

# Changing Faces of Network Capitalism in Korea: A Case of Corporate Board of Directors' Network\*

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*The concept of network capitalism among scholars was coined to capture unique characteristics of East Asian market (Gerlarch and Lincoln 1992; Biggart and Hamilton 1992). The goal of this paper is to examine the changing faces of network capitalism in Korea after the economic crisis in 1997 particularly focusing on the composition of corporate board of directors. Our research questions are: (1) Has the “homophily” rule of group composition dominant in the boardroom prior to the economic crisis shifted to “functional” rule after the economic crisis?; (2) What types of firms, if any, rely on homophily more heavily than others? Major findings of our paper are summarized as the following. First, corporate boardrooms in Korea are still dominated by directors who graduated from top-tier high schools and universities. We also have observed high levels of concentration of directors representing specific schools and regions. The analyses of inequality of high school, college, and region measured by Gini indices and their dominance ratios show that a strong “homophily” effects still operate in the boardroom of Korean firms throughout the observed period. Second, the homogeneity of board members began to decline before the economic crisis, but it increased as firms overcome financial difficulties. Third, larger firms tend to have a higher level of heterogeneity in the boards of directors. Older firms also have lower level of homophily in the board. And lastly, debt ratio has the significant and positive relationships with all three dominance ratios.*

**Keywords:** board of directors, network capitalism, regional ties, school ties, homophily, heterogeneity, economic crisis

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\* Earlier versions of this paper were presented at the *Professors Colloquium at Yonsei University* and at the *Korean Studies Center University of California, Berkeley*. The latter institution provided a seed money for this research. We give special thanks to all commentators who suggested insightful criticisms, including professor Hong Young Lee, Chung-in Moon, Sangyoung Lew, Yonho Lee. Three anonymous reviewers also provided five pages of detailed comments which helped us revise the paper. Direct all correspondence to Yong Hak Kim (E-mail: yhakim@yonsei.ac.kr; Telephone: 822-2123-2426).

## INTRODUCTION

The concept of network capitalism was coined to capture unique characteristics of East Asian market, which are quite different from those found in advanced capitalism. Scholars, however, used the term in various ways focusing on different aspects of the East Asian market (Hamilton 1998; Biggart and Hamilton 1992; Greenhalgh 1988). Some used the term to describe the *State-Business* relation in which the state functions like a head-quarter of an M-firm (Evans 1995). They focus on how the state manages and regulates private firms embedded in a set of “political-bureaucratic-business” nexus, which are routinely mobilized for an effective state-policy implementation (Moon and Prasad 1994). Others focused on the institutional linkages among firms as found in Japanese *Keiretsu* networks or Korean *Chaebols*. Unlike the market in the West, a long term durable contract relation based on high trust exists among firms (Dore 1992; Macaulay 1992; Gerlach and Lincoln 1992; Gerlach 1992; Granovetter 1994). Relations among business and financial institutions constitute the *Quasi-internal Capital Market* (Lee 1992; Islam 1994),<sup>1</sup> whose equivalent is not observed in the West. Still others noted personal networks in market transactions as a key aspect of network capitalism, such as the Chinese business network (Bian and Ang 1997).

More recently, especially after the *IMF* bailout of *Korea* in 1997, scholars studying network capitalism focused on the corporate governance structure. Analyzing the cause of Korean economic crisis, they focused on CEOs and managers of big businesses, who are interlinked by regional, kin or school ties. Big business groups, once praised as a locomotive of Korean economic development (Granovetter 1994; Gerlach and Lincoln 1992; Gerlach 1992; Biggart 1991; Biggart and Hamilton 1992; Lincoln and McBride 1987; Orru 1991), were regarded as the prime source of low economic efficiency representing crony capitalism. For instance, Korean corporate governance were regarded as lacking a public “check and balance system” because of the tight family control (Beck 1998: 1020). The board members are recruited via personal connections with the owner, not by functional expertise (Chang, 2001; Biggart 1990). Although this management practice is also found in western countries (Hillman, Zardkoohi, and Bierman 1999), it has been criticized as crony capitalism widespread in *East Asian* countries (Krugman 1998; Wei 2000; Wei and Wu 2001).

The goal of this paper is to examine the changing faces of network capitalism in Korea focusing on the structure of corporate governance, more specifically, the composition of corporate board of directors. The economic crisis of 1997 forced Korean corporations to reshape their institutional arrangement of board of directors, either by market forces or by the

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<sup>1</sup> When the capital is mobilized and allocated internally within a business group rather than from the external capital market, a business group is said to function efficiently because allocating resources within, e.g., *Keiretsu* as an “information club,” can benefit timely and accurate information obtained from member firms (Goto 1982).

reform measures implemented by the government. It was a very common practice before the 1997 economic crisis that Korean firms relied heavily on personal connections when recruiting their board members (Shin and Chin 1989). It was an efficient way of reducing behavioral uncertainty such as shirking, thus promoting personal trust via the third party monitoring in a clique (Burt 1992). Has the compositional rule of the board members changed after the economic crisis 1997? This is the central question we tackle in this paper. We also analyze if school or regional ties among board members are more prevalent in certain industries than others reflecting industry characteristics.

### IMPACT OF ECONOMIC CRISIS ON CORPORATE BOARDROOM COMPOSITION IN KOREA

Connections are important in every society, including advanced industrial nations. Be it an old boys' network, a *guanxi*, an alumni network, or an F-connection, a personal connection looms large in business and politics (Yang 1994; Ben-Porath 1980). Korean firms in particular had relied heavily on *personalistic ties* to reduce the risk because of high in-group trust but extremely low trust outside the group boundary (Fukuyama 1996; Hamilton and Biggart 1999; Kim EM 1991). Three *yonjuls* — regional, school, and kin ties — are the most salient networks. Family members of a *chaebol* owner headed its subsidiary companies as CEOs and managers. For instance, analyzing one hundred largest Korean firms in 1978, a study reports that about 21% of the total number of executive positions in these corporations was occupied by individuals who had some type of “family tie” with the owners (Shin and Chin 1989). They interpreted that a “trust” factor was a main cause of these kin ties between the owners and executives. An analysis of 1997 data also shows that kin connections got stronger over the past 19 years; 63% of *chaebol* founders' sons, 37% of founders' siblings, and 20% of siblings' sons occupy the respective *chaebols'* top managerial positions (Chang 2001).

Apparently personalistic ties have continued to condition the Korean economy despite the rapid advance of industrialization and democratization. Against the contention of modernization theories arguing that industrialization and capitalism breed universalism, and that meritocracy eventually erodes traditional social arrangements (Tönnis 1971: 76-98; Durkheim 1933: 203-4; Lerner 1958: 183-89), particularistic ties have not attenuated in modern Korea (Chang, Y. 1991). When corporate finance is not transparent, top managers are prone to rely on personal networks to circumvent fraud, shirking or rent-seeking of employees.

Yet, the economic crisis of 1997 asked traditional mode of business practices to introduce rationalized mode of corporate governance strongly recommended by IMF. In February of 1998, two months after the IMF bailout, the government introduced a new law to increase the outside supervision and accordingly transparency of corporate governance. The law mandated that all listed companies in *Korea Stock Exchange* should appoint at least one and at least one

fourth of all directors from outside. Two years later in 2000, additional measure was introduced for large corporations whose asset exceeds 2,000 billion *Won*; the number of outside directors must be at least three and at least a half of the board.

How did the firms respond to this sudden introduction of new law? Would they still recruit outside directors based on personal connections? A research carried out right after the introduction of this law has shown that the reliance on personal network declined due to the firms' effort to cope with the bad economic situation (Lim and Lee 1998). Unfortunately, however, this time sliced study awaits a follow-up study. We trace over time (1995-2002 period) to examine how Korean firms reshaped their board, responding to the new law and to overcome the shock of economic crisis of 1997.

Unlike most previous research that restrictively focused on the family members of *chaebol* founders, this study starts with directors to examine if they have *yonjul* relations with the top management, i.e., CEOs. To do so, we extend our analysis to cover not only *chaebols* but also all enlisted companies in the *Korea Stock Exchange*. Was there a significant change in the composition of the board after the economic crisis of 1997, possibly away from the "homophily" to "functional" rule of group composition? The *mechanism of homophily* explains group composition in terms of the similarity of members' characteristics such as regional origins, schools, and kinship. The *mechanism of functional rule*, on the contrary, asks groups to be composed of members with diverse achieved characteristics, e.g., leadership, occupational competency (Ruef, Aldrich, and Carter 2003).

Did the government regulation actually reduce the homophily in the board composition? More specifically, our research questions are as follows: First, how strong is the *homophily* effect before the crisis? Has it changed after the 1997 economic crisis? In other words, has the rational restructuring of the corporate governance to overcome the economic crisis reduced the relative importance of personalistic ties among board members? Secondly, what types of firms, if any, rely on homophily more heavily than others?

## DATA AND BASIC STATISTICS

To examine the sudden impact of the economic crisis on the board composition, we had to collect data covering some years *before* and *after* the crisis during 1995-2002. The primary data source was "Who is Who in Korean Top Management," published by *The Council of Enlisted Firms in Korean Stock Market*. From this source, we compiled information about personal characteristics of *board* members of each enlisted company, such as their regional origin, schools (high schools and universities they graduated) and socio-demographic variables. On-line databases such as [www.joins.com](http://www.joins.com), [www.inmul.donga.com](http://www.inmul.donga.com), [db.chosun.com](http://db.chosun.com) and [www.yonhap.news.co.kr](http://www.yonhap.news.co.kr) were searched additionally to fill up the missing data. Firm

characteristics (1991-1999) then were collected by using *Korea Information Service*, *SMAT* (Stock Market Analysis Tool) and *FAS* (Financial Analysis System).

Table 1 shows the number of firms, the total number of directors listed in “*Who is Who in Korean Top Management*,” and the average number of board members of the firm each year during the period. The unit of observation is the firm-year-person. The number of firms reached the peak in 1997 and steadily declined after the crisis. The total number of board members and the mean board members started to decline from 1998 while the size of outside board members increased. This can be interpreted in two ways. First, firms were economizing the board size by eliminating unnecessary board members after the economic crisis. Secondly, they merely responded to the law that outside directors must exceed one fourth of all directors; in order to appoint a smaller number of outside directors, the firm has to reduce the size of the board.

Table 2 lists the top high schools and universities that produced largest number of board of directors. It is interesting to note that the rank order corresponds almost perfectly to the common-sense ranking of school reputation. The concentration in the top nine high schools and universities was amazing because they produced 32% and 72% of total directors respectively; the top tier high schools such as “*Kyunggi High School*” and “*Kyungbok High School*” has a lion’s share; directors who graduated *Seoul National University* (27.13%), *Korea University* (10.8%), and *Yonsei University* (9.75%), the big three, constituted almost a half of the total number of directors in Korea. Such a high concentration in the top educational institutions is even more impressive considering the fact that there are more than two thousand high schools and two hundred universities in Korea. Such an unequal distribution of resources and privileges results partly from school connections among managers and directors in recruitment processes, a common practice in Korean society.

Previous studies have shown that regional connections are also very important variable in explaining the elite recruitment in Korea. Table 3 shows descriptive statistics of regional origin

**Table 1.** Number of Firms and Directors by Year

Year	Number of Firms	Total Number of Directors	Average Number of Directors in the Board	Outside Board Members (%)
1995	692	8,232	11.9	0%
1996	725	8,263	11.4	0%
1997	755	8,156	10.8	0%
1998	733	6,968	9.5	11%
1999	704	5,984	8.5	22%
2000	693	5,472	7.9	27%
2001	681	5,172	7.6	28%
2002	666	4,864	7.3	28%

**Table 2.** Number of Directors from Top High Schools and Top Universities

High School	Frequency	%	University	Frequency	%
<i>Kyunggi</i>	3,237	8.25	<i>Seoul National</i>	12,882	27.13
<i>Kyungbok</i>	1,711	4.36	<i>Korea</i>	5,168	10.88
<i>Seoul</i>	1,672	4.26	<i>Yonsei</i>	4,630	9.75
<i>Kyungbuk</i>	1,184	3.02	<i>Hanyang</i>	3,818	8.04
<i>Pusan</i>	1,136	2.89	<i>Sungkyunkwan</i>	2,389	5.03
<i>Kyungnam</i>	1,070	2.73	<i>Pusan</i>	1,397	2.94
<i>Taejon</i>	828	2.11	<i>Chungang</i>	1,404	2.96
<i>Yongsan</i>	811	2.07	<i>Youngnam</i>	1,279	2.69
<i>Chungang</i>	747	1.90	<i>Donguk</i>	1,136	2.39
Miscellaneous	26,858	68.42	Miscellaneous	13,384	28.18
Missing	13,857	-	Missing	5,624	-
Total	53,111	100.00	Total	53,111	100.00

of directors. Directors from *Youngnam* region occupied the highest proportion (33%) followed by Seoul (31%); over 60% of the directors are from these two regions constituting the majority, 1.7 times more than the proportion of population size 55 years ago.<sup>2</sup>

We have observed over-represented numbers of directors from specific schools and regions. To see if these school and regional inequalities increased or decreased after the economic crisis, we calculated the *Gini* index,<sup>3</sup> a standard measure of inequality. Figure 1 summarizes the changing degree of inequality. Inequality for “university” and “high school” is huge but shows a sign of slight decline. The magnitude of *Gini* indices (around 0.75) reveals that only a few educational institutions enjoy a lion’s share, as we already noted in Table 2. The regional inequality has also declined somewhat dramatically due to the fact that the proportion of *Youngnam* region decreased while that of *Hanam* increased, reducing the gap between the two regions. The number of social elites from *Honam* skyrocketed after the regime change from the president *Young Sam Kim* representing *Yongnam region* to *Dae Jung Kim* representing *Honam region* in 1998. A change of political leader has indeed reshaped the power distribution among regions, and the corporate sector was no exception.

After reviewing descriptive statistics and the macro trend, we now turn to the firm level to examine if board members were less likely to be recruited via personal connections such as school, regional ties after the economic crisis.

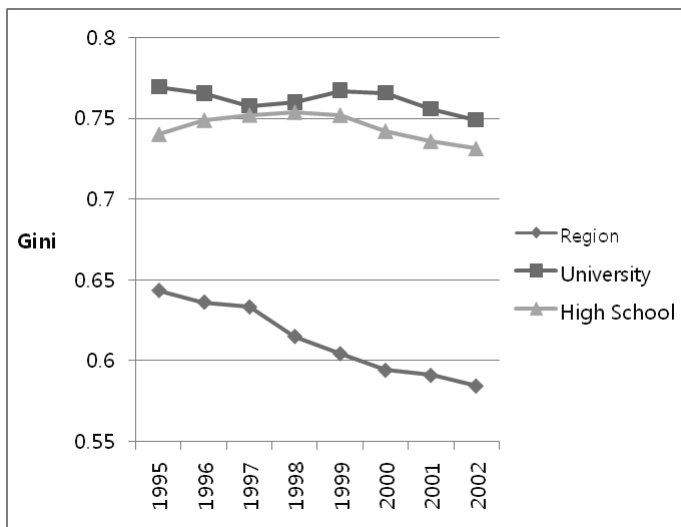
<sup>2</sup> Population size of 1949 was used because the mean age of board members was 53.8. The population of each province in 1949 was the earliest government statistics that allowed us to control population size. The statistics are obtained from the Korean Statistical Information System (KSIS) of the Korea National Statistical Office (KNSO).

<sup>3</sup> *Gini* index is measured as  $G = 1 - \sum_i (X_i * (Y_{i-1} + Y_i))$  where  $x_i$  is the relative size of group  $i$ ,  $Y$  is the fraction of board of directors produced by group  $i$ , sorted by the magnitude of the fraction. It varies from 0 (perfect equality) to 1 (perfect inequality).

**Table 3.** Director's Regional Origin

Region	Frequency	Percent
Youngnam	16,500	33.29
Seoul	15,442	31.16
Choongchung	5,451	11
Honam	4,673	9.43
Kyunggi	3,958	7.99
Kangwon	1,213	2.45
Northern	1,049	2.12
Foreign	935	1.89
Jeju	342	0.69
Missing	3,548	-
Total	53,111	100

**Figure 1.** Changing Inequality in Board Composition



**Measuring Homophily**

If directors of a company are recruited based on personal connections, it is likely that CEO of the company and board members share common characteristics, e.g., they share the regional or school origin. To test if this is the case and how strong is the homophily effect, we first define the *dominance ratio* as  $DR = R_{max} / \sum R_i$ , where  $R_{max}$  is the number of directors from a majority group and  $\sum R_i$  is the total number of directors. For example, if a board of directors consists of four directors from region A, and one from each region B C D, then the dominance ratio would

be  $4/7$ ,<sup>4</sup> and the dominant group is the majority group  $\underline{A}$  ( $R_{\max}$ ). Intuitively, we hypothesize that if a CEO is from region A, then A is likely to be dominant in the board of directors. We first examine the degree to which CEO's original region matches the dominant region in that firm.

The rightmost column of Table 4 shows the percentage of CEO's regional origin matching the dominant region in the board. When CEOs' regional origins are *Seoul*, *Youngnam*, or *Honam*, the dominant group in the board tends to match CEO's region (the percentage of match ranges from 73.4% up to 83.7%). *Honam* occupies only 9% of total directors, but they become dominant group seven out of ten times when the company's CEO is from *Honam*. The interpretation of the lower match percentage in *Kangwon*, *Kyunggi*, *Choongchung*, *North*, and *Foreign* is cautionary because they produced too small numbers of CEOs to generalize.

As for the percent matched between CEO's university and the dominant university, *Seoul National University* again shows an exceptionally high percent matched (83.3%). Considering the high proportion of directors from this prestigious university in the sample (27.13%, see Table 3) some may argue correctly that the high percent match for *Seoul National University* is merely a result of the high proportion of directors in the sample, i.e., the percent match does not separate out the confounding effect of the group size. Because our prime goal is to compare the changing percentages over time (particularly, before and after 1997 economic crisis), we could still use it, because this confounding effect remains the same across time. Our analysis shows that there seems to be a slightly stronger homophily effect for high school than for university. Eighty two percent of the companies, whose CEOs graduated from *Kyunggi High*

**Table 4.** CEO's Regional Origin matching the Dominant Region

CEO's Region	N (firm-year)	Percent	Matched (CEO's Region is Dominant Region)	Percent matched
Seoul	780	26.7	653	83.7%
Kangwon	83	2.8	8	9.6%
Kyunggi	199	6.8	80	40.2%
Youngnam	1092	37.3	868	79.5%
Honam	263	9.0	193	73.4%
Cheju	6	0.2	5	83.3%
Choongchung	235	8.0	93	39.6%
North	237	8.1	17	7.2%
Foreign	32	1.1	8	25.0%
Total	2927	100%	1925	65.8%

<sup>4</sup> The Dominance ratio is similar to Peter Blau's heterogeneity index. Blau's heterogeneity measure is given by  $1 - \sum_i p_i^2$ , where  $p_i = R_i/\Sigma R_i$ . Using the same example above, Blau's heterogeneity =  $1 - ((1/7)^2 * 3 + (4/7)^2) = 0.61$ . Since we are interested primarily in the majority group in the board, we used the dominance ratio instead.

**Table 5.** CEO's Educational Background and Dominant groups in the Board

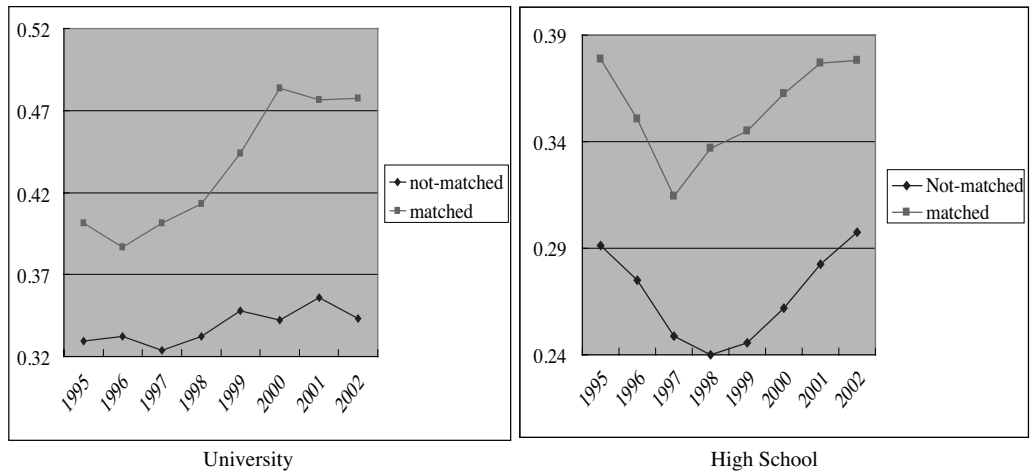
CEO University	N (firm-year)	%	CEO University = Dominant University	% Matched
Seoul National Korea	658	27.9	548	83.3
Yonsei	236	10.0	79	33.5
Hanyang	251	10.7	110	43.8
Sungkyunkwan	182	7.7	41	22.5
Pusan	56	2.4	15	26.8
Chungang	52	2.2	12	23.1
Youngnam	66	2.8	18	27.3
Donguk	17	0.7	12	70.6
Miscellaneous	72	3.1	3	4.2
	765	32.5	50	6.5
<b>Total</b>	<b>2355</b>	<b>100.0</b>	<b>888</b>	<b>37.7</b>

CEO's High School	N (firm-year)	%	CEO's High School = Dominant High School	% Matched
Kyunggi	363	14.6	299	82.4
Kyungbok	158	6.4	107	67.7
Seoul	163	6.6	103	63.2
Kyungnam	44	1.8	26	59.1
Kyungbuk	44	1.8	30	68.2
Yongsan	85	3.4	35	41.2
Chungang	75	3.0	38	50.7
Pusan	46	1.9	40	87.0
Taejon	24	1.0	10	41.7
Miscellaneous	1476	59.6	316	21.4
<b>Total</b>	<b>2478</b>	<b>100.0</b>	<b>1004</b>	<b>40.5</b>

*School* recruit major portion of board members from the same high school.

We now examine if the effect of school connections has changed after the economic crisis. Figure 2 shows the average university/high school dominance ratios of two groups over time; “matched” (CEOs’ school matches the dominant school in the board) and “unmatched” groups. Before the crisis, firms began to reduce the proportion of directors graduated from a single majority school. Yet, right after the crisis, i.e., after the introduction of the law mandating outside directors, the proportion of dominant school has increased. Interestingly, the matched group shows a sharper increase than the “unmatched” group. In the year 2000, the matched group peaks at a 0.5 level, i.e., a half of directors were university alumni of the CEO, while the unmatched group slightly decreases to about 0.34. Decision makers in firms, be it the CEO or the board members, have relied more heavily upon personal ties when recruiting board

**Figure 2.** University/High School Dominance Ratio

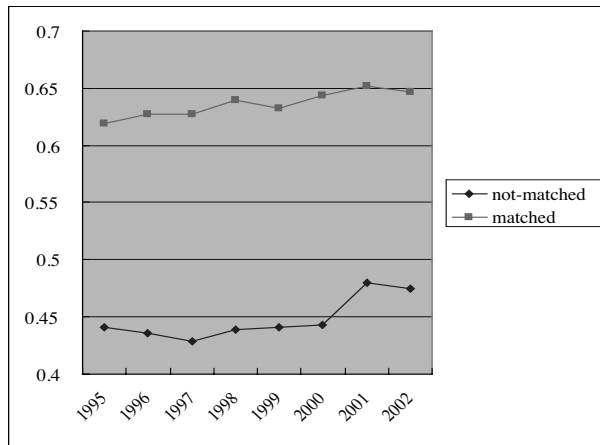
Notes | Matched: CEO graduated the dominant school in the board  
 Unmatched: CEO did not graduate the dominant school in the board

members, even in the face of strong government pressure that demanded a rationalization of corporate governance. Another possibility was that when they reduced the size of the board, they fired those who do not share school connections. In case of high school dominance ratios, the same pattern is found.<sup>5</sup> One notable distinction between the high school and the university is that there was a “dip” in case of high school during the economic crisis in 1997 and 1998. In short, while the dominance ratios of both the “matched” and the “unmatched” group declined before 1997, the trend moved to the opposite direction after 1997 (for the matched group), or after 1998 (for the unmatched group).

We also analyzed the *regional* dominant ratios of matched and not-matched companies (Figure 3). The dominance ratio of the former group is distinctly higher (all statistically significant,  $p <= 0.001$ ) than the latter group. In addition, the dominance ratios of both groups, with some fluctuations, have increased over time. Even after the economic crisis of 1997, the regional homophily effect seems to be strengthening but not significantly.

The above analysis has shown only a macro trend of increasing alumni concentration or decreasing heterogeneity in the board composition after the economic crisis. To examine the school alumni effect for each specific school, we reanalyzed the dominant ratio by the university and the high school from which the CEO of each firm graduated. The questions we raise are 1) Does the alumni concentration in the board vary from school to school? 2) Does the trend of alumni concentration change after the economic crisis? We selected the top seven

<sup>5</sup> In all periods, the t-test of regional and school dominance ratios by match/non-match shows a statically significant difference at the .0001 level.

**Figure 3.** Regional Dominance Ratio

Notes | Matched: CEO's regional origin is the same as the dominant region in the board  
 Unmatched: CEO's regional origin is different from the dominant region in the board

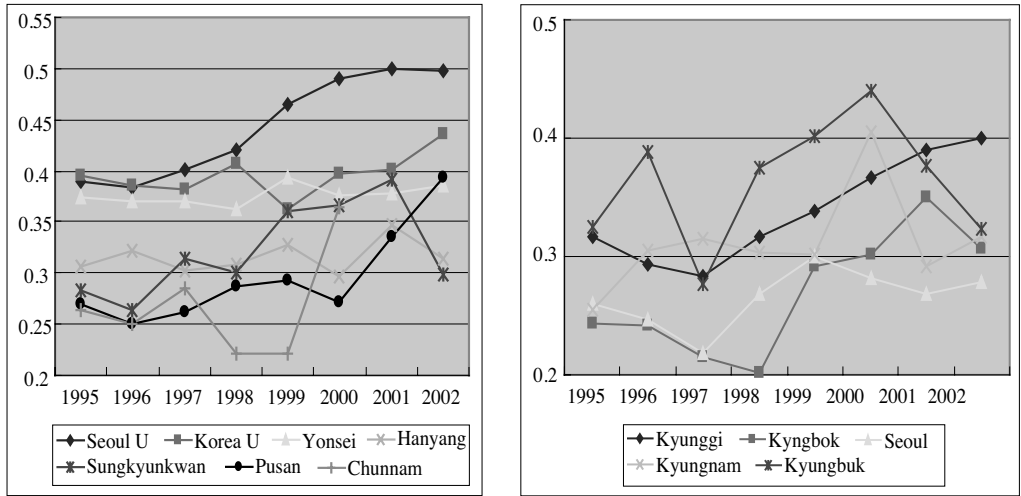
universities and the top five high schools that produced largest numbers of board members in Korean enlisted companies. Figure 4 reveals a remarkable trend. The dominance ratios of the most prestigious educational institutions in Korea, i.e., *Seoul National University*, and *Kyunggi High School*, have increased drastically after the economic crisis, reaching the top in 2002. Other institutions fluctuated with a general linear upward trend.

We interpret this trend as follows. The introduction of the new corporate governance law forced all enlisted firms to hire outside board members. Firms face high uncertainty concerning their behaviors. To reduce the risk and to keep the outside board members at arm's length, all CEO's have strong incentives to rely more heavily on alumni relations. Then why was there a heavier concentration in top schools? Legitimacy in terms of qualifications of outside board members becomes an important issue. The most prestigious institutions enjoy the largest pool of candidates because they have produced the largest number of social elites in every sector of society. Therefore, CEO who graduated from the most prestigious schools could recruit alumni board members rather easily whose qualifications did not become a legitimacy issue because of the signal effect school names (Spence 1994).

## DETERMINANTS OF HOMOPHILY

In order to investigate factors that explain different degree of alumni and regional concentrations in the board measured by the dominance ratio, we conducted OLS regression analyses. Three dependent variables, the dominance ratio of region, high school, and university

**Figure 4.** Mean Dominance Ratios by University/High School



were regressed on the industrial sector of the firm and firm characteristics. Table 6 presents a result of OLS regression with industry coded with dummy variables, economic crisis (a dummy variable coded 1 if the firm-year is after the economic crisis, and 0 otherwise), sales, board size, return on assets, return on sales, firm age, and debt ratio as the independent variables.<sup>6</sup> A control variable named *Hometown* was included in the regression analysis of the regional dominance ratio to control the effect of the location of the corporate headquarter; if the headquarter of the firm is located at the CEO’s hometown, the regional dominance ratio must be higher.

The analyses revealed interesting results. First of all, with service and transportation industry as the base, firms in construction industry showed significant and negative relationships with all three dominance ratios ( $p < 0.001$ ). Construction industry showed the lowest level of dominance ratios, i.e., the most heterogeneous board composition. This finding can be interpreted as the following. Firms in construction industry face high uncertainties in its task environments. According to Stinchcombe (1959), they share the structure of “craft organization” because the input side market as well as the output side market is extremely unstable; thus they differed from other industry in resisting bureaucratization and Taylorization because inflexibility to them meant organizational death. To cope with high external uncertainties, construction firms need to maintain diverse networks to keep the market at arm’s length (Aldrich 1979). Making good connections with the influential external groups may determine the fate of their businesses. If directors of a firm are recruited from diverse regions and schools, it has a definite advantage in connecting diverse functional areas needed for

<sup>6</sup> Additional analyses were conducted with three heterogeneity measures instead of domination ratios as the dependent variables regressed on the same independent variables. They produced very similar results as in Table 9.

**Table 6.** Regression Analyses of Dominance Ratios (firm-year)

Variables	Regional Dominance			University Dominance			High School Dominance		
	Coeff.	S.E.	Sig. <sup>b)</sup>	Coeff.	S.E.	Sig.	Coeff.	S.E.	Sig.
Intercept	0.86212	0.12886	***	0.21233	0.11574		0.98474	0.15026	***
Industry <sup>a)</sup>									
Manufacturing (D)	-0.04659	0.01038	***	0.00392	0.00931	-	-0.0157	0.01209	-
Construction (D)	-0.10044	0.01476	***	-0.06557	0.01327	***	-0.08166	0.01722	***
Financial (D)	-0.05874	0.01273	***	0.02577	0.01143	*	-0.02405	0.01484	-
Economic Crisis (D)	0.00713	0.00601	-	0.02005	0.0054	***	-0.02401	0.00701	***
Sales (Log in Billion Wons)	-0.02563	0.00213	***	0.00516	0.00191	**	-0.02939	0.00248	***
Board Size (Number of Directors)	0.20203	0.12298	-	0.04243	0.11052	-	-0.0354	0.14348	-
ROS	0.000529	0.000294	-	0.000386	0.000264	-	0.000618	0.000343	-
Firm Age (Years)	-0.0005	0.000243	*	-0.00017	0.000218	-	-0.00168	0.000283	***
Debt Ratio (Total Debts/ Total Assets)	0.01358	0.00649	*	0.01426	0.00583	*	0.01623	0.00757	*
Home Town Dummy	0.20555	0.00791	***						
Adjusted R-Sq		0.2267			0.02			0.0758	
N		3442			3442			3442	

Notes | <sup>a)</sup> Base Industry is Service and Transportation.

<sup>b)</sup> \*  $p < 0.05$ , \*\*  $p < 0.01$ , \*\*\*  $p < 0.001$ .

survival.

Interestingly, the economic crisis measured by the dummy variable produced mixed results. Controlling all other independent variables, the economic crisis increased the university dominance ratio ( $p < 0.001$ ), but it decreased the high school domination ratio ( $p < 0.001$ ). Its impact on regional dominance was not significant. The possible explanations for these seemingly contradictory results are presented as the following. A careful reexamination of the pattern in Figure 2 leads us to find that the mean level of high school homogeneity of board composition was a bit higher before the crisis, so that the dummy variable effect capturing the mean difference before and after the crisis was negative. The mean level of university heterogeneity, however, has become much higher after the crisis, producing a positive dummy variable effect.

Firm Size measured by the log sales in billion *Wons* had significant and positive relationships with all three dominance ratios. In short, large firms tend to have heterogeneous board composition in terms of directors' regional origins, universities, and high schools. This result is consistent with the existing literature that found board heterogeneity increases with firm size (cf. Goodstein, Gautam, and Boeker 1994). Since larger firms are typically faced with more contingencies than smaller firms in their task environments, they need directors with

diverse backgrounds to deal with these diverse uncertainties.

Board size measured by the number of directors in the board did not have impact on any of the dominance ratios in our analyses. To check if there is multi-collinearity between firm size and board size, the VIF (variance inflation factor) was run in the regression option, yet it was within a tolerable limit. Also, there was only a marginal correlation between Firm Size and Board Size ( $r = 0.07$ ). Firm Age had significant and negative relationships with two dominance ratios ( $p < 0.05$  for regional dominance and  $p < 0.001$  for high school dominance). Usually startup firms prefer homogeneity in the board because of high trust. As they stabilize, they confront the need to incorporate different demographic traits from below or from outside. Frankly, we cannot interpret why university homogeneity, unlike cases of region or high school, did not drop as the firm gets older.

Debt ratio measured by the total debts over the total assets had significant and positive relationships with all three dominance ratios ( $p < 0.05$ ), i.e., firms with large debts have high level of dominance ratios in the board. One may be tempted to say that homogeneity of board members results in low performance as to increase the debt. We find that firm's profitability, measured by return on sales, has a positive relationship with dominance ratios even though its significance level is not high ( $p < 0.1$ ).

Looking at more closely the results reported in Table 9, one can notice that three dominance ratios are grouped into two different kinds. Regional and high school dominance ratio are considered as the same kind because the signs and the significance of independent variables behaved in a very similar way, different from those of university dominance. Regional connections and high school connections overlap because many people go to high school in their hometown. They function similarly because they are functional substitutes. That is for most board members, high school ties are virtually indistinguishable with regional ties.

## DISCUSSIONS

In this paper, we have examined the changing faces of network capitalism in Korea after the economic crisis of 1997, focusing on the composition of corporate board of directors. The main research question is if the common practice of recruiting board members based on personalistic ties has changed after the crisis because of rationalization pressure on corporate governance. The major findings of our analyses are summarized as the following. First, corporate boardrooms in Korea are dominated by directors who graduated from top-tier high schools and universities. Ten top-tier high schools occupy the seats of more than thirty percent and three top-tier universities constitute nearly a half in the boardroom. Although there is a gradual change in the board composition, the prevalence of directors from premier schools has not declined.

Second, examining the composition of the firm level board, we have observed high levels of concentration of directors representing specific schools and regions. The analyses of inequality measured by *Gini* indices and dominance ratios show that a strong “homophily” effects still operate in the boardroom of Korean firms throughout the observed period. The homogeneity of board members began to decline before the economic crisis, but it increased as firms overcome financial difficulties. Then the question is “will the effect of homophily continue to rule the network capitalism even in the face of globalization?” Our answer is mixed: “yes” in the short-run, and probably “no” in the long-run. It is hard to deny that homophily will continue to persist in Korea. Yet, one can also find evidences of change. If we examine dominant ratios before the crisis closely, there is a downward movement of homogeneity of board members indicating firms were readjusting voluntarily to the coming of financial difficulties. *Gini* indices for regional origin, high school, and university also moved downward, although somewhat slowly during the period. Competition for survival under global market pressure may well reduce homophily.

Another evidence to support gradual deterioration of homophily is provided by the opposite movement of inequality measure of undergraduate major which climbed up rather sharply after the economic crisis of 1977. An increasing proportion of “business,” “economics,” and “law” majors in the board reflects the need for the firms to deal with critical strategic business and legal issues triggered by the economic crisis. That may support the notion of “functional rule” of the board’s expertise and explain in part the decreasing trend of homophily in the board. The last clear evidence of all comes from the regression analyses of domination ratios. The result shows that construction industry has the lowest domination ratio, i.e. the highest heterogeneity in the boardroom among all industries. It may well be the case that firms in a competitive and highly uncertain industry such as construction need diverse networks spanning diverse task environments (Stinchcombe 1959). Construction firms have been described as craft organizations that face high uncertainties in the business environments. To cope with high external uncertainties, firms need to maintain diverse networks to keep the market at arm’s length. Also, it is also worth mentioning about a unique characteristic of construction industry in Korea. Construction in Korea has been known as an industry where a wide range of external networking activities are required to deal with various regulatory groups such as government and politicians (Kim and Park 2004). In making connections with these influential external groups that affect their businesses, firms that have directors with various regional and educational backgrounds have definite advantages over those having homogenous background. This logic provides the basis of prediction that firms will add more diversity in the board and utilize their diverse personal ties to more effectively manage increasingly diverse demands from the task environments in the long run.

Third, larger firms tend to have a higher level of heterogeneity in the boards of directors. This result is consistent with the existing literature that found board heterogeneity increases

with firm size (cf. Goodstein, Gautam, and Boeker 1994). There seem to be two intervening mechanisms to explain this. First mechanism is the growth of managerial internal labor markets in large firms. In large firms, heterogeneity in the board composition increases because a large number of managers participate in fiercely competitive game to get promoted to directors. In an intensified tournament, there is no guarantee that managers from a particular region or a school are heavily preferred over those from other regions or schools. The second mechanism is the growing complexity in the firm's task environments with growing size. When firms grow, the kinds and the magnitude of the environmental elements expand sharply. In dealing with environmental complexities, firms need a variety of directors with different backgrounds.

Fourth, older firms also have lower level of homophily in the board. The older the firm, the higher the chance the firm has in dealing with the new environmental conditions. This, in turn, increases the need to replace the old directors with the new ones with different demographic traits. On the other hand, newly founded firms would prefer homogeneity in the management teams because of its higher interpersonal trust.

Last, debt ratio has the significant and positive relationships with all three dominance ratios. Firms with homogeneous board members tend to have larger debts. One possible explanation is that homogeneity lowers performance. In fact, firms' profitability declined with the increasingly homogenous board members at the significance level of 0.1. To confirm our tentative interpretation, we need more data over longer period of time.

There are certain limitations of our study. First, since we primarily concentrated on a small set of demographic characteristics of the directors, our results should be interpreted with caution. There may be the other demographic and individual characteristics among directors such as functional expertise, career, age, and their external ties that influence the board composition.

Second, one of the most important characteristics in Korean corporate governance is the role of family owners. In our paper, we did not distinguish whether the CEOs are owners or professional managers. In selecting new directors, the selection rule may be activated differently depending on whether the CEO is the owner or the professional CEO. For example, since the owner-CEO is more powerful in hiring directors than the professional-CEO, the demographic similarity between the owner-CEO and the directors will be much stronger than that between the professional-CEO and the directors (cf. Mace 1971; Pfeffer 1972; Westphal and Zajac 1995). In future study, it will be interesting to investigate the different dynamics in the board composition between the two remarkably distinct governance mechanisms.

Third, we did not look at strategic orientations of the firm. The existing literature argues that board composition is influenced by CEO succession and firm's need for strategic change (Finkelstein and Hambrick 1995). An intriguing question is which of the factors is more powerful in explaining the composition of the board among director attributes, CEO characteristics, or firm's strategic contingencies. Future studies on this subject will reveal what

is going on at the core of corporate governance system in Korea.

To summarize, this paper examined how the economic crisis of 1997 reshaped the corporate governance by focusing on the board composition. We found out that board members are homogeneous in that they share same origins. Firms relied on personal networks to internalize and domesticate possible external threats. During the crisis and because of the law, there was a slight weakening of this practice, but regained its force right after. Resilience of business practice is strong, but we also find evidences that firms with high uncertainties tend to have heterogeneous board composition. The resilience of network capitalism under strong and growing global uncertainties remains to be seen.

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**[Submitted September 28, 2008; Accepted December 10, 2008]**