Does The Market React Differently To Chaebol Firms?

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ABSTRACT

Based on a sample of Korean firms listed on the KOSPI and KOSDAQ from 2001 to 2011, we examined whether the affiliation of a firm with a Chaebol group affects the sensitivity of stock prices to earnings surprises. We found that the market response to positive (negative) earnings surprises is more positive (negative) for Chaebol firms than for non-Chaebol firms. In addition, we investigated how intra-group transactions affect the ERCs of Chaebol firms by comparing with those of non-Chaebol firms. Our results show that the intra-group transactions of Chaebol firms are positively related to ERCs under both positive and negative earnings surprises. However, we did not find the same results from the analyses of non-Chaebol firms.

Keywords: Chaebol Firms; Earnings Response Coefficient (ERC); Earnings Surprises; KOSPI; KOSDAQ

1. INTRODUCTION

The aim of this study is to examine how differently the market reacts to earnings surprises of Chaebol firms compared to those of non-Chaebol firms. Although there is no official definition of Chaebol, firms are perceived as Chaebol if they consist of a large group and operate in many different industries, maintain substantial business ties with other firms in their group, and are controlled by the largest shareholder as a whole. The definition used to identify Chaebol firms is that of a large business group established by the Korea Fair Trade Commission (KFTC) and a group of companies of which more than 30% of the shares are owned by the group's controlling shareholders and its affiliated companies. According to a report from the KFTC, 51 groups have been designated as large business groups, including 1,740 listed and non-listed firms.[1] In 2011, Chaebol firms accounted for three quarters of all market value in Korea. Chaebol firms contributed to boosting Korea's export-driven economy in recent decades and overcoming the Asian currency crisis in the late 1990s but have become a target of public criticism over their perceived abuses of economic power. Regardless of which view one holds of Chaebol firms in the Korean economy, market participants are interested in Chaebol firms. Due to the significance of Chaebol firms to the Korean economy, their decisions and strategies function as milestones of the economy. Information on Chaebol firms is easily obtained from the media and official resources such as the KFTC. This means that Chaebol firms have a better information environment than non-Chaebol firms. We examined whether the affiliation of a firm with a Chaebol group influences the sensitivity of stock prices to earnings surprises. We predicted that the Earnings Response Coefficients (ERCs) of Chaebol firms would show different patterns from those of non-Chaebol firms.

Additionally, we investigated how intra-group transactions affect the ERC of Chaebol firms and whether there is a difference with non-Chaebol firms. One of the distinct strategies of a Chaebol is decision making at the whole group level using affiliates. Even though each firm in a Chaebol group has an independent statutory status and system, they are run for the maximization of the group value, including all affiliates in the group, not for the maximization of the individual value of the firm. Park et al. (1997) found that a Chaebol firm makes decisions that maximize the size of the whole group, and the Korea Development Institute (KDI) reported on the influence of the

[1] http://groupopni.ftc.go.kr/

controlling shareholders over firms in the group (KDI report, 2003). As a result, intra-group transactions are easily utilized for the goal of the controlling shareholders of Chaebol firms. The ratio of intra-group transactions among the affiliates of a Chaebol in Korea has increased over the past years.[2] This implies that intra-group transactions are an essential strategy of a Chaebol to achieve the goals of the controlling shareholder. Intra-group transactions under the influence of the controlling shareholders have both positive and negative aspects (Bae & Park, 2009).

At first, the controlling shareholders have incentives to increase their wealth by transferring some value to other group firms (Johnson et al., 2000). To describe the transfer of resources out of firms for the benefit of the controlling shareholders, Johnson et al. (2000) used the term "tunneling." Not only other minority shareholders but also creditors may lose their wealth from the decreases in value of a single firm caused by tunneling activities directed by controlling shareholders. As empirical evidence, Bae et al. (2002) found that while the minority shareholders of a firm within a Chaebol may lose from an acquisition, the controlling shareholders benefit because the acquisition enhances the value of the other firms in the group. In contrast, the group structure of a Chaebol can add value to a member firm by providing intra-group equity investments, low-interest loans, and cross-debt guarantees, namely "propping." Friedman et al. (2003) used "propping" to describe the injection of private cash from an entrepreneur into an affiliated firm with outside investors. The resources to prop up the troubled firm need not only come from the private property (i.e., purchase or buy an asset of the affiliated firm at a price lower or higher than fair value) of the controlling shareholders. Other healthier affiliates can be utilized to support the target firm. This study examined how intra-group transactions affect the market response to earnings surprises. We expect that the reaction of market participants to intra-group transactions of non-Chaebol firms is different from that of Chaebol firms due to the unique structure of a Chaebol which makes possible "tunneling" or "propping."

Our results show that market response to positive (negative) earnings surprises is more positive (negative) for Chaebol firms. One possible explanation for this result can be a better information environment and less information uncertainty. Second, intra-group transactions of Chaebol firms are positively related to ERCs. Specifically, Chaebol firms with greater intra-group transactions show larger ERCs under positive earnings surprises, while they show smaller ERCs under negative earnings surprises. However, we found that intra-group transactions have no effect on the ERCs in non-Chaebol firms. This result indicates that investors expect or recognize the "propping" effect that maintains or increases the value of a firm in case of bad news from Chaebol firms.

This study contributes to the literature on Chaebol firms in two ways. First, we identified that Chaebol firms have larger ERCs than non-Chaebol firms, and this result is supported regardless of the type of news, good or bad. A previous study could not find evidence that Chaebol firms exhibit larger ERCs than non-Chaebol firms after controlling for the size effect (Lee, 1993). Second, we extend studies on ERCs of Chaebol firms by including intra-group transactions as one of the determinants of the market response. We expect future studies to explore what causes the larger ERCs of Chaebol firms in terms of the information environment and the direct connections between intra-group transactions and "propping."

The rest of this paper proceeds as follows. Section 2 reviews the related literature and develops the hypotheses. Section 3 describes the sample selection and research methodology. Section 4 reports our main results, and the final section summarizes and concludes the paper.

2. LITERATURE REVIEW AND HYPOTHESES DEVELOPMENT

2.1 Literature on Earnings Response Coefficient

Since Ball and Brown (1968), many financial accounting researchers have examined the ERC, which is defined as the effect of a $1 change in earnings on the dollar stock returns. The ERC is the slope coefficient for the regression of returns for the change in earnings. Major studies in the capital market area have focused on the

[2]According to a report by the Fair Trade Commission (FTC), the so-called inter-affiliate contracts of 46 business groups came to 186.3 trillion won ($164.1 billion), or 13.2 percent of their total combined sales of 1,407.2 trillion won. That is up from 12 percent tallied a year earlier, and the amount also represented a 28.7 percent increase over the same period. Those figures are based on a review of sales and contract data compiled from 1,373 affiliates of business groups until the end of May 2012 (The Korea Times, 2012.8.30.).

determinants of the ERC. The overall findings of these studies suggest that the ERC is positively related to earnings persistence and growth and negatively related to beta and the risk-free interest rate (Kormendi & Lipe, 1987; Easton & Zmijewski, 1989; Collins & Kothari, 1989).

In the same context, researchers have examined whether stock price reactions to earnings surprises are related to the quality of the reported earnings numbers (Imhoff & Lobo, 1992; Lee & Sami, 1998). Some studies have attempted to analyze the difference in market reaction with regards to the sign of the news. For example, Basu (1997) showed that firms with positive (negative) unexpected earnings, meaning good news (bad news), have positive (negative) excess returns. In addition, Mian and Sankaraguruswamy (2012) found that stock price sensitivity to good earnings news is higher during high sentiment periods than during low sentiment periods, whereas stock price sensitivity to bad earnings news is higher during low sentiment periods than during high sentiment periods.

2.2 Literature on Chaebol

Due to the unique ownership structure, extant studies on Chaebol firms have focused on the relation between the value of firms and Chaebol affiliation. Ferris et al. (2003) found a negative effect of Chaebol membership on a firm's value. Lee et al. (2011) showed that high insider ownership and Chaebol affiliation reduce a firm's value. However, Kim et al. (2011) examined the influence of ownership-control disparity on a firm's value, but they could not find any significant correlation between them.

In particular, a large body of studies have examined "tunneling" and "propping" among Chaebol firms. "Tunneling" occurs when the controlling shareholders increase their wealth by transferring some value to other group firms (Johnson et al., 2000). The tunneling effect has been reported for various situations. Bae et al. (2002) found that while the minority shareholders of a firm within a Chaebol may lose from an acquisition, the controlling shareholders benefit because the acquisition enhances the value of the other firms in the group. Baek et al. (2006) showed that Chaebol firms offering private securities to group affiliates set the offering prices to benefit their controlling shareholders. In contrast, Friedman et al. (2003) used "propping" to describe the injection of an entrepreneur's private cash into an affiliated firm with outside investors. In the same context, Riyanto and Toolsema (2008) identified "propping" as a form of inter-group insurance in case of financial distress. As evidence of recognition of "propping" by the market, Bae et al. (2008) found that the announcement of increased earnings by a Chaebol firm has a positive effect on the market value of other affiliates in the group.

Studying the market's evaluation of Chaebol affiliation, Lee (1993) reported that Chaebol firms exhibit larger ERCs than non-affiliated firms due to the monopoly power of Chaebol firms. However, after controlling for size, Chaebol firms did not show any significant correlation. On the other hand, Yoon and Huh (1998) reported that growth and Chaebol affiliation have a positive effect on ERC.

2.3 Literature on Intra-Group Transactions

According to IAS 24, a person or entity is related to a reporting entity if that person or entity has control or joint control of the reporting entity, or if that person or entity has significant influence over the reporting entity. As such, we can define intra-group transactions as transactions among firms in the same Chaebol group. The controlling shareholder of the Chaebol group has substantial power to make decisions at the whole group level and an incentive to maximize its wealth by managing earnings through intra-group transactions.

Extant studies have examined the effect of intra-group transactions on the aspects of earnings management and market response. Kim and Woo (2008) examined the relationship between the transactions of related parties and earnings management. They found that discretionary accruals become larger as the transactions of related parties increase. In addition, the ERC is smaller when the size of the transactions of related parties is relatively large, which implies that the investors evaluate the transactions of related parties negatively. Choi (2010) examined the association between the transactions of related parties, such as the sale of goods and credit offerings among affiliates and stock return. The results showed that the sales of the related party are not related to stock returns, while the accounts receivables of the related party are negatively correlated with stock price.

Chang et al. (2000) examined the economic performance of Chaebol firms by explicitly addressing group wide resource-sharing and intra-group transactions. The results showed that group-affiliated firms benefit from group membership because they share intangible assets and financial resources with other member firms. Lee (2006) reported a negative effect of the transactions of related parties on a firm's value regardless of Chaebol affiliation. This is inconsistent with Kim and Woo's (2008) study, which did not find a negative evaluation of the market for Chaebol firms.

2.4 Hypotheses Development

Investors make decisions based on available information and are affected by behavioral biases. Mian and Sankaraguruswamy (2012) found that market-wide investor sentiment influences the stock price sensitivity to firm-specific earnings news, which implies the existence of behavioral biases by investors. Specifically, the ERC for good earnings news is higher during high sentiment periods than during low sentiment periods, whereas the ERC for bad earnings news is higher during low sentiment periods than during high sentiment periods. Similarly, whether a firm is a member of a Chaebol affects the response of investors to earnings surprises after controlling for other determinants of ERC such as size and risks. Chaebol firms receive more attention from the public, including investors and regulators, than non-Chaebol firms. Therefore, investors are able to access information about Chaebol firms not only from annual reports but also from the media without consuming considerable time and effort.[3] Given the more available information compared to non-Chaebol firms, we expect that information uncertainty can be reduced for Chaebol firms.

Hypothesis 1: The ERC of a Chaebol firm for positive (negative) earnings surprises is significantly different from that of a non-Chaebol firm.

A Chaebol establishes its goals and executes its strategies at the group level rather than at the individual firm level. This implies that a large portion of intra-group transactions can be used to adjust the performance of individual firms to achieve operational and financial goals intended by the controlling shareholders. Chaebol firms are exposed to the risk of "tunneling" and to the advantage of "propping" facilitated by intra-group transactions. Intra-group transactions can decrease the value of a firm because of the controlling shareholders' pursuit of private profit (called "tunneling") and cause a negative market response to earnings news. On the other hand, intra-group transactions are used to prop up distressed firms or relatively weak affiliated firms by supporting their operations or making additional investments.

However, intra-group transactions are not an exclusive strategy of Chaebol firms. Non-Chaebol firms also have various types of related parties, including subsidiaries and associates, involved in related party transactions. Kim and Woo (2008) analyzed a single regression irrespective of the sign of earnings surprises and found that the ERC is lower when the size of the related party transactions is large. This result indicates that investors evaluate the related party transactions negatively. However, this result is only applicable to non-Chaebol firms and implies that the intra-group transactions of non-Chaebol firms deliver different signals to investors due to the limited information available compared to Chaebol firms.

Due to the mixed effects of "tunneling" and "propping" of Chaebol firms, we do not predict the direction of the net effect of intra-group transactions on the ERC. Additionally, we predict that how and to what extent intra-group transactions affect ERCs are different depending on the sign of the earnings surprises and whether a firm belongs to a Chaebol.

Hypothesis 2a: The ERCs of Chaebol (non-Chaebol) firms vary depending on intra-group transactions.
Hypothesis 2b: The effects of intra-group transactions on the ERCs of Chaebol (non-Chaebol) firms for positive earnings surprises are different from the ERCs for negative earnings surprises.

[3] http://www.chaebul.com/ is a portal website providing comprehensive information about Chaebol.

3. RESEARCH METHODOLOGY

To examine whether Chaebol firms have different ERCs for earnings surprises compared to non-Chaebol firms, we constructed basic Model (1). Then, to investigate ERCs for positive and negative earnings surprises separately, we developed basic Model (1) into Model (1a) and Model (1b).

$$SAR_{i,t} = a_0 + b_1UE_{i,t} + b_2UE_{i,t} \times CHAEBOL_{i,t} + b_3CHAEBOL_{i,t} + b_4SIZE_{i,t} + b_5LEV_{i,t} + b_6BM_{i,t} + b_7MK_{i,t} + \Sigma\beta_jIND_{i,t} + \Sigma\beta_kYD_{i,t} + \varepsilon_{i,t} \quad \text{Model (1)}$$

$$SAR_{i,t} = a_0 + b_1UEUP_{i,t} + b_2UEUP_{i,t} \times CHAEBOL_{i,t} + b_3CHAEBOL_{i,t} + b_4SIZE_{i,t} + b_5LEV_{i,t} + b_6BM_{i,t} + b_7MK_{i,t} + \Sigma\beta_jIND_{i,t} + \Sigma\beta_kYD_{i,t} + \varepsilon_{i,t} \quad \text{Model (1a)}$$

$$SAR_{i,t} = a_0 + b_1UEDOWN_{i,t} + b_2UEDOWN_{i,t} \times CHAEBOL_{i,t} + b_3CHAEBOL_{i,t} + b_4SIZE_{i,t} + b_5LEV_{i,t} + b_6BM_{i,t} + b_7MK_{i,t} + \Sigma\beta_jIND_{i,t} + \Sigma\beta_kYD_{i,t} + \varepsilon_{i,t} \quad \text{Model (1b)}$$

Where,

SAR	*Size-adjusted abnormal return*
UE	*Unexpected net income scaled by total asset of t-1*
UEUP	*Positive unexpected net income*
UEDOWN	*Negative unexpected net income*
CHAEBOL	*An indicator variable equal to 1 if a firm is an affiliate of a Chaebol, 0 otherwise*
SIZE	*Natural logarithm of total assets*
LEV	*Total debt/Net assets*
BM	*Market capitalization/Book value*
MK	*An indicator variable equal to 1 if a firm is listed on KOSPI, 0 otherwise*
IND	*Industry dummy*
YD	*Year dummy*

SAR is the size adjusted return cumulated over a 12-month period ending three months after the company's fiscal year-end. We selected this period to ensure that information on earnings surprises and intra-group transactions reported in the firm's annual report is available to the market. SAR is free of the size effect because these returns are computed after subtracting the returns on a portfolio of stocks that are similar in size. CHAEBOL is an indicator variable which takes the value of 1 if a firm is an affiliate of a Chaebol group. The ERC of a Chaebol firm is the sum of b_1 and b_2. We included LEV as a control variable to reflect the result of a previous study that showed low leveraged firms have a larger ERC than that of high leveraged firms (Dahliwal et al., 1991). In addition, we added SIZE and BM into the model to control for the effects of firm size and growth on the ERC (Collins & Kothari, 1989). Finally, we included an indicator variable MK to identify in which market a firm is listed to control for market specific effects.

To test Hypothesis 2, we estimated Model (2) including TRANS. TRANS is an indicator variable that represents whether the size of the intra-group transactions is larger than the median of the total samples' intra-group transactions. We measured the intra-group transactions by calculating the net effect of the intra-group transaction on a firm's profitability. Specifically, we deducted the purchases and expenses from the revenue and other gains and then, scaled this by the total revenue of the firm. We included the same control variables as in Model (1) and ran Model (2) independently for Chaebol firms and non-Chaebol firms. To investigate the effect of the sign of earnings surprises, we examined Model (2a) and (2b), respectively.

$$SAR_{i,t} = a_0 + b_1UE_{i,t} + b_2UE_{i,t} \times TRANS_{i,t} + b_3TRANS_{i,t} + b_4SIZE_{i,t} + b_5LEV_{i,t} + b_6BM_{i,t} + b_7MK_{i,t} + \Sigma\beta_jIND_{i,t} + \Sigma\beta_kYD_{i,t} + \varepsilon_{i,t} \quad \text{Model (2)}$$

$$SAR_{i,t} = a_0 + b_1 UEUP_{i,t} + b_2 UEUP_{i,t} \times TRANS_{i,t} + b_3 TRANS_{i,t} + b_4 SIZE_{i,t} + b_5 LEV_{i,t} + b_6 BM_{i,t} + b_7 MK_{i,t} + \Sigma\beta_j IND_{i,t} + \Sigma\beta_k YD_{i,t} + \varepsilon_{i,t}$$ Model (2a)

$$SAR_{i,t} = a_0 + b_1 UEDOWN_{i,t} + b_2 UEDOWN_{i,t} \times TRANS_{i,t} + b_3 TRANS_{i,t} + b_4 SIZE_{i,t} + b_5 LEV_{i,t} + b_6 BM_{i,t} + b_7 MK_{i,t} + \Sigma\beta_j IND_{i,t} + \Sigma\beta_k YD_{i,t} + \varepsilon_{i,t}$$ Model (2b)

Where,

SAR	*Size-adjusted abnormal return*
UE	*Unexpected net income scaled by total asset of t-1*
UEUP	*Positive unexpected net income*
UEDOWN	*Negative unexpected net income*
TRANS	*An indicator variable equal to 1 if the intra-group transactions are larger than the median of the year, 0 otherwise*
SIZE	*Natural logarithm of total assets*
LEV	*Total debt/Net assets*
BM	*Market capitalization/Book value*
MK	*An indicator variable equal to 1 if a firm is listed on KOSPI, 0 otherwise*
IND	*Industry dummy*
YD	*Year dummy*

4. SAMPLE AND RESEARCH DESIGN

4.1 Sample Selection

Our sample consisted of firms listed on the Korea Stock Exchange (KSE) and the Korea Securities Dealers Automated (KOSDAQ) during the period 2001-2011. We obtained financial data from KIS-VALUE, which provides the financial statements of all listed firms, and analyst forecasts from the Fn-Guide. For comparability, we deleted firms with non-December fiscal year-ends and all firms in which total liabilities were larger than the total assets. This screening procedure yielded a total of 10,794 firm-year observations. Table 1 presents the sample selection criteria and the number of excluded firms to arrive at our final sample.

Table 1: Sample Selection

Sample Selection Criteria	N
Firm-years with December fiscal year-ends and listed on the KSE during the period 2001-2011.	22,651
(Less) Firm-years without intra-group transaction data from the Korea Listed Companies Association[4]	(7,978)
(Less) Firm-years without data from KIS-VALUE and Fn-Guide	(3,782)
(Less) Firm-years in which total liabilities were larger than the total assets	(48)
(Less) Firm-years with issues for administration	(49)
Total number of firm-years in the final sample	10,794

4.2 Definition of Chaebol

Each year, the KFTC ranks business groups by the size of their total assets and identifies the 30 largest groups. We used the website operated by the Korean Fair Trade Commission to obtain a list of Chaebol firms. Table 2 presents the distribution of our sample firms (Chaebol and non-Chaebol). As can be seen in Panel A, a total of 1,631 firms are classified as Chaebol firms and account for 15 percent of our sample. In addition, Panel A shows that 86% of the Chaebol firms are listed on the KSE, whereas the portion of non-Chaebol firms listed on the KSE is only 45%. In Panel B of Table 2, we summarize the industrial composition of our sample.

[4] Excluded firm-year that all amounts of sales, account payables, revenues, and expenses are zero in intra-group transactions.

Table 2: The Distribution of Sample Firms

Panel A: The Distribution of Sample Firms by Year and Listed Market

Year	Chaebol Firms			Non-Chaebol Firms		
	KSE	KOSDAQ	Total	KSE	KOSDAQ	Total
2001	55	5	60	336	189	525
2002	105	13	118	318	267	585
2003	114	16	130	338	342	680
2004	121	15	136	343	371	714
2005	123	16	139	347	401	748
2006	136	28	164	372	459	831
2007	145	26	171	386	501	887
2008	165	37	202	380	547	927
2009	138	25	163	427	599	1,026
2010	141	26	167	436	651	1,087
2011	155	26	181	438	715	1,153
Total	1,398(86%)	233(14%)	1,631	4,121(45%)	5,042(55%)	9,163

Panel B. The distribution of sample firms by industry

Industry Description	Chaebol Firms		Non-Chaebol Firms	
	N	%	N	%
Food, beverages and tobacco products	68	4.17	409	4.46
Textile and leather products	21	1.29	344	3.75
Wood, pulp and paper products	13	0.80	287	3.13
Chemicals and chemical products	170	10.42	627	6.84
Medicine and Medical Supplies Products	19	1.16	511	5.58
Rubber and plastics products	20	1.23	243	2.65
Non-metallic mineral products	56	3.43	243	2.65
Primary metal and fabricated metal products	132	8.09	730	7.97
Electronic component and communication equipment products	130	7.97	1,332	14.54
Electrical machinery and apparatuses products	44	2.70	539	5.88
Other machinery and equipment products	54	3.31	655	7.15
Motor vehicles and other transport equipment products	85	5.21	543	5.93
Construction	159	9.75	268	2.92
Wholesale and retail trade	191	11.71	608	6.64
Transportation	78	4.78	134	1.46
Publishing business	15	0.92	405	4.42
Professional services	179	10.97	525	5.73
Others	197	12.08	760	8.29
Total	1,631	100	9,163	100

5. RESULTS

5.1 Descriptive Statistics and Correlation Analysis

Table 3 presents the descriptive statistics of the variables used in the analyses. Size-adjusted returns, SARi,t, have been winsorized at 1 percent and 99 percent of the respective distribution to mitigate the impact of outliers. The mean of the size-adjusted returns was 0.048, which represents the average response to positive, negative, and no-news surprises. The positive mean of 0.008 for earnings surprises, UE $_{i,t}$, indicates that the earnings news have, on average, been positive. However, when we divide the sample into positive and negative earnings surprises, we note that the mean magnitude of the two sub-groups, UEUP[>0] and UEDOWN[<0], was 0.077, -0.072, respectively, suggesting that the overall positive mean of UE is due to the greater preponderance of positive news in our sample. CHAEBOL is an indicator set to 1 if the firm is a Chaebol firm and 0 otherwise. The mean CHAEBOL was 0.151. This finding suggests that about 15 percent of our sample firms are classified as Chaebol firms. Table 3 also provides statistics on the control variable. The control variables include measures such as firm size (SIZE) measured as the natural logarithm of the total assets, the market-to-book ratio (MB), an indicator set to 1 if the firms are listed on the KSE and 0 otherwise (MK), and a leverage as the total debt divided by the net assets (LEV). To control or mitigate industry and time-series effects, we added an industry dummy and year dummy for the regression analysis.

Table 3: Summary of the Statistics

Variables	N	Mean	Std.	p25	p50	p75
SAR	10,794	0.048	0.551	-0.271	-0.045	0.219
UE	10,794	0.008	0.261	-0.032	0.002	0.035
UEUP	5,637	0.077	0.135	0.013	0.033	0.080
UEDOWN	5,157	-0.072	0.119	-0.081	-0.035	-0.013
CHAEBOL	10,794	0.151	0.358	0.000	0.000	0.000
TRANS	10,794	0.500	0.500	0.000	1.000	1.000
SIZE	10,794	25.731	1.433	24.749	25.435	26.398
LEV	10,794	1.084	1.345	0.372	0.748	1.323
MB	10,794	1.731	1.651	0.747	1.300	2.172
MK	10,794	0.511	0.500	0.000	1.000	1.000

Note: The sample consists of 10,794 firms between 2001 and 2011. All firms are publicly traded. SAR is the size adjusted return cumulated over the 12-month period ending three months after the company's fiscal year-end. SAR is free of the size effect because these returns are computed after subtracting the returns on a portfolio of stocks that are similar in size. The control variables include measures such as firm size (SIZE) measured as the natural logarithm of the total assets, the market-to-book ratio (MB), an indicator set to 1 if the firms listed on the KSE and 0 otherwise (MK), and a leverage as the total debt divided by the net assets (LEV). To control or mitigate industry and time-series effects, we added an industry dummy and year dummy for the repression analysis.

Table 4 provides the Pearson and Spearman correlation coefficient for the various combinations of control and test variables. SAR is significantly positively correlated with CHAEBOL. SAR is significantly correlated with TRANS, LEV, and MK with a negative sign.

Table 4: Correlations

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
(1)SAR		**0.087**	**0.023**	0.012	**0.046**	**-0.029**	**0.125**	**-0.036**
(2)UE	**0.312**		0.001	0.002	-0.015	-0.013	**0.045**	-0.002
(3)CHAEBOL	**0.032**	**0.029**		**0.087**	**0.588**	**0.076**	-0.015	**0.292**
(4)TRANS	0.001	-0.005	**0.072**		**0.021**	-0.007	-0.012	**-0.048**
(5)SIZE	**0.086**	**0.023**	**0.474**	0.009		**0.138**	**0.106**	**0.539**
(6)LEV	**-0.034**	**-0.031**	**0.131**	0.003	**0.208**		**-0.040**	**0.080**
(7)BM	**0.171**	**0.134**	**-0.055**	-0.006	**0.162**	**-0.030**		**0.247**
(8)MK	**-0.020**	**0.022**	**0.292**	**-0.056**	**0.574**	**0.114**	**0.271**	

Note: This table reports pairwise Pearson (Spearman) correlation coefficients above (below) the diagonal for the firms in our dataset. The bold values are significant at 5% or less. The definitions of the variables are the same as before.

Table 5 reports the results of the univariate tests on the differences between Chaebol firms and non-Chaebol firms. Firm size, measured by market capitalization and total assets, is much larger for Chaebol firms than for non-Chaebol firms. This is consistent with the market distribution of Chaebol firms skewed to the KSE. In addition, SAR is significantly larger for Chaebol firms (0.078) than for non-Chaebol firms (0.043). Leverage measured by the ratio of the total debt to the market value of equity is also significantly different between the groups. The mean (median) leverage ratios for Chaebol firms and non-Chaebol firms are 1.327 (1.030) and 1.041 (0.706), respectively. The mean (median) TRANS for Chaebol firms and non-Chaebol firms are 0.070 (0.007) and 0.014 (-0.001), which indicates that Chaebol firms execute more intra-group transactions. These differences are statistically significant at the 1 percent level. However, UE and BM are not significantly different between the groups.

Table 5: Univariate Analysis

Variables	Chaebol Firms (N = 1,631)		Non-Chaebol Firms (N = 9,163)		T-test	
	Mean	Median	Mean	Median		
SAR	0.078	-0.032	0.043	-0.048	2.39	**
UE	0.009	0.005	0.008	0.001	0.11	
TRANS	0.070	0.010	0.014	-0.001	7.92	***
SIZE	27.727	27.756	25.376	25.254	57.07	***
LEV	1.327	1.030	1.041	0.706	7.94	***
BM	1.670	1.128	1.741	1.330	1.45	
MK	0.857	1.000	0.450	0.000	40.31	***

Note: The definition of variables is described in Table 3. ***, **, * represent $p < .01$, $p < .05$, and $p < .10$, respectively (two-tailed).

5.2 Regression Analysis

Table 6 presents the results for the test of our first hypothesis from the regression analysis based on Equations (1), (1a), and (1b). The coefficients of UE, UEUP, and UEDOWN capture the stock price response to earnings surprises in the case of non-Chaebol firms. Our primary focus in Table 6 is on the interactions of UE (UP and DOWN) and Chaebol that capture the differences in the ERC between Chaebol and non-Chaebol firms. The positive coefficient of the interaction variables indicates that the stock price changes more when a firm belongs to a Chaebol.

Table 6: ERCs of Chaebol Firms for Earnings Surprises

$SAR_{i,t} = a_0 + b_1UE_{i,t} + b_2UE_{i,t} \times CHAEBOL_{i,t} + b_3CHAEBOL_{i,t} + b_4SIZE_{i,t} + b_5LEV_{i,t} + b_6BM_{i,t} + b_7MK_{i,t} + \Sigma\beta_jIND_{i,t} + \Sigma\beta_kYD_{i,t} + \varepsilon_{i,t}$ (1)

$SAR_{i,t} = a_0 + b_1UEUP_{i,t} + b_2UEUP_{i,t} \times CHAEBOL_{i,t} + b_3CHAEBOL_{i,t} + b_4SIZE_{i,t} + b_5LEV_{i,t} + b_6BM_{i,t} + b_7MK_{i,t} + \Sigma\beta_jIND_{i,t} + \Sigma\beta_kYD_{i,t} + \varepsilon_{i,t}$ (1a)

$SAR_{i,t} = a_0 + b_1UEDOWN_{i,t} + b_2UEDOWN_{i,t} \times CHAEBOL_{i,t} + b_3CHAEBOL_{i,t} + b_4SIZE_{i,t} + b_5LEV_{i,t} + b_6BM_{i,t} + b_7MK_{i,t} + \Sigma\beta_jIND_{i,t} + \Sigma\beta_kYD_{i,t} + \varepsilon_{i,t}$ (1b)

	(1)		(1a)		(1b)	
	Coefficient	**t-Statistics**	**Coefficient**	**t-Statistics**	**Coefficient**	**t-Statistics**
Intercept	-0.936***	-6.99	-0.973***	-4.84	-0.625***	-3.67
UE	0.150***	7.49				
UEUP			0.041	0.66		
UEDOWN					0.297***	5.16
UE×CHAEBOL	2.574***	9.56				
UEUP×CHAEBOL			1.200***	2.92		
UEDOWN×CHAEBOL					0.792**	2.22
CHAEBOL	-0.004	-0.20	-0.036	-1.10	0.025	0.89
SIZE	0.036***	6.81	0.044***	5.57	0.019***	2.77
LEV	-0.009**	-2.17	-0.008	-1.28	-0.001	-0.20
BM	0.052***	14.31	0.045***	9.27	0.044***	8.27
MK	-0.142***	-10.61	-0.178***	-8.91	-0.097***	-5.93
Year Dummy	Included		Included		Included	
Industry Dummy	Included		Included		Included	
N	10,794		5,637		5,157	
Adj R^2	0.049		0.043		0.043	
F-value	17.44***		8.47***		7.74***	

Note: The sample consists of 10,794 firms between 2001 and 2011. All firms are publicly traded. The independent variable is the size adjusted return cumulated over the 12-month period ending three months after the company's fiscal year-end. T-Statistics are in parentheses.

We predict that the ERC of a Chaebol firm for positive (negative) earnings surprises will be significantly different from that of a non-Chaebol firm. As seen in Table 6, before partitioning the sample according to the sign of the earnings surprises, we run the regression analysis by including the whole sample. The first two columns of Table 6 show that both coefficients of UE and the interaction of UE and Chaebol are positive. The positive coefficient of UE is consistent with a large body of prior literature stating that earnings surprises cause a significant response from stock prices. The positive coefficient of the interaction of the UE and Chaebol indicates that the market response to earnings surprises is stronger for Chaebol firms. This result is still supported when we divided our total sample into two sub-groups: one group with positive earnings surprises and the other group with negative earnings surprises. The results show that both coefficients for the UEUP × CHAEBOL and UEDOWN × CHAEBOL are significantly positive (significant at the 1% level). This means that the stock price of Chaebol firms increase more when there are positive earnings surprises, whereas it declines more in the case of negative earnings surprises.

In summary, our results are consistent with our expectation that investors react differently to the earnings surprises of Chaebol firms. One possible explanation for the greater reaction to news on Chaebol firms could be because of a better information environment formed by a greater following of analysts and more interests from the media. In addition, it can be inferred that "tunneling" or "propping" intended by controlling shareholders affects the decisions of investors. By examining our second hypothesis which includes intra-group transactions as an additional explanation variable, we will further discuss "tunneling" and "propping."

Next, we examine whether market reactions vary depending on intra-group transactions. We estimated equations (2), (2a), and (2b), respectively, for Chaebol firms and non-Chaebol firms. Intra-group transactions are perceived by external auditors and regulators as risk areas where a material misstatement could occur. As such, we expect that market participants respond to earnings surprises differently by evaluating the nature and size of the intra-group transactions. Hypothesis 2a predicts that intra-group transactions affect the ERCs of the Chaebol (Non-Chaebol) firms. Furthermore, we expect that the effects of the intra-group transactions are different according to the sign of earnings surprises as stated by Hypothesis 2b.

Table 7 shows the results separately for Chaebol firms and non-Chaebol firms. The coefficients of the UE × TRANS are positive for both Chaebol firms and non-Chaebol firms, which means that the market reaction to earnings surprises is greater with larger intra-group transitions. This is consistent with our prediction that the level of intra-group transactions differentiates ERCs. When we run the regression analysis of (2a) and (2b) for each subgroup, the results show different implications for Chaebol firms and non-Chaebol firms.

The coefficient of UEUP × TRANS for Chaebol firms under positive earnings surprises is significantly positive, whereas that for non-Chaebol firms does not show any statistically meaningful relation. The result suggests that the market interprets earnings surprises with large intra-group transactions positively only in the case of Chaebol firms. This difference is also found in negative earnings surprises. As can be seen in the Table 7 on the left side, the coefficient of UEDOWN × TRANS is significantly negative, which means that the market reacts weaker to negative earnings surprises of Chaebol firms when there are large intra-group transactions. However, we cannot find the same results from the analysis of non-chaebol firms. From the different responses of the market to negative earnings surprises, "propping" effects can be inferred. This can be interpreted as investors of Chaebol firms do not evaluate earnings surprises negatively as much as those of non-Chaebol firms do because they expect that Chaebol firms receive operational or financial support from other affiliates in the Chaebol group. Those types of support are provided in the form of intra-group transactions.

Table 7: The ERCs of Chaebol Firms According to Intra-Group Transactions

$SAR_{i,t} = a_0 + b_1UE_{i,t} + b_2UE_{i,t} \times TRANS_{i,t} + b_3TRANS_{i,t} + b_4SIZE_{i,t} + b_5LEV_{i,t} + b_6BM_{i,t} + b_7MK_{i,t} + \Sigma\beta_j IND_{i,t} + \Sigma\beta_k YD_{i,t} + \varepsilon_{i,t}$ (2)

$SAR_{i,t} = a_0 + b_1UEUP_{i,t} + b_2UEUP_{i,t} \times TRANS_{i,t} + b_3TRANS_{i,t} + b_4SIZE_{i,t} + b_5LEV_{i,t} + b_6BM_{i,t} + b_7MK_{i,t} + \Sigma\beta_j IND_{i,t} + \Sigma\beta_k YD_{i,t} + \varepsilon_{i,t}$ (2a)

$SAR_{i,t} = a_0 + b_1UEDOWN_{i,t} + b_2UEDOWN_{i,t} \times TRANS_{i,t} + b_3TRANS_{i,t} + b_4SIZE_{i,t} + b_5LEV_{i,t} + b_6BM_{i,t} + b_7MK_{i,t} + \Sigma\beta_j IND_{i,t} + \Sigma\beta_k YD_{i,t} + \varepsilon_{i,t}$ (2b)

	Chaebol Firms						Non-Chaebol Firms					
	(2)		(2a)		(2b)		(2)		(2a)		(2b)	
	Coefficient	t-Stat.	Coefficient	t-Stat.	Coefficient	t-Stat.	Coefficient	t t-Stat.	Coefficient	t-Stat.	Coefficient	t-Stat.
Intercept	-0.127	-0.47	0.561	1.41	-0.452	-1.30	-1.331 ***	-8.13	-1.601 ***	-6.40	-0.756 ***	-3.64
UE	0.545 ***	2.84					0.036	1.58				
UEUP			-0.428	-1.29					0.104	1.27		
UEDOWN					2.162 ***	4.45					0.301 ***	3.7858
UE×TRANS	0.767 **	2.45					0.964 ***	11.97				
UEUP×TRANS			1.044 **	2.20					-0.037	-0.27		
UEDOWN×TRANS					-2.095 ***	-3.68					-0.009	-0.07
TRANS	0.025	0.91	0.007	0.16	-0.087 **	-2.04	-0.014	-1.23	0.020	0.96	-0.032 *	-1.91
SIZE	0.005	0.49	-0.011	-0.78	0.010	0.80	0.053 ***	8.11	0.070 ***	7.03	0.025 ***	3.04
LEV	0.015	1.42	0.027 *	1.76	0.015	1.09	-0.012 ***	-2.87	-0.014 **	-2.02	-0.004	-0.71
BM	0.061 ***	7.42	0.066 ***	6.17	0.044 ***	3.50	0.045 ***	10.87	0.035 ***	6.33	0.044 ***	7.24
MK	-0.189 ***	-4.37	-0.223 ***	-3.67	-0.131 **	-2.32	-0.146 ***	-10.21	-0.177 ***	-8.22	-0.101 ***	-5.77
Year Dummy	Included		Included		Included		Included		Included		Included	
Industry Dummy	Included		Included		Included		Included		Included		Included	
N	1,631		921		710		9,163		4,716		4,447	
Adj R^2	0.098		0.115		0.040		0.054		0.039		0.046	
F-value	6.23***		4.53***		1.87***		16.42***		6.55***		7.24***	

Note: The sample consists of 10,794 firms between 2001 and 2011. All firms are publicly traded. The independent variable is the size adjusted return cumulated over the 12-month period ending three months after the company's fiscal year-end. T-Statistics are in parentheses.

6. CONCLUSION

We investigated how being an affiliate of a Chaebol group affects the sensitivity of stock prices to earnings surprises using firms listed on the KOSPI and KOSDAQ from 2001 to 2011. In addition, we analyzed to what extent intra-group transactions affect the ERCs of Chaebol firms compared to non-Chaebol firms. Our results show that the market response to positive (negative) earnings surprises is more positive (negative) for Chaebol firms than for non-Chaebol firms after controlling for other determinants of ERC. Second, we found evidence that, when there are large intra-group transactions, the market reacts more positively to the earnings surprises of Chaebol firms. Specifically, for Chaebol firms, the ERCs for positive earnings surprises are greater, while those for negative earnings surprises are smaller. We developed and extended extant research by examining the ERCs of Chaebol firms for positive and negative earnings surprises separately while considering intra-group transactions. We expect our results to serve as a starting point for other studies on what makes investors react differently to earnings surprises and how intra-group transactions work on market responses. Acknowledgment of "tunneling" and "propping" by investors may be one explanation for the distinction between the ERCs of Chaebol firms and non-Chaebol firms.

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