The Role of Equity Investments in Corporate Control of the Large Business Conglomerates in Korea*

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1. Introduction

It is well-known that controlling minority shareholders of large business conglomerates in Korea, so called chaebols, exercise higher control rights over affiliated firms than cash-flow rights, which is amplified through circular shareholding and/or pyramidal shareholding.[†] As a result, separation of management from ownership is relatively small in Korea as compared to that in U.S. and U.K. Since equity investments among affiliated firms make the ownership structure of business groups so complicated, corporate control mechanisms hardly work for monitoring and disciplining controlling shareholders' decisions. So there exist conflicts between controlling shareholders and minority shareholders because controlling shareholders have incentives to maximize private benefits and minority shareholders cannot curb this.

Under this circumstance, controlling shareholders try to keep and secure benefits from corporate control. This is true especially when there exist huge control benefits as reported by Joh (2001) and Chung and Kim (1999). Joh (2001) estimates voting premium measured by the ratio of common stock price to preferred stock price. She finds that as of 1999, voting premium in Korea is 81% that is far greater than 5.4-10.5% in U.S. and 13.3% in U.K. Chung and Kim (1999) also do the similar analysis to Joh (2001) and find that the size of private benefits of control is about 10% of market capitalization for the listed firms in Korea. The findings in these studies suggest that controlling shareholders have incentives to secure and extend their controlling powers

[†] Ownership-control disparity arises even in the absence of circular or pyramidal shareholding. Consider the situation where there are only 2 shareholders, A, and B, and A has 2 shares and B has 1 share. Under majority voting, A's control right is 1 while A's cash-flow right is 2/3.

over affiliated firms through equity investments. Nevertheless, little research has been conducted to investigate how shareholding among affiliated firms works for control motives of controlling shareholders.

The previous studies on equity investments can be roughly categorized into two groups. The first group pays attention to equity investment when examining the disparity between ownership and control. Claessens *et al*. (2000), La Porta *et al.* (2002), Lemmon and Lins (2003), and Lins (2003) analyze the East Asian countries and find the negative association between ownership-control disparity and firm value. These studies only consider listed firms, which is a limitation in that many firm belonging to business groups are non-listed. Baek, Kang and Park(2003) and Joh(2003) focus on Korean firms and confirm the findings in the above studies. Although these studies provide useful information about the effect of equity investments, they do not fully take into account of the complex nature of equity investments among affiliated firms of business groups. Moreover these two papers cover the time period before 1998. Our paper differs from the previous research in that we consider the complex equity investment structures and examine for the time period of 1997-2005.

The second group of studies on equity investments focuses on the effect on profitability or effect on physical investments. Because the main interest of these is not in the ownership structure, they give a descriptive look at the ownership structure and identify which firms are important in group control, using diagrammatic approach. There are few, if any, studies that quantitatively investigate the role of equity investments in group control. Recently Kim, Lim and Sung (2006) tried to quantify the role of equity investments in group control and found the close relationship between

control motives and shares held by controlling shareholders.

Unlike previous works, this paper develops an index that measures the importance and magnitude of an affiliated firm in terms of control right. Based on the index, this paper analyses the evolution of inter-firm equity investment within a group and the effect of total equity investment regulation on the control structure of business groups.

The rest of the paper is organized as follows. Chapter 2 explains how to quantify the importance of shareholding by affiliated firms. In doing so, we introduce control rights and control contribution index. Using indices developed in Chapter 2, Chapter 3 investigates equity investments structure. Lastly, chapter 4 concludes.

2. Voting Right and Control Contribution Index

In this section, we introduce an index that measures the importance of an affiliated firm in group control. In order to do that, we need to take the equity investment structure among affiliated firms into account since Korean business groups have complex ownership structures mainly due to pyramidal shareholding and circular equity investments among affiliated firms. In the first part of this section, we explain how to compute control rights, as a building block, that measure voting rights of the minority controlling shareholders in each group. Then we introduce control contribution index(CCI) as a measure of importance of an affiliated firm in group control.

2.1 Control Right (Voting Right)

This paper exploits ownership data for years 1999-2005 from KFTC that contains shareholding not only of controlling shareholders and their family members but also of affiliated firms. The business groups included are under cross-shareholding regulation governing that affiliated firms cannot have cross-shareholdings with other affiliated firms. The rule had been applied to top 30 business groups until March 2002. Since April 2002, the regulation has been applied to all affiliated firms in business groups with more than 2 trillion KRWon in asset size.

Since pyramidal and circular shareholding among affiliated firms make ownership structures of Korean business groups complex, it is important to consider this aspect when calculating voting rights. The previous research such mentioned in the previous section, however, do not fully reflect this feature due to data limitations.[‡] This paper uses a unique dataset and takes this feature of Korean business groups into account.

Some studies such as Kim, Lim and Sung (2006) compute voting rights as a simple sum of the two shareholdings: (i) direct ownership share held not only by controlling shareholders and their family but also related parties such as not-for-profit organizations and directors in an affiliated firm i and (ii) the direct share ownership in firm i held by firm j when firm i and firm j belong to the same business group. The simple sum implicitly assumes 100% control power of controlling shareholders, which emphasizes de facto control of controlling shareholders. If we accept this assumption, it is unnecessary to compute voting rights because control power of controlling

[‡] Claessens *et al.* (2000) and LLSV(2002) also examine voting rights of controlling shareholders. However, they only consider listed firms while this paper investigates not only listed firms but also non-listed firms.

shareholders is 100%. That is, under this assumption, summing up of the two shareholdings has little meaning because this contradicts the underlying assumption. Moreover, the calculation results are far below 1 in most firms, which contradicts the implicit assumption. This lacks internal consistency! §

We take a different approach in calculating voting rights. To understand how to compute voting right, let us define the following variables:

- f_i : direct ownership share held not only by controlling shareholders and their family but also by related parties such as not-for-profit organizations and directors in an affiliated firm i
- S_{ij} : the direct share ownership in firm i held by firm j when firm i and firm j belong to the same business group.

Then we compute the initial value of the voting right that controlling shareholders have on firm i as follows:

$$VR_{i0} = f_i + \sum_{j \neq i} (S_{ij} \times VR_{j0}) \qquad (1)$$

When there are n affiliated firms in the business group, the above expression is the system of n equations. Solving out for the equations gives the set of voting rights of controlling shareholders. That is, voting rights of controlling shareholders in vector

§ Of course, the simple sum is a useful measure in some cases where de facto control over the affiliated firms has its own meaning and ordinary decisions are made. However, this is not adequate in case of contest for corporate control rights because this excludes an issue of market for corporate control. Moreover, the simple sum is not the ex ante voting power but share of controlling shareholders only when controlling shareholders win the voting contests. In other words, the simple sum is the power of controlling shareholders conditional on that they win. Therefore this is not an adequate measure of voting rights in the context of "market for corporate control."

expression as a solution for (1) are

$$VR_0 = (I_n - [S_{ij}])^{-1} f \qquad (2)$$

After having the initial value of voting rights, we make the following adjustment in consideration of voting game: **

Step (1): Replace voting rights with 1 if the initial value of the voting rights exceeds 0.5.

Step (2): Then substitute the adjusted voting rights into the system of equations.

Step (3): We iterate the step (1) and (2) until convergence occurs.

Under majority rule, there is no difference between 51% and 100% shareholding in decision making process. So it is reasonable to adjust as in step (1) in consideration of voting game.†† Even in the absence of circular shareholding and/or pyramidal shareholding, the adjustment has its own meaning because ownership-control disparity and possibility of expropriation of minority shareholders by controlling shareholders do exist.

Using the adjusted voting powers, we compute a set of new values of voting rights in step 2. We repeat this process until the values converge to fixed points.

Table 2.1 shows shareholdings by controlling shareholders and control rights for the period of 1997-2005. Since 1997, changes in controlling shareholders' shareholding have been relatively small while those in voting rights have been significant. This

** See Cho and Lim(2007) for the detailed discussion on the calculation of voting rights

†† Of Course, one can compute voting rights with different critical values, say 0.3 or 0.2. We compute this but the results are not much different from the case with the critical value of 0.5 qualitatively.

suggests that changes in voting rights be related with changes in equity investments, which will be discussed in the next section.

Table 2.1. Percentage of Shares held by controlling shareholders and Voting Rights

Year	Percentage of Shares held by controlling shareholders	Percentage of Shares held by controlling shareholders and related parties	Voting Rights
1997	13.3	16.0	29.7
1998	12.6	15.4	30.8
1999	9.7	12.2	25.0
2000	10.6	12.9	27.7
2001	9.9	12.7	30.6
2002	11.0	13.3	35.6
2003	12.1	14.7	38.2
2004	11.8	13.6	41.1
2005	13.3	15.3	45.0

2.2 Control Contribution Index (CCI)

The previous research on equity investments among affiliated firms focuses on the calculation of ownership-control disparity and its relation with firm-value or firm performance. As mentioned earlier, most of these studies do not consider non-listed firms in their analyses and some lack internal consistency in calculating divergence between ownership and control. More importantly, there are few, if any, that try to quantify the importance of an affiliated firm in group control. For example, Kim *et al.* (2003) adopt a diagrammatic approach to identify core firms in group control. This

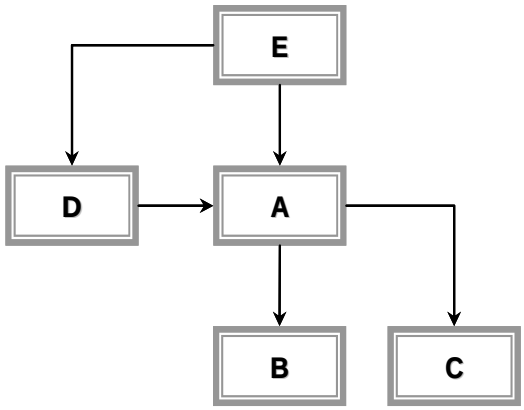
approach is useful in that looking at equity investment structure helps to find out core companies in group control. However, there are shortcomings. It is hard to see how much important an affiliated firm is. Moreover, this approach makes it even more difficulty to examine the changes in contribution to group control.

This paper tries to overcome these problems and proposes a measure to quantify the contribution of an affiliated firm to group control. Let's call this measure "Control Contribution Index(CCI)."

Recently Kim, Lim and Sung (2006) quantified the importance of equity investments and investigated the role of equity investments in group control. They find the close relationship between group control motives and controlling shareholders' equity holdings. Our paper is similar to Kim, Lim and Sung (2006) in that both try to quantitatively measure the importance of an affiliated firms in group control. However, several points differentiate our paper from Kim, Lim and Sung (2006). First, as mentioned in the previous subsection, we propose an internally consistent measure of voting rights while Kim, Lim and Sung (2006) use simple sum of f_i and S_{ij}. Second, this paper proposes indices that measure the importance of an affiliated firm in group control in different situations. Thirdly, we are interested in the changes in CCI while Kim, Lim and Sung (2006) pay little attention to these. Time-series variations in CCI are important and interesting in Korea context because regulatory regime has changed. To examine what has happened in the course of changes in regulation provides useful information about the future direction of regulation. Last, but not the least, our indices lie in the closed interval [0, 1] so it is easy to see the relative importance of each company belonging to the business groups. The index in Kim, Lim and Sung (2006) is unbounded and this makes it hard to interpret the relative importance.

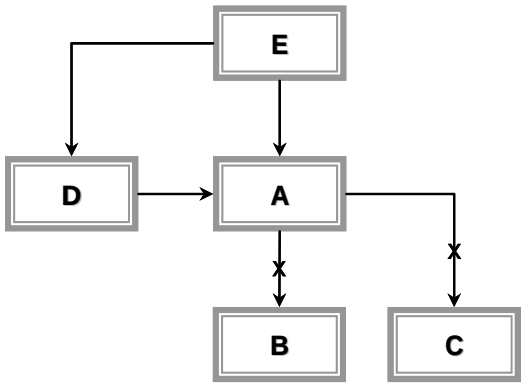
To understand how to compute CCI, imagine the following situation in [Figure 2-1]. [Figure 2-1] shows equity investments structure of a hypothetical business group consisting of 5 firms. Arrows denote the directions of equity investment. For example, arrows from Firm A to Firm B and Firm C denote that Firm A has shares in Firm B and Firm C. In the following, we explain CCI in the viewpoint of firm A.

Figure 2.1



Consider the three different hypothetical situations.

Case 1: no equity investment from firm A to other firms. (CCI_I **)**



Since Firm B and Firm C belongs to a group through the equity investments from Firm A, controlling shareholders lose controlling power over Firm B and Firm C if

controlling shareholders do not have any share in those companies.

An index for this case can be calculated by adjusting equity investment matrix. For CCI_I, we replace ith column with zeros and compute voting rights as in the previous subsection.

$$S = \begin{pmatrix} S_{11} & \cdots & S_{1i} & \cdots & S_{1n} \\ \vdots & \ddots & \vdots & \ddots & \vdots \\ S_{i1} & \cdots & S_{ii} & \cdots & S_{in} \\ \vdots & \ddots & \vdots & \ddots & \vdots \\ S_{n1} & \cdots & S_{ni} & \cdots & S_{nn} \end{pmatrix} \Rightarrow S_I^{-i} = \begin{pmatrix} S_{11} & \cdots & 0 & \cdots & S_{1n} \\ \vdots & \ddots & \vdots & \ddots & \vdots \\ S_{i1} & \cdots & 0 & \cdots & S_{in} \\ \vdots & \ddots & \vdots & \ddots & \vdots \\ S_{n1} & \cdots & 0 & \cdots & S_{nn} \end{pmatrix}$$

We denote these voting rights for firm j by $VR_{I,j}^{-i}$ (i=1,…,n). After getting voting rights, we compute CCI_I in the following way:

$$CCI_{I,i} = \frac{\sum_{j=1}^{n} Asset_j \times VR_j - \sum_{j=1}^{n} Asset_j \times VR_{I,j}^{-i}}{\sum_{j=1}^{n} Asset_j \times VR_j} = 1 - \frac{\sum_{j=1}^{n} Asset_j \times VR_{I,j}^{-i}}{\sum_{j=1}^{n} Asset_j \times VR_j}$$

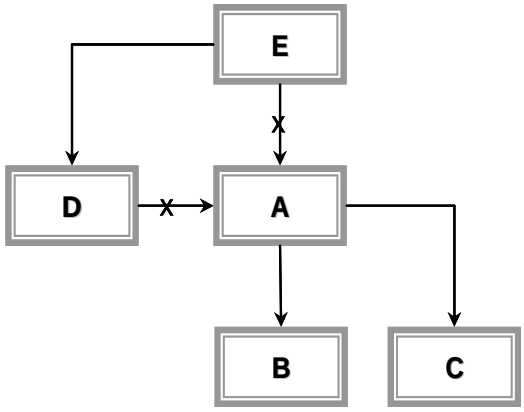
One can see that from the far right-hand side, CCI_I is one minus (weighted voting rights without firm i/ weighted voting rights). If there is no equity investment from firm i to the other affiliated firms, then CCI_I is zero. In the other extreme case where controlling shareholders have shares only firm i and firm i is a holding company, then CCI_I becomes 1. So the higher CCI_I is, the more important the firm in group control.

We use asset size as weights to reflect empire building taste pointed by Jensen (1986). One can use capital or as weights that is used in Kim, Lim and Sung (2006). For non-listed firms, it is hard to know the value of capital. So using capital as weights may

not be appropriate. Moreover, when controlling shareholders seek to maximize private benefits of control, then asset size seems more appropriate.

By the same token, we compute indices for the following cases.

Case 2: no equity investment from other firms to firm A. (CCI_{II})



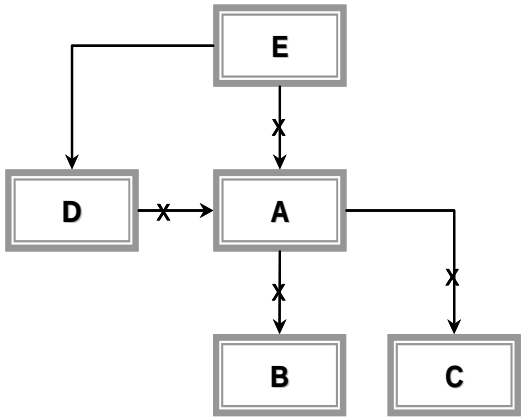
As in case 1, controlling shareholders lose controlling power over Firm A if controlling shareholders do not have any share in Firm A. Moreover, in the absence of shareholding of Firm B and Firm C by controlling shareholders, the controlling shareholders cannot control Firm B and Firm C.

$$S=\begin{pmatrix} S_{11} & \cdots & S_{1i} & \cdots & S_{1n} \\ \vdots & \ddots & \vdots & \ddots & \vdots \\ S_{i1} & \cdots & S_{ii} & \cdots & S_{in} \\ \vdots & \ddots & \vdots & \ddots & \vdots \\ S_{n1} & \cdots & S_{ni} & \cdots & S_{nn} \end{pmatrix} \Rightarrow S_{II}^{-i}=\begin{pmatrix} S_{11} & \cdots & S_{1i} & \cdots & S_{1n} \\ \vdots & \ddots & \vdots & \ddots & \vdots \\ 0 & \cdots & 0 & \cdots & 0 \\ \vdots & \ddots & \vdots & \ddots & \vdots \\ S_{n1} & \cdots & S_{ni} & \cdots & S_{nn} \end{pmatrix}$$

As compared to CCI_I, CCI_{II} measures the magnitude of equity investment inflow.

Case 3: no equity investment from Firm A to the other firms or from the other firms

to firm A. (CCI_{III} **)**



In this case, there is no equity investment related to Firm A. So it is as if Firm A is an independent firm from a business group.

$$S = \begin{pmatrix} S_{11} & \cdots & S_{1i} & \cdots & S_{1n} \\ \vdots & \ddots & \vdots & \ddots & \vdots \\ S_{i1} & \cdots & S_{ii} & \cdots & S_{in} \\ \vdots & \ddots & \vdots & \ddots & \vdots \\ S_{n1} & \cdots & S_{ni} & \cdots & S_{nn} \end{pmatrix} \Rightarrow S_{III}^{-i} = \begin{pmatrix} S_{11} & \cdots & 0 & \cdots & S_{1n} \\ \vdots & \ddots & \vdots & \ddots & \vdots \\ 0 & \cdots & 0 & \cdots & 0 \\ \vdots & \ddots & \vdots & \ddots & \vdots \\ S_{n1} & \cdots & 0 & \cdots & S_{nn} \end{pmatrix}$$

CCI_{III} measures how much control would be lost if a firm is spun off from a business group.

3. Equity Investment on Affiliated Companies of Korean Chaebols

3.1 Descriptive Statistics of CCI

We utilize shareholder information of major Korean Chaebols collected by the Korea Fair Trade Commission (henceforth KFTC). To enhance the accuracy of data set utilized in our study, we compare the original data set provided by the KFTC with

financial statements of each company. We exclude public business groups and groups that are not controlled by a controlling family since these business groups' equity investment on affiliated companies could be executed with different intentions.

We begin our analysis by introducing some descriptive statistics for illustrative purpose. Table 3.1 shows the CCI_I s of top 10 ranked companies of one Korean Chaebols in 2005 calculated by the method introduced in the previous chapter.

First of all we can see that CCI_I s of top 2 companies are much bigger than those of lower ranked companies. That is, control over the group mainly stems from the equity investments of these top 2 companies. For example, if the voting rights of equity held by Samsung Everland were prohibited, the controlling family would lose about 41% of control on the group companies measured by asset size. In contrast, if the voting rights of equity held by Samsung Card ranked 4th in terms of CCI_I were prohibited, the controlling family would lose merely 0.5% of control on the group companies. The concentration of CCI_I described in this example is not limited to this case but can be easily found in most business groups.

Table 3.1. CCI of companies of Samsung group in 2005

Name	CCI_I	CCI_{II}	CCI_{III}	Ranking 1	Ranking 2	Ranking 3
Samsung Everland	40.744	0.000	40.744	1	60	2
Samsung Life Insurance	12.009	40.993	47.031	2	1	1
Samsung Electronics	3.151	4.603	6.412	3	3	3
Samsung Card	0.483	6.313	6.313	4	2	4
Samsung Corp.	0.415	0.617	0.809	5	6	7
Samsung Marine	0.282	1.601	1.727	6	4	5
Samsung SDS	0.248	0.066	0.293	7	19	10
Samsung Electro-machine	0.118	0.194	0.229	8	11	13
Samsung Kwangju	0.108	0.237	0.237	9	10	12

Samsung Chemical	0.096	0.138	0.150	10	13	15

Note: CCIs are calculated by asset.

The different types of definitions of CCI can provide richer implications on the role of equity investment structure. As summarized in Table 3.1 CCI_I and CCI_{II} of each company are significantly different in many cases. This implies that some companies are mostly recipients of equity investment by affiliated companies, while some companies are mostly investors to affiliated companies.

A descriptive analysis on CCI_I s of our whole sample shows some notable features. Table 3.2 shows the average values of CCI_I by year and business group. As we have seen in the case of Samsung group CCI of companies ranked 1st and 2nd are much bigger than other companies by a wide margin. For example, CCI_I s of companies ranked 1st and 2nd in 2005 are 35.9% and 10.9% respectively, while the CCI_I of company ranked 3rd is only 4.3%. Another interesting fact is that CCI_I s of highly ranked companies are increasing rapidly over the sample period. For example, CCI_I of company ranked 1st was 17.5% in 1997 but it has increased up to 35.3% in 2005. Meanwhile, CCI_I s of companies ranked lower than 2nd have changed little.

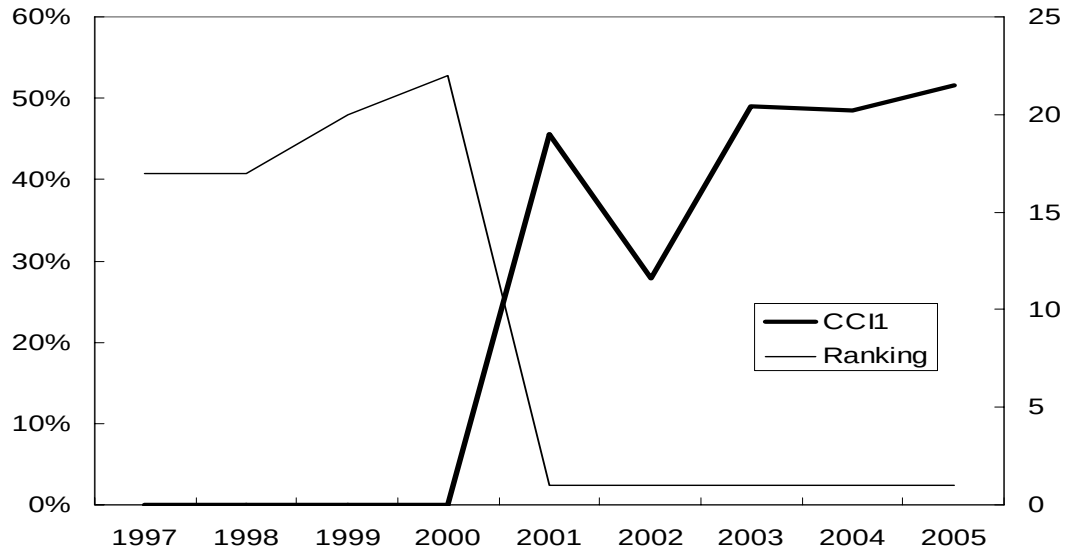
Table 3.2. Trends of CCI_I ranked 1st Companies Each Year

	1997	1998	1999	2000	2001	2002	2003	2004	2005
1st	17.5	17.6	20.2	21.2	26.8	26.3	28.5	32.9	35.3
2nd	6.5	7.0	7.0	7.2	9.5	10.5	11.3	10.4	10.9
3rd	3.6	4.1	2.8	3.7	4.8	5.2	4.1	3.5	4.3
4th	2.3	2.1	1.9	2.6	2.8	3.3	1.8	1.8	2.2
5th	1.5	1.2	1.3	1.5	1.3	1.0	1.1	0.9	1.2

Moreover, it is noteworthy that the rankings of companies measured by CCI_I have been changing actively during our sample period. More specifically, some companies that were not crucial in terms of control over group companies have become key companies for controlling group companies. To see these changes more clearly, we limit our analysis to 15 groups which we have data for the whole sample period.[##]

Let us introduce one of the most dramatic changes in CCI_I among our samples. Figure 4.1 shows the trend of ranking and CCI_I of SK C&C which is one of affiliated companies in SK group. In 1997 the CCI_I and the ranking of this company were 0 and 17th (the lowest) respectively but the CCI_I and the ranking of this company have changed into first in 2001 suddenly. That means SK C&C became the most important company for controlling group companies.

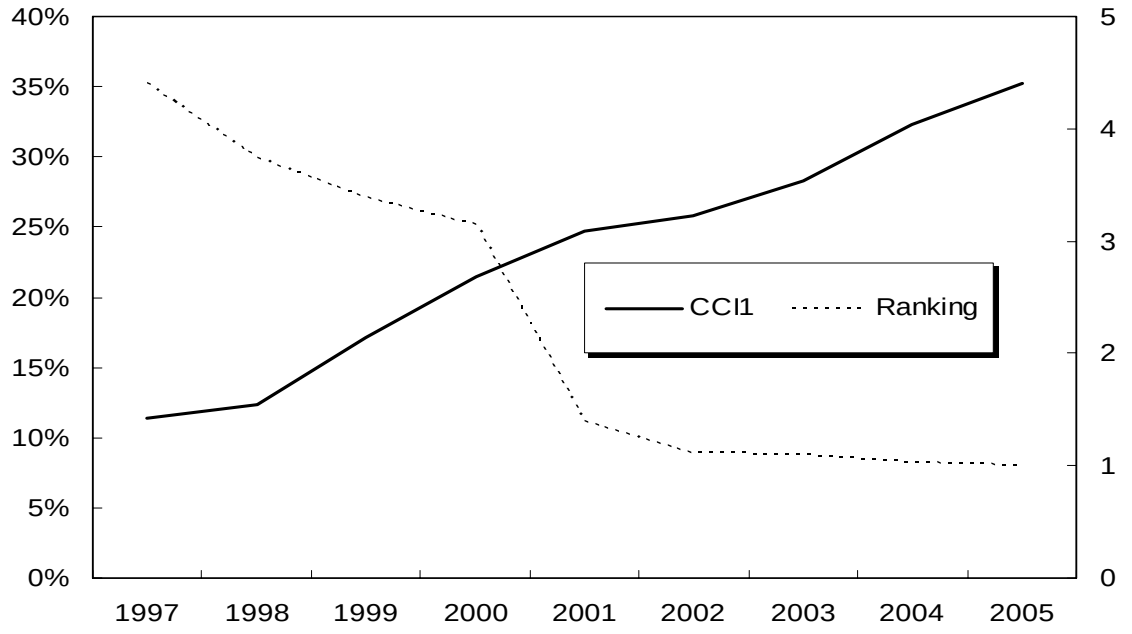
Figure 3.1 CCI_I **and Ranking of SK C&C**



[##] Theses groups are Kumho, Daelim, Dongguk, Dongbu, LG, Samsung, SK, Kolon, Hanwha, Hyundai, Hansol, Hanjin, Lotte, Doosan, Dongyang.

In fact, many business groups have experienced similar changes. Among these 15 business groups 10 business groups have changed companies ranked 1st in terms of CCI_I. In addition, the average value of CCI_I of the companies ranked 1st in terms of CCI_I in 2005 has changed from 11% in 1997 to 35% in 2005. The next figure shows the past trends of CCI_I and ranking of 1st ranked company in terms of CCI_I in 2005. Again, this confirms that the structure of equity investment among affiliated companies have changed very actively. These active structural changes resulted in changes of company's ranking in terms of CCI_I.

Figure 3.2 CCI_1 **and Ranking of 1st Ranked Company in 2005**



As we discussed so far, controlling families in Korea have utilized equity investment of group companies to guarantee their control power over group companies. This equity investment was regulated by the legislation named "Upper Ceiling on Equity Investment." This regulation has limited the amount of equity investment of affiliated companies up to a certain level before the financial crisis.[§§] After the financial crisis this regulation was abolished to facilitate corporate restructuring in Korea. The period in which the regulation on equity investment was abolished coincides with the period where we found very active changes of CCI_1

[§§] The limit of equity investment has been changing. Between April 1987 and March 1990 40% upper ceiling applied to all the firms in the top 30 Chaebols. Between April 1990 and March 1994 40% upper ceiling applied to all the companies in the top 30 Chaebols with the exception of financial institutions. Between December 1994 and February 1998 25% upper ceiling applied to all the companies in the top 30 Chaebols with the exception of financial institutions. Between February 1998 and March 2001 the upper ceiling was removed to facilitate corporate restructuring. After April 2001, the regulation was reintroduced.

rankings of our sample companies. One might argue this is just a coincidence but the trends of equity investments by affiliated companies and some examples presented below shows that these changes during this period were rather intentionally driven to strengthen the control power of controlling families. Table 4.3 shows the total amount of equity investment by business groups regulated by the KFTC. When the regulation on equity investment was removed in April 1998 the total amount of equity investment was about 1.77 billion won. When the regulation on equity investment was re-introduced in April 2001 the total amount of equity investment has increased to the level of 50.8. One can infer that the changes of CCI_I during this period were driven by the increase in equity investment.

Table 3.3. Total Amount of Equity Investment and Net Asset

(100 Billion Won, %)

	1996. 4	1997. 4	1998. 4	1999. 4	2000. 4	2001. 4
Equity Investment (A)[1)]	13.6	16.9	17.7	29.9	45.9	50.8
(Y-o-Y)	(20.2)	(24.3)	(4.7)	(68.9)	(53.5)	(10.7)
Net Asset (B)[1)]	54.8	61.3	59.2	92.0	139.6	142.8
(Y-o-Y)	(28.0)	(11.8)	(△3.4)	(55.4)	(51.7)	(2.3)
A/B	24.8	27.5	29.8	32.5	32.9	35.6

Note: 1) Excluding financial institutions.

The case of SK C&C discussed earlier provides additional evidence that these changes in CCI_I were intentionally driven by equity investment. In fact, SK C&C increased shareholding of key affiliated companies such as SK corporations during the period and this resulted in increase CCI_I of SK C&C which is mainly held by the

controlling family.***

3.2 The relationship between CCI and share held by controlling family

So far we have showed that CCI_Is of group companies are highly skewed towards a couple of companies. Also, our analysis showed that the key companies for controlling business group have been changing actively during the period when the regulations on equity investment to affiliated companies are abolished.

This subsection explores the major characteristics of the key companies with high values of CCI_I. To identify major characteristic we perform simple regression analyses where we consider CCI_Is of each company as dependent variables and consider major characteristics as independent variables. These analyses might enable us to verify the strategic goal and pattern changes of equity investment among affiliated companies on behalf of controlling families.

First of all, one can expect that controlling families want to holds large shares of key companies for controlling the business group. Since CCI_I measures the role of each company for controlling the business group, we check the relationship between CCI_I and the share held by controlling family. Table 4.4 shows the result of regression in which CCI_I is dependent variable and the share held by controlling family is independent variable for each year. According to the regression results, there is statistically significant and positive relationship between two variables. More interesting result is that the relationship between these two variables became tighter in the later years. The estimated coefficient for share held by controlling family was 0.096

*** There are other anecdotal evidences in other business groups.

in 1998 but it increased up to 0.213 in 2002. This suggests that equity investment when the regulation on equity investment was lifted during 1998 aimed at boosting CCI_I of certain companies in which controlling families have sufficient shares.

Table 3.4 Relationship between CCI_I & Shareholding by Controlling Family

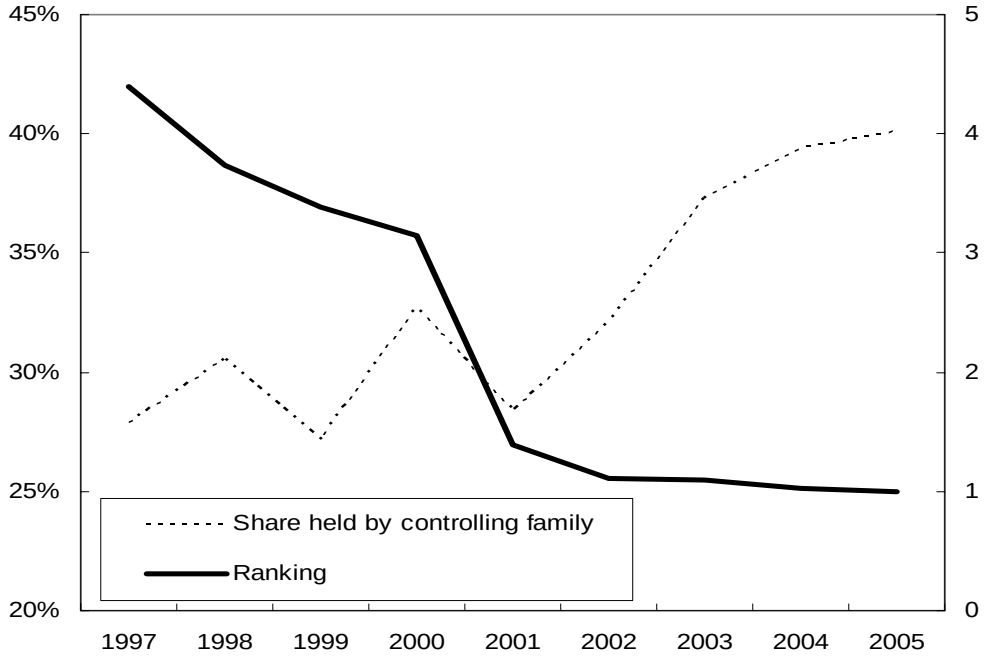
	1997	1998	1999	2000	2001	2002	2003	2004	2005
Share held by controlling family	0.040 (3.72)	0.096 (7.14)	0.104 (5.64)	0.135 (6.42)	0.194 (6.26)	0.213 (6.94)	0.158 (6.65)	0.199 (7.52)	0.176 (6.18)
R^2	0.0312	0.1065	0.0770	0.1206	0.1276	0.1428	0.1120	0.1417	0.1062
Observation No.	431	429	383	302	270	291	353	344	324

Note: 1) Year by year regressions.

2) Numbers in the parenthesis are t- values and all of them are significant at 1% level.

Figure 4.4 shows the past changes of ranking and share held by controlling family of 1st ranked companies in 2005. The average share held by controlling family was already about 30%, which is well above the overall average share held by controlling family. Another interesting observation is that between 2000 and 2001 when the ranking of 1st ranked companies changed sharply the share held by controlling family did not change that much. After 2002 the share held by controlling family is on an increasing trend. The financial crisis in 1997 removed many obstacles for hostile takeover in Korea. In fact, there have been several hostile takeover attempts by foreign investors recently. The increasing trend of share held by controlling family might reflect the defensive efforts of controlling family to possible takeover threat.

Figure 3.3 Ranking and Share Held by Controlling Family of 1st Ranked Companies



Next we include more independent variables to explore characteristics of CCI_I. As for financial variables we include debt-equity ratio and ROA (=net profit/asset). To check whether CCI_I is depending on firm age we include firm established year data. To check whether listing in the public market affects CCI_I we includes listed dummy. To check whether size of company can be a determinant of CCI_I we include logarithm of asset variable. Table 4.5 shows the regression results.

As in the previous simple regression, the share held by controlling family is statistically significant and positive in all specifications. The financial variables are not significant in all specification. This implies that financial soundness and profitability are not closely related to CCI_I. The listed dummy is positive and statistically significant, which implies that values of CCI_I are bigger in listed companies.

Table 3.5 Regression Results

	Dependent Variable: CCI				
	(1)	(2)	(3)	(4)	(5)
Share held by controlling family	0.144*** (18.90)	0.145*** (18.95)	0.145*** (18.94)	0.153*** (20.74)	0.156*** (21.56)
ROA	- -	0.006 (1.41)	0.006 (1.41)	0.003 (0.79)	-0.001 (-0.18)
Debt-Equity ratio	- -	- -	0.000 (0.07)	0.000 (0.20)	-0.000 (-0.40)
Listed Dummy	- -	- -	- -	0.051*** (14.81)	0.027*** (6.92)
Established Year	- -	- -	- -	-0.0001** (-2.00)	-0.00002 (-0.34)
ln(Asset)	- -	- -	- -	- -	0.010*** (11.52)
R^2	0.1026	0.1035	0.1035	0.1715	0.2053
Number of Observation	3,127	3,125	3,125	3,125	3,125

Note: Robust standard errors in parentheses, *** p<0.01, ** p<0.05, * p<0.1

5. Concluding Remarks

Despite the consensus that controlling families in Korea have utilized equity investment of affiliated companies, there have been few studies which tackle this phenomenon analytically.

Our study benefited from many previous studies proposes an index which measures the role of equity investment for controlling business group. With this index explore the role of equity investment of affiliated companies for controlling business group.

The analyses show that the current structures of Korean Chaebols have established during the period when the regulation on equity investment was removed. Through the changes of equity investment among affiliated companies the controlling families seem to have strengthened their control over business group.

There are still controversies on the cost and benefit of the regulation on equity investment. As any other regulation, there must be both cost and benefit of this regulation. But considering this experience the controlling family might utilize equity investment of affiliated companies to strengthen their control over the business group again, if the regulation on equity investment is removed or weakened. It is evident that the abolishment of the regulation on equity investment would provide more convenient tools for controlling families. But it is not clear whether it is desirable to strengthen the power of controlling family given that market discipline through hostile takeover just began to work in Korean market for corporate control.

References

Baek, Jae-Seung, Jun-Koo Kang, and Kyung Suh Park, "Corporate Governance and Firm Value: Evidence from the Korean Financial Crisis," Journal of Financial Economics, 2003.

Cho, Sungbin and Kyung-Mook Lim, "A Note on the Measurement of Ownership-Control Disparity," Working Paper 2007-01, Korea Development Institute, 2007. (in Korean)

Cho, Sungbin and Kyung-Mook Lim, "Related-Party Transactions of Korean Conglomerates: Determinants and Efficiency," KDI-EWC Conference, 2007.

Chung, K. H., Kim, J. K., "Corporate ownership and the value of a vote in an emerging market," Journal of Corporate Finance Vol. 5, 1999, pp.35-54.

Claessens, Stijn, Simeon Djankov, and Larry H. P. Lang, "The separation of ownership and control in East Asian Corporations," Journal of Financial Economics, 58, 2000, pp.81-112.

Jensen, M., "Agency Costs of Free Cash Flow, Corporate Finance and Takeover," American Economic Review, Vol. 76, No. 2, 1986, pp.323-329.

Jensen, M., and W. H. Meckling, "Theory of the Firm: Managerial Behavior, Agency Costs, and Ownership Structure," Journal of Financial Economics, Vol. 3, 1976, pp.305-360.

Joh, Sung Wook, "Analysis on the Corporate Governance of Chaebols: Stock Market Evaluation," KDI Policy Forum 2000-03, Korea Development Institute, 2000. (in Korean)

Joh, Sung Wook, "Corporate Governance and Firm Profitability: Evidence from Korea before the Economic Crisis," Journal of Financial Economics, Vol. 68, 2003, pp.287~322.

Kim, Son-ku, Keunkwan Ryu, Sangseung Yi, Kibeom Bihn, “Policy Improvement on Total Equity Investment Regulation,” 2003. (in Korean)

Kim, Woochan, Yongjae Lim and Taeyoon Sung, "What Determines the Ownership Structure of Business Conglomerates?: On the Cash Flow Rights of Korea's Chaebol," European Corporate Governance Institute, Finance Working Paper No. 51/2004, 2004

La Porta, R., Lopez-de-Silanes, F., Shleifer, A., Vishny, R., "Investor protection and corporate valuation," Journal of Finance, Vol.57, No.3, 2003, pp.1147-1170.

Lemmon, Michael L., and Karl V. Lins, "Ownership Structure, Corporate Governance and Firm Value: Evidence from the East Asian Financial Crisis," Journal of Finance, Vol.58, No.4, 2003, pp.1445-1468.

The Role of Equity Investments in Corporate Control of the Business Conglomerates in Korea

Aug. 10, 2007 | Sungbin Cho & Kyung-Mook Lim Korea's Leading Think Tank KDI

CONTENTS

Part-01 Introduction

1. Introduction

Controlling Shareholders and Concentrated Ownership

- **Circular shareholding as well as pyramidal shareholding among affiliated firms**
  - ✓ Ownership-Control Disparity
  - ✓ Conflict of interests between controlling shareholders and minority shareholders
  - ✓ Difficult for corporate control mechanisms to monitor and discipline controlling shareholders' decisions
- **Large Control Benefits in Korea**
  - ✓ Voting premium in Korea is 81% that is far greater than 5.4-10.5% in U.S. and 13.3% in U.K. (Joh(2001))
  - ✓ 10% of market capitalization for the listed firms in Korea. (Chung and Kim (1999))

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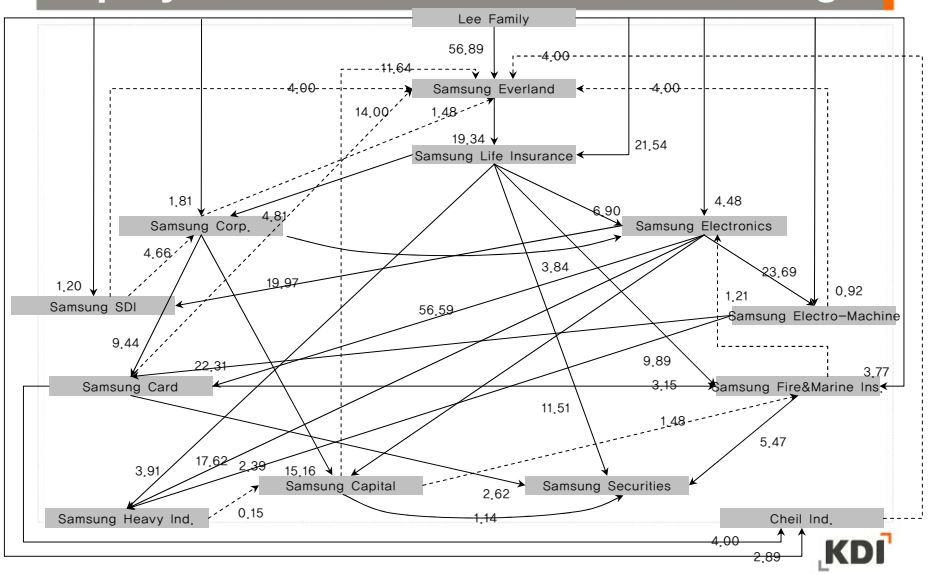
Equity Investment Structure: Samsung



Introduction

Key Questions

- **Controlling shareholders have incentives to secure and extend their controlling powers over affiliated firms through equity investments**

- **Questions**
  - ✓ How does equity investment among affiliated firms work for control motives of controlling shareholders?
  - ✓ Any relation with controlling shareholders' ownership share?
  - ✓ How has equity investment structure changed over time (1997–2005)?

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Introduction

Previous Research

- **Equity investment and Ownership-Control Disparity**
  - ✓ Claessens *et al.* (2000), La Porta *et al.* (2002), Lemmon and Lins (2003)
    - East Asian Countries
    - Listed Firms
  - ✓ Baek, Kang and Park(2003) and Joh(2003)
    - Korean Firms
    - Before 1998

► Need to consider the complex equity investment structures including non-listed firms

► Investigate changes for the time period of 1997-2005

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Introduction

Previous Research

- **Equity investment and Group Control**
  - ✓ **Kim, Lim and Sung (2006)**
    - **Little attentions to changes over time**
    - **Index(?)**

► index that measures the importance and magnitude of an affiliated firm in terms of control right

► evolution of inter-firm equity investment within a group and the effect of total equity investment regulation on the control structure of business groups.

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Part-02

Voting Right and Control Contribution Index

Regulatory Environment

- **Regulation related to Large Business Conglomerates (so called Chaebol) in Korea**
  - ✓ **Ban on cross shareholdings: Affiliated firms in the designated large business conglomerates cannot have cross shareholdings with other affiliated firms in the same conglomerate (but circular shareholding is allowed)**
    - Applied to top 30 chaebols (1991-2002)
    - Applied to chaebols above 2 trillion won (2002-Present)
  - ✓ **No voting rights for financial institutions on shares issued by affiliated firms: Financial institutions in the designated large business conglomerates cannot exercise their voting rights on shares issued by their affiliated firms**
    - Applied to all financial firms in top 30 chaebols (1993-2002)
    - Voting rights of financial institutions allowed up to 30% of shares (2002-Present)

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Regulatory Environment

- ✓ **Upper ceiling on equity investment (Total equity investment regulation): Affiliated firms in the designated large business conglomerates can make equity investments in other domestic companies up to 25% of net assets (= assets – book equity invested by other affiliates) with the exception of financial firms**
  - **25% upper ceiling applied to all the firms in the top 30 chaebols (1994-1998)**
  - **No upper ceiling (1998-2001)**
  - **25% upper ceiling applied to all the firms in top 30 conglomerates, with exemptions on various reasons (2001-2002)**
  - **Limit voting rights on shares above the 25% upper ceiling applied to all the firms in conglomerates above 5 trillion won with exemptions for various reasons (2002-Present)**

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Voting Right (Control Right)

- **Data**
  - ✓ **Ownership data for 1997-2005 from KFTC**
  - ✓ **Business groups under cross-shareholding regulation**
- **Ingredients for Calculation of Voting Right**
  - ✓ **Direct ownership share held not only by controlling shareholders and their family but also by related parties such as not-for-profit organizations and directors in an affiliated firm**
  - ✓ **Direct share ownership in firm i held by firm j when firm i and firm j belong to the same business group.**

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Voting Right (Control Right)

Percentage of Shares held by controlling shareholders and Voting Rights

Year	Percentage of Shares held by controlling shareholders	Percentage of Shares held by controlling shareholders and related parties	Voting Rights
1997	13.3	16.0	29.7
1998	12.6	15.4	30.8
1999	9.7	12.2	25.0
2000	10.6	12.9	27.7
2001	9.9	12.7	30.6
2002	11.0	13.3	35.6
2003	12.1	14.7	38.2
2004	11.8	13.6	41.1
2005	13.3	15.3	45.0

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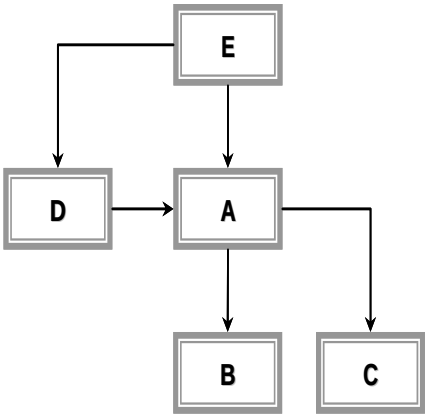
Control Contribution Index (CCI)



- **Hypothetical business group consisting of 5 firms**
- **Arrows denote the directions of equity investment**
  - ✓ Arrows from Firm A to Firm B and Firm C denote that Firm A has shares in Firm B and Firm C.

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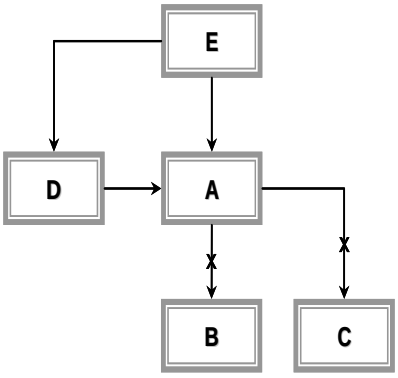
Control Contribution Index

Case 1: no equity investment from firm A to other firms.(CCI_I)



- Since Firm B and Firm C belongs to a group through the equity investments from Firm A, controlling shareholders lose controlling power over Firm B and Firm C if controlling shareholders do not have any share in Firm B and Firm C.

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Control Contribution Index

Case 1: no equity investment from firm A to other firms (CCI_I)

$$CCI_{I,i} = \frac{\sum_{j=1}^{n} Asset_j \times VR_j - \sum_{j=1}^{n} Asset_j \times VR_{I,j}^{-i}}{\sum_{j=1}^{n} Asset_j \times VR_j} = 1 - \frac{\sum_{j=1}^{n} Asset_j \times VR_{I,j}^{-i}}{\sum_{j=1}^{n} Asset_j \times VR_j}$$

- CCI_I : 1−(weighted voting rights without firm i/ weighted voting rights).
  - ✓ If there is no equity investment from firm i to the other affiliated firms, then CCI_I is zero
  - ✓ If controlling shareholders have shares only in firm i and firm i is a holding company, then CCI_I becomes 1
  - ✓ The higher CCI_I is, the more important the firm in group control.

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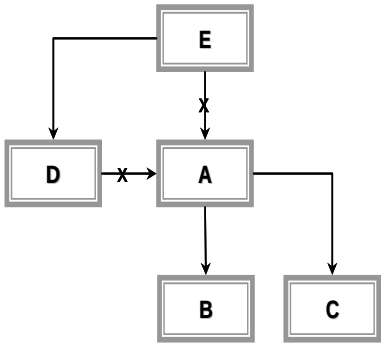
Control Contribution Index

Case 2:no equity investment from other firms to firm A. (CCI_{II})



- Controlling shareholders lose controlling power over Firm A if controlling shareholders do not have any share in Firm A.
- In addition, without holding shares in Firm B and Firm, the controlling shareholders cannot control Firm B and Firm C.
- Measure of the magnitude of equity investment inflow

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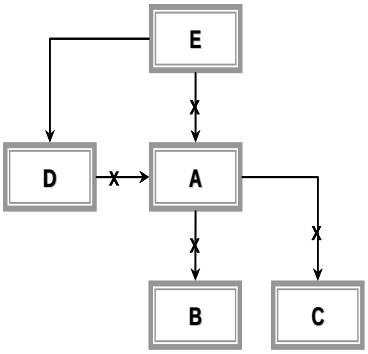
Control Contribution Index

Case 3: no equity investment from Firm A to the other firms or from the other firms to firm A.(CCI_{III})



- It is as if Firm A is an independent firm from a business group.
- Measure of how much control would be lost if a firm is spun off from a business group.

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Part-03

Equity Investment on Affiliated Companies of Korean Chaebols

Descriptive Statistics of CCI

CCI of Companies of Samsung Group in 2005

Name	CCI_{I}	CCI_{II}	CCI_{III}	Ranking 1	Ranking 2	Ranking 3
Samsung Everland	40.744	0.000	40.744	1	60	2
Samsung Life Insurance	12.009	40.993	47.031	2	1	1
Samsung Electronics	3.151	4.603	6.412	3	3	3
Samsung Card	0.483	6.313	6.313	4	2	4
Samsung Corp.	0.415	0.617	0.809	5	6	7
Samsung Marine	0.282	1.601	1.727	6	4	5
Samsung SDS	0.248	0.066	0.293	7	19	10
Samsung Electro-machine	0.118	0.194	0.229	8	11	13
Samsung Kwangju	0.108	0.237	0.237	9	10	12
Samsung Chemical	0.096	0.138	0.150	10	13	15

Note: CCIs are calculated by asset.

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Descriptive Statistics of CCI

Trends of CCI_I

CCI Rank	1997	1998	1999	2000	2001	2002	2003	2004	2005
1	17.5	17.6	20.2	21.2	26.8	26.3	28.5	32.9	35.3
2	6.5	7.0	7.0	7.2	9.5	10.5	11.3	10.4	10.9
3	3.6	4.1	2.8	3.7	4.8	5.2	4.1	3.5	4.3
4	2.3	2.1	1.9	2.6	2.8	3.3	1.8	1.8	2.2
5	1.5	1.2	1.3	1.5	1.3	1.0	1.1	0.9	1.2

- CCI of companies ranked 1st and 2nd are much bigger than other companies by a wide margin.
- CCI of highly ranked companies are increasing rapidly over the sample period.

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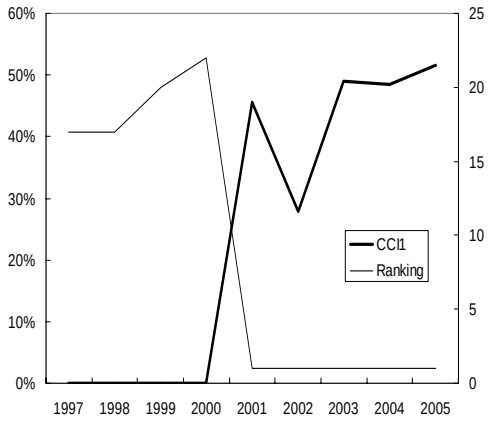
Rapid Changes in the Ranking of Companies in terms of CCI

- Some companies that were not crucial in terms of control over group companies have become key companies for controlling group companies.
- SK C&C: 17th (1999) ⇒ 1st (2001)
  - SK C&C became the most important company for group control.

CCI_I and Ranking of SK C&C



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Rapid Changes in the Ranking of Companies in terms of CCI

- **Among 15 business groups, 10 business groups have changed companies ranked 1st in terms of CCI.**
  - ✓ **15 business groups: Kumho, Daelim, Dongguk, Dongbu, LG, Samsung, SK, Kolon, Hanwha, Hyundai, Hansol, Hanjin, Lotte, Doosan, Dongyang.**
  - ✓ **Most of changes in ranking (9 out of 10) occurred during the period of no upper ceilings on equity investments.(Feb.1998-March 2001)**
- **In addition, the average CCI value of the companies ranked 1st in terms of CCI in 2005 has changed from 11% in 1997 to 35% in 2005.**
- **This confirms that the structure of equity investment among affiliated companies have changed very actively.**
- **These active structural changes resulted in changes of company's ranking in terms of CCI.**

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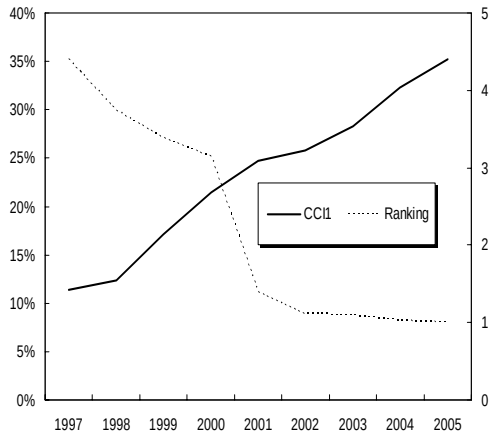
Rapid Changes in the Ranking of Companies in terms of CCI

CCI_I and Rankings of 1st Ranked Company as of 2005

- **Average Ranking in 1997 : 4.4**
- **Average Ranking in 2005 : 1**
- **Active change in rankings during 1998-2001**



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Changes of Group Structure

Group Name	Year of Change	Former 1st ranked company			New 1st ranked company		
		Name	CF's Share	Listed	Name	CF's Share	Listed
Samsung	2000-2001	Samsung Life Insurance	24%	N	Samsung Everland	54%	N
Daelim	1998-1999	Daelim Engineering	7%	Y	Daelim Corp.	51%	N
SK	2000-2001	SKC	32%	Y	SK C&C	60%	N
Hanjin	1999-2000	Korean Air	24%	Y	Jungseok Corp.	79%	N
Lotte	2000-2001	Lotte Beverage	24%	Y	Lotte Confectionary	26%	Y

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Regulation and Equity Investments

Total Amount of Equity Investment and Net Asset

(100 Billion Won, %)

	1996. 4	1997. 4	1998. 4	1999. 4	2000. 4	2001. 4
Equity Investment (A)[1] (Y-o-Y)	13.6 (20.2)	16.9 (24.3)	17.7 (4.7)	29.9 (68.9)	45.9 (53.5)	50.8 (10.7)
Net Asset (B)[1] (Y-o-Y)	54.8 (28.0)	61.3 (11.8)	59.2 (△3.4)	92.0 (55.4)	139.6 (51.7)	142.8 (2.3)
A/B	24.8	27.5	29.8	32.5	32.9	35.6

Note: 1) Excluding financial institutions.

- **When the regulation was removed in April 1998 the total amount of equity investment was about 1.77 billion won.**
- **When the regulation was re-introduced in April 2001 the total amount of equity investment has increased to the level of 50.8.**

⇒ **The changes of CCI during this period were driven by the increase in equity investment. (ex.SK C&C)**

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CCI and Controlling Shareholders' Ownership

Relationship between CCI_I and Shareholding by Controlling Shareholders

	1997	1998	1999	2000	2001	2002	2003	2004	2005
Share held by controlling family	0.040 (3.72)	0.096 (7.14)	0.104 (5.64)	0.135 (6.42)	0.194 (6.26)	0.213 (6.94)	0.158 (6.65)	0.199 (7.52)	0.176 (6.18)
R^2	0.0312	0.1065	0.0770	0.1206	0.1276	0.1428	0.1120	0.1417	0.1062
No. of Obs.	431	429	383	302	270	291	353	344	324

Note: 1) Year by year regressions.
2) Numbers in the parenthesis are t- values and all of them are significant at 1% level.

- Controlling families want to holds large shares of key companies for controlling the business group.
- The relationship between CCI and the share held by controlling family became tighter in the later years as compared to 1997.

⇒ Equity investment when the regulation on equity investment was lifted during 1998 aimed at boosting CCI of certain companies in which controlling families have sufficient shares.

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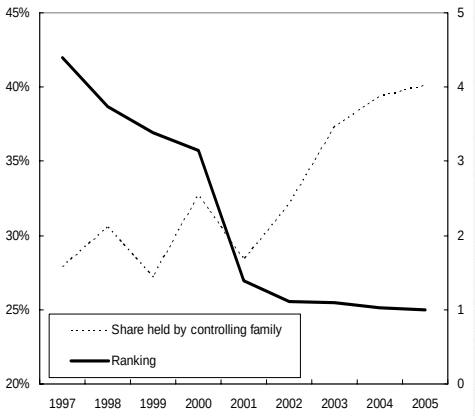
CCI and Controlling Shareholders' Ownership

CCI_I Ranking and Share Held by Controlling Family of 1st Ranked Company as of 2005

- The average share held by controlling family: about 30%, well above the average ownership share held by controlling family.
- The share held by controlling family did not change much in 2000 and in 2001 when rankings in CCI changed sharply.
- Since 2002, controlling shareholders have increased shareholding in the key companies.
- This might reflect the defensive efforts of controlling family to possible takeover threat.



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CCI and Controlling Shareholders' Ownership

Regression Results

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Debt-Equity ratio	- -	- -	0.000 (0.07)	0.000 (0.20)	-0.000 (-0.40)
Listed Dummy	- -	- -	- -	0.051*** (14.81)	0.027*** (6.92)
Established Year	- -	- -	- -	-0.0001** (-2.00)	-0.00002 (-0.34)
ln(Asset)	- -	- -	- -	- -	0.010*** (11.52)
R^2	0.1026	0.1035	0.1035	0.1715	0.2053
Number of Observation	3,127	3,125	3,125	3,125	3,125

Note: Robust standard errors in parentheses, *** p<0.01, ** p<0.05, * p<0.1

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Part-04 Implications/Conclusion

4. Implications / Conclusion

- **Quantify the role of equity investment in group control (CCI)**
- **Substantial Changes in CCI is attributed to changes in equity investment especially for the period of 1999-2001 in the absence of equity investment regulation**
- **Regulation**
  - ✓ **Cost and Benefits**
  - ✓ **Necessary and/or Sufficient?**
- **Market Discipline**

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Appendix: Ownership-Control Disparity

Trend in Controlling Shareholder's CFR, and CR

	1997	1998	1999	2000	2001	2002	2003	2004	2005
Controlling Shareholder and Relatives	0.14	0.13	0.10	0.11	0.10	0.11	0.12	0.12	0.13
Cash Flow Right (*CFR*)	0.22	0.23	0.19	0.19	0.20	0.23	0.25	0.28	0.31
Control Right (*CR*)	0.45	0.54	0.47	0.41	0.46	0.53	0.59	0.66	0.68
cf) Control Right (Simple Sum)	0.66	0.66	0.65	0.67	0.70	0.71	0.71	0.73	0.74
Number of Chaebols	29	29	29	26	26	31	35	36	38

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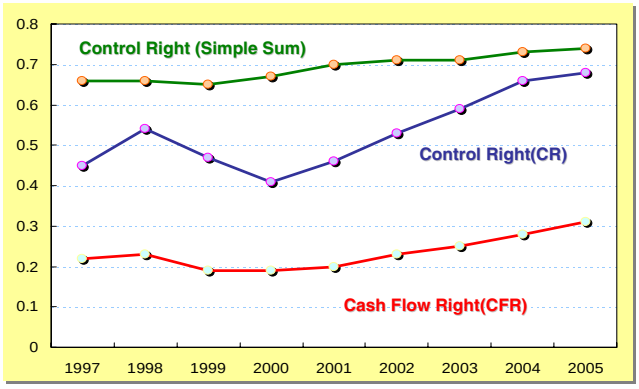
Appendix: Ownership-Control Disparity

Cash Flow Right and Control Right



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Appendix: Ownership-Control Disparity

- **Two Indices: Disparity and Voting Right Leverage Index**
  - ✓ **Disparity: Difference between Control Right and Cash Flow Right (=CR-CFR)**
  - ✓ **Leverage: Ratio of Control Right to Cash Flow Right (=CR/CFR)**

Disparity and Leverage

	1997	1998	1999	2000	2001	2002	2003	2004	2005
Disparity	0.24	0.31	0.28	0.22	0.26	0.30	0.34	0.38	0.37
Dis(Sum)	0.44	0.43	0.46	0.47	0.50	0.48	0.46	0.45	0.43
Leverage	2.66	3.31	3.03	2.61	2.77	2.85	3.03	3.59	3.06
Lev(Sum)	14.91	11.15	14.49	14.85	11.37	10.13	9.25	10.25	17.86

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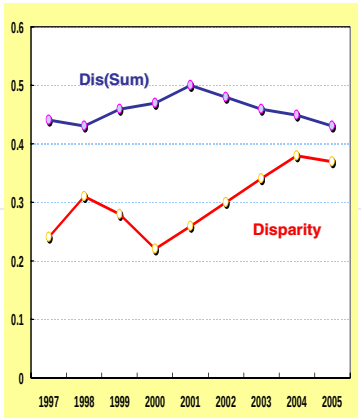
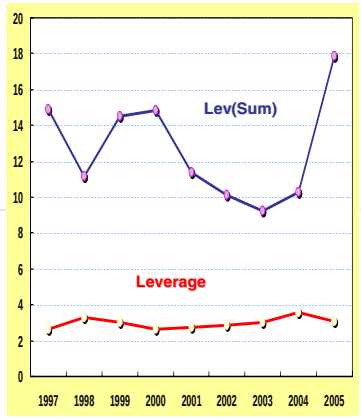
Appendix: Ownership-Control Disparity





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Appendix: Ownership-Control Disparity

Weighted Disparity

		1997	1998	1999	2000	2001	2002	2003	2004	2005
Weighted By Asset	Disparity	0.17	0.26	0.25	0.13	0.21	0.29	0.34	0.38	0.40
	Dis(Sum)	0.24	0.24	0.22	0.20	0.23	0.21	0.21	0.21	0.21
Weighted By Sales	Disparity	0.19	0.25	0.25	0.14	0.21	0.29	0.33	0.39	0.40
	Dis(Sum)	0.24	0.24	0.22	0.19	0.22	0.20	0.20	0.21	0.21

Weighted Leverage

		1997	1998	1999	2000	2001	2002	2003	2004	2005
Weighted By Asset	Leverage	2.00	2.36	2.23	1.76	1.99	2.25	2.36	2.76	2.79
	Lev(Sum)	6.52	6.13	7.29	6.20	5.75	4.83	4.40	9.98	10.99
Weighted By Sales	Leverage	1.91	2.43	2.28	1.72	1.96	2.18	2.37	2.74	2.80
	Lev(Sum)	6.77	6.56	6.85	6.54	6.11	5.20	4.62	8.85	9.82

KDI

Appendix: Ownership-Control Disparity

- **CCI : a measure of firm i's contribution to group control by the amount of additional control rights the controlling shareholder would gain in other companies by having company i under his/her control**

Trends in CCI

CCI Rank	1997	1998	1999	2000	2001	2002	2003	2004	2005
1	17.5	17.6	20.2	21.2	26.8	26.3	28.5	32.9	35.3
2	6.5	7.0	7.0	7.2	9.5	10.5	11.3	10.4	10.9
3	3.6	4.1	2.8	3.7	4.8	5.2	4.1	3.5	4.3
4	2.3	2.1	1.9	2.6	2.8	3.3	1.8	1.8	2.2
5	1.5	1.2	1.3	1.5	1.3	1.0	1.1	0.9	1.2

KDI

Appendix: Ownership-Control Disparity

- **Substantial Changes in CCI is attributed to changes in "Equity Investment."**

Changes in Controlling Shareholders' Ownership Share of the firm whose rank in CCI is 1 as of 2005.

CCI Rank	1997	1998	1999	2000	2001	2002	2003	2004	2005
CS's Ownership Share	30%	33%	27%	34%	33%	37%	39%	40%	43%
CCI Rank	6.5	5.7	5.3	4.4	1.3	1.1	1.1	1.1	1.0

*For those groups that are under regulation both in 1997 and in 2001.

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