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"Corporate Governance and Investment in East Asian Firms -Empirical Analysis of Family- Controlled Firms"

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Corporate Governance and Investment in East Asian Firms*

-Empirical Analysis of Family-Controlled Firms-

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Abstract

In this paper, we analyze in quantitative terms the influence of family control on the pattern of corporate investment, using firm-level data from Indonesia, Korea, Malaysia, the Philippines, and Thailand to regress the investment function and focusing on the family ownership structure that characterizes East Asian corporate governance. Our results present evidence that family-controlled firms, the majority of the firms in our data set, face more severe internal financing constraints than non-family-controlled firms. Our findings suggest that the mechanism in East Asian countries, which is commonly assumed to permit smooth reallocation of money among investment projects through the internal capital markets of family-controlled group firms, does not work well, and that, coupled with the difficulty of obtaining financing from external capital markets, it may lead to strict internal financing constraints on investment.

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1. Introduction

The East Asia region, while recording remarkable economic growth over the long term, experienced a serious financial crisis in 1997. In the wake of the crisis, the view that there was some kind of relationship between the structure of corporate governance in East Asia and spread of the crisis served to popularize research on corporate governance.

A large amount of research regarding East Asian corporate governance suggests that many firms in East Asia are actually dominated by specific families. In this type of family ownership structure, consistency of interest between shareholders and entrepreneurs is less of a problem than conflict of interest between majority shareholders and minority shareholders. In such case, it is argued that there is a strong possibility that the controlling shareholder may expropriate profits that would have otherwise gone to outside investors.

Previously, family-controlled conglomerates did not have an entirely negative image. On the contrary, it is accepted that the pre-war *Zaibatsu*, through their strong drive to industrialize, led the development of Japanese industry. Even from the viewpoint of corporate governance, *Zaibatsu* headquarters had efficiently monitored subsidiaries, while, based on this monitoring, functioning as their main source of funds. Furthermore, it is the common consensus that *Keiretsu*, which centered on the main bank system after the breakup of the *Zaibatsu* after the Second World War, played a role in promoting investment in *Keiretsu* firms.

Our study is based on two hypotheses, one positive and one negative, regarding family-controlled firms, and quantitatively analyzes the influence of family control on the pattern of corporate investment using firm-level data from Indonesia, Korea,

Malaysia, the Philippines, and Thailand to regress the capital investment function. To this end, we first classify the sample data into family-controlled firms and nonfamily-controlled firms (independent firms), and then divide the sample period into pre-crisis and post-crisis. By comparing these two groups between two periods, we find that family-controlled firms faced more severe internal financing constraints than did nonfamily-controlled firms.

This result suggests that it is difficult to state that the financial institutions and central firms within family-controlled affiliated firms were effective in achieving smooth financing of investment in the conglomerate and alleviating internal financing constraints. In fact, one can argue that nonfamily-controlled firms positively pushed forward capital markets and bank financing and that, by virtue of these investments, internal financing constraints were released to a relatively high degree.

The paper is organized as follows: Section 2 describes the corporate governance in East Asia, Section 3 performs empirical analysis based on investment function, Section 4 offers concluding remarks.

2. Corporate Governance in East Asia

2.1 Agency Problems throughout Firm Organization

Principle-agent theory arises in a business management context associated with behavioral studies of employer-contractor or employer-employee interactions, but it can be applied to public and non-profit settings as well. The central dilemma investigated by present principal-agent theory is how to get the employee or manager (the agent) to

act in the best interests of the employer or shareholder (the principal) when the agent has an informational advantage over the principal and has different interests from the principal.

In the case of an agency problem between shareholder and manager, it refers to the difficulties the shareholder has in assuring that the entrepreneur is giving his best effort, rather than shirking or perking to maximize his own benefits.

From the social standpoint, the typical agency cost derived from principle-agent relationship is inefficient resource waste. The main objective of corporate governance is to alleviate the potential agency problem between shareholders and entrepreneurs, and deal with the mechanism to ensure that managers act in the best interest of shareholders.

2.2 Family Controlled Firms

Originally, the corporate governance problem, which occurs throughout the agent relationship between shareholders and entrepreneurs, is a presupposition of the case of dispersed ownership of corporate stock according to comparative multiple shareholders, as can typically be seen in large firms in Japan and the United States. However, even in large firms worldwide, concentrated ownership and actual domination of firms by specific families are extensive.

La Porta, et al. (1999) is the first research to reveal this fact. They focus on the ownership structure of 700 firms in 27 countries worldwide, identify the ultimate shareholders of firms, and accordingly classify firms into 6 groups: widely held firms which actually have no controlling shareholder, family controlled firms, state owned

firms, widely held financial institution owned firms, widely held non-financial corporation owned firms, and miscellaneous.[1]

They focus on large firms[2] with minimum held ownership of 20 percent. Table 1 shows the result; it presents that there is no firm with a shareholder that owns more than 20 percent stock in the United Kingdom, all 20 firms are widely held, and even in the U.S. and Japan, the overwhelmingly majority of firms are widely held.

On the other hand, all sample firms are family-controlled in Mexico, while in Hong Kong, Argentina, Belgium, Greece and Israel, at least half of firms are family-controlled. Looking at the total of 27 countries, family-controlled firms account for a substantial 30 percent, similar to the figure for widely held firms (36 percent).[3]

2.3 Family Dominance in East Asian Firm

La Porta, et al. (1999) triggered research relating to corporate ownership structure worldwide. Claessens, Djankov and Lang (2000) focus on detailed analysis of ownership structure of East Asian firms. They study 3000 publicly traded companies in 9 countries and regions in East Asia, based on information at that time, 1996. And they succeed in identifying ultimate controlling owners.[4] Their sample firms occupy the majority in the 9 regions in terms of the number of listed companies. Furthermore in terms of market capitalization, they range from 64 percent in Thailand to 96 percent in Singapore, and

[1] Refers to firms, nonprofit organizations, employee-holding firms which are controlled by pension funds, mutual funds, and voting-trust certificate.

[2] Refers to the largest 20 firms in each country in terms of market capitalization of common stock at the end of 1995.

[3] They focus on middle scale firms, and find that among 27 countries, 45% of firms are family-controlled firms, which largely exceed dispersed firms (24%).

[4] La Porta, Lopez-de-Silanes and Shleifer (1999) define cross-holding differently from Claessens, Djankov and Lang (2000). The former classifies it as dispersed firms, whereas the latter classifies it according to subject of cross-holding.

they largely reflect the characteristics of listed firms in this region.

Table 2 presents the results. In Japan, widely held firms occupy 80 percent of total firms compared to 10 percent family controlled. Originally, in the East Asia region, from the view of ownership structure, Japanese firms were seen as outsiders. To put it another way, in regions and countries outside of Japan, family-controlled firms account for the largest proportion of the five groups - over 70 percent for Indonesia and over 50 percent in most cases. As shown above, in the East Asian region, excluding Japan, family ownership of listed firms is prevalent.[5]

2.4 Structure of Family Domination

As stated above, family-controlled firms are firms controlled by a specific family. It is not rare for a family to become controlling shareholders of multiple firms, and there are many cases in which those firms become large shareholders of many other firms (so called sub-subsidiaries). In situation like that, we can recognize that the family is the actual owner of the sub-subsidiaries.

In the case of designing so-called business groups under family control of many companies, it is fairly popular for each company to be connected through the use of pyramid ownership structure. In addition, there are cases of cross-shareholdings between group companies.[6]

In the context of this complicated ownership structure, it is not possible to find who

[5] Khanthavit, Polsiri and Wiwattanakantang (2004) research non-financial firms in Thailand, and Anuchitworawong, Souma and Wiwattanakantang (2003) analyze the corporate controlling structure, focusing on financial institutions in Thailand.

[6] Claessens, Djankov and Lang (2000) demonstrate that 39% of all sample firms have pyramiding ownership structure, and 10% of all sample firms have cross-holding ownership structure.

has the most voting rights by just looking at the immediate ownership. Instead, it is only possible to identify the ultimate shareholder by tracing cross-shareholdings and pyramid ownership structure and bringing out ultimate ownership structure.

There is another important side to this family ownership structure, the problem of voting rights exceeding cash-flow rights.[7] Voting rights indicate the actual control of firms, while cash-flow rights the ownership of firms.

Expropriation of outside investors by controlling shareholders occurs easily with separation of voting rights and cash-flow rights. That is because when voting rights exceed cash-flow rights, the controlling shareholders' portion remains relatively lower when the firms experience financial loss.

2.5 Inefficiency of Family Control

How does one evaluate family ownership structure? In regard to this question, although many scholars have examined it, an accepted view remains largely unknown. For the time being, there are two different perspectives.

One of two perspectives is controlling shareholders expropriate profits that should otherwise go to outside investors. The subject of corporate governance is to reconcile the interests of managers with those of shareholders. In the case of dispersed ownership of large firms in Japan and the U.S., there is a conflict of interest between managers and shareholders. Regarding East Asian firms, this theory does not hold. In the case of family ownership firms, the families hold essential control over firms, and, in most cases, they also appoint managers with interests that coincide with theirs. Therefore,

[7] Claessens, Djankov and Lang (2000) present that in East Asian sample firms, voting rights exceed cash flow rights generally by 10 percent to 20 percent, and the majority are firms without disparity of voting rights and cash flow rights.

the conflict of interest between controlling shareholders and outside shareholders becomes the main issue, as Shleifer and Vishny (1997) suggest. The result is the possibility that expropriation of outside shareholders will occur grows as the voting rights held by controlling shareholders increase.

We will focus first on the agency problem between controlling shareholders and outside shareholders, emphasizing the problems and inefficiency of the family ownership structure.

2.6 Empirical Analysis on Weakness of Investor Protection

The 1997 Asian crisis exposed the problems regarding family ownership structure in East Asia. Furthermore, there is a hypothesis that the weak corporate governance, coupled with elements of family ownership structure and poor protection of outside investors, triggered the crisis and compounded the impact. There are several studies that examine this hypothesis empirically.

Johnson, Boone, Breach and Friedman (2000) suggest controlling families treat outside investors well to finance their activities when there are bright economic prospects; however, in countries with insufficient investor protection, when the economic environment deteriorates, inside shareholders expropriate outside investors, resulting in more severe stock market declines and exchange rate depreciation than in that of countries with sufficient investor protection.

To examine this hypothesis empirically, they focus on the price movements of currency exchange and stock market in 25 emerging countries from 1997 to 1998. They

show that country-specific measures of corporate governance[8] relating to legal protection perform better than such standard macroeconomic variables as balance of accounts, financial deficit, and cumulative external debt at explaining the extent of currency depreciation and stock market decline of emerging markets during the crisis.

Obata (2002) examines the correlation of legal investor protection and pyramiding ownership structure in East Asia. He compares the stock's market valuation of firms in financial distress between independent firms and firms belonging to pyramiding structure, and finds no significant difference between these two groups in countries with sufficient investor protection; however, the stock's market value is higher for firms belonging to pyramiding structure in countries with insufficient investor protection. Although, this correlation depends on which position in the pyramid chain the firm belongs; if it is in the bottom of the chain, conversely, the market valuation is lower than the independent firm.

His interpretation of this result is that risk-sharing across affiliated-firms in East Asia did not function well, as the controlling shareholders tunnel the profits in their best interest, resulting in profits of firms in the lower pyramid chain being siphoned to ones in the upper chain.

2.7 Family Control and Asian Crisis

We continue by looking at some empirical research on the relationship between ownership concentration by family control and the Asian crisis. Lemmon and Lins (2003) study the effect of ownership structure on firm value during the East Asian

[8] The indices used in this study are judicial efficiency, corruption, rule of law, enforceable minority shareholder rights, anti-directors rights, creditor rights, accounting standards at the time, 1990, most of which draw on La Porta, Lopez-de-Silanes, Shleifer and Vishny (1998).

financial crisis that began in July 1997. They focus on two factors of ownership structure: separation of voting rights and cash-flow rights and managers effectively controlling the firm.

Using detailed ownership data from over 800 firms in eight East Asian countries, they find Tobin's Q ratios of those firms with a separation between voting rights and cash-flow rights declined twelve percent more than Q ratios in other firms during the crisis period, and Tobin's Q ratios of those firms in which managers have effective control over the firms declined twenty percent more than Q ratios in other firms during the crisis period. This evidence indicates that the crisis deteriorates the investment environment and raises the incentives of controlling shareholders to expropriate minority shareholders. Moreover, the large separation between cash-flow rights and voting rights suggests that insiders have higher incentive to engage in expropriation.[9]

2.8 Possibilities of Crony Capitalism

Claessens, Djankov and Lang (2000) indicate a relatively small number of families effectively control most East Asian economies, and these families have even had a strong effect on the economic policy of governments. Cases in point are the business empire of the Suharto family in Indonesia and Imelda-Marcos family in the Philippines. These families' powerful abilities extend to possible influence on the evolution of the

[9] Mitton (2002) investigates the correlation between ownership concentration and corporate performance during the crisis, using the ratio of controlling shareholder's cash-flow rights to total cash-flow rights as a measure of ownership concentration, and finds that raising the controlling shareholder's cash-flow rights ratio by 10% increases per share earning ratio by 2.6%. Different from Lemmon and Lins (2003), his findings support the view that controlling shareholder plays an active and positive role in corporate governance. He interprets this result as without involvement in management, the controlling shareholder does not necessarily have a conflict of interest with the minority shareholder, in fact the controlling shareholder has a strong incentive to monitor the management, thereby avoiding expropriation by management.

countries' legal systems, for instance anti-monopoly law and commercial law, in addition to trade and foreign currency management policies, macro financial policies, contracting process of public investment and expenditure.

These family-controlled firms are able to increase their profit-earning opportunities directly or indirectly by lobbying government agencies and public officials. At the same time, the government prefers to accept their interference if the preferential treatment to these firms can secure its power base. The interdependence structure of these firms and government can be interpreted as indicative of high incentive for both sides.

The interdependence structure of these firms and government in East Asia has strong characteristic of crony capitalism. It may distort the distribution of income and resources and worsen the distress in case of economic crisis.

2.9 Growth Promoting Effect of Family-Controlled Firms' System

It has been argued that the cooperative or integrated policy decision-making by family-controlled firms and government, not based on market mechanisms, was not evaluated negatively. Instead, the World Bank (1993) demonstrates that the cooperation of government and corporate sector is one of the institutional underpinnings that contribute to achievement of the miraculous economic development in East Asia.

There existed a large number of family-controlled firms in Japan, i.e., Zaibatsu firms. They exerted considerable influence in Japanese industry from the Meiji era to the Second World War. The evaluation on those feudal family-controlled firms is controversial; however, Morikawa (1980) and Kikkawa (1996) indicate that there is consensus that Zaibatsu firms had strong industrialization will and led industry

development.

Moreover, there are positive effects of Zaibatsu even from the view of corporate governance. For instance, Okazaki (1997, 1999) states that Zaibatsu headquarters efficiently monitored[10] subsidiaries and were positively evaluated for functioning as main funds supplier based on this monitoring.[11] Teranishi (2003) points out that regarding the governance within the Zaibatsu group firms, initially the Zaibatsu families, or so-called Banto, played a key role; later, professional managers gradually were employed and a managers' monitoring system, which relied on information on divisions and holding companies within the organization, became more important.

Friedman, Johnson and Mitton (2003) indicate that controlling shareholder families propped the group firms in financial distress by their own fortune during the period of economic anarchy after crisis, and analyze the background. They argue that with a poor investor protection legal system, propping and tunneling (as in Johnson, La Porta, Lopez-de-Silanes and Shleifer, 2000) are two sides of the same coin. When the externally negative shock is not so large to the firm, propping possibly happens if the going concern will be interest for controlling shareholders.

2.10 Investment Promoting Effect of Keiretsu Firms

The Zaibatsu were promptly dismantled as one part of the occupation policies of GHQ after Japan's surrender. During the process, equity held by Zaibatsu families and

[10] Okazaki (1997, 1999) adduces some examples as proof of the efficient monitoring mechanism by Zaibatsu headquarter such as: dispatch of board members of affiliated firms by Zaibatsu headquarter, ex ante report regarding important issues to Zaibatsu headquarter by affiliated firms, authority by Zaibatsu headquarter to shuffle personnel of key posts of affiliated firms.

[11] While agreeing with Okazaki (1997, 1999), Miyajima (2004) also indicates some costs of Zaibatsu, that the Zaibatsu family is risk averse and has a strong preference of maintaining feudal ownership, therefore the investment in affiliated firms is largely constrained by their liquidity and leverage.

holding companies was transferred to the private sector. The sudden disappearance of stable shareholders threatened the independence of management in Zaibatsu firms. The way to deal with this problem is the cross-holding of stocks across old Zaibatsu firms.[12] As the result, such six big bank-centered affiliated firms groups as Mitsui, Mitsubishi, Sumitomo, Fuji, Ichikan and Sanwa formed.

Hoshi, Kashyap and Scharfstein (1990, 1991) focus on these Keiretsu firms, and analyze them quantitively from a view of corporate finance. Hoshi, Kashyap and Scharfstein (1990) investigate the relationship among financially distressed firms, Keiretsu and main bank, using investment data from 125 financially distressed firms.[13] They find that Keiretsu-member firms and higher ratio of loans from their biggest financing banks are associated with the higher level of investment in the immediate aftermath of a crisis. They interpret these results as the Keiretsu and main bank system lower the cost of financial distress.

Hoshi, Kashyap and Scharfstein (1991) analyze the significance and effects of Keiretsu firms from the perspective of internal financing constraints on investment. They classify manufacturing firms listed on the Tokyo Stock Exchange into independent firms and Keiretsu firms, estimate Tobin's Q investment function for these two groups, and find independent firms face more severe internal financing constrains. They argue that in the case of Keiretsu firms, as the bank is the core element of Keiretsu finance, Keiretsu firms can avoid internal financing constraints.

Hoshi, Kashyap and Scharfstein (1990, 1991) demonstrate that groups of affiliated firms promoted investment not only in peacetime but also in Japan's postwar period of

[12] Teranishi (2003) indicates that cross-holding within Zaibatsu firms was widespread from the 1930s.
[13] They define these firms as financially distressed firms if the interest coverage ratio (Business Income/Interest Paid) drops continuously below 1 for 2 periods. All sample firms are listed on the Tokyo Stock Exchange Market.

financial distress.

3. Empirical Analysis Based on Investment Function

3.1 Two Assumptions

Relating to corporate governance symbolized by family-controlled firms, there are two assumptions. One emphasizes the negative effects of controlling shareholders' expropriating outside investors; the other highlights the positive effects of promoting investment and growth through smooth inter-group finance.

Given the present circumstances, these two assumptions should not be absolutely contrasting. In the first place, the former view pertains to a study that covers the East Asian firms during the period around the Asian crisis; the latter mainly applies to Japanese firms around the Second World War. Secondly, the former estimates the relationship between corporate governance and corporate performance; the latter measures the investment function. Direct comparability is impossible because analysis objective and means are different.

Put another way, regarding the corporate governance in East Asia, research that clarifies the relationship between these two assumptions remains insufficient. In this paper, we focus on measuring the investment function with firm-level data for East Asian firms. We aim to illustrate the economic significance of corporate governance symbolized by family dominance in East Asia, and to test which assumption is supported.

3.2 Data and Model

We collect financial data from Worldscope for all non-financial firms from Indonesia, Korea, Malaysia, the Philippines and Thailand from 1994 to 2000. The number of sample firms varies yearly. In 2000, the number is 395, with the most for Malaysia and the least for the Philippines (88). Table 3 presents the results.

The basic model we estimate is:

$$I = F\ (ROA, R, CASH, DEBT, K)$$

in which, I indicates investment; ROA, return on total assets; R, interest rate (cost of funds); CASH, cash-flow; DEBT, debt ratio; and K, capital stock. Of these explanatory variables, ROA and R are the most standard factors according to Keynes' investment theory.[14]

Cash-flow conception is used when we take into account the financing problem in an imperfect finance market; that is, as M&M theory suggests, investment is independent of financing methods if the cost of using cash-flow is the same as that of external finance. However, given the agency problem between creditor and debtor (as in Jensen and Meckling (1976)), investment is affected by cash-flow－a relatively lower cost than other financing methods. That suggests that different scales of investment may occur between firms with abundant cash-flow and those without.[15] We link this approach with the corporate governance factor to investigate the correlation between corporate governance and internal financing constraints of investment from the standpoint of relationship

[14] See Keynes (1936), the eleventh chapter.

[15] Fazzari, Hubbard and Petersen (1988) is the first study to formulate this idea and analyze empirically the correlation between funds constraints and investment. They find that the cost of funds varies according to the kind, and firms finance their investments sequentially from cheaper ones, which they define as Financing Hierarchies". It is argued that cash flow, regarded as the cheapest funds, definitely affects the level of investment. Hoshi, Kashyap and Scharfstein (1991) investigate empirically Japanese firms based on the same approach, and show that compared with independent firms, Keiretsu firms have lower sensitivity of investment to cash flow.

between cash-flow and investment.

Moreover, we include debt ratio into the model to control the credit risk.[16] It is argued that a high debt ratio raises the credit risk, and makes it difficult for firms to access external finance and, therefore, may constrain the investment. Capital stock is taken to represent the scale of firms, since large-scale firms tend to invest in a high level based on the depreciation concept.

3.3 Estimated Model

We estimate the following regression models based on the basic model:

$$I_{it}/K_{it-1} = a_i + b*(ROA_{it-1} - R_{it-1}) + c*(CASH_{it}/K_{it-1}) + d*DEBT_{it-1} \quad (1)$$

In which I and CASH are normalized by K in formula (1). All variables used in this study are defined as follows:

I: the expense related to the fixed assets

ROA: operating income/fixed assets

R: interest expense on Debt/ all interest bearing and capitalized lease obligations

CASH: retained earnings + depreciation

DEBT: debt/total assets

K: fixed assets

We normalize investment and fixed assets by investment deflator, and operating income, interest expense, and cash-flow by GDP deflator. We control for industry and year effects in all estimations (based on 2-digit SIC code), country dummy in some

[16] Regarding debt ratio, there is a hypothesis that debt contract exerts disciplinary mechanisms on corporate management. Jensen (1986, 1989) suggests firms with large amount of debt would manage more efficiently if creditors effectively monitor their debtors. And if efficient management promotes investment, we can expect a positive coefficient sign for debt ratio. But our findings show the sign is negative, which supports our hypothesis that debt ratio represents the credit risk.

estimations, and total assets denominated in US dollars[17] in some estimations.

We use the random effects model in our regression analysis, and, as we describe above, our sample data is an unbalanced panel owing to different sample numbers by year.

Table 3 presents descriptive statistics of the investment ratio (I/K), cash-flow ratio (CASH/K) and debt ratio (DEBT), organized by country. First, the pre-crisis (i.e., pre-crisis refers to 1994-1997) investment ratio ranges from 20 percent to 30 percent; however, post-crisis (i.e., post-crisis refers to 1998-2000) investment ratio declines largely to 10 to 15 percent.

Second, the cash-flow ratio peaks in 1994 both on mean and median measures apart from Korea. It exhibits a clear declining trend after 1994, and falls to a negative value for Indonesia, Korea and Malaysia in 1998 on mean measure reflecting the marked exacerbation.

Third, the debt ratio distributes from 20 percent to 50 percent both on mean and median measures, not necessarily higher than that for the developed countries.[18] However, it shows an upward trend as a whole, except for Korea, in which it shifts between 40 percent and 50 percent. In 2000, the debt ratio is 40 percent for Indonesia, 30 percent for Korea, 20 percent for the Philippines.[19]

3.4 Empirical Results

[17] We convert the domestic currencies into US dollars, using exchange rate at the end of each year. The unit of US dollars is billion.
[18] Hanazaki and Thuy (2003) show the average debt ratio of large firms during the 1980s to 1990s is 61% for Japan, 52% for United States, and 56% for France.
[19] We eliminate the outliers of our variables as follows: I/K＞300、ROA＞200、ROA＜-200、CASH/K＞1000、CASH/K＜-500.

Table 4 presents the regression results, using the pool data from the above five countries. The coefficient estimates on net profit ratio (ROA－R) indicator variable and debt ratio indicator variable show significantly positive and negative respectively, which are consistent with the predicted ones. These results confirm that corporate investment in the five East Asian countries supports the theories relating to this aspect.

In particular, a positive coefficient estimates on cash-flow indicator variable with a high statistical significance suggest that the cost of external funds is relatively higher than that of internal funds owing to imperfection of financial market; consequently, the availability of internal funds has considerable influence on investment level.

3.5 Effects of Family-Controlled Corporate Governance

Next, we analyze quantitatively the effects on investment of corporate governance symbolized by family control. To this end, we classify our sample data into family-controlled firms and independent firms, and compare the investment between these two groups by estimating the investment function.

We combine my financial data with ownership data[20] used in Claessens, Djankov and Lang (2000). They define controlling shareholders at the 20% cutoff in terms of direct and indirect voting rights. We draw on their measures and classify firms as family-controlled firms and independent firms based on whether or not the controlling shareholder is a family. By doing so, our sample data from those five countries consists of 70 percent of family-controlled firms and 30 percent independent firms, which again confirms the extensive pervasion of family control.

[20] We are especially grateful to Joseph P. H. Fan for providing the ownership structure data used in Claessens, Djankov, and Lang (2000).

Table 5 presents the comparisons of main variables used in this paper between these two groups. Family-controlled firms show a higher investment ratio, debt ratio and cost of funds and a lower profit ratio and cash-flow ratio compared to independent firms.

Table 6 shows the regression results of investment functions. The coefficient estimates on net profit rate (ROA－R) indicator variable are significantly positive in all specifications for both family-controlled firms and independent firms. There is no big difference between the magnitudes of coefficients in the two groups either. These results indicate there is similarity between the two groups in terms of effects of net profit rate on investment, and it is difficult to conclude that family control exhibits some peculiar impacts.

However, the coefficient estimates on cash-flow indicator variable vary largely. They are significantly positive in all specifications for family-controlled firms, but not significant for independent firms. The magnitude of the coefficients on cash-flow indicator variable is between 0.073-0.078 for family-controlled firms, raising cash-flow indicator variable by 10 percentage points increase the investment rate by 0.7 percentage point.

In all specifications of both family-controlled firms and independent firms, the coefficients estimates on year dummies of 1998, 1999 and 2000 demonstrate highly significant negative values, indicating the macro negative shock of the crisis.

In contrast to the study on Keiretsu firms in Japan by Hoshi, Kashyap and Scharfstein (1991), this result suggests that family-controlled firms face more severe internal financing constraints of investment compared to independent firms.

As Table 5 shows, family-controlled firms invest more relative to less cash-flow, compared to independent firms, resulting in higher dependence of external

finance—high debt ratio. Consequently, the result suggests that the relatively high cost of external finance leads to investment that is largely constrained by internal funds.

3.6 Examination on Debt-overhang

Regarding the financing problem of investment, there is another important hypothesis--the debt-overhang hypothesis. This hypothesis suggests that firms with excessive debt have trouble attracting new investment even if they bring in a profit, because profits gained from the new investment would be appropriated first to the payment of existing debt.[21]

Measuring directly the debt-overhang problem in East Asia is a bit tricky. In this study, we focus on the measure of profitability to address this problem. Given high profitability is associated with more investment opportunities, if highly profitable firms face more severe internal funds constraints of investment or have larger negative sensitivity to credit risk than lowly profitable firms, there implies the possibility of debt-overhang problem confronted by highly profitable firms.

We classify my sample firms into 3 groups based on ROA measure, and we define the highest 30 percent as highly profitable firms, while the lowest 30 percent as lowly profitable firms. Table 7 presents the comparison of regression results between highly profitable firms and lowly profitable firms. For lowly profitable firms and highly profitable firms, the coefficient estimates on cash-flow indicator variable are statistically significant in the specifications of family-controlled firms, but not statistically significant in the specifications of independent firms. However the

[21] See Myers (1977)、Myers and Majluf (1984), for Japanese evidence see Otaki (2000), Arikawa, Miyajima and Saito (2003)

magnitudes of the coefficients on cash-flow indicator variable are larger for lowly profitable firms than those for highly profitable firms. The coefficient estimates on debt ratio indicator are fairly similar for lowly profitable firms and highly profitable firms in terms of significance and magnitude, while the former one is a little lower.

These findings do not provide evidence that highly profitable firms with more potential investment opportunities pass up these opportunities owing to excessive debt problems.

3.7 Comparison of Pre-crisis and Post-crisis

The Asian crisis in 1997 severely damaged corporate sector of East Asian countries. As outlined above, recent research has found evidence that corporate governance can explain not only cross-country differences in performance during crisis, but also cross-firm differences in performance within countries.

We divide my sample period into pre-crisis and post-crisis, and highlight on variation of internal funds constraints of investment between these two periods.

Table 8 presents the regression results. For pre-crisis period, the coefficient estimates on cash-flow indicator variable are statistically significant and positive in all specifications. However, the magnitude of the coefficient estimate for family-controlled firms is bigger than that for independent firms. For post-crisis period, cash-flow indicator has a significant and positive effect on the investment in family-controlled firms group, but loses the significance in the independent firms group.

The picture of differences on internal funds constraints of investment appears more clearly by comparing the estimations between pre-crisis period and post-crisis period.

Taken together, our findings suggest that in family-controlled firms of the East Asian countries, the central bank or key firm may not smoothly finance the investments within the group and not properly function to mitigate the internal funds constraints. Conversely, the independent firms, which are the minority in East Asia, actively promote the external finance through bank and capital markets alleviating greatly the internal funds constraints of investment.

And compared with pre-crisis period, after crisis the internal funds constraints are relaxed for family-controlled firms, and released for independent firms. The results are opposed in spite of the anticipation that the internal funds constraints are intensified in post-crisis anarchy period. To investigate this paradox, we calculate the ratio of investment to cash-flow. Table 9 shows the results. In all countries in post-crisis period, the median value of this ratio falls sharply compared with pre-crisis period, or compared with decline of cash-flow, investment decreases much more.

The reason pointed out is that the net profit ratio, which is the key determinant of investment, declines largely after crisis. Figure 1 shows the trend of net profit ratio. All four countries showed in this figure present a sharp drop in this ratio, and Korea, Malaysia and Thailand turn into minus value in 2000.[22]

This result indicates that decline of investment after crisis is largely determined by significant decrease of investment opportunities with deterioration of economic environment, rather than internal funds constraints.

4. Conclusion

[22] We exclude Indonesia here, as it is difficult to estimate the real interest rate owing to the high inflation rate, especially, in 1998 when high inflation rate reached 75%.

The Asian crisis that occurred in 1997 increased interest in East Asian corporate governance. In East Asia, there is a large number of firms with concentrated ownership and virtually controlled by certain families. In that context, shareholders and management may have basically the same interests; however, controlling families' interests need not coincide with the interests of other investors in the firm, and they may possibly expropriate other shareholders.

Originally, negative evaluation of family-controlled firms was not necessarily a conventional argument. In fact, it is recognized that strong industrialization will of pre-war Japanese Zaibatsu led industry development, and, even from the view of corporate governance, Zaibatsu headquarters had efficiently monitored subsidiaries, while at the same time, were positively evaluated for functioning as the main funds supplier based on this monitoring.

In this research, based on these two hypotheses and using firm-level data from Indonesia, Korea, Malaysia, Philippines, and Thailand, we estimate the investment function, and analyze quantitively the influence of family control on the pattern of investment in firms. We confirm 4 stylized facts: first, corporate investment in five East Asian countries is determined by profitability, cash-flow and credit risk, which supports the theories relating to this aspect. Second, family-controlled firms face more severe internal funds constraints on investment than independent firms. Third, we did not find evidence that highly profitable firms with more potential investment opportunities pass up these opportunities owing to excessive debt problems. Fourth, comparison of pre-crisis and post-crisis periods confirms the result that family-controlled firms face more severe internal funds constraints of investment than independent firms. And internal funds constraints are more serious in the pre-crisis period than in the

post-crisis period.

Our findings suggest that the mechanism in East Asian countries, which is commonly assumed to permit smooth reallocation of money across investment projects through the internal capital markets of family-controlled group firms, probably does not work well, and together with the financing difficulty from external capital markets, it may lead to strict internal financing constraints on investment.

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Table 1. Comparison of Corporate Control

	Widely held	Family	State	Widely held financial	Widely held corporatio	others
Argentina	0.00	0.65	0.15	0.05	0.15	0.00
Australia	0.65	0.05	0.05	0.00	0.25	0.00
Austria	0.05	0.15	0.70	0.00	0.00	0.10
Belgium	0.05	0.50	0.05	0.30	0.00	0.10
Canada	0.60	0.25	0.00	0.00	0.15	0.00
Denmark	0.40	0.35	0.15	0.00	0.00	0.10
Finland	0.35	0.10	0.35	0.05	0.05	0.10
France	0.60	0.20	0.15	0.05	0.00	0.00
Germany	0.50	0.10	0.25	0.15	0.00	0.00
Greece	0.10	0.50	0.30	0.10	0.00	0.00
Hong Kong	0.10	0.70	0.05	0.05	0.00	0.10
Ireland	0.65	0.10	0.00	0.00	0.10	0.15
Israel	0.05	0.50	0.40	0.00	0.05	0.00
Italy	0.20	0.15	0.40	0.05	0.10	0.10
Japan	0.90	0.05	0.05	0.00	0.00	0.00
Mexico	0.00	1.00	0.00	0.00	0.00	0.00
Netherlands	0.30	0.20	0.05	0.00	0.10	0.35
New Zealand	0.30	0.25	0.25	0.00	0.20	0.00
Norway	0.25	0.25	0.35	0.05	0.00	0.10
Portugal	0.10	0.45	0.25	0.15	0.00	0.05
Singapore	0.15	0.30	0.45	0.05	0.05	0.00
South Korea	0.55	0.20	0.15	0.00	0.05	0.05
Spain	0.35	0.15	0.30	0.10	0.10	0.00
Sweden	0.25	0.45	0.10	0.15	0.00	0.05
Switzerland	0.60	0.30	0.00	0.05	0.00	0.05
United Kingdon	1.00	0.00	0.00	0.00	0.00	0.00
United States	0.80	0.20	0.00	0.00	0.00	0.00
Total	0.36	0.30	0.18	0.05	0.05	0.05

Note 1: source: La Porta, Lepez-de-Silanes and Shleifer (1999)

Note 2: the sample data are for the top 20 publicly traded corporations in terms of market capitalization valuation at the end of 1995 in each country, and classified into 6 categories accoding to the ultimate shareholder who holds at least 20% of voting

Table 2. Control of Publicly Traded Corporations in East Asia

	Number of corporations	Widely held	Family	State	Widely held financial	Widely held corporation
Hong Kong	330 (56.6)	7.0	66.7	1.4	5.2	19.8
Indonesia	178 (70.1)	5.1	71.5	8.2	2.0	13.2
Japan	1,240 (70.9)	79.8	9.7	0.8	6.5	3.2
Korea	345 (45.4)	43.2	48.4	1.6	0.7	6.1
Malaysia	238 (38.3)	10.3	67.2	13.4	2.3	6.7
The Philippines	120 (55.6)	19.2	44.6	2.1	7.5	26.7
Singapore	221 (83.1)	5.4	55.4	23.5	4.1	11.5
Taiwan	141 (36.9)	26.2	48.2	2.8	5.3	17.4
Thailand	167 (36.8)	6.6	61.6	8.0	8.6	15.3

Note 1: source: Claessens, Djankov, and Lang (2000)
Note 2: the sample data is collected as of the end of fiscal year 1996 or the closest possible data. Controlling shareholders are defined at 20% cutoff. The number in parentheses is the ratio to all publicly traded corporations in that country.

Table 3. Summary Statistics of Sample Firms by Country

Country	Variable	Statistic	94	95	96	97	98	99	2000
Indonesia	Number of Firms		79	83	111	127	133	136	161
	I/K	Mean	30.55	25.87	31.51	30.40	15.23	6.51	11.60
		Minimum	0.14	0.22	0.16	0.47	0.00	0.00	0.00
		Maximum	202.35	226.06	246.02	187.87	191.99	94.53	121.83
		Median	17.26	19.46	20.60	21.41	7.80	2.85	5.18
		Std. Deviation	36.80	32.34	40.17	31.95	23.48	10.45	18.77
	CASH/K	Mean	52.15	45.12	48.69	4.66	-10.90	33.45	26.48
		Minimum	3.10	-0.92	-15.53	-341.21	-420.03	-401.78	-46.45
		Maximum	504.87	398.26	844.52	352.84	486.92	746.21	121.86
		Median	39.84	33.41	29.88	13.81	1.24	23.59	13.59
		Std. Deviation	68.67	46.76	88.15	71.40	81.99	90.14	61.05
	DEBT	Mean	26.78	27.07	32.22	34.57	48.03	59.68	46.83
		Minimum	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		Maximum	77.80	76.28	81.78	96.69	113.17	251.67	218.39
		Median	24.43	27.21	31.89	33.96	51.18	58.89	46.23
		Std. Deviation	18.02	18.76	19.05	20.01	24.90	42.98	39.67
Korea	Number of Firms		136	172	190	222	242	258	348
	I/K	Mean	16.16	21.74	21.99	20.17	11.91	10.86	17.20
		Minimum	0.06	0.43	0.19	0.16	0.00	0.00	0.00
		Maximum	106.09	130.30	140.59	250.16	207.31	233.43	291.31
		Median	11.29	15.94	15.44	13.58	6.98	5.39	7.25
		Std. Deviation	17.80	20.18	21.05	22.04	21.99	19.31	34.74
	CASH/K	Mean	28.73	22.10	14.86	8.84	-1.62	17.65	31.50
		Minimum	0.41	-104.49	-103.89	-132.48	-414.72	-477.48	-403.22
		Maximum	244.53	276.87	97.75	138.60	227.70	404.36	679.51
		Median	19.62	17.08	14.81	11.29	11.47	18.00	18.32
		Std. Deviation	37.91	29.57	21.29	28.46	58.15	59.87	91.26
	DEBT	Mean	42.23	40.73	42.89	44.32	48.71	45.73	35.93
		Minimum	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		Maximum	92.82	86.69	247.95	267.23	109.97	195.06	191.13
		Median	42.96	42.69	44.24	45.27	50.75	44.49	32.30
		Std. Deviation	17.75	17.60	22.06	23.23	20.76	28.76	27.25
Malaysia	Number of Firms		191	204	287	344	378	379	395
	I/K	Mean	23.52	23.05	29.40	22.33	16.61	8.90	6.53
		Minimum	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		Maximum	223.70	192.65	294.86	200.05	276.14	225.65	117.13
		Median	12.50	12.93	15.87	13.21	8.43	3.96	3.53
		Std. Deviation	33.57	30.74	42.06	28.15	31.36	18.65	10.64
	CASH/K	Mean	65.61	57.61	53.27	34.40	-2.83	11.25	13.81
		Minimum	-28.80	-176.73	-119.96	-209.57	-453.72	-398.34	-203.73
		Maximum	915.31	759.40	822.47	618.21	392.16	565.57	410.86
		Median	27.84	30.93	29.06	22.07	10.03	12.69	11.43
		Std. Deviation	135.86	100.99	96.85	75.02	71.88	75.71	43.71
	DEBT	Mean	15.23	18.32	20.62	22.83	26.99	32.12	33.78
		Minimum	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		Maximum	73.86	92.07	84.56	80.91	286.94	173.26	277.65
		Median	9.80	14.38	18.26	21.65	26.40	29.62	26.80
		Std. Deviation	15.54	17.40	17.43	18.31	23.37	26.73	35.80
Philippines	Number of Firms		44	46	72	81	86	84	88
	I/K	Mean	24.35	18.98	31.83	35.57	14.98	8.17	10.24
		Minimum	0.00	0.84	0.00	0.01	0.00	0.00	0.00
		Maximum	203.23	77.63	120.93	246.65	251.24	120.17	155.68
		Median	12.16	13.77	23.61	24.67	9.23	4.21	3.74
		Std. Deviation	38.70	17.89	29.48	44.83	28.62	14.53	20.19
	CASH/K	Mean	78.16	62.56	66.92	76.18	40.52	38.94	34.20
		Minimum	-48.49	-251.72	-402.02	-244.87	-149.39	-175.72	-356.20
		Maximum	734.21	243.09	267.10	942.71	679.90	713.82	515.61
		Median	46.78	52.05	51.46	39.52	25.83	25.01	22.93
		Std. Deviation	120.84	75.88	85.69	136.04	89.74	94.55	90.35
	DEBT	Mean	16.05	14.98	18.60	21.37	25.78	23.96	25.22
		Minimum	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		Maximum	67.03	64.84	69.06	65.82	76.93	70.32	105.16
		Median	10.00	12.18	16.12	18.77	22.97	20.33	20.83
		Std. Deviation	17.37	15.45	16.42	18.35	19.16	19.42	22.62
Thailand	Number of Firms		132	150	163	183	184	187	191
	I/K	Mean	29.93	24.57	20.37	17.89	8.38	6.16	7.13
		Minimum	0.12	0.00	0.00	0.21	0.00	0.00	0.00
		Maximum	287.32	115.45	101.58	264.74	152.31	97.21	71.94
		Median	17.06	17.57	12.50	8.20	2.80	2.88	3.30
		Std. Deviation	39.58	23.73	22.15	28.37	17.91	10.78	10.61
	CASH/K	Mean	57.15	49.38	52.00	30.49	38.29	27.51	26.81
		Minimum	-19.78	-21.05	-140.66	-145.45	-277.19	-335.93	-226.77
		Maximum	387.75	396.17	973.16	787.74	789.92	995.78	493.05
		Median	38.35	31.95	29.51	20.48	25.37	20.54	23.51
		Std. Deviation	59.33	63.70	100.10	80.43	107.67	113.03	72.02
	DEBT	Mean	31.11	32.40	36.38	38.14	48.02	42.71	43.02
		Minimum	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		Maximum	83.71	88.43	112.87	86.19	126.65	129.91	221.15
		Median	32.66	33.21	37.63	41.61	52.99	45.08	39.02
		Std. Deviation	19.63	19.82	20.64	21.17	30.43	31.43	39.51

Note 1: source: WorldscopeDatabase
Note 2: unit is percent

Table 4. Coefficient Estimation from Regressions of Investment Functions

Dependent Variable: Iit /K it-1

	I - A	I - B	I - C	I - D
ROA_{it-1} - R_{it-1}	0.0836***	0.0745***	0.0839***	0.0740***
	(5.68)	(4.85)	(5.70)	(4.81)
$CASH_{it}/K_{it-1}$	0.0587***	0.0631***	0.0588***	0.0631***
	(5.74)	(6.13)	(5.75)	(6.12)
$DEBT_{it-1}$	-0.0379*	-0.0445*	-0.0410*	-0.0463*
	(-2.11)	(-2.40)	(-2.28)	(-2.50)
D95	-1.9912	-2.0027	-2.2987	-2.2595
	(-1.15)	(-1.15)	(-1.32)	(-1.30)
D96	-2.613	-2.567	-2.9479	-2.8431
	(-1.53)	(-1.50)	(-1.71)	(-1.65)
D97	-0.6489	-0.6068	-0.7281	-0.6532
	(-0.39)	(-0.36)	(-0.43)	(-0.39)
D98	-10.8227***	-10.6954***	-10.9474***	-10.8063***
	(-6.47)	(-6.39)	(-6.53)	(-6.44)
D99	-15.7953***	-15.5743***	-15.9604***	-15.7212***
	(-9.50)	(-9.35)	(-9.58)	(-9.41)
D00	-14.3631***	-13.9738***	-14.5443***	-14.1279***
	(-8.27)	(-8.01)	(-8.35)	(-8.07)
Indonesia dummy		2.1002		2.4877
		(1.34)		(1.58)
Malaysia dummy		-2.0543		-1.6172
		(-1.38)		(-1.08)
Philippine dummy		-3.2654		-2.8344
		(-1.50)		(-1.30)
Thailand dummy		-3.6748*		-3.2365*
		(-2.29)		(-2.00)
Total assets			0.4263*	0.3916*
			(2.24)	(2.04)
Intercept	16.9992*	18.1628**	17.0663*	17.9470*
	(2.42)	(2.59)	(2.43)	(2.56)
Overall R-squared	0.1882	0.195	0.1907	0.1972
Number of Observations	2186	2186	2179	2179

Note 1: regression results of Industry dummies as explanatory variables have been omitted.
Note 2: asterisks denote significance levels: * indicates significance at the 10% level, ** at the 5% level, *** at the 1% level.
Note 3: t-values are displayed in parentheses below the coefficients.

Table 5. Comparison of Family-controlled firms and Independent Firms

		Family-controlled Firms		Independent Firms		
	Period	Mean	Std. Deviation	Mean	Std. Deviation	t-test
I/K	1994～1996	**24.13**	29.17	20.84	19.19	**
	1997～2000	12.72	19.63	11.87	17.88	
	Whole period	**16.80**	24.11	15.08	18.85	**
ROA	1994～1996	21.19	25.99	**25.83**	31.72	**
	1997～2000	13.26	27.16	14.98	36.36	
	Whole period	15.79	27.04	**18.52**	35.27	**
R	1994～1996	**3.05**	7.85	1.97	5.32	**
	1997～2000	2.51	17.34	1.20	16.14	
	Whole period	**2.70**	14.74	1.47	13.40	**
CASH/K	1994～1996	39.89	67.16	48.25	84.28	
	1997～2000	16.35	70.72	**24.96**	74.42	**
	Whole period	24.98	70.34	**33.53**	78.95	***
DEBT	1994～1996	**32.67**	20.75	29.36	20.25	**
	1997～2000	**42.32**	29.69	38.73	30.04	**
	Whole period	**38.91**	27.26	35.37	27.31	***

Note 1: asterisks denote significance levels of t-tests: * indicates significance at the 10% level, ** at the 5% level, *** at the 1% level.

Note 2: data is reported in percent .

Note 3: larger values with significant difference in the t-test are displayed by bold font.

Table 6. Regressions of Basic Investment Functions for Family-controlled Firms and Independent Firms

1. For Family-controlled Firms

Dependent Variable: Iit /K it-1

	I - A	I －B	I - C	I - D
ROA_{it-1} - R_{it-1}	0.0993***	0.0860***	0.1004***	0.0851***
	(5.02)	(4.16)	(5.08)	(4.12)
$CASH_{it}/K_{it-1}$	0.0736***	0.0779***	0.0730***	0.0772***
	(5.71)	(6.00)	(5.67)	(5.95)
$DEBT_{it-1}$	-0.0189	-0.0264	-0.0235	-0.0287
	(-0.83)	(-1.12)	(-1.03)	(-1.22)
D95	-3.1996	-3.0973	-3.8445	-3.6603
	(-1.43)	(-1.38)	(-1.71)	(-1.63)
D96	-5.1540*	-4.9704*	-5.8815**	-5.6129*
	(-2.33)	(-2.24)	(-2.64)	(-2.51)
D97	-1.5612	-1.4138	-1.8308	-1.6107
	(-0.73)	(-0.66)	(-0.85)	(-0.75)
D98	-12.5734***	-12.3274***	-12.8873***	-12.6133***
	(-5.84)	(-5.72)	(-5.97)	(-5.84)
D99	-18.2136***	-17.8218***	-18.5743***	-18.1423***
	(-8.51)	(-8.30)	(-8.65)	(-8.42)
D00	-16.3593***	-15.8066***	-16.6770***	-16.0748***
	(-7.29)	(-7.01)	(-7.41)	(-7.10)
Indonesia dummy		3.3914		4.2572*
		(1.69)		(2.11)
Malaysia dummy		-1.7842		-0.8304
		(-0.94)		(-0.43)
Philippine dummy		-1.3878		-0.8023
		(-0.44)		(-0.26)
Thailand dummy		-3.1865		-2.2685
		(-1.45)		(-1.03)
Total assets			1.1877**	1.2150**
			(2.70)	(2.71)
Intercept	22.2665*	22.1293*	22.5960*	22.3281*
	(2.00)	(1.99)	(2.04)	(2.02)
Overall R-squared	0.1931	0.1995	0.1983	0.2049
Number of Observation	1583	1583	1576	1576

Note 1: regression results of Industry dummies as explanatory variables have been omitted
Note 2: asterisks denote significance levels: * indicates significance at the 10% level, ** at the 5% level, *** at the 1% level.
Note 3: t-values are displayed in parentheses below the coefficients.

Table 6. Regressions of Basic Investment Functions for Family-controlled Firms and Independent Firms (*continued*)

2. For Independent Firms

Dependent Variable: Iit /K it-1

	I - A	I －B	I - C	I - D
ROA_{it-1} - R_{it-1}	0.0611***	0.0642***	0.0611***	0.0639***
	(3.50)	(3.53)	(3.50)	(3.51)
$CASH_{it}/K_{it-1}$	0.0135	0.0161	0.014	0.0163
	(0.96)	(1.14)	(0.99)	(1.16)
$DEBT_{it-1}$	-0.1140***	-0.1149***	-0.1172***	-0.1170***
	(-4.43)	(-4.48)	(-4.54)	(-4.54)
D95	1.1928	0.8798	1.1339	0.8657
	(0.54)	(0.40)	(0.52)	(0.39)
D96	3.5759	3.2767	3.4916	3.25
	(1.67)	(1.53)	(1.64)	(1.52)
D97	1.152	0.9103	1.2316	0.9876
	(0.54)	(0.43)	(0.58)	(0.46)
D98	-6.1061**	-6.2435**	-6.0296**	-6.1773**
	(-2.85)	(-2.92)	(-2.82)	(-2.89)
D99	-9.5851***	-9.6976***	-9.5606***	-9.6685***
	(-4.52)	(-4.58)	(-4.52)	(-4.57)
D00	-8.9869***	-9.1117***	-9.0583***	-9.1410***
	(-4.10)	(-4.15)	(-4.14)	(-4.17)
Indonesia dummy		-2.9269		-2.6483
		(-1.31)		(-1.17)
Malaysia dummy		-3.9384		-3.6166
		(-1.72)		(-1.55)
Philippine dummy		-4.6715		-4.4748
		(-1.77)		(-1.68)
Thailand dummy		-5.8370**		-5.5265**
		(-3.04)		(-2.81)
Total assets			0.2129	0.1355
			(1.42)	(0.91)
Intercept	12.1851	16.2672*	12.1326	15.8989*
	(1.95)	(2.52)	(1.93)	(2.44)
Overall R-squared	0.3665	0.3836	0.3696	0.3847
Number of Observations	603	603	603	603

Note 1: regression results of Industry dummies as explanatory variables have been omi
Note 2: asterisks denote significance levels: * indicates significance at the 10% level, ** at the 5% level, *** at the 1% level.
Note 3: t-values are displayed in parentheses below the coefficients.

Table 7. Regressions of Basic Investment Functions for Highly Profitable Firms and Lowly Profitable Firms

1. Highly Profitable Firms

Dependent Variable: Iit /K it-1

	All Sample Firms	Family-controlled Firms	Independent Firms
$ROA_{it-1} - R_{it-1}$	0.0634*	0.1079*	0.0202
	(2.23)	(2.53)	(0.67)
$CASH_{it}/K_{it-1}$	0.0438**	0.0613**	0.0119
	(2.77)	(2.82)	(0.58)
$DEBT_{it-1}$	-0.0441	0.0064	-0.1598**
	(-1.17)	(0.13)	(-3.12)
D95	1.0969	-0.6857	4.6895
	(0.26)	(-0.12)	(0.98)
D96	2.407	-2.8661	11.4632*
	(0.58)	(-0.52)	(2.40)
D97	7.3579	5.6609	10.4907*
	(1.85)	(1.06)	(2.28)
D98	-6.7469	-7.6772	-3.5456
	(-1.65)	(-1.40)	(-0.75)
D99	-12.3018**	-14.3493**	-6.3274
	(-3.03)	(-2.62)	(-1.33)
D00	-11.1732**	-12.0827*	-5.5299
	(-2.58)	(-2.08)	(-1.10)
Indonesia dummy	-5.0634	-8.4959	-0.6731
	(-1.49)	(-1.79)	(-0.14)
Malaysia dummy	-1.5442	-1.1854	-8.5428
	(-0.45)	(-0.26)	(-1.46)
Philippine dummy	-2.0071	-1.9586	-5.0191
	(-0.38)	(-0.22)	(-0.72)
Thailand dummy	-10.9854**	-13.6898*	-12.9354*
	(-2.69)	(-2.39)	(-2.33)
Total assets	-0.196	-0.138	3.0913
	(-0.24)	(-0.15)	(0.87)
Intercept	25.5844	3.148	8.594
	(1.53)	(0.11)	(0.69)
Overall R-squared	0.2319	0.2252	0.5318
Number of Observation	607	425	182

Note 1: regression results of Industry dummies as explanatory variables have been omitt
Note 2: asterisks denote significance levels: * indicates significance at the 10% level, ** at the 5% level, *** at the 1% level.
Note 3: t-values are displayed in parentheses below the coefficients.

Table 7. Regressions of Basic Investment Functions for Highly Profitable Firms and Lowly Profitable Firms (*continued*)

2. Lowly Profitable Firms

Dependent Variable: Iit /K it-1

	All Sample Firms	Family-controlled Firms	Independent Firms
ROA_{it-1} - R_{it-1}	0.0826*	0.0837*	0.1108**
	(2.57)	(1.97)	(2.82)
$CASH_{it}/K_{it-1}$	0.1205***	0.1377***	0.0384
	(5.17)	(4.58)	(1.25)
$DEBT_{it-1}$	-0.038	-0.0275	-0.1217*
	(-1.18)	(-0.69)	(-2.29)
D95	-3.4168	-4.0189	-3.2073
	(-1.29)	(-1.14)	(-1.07)
D96	-5.8146*	-7.9584*	-1.7964
	(-2.23)	(-2.26)	(-0.61)
D97	-4.2862	-4.4142	-6.0880*
	(-1.65)	(-1.27)	(-2.06)
D98	-11.1701***	-13.1283***	-6.9715*
	(-4.23)	(-3.72)	(-2.26)
D99	-15.4139***	-17.8168***	-11.2699***
	(-5.79)	(-5.05)	(-3.59)
D00	-13.2375***	-15.6722***	-10.0893**
	(-4.80)	(-4.28)	(-3.13)
Indonesia dummy	4.6031	8.8892*	-2.1009
	(1.61)	(2.37)	(-0.44)
Malaysia dummy	-1.8733	-0.4964	-4.686
	(-0.64)	(-0.13)	(-0.86)
Philippine dummy	-3.2997	-0.171	-6.9577
	(-0.79)	(-0.03)	(-1.43)
Thailand dummy	-3.4297	-0.3706	-6.1931
	(-1.19)	(-0.09)	(-1.39)
Total assets	0.1323	0.7476	-0.0539
	(0.55)	(0.76)	(-0.24)
Intercept	17.3391	20.7345	30.1474***
	(1.29)	(1.78)	(3.42)
Overall R-squared	0.2913	0.3324	0.4055
Number of Observations	721	515	206

Note 1: regression results of Industry dummies as explanatory variables have been omitted
Note 2: asterisks denote significance levels: * indicates significance at the 10% level, ** at the 5% level, *** at the 1% level.
Note 3: t-values are displayed in parentheses below the coefficients.

Table 8. Regressions of Basic Investment Functions for Pre-crisis Period and Post-crisis Period

1. Pre-crisis（1994～1996）

Dependent Variable: Iit /K it-1

	All Sample Firms	Family-controlled Firms	Independent Firms
ROA_{it-1} - R_{it-1}	-0.0601	-0.0519	-0.0002
	(-1.43)	(-0.89)	(-0.00)
$CASH_{it}/K_{it-1}$	0.3593***	0.3838***	0.1575*
	(7.97)	(6.82)	(2.11)
$DEBT_{it-1}$	-0.0051	0.0377	-0.1989*
	(-0.09)	(0.52)	(-2.10)
D95	-1.374	-2.1062	0.5988
	(-0.72)	(-0.86)	(0.25)
D96	-1.589	-3.8923	2.831
	(-0.83)	(-1.55)	(1.20)
Indonesia dummy	0.2862	3.7148	-7.7388
	(0.09)	(0.90)	(-1.53)
Malaysia dummy	-2.2583	0.4427	-11.286
	(-0.65)	(0.10)	(-1.89)
Philippine dummy	-12.6402*	-13.7668	-13.9018*
	(-2.37)	(-1.53)	(-2.36)
Thailand dummy	-3.8944	-2.0158	-9.7853*
	(-1.21)	(-0.45)	(-2.27)
Total assets	1.2019**	1.9278*	1.5789*
	(2.63)	(2.25)	(1.96)
Intercept	8.8547	12.8002	20.9169
	(0.67)	(0.53)	(1.67)
Overall R-squared	0.2335	0.2535	0.4969
Number of Observations	710	512	198

Note 1: regression results of Industry dummies as explanatory variables have been omitted.
Note 2: asterisks denote significance levels: * indicates significance at the 10% level, ** at the 5% level, *** at the 1% level.
Note 3: t-values are displayed in parentheses below the coefficients.

Table 8. Regressions of Basic Investment Functions for Pre-crisis Period and Post-crisis Period (*continued*)

2. Post-crisis (1997～2000)

Dependent Variable: Iit /K it-1

	All Sample Firms	Family-controlled Firms	Independent Firms
ROA_{it-1} - R_{it-1}	0.0611***	0.0660**	0.0534**
	(3.88)	(3.17)	(2.73)
$CASH_{it}/K_{it-1}$	0.0360***	0.0477***	0.0029
	(3.82)	(3.97)	(0.22)
$DEBT_{it-1}$	-0.0455*	-0.0396	-0.0856***
	(-2.57)	(-1.73)	(-3.61)
D98	-10.4862***	-11.4294***	-7.3979***
	(-9.47)	(-8.07)	(-5.04)
D99	-15.0177***	-16.4856***	-10.7071***
	(-13.46)	(-11.55)	(-7.23)
D00	-13.7487***	-15.0327***	-10.1226***
	(-11.36)	(-9.66)	(-6.37)
Indonesia dummy	1.7822	2.9253	-0.9066
	(1.07)	(1.33)	(-0.41)
Malaysia dummy	-1.4679	-1.6444	-0.8616
	(-0.99)	(-0.83)	(-0.40)
Philippine dummy	0.0013	1.0882	-1.6068
	0.00	(0.35)	(-0.65)
Thailand dummy	-4.4302**	-4.2808	-4.2991*
	(-2.72)	(-1.84)	(-2.37)
Total assets	0.2301	0.7406	0.1366
	(1.23)	(1.54)	(1.04)
Intercept	19.5682**	22.1123*	15.4761*
	(2.81)	(2.03)	(2.52)
Overall R-squared	0.209	0.2126	0.378
Number of Observations	1469	1064	405

Note 1: regression results of Industry dummies as explanatory variables have been omitted.
Note 2: asterisks denote significance levels: * indicates significance at the 10% level, ** at the 5% level, *** at the 1% level.
Note 3: t-values are displayed in parentheses below the coefficients.

Table 9. Change on Ratio of Investment to Cash Flow

		94	95	96	97	98	99	2000	Pre-crisis	Post-crisis	Whole period
Indonesia	Mean	0.16	0.88	1.23	0.75	-0.82	0.33	0.54	0.83	0.27	0.44
	Minimum	-64.36	-0.06	-0.58	-13.64	-101.99	-6.40	-18.16	-64.36	-101.99	-101.99
	Maximum	4.53	4.70	11.76	20.63	15.91	15.55	34.27	11.76	34.27	34.27
	Median	0.56	0.52	0.81	0.23	-0.01	0.13	0.03	0.63	0.07	0.23
	Std. Deviation	7.20	0.98	1.49	4.04	9.34	1.48	3.79	3.81	5.12	4.75
Korea	Mean	0.71	1.14	-2.02	12.20	1.26	0.69	0.62	-0.33	2.36	1.76
	Minimum	-21.05	-54.66	-874.65	-32.43	-15.91	-19.63	-98.32	-874.65	-98.32	-874.65
	Maximum	6.49	16.77	54.51	2613.84	64.31	36.99	68.07	54.51	2613.84	2613.84
	Median	0.84	1.26	1.44	1.00	0.29	0.33	0.41	1.21	0.38	0.52
	Std. Deviation	3.30	4.89	58.50	166.74	6.16	2.45	5.47	38.84	62.23	57.80
Malaysia	Mean	0.61	1.63	1.27	1.01	0.04	0.66	0.73	1.23	0.62	0.82
	Minimum	-80.50	-19.48	-162.91	-15.87	-448.67	-23.56	-27.65	-162.91	-448.67	-448.67
	Maximum	57.68	91.90	140.13	37.98	79.46	58.22	234.49	140.13	234.49	234.49
	Median	0.50	0.55	0.61	0.49	0.20	0.15	0.19	0.55	0.23	0.33
	Std. Deviation	7.32	7.11	13.04	3.44	23.51	3.82	9.94	10.03	12.60	11.83
Philippines	Mean	0.28	0.54	-1.08	0.49	0.26	-0.10	0.15	-0.20	0.19	0.06
	Minimum	-1.95	-1.11	-147.03	-54.06	-9.84	-11.47	-20.81	-147.03	-54.06	-147.03
	Maximum	3.34	6.34	12.18	24.55	14.43	1.72	11.37	12.18	24.55	24.55
	Median	0.20	0.31	0.34	0.45	0.16	0.11	0.03	0.28	0.14	0.20
	Std. Deviation	0.69	0.88	15.54	6.61	2.16	1.55	2.20	10.08	3.50	6.42
Thailand	Mean	0.81	-0.11	0.18	-0.87	1.03	-0.70	0.33	0.27	-0.01	0.09
	Minimum	-10.97	-150.07	-64.48	-260.33	-9.98	-147.57	-7.82	-150.07	-260.33	-260.33
	Maximum	5.86	10.53	19.24	55.22	150.01	6.00	54.18	19.24	150.01	150.01
	Median	0.51	0.50	0.45	0.21	0.05	0.06	0.11	0.49	0.09	0.19
	Std. Deviation	1.49	11.48	5.78	19.19	10.86	10.54	3.12	7.52	11.57	10.28

Note 1: source: WorldscopeDatabase
Note 2: data is reported in percent .

Figure 1 Net Profit Rate (ROA-R)