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College of Economics, Nihon University

# Evolution of the costs and benefits of business groups: Korean chaebols with pre-crisis discount and post-crisis premium

Keun Lee<sup>\*</sup>, Ji Youn Kim<sup>a</sup>, Oonkyu Lee<sup>b</sup>

<sup>a</sup> *School of Economics, Seoul National University, Seoul Korea*

<sup>b</sup> *Techno-Economics and Policy Program(TEPP), Seoul National University, Seoul, Korea*

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## Abstract

We examine Korean chaebols to analyze the long term evolution of the costs and benefits associated with a diversified business group. We find that Korean chaebol-affiliated firms have shown some dramatic changes in the costs and benefits along the three time periods (1984-1988, 1990-1995, and 2001-2003). Korean chaebol-affiliated firms did not suffer a value loss relative to non-affiliated firms in the 1980s and did so in the 1990s, but in the post-crisis period, they are rather experiencing value gains. Chaebol-affiliated firms' value loss/gains hold even after controlling for the relatedness of the diversification present within the chaebol. To identify the causes of this dramatic changes, we check whether chaebol firms: (1) pursue profit stability rather than profit maximization, (2) over-invest in low performing industries, (3) cross-subsidize the weaker members of their group, and (4) possess greater debt capacity and consequently enjoy lower tax burdens. Overall, in the 1980s chaebol firms have enjoyed various advantages including taxes but did not invest much excessively, but in the 1990s their performance decreased due to substantial over-investment, despite several advantages still holding. Now, after restructuring after the financial crisis, they (survived chaebols) have emerged as very profitable firms with less over-investment despite no longer tax advantages which show that they have become more transparent than before.

*JEL classification:* G32; G34

*Keywords:* Chaebol; Business groups; Value loss/gain

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\* Corresponding author. Tel.: +82-2-880-6367; [kenneth@snu.ac.kr](mailto:kenneth@snu.ac.kr) (Keun Lee).

## 1. Introduction

Business groups are found in numerous economies, including India (Bertrand, Mehta, and Mullainathan 2002; Ghemawat and Khanna 1998), Chile (Khanna and Palepu 2000b; Khanna and Palepu 1999b), Hong Kong (Au, Peng, and Wang 2000), and China (Peng 2000; Keister 1998), in addition to Japan and Korea where the Chaebols and the Keiretsu, respectively, have been symbols of economic growth. Since early works such as Leff (1978) and Goto (1982), there has been a surge of literature on the subject (Kock and Guillen 2001; Peng, Lee and Tan 2001; Khanna 2000; Khanna and Palepu 2000a, 1999a, 1997; Feenstra and Hamilton 1995; Guillen 2000; Granovetter 1994; Powell and Smith-Doerr 1994; Joh 2003 LaPorta, Lopez-De-Silanes and Shleifer, 1999, Shin and Park, 1999).

While performance comparisons between group firms versus stand-alone firms have been the central topic of academic research, the results have never been conclusive. For example, in earlier studies of the Japanese keiretsu, group affiliation is viewed as beneficial as Hoshi, Kashyap, and Scharfstein (1990, 1991), Prowse (1992) and Ferris, Kumar, and Sarin (1995) find that keiretsu affiliations lead to reductions in agency, bankruptcy, and monitoring costs as well as liquidity constraints. However, later studies of keiretsu such as Weinstein and Yafeh (1998), Morck and Nakamura (1999), and Kang and Stulz (2000), report significant costs to group membership due to the presence of an affiliated bank.

The studies on the Korean business groups have also shown diverging results although they are somewhat different from Japanese keiretsu.<sup>1</sup> Korean chaebols are large corporate groupings of firms that operate in unrelated industries, and they have become dominant during the mid-1960s (Jung, 1989), and contributed significantly to Korea's economic growth (Yoo and Lee, 1987). An earlier work by Chang and Choi (1988) using data for the 1970s and 1980s credits Chaebols with higher profitability relative to non-Chaebol firms. On the contrary, numerous recent studies, with the exception of Chang and Hong (2000), associate Chaebol firms with poorer relative efficiency. Choi and Cowing (1999) and Joh (2003) compare group-affiliated firms to non-group firms in the mid-1990s and confirm that the relative financial efficiency of Chaebol firms is lower. Using data for the period 1996–1999, Lee and Kim (2000) find that Chaebol affiliates are inferior to non-Chaebol firms with regard to productive efficiency. Using early to mid-1990s data, Ferris et al. (2003) also find that Chaebol-affiliated firms suffer a value loss relative to non-affiliated firms.

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<sup>1</sup> Ferris et al noted the following differences. First, chaebols use explicit centralized control, whereas the linkages within a keiretsu are more informal (Hattori, 1989; Shin and Park, 1999). Second, chaebols do not employ a “main” bank system (Hattori, 1989).

Based on the previous literature, it is obvious that a consensus does not exist concerning the net advantages that might result from membership in a business group. It is our view that one way to resolve this performance divergence issue is to take a long term perspective. Most existing studies have used data for different or short periods and have produced differing results. However, we employ longer-term data to examine the long-term performance of business groups in a consistent way. For this purpose, Korean chaebols should be a good choice for study as they underwent dramatic changes during the last decades including the financial crisis of 1997. In particular, we think that examination of the post-crisis period is quite important as the business groups have been subject to substantial reform and restructuring. There are now appearing many anecdotal stories that the survived business groups are now performing much better than stand-alone companies.

Methodologically, we replicate the work by Ferris et al (2003) exactly, while their study follows Berger and Ofek (1995), Lang and Stulz (1994), and Servaes (1996) that report the existence of a “diversification discount” in the value of a diversified firm or business group. Specifically, these researchers find that the diversified firm’s market value is less than the sum of the imputed market values of its component single-segment firms. Ferris et al (2003) find that chaebol-affiliated firms are in fact valued at a discount relative to comparable firms that lack a chaebol affiliation, and that the chaebol as an aggregate is valued less than the sum of the imputed value of its component firms. These results suggest that the discounted value of conglomerate firms is not merely a U.S. phenomenon, but exists internationally. While adopting the same method, we find that the situation has changed after the crisis with the chaebols doing better than stand-alone firms, valued at a premium to comparable firms, while during the 1980s there was no significant difference between the group firms and non-group firms.

As clues to the relative performance change, we check the following three hypotheses of over-investment, cross-subsidization, and related/unrelated diversification. The *over-investment hypothesis* as contended by Stulz (1990) is that diversified firms will invest too much in lines of business with poor investment prospects, thus adversely influencing their value, and this behavior has been explained by agency costs of owners who actually owned a very small share but control the whole empire owing to cross or circular shareholdings among affiliates, given the controlling minority structure of the firms (Bebchuk, Kraakman, and Triantis 2000). The *cross-subsidization hypothesis* predict (Meyer, Milgrom, and Roberts 1992) that failing business segments create more value loss as part of a conglomerate than as a stand-alone segment since independent firms have no parent to provide an operating subsidy.

Regarding *diversification hypothesis* we examine whether the business groups doing related, rather than unrelated, diversification, suffer less value losses.

While Ferris et al (2003) find all these three hypotheses are correct for the Korean chaebols and can explain the value losses, we find somewhat different results, especially for the post-crisis period. We find, during the 2001-03 period, that over-investment and diversification hypothesis has no much explanatory power while cross-subsidization has much weakened, and more importantly that profitability improvement is now reflected in the value premium associated with group firms.

We also examine the *profit stability hypothesis* (Nakatani 1984 and Prowse 1992) that the business groups tend to emphasize the stability of profits at the expense of profit levels. While Ferris et al confirms this hypothesis for the 1990, we find that after the restructuring chaebols boast higher profitability with less variations. Following Ferris et al (2003), we also examine the benefits that arise from membership in a business group. First is the high debt carrying capacity as Lewellen (1971) notes that by combining business segments with imperfectly correlated earnings, the risk of the firm's debt is reduced and thus increases the firm's debt capacity. This is often called the co-insurance effect that can operate in diversified firms. The firm's increased debt capacity subsequently generates increased tax shields and correspondingly less tax paid for the business conglomerate. We test for the increased use of debt by chaebols and whether any differences in leverage allow the chaebol to reduce its tax expenditures. We find that chaebols are significantly more levered than non-chaebol firms only during the 1990s, and thus chaebol firm's tax shield advantages has disappeared in 2001-2003, whereas there were some in the pre-crisis period.

The paper is organized as follows. In the next section, we describe the nature of the data and identify important characteristics of them in comparison with non-chaebols. Section 3 provides a measurement of the excess values of the Chaebols firms compared with non-chaebols. Section 4 examines the three sources for the churning performance (excess values) of Chaebol firms, such as over-investment, cross-subsidization, and diversification. Section 5 examines the advantage of Chaebols, such as debt capacity, tax advantages, and profit stability. Section 6 provides a synthesis of the overall results over the three sub-periods. The paper concludes in Section 7.

## **2. The Data and Characteristics of Chaebol Firms**

The main source of the data for Korean firms are the Korea Information Service (KIS) Value Plus and Korea Securities Research Institute (KSRI) Stock Database, while Ferris et al

(2003) relied on the Financial Statements File and the Monthly Stock Returns File of the Pacific Capital Markets Research Center (PACAP) Databases-Korea. The industry classifications are defined by the Korea Stock Exchange (KSE). In the literature, the term chaebol usually refers to the 30 largest business conglomerates, and since 1987 the Korea Fair Trade Commission (FTC) had provided the reports of the list and information of the top 30 chaebols based on asset sizes.<sup>2</sup> For the pre-1987 period, we have simply picked up the top 30 based on their total asset ranking in the Korea's Fifty Major Financial Groups( 50 ) published by Management Efficiency Research Institute ( ). Also, in determining whether or not a firm belongs to a chaebol, we use the Annuals of the Korean Firms ( ) published by Maeil-Business Newspaper( ). Using the Annuals, we make lists of the chaebol-affiliated firms and stand-alone firms every year, and have adjusted them in consideration of M&As, delisting or death, and name changes. For this kind of work, additional source was each firm's annual report( ) released open. Through this process, we have compiled the data base of the listed firms divided into chaebol-affiliated firms and non-chaebol firms during the 1984-88, and 1998-2003, and for the 1990-95 periods, we just use the results by Ferris et al (2003).

Following the usual practices, we limit our study to nonfinancial firms belonging to industries with certain size and at least five non-chaebol firms.<sup>3</sup> Of course, these sample selection criteria tend to reduce sample sizes to a certain extent.<sup>4</sup> We also eliminate certain chaebol group- year observations from our analysis because data is available for only one member firm. In case of the 2001-2003 period, we eliminate 21 chaebol group-year observations from our analysis because data is available for only one member firm, for the 1998-2000 periods, 14, and for the 1984-1988 period, 40 group-year observations are dropped, while Ferris et al (2003) dropped one chaebol(see Appendix – Table 7 for detail). Our final sample consists of 295 chaebol firm-year observations (with 81 chaebol group-year observations) and 818 non-chaebol firm-year observations in 1984-1988. In case of 1990-1995 (Ferris et al 2003), the numbers are 759 chaebol firm-year observations (with 173 chaebol group-year observations) and 1,316 non-chaebol firm-year observations. And we use 248 chaebol firm-year observations (with 57

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<sup>2</sup> There are some firms that are loosely affiliated with one another, but these 'minor' chaebol firms do not belong to a major chaebol group. Similar to Ferris et al (2003) and Shin and Park (1999), we eliminate these minor chaebol firms when we construct our sample.

<sup>3</sup> As stated in Ferris et al (2003), this sample screening criteria has the following reasons. First, operating income for financial firms is not meaningful. Second, sales must be significantly greater than zero to avoid distorted valuation multiples. Third, each industry must have at least five non-chaebol firms to obtain statistically meaningful industry medians.

<sup>4</sup> For instance, Ferris et al (2003) lose only 6.1 percent of our non-chaebol firm-year observations and only 1.8 percent of our chaebol firm-year observations in 1990-1995.

chaebol group-year observations) and 1,369 non-chaebol firm-year observations in 2001-2003.<sup>5</sup>

In panel A of Table 1, we present comparative descriptive statistics between chaebol and non-chaebol affiliated firms. We immediately notice that chaebol firms are significantly larger than non-chaebol firms. Total assets of the chaebol firms are more than about four times in 1984-88, ten times in 1990-95 and five times in 2001-2003 as large as those of non-chaebol firms. And sales of the chaebol firms are more than about seven times as large as those of non-chaebol firms in 1984-88. The sales gaps of chaebol firm and non-chaebol firms become larger in the 1990s and 2000s. The table also shows that chaebol firms has continued to spend more on capital expenditures (as measured by the change in total fixed assets and capital investment from the previous year) than do non-chaebol firms, both during the pre and post-crisis period.

[table 1: descriptive statistics]

Despite these continuing characteristics of chaebol firms, we are now noting several important changes after the crisis. First, in terms of financial leverage, chaebols had the higher ratio than the typical non-chaebol firm in 1990-95 but the situation is different after the crisis. The total debt-to-total assets ratio is 75% for chaebol-affiliated firms, but only 63.3% for the non-chaebol firms in 1990-95. During the 1998-2000 period, the leverage ratio of chaebol firm is 83% and non-chaebol firms, 73%. But the gap is drastically reduced in 2001-2003. In 2001-2003, chaebol firm's leverage ratio is 57%, non-chaebol firms' is 55%. The change must have to do with the post-crisis imposition of the regulation against chaebol firms to reduce the debt-equity ratio to lower than 200%.

Second, chaebol firms have lower betas (as determined from the market model using monthly returns from our sample period) than non-chaebol firms in 1990-95, and this is consistent with the interpretation that chaebol firms are likely to be less vulnerable to market movements because they belong to a diversified collection of businesses. However, in other periods, chaebol firms have higher betas than non-chaebol firms. Chaebol firm's beta is 0.8995/ 0.831 in the 1984-88/ 2001-2003 periods, whereas that of non-chaebol firms is 0.5759/ 0.606.

Third, a comparison of current ratios suggests that chaebol-affiliated firms are less liquid than non-chaebol firms during the pre-crisis but are now equally liquid after the crisis. Fourth, chaebol firms had barely matched non-chaebol firms in their dividend payout ratios,

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<sup>5</sup> In case of 1998-2000, the numbers are 333 chaebol firm-year observations (with 72 chaebol group-year observations) and 1,388 non-chaebol firm-year observations.

but after the crisis, chaebols are now paying significantly more than non-chaebols. Finally, two simple measures of stock market performance show that chaebol firms are now doing much better than non-chaebol firms; equity returns of chaebol firms measured as a long-run stock market performance are now higher than non-chaebol, whereas in the 1990-1995 period the reverse was true, and market to book ratios are now significantly higher for chaebols firms whereas it was lower during the 1990s.

We present descriptive statistics for chaebol groups in panel B of Table 1. One noticeable fact is the reduction of diversification tendency among chaebols. In the 1984-88 period, chaebol groups' median number of firms is 2 and the median number of industries of their doing business is 2. The 1990-95 period, showed further diversification as the median number increased to 4 and 3, respectively. However, in the 2001-2003 period, the median number decreased to 3 and 2, respectively. Other financial characteristics of the chaebol addressing such issues as liquidity, size, dividend payout, capital expenditures and effective tax rates are also provided.

In summary, the results contained in Table 1 present the typical chaebol firm as significantly larger and invest more than the non-chaebol firm, and these tendencies have not changed over the crisis. However, in other many respects, there are dramatic changes over the crisis period, and the reversal has happened in favor of chaebols in terms of debt-asset ratio, market-to-book value ratio, and dividends to net income ratio, while they are no longer enjoying tax advantages associated with debt ratios. Such performance improvement seems to be related to the reduction of diversification as shown in Panel B of the table. We will turn to more rigorous analysis of this issue.

### **3. Measuring and Comparing the Excess values**

In Table 2, we estimate firm excess value by using a method similar to Berger and Ofek (1995). Specifically, firm excess value is calculated as the natural log of the ratio of the firm's actual value (i.e., market value of the firm's equity plus the book value of its debt) to its imputed value.<sup>6</sup> Imputed value is calculated as the firm's total assets times the industry median capital-to-assets ratio.<sup>7</sup> For the chaebol-level of analysis, the actual value of each

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<sup>6</sup> We eliminate firms with extreme excess values from our sample. Consistent with Berger and Ofek (1995), extreme excess value is defined as actual value either more than four times the firm's imputed value or less than one-fourth imputed value.

<sup>7</sup> To make direct comparisons between chaebol and non-chaebol firms, the industry median is drawn from a sample of non-chaebol firms. This approach is consistent with Berger and Ofek (1995).



group is estimated as the sum of the actual value of each member firm. The imputed value for each chaebol is the sum of each member firm's imputed value.

First of all, Table 2 shows an interesting evolution of the excess values for chaebol firms. In the early period (1984-88), the mean values are significantly positive, but in the 1990-95 period, both the median and mean excess values are significantly *negative*. *Finally in the post-crisis period of 2001-2003, the mean values are significantly positive again*. When we check whether these values are significantly different from those we calculate for non-chaebol firms, we find that they are not in the 1980s but significantly lower than non-chaebols in the 1990s and significantly higher than non-chaebols in the post-crisis period. The pattern still holds in terms of the median excess value although the levels of significances are different. We further observe that the evolutionary pattern still holds when measured at the group level as shown at the bottom row of table 2.

[table 2: measuring excess value at the firm and chaebol levels]

In Table 3, we provide more rigorous evidence concerning the relation between value loss/premium in the firm and grouping strategy while controlling for several factors that Berger and Ofek (1995) contend might influence the level of value loss in a diversified firm. Specifically we control for the firm's use of leverage, profitability and growth opportunities.<sup>8</sup> In addition, we follow Ferris et al (2003) to include beta to control for the risk difference because chaebol firms are often hypothesized to experience a lower level of systematic risk relative to non-chaebol firms. The firm's use of financial leverage is measured by its total debt-to-total assets ratio, its profitability is estimated by the operating profit margin, and the firm's growth opportunities are proxied by the ratio of capital expenditures to sales.<sup>9</sup> The most important variable in this regression is a chaebol membership dummy variable that assumes a value of one if the firm belongs to a chaebol and is zero otherwise.

[table 3: annual regressions of firm excess value]

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<sup>8</sup> Another possible explanatory variable on excess value is firm size, as suggested by Berger and Ofek (1995). However, following Ferris et al (2003) we don't include this due to high correlation with chaebol dummy. As noted there, the theoretical relationship between size and excess value is contentious and the empirical evidence is inconsistent with Lang and Stulz (1994) finding a negative relation, Berger and Ofek (1995) finding a positive one, and finally Lins and Servaes (1999) confirming the inconsistency of size as an explanatory variable on excess value.

<sup>9</sup> Ferris et al (2003) observes that the results remain qualitatively identical when they standardize profitability and growth opportunities by total assets, and that this holds true whenever they use profitability and growth opportunities in any of the reported regression analyses.

The results in Table 3 confirm again the quite dramatic shift of discount and premium of the chaebol firm performance. In the upper panel showing the results of the three representative periods, it is shown that during the 1984-88 period, the coefficient of the chaebol dummy variable is statistically insignificant, in the 1990-95 period the coefficient is a significant negative  $-0.080$ , and finally after the crisis and restructuring, we get a significant premium of 6.6%. The annual regressions shown at the bottom panel of Table 3 trace more closely the turn-around of the discount to back to premium of chaebol firms. In the years of 1998, 99, and 2000, the chaebol coefficients are all negative and significant but the absolute size of the coefficient had continued to decline slowly and consistently year by year. Thus, in the year 2001, it is still negative but insignificant. Finally from 2002 it starts to become positive. Since then it has continued to grow bigger and bigger to become significantly positive in 2003.

#### **4. Sources for the Changes: Over-investment, Diversification, and Cross-Subsidization**

In this section, we test if the value performance of chaebols can be attributed to managerial over-investment, diversification and cross-subsidization.

First, similar to Berger and Ofek (1995), we estimate a chaebol's over-investment as the sum of the capital expenditures of each of its member firms operating in industries whose median Tobin's  $q$  is in the lowest quartile as scaled by total sales. Thus, higher values of over-investment indicate greater investment by firms operating in declining or unprofitable industries.

Second, our first relatedness measure is the inverse of the number of distinct three-digit industry classification codes in which the chaebol operates.<sup>10</sup> Despite the intuitive appeal behind this relatedness measure, researchers such as Maksimovic and Phillips (1999), Chevalier (2000) and Khanna and Tice (2001) raise concerns with the use of industry classification codes to measure relatedness within a conglomerate. Chevalier (2000) argues that segments operating in different industries might still be related through such linkages as common distribution channels or a vertical integration of production activity. Thus, she contends that a high correlation between a segment's level of capital expenditures and another segment's cash flows might better capture the degree of relatedness that exists within a conglomerate. Maksimovic and Phillips (1999) and Whited (2001) provide a similar line of

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<sup>10</sup> The KSE constructs a series of four digit industry classification codes that spans all listings on the exchange. Our use of three digits is to prevent overestimation of the degree of diversity within the chaebol.

reasoning and contend that a conglomerate's investment opportunities are improperly measured if investment cross-subsidization is not explicitly taken into account when assessing conglomerate valuation.<sup>11</sup> Therefore, we estimate the mean (median) cross-correlations between capital expenditures and cash flow across members of a given chaebol and use them as additional measures of the relatedness of diversification within a chaebol. Maksimovic and Phillips (1999) and Khanna and Tice (2001) argue that conglomerate firms operating in related segments are functionally less diverse and consequently might not suffer a valuation loss to the same degree as conglomerates whose holdings are unrelated. We test for such a possibility by including the measures of relatedness in our regression of chaebols' excess values.

Third, another possible explanation for the value loss observed in chaebols might be the subsidization of failing or poorly performing business segments by other members of the chaebol. Shin and Park (1999) argue that financial cross guarantees link the members of a chaebol and provide the basis for an internal capital market. Thus a failing chaebol member has recourse to other sources of funding that can insulate it from the discipline of the marketplace.

To test this hypothesis, we use negative cash flow (i.e.,  $EBIT < 0$ ) as the measure of a poorly performing firm and as the trigger for a likely cross-subsidy. We test whether the presence of a negative cash flow has a more negative effect on the value of a chaebol than on a non-chaebol firm. Such a result is consistent with an unprofitable chaebol affiliate draining value from other members of the chaebol through cross-subsidies. We construct a conditional excess value measure similar to that of Berger and Ofek (1995) and use separate multipliers to estimate the imputed values of firms, depending on whether they experience negative or positive cash flows.

In Table 4A, we examine the impact of over-investment and related diversification on the excess value of a chaebol group while controlling for chaebol leverage, profitability, and capital expenditures. We observe in Table 4A that the coefficient on over-investment is positive but insignificant in the 1980s, but significantly negative in the 1990s and post-crisis period of 2001-2003. However, for the period of 2001-2003 the coefficient is only marginally significant at the level of 10%. Furthermore, the same regressions for the transition period of 1998-2000, the coefficients are positive but insignificant. For the whole period of 1998-2003, the coefficient is negative and insignificant. These results are worth some discussion.

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<sup>11</sup> A high positive correlation between these variables indicates that chaebols suffer less from internal power struggles, another source of potential value-loss in a diversified organization (Rajan, Servaes, and Zingales 2000), and might reflect low information asymmetry between divisions and the headquarters of the organization (Meyer, Milgrom and Roberts 1992).

It is true that over-investment had contributed to the reduced levels of excess value for the chaebol group in the pre-crisis period, to supports the conclusion of Berger and Ofek (1995) that over-investment is a source of value loss in the diversified firm. This result is also consistent with the finding of Bae, Kang and Kim (2002) that firms belonging to a chaebol de-emphasize the maximization of individual firm values and make investment decisions in the market for corporate control (i.e., mergers) that benefit only the controlling shareholders. However, the insignificance of this over-investment variable in the post-crisis periods, the impact of this on firm values have become less important than before.

[ table 4A and 4B]

We notice a new variable rising as the important factor in value determination, and, that is, real performance measured by operating income divided by sales. This variable which has never been significant in the 1980s and 1990s has now strongly significant in the post-crisis period. This might reflect the shift of investors' perception on chaebols. In the past, they did not believe the trueness of this variable itself or did not expect this profitability leading to more benefits to investors (in the form of dividends). Now, with some restructuring to make firms more accountable and transparent, investors seem to start see more linkage between firms' financial performance and valuations.

In some contrast to the results with over-investment hypothesis, the impact of cross-subsidization still seem to affect negatively the value of chaebols as shown in Table 4B. The coefficients of the negative cash flow variables are always negative with different levels of significance of either 1% or 5% when tried with different measures of related diversifications. We observe that the negative cashflow dummy variable is negative for chaebol group in all time periods although not significant in the 1980s, and significantly negative for non-cheabols for the 1990s and the 2000s. This result suggests that the investors still believe that chaebol group might try to help poor-performing firms in the same group, which confirms the arguments of Chevalier (2000) and Whited (2001).

Finally, we can discuss the impact of related diversification on the value based on the results presented in both 4A and 4B. As the coefficients of related variables included in both regressions of over-investment and cross-subsidization, the directions and size of the impacts are somewhat dubious. In the 1980s, relatedness seems to contribute positively to the excess values as shown by the cases with two measures of relatedness. But, in the 1990s the coefficient is not significant at all, and in the post-crisis period, it become negative, while insignificant in two correlation based measures of relatedness and significant in the number of industries based measure of relatedness. Overall, the results are inconclusive, and do not

support the claims of Chevalier (2000), Whited (2000) and Khanna and Tice (2001) that the relatedness of operations between firms can temper the value reduction that often follows from a policy of corporate diversification.

## **5. Advantages of Chaebols: Debt Capacity, Profit Stability, and Tax Advantage**

### *5.1. Profit stability hypothesis*

In this subsection we test whether the profit objective of chaebols is similar to that of Japanese keiretsu, which is profit stability rather than maximization. Overall, the results in Table 5 support the hypothesis for the 1990s strongly and less strongly in the 1980s, but for the post-crisis period, are rather the opposite to the prediction by the hypothesis as chaebol firms boast higher performance with lower variations. More detailed discussion follows.

In panel A of Table 5, we examine the mean (median) industry-adjusted annual operating returns (EBIT) on assets and net income on assets for chaebol and non-chaebol firms. We find that chaebol-affiliated firms under-perform relative to non-chaebol firms in two periods, 1984-88 and 1990-95, and also that the standard deviation of these accounting-based profitability measures is lower for chaebol firms in all time periods. Especially, in the 1990s, the standard deviation of operating income and net income is statistically significantly low for chaebol firms at the 1% level. Together, these findings are consistent with the claim that chaebols manage their profitability by emphasizing the stability rather than the level of returns. This finding suggests a partial explanation of the value loss observed for chaebols. However, the situation is quite different after the crisis. In the 2001-2003 period, chaebol firms show always higher profitability with lower variations although with varying levels of significance.

[table 5: chaebols and the profit stability hypothesis]

The changed behavior of chaebols after the crisis remains the same when measured with market based measures of profitability. In panel B, we present market-based measures of profitability by examining the mean (median) monthly abnormal returns for chaebol and non-chaebol firms. Similar to the results for the accounting-based profitability measures, we find both a lower level of return and return variability for chaebol firms in the 1990s. But, in the post-crisis period, chaebol firms are showing higher rates of return with lower variance.

In panels C and D, we examine the long-term performance of chaebols relative to non-chaebol firms. Employing a methodological approach similar to that of Spiess and Affleck-Graves (1995), we first compare a mean (median) holding period return (HPR) over the entire

sample period between chaebol and non-chaebol firms.<sup>12</sup> From this analysis, we note that the long-term performance of chaebol firms is significantly lower than that of non-chaebol firms in 1990-95, however, higher than that of the non-chaebol firms in the post-crisis periods. We also calculate a 60-month wealth relative based on HPRs and find that it is only 0.828 during 1990-95, on the other hand, 1.132 during 1984-88 and 1.533 during 2001-2003.<sup>13</sup>

In panel D, we sharpen our comparison of holding period returns by constructing a sample of non-chaebol firms matched on the basis of industry membership and firm size. The variance of the holding period returns is lower for chaebol member firms than for non-chaebol firms in 1990-95 and also in 2001-2003 period although significant only during the former period. The mean wealth relative was 1.102 in the 1980s, declined to 0.721, and resurfaced back to 1.208 in the post-crisis period.

When these results are combined with those reported in panels A, B and C, we conclude that chaebols tend to show lower variations of accounting profits than non-chaebols but with higher or lower profitability. In terms of market based measure of returns, chaebol firms show lower return and variation only during the 1990s but conflicting results in the 1980s and 2000s. Rather in the short term measures, chaebol firms show higher return and lower variations, and in the long term measures, they show higher return with variance difference ambiguous.

## *5.2. Debt Capacity and Advantage in Taxation*

Now, we test for the existence of possible financial benefits that might be attributable to chaebol membership. One such possible benefit is a co-insurance effect. If chaebol members are able to co-insure each other's debt because of an imperfect correlation between their cashflows, then the debt capacity of chaebol firms should increase. Further, any increased borrowing by chaebol firms also increases the size of the interest tax shields that are available to the firm.

In panel A of Table 6, we compare mean (median) debt ratios between chaebol and non-chaebol firms. In 2001-03 period, a simple comparison of unadjusted debt ratios shows that chaebol firms use 2.3 percent more debt to finance their assets than do non-chaebol firms. When we industry-adjust our debt ratios, the difference increased to 2.7 percent in 1%

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<sup>12</sup> Holding period returns (HPR) are calculated as:  $[\prod_{t=1,2,\dots,\text{end-period}}(1 + \text{ret}_{i,t})]-1$  for each stock  $i$ , where  $\text{ret}_{i,t}$  are monthly returns calculated from the first month to the last month of our sample period.

<sup>13</sup> The wealth-relative is estimated as the ratio of 1 plus the mean (median) HPR for chaebol firms divided by 1 plus the mean (median) HPR for non-chaebol firms. Therefore, the wealth relative indicates the magnitude of performance of chaebol firms as compared to non-chaebol firms.

significance level. These results are basically the same as those by Ferris et al (2003) for the 1990-95 period, reported in the same table. The same results hold for the 1980s. This greater use of debt for chaebol firms is consistent with the predictions of the co-insurance hypothesis and suggests that membership in a chaebol increases a firm's debt capacity.

[ table 6 and 7 ]

To further examine possible co-insurance effects in the capital structure decisions of chaebol-affiliated firms, we present the results from a multiple regression analysis in panel B. We have regressed industry-adjusted total debt-to-total assets against a chaebol dummy variable, firm size (log of total assets), firm profitability (operating profit margin) and firm growth (capital expenditures to sales). Based upon the estimated coefficient for the chaebol dummy variable, we observe that while chaebol firms borrow 4.7 percent more of their assets than do non-chaebol firms in 1990-95, chaebol firms borrow 3.2 percent more of their assets than do non-chaebol firms but the coefficient is far from being significant in 2001-2003. This result implies no more debt capacity advantage of chaebol firms after the crisis, which implies the possibility of their being subject to more scrutiny by the banks in lending. It is also related to the fact that chaebols firms were subject to the restructuring "order" from the government to reduce to the debt-equity ratio to lower than 200%.

An important implication of the debt-capacity hypothesis is that the increased use of debt will generate additional tax shields, which, in turn, will result in less tax paid by chaebol-affiliated firms. In panel A of Table 7, we observe that chaebol firms experience a tax rate that is almost half the tax rate incurred by non-chaebol firms (i.e., total tax expenditure scaled by total sales is 0.010 for chaebol firms versus 0.020 for non-chaebol firms in 1984-88 and 0.008 for chaebol firms versus 0.014 for non-chaebol firms in 1990-95). After industry-adjusting these tax rates, the difference remains statistically significant.<sup>14</sup> This result indicates that chaebol firms enjoy lower effective tax rates than non-chaebol affiliated firms. However, in case of 2001-2003, tax shield advantages of chaebol firms have completely vanished.

We provide results in panel B of Table 7 of a regression of industry-adjusted taxes paid against a chaebol dummy variable and the same set of control variables used in Table 6. We observe a significant negative coefficient for the chaebol dummy variable in the pre-crisis periods, and but positive in the 2001-2003 period. This result is consistent with the results

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<sup>14</sup> To calculate industry-adjusted taxes, we calculate the difference between a firm's actual taxes-paid and its imputed taxes-paid. Imputed taxes-paid is estimated as the firm's operating income multiplied by the industry's median taxes paid-to-operating income ratio. Furthermore, (1) we exclude negative EBIT firms when calculating industry median multipliers, (2) imputed taxes-paid are set to zero for negative EBIT firms, and (3) if the tax-to-

with univariate calculations. This suggests that chaebol firms no longer enjoy tax savings from the higher interest tax shields.

## **6. A Synthesis: Dynamic and Evolving Nature of the Firms in Emerging Economies**

Now, let us try to summarize the results of our analysis on the evolution of the business groups in Korea over the sub-periods of 1984-88, 1990-95, and 2001-03. Table 8 provides a summary of the main results. At the bottom of the table, we have tried to characterize the Chaebols firms differently across the three periods.

[table 8: summary of the overall results]

In the 1980s, Chaebols had enjoyed some benefits such as tax advantages but had not committed much excessive investment and thus were performing slightly better than non-chaebols in several aspects. However, in the 1990s, they under-performed compared to non-chaebol firms significantly in almost every aspects despite the strong advantages such as higher debt carrying capacity and lower taxation because the costs of over-investment and cross-subsidization outweigh the benefits. Their behavior can be typically characterized by lower profitability with lower variations. In the post-crisis period, the chaebols has lost all the advantages but their performance was better than non-chaebols. This turn-around was possible not because they are not doing over-investment but more because their real performance (profitability) has improved significantly owing to restructuring and re-focusing particularly during the transition period of 1998-2001.

In sum, it can be said that during the 1980s the costs and benefits of business groups structure was roughly equal, during the 1990s there was net costs, and finally after restructuring there has happened net gains. The over-investment in the 1990s must have to do with the agency costs of the minority but controlling owner as verified by numerous empirical studies focusing on the wedge between cash flow rights and control right of the controlling owner (Joh 2003, Bae, Kang, Kim 2002, Lemmon and Lins 2003). The rough matching of the costs and benefits in the 1980s might have to do with the possibility of smaller gap between cash flow and control rights in this period as the Korean chaebols have also evolved originally from a firm with family but concentrated ownership in the 1960s and 1970s. However, the post-crisis turn-around should be explained by other factors than the ownership structure, as they are still maintaining basically same ownership structure despite some business

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EBIT ratio is greater than 34%, then they are set at 34%. During the 1990s, the maximum corporate tax rate in Korea was 34% (Coopers and Lybrand, 1995).



restructuring. This phenomenon must have to do with re-focusing and slim-down of business as well as increased innovation capabilities, and also suggest that ownership structure alone cannot explain performance of the firms.

## 7. Summary and Concluding Remarks

This paper has extended earlier works on business groups to a longer period to see if the same findings still hold, such as value loss for group firms associated with over-investment, diversification and cross-subsidization. In general, we find dramatic changes over the two decades from weak premium in the 1980s, strong discount in the 1990s and back to strong premium during the post-crisis period.

Specifically, this paper finds, during the post-crisis period, that over-investment and diversification hypothesis has no much explanatory power while cross-subsidization has much weakened, and, more importantly, that profitability improvement is the main causes for the value premium associated with group firms. We also find that while *profit stability hypothesis* was true for the 1990s, it was not so after the restructuring as chaebols boast higher profitability with less variation. It is also verified that chaebols are significantly more levered than non-chaebol firms only during the 1990s, and chaebol firm's tax shield advantages has now disappeared in 2001-2003, whereas there were some in the pre-crisis period.

Turn-around of chaebols' performance is not surprising because chaebols have both advantages and disadvantages. Ferris et al (2003) actually predicated in their final remarks that if over-investment, cross-subsidy, and an emphasis on earnings stability can be appropriately controlled, the chaebol structure can generate shareholder benefits. Given this, what we would like to emphasize is the ever-evolving or very dynamic nature of the firms in emerging economies, which should be one of the most important differentiating factors of them, compared to the firms in the advanced economies. This implies that jumping into any conclusions based on analysis of data from particular period of time is very dangerous in studies on firm behavior in emerging economies where environment, institutions and almost everything change quite rapidly.

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