Does a Firm's IPO Affect Other Firms in the Same Conglomerate?

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Abstract

Purpose - This study aimed to examine the behavior surrounding the Initial Public Offering (IPO) event of firms within the same conglomerate and the impact of under-pricing and Return on Equity(ROE) on a firm's abnormal stock returns.
Design/methodology - This study collected data from 166 South Korean Chaebols, consisting of 355 firms distributed as 202 listed on Korea Composite Stock Price Index (KOSPI) and 153 firms listed on Korean Securities Dealers Automated Quotations (KOSDAQ) from 2000 to 2020. The Capital Asset Pricing Model (CAPM) and the multiple regression analysis were hired to analyze the data.
Findings - First, we found an adverse price reaction of IPO listing in the same chaebol group, and firms with higher under-pricing affect other firms' stock prices more adversely within the conglomerate. Next, we explored a negatively significant relation between ROE and the chaebol firms' stock returns during IPO events.
Research implications - The novelty of this study is there are not many empirical studies on the impact of IPO within a conglomerate. So, the findings of this study contribute to the literature for analyzing stock's abnormal returns within a conglomerate.

Keywords: Chaebol, Cumulative Abnormal Return, Initial Public Offering, Under-pricing
JEL Classifications: G11, G14, M19

Ⅰ. Introduction

The Initial Public Offering (IPO) is a process by which a private firm can go public by issuing its stock. In most cases, IPOs provide firms with an opportunity to raise equity capital through the primary market. South Korea's equity market is the fifth biggest equity market by capitalization in Asia and during 2000 to 2020, more than 1600 South Korean firms listed their IPOs in the primary market.[1] In South Korea, large family-owned corporate groups is often termed chaebol. The South Korean chaebols emerged in the early 1960s with support from the South Korean government. The top 10 largest chaebol groups account for more than 50% of all listed firms' market capitalization in South Korea. Any changes in the stock value of chaebol firms have a significant role in the South Korean economy. Although IPOs in South Korean chaebols have attracted public and academic attention in recent years, there has not been much in-depth investigation into their impact. Given the lack of empirical research on South Korean chaebols, our study examines the chaebol firms' abnormal returns at the IPO listing of other firms in

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1) According to the OECD Equity market review, South Korea is the 5th largest equity market in Asia.

the same group. For family-owned firms or chaebols in South Korea, a chaebol firm's going public significantly changes another firm's stock price within the group. This significance is typically to be observed for IPOs of family-owned firms in South Korea. We only investigate South Korean IPOs that are issued by chaebols.

Using South Korean firms' data from 2000 to 2020, we attain several findings that propose listing a chaebol firm has a significant effect on other firms' stock prices in the same chaebol. Our study examined the hypothesis of adverse reaction on chaebol firms' stock price by empirically testing the market reaction to IPO listing events. We used cumulative abnormal returns (CAR) for calculating the volatility of stock returns. Abnormal Returns are the difference between daily percentage change in stock prices and daily percentage change in return on market index represented by KOSPI index & KOSDAQ index. CAR is the sum of the abnormal returns. We used the Capital Asset Pricing Model(CAPM) to generate the expected returns. The T-test was used to examine the significance of CAR. The findings show that there is a statistically significant CAR around the IPO listing days. We discussed the magnitude of abnormal returns during the days surrounding the IPO listing date of chaebol firms. We expect to reveal the factors determining abnormal returns on both KOSPI Stock Exchange and the KOSDAQ stock exchange. This is accomplished by measuring the abnormal returns during and after the IPO listing date. The test of CAR for the whole estimation period assumes that abnormal returns are normally distributed. Our study found that there is a statistically significant relationship between CAR and its determinants.

Our paper aims to contribute and refine the existing literature. First, we examined that the IPO listing of one chaebol firm adversely affects other firms' stock prices in the same chaebol group. For that, we tested our hypotheses to perform a more in-depth analysis. In this regard, we collected the chaebol firms in the South Korean stock market and analyzed an event study. We explored the relationship between the IPO listing date and the subsequent change in other firms' firm value in the same chaebol by taking an event study. Then, by regressing CAR on various financial variables, we provided evidence that the under-pricing value of IPO firms and ROE of chaebol firms affect CAR significantly. Secondly, we divided the whole sample into various subgroups and examined each subgroup's significance level.

The remainder of the paper is organized as follows. Section 2 inspires the theory and hypotheses. Section 3 presents the data and empirical approach, and section 4 reports the empirical results of our data analysis. Section 5 offers a conclusion.

II. Theory and Hypothesis

1. IPO event and Abnormal Returns

We examined our first hypotheses related to the stock price reaction of chaebol firms. The organizational structure of multiple firms in a large business group linked to equity ownership is significant in emerging and developed markets. They are often called pyramidal ownership structures, where an individual or a family controls many firms. These organizations are sometimes referred to as a family business group or chaebols in South Korea, where the family owns multiple firms by a chain of ownership relations. Chaebols are mostly family-controlled, and the controlling family achieves the crucial decisions of the various firms in the group rather than professional management. Chaebols have a cross-corporate shareholding among firms

that belong to the same group. The pyramidal ownership structure of a chaebol allows controlling power to be concentrated in an individual. Cross-corporate shareholding restricts South Korean chaebols from external influences like it is closely impossible for any hostile corporate takeovers in South Korean chaebols.[2] Marisetty and Subrahmanyam (2010) show that the first day's return of IPOs from a firm affiliated to an Indian business group tends to be higher than that from a stand-alone firm. Dewenter, Novaes and Pettway (2001) also show that the first day's return of IPOs from a firm affiliated to Japanese Keiretsu tends to be higher than that from an independent firm. Cho and Lee (2013) find that chaebol firms are more profitable than independent firms for the year when their stocks are listed and the following year. So, the chaebol firms' IPOs' first-day return tends to higher returns compared to independent firms. When a chaebol firm's IPO got under-priced, it implies that its stock value is priced below market value, and issuer firms leaving money on the table. Money left on the table is the difference between the offering and market prices at the end of the first day of the firm's IPO, multiplied by the number of shares issued. For establishing a good market performance for IPO firms, most issuer firms leave a vast sum of money on the table, which is less financially beneficial for a firm and the chaebol group. Sometimes an IPO is under-priced purposely to raise demand in the market and encourage investors to risk a new chaebol firm. As a result of under-pricing, the money left on the table directly flow to investor and shareholders' hand, rather than to the chaebol firm. Stein (1997) shows that Chaebol firms might allocate capital through their internal capital market to their most profitable projects when external financing is scarce. Furthermore, under the "propping" hypothesis, controlling shareholders may provide resources to support their affiliated firms when they are temporarily in trouble (Bae, Cheon and Kang, 2008). So, when a chaebol firm IPO is under-priced, then the wealth losses that occurred to the IPO firm will be shared by other firms within that chaebol group, which has an adverse effect on other firms' stock price.

For the calculation of CAR, it is assumed that the daily abnormal returns are normally distributed. Also, a basic assumption that stock prices tend to approach the expected value over a long period is the mean value. The t-statistic tests CAR's significance for the sample of N observations for each day in the event window. To observe whether an IPO listing date of one chaebol firm affected another chaebol firm's stock values, abnormal returns (AR) and CAR are measured during and post events. Conclusions described the test results of statistical significance of CAR. The following is the postulation of the null hypothesis.

H1: During an IPO event of any chaebol firm, there is an adverse reaction to other chaebol firms' stock prices in the same chaebol group.

2. IPO firm under-pricing and Abnormal Returns

We also examined the relationship between the IPO firm's under-pricing and other firm's stock performance in the same chaebol group. According to earlier research studies, using US firm data, McConaughy et al. (2001) find that family-controlled firms have more excellent

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2) Cross-corporate shareholding happens when a publicly traded firm owns a stake in another publicly traded firm. Usually, in large chaebol groups, members of the chaebol firms own small portions of each other's chaebol firms' shares.A hostile takeover is the acquisition of one firm, referred to as the target firm by another firm, referred to as the acquirer firm. This process is achieved by going directly to the firm's stakeholders or fighting to replace management to get approval for the acquisition.

value and are operated more efficiently than independent firms. Hsu and Reed (2010) found that Stock prices of publicly traded firms react to IPOs in their industry, and companies experience adverse stock price reactions to completed IPOs in their sector and positive stock price reactions to their withdrawals. According to the signaling literature (Ibbotson and Jaffe, 1975; Welch, 1989; Grinblatt and Hwang, 1989), under-pricing is a powerful tool for signaling a firm's quality to investors and providing them with the possibility of distinguishing between good firms and bad firms. Low-quality firms cannot afford to leave money on the table when going public because they will not make up for this loss in the future (Grinblatt and Hwang, 1989). As discussed earlier, South Korean chaebol firms have more excellent value and are operated more efficiently than independent firms; they can leave money on the table and cope with the losses arising from under-pricing. Because of the shared resources, chaebol firms can easily overcome any firms' financial difficulties within the chaebol group. When any chaebol firm IPO is highly under-priced, it implies more money left on the table. Following chaebol firms shared resource allocation, this paper examined that IPO firm under-pricing negatively affects other firms' share price within that chaebol and is more statistically significant among higher under-priced firms. The following is the postulation of the null hypothesis.

H2: There is a negative statistically significant relationship between IPO firms under pricing and CAR of other firms in the same chaebol group.

3. ROE & Abnormal Returns

In the secondary market, many factors affect the stock price returns. Among them, ROE is a crucial measure of stock returns. ROE is a measure of financial performance calculated by dividing net income by shareholders' equity. This ratio is used as a measure of the firm's profitability concerning stockholders' equity. ROE is an important metric for investors as it links the income statement to the firm's balance sheet. It provides the information about a firm's income available to its shareholders who invest in that firm. As per earlier studies carried out with the 2018 financial statement data Nikkei 225 index with a sample of 57 issuers, Badruzaman (2020) finds that ROE negatively affects the stock price, which implies that if ROE increases, it will have an impact on declining stock prices. Several studies argued that South Korean chaebols have often engaged in inter-firm financial transactions to support weak member firms. As per earlier studies by Chang and Hong (2000), Chaebol groups benefit from group membership by sharing financial resources with other member firms like extensive cross-subsidization such as debt guarantee, equity investment, internal trade, etc. It supports poorly performing firms at the expense of well-performing firms and the exchange of human resources within the group. Gopalan et al. (2007) find that the risk-sharing effect or co-insurance effect can reduce default risk and debt financing cost. According to Khanna and Yafeh (2007), business groups reallocate resources from one affiliate to another, enabling member firms to share risks. This co-insurance effect reduces the volatility of cash flows for member firms. A chaebol firm's IPO under-pricing happened for the short run, but the associated risk it bears continues for the long run. Investors tend to sell their shares to get an immediate profit, which lowers the demand for new stock in the secondary market. Because of under-pricing, more money is left on the table, which ultimately benefits the investors rather than the new firm. Financial losses that arise to the new firm negatively

impact the associated projects of that firm. To compensate for new firms' risk, the chaebol group prefers to share high ROE chaebol firms' resources with new chaebol firms as high ROE firms are more financially robust and produce more earnings, free cash flows. Due to the shifting of resources from high ROE firms to new chaebol firms, an adverse stock reaction is observed on high ROE chaebol firms. Finally, chaebol firms with high ROE exhibit adverse stock price reactions due to the chaebol group's IPO event. The following is the postulation of the null hypothesis.

H3: There is a negative, statistically significant relationship between ROE and CAR of the chaebol firms.

Ⅲ. Data and Empirical Approach

This paper examined the firms' data in the South Korean stock market from 2000 to 2020. The firms collected for analysis listed either in Korea Composite Stock Price Index (KOSPI) or Korea Securities Dealers Automated Quotations (KOSDAQ). The study takes daily KOSPI & KOSDAQ stock price data, the market index for 21 years ranging from 2000 to 2020. KOSPI & KOSDAQ are the two primary stock market indexes that track most of the common shares listed on the Korean stock market. Our sample for corporate financial analysis collected from the TS2000 (Total Solution 2000) database, an electronic disclosure system administered by the Korea Listed Firms Association (KLCA). Our sample collected data from 166 South Korean Chaebols, consisting of 355 firms distributed as 202 listed on KOSPI and 153 firms listed on KOSDAQ. After the 1998 Asian crisis, the South Korean economy has recovered quickly and has remained surprisingly sound and stable (Lee, 2020). Srinivasan (1988) finds that the CAPM relationship is valid, but a much larger sample is warranted to draw inferences. We conducted the daily stock returns using the CAPM model for 21 years from 2000 to 2020 to get a better inference. The data snooping problem is practically unavoidable in analyzing time series data. We are constrained to use only 355 publicly listed firms' data as a long time of 21 years used for our analysis. However, we divided our sample into two sub-group samples to test the robustness of our result in the individual category. First, sub-sample based upon under-pricing and secondly based on ROE values. We found similar results in both the cases. This study used 200 days CAR for event study. The average abnormal returns estimated using the CAPM model.

The event study is to examine the hypothesis of stock price reaction on the event period. Firstly, we adopted the chaebol firm's IPO listing date as an event date for other chaebol firms in the same group. Secondly, to calculate the abnormal returns in stock price due to an event, we investigated other chaebol firm's stock returns in the absence of the event. This investigation required to regress each firm's stock return on the overall market return during the estimation window. The estimation window regression result then predicts the chaebol firm's stock return during the event window 0 to T in the absence of the event. The difference between the actual return and the predicted return for any given day in the event window called the abnormal returns (AR). The sum of the abnormal returns in an event window is the cumulative abnormal returns (CAR). Our study used 200 daily trading observations as the estimation period from day -20 to day -220 before the event period and the event period of 11 trading days, covering the period 0 to T= +10 after the IPO listing date study. Thirdly, the estimation window

regression performed by the CAPM model as follows.[3]

$$R_{i,t} = \propto_i + (\beta_i \times R_{m,t}) + \epsilon_{i,t} \tag{1}$$

where $R_{i,t}$ is the return for an event i at day t.

α_i is the time-invariant model intercept.

β_i is the effect of market portfolio return for an event i .

$R_{m,t}$ is the daily market return on the market m at day t.

$\varepsilon_{i,t}$ is the residual, which is also called abnormal return at day t.

α and β are parameter estimates of the market model.

The residual (abnormal returns) ; therefore, it is calculated from equation (1) as follows.

$$\epsilon_{i,t} = R_{i,t} - [\alpha_i + (\beta_i \times R_{m,t})] \tag{2}$$

The abnormal return averages individual observations as follows.

$$AR_t = stock\,return_t - (\alpha + \beta \times market return_t) \tag{3}$$

where AR_t is the average abnormal return at day t.

The CAR over holding periods, from day 0 to day T, is calculated as follows:

$$CAR_{(0,\,T)} = \sum_0^T AR_t \tag{4}$$

where $CAR_{(0,\,T)}$ is the cumulative abnormal return over the holding period 0 to T.[4]

We assumed that the daily abnormal returns are normally distributed, and over a long period, stock prices tend to approach the expectation value, that is, mean value. Our study investigated the presence of CAR during event days. In addition, we examined post-event abnormal returns (AR) and cumulative abnormal returns (CAR).

We computed CARs over windows (0, 0), (0, +1) … (0, +10) for this analysis. We regressed the CARs on variables using the following regression analysis over windows (0, 0) and (0, +1) to test the CAR determinants.

$CAR_{(0,\tau)} = \beta_0 + \beta_1 IPO\,under\,pricing + \beta_2 ROE + \beta_3 Log\,Sales + \beta_4 Debt\,Ratio + \beta_5 Asset\,Turnover\,Ratio + \beta_6 Current\,Ratio + \epsilon$

where τ =0, +1.

Table 1 presents the dependent variable CAR and explanatory variables that we used in the multiple regression analysis, and Table 2 shows summary statistics of the whole sample. To check the heteroscedasticity problem, the correlation analysis is given in Table 3.

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3) According to the CAPM model, $R_{i,t} - R_{f,t} = \propto_i + [\beta_i \times (R_{m,t} - R_{f,t})] + \epsilon_{i,t}$, as the risk-free rate $R_{f,t}$ is close to 0, we have omitted it from the calculation of expected market return.

4) Value of T ranges from 0 ~ + 10.

Table 1. Variable Definition

| Variables	Descriptions
CAR	Abnormal returns are the difference between daily percentage change in stock prices and daily percentage change in return on market index KOSPI & KOSDAQ. CAR is the sum of all abnormal returns. CAR is usually calculated over small windows.
Under-pricing	IPO is considered under-priced by the difference between its first-day closing price and its set IPO price. Under-pricing is the way of listing an initial public offering (IPO) at a price below its real value in the stock market. It is considered under-priced when a new stock closes its first day of trading above the set IPO price. Under-pricing is momentary as investors' demand drives the stock price upwards very quickly to its market value. Sometimes new firms purposely under-priced their IPO to raise the need among investors to risk a new firm. Sometimes under-priced by chance as its underwriters underestimated the demand in the market for that firm's stock.
ROE	ROE is a measure of financial performance calculated by dividing net income by shareholders' equity.
Ln(sales)	The logarithm of net sales of the firm.
Market to Book Ratio	The Market to Book ratio also referred to as the Price to Book ratio, is a financial valuation metric used to evaluate a firm's current market value compared to its book value. The market value is the current stock price of all outstanding shares, and the book value is the amount that would be left if the company liquidated all its assets and repaid all its liabilities.
Debt Ratio	The debt ratio is the ratio of total debt to total assets. It explains the proportion of a firm's assets financed by debt which ultimately measures the amount of leverage used in total debt to total assets. A debt ratio greater than 1.0, i.e., 100%, indicates that a firm has more debt than total assets, and less than 100% means that a company has more assets than total debts. If we consider risk, lower debt ratios are considered better for a firm. A higher debt ratio or over-leveraged makes it more difficult for a firm to extend further credit.
Asset Turnover Ratio	Asset turnover ratio is the ratio of total sales to the average total assets of a firm. This ratio is helpful for investors to analyze how effectively a firm uses its assets to generate sales. The asset turnover ratio delivers information on the number of sales generated for every dollar's worth of assets.
Current Ratio	The current ratio is a ratio of current assets to current liability. These metrics measure a firm's ability to pay short-term obligations or dues within one year. It helps analyze how a firm can maximize its current assets after satisfying its existing debts and other payables.

Table 2. Summary Statistics

	No. of obs.	Mean	Std. Dev.	Min.	Max.
Under-pricing	355	37.3294	65.7939	-53.4728	420
Return on Equity ROE	355	0.0540	0.7341	-11.4667	4.8231
Ln(sales)	355	26.8721	1.9029	22.0515	32.9599
Market to Book Ratio	355	1.5628	1.7467	0.1193	16.4568
Debt Ratio	355	0.4726	0.1928	0.0330	0.9416
Asset Turnover Ratio	355	0.9275	0.6265	0.02563	7.7123
Current Ratio	355	1.9702	2.4004	0.1489	26.1489

Table 3. Correlation

		(1)	(2)	(3)	(4)	(5)	(6)	(7)
(1)	Under-pricing	1.000	--	--	--	--	--	--
(2)	ROE	0.0974	1.000	--	--	--	--	--
(3)	Ln(sales)	0.0123	0.0021	1.000	--	--	--	--
(4)	Market to Book Ratio	0.0523	0.0005	-0.2223	1.000	--	--	--
(5)	Debt Ratio	0.0162	-0.1997	0.4022	-0.0051	1.000	--	--
(6)	Asset Turnover Ratio	0.0171	-0.0072	0.3155	-0.0111	0.2552	1.000	--
(7)	Current Ratio	0.0275	0.0832	-0.3329	0.0221	-0.5267	-0.2029	1.000

IV. Empirical Results

A window of 11 trading days from 0 days, i.e., on event day to +10 days after the event day, i.e. (0, +10), is used to measure abnormal returns of chaebol firms on the event date, i.e., the IPO listing date of other chaebol firms in the same business group. The listing of a chaebol firm's IPO significantly affects other firms in the same chaebol group during the event day and following days. There was a downward trend observed for the whole sample. Figure 1 plots the CAR over the event windows (0, +1), (0, +2) ... (0, +10). It shows that the average stock price of the total sample started decreasing after the event date. In the post-event period, the average stock price change is statistically significant. This supports our first hypothesis mentioned earlier, which indicates an adverse reaction to other chaebol firms' stock prices during an IPO event of any of the chaebol firms in the same chaebol group.

Figure 1. Cumulative Abnormal Returns (CAR) Around IPO Listing Date
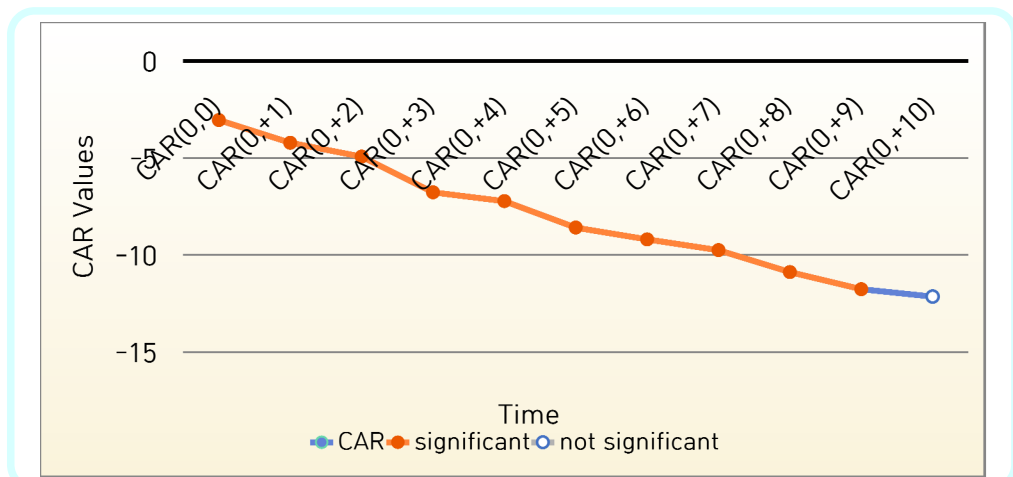
Notes: Figure 1 shows the averages of CAR [0, x] over x, where x = 0, +1 ⋯⋯ +10 for the whole sample. Abnormal returns are estimated from the CAPM model using the past 200 trading days from day –20 to –220. KOSPI return is used as the market return for stocks listed on the KOSPI, while KOSDAQ composite return is used as the market return for stocks listed on the KOSDAQ market. Returns are in percentage terms. Solid symbols (as opposed to empty symbols) indicate that the average CAR is significantly different from 0 at the 10% level.

We divided the sample into two groups according to higher IPO under-pricing firms and lower IPO under-pricing firms to determine whether there is an impact of IPO under-pricing on the abnormal returns of other firm's stocks in the same chaebol. Figure 2 plots the CAR returns according to IPO under-pricing against other chaebol firms over the event window (0, +1), (0, +2) ⋯ (0, +10). It is observed that CAR is statistically significant over event windows (0, 0), (0, +1), and (0, +2). The results show that higher IPO under-pricing firms significantly negatively impact other firms' stock prices in the same chaebol. This supports the second hypothesis mentioned earlier, which states a negative statistically significant relationship between IPO firms' under-pricing and other firms' CAR in the same chaebol group.

Figure 2. CAR of Sub-samples Having Higher and Lower Under-pricing Firms
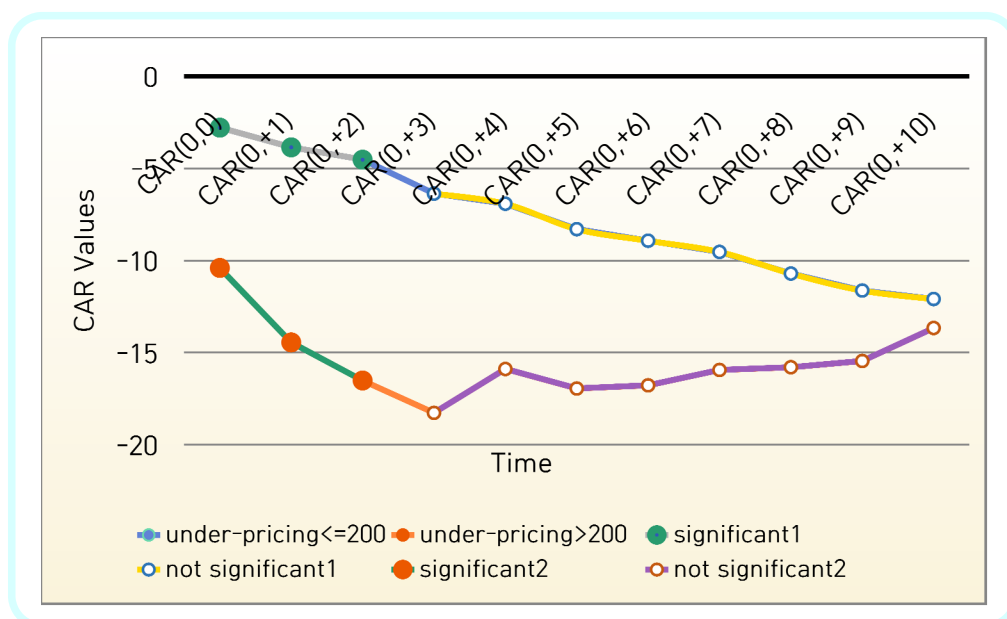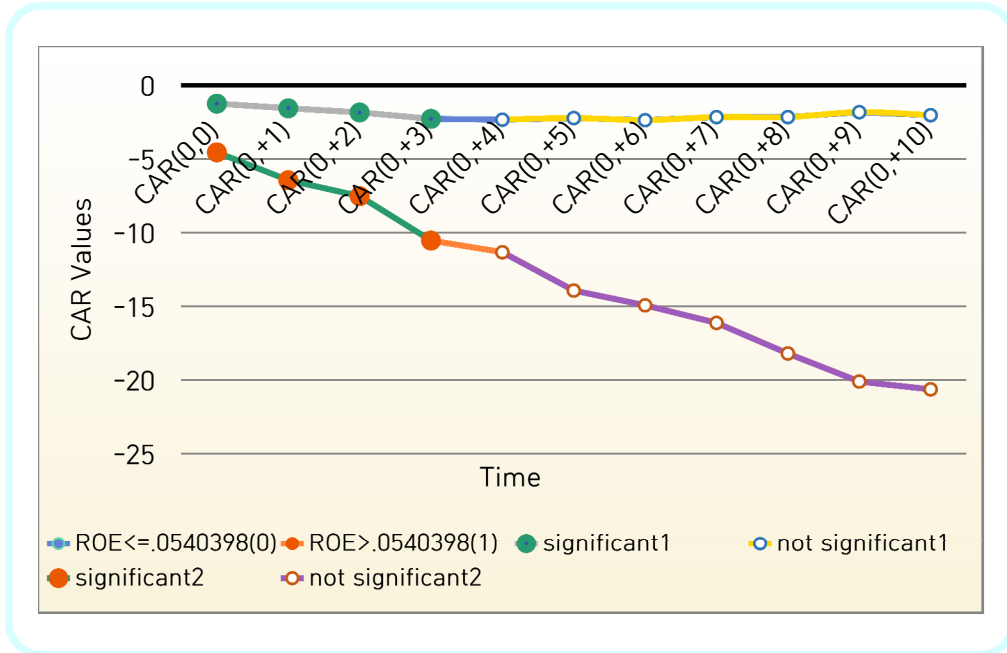

Notes: Figure 2 shows CAR [0, x] over x, where x = 0, 1 ⋯, 10 by under-pricing subgroup sample. This figure shows CARs on and after the event date as higher IPO under-pricing and lower IPO under-pricing samples. These figures show the average of returns is in percentage terms. Significant1 shows significance of firms with underpricing<= 200 and significant2 shows significance of firms with underpricing >200.Solid symbols (as opposed to empty symbols) indicate that the average CAR is significantly different from 0 at the 10% level.

We divided the sample into two groups according to higher ROE chaebol firms and lower ROE chaebol firms to determine whether ROE impacts the abnormal returns of chaebol firms' stock price. Figure 3 plots the CAR returns according to ROE of the respective chaebol firms over the event window (0, +1), (0, +2) ⋯ (0, +10). It is observed that CAR is statistically significant over event windows (0, 0), (0, +1), (0, +2) and (0, +3). The results show that higher ROE firms' stock prices affected more negatively than lower ROE chaebol firms. This supports the third hypothesis mentioned earlier, which explains a negative statistically significant rela-

tionship between ROE and CAR of the chaebol firms.

Figure 3. CAR of Higher and Lower ROE Firms

Notes: Figure 3 shows CAR [0, x] over x, where x = 0, 1 ···, 10 by higher ROE chaebol firms and lower ROE chaebol firms' sample. These figures show averages returns are in percentage terms. Significant1 shows significance of firms with ROE<= 0.05 and significant2 shows significance of firms with ROE>0.05. Solid symbols (as opposed to empty symbols) indicate that the average CAR is significantly different from 0 at the 10% level.

The cross-sectional regression analyses are performed to analyze further the nature of stock price reactions to the event date. Table 4 presents the hypothesized relationships between the dependent variable (CAR) and explanatory variables. Table 5 presents the results of multi-variate regression estimates and corresponding t-values for CAR using dependent variables over event windows (0, 0) & (0, +1).

Table 4. Hypothesized Relationships between the Dependent Variable (CAR) and Explanatory Variables

Variables	Predicted Sign
Under-pricing	–
Return on Equity ROE	–

Table 5. CAR – Multivariate Regression

	(1)	(2)	(3)	(4)	(5)	(6)
Event Window	[0,0]	[0, +1]	[0,0]	[0, +1]	[0,0]	[0, +1]
Under-pricing	-0.0199* (0.0110)	-0.0223** (0.0115)	--	--	-0.0180* (0.0108)	-0.0192* (0.0113)
ROE	--	--	-3.2557*** (0.9480)	-4.1853*** (0.9851)	-2.9937*** (0.9719)	-3.8804*** (1.0140)
Ln(sales)	--	--	--	--	0.2784 (0.4296)	0.5488 (0.4482)
Market to Book Ratio	--	--	--	--	0.5449 (0.4159)	0.6148 (0.4340)
Debt Ratio	--	--	--	--	5.6102 (4.6069)	4.5271 (4.8065)
Asset Turnover Ratio	--	--	--	--	0.7168** (0.3434)	0.4359 (0.3582)
Current Ratio	--	--	--	--	2.1142 (1.2983)	1.2055 (1.3546)
Event year Dummies	Y	Y	Y	Y	Y	Y
Observations	355	355	355	355	355	355
R Squared	0.0619	0.0709	0.0850	0.1086	0.1169	0.1325

Notes: Table 5 reports multivariate regression results where CAR around IPO event is regressed on several determinants. In column (1), (3) and (5) we regress CAR (0,0), while in columns (2), (4) and (6), we regress CAR (0, +1). Returns are in fractional terms. *, **, *** indicate significance at 10%,5% and 1% levels, respectively. All regressions use event year dummies.

    This multivariate regression analysis shows that CAR (0, 0) & CAR (0, +1) are negatively related to both IPO under-pricing of listed firms & ROE of the chaebol firms hypothesized. The findings are statistically different from zero as the t value for these variables is significant. We found that in event window CAR (0, 0), the coefficient for under-pricing variable is -0.0180 with a t-value of -1.66, and in event window CAR (0, +1), the coefficient for this variable is -0.0192 with a t-value of -1.69, which is significant under 10% significance level. Furthermore, in the event window CAR (0, 0), the ROE variable's coefficient is -2.9937 with a t-value of -3.08. In event window CAR (0, +1), this variable's coefficient is -3.8804, with a t-value of -3.83, significant under a 1% significance level.

    We divided the whole sample into subgroups and examined each subgroup's significance level. First, we divided by higher IPO under-priced firms and lower under-priced firm categories. Table 6 presents the significance level under this category. We found that extremely higher under-priced IPO firms have a significantly negative effect on other firms in the same chaebol group over the event windows (0, 0), (0, +1), and (0, +2).

Table 6. CARs and Associated t-values According to Under-pricing Category

	(1) Under-pricing <=200	(2) Under-pricing >200	(3) = (1)−(2)
CAR [0,0]	-2.7856 (0.6801)	-10.4074 (6.7767)	7.6218 (3.8390) (t=1.9853) Pr(|T|>|t|) =0.0479
Observations	343	12	
CAR [0, +1]	-3.8551 (0.6958)	-14.4458 (8.4811)	10.5907 (4.0245) (t=2.6315) Pr(|T|>|t|) =0.0089
Observations	343	12	
CAR [0, +2]	-4.5243 (1.0314)	-16.5149 (9.7787)	11.9906 (5.7946) (t=2.0693) Pr(|T|>|t|) =0.0392
Observations	343	12	

Secondly, we divided the sample into two subgroups by higher ROE firms and lower ROE firm's categories. Table 7 presents the significance level of each type. We found that higher ROE firms have a significantly more negative effect compared to lower ROE chaebol firms.

Table 7. CARs and Associated t-values According to Higher and Lower ROE Values

	(1) ROE<=.05403980	(2) ROE>.0540398	(3) = (1)−(2)
CAR [0,0]	-1.2430 (0.4899)	-4.5543 (1.2045)	3.3113 (1.3895) (t=2.3830) Pr(|T|>|t|) =0.0177
Observations	162	193	
CAR [0, +1]	-1.5588 (0.5941)	-6.4411 (1.2324)	4.8822 (1.4514) (t=3.3638) Pr(|T|>|t|) =0.0009
Observations	162	193	
CAR [0, +2]	-1.8397 (0.6455)	-7.5231 (1.8394)	5.6834 (2.0934) (t=2.7149) Pr(|T|>|t|) =0.0070
Observations	162	193	

V. Conclusion

The main purpose of this study is to examine the abnormal returns to the stock during IPO event and the reason behind such abnormal returns. From this event study, we found a significant CAR around the event date. The abnormal return is statistically significant. The market reacts positively to the IPO listing event, even on the same day as the listing. The market responds the most favorably to IPO listing whose under-pricing value is more. Tests of the CAR determinants using regression analysis show a negative relation between IPO under-pricing and other firms' CAR. Our study found that IPO firms with more under-pricing affect the chaebol firm's stock price more adversely because of sharing risk among other firms

in a group. Also, our research found that to compensate for the financial loss due to high under-pricing, chaebol firms allocate resources from high ROE firms to the new firm. As a result, we found a significant negative effect between ROE and CAR of the chaebol firms. The higher ROE chaebol firms affect more negatively compared to the lower ROE chaebol firms within a group.

The value of this study can be explained from various outlooks. This study uses event study analysis to contribute to the literature on IPO events and their impact on other firms' stock returns. It is the first attempt to examine this relation. The growing importance of conglomerate firms in the economy inspires us for this research. This study provides some empirical results in support of a chaebol firm's stock performance. The limitation of this study is that our study focused only on the publicly listed firms of South Korea. It will be interesting to understand this impact in other world economies as well. We will need to conduct supplementary studies that include other factors for abnormal returns in chaebol firms. In addition, further study needs to investigate post-event analysis studies among chaebol firms and their long-term impact on other firms. In the face of these limitations, this paper expects to contribute to the literature by supporting scholars interested in the stock market performance of chaebol firms.

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