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The effects of ownership structure on corporate payout policy: Incentive alignment or entrenchment

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Abstract

This paper examines how control and ownership structure affect corporate payout policy. As corporate insiders derive personal benefits from the firm, they have an incentive to protect their position, especially when the control rights are relatively low. Unlike cash dividends, stock repurchases change ownership structure and they also strengthen the insiders' relative positions. The paper argues that corporate payout methods depend on the degree of interest alignment of controlling shareholders measured by ownership concentration and the need to secure their positions measured by control rights. Using information on stock repurchases and cash dividends in Korea, this study empirically analyzes the determinants for payout decisions and factors affecting the magnitude of share repurchases. This paper shows that firms are likely to adopt payout programs when interest of controlling shareholders is closely aligned with that of other shareholders. Firms are more likely to choose share repurchase programs when control rights are weak. Moreover, the market responds negatively to share repurchases announced by firms with lower control rights. These results suggest that share repurchase program can be used to protect incumbent insiders.

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We are grateful to comments on earlier versions of the paper from several participants at the Korea Finance Association's Forum and Korea Management Society Conferences. We are grateful to the research grant from the Korea Corporate Governance Service. The first author also appreciates the faculty research grants from Seoul National University.

1. Introduction

A recent major change in corporate payout policy can be found in a wide use of stock repurchase in many countries. As time series data show, more firms have adopted stock repurchases while fewer firms have distributed firm resources through cash dividends. Some examine whether stock repurchase replaces cash dividends which have been a traditional payout method.[3] In addition, some try to explain why share repurchase become popular.[4]

Both cash dividend and stock repurchase may reduce agency problems through distributing free cash flows to shareholders. In addition, firms might send a signal to shareholders that the firm has a good future perspectives or the firm is currently undervalued. According to the free cash flow and signaling hypotheses, both payouts can yield similar positive effects on stock returns.

On the other hand, some studies suggest that stock repurchases are preferred to cash dividends as the former better serves managerial incentives than cash dividends. When a firm distributes cash, the stock price goes down, and value of exercisable stock option decreases. This creates an incentive for the corporate decision maker with large stock options not to use cash dividend and prefer stock repurchase, as shown by Fenn and Liang (1997). While share repurchase reduces the outstanding shares, cash used to purchase the stocks is not deducted from earnings. Therefore, a firm's share repurchase boosts the earnings per share. As Weisbenner (2000) argues, firms buy back shares to undo dilution of earnings due to stock options granted to the managers. Unless stock options increase firm profitability to offset the dilution, shareholders incur the costs. In addition, firms under takeover threats can repurchase their stocks as a defensive mechanism. Shareholders with lower valuations would tender their shares while remaining shareholders with higher valuations would keep the shares and require higher price for their stocks. By pushing up share prices for acquirers to pay for with an upward sloping supply curve, Bagwell (1991) theoretically explains how share repurchases deter outside M&A threats. Denis (1990) shows that a firm's stock repurchase program generates a negative return when the firm is under a takeover threat.

Previous studies show that firms make choices between two payout methods partially due to differences in managerial incentives. Moreover, they imply that a firm's decision to distribute earnings to shareholders through share repurchase programs generates two conflicting effects; mitigate incentive problems or exacerbate the problems. Such conflicting and competing effects of share repurchase occur depending on the presence of takeover threats and adoption of managerial stock options.

In addition to the above explanations and financial flexibility,[5] are there other reasons

3 Fama and French (2001), Grullon and Michaely (2002)

4 Dittmar (2000)

5 The choice between cash dividends and share repurchase also depends on the volatility of firms' earnings and financial flexibility. Jagannathan, Stephens, and Weisbach(2000), Guay and Harford (2000) show that stock repurchases are more sensitive to transitory shock in cash flows while cash dividends respond to changes in permanent components of earnings. Since firms have a tendency to maintain the cash dividend levels, share repurchases are more related to firms' need to maintain financial flexibility.

why share repurchase becomes popular? Can share repurchase exacerbate the incentive problems in other situations? The presence of M&A threats and stock options is important to the interest of insiders, we might need another explanation. This question is important to explain why repurchases become popular in other countries where stock options are not strong in firms outside the US.[6] It explains what happens to the payout composition when hostile mergers do not occur often in recent years.[7] In addition, to evaluation the impact of share repurchase on firm value, investors ask whether share repurchase can cause incentive problems in a firm without immediate M&A threats or without large stock options.

This paper argues that control and ownership structure causes conflicts of interest between the insiders and outside shareholders, and it affect corporate payout decisions. In a firm with a high percentage of ownership by insiders, incentive problems are less severe because insiders' interest would be closely aligned with that of outside shareholders. In other words, firms with high insider ownership are likely to choose payout methods and magnitude to increase firm value. If a firm with high insider shareholding adopts the program, the purpose is to signal firm value to the market. This argument is consistent with studies that show share repurchase announcement returns are positively to inside shareholdings.[8]

Corporate insiders can derive personal benefits from the firm. As the corporate insiders' ownership becomes lower, Jensen and Meckling (1976) argue that the insiders would have a more incentive to pursue their personal interest. In this situation, they have an incentive to protect their position even before takeover threats occur. Especially the need to protect their control from external threats would be large when the control rights are weak. Share repurchase can serve this purpose. Unlike cash dividends, stock repurchases change ownership structure. Consider a case in which insiders maintain or increase their ownership while the firm buys back shares from other shareholders. Share repurchase can strengthen the insider's relative position. In a nutshell, the objective of share repurchases may depend on the degree of interest alignment of the insiders with outside shareholders and the need to secure their positions.

The incentive problems would occur even when a firm is under the control of controlling shareholders. Among many countries with prevalent family control, some families do not necessarily own a majority of shares even though they have control rights.[9] When controlling shareholders of a firm do not have a high level of ownership or the control rights are weak, the firm may be exposed to potential threat. Moreover, controlling shareholders might prefer share repurchases to cash dividends to strengthen their control even before any takeover threat occurs.

Unlike previous studies on payout policy which have not explored the incentive to secure their control position even when there is no immediate threats, this paper studies

6 Murphy (1999) shows that the portion of stock options in total managerial compensation vary across countries. Analysis on components of compensation in 12 OECD countries shows that the equity based compensation proportion is the highest in the US.

7 According to Andrade, Mitchell and Stafford (2001), hostile mergers virtually disappeared in the US in the 1990s.

8 Comment and Jarrell (1991), McNally (1999), Ikenberry, Lakonishok and Vermalen (1995), Li and McNally (2003)

9 LLS(1999) show that outside America, family ownership and controlling minority structure are widespread.

the effects of control rights and ownership concentration. We argue that controlling shareholders of a firm have an incentive to adopt a payout program either to signal the firm value or to strengthen the control. The incentive to secure their control increases when their control rights are small. We investigate whether such incentive to secure their position might exist, when the firm does not face an immediate takeover threat or when managerial stock option programs are not in place. A share repurchase program can play a preemptive defensive measure without immediate takeover.

We also test how the capital markets respond to repurchase announcements. Suppose a firm lowers free cash flows through repurchasing stocks and the firm does not waste its resources to negative NPV projects. Therefore, such stock repurchases are beneficial to the shareholders. If the capital markets perceive that a firm adopts a share repurchase program for value enhancing reasons, the market would respond to the news positively. When the firm repurchases shares to protect the controlling shareholders rather than signaling firm value or reducing agency problems, entrenched controlling shareholders would engage in value destroying tunneling activities. In this case, stock repurchase will lower the shareholders' value. The expected effects of stock repurchase on firm value can be negative when the repurchase is done to protect controlling minority shareholders. When a firm buys back shares to protect controlling shareholders, it is expected that the market would respond negatives.

We use the data on share repurchase and cash dividends as well as ownership information on publicly traded firms in Korea. Korean firms provide an ideal case to see whether corporate payout policy is used to protect controlling owners for the following reasons. First, as Joh (2003) and Baek, Kang, and Park (2004) show, Korean firms present a typical case of controlling minority structure. While controlling shareholders do not own high ownership, they maintain control through interlocking ownership among subsidiaries. Second, Choi and Kim (2005) show that Korean firms have increased their payout activities in recent years in both cash dividends as well as stock repurchases. The number of firms that pay cash dividends increased along with a rise in cash dividend yields. At the same time, with legalization of stock repurchase in 1994, over 25% of publicly listed firms have engaged in stock repurchase. Third, Korean corporations become more exposed to outside threats (Joh 2004). Since the economic crisis, the Korean government has abolished many legal and administrative provisions designed to protect the control by controlling shareholders. The government has lifted a ban on foreign ownership, abolish restrictions on buying shares, and legalize hostile takeovers. The government also eliminated the mandatory administrative rule that an acquirer who purchased a 25% of votes should extend an offer to 50% +1 of all shareholders. Such changes expose controlling shareholders to takeover threats.

Using the firm level announcement data from 1994 to 2004, we have examined factors affecting firms' payout policy. In particular we have studied how ownership structure affects firms' payout choices between cash dividend and stock repurchase. In addition using an event study method, we examined the effects of stock repurchase announcement on firm value.

The results show that firms with a lower control rights by controlling shareholders are more likely to engage in stock repurchases. A decrease in control rights by controlling

shareholders increases the probability that the firm makes a decision to buy back its shares. The magnitudes of share repurchase increase in a firm with lower control rights by controlling shareholders. The effects of ownership on payout decision still remain even when other factors such as the presence of M&A's and adoption of managerial stock option plans are controlled. Moreover, we have found that the market responds negatively when a repurchase announcement is made by a firm with a lower control rights by controlling shareholders.

The contribution of our study is to show that control and ownership structure affects the corporate decision on payout policy and magnitude of share repurchase to protect the position of the insiders. Using detailed public announcement information, we show that share repurchase program can be used as an entrenchment device for the insiders whose control rights are weak.

The paper is organized as follows. Section 2 briefly discusses background information on payout policy and ownership and control structure of Korean firms. In Section 3, we discuss the data and introduce methodology in the study. Section 4 reports and discusses the analysis results followed by conclusion in Section 5.

2. Background information on payout policy and ownership structure in Korea

2.1. Control and Ownership structure

Around the world, controlling shareholders can extract private benefits from a firm which they take control at the expense of firm value accruing to dispersed shareholders (Jensen and Meckling 1976, Grossman and Hart 1998, LLSV 1999). Private benefits of control measured through value of control vary across countries. Korea shows one of the highest control values among the countries studied by Nenova (2003).

Value of corporate control is high in Korea partially due to the Korean corporate ownership structure that demonstrates prevalence of controlling minority structure (Bebchuck, Kraakman, and Triantis 2000). Controlling shareholders in publicly traded firms or business group affiliated firms hold less equity shares than those in privately owned or independent (stand-alone) firms. Business groups *(chaebol)* are prevalent in Korea[10]. In our sample, over 20% of publicly traded firms belong to *chaebols*. The direct personal ownership by controlling shareholders in the large *chaebols* is on average less than 10% of total shares and much smaller in some *chaebols*.[11] Their personal stake varies across subsidiaries within a group they control. In some subsidiaries, the controlling shareholders' ownership is near zero. Despite such a low level of ownership (cash-flow rights) controlling shareholders in Korea can easily exercise their control power. Complicate interlocking ownership structure in *chaebols* makes it possible for founders and their families without large shareholdings to control the firms.

10 According to Joh (2003), more than 60% of all the Korean firms in her sample (including privately held firms subject to outside auditing) belong to business groups small or large.

11 The Fair Trade Commission of Korea

Until recently, the legal system provided little protection for the minority shareholders, leaving large room for controlling shareholders to pursue their private interests.[12] Many of large business groups are reported to engage in self-dealings.[13] The private benefits to controlling families explain why Korean firms showed lower performance before the crisis (Joh 2003) and during the crisis (Baek, Kang, and Park 2004).

Since the economic crisis in 1997, the Korean government has abolished many legal and administrative rules and procedures protecting insiders.[14] Starting from January 1998, the government has introduced many reform measures that increase corporate transparency in financial information and business transactions, and accountability of management. The government legalized that all listed firms have at least one outside directors, and introduced cumulative voting system.[15] The Korean government lifted a ban on foreign ownership, abolished restrictions on buying shares, and legalized hostile takeovers. Before the crisis, there was a ceiling on foreign ownership such that foreigner investors altogether cannot own more than 25% of shares of any Korean firm. After the government eliminated the ceiling in April 1998, foreign ownership becomes stronger than ever. The sum of ownership by all foreigners in some publicly listed firms has exceeded 50% in aggregate. Moreover, the sum of large foreign investors is also large. The government also eliminated the mandatory administrative rule that an acquirer who purchased a 25% of votes should extend an offer to 50% +1 of all shareholders at least at the highest price at which the acquirer purchased shares. Such legal and institutional changes expose controlling shareholders to takeover threats.

2.2. Payout policy in Korea

Korean firms have paid very little or no cash dividend before the crisis. For 20 years between 1981 and 2002, the average dividend yield was 1.72% while the average one year deposit interest rate was 13.79%.[16] Since the economic crisis in 1997, Korean firms have increased their payout activities in recent years in both cash dividends and stock repurchases. Choi and Kim (2005) summarize the changes in the Korean cash dividend policies. They show that the number of firms that pay cash dividends have increased but the ratio of firms that pay cash dividends over total listed firms did not change much.

Share repurchase became legalized in Korea in 1994. In 1998, the ceiling on the number of shares to be purchased is lifted. In aggregate, the Korean firms have spent 7.8 trillion won in 2001. While the Korean firms in aggregate spent 6.4 trillion won on cash dividend in 2003, they spent 7 trillion won on share repurchase in the same year. On average, the number of shares to be purchased amounts to 5.33% of total shares, the median value of the ratio reaches 4.11%. These suggest that share repurchase is a large component of corporate payout policy.

12 Joh (2003) and Bae, Kang, Kim (2002)

13 Many studies document tunneling activities in Chaebol affiliated firms. See Joh (2003, 2004) Bae, Kang, Kim (2002)

14 For more see Nam et al. (2000)

15 Companies can choose to adopt a cumulative voting system in their charter.

16 Choi and Kim (2005)

Most stock repurchases in Korea are done through open market repurchase rather than tender offers. When a firm plans to buyback shares, the firm is required to disclose how much money the firm is planning to spend and the purpose of the repurchases. As <Table 1> shows, on average 16.4% of all publicly listed firms, and 17.7% of the non-financial listed firms have adopted share repurchase programs. More than 25% of all publicly traded firms have adopted at least one share repurchase program.

<Insert Table 1 around here>

Firms can repurchase their shares from the open market directly or they can invest in funds and trusts which buy the firms' own shares. We include share repurchase through direct and indirect operations. We exclude share repurchases when a firm buys back its shares in the process of restructuring such as merger and acquisitions and split off.

In earlier years before corporate governance issues became a public concern, as <Table 2> show, 14.2% of firms with repurchase programs reported that M&A defense was their main purpose of repurchases. However after the 1997 crisis with a rising concern for the governance issues, very few firms reported M&A defense as the main objective of repurchases.

<Insert Table 2 around here>

3. Data and methodology

3.1. Data

We have collected information on firms' announcement of share repurchase programs from January 1995 until December 2004. Public announcement information was obtained from the Korea Investor's Network for Disclosure System (KINDS) run by the Korea Stock and Future Exchange. When a firm announces share repurchase more than once during the analysis periods for the market reaction, the firm-year is excluded in the sample.

We collect information on share repurchase programs including announcement dates, the value of share repurchase, and number of shares to be repurchased. For financial information, we use KIS-Line data compiled by the Korea Information Service, for ownership information, we use data from TS-2000 which is compiled by the Korea Listed Companies Association, and for stock price and shares, we use data provided by the FN-guides. Information on hostile M&A threats is collected using news paper articles and public announcement reported on the KIND. *Chaebol* classification follows the Korea Fair Trade Commission (KFTC)'s annual press releases. Before 2002, a firm is considered to be group affiliated when it belongs to the largest thirty business groups (Korean chaebols) identified by the commission. Since 2002, KFTC has selected large business groups which are subject to the government regulation on equity investment. We classify those groups as chaebols. Among the listed firms, we exclude financial institutions and firms with missing information on ownership structure or accounting information.

We examine the magnitude of stock repurchases using three variables. We use REP

which is the value of stock repurchase divided by the prior year end market value of equity. We also use SRR which is the number of shares that a firm plans to purchase over total number of shares. In addition, we use STP which is the value of stock repurchase divided by the total dividend payment which is the sum of the prior year end cash dividend and share repurchase. In our analysis, we focus on common stock repurchases only and exclude preferred stock repurchases.

Our measurement of share repurchase based on public announcement has advantages over using information on the dollar volume of stock repurchase on financial statement. As Stephens and Weisbach (1998) argue these data based on financial statement overstate stock repurchases. The information includes conversion of other securities into stocks. In addition, the method might understate the true size of share repurchase over market value when there is seasoned equity issuance.

<Table 3> shows the summary statistics. Panel A in <Table 3> shows summary statistics of all the firms with financial information between 1994 and 2004. Firms with payout programs are larger in asset size. Firms with payout programs show a lower market to book ratio, more free cash flows, less financial volatility and higher ownership rights and control rights by controlling shareholders, and higher foreign ownership than firms without payout programs. Panel B in <Table 3> shows summary statistics for all the firms with share repurchase programs. Firms with share repurchase programs are larger. Firms with share repurchase programs show higher free cash flows, less financial volatility, and higher CS ownership than firms without such programs. The differences in two groups are similar in general payout program case and share repurchase programs. Note that there is one difference. Compared with firms without share repurchase programs, firms adopting share repurchase programs show lower control rights which include all ownership level that CS can directly or indirectly control.

<Insert Table 3 around here >

3.2 Methodology

Our study consists of three parts. First, using the Logit model, we examine the factors that affect firms' payout policy. In addition, we also examine whether a firm decides to adopt share repurchase programs or not. Then, using the Tobit model, we examine the determinants of the magnitude of share repurchase. We use the ratio of stock repurchase over total dividends, the ratio of number of shares to be repurchased over total outstanding shares, and the ratio of stock repurchase over market value. Last, we examine the market reaction to the repurchase announcement.

First, we examine whether and how firm characteristics affect the firm's payout decisions using a panel data set. We assume that each firm's probability to adopt a payout policy is independent of other firms. It is treated as a single draw from a Bernoulli distribution. When a firm 'i' has a payout policy, y_i takes a value of one otherwise it takes zero. In our empirical analyses, we examine two cases separately: general payout policy and share repurchase program. In the model below, the function F represent probability that a firm adopts a payout policy. Firm i's probability depends on coefficient vector β and vector of explanatory variables $\mathbf{X_i}$. The logit model

maximizes the joint probability or likelihood function as follows.

$$\ln L = \sum_{i=1}^{n} \{ y_i \ln F(\beta X_i) + (1 - y_i) \ln[1 - F(\beta X_i)] \}$$

Explanatory variables include constant term, firm size (Firm_size), free cash flows (Free_cash), capital structure (Debt_asset), market to book value (MTB), financial volatility (Std_ret), and other variables explained below. We use a log value of total asset as a proxy for firm size (Firm_size) and debt ratio over total asset for capital structure (Debt_asset). Free cash flow (Free_cash) represents the sum of ordinary income and depreciation divided by total asset, and it measures whether firms with high free-cash flow adopt repurchase programs to reduce agency problems. Market value to book value (MTB) measures the value of future growth option and it tests whether a payout program is adopted to reduce under valuation and signals future firm performance. Financial volatility (Std_ret) is measured through the standard deviation of stock returns in the previous year and represents the corporate need for financial flexibility.

In the equation above, we include ownership information and other governance related information such as whether a firm faces a credible outside M&A threat or whether it adopts a managerial stock option plan. In addition we also control whether a firm belongs to a chaebol. For ownership information, we use two control, ownership related measures. One is controlling shareholders' ownership (CS_own), which represents the controlling shareholder and family members' cash flow rights. We also use controlling shareholders' control rights (CS_control) which is derived as the sum of all ownership under the influence of CS such as own ownership (CS_own) and subsidiaries' interlocking ownership. In order to see the influence of foreign shareholders, we also use Foreign_own which is the sum of all the ownership by foreign shareholders.[17]

Second, we examine factors affecting the magnitudes of stock repurchases. Three variables are used to measure the magnitude: a) the ratio of share repurchase over total dividend payments to shareholders through cash dividend and share repurchase (STP), b) the ratio of share repurchase over market value of the firm (REP), c) the number of shares to be repurchased over total number of shares (SRR). In the analysis, we use market value at t-1 and cash dividend value at t-1.

Since many firms have not adopted a share repurchase program, a large portion of samples would report a zero ratio. Firms with the repurchase program would show a positive ratio for the measures described above. Conventional least squares method would not account for the qualitative difference in observations with a zero value and observations with a continuous non-zero positive value. Therefore it is not appropriate to use an OLS method. To resolve this problem, we use the following log likelihood function. The function consists of two parts: regression for non-zero observations and the relevant probabilities for the zero observations. For more discussion on TOBIT analysis, see Greene (1993).

$$\ln L = \sum_{y_i > 0} -\frac{1}{2} \left\{ \ln (2\pi) + \ln \sigma^2 + \frac{(y_i - \beta X_i)^2}{\sigma^2} \right\} + \sum_{y_i = 0} \left\{ \ln \left[1 - \Phi \left(\frac{\beta X_i}{\sigma} \right) \right] \right\}$$

17 The results do not change when we use information on ownership by large foreign investors.

Compared with the earlier equation, when a firm adopts a share repurchase program, y_i takes an aforementioned ratio value. In the equation above, Φ is a standard normal probability density function with standard deviation σ.

Third, we also examine the market reaction to share repurchase announcement using a typical event study method. We identify exact announcement dates using information on the KINDS. Using daily stock returns and market portfolio returns for the 200 days from 220 days to 20 days prior to the announcement date, we estimate the constant term and "beta" in the market model for each firm. Then, we derive abnormal returns around the announcement date for each firm.

$$AR_{i,t} = (R_{i,t} - R_{f,t}) - \left[\alpha_i + \beta_i (R_{m,t} - R_{f,t})\right]$$

Using the OLS method, we examine factors that affect cumulative average abnormal returns (CAAR). Following previous literature, we control for firm size (Firm_size), free cash flows (Free_cash), capital structure (Debt_asset), market to book value (MTB), standard deviation of return (Std_ret), compounded excess return (EXRET), and ownership variables. We also control for the relative size of share repurchase in three ways: STP, REP, SRR

$$\boldsymbol{CAAR_i = \alpha_0 + \alpha_1\ Size\_repurchase + \alpha_2 SIZE + \alpha_3 Free\_cash + \alpha_4 DEBT\_Asset + \alpha_5 MTB + \alpha_6 RETSTD + \alpha_7 EXRET + \alpha_8 Ownership + YEAR\ dummies + Industry\ dummies}$$

4. Results and Discussion

In this section, we summarize the empirical results on corporate payout policy. One, we report the results on firms' decision to adopt payout program or not, using Logit models. Two, we also show the results on magnitude of stock repurchase using Tobit models. Three, we summarize the market response to share repurchase announcements.

4.1 Factors affecting decision to payout policy

<Table 4> summarizes the Logit regression results on firms' probability to make a payout decision using pooled data. Panels A and B report regression results using all the sample firms and firms which have had a payout program at least once during the sample period, respectively. Using all sample observations, Panel A analyze the factors that affect firms' decision to pay earnings to shareholders regardless of payment methods either through cash dividend or share repurchase programs. Column one shows that larger firms, firms with more free cash flows and lower debt to asset ratio would increase the probability to distribute earnings to shareholders. Firms with lower financial volatility, firms with lower debt ratio and firms with lower market value are likely to adopt a payout program.

Column two shows that chaebol affiliation and adoption of stock options lowers firms' decision on payout policy while the experience of M&A threats does not have a statistically significant effect, after controlling for firms' financial conditions. Column thee shows that controlling shareholders' ownership concentration (CS_own) increases

the probability to adopt payout policy while foreign ownership concentration does not yield a statistically significant effect. Column four shows that total control rights under the influence of CS (CS_control) increases the probability to adopt payout policy while foreign ownership concentration (foreign_own) does not yield a statistically significant effect. Columns five and six show that the effects of control-ownership related variables are still significant even we include other governance related variables such as M&A threats, chaebol affiliation and managerial stock options.

Using firms which have ever paid to shareholders, Panel B of Table XXX reports that financial variables and control-ownership variables affect firms' decision to pay dividends either through cash dividend or share repurchase programs. The results are not much different from those in Panel A.

4.2. **Factors affecting decision to adopt repurchase program**

<Table 5> summarizes the logit regression results on firms' probability to make a share repurchase program using pooled data. Panel A and Panel B report regression results using all the sample firms and firms which have had at least once some payout policy, respectively. Using all sample observations, Panel A shows that financial variables affect firms' decision to pay earnings to shareholders through share repurchase programs. As Column one shows, larger firms, firms with more free cash flows, less financial volatility and lower debt to asset ratio exhibit higher probability to distribute earnings to shareholders through share repurchase programs. Moreover, firms which show higher dividend yield is more likely to adopt share repurchase programs. Column two shows that chaebol affiliation lowers the probability while the present of M&A threats, and adoption of stock options increase the probability to adopt share repurchase programs, after controlling for firms' financial conditions. Columns three and four show that firms with high CS_own are more likely to adopt share repurchase programs, but firms with high control rights of insiders (CS_control) are less likely to adopt the program. Last two columns show that when ownership variables and other governance related variables are included together, the positive effects of CS_own (although it is significant only at a 10 percent level), and the negative effects of CS_control still remain.

Using firms which have ever paid earnings to shareholders at least once, Panel B of <Table 5> reports that financial variables affect firms' decision to pay dividends through share repurchase programs. The results are not much different from those in Panel A.

The earlier results in <Table 4> show positive effects of both ownership and control variables on payout policy. In contrast, the results in <Table 5> show the positive effects of ownership concentration and strong, significant negative effects of CS_control on share repurchase programs. This difference suggests that control and ownership structure affect differently firms' decision to adopt share repurchase programs. Since controlling shareholders with low control rights are exposed to outside threat while CS with high control rights are protected from outside threat, the difference may result from the need for CS to secure their position.

4.3. **Determinants of magnitude of share repurchase**

A. Target number of shares to be repurchased over total shares

<Table 6> summarizes the Tobit regression results on firms' target number of shares to be repurchased over total number of shares using pooled data. Panel A and Panel B report regression results using all the sample firms and firms which have had at least once some payout policy, respectively. Using all sample observations, Panel A shows that financial variables affect the target number to be purchased over total shares. Column one show that firm size, free cash flow, and cash dividend yield all affect firms' share purchase positively and significantly. On the other hand, negative coefficients for Std_ret and Debt_Asset indicate that firms which need financial flexibility and firms which rely on high debt do not have high share repurchase. These results are consistent with previous studies that share repurchases are preferred to cash dividend due to its financial flexibility.

Column two shows that chaebol affiliation lowers the number of shares to be repurchased. On the other hand, firms with the experience of M&A threats, and adoption of managerial stock options increase it after controlling for firms' financial conditions. Columns 3 and 4 show that the coefficient for CS_own is positive and significant. The effect is still significant when other governance related variables are included in the analysis. Firms with high ownership concentration plan to repurchase more shares. As Columns 5 and 6 show, the coefficient for CS_control is negative and significant, and its significance remains when other governance related variables are controlled for. As the control rights by controlling shareholders decrease, the firm plans to repurchase more shares from the open market.

Using firms which have ever paid to shareholders, Panel B of <Table 6> reports that financial variables and governance related variables affect the number of shares to be repurchased. The results are similar to those in Panel A.

B. share repurchase over market value

<Table 7> summarizes the Tobit regression results on firms' shares repurchase over market value using pooled data. We examine the factors affecting announced amount of share repurchase over total market value. Panel A and Panel B report the results using all sample and sub sample of firms with history of paying dividend at least once during the sample period, respectively. They have similar results. Columns one and two show positive coefficients for firm size and market to book value. This means that large firms, and firms with high market value will spend more money on share repurchase. Firms with lower dividend yield announce that they would spend more money on repurchase. Similarly as in <Table 6>, firms with chaebol affiliation, presence of M&A threats and managerial stock option programs have the same effects on share repurchase programs. Chaebol affiliated firms will spend less on share repurchase, while firms with presence of M&A threats and managerial stock option program will spend more on share repurchase.

Columns 3 and 4 show that the coefficient for CS_own is not significant while columns 5 and 6 show that the coefficient for CS_control is significant and negative. Again,

firms whose controlling shareholders do not have high control rights will spend more to repurchase shares.

Using firms which have ever paid to shareholders, Panel B of <Table 7> reports that financial variables and governance related variables affect the ratio of share repurchase amount over market value. The results are similar to those in Panel A.

C. Share repurchase over total payout amount

<Table 8> summarizes the Tobit regression results on firms' shares repurchase over total payout amount using pooled data. These analyses examine how firms allocate their resources between cash dividend and share repurchase. Since all the observations must have non-zero dividend amounts to be included in the analysis, the number of observations decrease compared with those in the previous sections.
The results show that among financial variables firm size, free cash flow, and cash dividend yield all increase the ratio of share repurchase over total dividend payment in favor of share repurchase. Firms with higher debt ratio to assets and with higher financial volatility decrease the ratio of share repurchase over total dividend payment. These results are consistent with an argument that share repurchases are preferred to cash dividend due to its financial flexibility. Similarly as before, firms with chaebol affiliation, presence of M&A threats and managerial stock option programs have the same effects on share repurchase programs. Chaebol affiliated firms will spend less on share repurchase, while firms with presence of M&A threats and managerial stock option program will allocate more dividend payment to share repurchase than cash dividends.

Columns 3 and 4 show that the coefficient for CS_own is not significant while columns 5 and 6 show that the coefficient for CS_control is significant and negative. Again, firms whose controlling shareholders do not have high control rights will allocate more dividend payment to share repurchase than cash dividends.

4.4. Market reaction to stock repurchase announcement

<Table 9> summarizes the results on the market reaction to share repurchase announcement using a typical event study method. After deriving cumulative returns for the period around the announcement day, we examine the factors affecting CAR (-1,1) using the OLS method.

Size of share repurchase is measured in three ways: the ratio of share repurchase over market value of the firm (REP), the ratio of share repurchase over total dividend payment (STP), the number of shares to be repurchased over total number of shares (SRR). Panels A, B, C shows the results using size of share repurchase through REP, STP and SRR, respectively.

The results in Panels A, B and C show that the market reacts positively to the announcements as the size of share repurchase increases, ownership concentration by controlling shareholders increases, and control rights decrease. These results hold

regardless of our choice of measuring the magnitude of share repurchases.

4.5. Discussion

In previous sections, we have showed that firms with higher control rights by the controlling shareholders are less likely to adopt stock repurchase programs, and if they adopt, the magnitude is smaller. This means that stock repurchases will be more likely to be adopted by firms with lower control rights by controlling shareholders. In addition, when firms with lower control rights by controlling shareholders adopt the program, the magnitude would be larger; More money will be spend to share repurchase, more shares will purchased, more dividend payment will be allocated to the program.

Moreover, the capital markets generate a positive response to firms with higher control rights by controlling shareholders. That means the markets respond negatively to share repurchase announcement when the controlling shareholders do not have high control rights.

These results imply that share repurchase programs in a firm with lower control rights by controlling shareholders are value destroying. Why does the firm to adopt share repurchase program that lowers firm value? Since controlling shareholders can influence the firm's decision on the dividend policy to benefit them, the decision reflects the value to controlling shareholders. We argue that controlling shareholders adopt share repurchase program as it changes ownership and strengthens the position of insiders.

5. Conclusion

Using information on cash dividends and share repurchase announcements between 1994 and 2004, this study has investigated the effects of control and ownership structure on payout decision and stock market responses.

Share repurchase can be used to signal the firm's performance or to secure corporate insiders' interest and positions. We show that control and ownership structure affects the firms' decision to have a payout policy or not. When ownership is large, firms are more likely to choose payout policy. When a firm's insider has high ownership, interest of the insider is more closely aligned with that of outside shareholders. In this situation, the reason to adopt share repurchase is more likely to signal the firm's value. When a firm with high ownership or high control rights adopts share repurchase, cumulative abnormal returns are greater.

Controlling shareholders have an incentive to pursue personal interest at the cost of other shareholders. When controlling shareholders have low control rights, they need to protect their control. A firm controlled by CS with low control rights is more likely to adopt share repurchase program as it changes ownership structure and strengthens their control. In addition, the firm will buy back more shares, spend more resources to repurchase stocks, increase share repurchase while lowering cash dividends. We show that the markets differentiate the same payout policy depending on ownership structure. The market respond negatively to the share repurchase announcement by a firm with lower control rights. Therefore, share repurchase programs in a firm with lower control

rights by controlling shareholders are value destroying. Since controlling shareholders can influence the firm's decision on the dividend policy to benefit them, the decision reflects the value to controlling shareholders.

The study shows that the same payout policy can serve different purposes depending on control and ownership structure. We can extend this research to examine whether such payout policy might be affected by investor protection or strengths of corporate governance as they are more likely to discipline value destroying activity by the controlling shareholders.

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<Table 1> Annual Trends of Share Repurchase in Korea

This Table reports the number of firms which made a public announcement on share repurchase, and target ratio of repurchase. We exclude firms with missing financial statement or ownership. We also exclude share repurchase in the process of mergers, acquisitions, split offs, and preferred share purchases.

Year	All listed firms (A)	Non-financial listed firms (B)	Firms with repurchase share program (C)	(C/B)	Target shares/total shares among firms in (C) (%)	Firms with Financial information among firms in (C) (D)	(D/B)	value of Target share/total share in (D)	
								Mean	Median
1995	721	590	115	19%	3.35	104	18%	3.16	2.93
1996	760	654	138	21%	4.51	123	19%	4.36	3.27
1997	776	669	163	24%	4.55	148	22%	4.50	3.42
1998	748	656	95	14%	4.99	94	14%	4.96	4.02
1999	725	637	74	12%	4.89	69	11%	4.76	4.17
2000	704	628	177	28%	7.36	170	27%	7.24	5.76
2001	689	624	93	15%	6.75	93	15%	6.79	5.59
2002	683	620	94	15%	5.96	90	15%	6.07	4.90
2003	684	623	123	20%	5.83	119	19%	5.96	4.17
2004	683	627	102	16%	4.9	96	15%	4.93	3.79
2005	702	649	58	9%	3.55	54	8%	3.60	2.61

<Table 2> Official objectives for share repurchase

This Table summarizes the official objectives of share repurchase programs and the number of firms which reported the objectives in the public disclosure. Firms are allowed to report multiple goals.

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Year	Incentive Provisions	M&A Defense	Signaling firm value	Others	Sum
1995	1	10	46	70	115
1996	1	26	93	51	138
1997	3	9	113	56	163
1998	3	15	81	12	95
1999	6	7	66	2	74
2000	4	7	173	5	177
2001	8	3	83	8	93
2002	13	4	75	12	94
2003	16	3	93	24	123
2004	15	2	73	27	102
2005	14	1	40	10	58

a: Employ stock ownership program, and other incentive provisions.

<Table 3> Summary Statistics

Depending on the adoption of payout policy and share repurchase program, we divided the sample in two groups and compare the mean differences of these two groups. REP represents the ratio of share repurchase market value, STP is the ratio of share repurchase over total dividends (which is the sum of cash dividend and share repurchase), SRR is the targeted number of shares over total shares. CS_own is percentage ownership by controlling shareholders and family members, CS_control is the sum of CS_own and interlocking ownership by subsidiaries. Foreign_own is the sum of all foreign shareholders' ownership. STD_RET is standard deviation of rate of stock return in the previous year, Size is log value of asset, Free_Cash is operating income and depreciation divided by total asset, Debt_Asset is debt over asset, MTB represents market value over book value.

Variables	Payout>0 (A) Mean	Payout=0 (B) Mean	(A-B) t Value	
cs_own	21.27	15.04	14.2	***
cs_control	31.20	24.07	15.29	***
foreign_own	0.93	0.46	5.53	***
STD_RET	3.40	4.71	-36.42	***
Firm_size	5.45	5.11	8.83	***
Free_cash	0.69	0.07	31.47	***
DEBT_ASSET	0.53	0.69	-31.02	***
MTB	0.76	1.28	-9.62	***
Dividend Yield	0.03	0.00	52.06	***
N	4277	1881		

Variables	Stock Repurchase>0 (A) Mean	Stock Repurchase=0 (B) Mean	(A-B) t Value	
cs_own	19.92	19.24	1.3	
cs_control	27.74	29.32	-2.81	***
foreign_own	0.93	0.76	1.7	*
STD_RET	3.50	3.87	-7.87	***
Firm_size	5.67	5.27	8.62	***
Free_cash	0.71	0.45	10.6	***
DEBT_ASSET	0.54	0.59	-7.13	***
MTB	0.84	0.93	-1.4	
Dividend Yield	0.03	0.02	8.9	***
N	1143	5015		

*, **,*** represents a significance level at 10%, 5% and 1%, respectively.

<Table 4> Logit Regression of firms' decision to adopt any payout program

This Table summarizes the Logit regression of firms' decision to adopt payout programs: cash dividend or share repurchase. Panel A reports the results using all sample observations Panel B uses firms which have ever adopted payout program at least once. Dependent variable takes 1 when a firm has any payout program, otherwise zero. Firm_size is a log value of asset, CFree_cash is operating income and depreciation divided by total assets, Debt_Asset is debt over asset, MTB represents market value over book value. CS_own is the controlling shareholders' ownership and families, CS_control is the sum of CS_own and interlocking ownership by subsidiaries. Foreign_own is the sum of all foreign investors' ownership. STD_RET is standard deviation of rate of stock return in the previous year. Chaebol is a dummy variable that takes 1 when a firm belongs to the large Korean business groups. M&A threat is a dummy variable that takes 1 when a firm faces a takeover threat in a given year. Stock option is a dummy variable that takes 1 when a firm adopts a managerial stock option plan in a given year. Numbers in parentheses show t-value and *, **,*** represents a significance level at 10%, 5% and 1%, respectively.

Panel A:

Variables	Eqn (1)	Eqn (2)	Eqn (3)	Eqn (4)	Eqn (5)	Eqn (6)
Constant	6.1866 ***	5.9692 ***	5.0371 ***	5.2651 ***	4.9838 ***	4.9426 ***
	(0.3354)	(0.3439)	(0.3622)	(0.3596)	(0.3663)	(0.3719)
STD_RET	-0.915 ***	-0.918 ***	-0.863 ***	-0.875 ***	-0.868 ***	-0.878 ***
	(0.0517)	(0.0517)	(0.0527)	(0.0524)	(0.0527)	(0.0525)
Firm_Size	0.175 ***	0.2471 ***	0.2494 ***	0.1933 ***	0.2858 ***	0.2787 ***
	(0.0326)	(0.0386)	(0.0343)	(0.033)	(0.0393)	(0.0393)
Free_cash	1.9356 ***	1.9363 ***	1.9523 ***	1.9389 ***	1.9515 ***	1.9432 ***
	(0.0928)	(0.0929)	(0.0939)	(0.0937)	(0.094)	(0.0939)
DEBT_ASSET	-7.117 ***	-7.124 ***	-7.018 ***	-6.962 ***	-7.023 ***	-6.953 ***
	(0.3036)	(0.304)	(0.3059)	(0.3047)	(0.306)	(0.3054)
MTB	-0.113 ***	-0.103 **	-0.1 **	-0.114 ***	-0.093 **	-0.107 **
	(0.0432)	(0.0428)	(0.0426)	(0.0426)	(0.0422)	(0.0425)
Chaebol		-0.359 ***			-0.185	-0.445 ***
		(0.1144)			(0.1173)	(0.1158)
M&A threat		-0.264			-0.067	-0.109
		(0.5587)			(0.5642)	(0.5535)
Stock option		-0.22 *			-0.185	-0.147
		(0.1306)			(0.132)	(0.1321)
CS_own			0.0225 ***		0.0214 ***	
			(0.00279)		(0.00285)	
CS_control				0.0173 ***		0.018 ***
				(0.00253)		(0.00255)
Foreign_own			0.0096	0.0102	0.0107	0.0114
			(0.0137)	(0.014)	(0.0138)	(0.014)
Year dummy	yes	yes	yes	yes	yes	yes
Industry dummy	yes	yes	yes	yes	yes	yes
-2 Log L	4396.3	4382.6	4328.8	4347.8	4324	4331
N	6158	6158	6158	6158	6158	6158

Panel B:

Variables	Eqn (1)	Eqn (2)	Eqn (3)	Eqn (4)	Eqn (5)	Eqn (6)
Constant	6.1551 ***	5.9012 ***	5.0351 ***	5.2492 ***	4.965 ***	4.8837 ***
	(0.3478)	(0.3574)	(0.3757)	(0.374)	(0.3804)	(0.388)
STD_RET	-0.864 ***	-0.867 ***	-0.811 ***	-0.825 ***	-0.816 ***	-0.827 ***
	(0.0526)	(0.0527)	(0.0537)	(0.0534)	(0.0538)	(0.0535)
Firm_Size	0.1702 ***	0.2549 ***	0.2451 ***	0.1917 ***	0.2923 ***	0.2906 ***
	(0.0345)	(0.041)	(0.0363)	(0.035)	(0.0417)	(0.0418)
Free_cash	1.946 ***	1.9494 ***	1.9646 ***	1.9478 ***	1.9656 ***	1.955 ***
	(0.0981)	(0.0982)	(0.0995)	(0.0992)	(0.0995)	(0.0994)
DEBT_ASSET	-7.012 ***	-7.02 ***	-6.933 ***	-6.861 ***	-6.938 ***	-6.857 ***
	(0.3195)	(0.3198)	(0.3225)	(0.3211)	(0.3223)	(0.3217)
MTB	-0.08 *	-0.067	-0.07	-0.078 *	-0.061	-0.068
	(0.0443)	(0.0435)	(0.0435)	(0.0431)	(0.0431)	(0.0428)
Chaebol		-0.407 ***			-0.236 *	-0.498 ***
		(0.1195)			(0.1225)	(0.1212)
M&A threat		-0.475			-0.282	-0.318
		(0.5561)			(0.5629)	(0.5524)
Stock option		-0.277 **			-0.237 *	-0.2
		(0.1335)			(0.1348)	(0.135)
CS_own			0.0222 ***		0.0207 ***	
			(0.00293)		(0.00299)	
CS_control				0.0169 ***		0.0177 ***
				(0.00267)		(0.0027)
Foreign_own			0.0056	0.0061	0.0071	0.0077
			(0.0138)	(0.0141)	(0.014)	(0.0142)
Year dummy	yes	yes	yes	yes	yes	yes
Industry dummy	yes	yes	yes	yes	yes	yes
-2 Log L	4028.4	4010.8	3968.5	3986.8	3961.1	3966.4
N	5837	5837	5837	5837	5837	5837

<Table 5> Logit Regression of firms' decision to adopt share repurchase program

This Table summarizes the Logit regression of firms' decision to adopt share repurchase programs: cash dividend or share repurchase. Panel A reports the results using all sample observations Panel B uses firms which have ever adopted payout program at least once. Dependent variable takes 1 when a firm has share repurchase program, otherwise zero. Firm_size is log value of asset, Free_cash is operating income and depreciation divided by total assets, Debt_Asset is debt over asset, MTB represents market value over book value. CS_own is the controlling shareholders' ownership and families, CS_control is the sum of CS_own and interlocking ownership by subsidiaries. Foreign_own is the sum of all foreign investors' ownership. STD_RET is standard deviation of rate of stock return in the previous year. Chaebol is a dummy variable that takes 1 when a firm belongs to the large Korean business groups. M&A threat is a dummy variable that takes 1 when a firm faces a takeover threat in a given year. Stock option is a dummy variable that takes 1 when a firm adopts a managerial stock option plan in a given year. Numbers in parentheses show t-value and *, **,*** represents a significance level at 10%, 5% and 1%, respectively.

Panel A:

Variables	Eqn (1)	Eqn (2)	Eqn (3)	Eqn (4)	Eqn (5)	Eqn (6)
Constant	-2.787 ***	-3.05 ***	-3.049 ***	-2.31 ***	-3.258 ***	-2.626 ***
	(0.3032)	(0.3139)	(0.3308)	(0.3278)	(0.3366)	(0.3411)
STD_RET	-0.164 ***	-0.173 ***	-0.154 ***	-0.183 ***	-0.165 ***	-0.188 ***
	(0.0484)	(0.0487)	(0.0488)	(0.0488)	(0.0491)	(0.049)
Firm_Size	0.2337 ***	0.2751 ***	0.2536 ***	0.2146 ***	0.287 ***	0.2557 ***
	(0.0278)	(0.0327)	(0.0296)	(0.0284)	(0.0334)	(0.0334)
Free_cash	0.4634 ***	0.4701 ***	0.4643 ***	0.4683 ***	0.4717 ***	0.4739 ***
	(0.0633)	(0.0635)	(0.0635)	(0.0637)	(0.0637)	(0.0638)
DEBT_ASSET	-1.877 ***	-1.799 ***	-1.843 ***	-1.942 ***	-1.779 ***	-1.863 ***
	(0.2386)	(0.2403)	(0.2396)	(0.2398)	(0.2411)	(0.2416)
MTB	0.0155	0.0132	0.017	0.0156	0.0146	0.0137
	(0.0193)	(0.0199)	(0.0191)	(0.0193)	(0.0197)	(0.0198)
Dividend yield	6.563 ***	7.0391 ***	6.4212 ***	7.1695 ***	6.8866 ***	7.5082 ***
	(1.4616)	(1.4922)	(1.4636)	(1.4892)	(1.4946)	(1.5129)
Chaebol		-0.352 ***			-0.317 ***	-0.317 ***
		(0.1043)			(0.1061)	(0.1051)
M&A threat		0.8307 *			0.8703 *	0.7735 *
		(0.4663)			(0.4678)	(0.4656)
Stock option		0.3401 ***			0.3614 ***	0.2964 **
		(0.1177)			(0.1183)	(0.119)
CS_own			0.0048 **		0.0044 *	
			(0.00238)		(0.00245)	
CS_control				-0.009 ***		-0.007 ***
				(0.00229)		(0.00232)
Foreign_own			-0.002	-0.004	-0.003	-0.005
			(0.0109)	(0.0109)	(0.011)	(0.011)
Year dummy	yes	yes	yes	yes	yes	yes
Industry dummy	yes	yes	yes	yes	yes	yes
-2 Log L	5368.4	5347.4	5364.3	5353.7	5344.2	5337.4
N	6158	6158	6158	6158	6158	6158

Panel B:

Variables	Eqn (1)	Eqn (2)	Eqn (3)	Eqn (4)	Eqn (5)	Eqn (6)
Constant	-2.824 ***	-3.099 ***	-3.07 ***	-2.329 ***	-3.287 ***	-2.655 ***
	(0.3037)	(0.3151)	(0.3314)	(0.3287)	(0.3377)	(0.3429)
STD_RET	-0.146 ***	-0.153 ***	-0.137 ***	-0.166 ***	-0.146 ***	-0.168 ***
	(0.0485)	(0.0487)	(0.0488)	(0.0488)	(0.0491)	(0.049)
Firm_Size	0.2288 ***	0.2743 ***	0.2482 ***	0.2087 ***	0.2856 ***	0.2536 ***
	(0.028)	(0.0331)	(0.0299)	(0.0287)	(0.0339)	(0.0339)
Free_cash	0.4315 ***	0.4397 ***	0.4326 ***	0.4383 ***	0.4413 ***	0.4448 ***
	(0.0638)	(0.064)	(0.064)	(0.0641)	(0.0642)	(0.0644)
DEBT_ASSET	-1.736 ***	-1.664 ***	-1.709 ***	-1.804 ***	-1.651 ***	-1.73 ***
	(0.2411)	(0.2426)	(0.242)	(0.2422)	(0.2433)	(0.2438)
MTB	0.0609 **	0.0584 **	0.0638 **	0.0623 **	0.0606 **	0.0601 **
	(0.0283)	(0.029)	(0.0282)	(0.0286)	(0.0289)	(0.0292)
Dividend yield	5.8401 ***	6.292 ***	5.7222 ***	6.4332 ***	6.1666 ***	6.7544 ***
	(1.4603)	(1.4882)	(1.4624)	(1.4864)	(1.4904)	(1.5093)
Chaebol		-0.362 ***			-0.329 ***	-0.325 ***
		(0.1049)			(0.1068)	(0.1058)
M&A threat		0.7707 *			0.809 *	0.7121
		(0.4645)			(0.4659)	(0.4638)
Stock option		0.3146 ***			0.3352 ***	0.2676 **
		(0.1177)			(0.1184)	(0.1192)
CS_own			0.0045 *		0.004	
			(0.00239)		(0.00246)	
CS_control				-0.009 ***		-0.008 ***
				(0.0023)		(0.00234)
Foreign_own			-0.003	-0.005	-0.004	-0.005
			(0.0109)	(0.0109)	(0.011)	(0.011)
Year dummy	yes	yes	yes	yes	yes	yes
Industry dummy	yes	yes	yes	yes	yes	yes
-2 Log L	5294.4	5274.3	5290.7	5278.9	5271.5	5263.5
N	5837	5837	5837	5837	5837	5837

<Table 6> Tobit Regression of target number of shares to be repurchased over total number of shares

This Table summarizes the Tobit regression of target number of shares to be repurchased over total shares repurchase program. Panel A reports the results using all sample observations Panel B uses firms which have ever adopted payout program at least once. Dependent variable is the ratio of target number of shares to be purchased over total shares when firm has a share repurchase program, otherwise zero. Firm_size is log value of asset, Free_cash is operating income and depreciation divided by total assets, Debt_Asset is debt over asset, MTB represents market value over book value. CS_own is the controlling shareholders' ownership and families, CS_control is the sum of CS_own and interlocking ownership by subsidiaries. Foreign_own is the sum of all foreign investors' ownership. STD_RET is standard deviation of rate of stock return in the previous year. Chaebol is a dummy variable that takes 1 when a firm belongs to the large Korean business groups. M&A threat is a dummy variable that takes 1 when a firm faces a takeover threat in a given year. Stock option is a dummy variable that takes 1 when a firm adopts a managerial stock option plan in a given year. Numbers in parentheses show t-value and *, **,*** represents a significance level at 10%, 5% and 1%, respectively.

Panel A:

Variables	Eqn (1)	Eqn (2)	Eqn (3)	Eqn (4)	Eqn (5)	Eqn (6)
Constant	-0.428 ***	-0.455 ***	-0.472 ***	-0.497 ***	-0.369 ***	-0.411 ***
	(0.0512)	(0.0522)	(0.056)	(0.0561)	(0.055)	(0.0565)
STD_RET	-0.018 **	-0.02 ***	-0.017 **	-0.019 **	-0.02 ***	-0.022 ***
	(0.0079)	(0.0078)	(0.0079)	(0.0078)	(0.0079)	(0.0078)
Firm_Size	0.022 ***	0.0258 ***	0.0255 ***	0.0285 ***	0.0197 ***	0.0241 ***
	(0.0047)	(0.0054)	(0.005)	(0.0056)	(0.0048)	(0.0056)
Free_cash	0.0776 ***	0.0786 ***	0.0774 ***	0.0788 ***	0.0784 ***	0.0796 ***
	(0.0107)	(0.0105)	(0.0107)	(0.0106)	(0.0107)	(0.0106)
DEBT_ASSET	-0.29 ***	-0.276 ***	-0.285 ***	-0.273 ***	-0.298 ***	-0.283 ***
	(0.0402)	(0.0398)	(0.0404)	(0.0399)	(0.0404)	(0.04)
MTB	-0.011	-0.013 *	-0.01	-0.012 *	-0.011	-0.013 *
	(0.0067)	(0.007)	(0.0066)	(0.0069)	(0.0068)	(0.007)
Dividend yield	1.0266 ***	1.0925 ***	1.0048 ***	1.0638 ***	1.0938 ***	1.1307 ***
	(0.2472)	(0.2428)	(0.2475)	(0.2429)	(0.2486)	(0.244)
Chaebol		-0.046 ***		-0.039 **		-0.042 **
		(0.0172)		(0.0175)		(0.0173)
M&A threat		0.464 ***		0.4733 ***		0.4603 ***
		(0.0675)		(0.0676)		(0.0676)
Stock option		0.0646 ***		0.0683 ***		0.0613 ***
		(0.0193)		(0.0194)		(0.0195)
CS_own			0.0008 **	0.0009 **		
			(0.0004)	(0.0004)		
CS_control					-0.001 ***	-7E-04 *
					(0.0004)	(0.0004)
Foreign_own			-6E-04	-0.002	-0.001	-0.002
			(0.0019)	(0.0018)	(0.0019)	(0.0018)
Year dummy	yes	yes	yes	yes	yes	yes
Industry dummy	yes	yes	yes	yes	yes	yes
-2 Log L	-1690	-1660	-1688	-1658	-1686	-1658
N	6158	6158	6158	6158	6158	6158

Panel B:

Variables	Eqn (1)	Eqn (2)	Eqn (3)	Eqn (4)	Eqn (5)	Eqn (6)
Constant	-0.43 ***	-0.458 ***	-0.471 ***	-0.496 ***	-0.367 ***	-0.41 ***
	(0.0514)	(0.0525)	(0.0562)	(0.0564)	(0.0553)	(0.0568)
STD_RET	-0.015 *	-0.017 **	-0.014 *	-0.016 **	-0.017 **	-0.019 **
	(0.0079)	(0.0078)	(0.008)	(0.0079)	(0.008)	(0.0079)
Firm_Size	0.0207 ***	0.025 ***	0.0241 ***	0.0275 ***	0.0183 ***	0.023 ***
	(0.0047)	(0.0055)	(0.0051)	(0.0056)	(0.0049)	(0.0056)
Free_cash	0.0732 ***	0.0745 ***	0.0731 ***	0.0747 ***	0.0743 ***	0.0756 ***
	(0.0108)	(0.0107)	(0.0108)	(0.0107)	(0.0108)	(0.0107)
DEBT_ASSET	-0.264 ***	-0.252 ***	-0.26 ***	-0.25 ***	-0.272 ***	-0.26 ***
	(0.0406)	(0.0402)	(0.0408)	(0.0403)	(0.0408)	(0.0404)
MTB	-0.008	-0.01	-0.007	-0.01	-0.009	-0.011
	(0.007)	(0.0073)	(0.0069)	(0.0072)	(0.0071)	(0.0073)
Dividend yield	0.8914 ***	0.9629 ***	0.8724 ***	0.9376 ***	0.9581 ***	1.0011 ***
	(0.2488)	(0.2442)	(0.249)	(0.2442)	(0.25)	(0.2453)
Chaebol		-0.046 ***		-0.04 **		-0.042 **
		(0.0173)		(0.0176)		(0.0174)
M&A threat		0.4538 ***		0.4628 ***		0.4497 ***
		(0.0673)		(0.0674)		(0.0674)
Stock option		0.0622 ***		0.0659 ***		0.0586 ***
		(0.0193)		(0.0194)		(0.0195)
CS_own			0.0008 *	0.0008 *		
			(0.0004)	(0.0004)		
CS_control					-0.001 ***	-8E-04 **
					(0.0004)	(0.0004)
Foreign_own			-8E-04	-0.002	-0.001	-0.002
			(0.0018)	(0.0018)	(0.0019)	(0.0018)
Year dummy	yes	yes	yes	yes	yes	yes
Industry dummy	yes	yes	yes	yes	yes	yes
-2 Log L	-1660	-1632	-1658	-1629	-1656	-1629
N	5837	5837	5837	5837	5837	5837

<Table 7> Tobit Regression of share repurchase over total market value

The Table summarizes the Tobit regression of announced share repurchase amount over total market value. Panel A reports the results using all sample observations Panel B uses firms which have ever adopted payout program at least once. Dependent variable is the ratio of share repurchase amount over total market value when firm has a share repurchase program, otherwise zero. Firm_size is log value of asset, Free_cash is operating income and depreciation divided by total assets, Debt_Asset is debt over asset, MTB represents market value over book value. CS_own is the controlling shareholders' ownership and families, CS_control is the sum of CS_own and interlocking ownership by subsidiaries. Foreign_own is the sum of all foreign investors' ownership. STD_RET is standard deviation of rate of stock return in the previous year. Chaebol is a dummy variable that takes 1 when a firm belongs to the large Korean business groups. M&A threat is a dummy variable that takes 1 when a firm faces a takeover threat in a given year. Stock option is a dummy variable that takes 1 when a firm adopts a managerial stock option plan in a given year. Numbers in parentheses show t-value and *, **,*** represents a significance level at 10%, 5% and 1%, respectively.

Panel A:

Variables	Eqn (1)	Eqn (2)	Eqn (3)	Eqn (4)	Eqn (5)	Eqn (6)
Constant	-1.24 ***	-1.327 ***	-1.2 ***	-1.28 ***	-0.893 ***	-0.991 ***
	(0.15)	(0.1554)	(0.1632)	(0.1659)	(0.1592)	(0.166)
STD_RET	0.0227	0.0195	0.0212	0.0177	0.0178	0.0154
	(0.024)	(0.024)	(0.0241)	(0.0241)	(0.024)	(0.024)
Firm_Size	0.0728 ***	0.0856 ***	0.0707 ***	0.084 ***	0.0569 ***	0.0685 ***
	(0.0135)	(0.0159)	(0.0144)	(0.0163)	(0.0138)	(0.0162)
Free_cash	0.0472	0.053	0.0487	0.055 *	0.0496	0.0548 *
	(0.0329)	(0.0329)	(0.033)	(0.0330)	(0.0329)	(0.0328)
DEBT_ASSET	0.0964	0.1149	0.0907	0.1085	0.0704	0.0863
	(0.1229)	(0.123)	(0.1231)	(0.1231)	(0.1225)	(0.1228)
MTB	0.0478 **	0.0396	0.0472 *	0.039	0.0404 *	0.0347
	(0.0241)	(0.0242)	(0.0242)	(0.0243)	(0.0241)	(0.0242)
Dividend yield	-6.5 ***	-6.285 ***	-6.523 ***	-6.312 ***	-6.222 ***	-6.078 ***
	(0.8262)	(0.8255)	(0.8268)	(0.826)	(0.8244)	(0.824)
Chaebol		-0.124 **		-0.129 **		-0.097 *
		(0.0498)		(0.0507)		(0.05)
M&A threat		0.4961 **		0.4982 **		0.4627 **
		(0.2292)		(0.2296)		(0.2283)
Stock option		0.1598 ***		0.1592 ***		0.1261 **
		(0.0573)		(0.0575)		(0.0576)
CS_own			-7E-04	-9E-04		
			(0.0012)	(0.0012)		
CS_control					-0.006 ***	-0.006 ***
					(0.0011)	(0.0011)
Foreign_own			-0.003	-0.004	-0.003	-0.004
			(0.0051)	(0.0051)	(0.0051)	(0.0051)
Year dummy	yes	yes	yes	yes	yes	yes
Industry dummy	yes	yes	yes	yes	yes	yes
-2 Log L	-2803	-2794	-2802	-2793	-2786	-2781
N	6158	6158	6158	6158	6158	6158

Panel B:

Variables	Eqn (1)	Eqn (2)	Eqn (3)	Eqn (4)	Eqn (5)	Eqn (6)
Constant	-1.24 ***	-1.327 ***	-1.2 ***	-1.28 ***	-0.893 ***	-0.991 ***
	(0.15)	(0.1554)	(0.1632)	(0.1659)	(0.1592)	(0.166)
STD_RET	0.0227	0.0195	0.0212	0.0177	0.0178	0.0154
	(0.024)	(0.024)	(0.0241)	(0.0241)	(0.024)	(0.024)
Firm_Size	0.0728 ***	0.0856 ***	0.0707 ***	0.084 ***	0.0569 ***	0.0685 ***
	(0.0135)	(0.0159)	(0.0144)	(0.0163)	(0.0138)	(0.0162)
Free_cash	0.0472	0.053	0.0487	0.055 *	0.0496	0.0548 *
	(0.0329)	(0.0329)	(0.033)	(0.033)	(0.0329)	(0.0328)
DEBT_ASSET	0.0964	0.1149	0.0907	0.1085	0.0704	0.0863
	(0.1229)	(0.123)	(0.1231)	(0.1231)	(0.1225)	(0.1228)
MTB	0.0478 **	0.0396	0.0472 *	0.039	0.0404 *	0.0347
	(0.0241)	(0.0242)	(0.0242)	(0.0243)	(0.0241)	(0.0242)
Dividend yield	-6.5 ***	-6.285 ***	-6.523 ***	-6.312 ***	-6.222 ***	-6.078 ***
	(0.8262)	(0.8255)	(0.8268)	(0.826)	(0.8244)	(0.824)
Chaebol		-0.124 **		-0.129 **		-0.097 *
		(0.0498)		(0.0507)		(0.05)
M&A threat		0.4961 **		0.4982 **		0.4627 **
		(0.2292)		(0.2296)		(0.2283)
Stock option		0.1598 ***		0.1592 ***		0.1261 **
		(0.0573)		(0.0575)		(0.0576)
CS_own			-7E-04	-9E-04		
			(0.0012)	(0.0012)		
CS_control					-0.006 ***	-0.006 ***
					(0.0011)	(0.0011)
Foreign_own			-0.003	-0.004	-0.003	-0.004
			(0.0051)	(0.0051)	(0.0051)	(0.0051)
Year dummy	yes	yes	yes	yes	yes	yes
Industry dummy	yes	yes	yes	yes	yes	yes
-2 Log L	-2803	-2794	-2802	-2793	-2786	-2781
N	5837	5837	5837	5837	5837	5837

<Table 8> Tobit Regression of share repurchase over total payout amount

This Table summarizes the Tobit regression of announced share repurchase amount over total payout amount. Panel A reports the results using all sample observations Panel B uses firms which have ever adopted payout program at least once. Dependent variable is the ratio of share repurchase amount over total market value when firm has a share repurchase program, otherwise zero. Firm_size is log value of asset, Free_cash is operating income and depreciation divided by total assets, Debt_Asset is debt over asset, MTB represents market value over book value. CS_own is the controlling shareholders' ownership and families, CS_control is the sum of CS_own and interlocking ownership by subsidiaries. Foreign_own is the sum of all foreign investors' ownership. STD_RET is standard deviation of rate of stock return in the previous year. Chaebol is a dummy variable that takes 1 when a firm belongs to the large Korean business groups. M&A threat is a dummy variable that takes 1 when a firm faces a takeover threat in a given year. Stock option is a dummy variable that takes 1 when a firm adopts a managerial stock option plan in a given year. Numbers in parentheses show t-value and *, **,*** represents a significance level at 10%, 5% and 1%, respectively.

Panel A:

Variables	Eqn (1)	Eqn (2)	Eqn (3)	Eqn (4)	Eqn (5)	Eqn (6)
Constant	-0.144 ***	-0.156 ***	-0.153 ***	-0.163 ***	-0.12 ***	-0.135 ***
	(0.0152)	(0.0157)	(0.0166)	(0.0169)	(0.0162)	(0.0169)
STD_RET	-0.007 ***	-0.008 ***	-0.007 ***	-0.007 ***	-0.008 ***	-0.008 ***
	(0.0023)	(0.0023)	(0.0023)	(0.0023)	(0.0023)	(0.0023)
Firm_Size	0.0104 ***	0.012 ***	0.011 ***	0.0124 ***	0.0093 ***	0.011 ***
	(0.0014)	(0.0016)	(0.0015)	(0.0017)	(0.0014)	(0.0017)
Free_cash	0.0201 ***	0.0204 ***	0.0201 ***	0.0203 ***	0.0203 ***	0.0205 ***
	(0.0031)	(0.0031)	(0.0032)	(0.0031)	(0.0031)	(0.0031)
DEBT_ASSET	-0.086 ***	-0.082 ***	-0.085 ***	-0.082 ***	-0.089 ***	-0.085 ***
	(0.0119)	(0.0119)	(0.012)	(0.012)	(0.0119)	(0.012)
MTB	-1E-04	-4E-04	0	-3E-04	-1E-04	-4E-04
	(0.0013)	(0.0013)	(0.0012)	(0.0013)	(0.0013)	(0.0013)
Dividend yield	0.4028 ***	0.4241 ***	0.3991 ***	0.4199 ***	0.4312 ***	0.4446 ***
	(0.072)	(0.0718)	(0.0721)	(0.072)	(0.0723)	(0.0721)
Chaebol		-0.017 ***		-0.015 ***		-0.015 ***
		(0.0052)		(0.0052)		(0.0052)
M&A threat		0.0525 **		0.0537 **		0.0498 **
		(0.0226)		(0.0227)		(0.0226)
Stock option		0.0201 ***		0.0207 ***		0.0181 ***
		(0.0057)		(0.0058)		(0.0058)
CS_own			0.0002	0.0001		
			(0.0001)	(0.0001)		
CS_control					-4E-04 ***	-3E-04 ***
					(0.0001)	(0.0001)
Foreign_own			0	-1E-04	-1E-04	-2E-04
			(0.0005)	(0.0005)	(0.0005)	(0.0005)
Year dummy	yes	yes	yes	yes	yes	yes
Industry dummy	yes	yes	yes	yes	yes	yes
-2 Log L	-473	-460.1	-472.1	-459.4	-465.7	-455.3
N	6158	6158	6158	6158	6158	6158

Panel B:

Variables	Eqn (1)	Eqn (2)	Eqn (3)	Eqn (4)	Eqn (5)	Eqn (6)
Constant	-0.145 ***	-0.157 ***	-0.152 ***	-0.163 ***	-0.12 ***	-0.135 ***
	(0.0152)	(0.0157)	(0.0166)	(0.0169)	(0.0163)	(0.017)
STD_RET	-0.006 ***	-0.007 ***	-0.006 **	-0.006 ***	-0.007 ***	-0.007 ***
	(0.0023)	(0.0023)	(0.0023)	(0.0023)	(0.0023)	(0.0023)
Firm_Size	0.01 ***	0.0118 ***	0.0106 ***	0.0122 ***	0.0089 ***	0.0108 ***
	(0.0014)	(0.0016)	(0.0015)	(0.0017)	(0.0014)	(0.0017)
Free_cash	0.0186 ***	0.0189 ***	0.0185 ***	0.0189 ***	0.0188 ***	0.0191 ***
	(0.0032)	(0.0032)	(0.0032)	(0.0032)	(0.0032)	(0.0032)
DEBT_ASSET	-0.078 ***	-0.075 ***	-0.077 ***	-0.074 ***	-0.081 ***	-0.077 ***
	(0.012)	(0.012)	(0.012)	(0.012)	(0.012)	(0.012)
MTB	0.0014	0.001	0.0015	0.0011	0.0013	0.001
	(0.0016)	(0.0017)	(0.0016)	(0.0017)	(0.0016)	(0.0017)
Dividend yield	0.3632 ***	0.3845 ***	0.3603 ***	0.3812 ***	0.3912 ***	0.4048 ***
	(0.0723)	(0.0721)	(0.0724)	(0.0722)	(0.0725)	(0.0723)
Chaebol		-0.017 ***		-0.016 ***		-0.015 ***
		(0.0052)		(0.0052)		(0.0052)
M&A threat		0.0493 **		0.0503 **		0.0464 **
		(0.0225)		(0.0225)		(0.0224)
Stock option		0.019 ***		0.0195 ***		0.0169 ***
		(0.0057)		(0.0058)		(0.0058)
CS_own			0.0001	0.0001		
			(0.0001)	(0.0001)		
CS_control					-4E-04 ***	-4E-04 ***
					(0.0001)	(0.0001)
Foreign_own			0	-1E-04	-1E-04	-2E-04
			(0.0005)	(0.0005)	(0.0005)	(0.0005)
Year dummy	yes	yes	yes	yes	yes	yes
Industry dummy	yes	yes	yes	yes	yes	yes
-2 Log L	-437.8	-425.7	-437.2	-425.2	-430	-420.5
N	5837	5837	5837	5837	5837	5837

<Table 9> Regression results of cumulative abnormal returns around announcement period (-1,1)

This Table summarizes the OLS regression of CAAR (-1,1). Firm_size is log value of asset, Free_cash is operating income and depreciation divided by total assets, Debt_Asset is debt over asset, MTB represents market value over book value. CS_own is the controlling shareholders' ownership and families, CS_control is the sum of CS_own and interlocking ownership by subsidiaries. Foreign_own is the sum of all foreign investors' ownership. STD_RET is standard deviation of rate of stock return in the previous year. Chaebol is a dummy variable that takes 1 when a firm belongs to the large Korean business groups. M&A threat is a dummy variable that takes 1 when a firm faces a takeover threat in a given year. Stock option is a dummy variable that takes 1 when a firm adopts a managerial stock option plan in a given year. Size of share repurchase is measured in three ways: the ratio of share repurchase over market value of the firm (REP), the ratio of share repurchase over total dividend payment (STP), the number of shares to be repurchased over total number of shares (SRR). Panels A, B, C shows the results using size of share repurchase through REP, STP and SRR, respectively.

Panel A:

Variables	Eqn (1)	Eqn (2)	Eqn (3)	Eqn (4)	Eqn (5)	Eqn (6)
Constant	0.4926 **	0.503 **	0.286	0.304	0.276	0.265
	(2.01)	(2)	(1.08)	(1.13)	(1.06)	(0.99)
REP	0.7741 **	0.765 **	0.795 **	0.785 **	0.808 **	0.798 **
	(2.3)	(2.27)	(2.36)	(2.33)	(2.4)	(2.37)
EXRET	-0.027	-0.05	-0.02	-0.05	-0.04	-0.06
	(-0.24)	(-0.43)	(-0.19)	(-0.41)	(-0.38)	(-0.56)
STD_RET	-3.99	-4.33	-3.69	-4.07	-4.08	-4.55
	(-1.07)	(-1.16)	(-0.99)	(-1.09)	(-1.1)	(-1.22)
Firm_Size	-0.04 *	-0.04 *	-0.02	-0.03	-0.02	-0.03
	(-1.96)	(-1.8)	(-0.88)	(-1.06)	(-1.16)	(-1.01)
Free_cash	-1.05 **	-0.97 *	-1.1 **	-1.01 *	-1.06 **	-0.97 *
	(-2.02)	(-1.85)	(-2.11)	(-1.92)	(-2.04)	(-1.84)
DEBT_ASSET	0.1287	0.132	0.135	0.132	0.125	0.131
	(0.66)	(0.67)	(0.69)	(0.67)	(0.64)	(0.67)
MTB	-0.023	-0.03	-0.02	-0.02	-0.02	-0.02
	(-0.63)	(-0.77)	(-0.52)	(-0.64)	(-0.42)	(-0.61)
Dividend yield	1.1027	1.136	0.988	0.994	0.743	0.79
	(0.92)	(0.95)	(0.83)	(0.83)	(0.62)	(0.66)
Chaebol		0.019		0.049		0.028
		(0.25)		(0.63)		(0.04)
M&A threat		0.432		0.469		0.488 *
		(1.47)		(1.59)		(1.66)
Stock option		0.028		0.031		0.048
		(0.3)		(0.34)		(0.53)
CS_own			0.388 **	0.415 **		
			(2.03)	(2.14)		
CS_control					0.431 **	0.446 **
					(2.42)	(2.49)
Foreign_own			-0.78	-0.89	-0.84	-0.96
			(-0.93)	(-1.06)	(-1.01)	(-1.15)
Year dummy	yes	yes	yes	yes	yes	yes
Industry dummy	yes	yes	yes	yes	yes	yes
-2 Log L	0.0867	0.089	0.092	0.094	0.093	0.096
N	1024	1024	1024	1024	1024	1024

Panel B:

Variables	Eqn (1)	Eqn (2)	Eqn (3)	Eqn (4)	Eqn (5)	Eqn (6)
Constant	0.1692	0.171	-0.09	-0.07	-0.06	-0.08
	(0.66)	(0.65)	(-0.31)	(-0.24)	(-0.22)	(-0.29)
STP	0.5338 ***	0.527 ***	0.561 ***	0.551 ***	0.546 ***	0.54 ***
	(4.21)	(4.14)	(4.41)	(4.33)	(4.31)	(4.25)
EXRET	-0.067	-0.08	-0.06	-0.08	-0.08	-0.1
	(-0.61)	(-0.75)	(-0.57)	(-0.75)	(-0.76)	(-0.9)
STD_RET	-4.48	-4.82	-4.15	-4.52	-4.58	-5.04
	(-1.21)	(-1.3)	(-1.12)	(-1.22)	(-1.24)	(-1.36)
Firm_Size	-0.035 *	-0.04	-0.01	-0.02	-0.02	-0.02
	(-1.74)	(-1.51)	(-0.54)	(-0.69)	(-0.92)	(-0.71)
Free_cash	-0.763	-0.7	-0.82	-0.74	-0.77	-0.69
	(-1.48)	(-1.34)	(-1.58)	(-1.42)	(-1.48)	(-1.32)
DEBT_ASSET	0.0324	0.04	0.036	0.037	0.027	0.037
	(0.17)	(0.2)	(0.18)	(0.19)	(0.14)	(0.19)
MTB	-0.03	-0.04	-0.03	-0.03	-0.02	-0.03
	(-0.84)	(-0.98)	(-0.71)	(-0.84)	(-0.64)	(-0.83)
Dividend yield	4.6108 ***	4.612 ***	4.659 ***	4.616 ***	4.325 ***	4.347 ***
	(3.22)	(3.21)	(3.26)	(3.22)	(3.02)	(3.03)
Chaebol		0.236		0.035		-0.02
		(0.03)		(0.45)		(-0.2)
M&A threat		0.392		0.429		0.448
		(1.34)		(1.47)		(1.53)
Stock option		0.035		0.038		0.056
		(0.38)		(0.42)		(0.62)
CS_own			0.448 **	0.468 **		
			(2.35)	(2.42)		
CS_control					0.44 **	0.459 **
					(2.49)	(2.58)
Foreign_own			-0.78	-0.89	-0.09	-0.97
			(-0.94)	(-1.06)	(-1.03)	(-1.17)
Year dummy	yes	yes	yes	yes	yes	yes
Industry dummy	yes	yes	yes	yes	yes	yes
-2 Log L	0.0979	0.1	0.104	0.106	0.105	0.107
N	1024	1024	1024	1024	1024	1024

Panel C:

Variables	Eqn (1)	Eqn (2)	Eqn (3)	Eqn (4)	Eqn (5)	Eqn (6)
Constant	0.4108 *	0.4036	0.1606	0.169	0.1795	0.1472
	(1.69)	(1.61)	(0.61)	(0.63)	(0.7)	(0.55)
SRR	0.0384 ***	0.0382 ***	0.0402 ***	0.0398 ***	0.0395 ***	0.0394 ***
	(5.11)	(5.06)	(5.34)	(5.27)	(5.27)	(5.23)
EXRET	-0.037	-0.055	-0.03	-0.053	-0.054	-0.071
	(-0.34)	(-0.5)	(-0.28)	(-0.48)	(-0.49)	(-0.65)
STD_RET	-4.458	-4.744	-4.122	-4.442	-4.569	-4.985
	(-1.21)	(-1.28)	(-1.12)	(-1.2)	(-1.25)	(-1.35)
Firm_Size	-0.036 *	-0.035	-0.012	-0.016	-0.02	-0.016
	(-1.79)	(-1.47)	(-0.54)	(-0.62)	(-0.93)	(-0.63)
Free_cash	-0.846 *	-0.778	-0.907 *	-0.824	-0.848	-0.768
	(-1.65)	(-1.51)	(-1.76)	(-1.59)	(-1.65)	(-1.49)
DEBT_ASSET	0.0581	0.0674	0.0627	0.0652	0.0519	0.0644
	(0.3)	(0.35)	(0.32)	(0.34)	(0.27)	(0.33)
MTB	-0.016	-0.022	-0.011	-0.016	-8.263	-0.015
	(-0.45)	(-0.59)	(-0.3)	(-0.43)	(-0.23)	(-0.42)
Dividend yield	0.8536	0.8974	0.7071	0.7248	0.4658	0.5223
	(0.72)	(0.75)	(0.6)	(0.61)	(0.39)	(0.44)
Chaebol		-5.261		0.0277		-0.024
		(-0.07)		(0.36)		(-0.31)
M&A threat		0.4066		0.4468		0.4654
		(1.4)		(1.53)		(1.6)
Stock option		0.0178		0.0208		0.0398
		(0.2)		(0.23)		(0.44)
CS_own			4.6219 **	4.7961 **		
			(2.44)	(2.49)		
CS_control					4.5647 ***	4.7547 ***
					(2.59)	(2.68)
Foreign_own			-8.507	-9.525	-9.268	-0.01
			(-1.03)	(-1.15)	(-1.13)	(-1.25)
Year dummy	yes	yes	yes	yes	yes	yes
Industry dummy	yes	yes	yes	yes	yes	yes
-2 Log L	0.1053	0.1071	0.1119	0.1142	0.1126	0.1151
N	1024	1024	1024	1024	1024	1024