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# Foreign Ownership and Stock Price Crash Risk:

# Evidence from Korea

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# Foreign Ownership and Stock Price Crash Risk: Evidence from Korea

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**Abstract**

In this paper, I investigate the effect of foreign ownership on the stock price crash risk. Since the late 1990, foreign investors take large portion of firms' shares and raise their voice in terms of firms' operational decisions. They are also known as short-term investors, however, who want to realize short-term gains during their investing period. I examine whether foreign investors actually play a role as a corporate governance mechanism or just have short-term incentive by investigating the relation between foreign ownership and future stock price crash risk. I find that foreign investors' ownership is positively correlated with a firm's stock price crash risk which support that foreign investors does not play a role as a monitoring mechanism and decrease the firms' value. Additional analyses show that the relation between foreign ownership and stock price crash risk is more pronounced within small level of foreign ownership sample and when firms does not belong to business groups: *chaebols*. Overall, this paper provide additional evidence that foreign investors are not efficient monitoring mechanism and are driven by their interest of realizing short-term gains.

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## 1. Introduction

Foreign investors are critical external shareholders who can have a decisive impact on the firm's decision-making in that they have an ability to check management's activities through ordering large-scale transactions and have a relatively stable and long-term perspective to invest (Park and Lee, 2006). Foreign investors, known to have excellent access to and analyze the company's internal information better than domestic institutional or individual investors do, also play the role of 'information intermediaries' that provide other investors in the capital market with intrinsically valued information of invested firms. These foreign investors contributes to the stability and efficient allocation of resources in the mid- and long-term capital market (Jiang and Kim 2004: Ahn et al. 2005).

Especially for the Korea stock market, the portion of foreign ownership has increased almost every year with the full permission of opening to foreign investments since the late 1990s. According to Financial Supervisory Services (FSS) in Korea, the number of officially permitted foreign investors recorded 46,813, which is the highest ever with their huge investment scale.[1] As the proportion of foreign ownership increases, there have been many researchers studying effects of foreign ownership to the invested firms.

However, prior literature has shown mixed results in terms of the effect of foreign ownership to the firm value. According to precedent studies showing positive effect of foreign ownership, foreign shareholders monitor and control manager more actively, which reduces agency costs and information asymmetry (Park and Lee 2006; Kim and Kim 2007;

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1  FSS (2019).
http://www.fss.or.kr/fss/kr/bbs/list.jsp?bbsid=1207397030605&url=/fss/kr/1207397030605&sort=DESC&order by=MODDATE

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Kim et al. 2012; Schleiffer and Vissey 1986). In addition, foreign shareholders are effective external monitoring entities that require managers to comply with International Financial Reporting Standards (IFRS) and perform active monitoring and checking of irrational decisions that reduce the reliability and transparency of accounting information (Jeon 2003; Chung et al. 2004).

On the other hand, there is also a negative view about foreign investors' impact on corporate value. This is because foreign investors with purpose of short-term gain return their investment to get capital gain and require excessive dividend, which causes overall instability in corporate management and inefficient resource allocation. Porter (1992) found that foreign investors focus on short-term performance and exert heavy pressure on management for reporting high profits since their purpose of investment is only for short-term period. Recent analyst reports provide evidence that foreign investors often adjust volatility of capital market rapidly for short-term capital gains.

In this paper, I provide new evidence about the role of foreign investors in terms of stock price crash risk. The stock price crash risk refers to the extremely negative returns within return distributions. This phenomenon occurs because of several reasons. Jin and Myers(2006) and Hutton et al. (2009) documented that the stock crash happen when managers withhold bad news from investors and do not disclosure timely manner. After the withholding bad news behavior approach to tipping point, a large amount of bad news released to the stock market which results in sharp drop in stock return (i.e., crash). Not only for the information asymmetry between managers and shareholders, inefficient investment behavior of managers is also known as a determinant of stock price crash risk which reduce the value of firms (Lee 2019). Considering these conditions for the stock crash occurrence, stock price crash risk is

suitable to test the role of foreign investors' monitoring mechanism and effect to the invested firms' value. If foreign investors monitor the management team effectively, it can decrease agency costs improving the value of invested firms, and then higher proportion of foreign ownership leads to lower stock price crash risk. On the other hand, if foreign investors' monitoring roles are limited and they are concerned with short-term gain, higher proportion of foreign ownership cannot control the management team's opportunistic behaviors and decrease the value of invested firms, which leads to higher stock price crash risk.

For previous literature studying the relation between foreign ownership and stock crash risk, Kim et al. (2019) find that the entrance of foreign investors is associated with a reduction in firms' crash risk in Chinese A-share market. Though Kim et al. (2019) provide evidence that foreign investors are related to monitoring mechanism which reduce stock price crash risk, it cannot be generalized to Korean stock market. Also, Lee (2016) examines the monitoring role of foreign investors in Korean stock market and finds that foreign investors play a monitoring role to reduce crash risk. However, my paper is different from Lee (2016) in several points. First, Lee (2016) only include KOSPI listed firms where foreign investors take a large portion of stake. I include KOSPI and KOSDAQ listed firms to provide more comprehensive picture with regard to the role of foreign investors.[2] Second, Lee (2016) use dummy variable which indicate the portion of foreign ownership (i.e., larger than sample median) while I utilize the level of foreign ownership as a variable of interest. This difference is quite important in that my paper distinguish the role of foreign investors depending on the

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[2] For example, Lee (2016) reports that foreign investors own more than 20% of stocks while average value of portions of foreign investors in my paper is about 6%. This is duet to my sample include KOSDAQ firms where foreign investors have relatively small portion of ownership. As a result, my paper incorporates more than 18,000 firm-year observations which is larger than Lee (2016)'s sample (about 4,000 firm-year observations).

level of foreign ownership (Table 6). That is, while Lee (2016) reports the average effect of foreign investors on stock price crash risk, I find different behavior of foreign investors depending on their shares. By providing different incentives of foreign investors, I show more comprehensive picture of the role of foreign investors especially for monitoring the management team.

The findings of this paper are as follows:

First, I find that the proportion of foreign investors' ownership is positively correlated with future stock price crash risk, which supports the prediction that foreign investors are not effective monitoring mechanism. Also, I provide evidence that the relation between foreign ownership and future stock price crash risk differ depending on the level of foreign ownership. For the firms with less than 5% of foreign ownership whose foreign owners are more likely to interested in short-term gain, I find the consistent result with previous finding. However, in subsamples of sufficiently large foreign ownership, higher foreign ownership is negatively related to the future stock price crash risk. I conjecture that in firms with sufficiently higher foreign ownership, foreign investors are more concerned about managers' behavior which results in effective monitoring mechanism. Lastly, I find that the relation between foreign ownership and stock price crash risk is salient in non-*chaebol* firms where foreign investors raise their voice to the management team.

This paper contributes to the research in several points. First, in terms of the role of foreign investors, I provide evidence that the monitoring role of foreign investors are limited in Korean stock market. Unlike prior studies that examine the relation between foreign investors and corporate behavior, I use more direct measure of foreign investors' monitoring role: stock price crash risk.

Second, this paper contributes to the determinant of stock price crash risk. Though many studies provide evidence that various firm characteristics are related to the future stock price crash risk, relatively little is known about the composition of investors as a determinant of stock price crash risk (An and Zhang 2013; Kim et al. 2019).

The remainder of the paper is organized as follows. Section 2 summarizes the previous literatures and presents hypothesis development. Section 3 presents the data, sample selection, descriptive statistics, and the main regression model used to test hypotheses. Section 4 reports the results of empirical analyses. Section 5 reports the results of additional analyses. Section 6 provides the results of robustness tests and Section 7 concludes the paper.


## 2. Literature Review and Hypotheses Development

Previous literature studying the impact of foreign ownership on corporate value have shown mixed results. That is because foreign capital has positive aspects of increasing corporate value in that it reduces agency costs and improves managerial transparency and the quality of accounting information through active monitoring, but at the same time, there are negative aspects that hinder the company's growth as an entity with speculative capital characteristics (Park and Lee 2006).

Prior studies focusing on the foreign ownership's effects of reducing agency costs suggested that foreign shareholders represent professional institutional investors in Korea, thus influencing corporate decision-making through large-scale transactions, and by extension, checking managers' unreasonable decision-making (Park and Lee 2006; Kim and Kim 2007; Kim et al., 2012; Shleiffer and Visney 1986). Through studying on developing countries, Sachs and Warner (1995) found that foreign investors play an important role in

monitoring manager's activities to reduce the high investment risk from information asymmetry. Kim and Jung (2011) reported that, in terms of R&D investments, foreign investors reduce the investment-cash flow sensitivity of capital limited companies and have a positive effect on the invested companies by mitigating information asymmetry.

Meanwhile, there are several literature setting importance on foreign investors' impact on the manager's use of discretionary accruals or reporting profits. Most studies reported that the higher the proportion of foreign investor, the lower the adjustment of profit through discretionary accruals (Shleifer and Vishiny, 1997; Watts, l988; Kim, 2004; Ahn et al., 2005). Chung et al. (2004) argued that foreign investors enhance the quality of discretionary accruals through effectively controlling the managerial opportunistic discretion. Ryu (2008) found that the higher the proportion of foreign investors, the higher the persistence of profits. Lee and Kang (2004) found that the absolute value of earnings management increasing reported profits or reducing reported profits decreases as the proportion of foreign investors increase. Kim et al. (2012) showed that not only earnings management through discretionary accruals but also real earnings management decrease as foreign shareholdings increase. Sohn and Oh (2006) reported the higher proportion of foreign investors, the higher demand for the level of company's transparency, resulting in a higher number of fair disclosures.

On the other hand, there are many precedent researches showing negative effects of foreign investors. According to Porter (1992), foreign investors are concerned with short-term performance and exert heavy pressure on management for reporting high profits since they exist as dispersed or temporary owners. They also find that foreign investors investing in developing countries try to increase dividends by engaging in management decisions. Kim (2006) finds that foreign investors are showing a short-term and speculative investment

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attitude like vulture fund. They frequently get capital gains from invested companies or earn profits using investment techniques such as selling after restructuring. In addition, they are obsessed with short-term performance rather than long-term growth of companies. In their research, foreign shareholders give pressure managers to discontinue new growth investment to prevent a decline of short-term profitability. Park (2004) document that the proportion of foreign investors is positively correlated with dividend indicators such as propensity to dividend, dividend per share and total amount of dividend and is negatively correlated with capital expenditure indicators such as the rate of fixed asset increase and tangible asset increase. Karpoff et al.(1996) and Kim (2010) reported that foreign investors cannot be able to monitor and control managers of company, but have incentive to sell their stocks to minimize their loss when the stock prices decline continuously.

The stock crash is extreme negative stock return and occurs because of several reasons. French et al. (1987) and Campbell and Hentschel (1992) documented that negative skewness on stock return (i.e., crash) is result from the adverse effect which is amplified by bad news. Jin and Myers (2006) and Hutton et al. (2009) suggested that the stock crash occurs when managers withhold bad news from investors and do not disclosure timely manner. When cumulated bad news withheld by firms' management team reaches a tipping point, a great deal of bad news is disclosed to the stock market, which results in sharp drop in stock return. Lee (2019) provided evidence that inefficient investment decreases the value of firms and consequently increase the crash risk even when the accounting opacity is controlled for. According to Kwon et al. (2019), corporate governance and management factors are also associated with firms' crash risk (Kwon et al., 2019). Francis et al. (2016) found that firms' deviation in real operations from industry norms is shown to be positively associated with

their future crash risk. Kim et al. (2011b) documented that corporate tax avoidance is positively associated with firm-specific stock crash risk. Callen and Fang (2013) argued that institutional investor stability is negatively associated with future crash risk, which is consistent with the monitoring theory of institutional investors. Robin and Zhang (2015) conducted to determine whether industry-specialist auditors help reduce stock price crash risk and found that high-quality auditors can lessen the impact of tax avoidance and accounting conservatism on crash risk.

Previous literatures imply that stock crash risk is suitable to test the role of foreign investors' monitoring mechanism and effect on the firms' value. If foreign investors monitor the management team effectively, not only managers disclose bad news more timely manner but also increase the value of companies, which consequently show negative correlation between proportion of foreign ownership and stock crash risk. On the other hand, if foreign investors' monitoring roles are limited, and they are interested in short-term gain, higher foreign ownership cannot hinder the managers' opportunistic behavior and decrease the value of invested company, which results in higher stock price crash risk. Because both of cases are possible, the relation between foreign ownership and stock price crash risk is an empirical question. Thus, my main hypothesis, stated in the null form, is as follows:


*Hypothesis: Ceteris Paribus, the proportion of foreign investors are not related to future stock price crash*


## 3. Sample and Research Design

## 3.1. Sample and Data

My sample consists of listed firms in Korea from 2001 to 2015. I obtain financial information from the DataGuide database provided by FnGuide which is the largest financial information provider in Korea. For the foreign ownership, I collect information from TS-2000 database. From 30,211 firm-year observations, I exclude firm-year observations belong to financial industries and observations with a non-December fiscal year-end to enhance the comparability of sample firms. Also, I exclude firm-year observations without sufficient information to construct stock price crash risk measure which explained below. Finally, I drop the firm-year observations which miss the other accounting variables used in main analysis. Final sample consists of 18,322 firm-year observations from 2001 to 2015. Table 1 describe the detailed procedure of sample construction.

<Insert Table 1 here>

## 3.2. Research Design

### 3.2.1. Stock Price Crash Risk

To test the effect of foreign investors on stock price crash risk, I develop three different crash risk measures (i.e., *NCSKEW, DUVOL, and CRASH*) of firm-specific level, which are commonly used in accounting and finance literature (Chen et al. 2001; An and Zhang 2013; Kim et al. 2016). To construct the crash risk measure, I first estimate the following market and industry model regression:

$$r_{j,\tau} =$$

$$\beta_{7,j} r_{i,(\tau-2)} + \beta_{8,j} r_{i,(\tau-1)} + \beta_{9,j} r_{i,\tau} + \beta_{10,j} r_{i,(\tau+1)} + \beta_{11,j} r_{i,(\tau+2)} + \varepsilon_t, \quad (1)$$

where $r_{j,\tau}$ is the return on stock $j$ in week $\tau$, $r_{m,\tau}$ is the market index in week $\tau$, and $r_{i,\tau}$ is the return on the two-digit SIC industry in week $\tau$. To allow for nonsynchronous trading, I

incorporate two lead and lag terms for the market and industry return (Dimson 1979). The natural log of residual return in Equation (1) plus one is used as a firm-specific weekly return for stock $j$ in week $\tau$ ($W$).

I define crash week as a week when a firm faces firm-specific weekly return that sharply drops more than 3.09 standard deviations below the average $W$ during the fiscal year.[3] On the other hand, when a firm-specific weekly return of week $\tau$ exceeds 3.09 standard deviations above the average firm-specific weekly return during the fiscal year, I define this week as a jump week to count symmetric return distribution.[4] First, I define first stock price crash measure as the negative skewness of firm-specific weekly returns over the fiscal year, denoted as *NCSKEW*. *NCSKEW* is calculated as the negative third moment of firm-specific weekly returns for each firm-year observation and is deflated by the standard deviation of firm-specific weekly returns raised to the third power. Specifically, for each stock $j$ in year $t$, *NCSKEW* is calculated as:

$$NCSKEW_{j,t} = -\left[n(n-1)^{3/2} \sum W_{j,\tau}^3\right] / \left[(n-1)(n-2)\{\sum W_{j,\tau}^2\}^{3/2}\right], \qquad (2)$$

where $W_{j,\tau}$ is firm-specific weekly return calculated as above equation (1), and $n$ is the number of weekly returns during fiscal year $t$ (Greene, 2017). I multiply minus one with the third moment of variable which can interpret an increase in *NCSKEW* as representing that a stock is more likely to crash (Chen et al. 2001; Kim et al. 2011a).

The second measure of crash risk is the down-to-up volatility of the stock return (*DUVOL*). I divide firm-specific weekly return for each firm $j$ by a fiscal year $t$: "down"

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[3] 3.09 standard deviation is known as a frequency of 0.1 percent in normal distribution which represent extreme returns (Kim et al. 2011a).
[4] In additionally analysis, I use an indicator variable of experiencing jump week at least once during a fiscal year as a dependent variable.

("up") weeks indicate weeks when the weekly returns are below (above) the average annual return. So, I calculate standard deviation of firm-specific weekly return for each of two types of separate weeks: "down" weeks and "up" weeks, respectively. *DUVO*L is defined as the natural logarithm of the ratio of the standard deviation in the "down" weeks to standard deviation in the "up" weeks.

$$DUVOL_{j,t} = \log\{(n_u - 1)\textstyle\sum_{Down} W_{j,\tau}^2 / (n_d - 1)\textstyle\sum_{Up} W_{j,\tau}^2\},\qquad(3)$$

where $n_u$ and $n_d$ are the number of up and down weeks in fiscal year *t*, respectively. Many recent prior studies use this measure as a crash risk measures since *DUVOL* does not involve third moments and hence is less likely to be overly influenced by extreme weekly returns.

Lastly, following Hutton et al. (2009) and Kim et al. (2011a), I also define stock price crash risk using indicator variable (*CRASH*) equals to one if a firm-year observation experience at least one firm-specific weekly return below 3.09 standard deviations of the average value of weekly returns in year *t*, and zero otherwise.

### 3.2.2. Research Design

To examine the role of foreign investors on the stock price crash risk, I estimate the following regression model:

$$CRASH\_RISK_{i,t} = \beta_0 + \beta_1 FOREIGN_{i,t-1} + \beta_2 SIZE_{i,t-1} + \beta_3 MTB_{i,t-1} + \beta_4 LEV_{i,t-1} +$$
$$\beta_5 DTURN_{i,t-1} + \beta_6 SIGMA_{i,t-1} + \beta_7 RET_{i,t-1} + \beta_8 ROA_{i,t-1} + \beta_9 CFO_{i,t-1} +$$
$$\beta_{10} SALEVOL_{i,t-1} + \beta_{11} CFOVOL_{i,t-1} + \beta_{12} ABACC_{i,t-1} + YEAR + INDUSTRY + \varepsilon_{i,t} \ (4),$$

where the dependent variable *CRASH_RISK* is one of the three measures used to estimate the firm-specific crash risk (i.e., *NCSKEW*, *DUVOL*, and *CRASH*). The variable of interest is

*FOREIGN* which is defined as the proportion of foreign ownership in year *t-1*. I use annual average of foreign ownership based on quarterly reports.[5] I set the missing value of foreign ownership as zero.[6] I also control for several variables that is identified by prior literature which affect the future stock price crash risk (Kim et al. 2011a; Kwon et al. 2019). I include some firm characteristics such as firm size (*SIZE*), financial leverage (*LEV*), return on assets (*ROA*), and operating cash flows (*CFO*) (Hutton et al., 2009). I also control for stock trading volume (*DTURN*) to control for investor belief heterogeneity (Hong and Stein 2003). Following Chen et al. (2001), I include past stock returns as a control variable (*RET*). I also control for past return volatility (*SIGMA*). Additionally, to control for the characteristics of business, I control for market-to-book ratio (*MTB*), volatility of sales (*SALEVOL*) and cash flows (*CFOVOL*). Lastly, I include the absolute value of discretionary accruals following modified Jones (1991) model to control for financial opacity (Hutton et al., 2009; Jones 1991; Kothari et al., 2005). The equation (4) include year and industry fixed effect and standard errors are clustered at the firm level (Petersen 2009). Detailed definitions of variables are explained in Appendix A.

## 4. Empirical Results

### 4.1. Descriptive Statistics

   Table 2 shows the descriptive statistics of variables used in my analysis. The mean value of *NCSKEW*, *DUVOL*, and *CRASH* is -0.222, -0.166, and 0.102, respectively. Specifically, the

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[5] The results are qualitatively similar when we use the proportion of foreign ownership at the end of fiscal year as a variable of interest.

[6] When I drop the missing observations of foreign ownership, I still find the similar results.

average value of *CRASH* shows that about 10.2% of my sample firm-year observations experience at least one stock price crash event (crash week) during the fiscal year *t*. The distribution of dependent variables is similar to prior studies (Kim et al. 2012). *FOREIGN* has mean value of 0.060 which represent the fact that foreign investors possess about 6% of common shareholders of Korean listed companies during my sample period. However, the median value of foreign ownership is 0.9% which shows the skewed distribution of my variable of interest.[7] The descriptive statistics of other variables are similar to prior literature.

<Insert Table 2 here>

   In Table 3, I report the Pearson (Spearman) correlation between variables used in my analysis. The correlation among three crash risk measures are quite high and statistically significant which shows that the construction of my dependent variables are valid. Specifically, the correlation between foreign ownership (*FOREIGN*) and two continuous crash risk measures (*NCSKEW* and *DUVOL*) is positive and significant at the 1% level which shows the preliminary evidence that high proportion of foreign investors are related to the higher future stock price crash risk. The correlation between foreign ownership and the experience of crash risk, however, is negative and significant at 5% level. In Figure 1, I depict the relation between foreign ownership and average value of crash risk conditional on the decile rank of foreign ownership (*FOREIGN*). I find the positive relation between the proportion of foreign ownership and two continuous measures of crash risk. As the proportion of foreign ownership increase, firms are more likely to experience stock price

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[7] To overcome this skewed distribution problem, I use log specification of foreign ownership as a robustness checks. The results are qualitatively similar.

crash risk. These figures show that foreign investors are not beneficial to monitor the behavior of management team. Instead, I argue that foreign investors are interested in short-term capital gain which leads to higher stock price crash risk. However, I cannot find any evidence of positive relation between foreign ownership and indicator of crash risk (*CRASH*). Overall, the opposite direction of correlation among three different crash risk measures make interpretation of results somewhat obvious which raise the need for multivariate analysis.

<Insert Table 3 here>

<Insert Figure 1 here>


### 4.2. Multivariate Analysis

Table 4 shows the multivariate regression results of equation (4). In Column (1), I use *NCSKEW* as a dependent variable, while Column (2) and Column (3) utilize *DUVOL* and *CRASH* as a dependent variable, respectively. The coefficient on *FOREIGN* in Column (1) is positive and statistically significant at 1% level (coefficient = 0.202; t-value = 3.40). Also, when I replace the dependent variable into *DUVOL* and *CRASH*, I still find the positive and statistically significant coefficient on the variable of interest at least 10% level. These results show that as the proportion of foreign investors increases, firms face higher likelihood of stock price crash risk, which implies that foreign investors do not play a significant role to monitor the behavior of management. Hence, management team withhold or do not disclose bad news to the investors due to relatively weak monitoring role of foreign investors. The results of Table 4 support the prediction of short-termism of foreign investors and provide evidence that recent intervention of foreign hedge fund such as Elliott would be related to the realization of short-term gain rather than increase the firm value. The direction of control

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variables is coinciding with prior studies. For example, firms with higher market-to-book ratio (*MTB*) or financially constraint (*LEV*) are more likely to experience stock price crash risk. Likewise, firms who have more volatile operating environments are related to the higher stock price crash risk (*SALEVOL* and *CFOVOL*). On the other hand, firms with higher operating performance such as *ROA* and *CFO* are less likely to face stock price crash risk situation which shows that stock price crash risk is not only related to the bad news holding behavior but delayed conveying information process contained in operating performance (Jung and Yim, 2018).

<Insert Table 4 here>

### 4.3. Endogeneity: Change Analysis

The positive relation between foreign ownership and future stock price crash risk would be suffer from endogeneity problem. That is, omitted firm characteristics or shareholder characteristics (i.e., foreign investors) affect the stake of foreign investors and the future stock price crash risk, simultaneously. To address the correlated omitted variable problem, I conduct change analysis based on change of dependent variable (independent variable) from *t-1* to *t* (*t-2* to *t-1*). Table 5 present the results of equation (4) when I use the change variable of each regression variables. *CH_* denotes the change of each variable between the prior year and year of estimated. The coefficients of CH_FOREIGN are positive and significant at least 10% level among two of three dependent variables. For example, in Column (3), the coefficient on *CH_FOREIGN* is positive and significant at 1% level (coefficient = 0.261; t-value = 2.77). Contrary, the coefficient on *CH_FOREIGN* is positive but statistically insignificant in two-tailed test in Column (1). Overall, the results of Table 5 mitigate the

concern of correlated omitted variable problem between the stake of foreign ownership and future stock price crash risk. These strong evidences provide the validity of my analysis in Table 4 which shows that as foreign investors participate in firm as a significant stake holder, they are less likely to play a role as a monitoring mechanism. Rather, as they are interested in short-term gain from stock price, managers hide bad news from these kinds of investors which results in future stock price crash risk.

<Insert Table 5 here>


## 5. Cross-Sectional Tests

## 5.1. The Level of Foreign Ownership

   Prior studies provide evidence that large portion of foreign investors help management team to allocate resource more efficiently and monitor the behavior of managers as a monitoring mechanism (Park and Kwon 2012; Kim and Park 2014). Specifically, my main results (Table 4) provide opposite evidence compared to Lee (2016). My main results provide opposite perspective of foreign investors, however, as a purpose of short-term gain which mitigate the monitoring role of foreign investors. To draw overall picture regarding the role of foreign investors and link two different perspectives of foreign investors, I conduct one cross-sectional test. I divide the sample into different subsamples based on the level of foreign ownership at the beginning of the year. That is, firms with less than 5% of foreign ownership, between 5% and 15% of foreign ownership, and firms with more than 15% of foreign ownership. I conjecture that as samples are separated into three different subsamples, the role of foreign investors would differ within each subsample. For example, among firms with less than 5% of foreign ownership, foreign investors are more likely to engage in short-

term gaining behavior. That is, as their level of shares are relatively low and have limited ability to affect the decision of management, they are more interested in realizing short-term stock return through timely transaction. On the other hand, as foreign investors hold more stocks of a firm, they have incentive to monitor the behavior of managers more carefully. This is because management teams' opportunistic behavior is more directly related to the investors' total wealth. To test this different level of foreign ownership hypothesis, I examine the effect of foreign ownership on future stock crash risk using three separated subsample. The results are reported in Table 6. In Column (1)–(3) (Column (4)–(6)), I report the results of equation when using *NCSKEW* (*DUVOL*) as a dependent variable. Interestingly, among subsamples with foreign ownership of less than 5%, I find the similar results with Table 4. That is, as the proportion of foreign ownership increase, firms are more likely to face future stock price crash risk. The coefficient on *FOREIGN* is positive and significant at 1% level both in Column (1) and (4). In contrast, the coefficient on *FOREIGN* is negative and statistically significant within sample of higher foreign ownership firms (coefficient = -0.267, -0.105; t-value = -2.66, -2.07, respectively). That is, when foreign investors have sufficient controlling power to the management, they are more likely to conduct monitoring behavior which results in lower stock price crash risk. These opposite results indicate that when foreign investors have lower portion of stake in the firm, they have interested in short-term gain instead of monitoring role. On the other hand, when foreign owners have higher proportion of stocks which have impact on management team, monitoring role of foreign investors arise which make managers disclose bad news in a timely manner. Overall, the

results of Table 6 provide evidence that monitoring role of foreign investors are depending on the level of their shares.[8]

<Insert Table 6 here>

## 5.2. Chaebols *versus* Non-chaebols

I also examine whether the positive relation between foreign ownership and future stock price crash risk differ in *chaebol* or *non-chaebol* firms. Due to more complex corporate governance structure, it is known as difficult to monitor the self-dealing transactions of managers or controlling shareholders in *chaebol* firms (Kim and Yi 2006). Lee (2008) also conjecture that foreign investors do not increase the informativeness of earnings within *chaebol* firms due to their limited role in the business group. To test different effect of foreign owners on stock price crash risk, I divide the sample into *chaebol* and non-*chaebol* firms and repeat equation (4) separately. Table 7 shows the results. In Column (1), (3), and (5), I find that foreign ownership is not directly related to stock price crash. On the other hand, the coefficients on *FOREIGN* are positive and statistically significant in Column (2), (4), and (6) suggesting that foreign investors' short-term gaining behavior is concentrated on non-*chaebol* firms. I argue that as suggested by prior studies, in chaebol firms, the role or the power of foreign investors are limited which results in insignificant relation. Overall, the results of Table 7 confirm that my main inferences are more salient in non-*chaebol* firms.

<Insert Table 7 here>

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[8] I also test the association between foreign investors and firm value (Tobin's Q). The untabulated results show that when the level of foreign investors is sufficiently high, higher stock ownership of foreign investors are positively related to the firm value. Less than 5% of ownership of foreign investors are negatively related to the firm value (statistically insignificant).

## 6. Additional Test and Robustness Checks

### 6.1. Long-term effect

As an additional test, I examine the. persistence of the relation between foreign investors' ownership and future stock price crash risk The results are reported in Table 8. Column (1), (4), and (7) shows the results of future stock price crash risk of year t+1. Column (2), (5), and (8) ((3), (6), and (9)) presents the results of year t+2 (year t+3). I find that future stock price crash risk persists up to three years. Specifically, when *NCSKEW* is used as a dependent variable, the coefficients on *FOREIGN* are 0.163, 0.128, and 0.125, respectively. Though the magnitude of coefficients become smaller as time gap increases, all the coefficients are significant at least 10% level. The results are qualitatively similar when *DUVOL* is used as a dependent variable. However, I cannot find any statistical significance when *CRASH* proxy for future stock price crash risk. Generally, the results of Table 8 confirm the persistence of the relation between foreign investors' ownership and future stock price crash risk.

<Insert Table 8 here>

### 6.2. Alternative Crash Risk measure

In this section, I utilize different measure of crash risk as a robustness check. First, following Chen et al. (2017), I count the difference between crash weeks and jump weeks (*COUNT*). Also, using 3.10 standard deviation as a different threshold of defining crash weeks, I define different measure of crash risk (*CRASH1*) which equals to one for the firm that experience at least one crash week event during the fiscal year. Panel A of Table 9 shows the results. Consistent with my main analysis, I find positive and significant coefficients on *FOREIGN* both in Column (1) and (2). The results of Panel A of Table 9 provide evidence

that my main inference in Table 4 is robust using the alternative definition of future stock price crash risk.

## 6.3. Asymmetric behavior: Jump

Alternative explanation of my main results would be foreign ownership just capture the volatility of stock return rather than negative skewness of extreme stock returns. To provide evidence of this alternative explanation, I utilize *JUMP* which indicate the positively skewed extreme stock returns. *JUMP* equals to one if a firm experience at least one week which exceed the 3.09 standard deviation from average stock return during the fiscal year, and zero otherwise. In Column (3) of Panel A, Table 9, I provide the result of *JUMP* specification. The coefficient on *FOREIGN* is negative but statistically insignificant which indicate that higher foreign ownership is not related to the symmetric volatility of stock returns. Instead, foreign ownership is more likely to increase the future stock price crash risk, which is negatively skewed extreme stock returns.

## 6.4. Firm-Fixed effect

Lastly, I include firm fixed effect in the regression to incorporate omitted time-invariant characteristics of a firm. The results are shown in Panel B of Table 9. After including the firm fixed effect I still find the positive and significant coefficients on *FOREIGN* which indicate that time-invariant firm characteristics do not change the results of my main analysis. Overall, the relation between foreign ownership and stock price crash risk is robust after controlling for various firm characteristics.

<Insert Table 9 here>

**7. Conclusion**

In this study, I examine whether foreign investors actually play a role as a corporate governance mechanism or just have short-term incentive by investigating the relation between foreign ownership and future stock price crash risk. The main results of this paper show that foreign investors' ownership is positively correlated with a firm's stock price crash risk. This implies that foreign investors does not play a role as a monitoring mechanism and decrease the firms' value. I also test the relation between foreign ownership and stock price crash risk dividing the sample into different subgroups based on the level of foreign ownership and find that relation between foreign ownership and stock price crash risk is more pronounced within small level of foreign ownership. Lastly, I investigate the role of business groups (i.e., *chaebol*s) by testing the relation after dividing the sample into *chaebol* and non-*chaebol* firms. The relation is more pronounced when firms do not belong to *chaebols,* implying that the role or the power of foreign investors are limited when firms belong to *chaebols*. Overall, this paper provides additional evidence that foreign investors are not efficient monitoring mechanism and are driven by their interest of realizing short-term gains.

This study provides evidence that the monitoring role of foreign investors are limited in Korean stock market. Unlike prior studies that examine the relation between foreign investors and corporate behavior, I use more direct measure of foreign investors' monitoring role: stock price crash risk. Second, this paper contributes to the determinant of stock price crash risk. Though many studies provide evidence that various firm characteristics are related to the future stock price crash risk, relatively little is known about the composition of investors as a determinant of stock price crash risk. As providing evidence that foreign investors are

important determinants of stock price crash risk, I contribute to the research regarding the

overall picture of stock price crash.

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## Appendix A. Variable Definitions

| Variables | Definition |
|---|---|
| $W$ | Firm-specific weekly return calculated by market model below. $r_{j,\tau} = \alpha_j + \beta_{1,j} r_{m,(\tau-1)} + \beta_{2,j} r_{m,\tau} + \beta_{3,j} r_{m,(\tau+1)} + \beta_{5,j} r_{i,(\tau-1)} + \beta_{6,j} r_{i,\tau} + \beta_{7,j} r_{i,(\tau+1)} + \varepsilon_t$, Residual term from above model is firm-specific weekly return in week $\tau$. |
| $NCSKEW$ | Calculated Negative third moment of firm-specific weekly returns over the fiscal year deflated by the standard deviation of firm-specific weekly returns raised to the third power. $NCSKEW_{j,t} = -\left[ n(n-1)^{3/2} \sum W_{j,\tau}^3 \right] / \left[ (n-1)(n-2) \{ \sum W_{j,\tau}^2 \}^{3/2} \right]$ , where $W_{j,\tau}$ is firm-specific weekly return as calculated by market model above and $n$ is the number of weekly returns over fiscal year $t$. |
| $DUVOL$ | The log of the ratio of the standard deviations of down-week to up-week firm specific returns. $DUVOL_{j,t} = \log \{ (n_u - 1) \sum_{Down} W_{j,\tau}^2 / (n_d - 1) \sum_{Up} W_{j,\tau}^2 \}$ |
| $CRASH$ | Indicator variables equals to one for a firm-year that experience one or more firm-specific weekly returns falling 3.09 standard deviation below the mean firm-specific weekly returns over the fiscal year; zero otherwise. |
| $FOREIGN$ | The ratio of foreign ownership to the total shares. |
| $SIZE$ | The natural logarithm of the book value of total assets |
| $MTB$ | The market value of equity divided by the book value of equity |
| $LEV$ | Short-term debt plus long-term debt divided by book value of total assets |
| $DTURN$ | Average monthly share turnover over the current fiscal year minus the average monthly share turnover over the previous fiscal year, where monthly share turnover is calculated as the monthly trading volume divided by the total number of shares outstanding during the month. |
| $SIGMA$ | The standard deviation of firm-specific weekly returns over the fiscal year. |
| $RET$ | The mean value of firm-specific weekly returns over the fiscal year. |
| $ROA$ | Net income divided by lagged book value of total assets. |
| $CFO$ | Operating cash flows divided by lagged total assets |
| $SALEVOL$ | Standard deviation of sales from year t-4 to year t. Sales are deflated by lagged total assets. |
| $CFOVOL$ | Standard deviation of operating cash flows from year t-4 to year t. operating cash flows are deflated by lagged total assets. |
| $ABACC$ | Opacity of financial reporting measured as the prior three years' moving sum of the absolute value of discretionary accruals following modified Jones (1991) model (Hutton et al., 2009) |
| *Additional Variables* | |
| $COUNT$ | Difference between the number of weeks which firm-specific weekly returns falling 3.09 standard deviation below the mean firm-specific weekly returns and the number of weeks which firm-specific weekly returns exceeding 3.09 standard deviation above the mean firm-specific weekly returns. |
| $JUMP$ | Indicator variable equals to one for a firm-year that experience one or more firm-specific weekly returns exceeding 3.09 standard deviation above the mean firm-specific weekly returns over the fiscal year; zero otherwise. |

**Figure 1. Average CRASH RISK conditioned on decile rank of Foreign Ownership**

**(A) NCSKEW**



NCSKEW
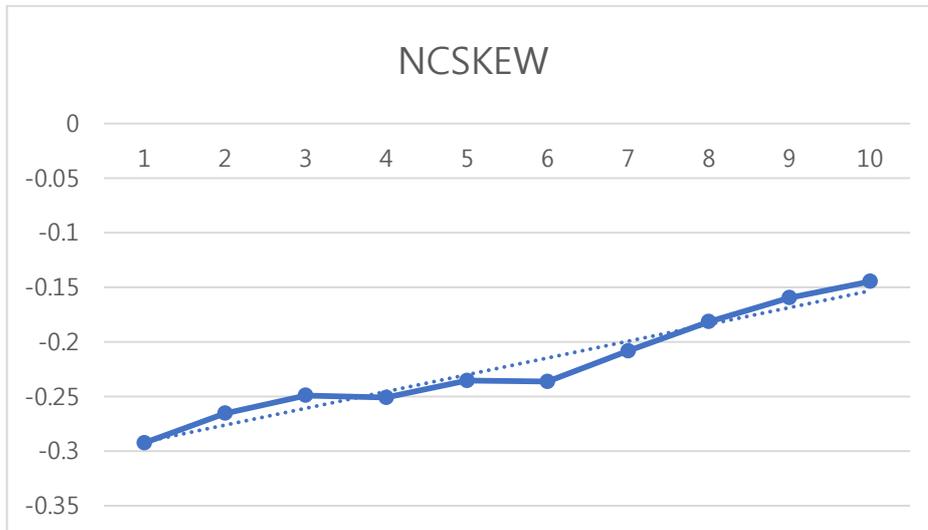
**(B) DUVOL**



DUVOL
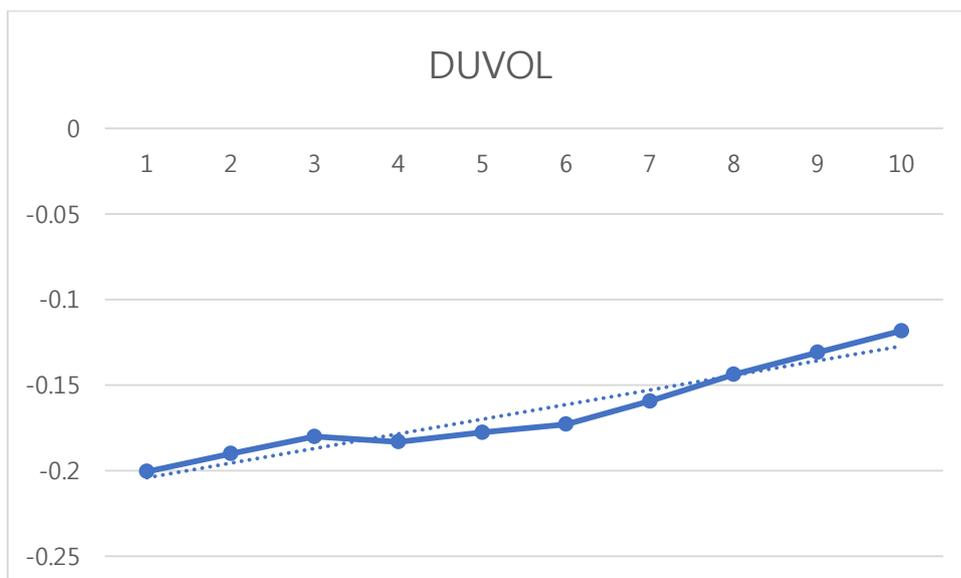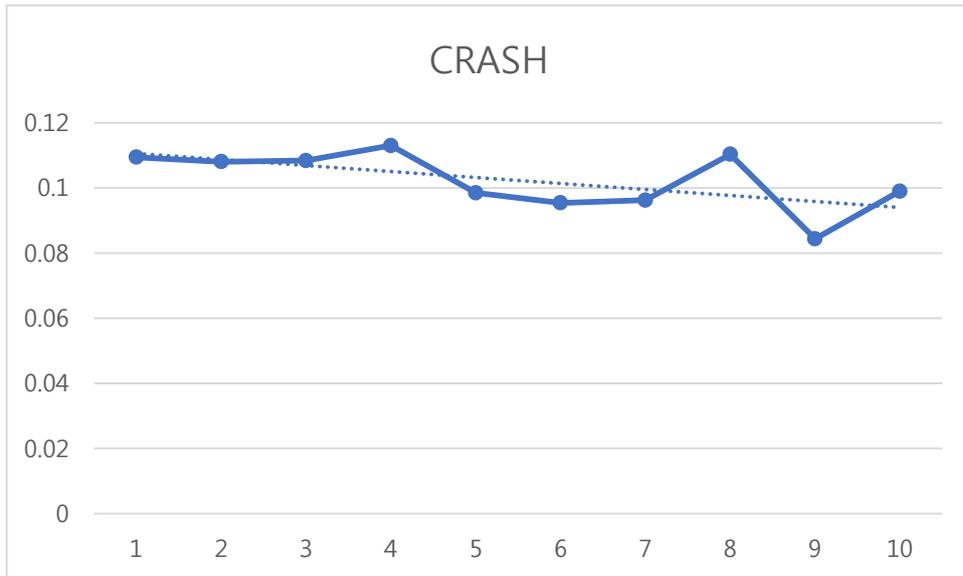
**(C) CRASH**

CRASH

**TABLE 1. Sample Selection**

| | |
|---|---:|
| KSE/KOSDAQ-listed companies (fiscal years 2001-2015) | 30,211 |
| Less: | |
|     Financial industries | (1,163) |
|     Observations with a non-December fiscal year-end | (1,397) |
|     Missing crash measure data | (6,508) |
|     Missing other accounting variable data | (2,821) |
| Full sample (fiscal year 2000-2015) | 18,322 |

*Note:* This table summarizes sample construction procedure of our sample from fiscal year 2001 to 2015.

## TABLE 2. Descriptive Statistics

| VARIABLES | N | Mean | Median | S.D. | Min | Q1 | Q3 | Max |
|---|---|---|---|---|---|---|---|---|
| *NCSKEW* | 18322 | -0.222 | -0.201 | 0.619 | -1.986 | -0.581 | 0.149 | 1.510 |
| *DUVOL* | 18322 | -0.166 | -0.170 | 0.307 | -0.879 | -0.371 | 0.037 | 0.624 |
| *CRASH* | 18322 | 0.102 | 0 | 0.303 | 0 | 0 | 0 | 1 |
| *FOREIGN* | 18322 | 0.060 | 0.009 | 0.110 | 0 | 0.001 | 0.058 | 0.534 |
| *SIZE* | 18322 | 17.892 | 17.647 | 1.498 | 15.212 | 16.884 | 18.592 | 22.897 |
| *MTB* | 18322 | 1.319 | 0.897 | 1.342 | 0.069 | 0.541 | 1.566 | 8.433 |
| *LEV* | 18322 | 0.284 | 0.247 | 0.246 | 0 | 0.074 | 0.433 | 1.157 |
| *DTURN* | 18322 | -0.039 | -0.018 | 0.551 | -2.088 | -0.170 | 0.074 | 2.201 |
| *SIGMA* | 18322 | 0.080 | 0.072 | 0.038 | 0.023 | 0.052 | 0.099 | 0.212 |
| *RET* | 18322 | 0.149 | -0.015 | 0.730 | -0.843 | -0.293 | 0.359 | 3.477 |
| *ROA* | 18322 | -0.003 | 0.027 | 0.153 | -0.722 | -0.024 | 0.071 | 0.294 |
| *CFO* | 18322 | 0.038 | 0.042 | 0.120 | -0.420 | -0.017 | 0.102 | 0.366 |
| *SALEVOL* | 18322 | 0.317 | 0.205 | 0.348 | 0.025 | 0.115 | 0.374 | 2.245 |
| *CFOVOL* | 18322 | 0.100 | 0.074 | 0.092 | 0.012 | 0.046 | 0.119 | 0.600 |
| *ABACC* | 18322 | 0.082 | 0.051 | 0.096 | 0.001 | 0.022 | 0.103 | 0.551 |

*Note*: This table shows the descriptive statistics of variables for main analysis. See Appendix A for the variable definitions.

## TABLE 3. Correlation Matrix

| Variable | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) | (11) | (12) | (13) | (14) | (15) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| (1) NCSKEW | | 0.954 | 0.488 | 0.065 | 0.086 | 0.099 | 0.031 | 0.011 | 0.045 | 0.034 | -0.073 | -0.030 | 0.043 | 0.055 | 0.048 |
| | | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 | 0.134 | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 |
| (2) DUVOL | 0.970 | | 0.445 | 0.079 | 0.105 | 0.081 | 0.019 | 0.009 | 0.007 | 0.033 | -0.043 | -0.010 | 0.025 | 0.036 | 0.021 |
| | <.0001 | | <.0001 | <.0001 | <.0001 | <.0001 | 0.010 | 0.229 | 0.343 | <.0001 | <.0001 | 0.189 | 0.001 | <.0001 | 0.004 |
| (3) CRASH | 0.434 | 0.404 | | -0.014 | -0.033 | 0.024 | 0.044 | -0.001 | 0.017 | -0.014 | -0.062 | -0.047 | 0.025 | 0.024 | 0.034 |
| | <.0001 | <.0001 | | 0.061 | <.0001 | 0.001 | <.0001 | 0.876 | 0.022 | 0.051 | <.0001 | <.0001 | 0.001 | 0.001 | <.0001 |
| (4) FOREIGN | 0.067 | 0.078 | -0.018 | | 0.524 | 0.071 | -0.125 | 0.009 | -0.190 | 0.012 | 0.172 | 0.175 | -0.065 | -0.075 | -0.097 |
| | <.0001 | <.0001 | 0.014 | | <.0001 | <.0001 | <.0001 | 0.229 | <.0001 | 0.094 | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 |
| (5) SIZE | 0.071 | 0.091 | -0.038 | 0.582 | | 0.275 | -0.066 | 0.052 | -0.270 | 0.214 | 0.266 | 0.219 | -0.120 | -0.125 | -0.184 |
| | <.0001 | <.0001 | <.0001 | <.0001 | | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 |
| (6) MTB | 0.104 | 0.086 | 0.020 | 0.139 | 0.371 | | 0.040 | 0.061 | 0.233 | 0.279 | -0.176 | -0.067 | 0.129 | 0.222 | 0.195 |
| | <.0001 | <.0001 | 0.006 | <.0001 | <.0001 | | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 |
| (7) LEV | 0.021 | 0.010 | 0.036 | -0.094 | -0.093 | -0.052 | | 0.027 | 0.143 | -0.100 | -0.309 | -0.240 | -0.014 | -0.023 | 0.144 |
| | 0.005 | 0.168 | <.0001 | <.0001 | <.0001 | <.0001 | | 0.000 | <.0001 | <.0001 | <.0001 | <.0001 | 0.066 | 0.002 | <.0001 |
| (8) DTURN | 0.021 | 0.021 | 0.003 | 0.051 | 0.111 | 0.077 | 0.021 | | 0.334 | 0.290 | -0.029 | -0.029 | -0.024 | -0.027 | 0.022 |
| | 0.005 | 0.004 | 0.668 | <.0001 | <.0001 | <.0001 | 0.005 | | <.0001 | <.0001 | 0.000 | <.0001 | 0.001 | 0.000 | 0.004 |
| (9) SIGMA | 0.038 | 0.001 | 0.015 | -0.206 | -0.274 | 0.220 | 0.152 | 0.261 | | 0.164 | -0.357 | -0.279 | 0.193 | 0.254 | 0.312 |
| | <.0001 | 0.846 | 0.045 | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 | | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 |
| (10) RET | 0.030 | 0.038 | -0.018 | 0.069 | 0.309 | 0.246 | -0.126 | 0.338 | -0.019 | | 0.204 | 0.136 | -0.064 | -0.065 | -0.082 |
| | <.0001 | <.0001 | 0.017 | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 | 0.010 | | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 |
| (11) ROA | -0.016 | 0.007 | -0.059 | 0.194 | 0.301 | 0.063 | -0.401 | 0.008 | -0.279 | 0.316 | | 0.562 | -0.131 | -0.245 | -0.487 |
| | 0.032 | 0.341 | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 | 0.278 | <.0001 | <.0001 | | <.0001 | <.0001 | <.0001 | <.0001 |
| (12) CFO | -0.007 | 0.011 | -0.043 | 0.163 | 0.223 | 0.029 | -0.275 | -0.014 | -0.240 | 0.201 | 0.551 | | -0.083 | -0.189 | -0.250 |
| | 0.336 | 0.124 | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 | 0.067 | <.0001 | <.0001 | <.0001 | | <.0001 | <.0001 | <.0001 |
| (13) SALEVOL | 0.036 | 0.018 | 0.020 | -0.094 | -0.159 | 0.182 | -0.004 | -0.055 | 0.252 | -0.119 | -0.061 | -0.073 | | 0.574 | 0.201 |
| | <.0001 | 0.017 | 0.008 | <.0001 | <.0001 | <.0001 | 0.557 | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 | | <.0001 | <.0001 |
| (14) CFOVOL | 0.043 | 0.022 | 0.020 | -0.091 | -0.159 | 0.224 | -0.027 | -0.046 | 0.275 | -0.125 | -0.084 | -0.106 | 0.561 | | 0.314 |
| | <.0001 | 0.004 | 0.008 | <.0001 | <.0001 | <.0001 | 0.000 | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 | | <.0001 |
| (15) ABACC | 0.019 | -0.004 | 0.020 | -0.103 | -0.171 | 0.130 | 0.082 | -0.004 | 0.268 | -0.116 | -0.192 | -0.206 | 0.229 | 0.323 | |
| | 0.010 | 0.590 | 0.006 | <.0001 | <.0001 | <.0001 | <.0001 | 0.592 | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 | |

*Note*: This table shows the Pearson correlation matrix among variables used in the main analysis. See Appendix A for the variable definitions.

**TABLE 4. Main Results: Foreign Ownership and Stock Price Crash Risk**

| Dep. Variable = | NCSKEW | DUVOL | CRASH |
|---|---|---|---|
| | (1) | (2) | (3) |
| Intercept | -0.716*** | -0.401*** | -0.259 |
| | (-7.02) | (-7.93) | (-0.76) |
| **FOREIGN** | **0.202***** | **0.108***** | **0.278*** |
| | **(3.40)** | **(3.80)** | **(1.85)** |
| SIZE | 0.037*** | 0.019*** | -0.053*** |
| | (7.82) | (8.34) | (-4.17) |
| MTB | 0.019*** | 0.008*** | 0.031*** |
| | (4.02) | (3.27) | (3.02) |
| LEV | 0.041* | 0.016 | 0.151*** |
| | (1.81) | (1.46) | (2.71) |
| DTURN | -0.007 | 0.001 | 0.010 |
| | (-0.72) | (0.29) | (0.39) |
| SIGMA | 0.103 | -0.173** | -0.859* |
| | (0.57) | (-1.98) | (-1.74) |
| RET | 0.031*** | 0.014*** | 0.004 |
| | (3.61) | (3.16) | (0.17) |
| ROA | -0.342*** | -0.145*** | -0.360*** |
| | (-7.65) | (-6.40) | (-3.16) |
| CFO | 0.024 | 0.014 | -0.243* |
| | (0.48) | (0.59) | (-1.76) |
| SALEVOL | 0.042** | 0.014* | 0.081* |
| | (2.51) | (1.66) | (1.80) |
| CFOVOL | 0.155** | 0.081** | 0.022 |
| | (2.34) | (2.38) | (0.13) |
| ABACC | 0.037 | -0.002 | 0.062 |
| | (0.61) | (-0.07) | (0.42) |
| Year FE | Yes | Yes | Yes |
| Industry FE | Yes | Yes | Yes |
| Observation | 18,322 | 18,322 | 18,322 |
| Adjusted $R^2$ (Pseudo $R^2$) | 0.033 | 0.032 | 0.015 |

*Notes:* This table shows the estimation results of Equation (4), which tests the relation between foreign ownership and future stock price crash risk. See Appendix A for the variable definitions. Standard errors are clustered by firm (Petersen, 2009). Year and Industry fixed effects are included. Detailed variable definitions are provided in Appendix A. ***, **, and * denote significance at 1%, 5%, and 10% levels, respectively.

**TABLE 5. Endogeneity: Change Analysis**

| Dep. Variable = | CH_NCSKEW | CH_DUVOL | CH_CRASH |
|---|---|---|---|
| | (1) | (2) | (3) |
| Intercept | -0.085** | -0.027 | 0.043** |
| | (-2.25) | (-1.37) | (2.55) |
| **CH_FOREIGN** | **0.264** | **0.162*** | **0.261*** |
| | **(1.47)** | **(1.75)** | **(2.77)** |
| CH_SIZE | 0.134*** | 0.088*** | 0.029*** |
| | (6.44) | (8.94) | (2.88) |
| CH_MTB | 0.009 | 0.003 | -0.003 |
| | (1.09) | (0.79) | (-0.87) |
| CH_LEV | 0.197*** | 0.106*** | 0.052* |
| | (3.50) | (3.96) | (1.83) |
| CH_DTURN | -0.047*** | -0.018*** | 0.006 |
| | (-4.04) | (-3.34) | (1.12) |
| CH_SIGMA | 1.070*** | 0.495*** | -0.565*** |
| | (3.89) | (3.85) | (-4.31) |
| CH_RET | 0.041*** | 0.019*** | 0.015*** |
| | (3.93) | (3.64) | (2.93) |
| CH_ROA | -0.149** | -0.073** | 0.001 |
| | (-2.31) | (-2.26) | (0.04) |
| CH_CFO | 0.066 | 0.030 | -0.008 |
| | (1.07) | (0.98) | (-0.22) |
| CH_SALEVOL | 0.057 | 0.030 | 0.006 |
| | (1.21) | (1.33) | (0.26) |
| CH_CFOVOL | -0.104 | -0.020 | 0.000 |
| | (-0.51) | (-0.20) | (0.00) |
| CH_ABACC | -0.115 | -0.056 | -0.052 |
| | (-1.41) | (-1.41) | (-1.33) |
| | | | |
| Year FE | Yes | Yes | Yes |
| Industry FE | Yes | Yes | Yes |
| Observation | 17,012 | 17,012 | 17,012 |
| Adjusted $R^2$ (Pseudo $R^2$) | 0.024 | 0.032 | 0.005 |

*Notes:* This table shows the estimation results of Equation (4), which tests the relation between foreign ownership and future stock price crash risk using change regression. See Appendix A for the variable definitions. Standard errors are clustered by firm (Petersen, 2009). Year and Industry fixed effects are included. Detailed variable definitions are provided in Appendix A. ***, **, and * denote significance at 1%, 5%, and 10% levels, respectively.

# TABLE 6. Cross-Sectional Test (1): Proportion of Foreign Ownership

| Dep. Variable = | | *NCSKEW* | | | *DUVOL* | |
|---|---|---|---|---|---|---|
| % of Foreign ownership | *(1) Less than 5%* | *(2) 5%-15%* | *(3) More than 15%* | *(4) Less than 5%* | *(5) 5%-15%* | *(6) More than 15%* |
| Intercept | -0.097 | -0.932*** | -1.043*** | -0.118 | -0.498*** | -0.537*** |
| | (-0.65) | (-3.98) | (-5.50) | (-1.62) | (-4.16) | (-5.51) |
| *FOREIGN* | 1.828*** | 0.260 | -0.267*** | 0.786*** | 0.089 | -0.105** |
| | (3.48) | (0.61) | (-2.66) | (2.97) | (0.41) | (-2.07) |
| *SIZE* | 0.002 | 0.037*** | 0.056*** | 0.003 | 0.019*** | 0.028*** |
| | (0.22) | (3.36) | (7.48) | (0.92) | (3.54) | (7.25) |
| *MTB* | 0.019*** | 0.022* | 0.032*** | 0.007*** | 0.008 | 0.017*** |
| | (3.50) | (1.82) | (2.88) | (2.71) | (1.32) | (2.94) |
| *LEV* | 0.030 | 0.045 | 0.057 | 0.014 | 0.009 | 0.021 |
| | (1.15) | (0.74) | (0.94) | (1.07) | (0.29) | (0.67) |
| *DTURN* | -0.007 | -0.011 | -0.042 | -0.000 | 0.011 | -0.011 |
| | (-0.70) | (-0.36) | (-1.01) | (-0.09) | (0.65) | (-0.53) |
| *SIGMA* | 0.118 | 0.331 | 0.190 | -0.141 | -0.146 | -0.257 |
| | (0.59) | (0.58) | (0.34) | (-1.45) | (-0.50) | (-0.89) |
| *RET* | 0.049*** | 0.024 | -0.030 | 0.022*** | 0.010 | -0.017 |
| | (4.89) | (1.04) | (-1.36) | (4.48) | (0.80) | (-1.44) |
| *ROA* | -0.365*** | -0.212 | -0.033 | -0.159*** | -0.049 | -0.035 |
| | (-7.19) | (-1.59) | (-0.20) | (-6.18) | (-0.71) | (-0.43) |
| *CFO* | -0.017 | 0.109 | 0.077 | -0.000 | 0.025 | 0.041 |
| | (-0.30) | (0.79) | (0.55) | (-0.00) | (0.36) | (0.58) |
| *SALEVOL* | 0.054*** | 0.066 | -0.048 | 0.022** | 0.029 | -0.047** |
| | (2.85) | (1.23) | (-1.32) | (2.29) | (1.09) | (-2.43) |
| *CFOVOL* | 0.127* | 0.036 | 0.296* | 0.062 | 0.014 | 0.206** |
| | (1.72) | (0.16) | (1.72) | (1.62) | (0.13) | (2.31) |
| *ABACC* | 0.036 | -0.011 | -0.068 | 0.000 | -0.015 | -0.092 |
| | (0.54) | (-0.06) | (-0.35) | (0.01) | (-0.18) | (-0.91) |
| Year FE | Yes | Yes | Yes | Yes | Yes | Yes |
| Industry FE | Yes | Yes | Yes | Yes | Yes | Yes |
| Observation | 13,357 | 2,519 | 2,446 | 13,357 | 2,519 | 2,446 |
| Adjusted $R^2$ | 0.029 | 0.028 | 0.063 | 0.023 | 0.031 | 0.062 |

*Notes:* This table shows the estimation results of Equation (4), which tests the relation between foreign ownership and future stock price crash risk using different subsamples based on the proportion of foreign ownership. See Appendix A for the variable definitions. Standard errors are clustered by firm (Petersen, 2009). Year and Industry fixed effects are included. Detailed variable definitions are provided in Appendix A. ***, **, and * denote significance at 1%, 5%, and 10% levels, respectively.

### TABLE 7. Cross-Sectional Test (2): *Chaebols* and *Non-chaebols*

| Dep. Variable = | NCSKEW | | DUVOL | | CRASH | |
|---|---|---|---|---|---|---|
| Chaebol? | *(1) Yes* | *(2) No* | *(3) Yes* | *(4) No* | *(5) Yes* | *(6) No* |
| Intercept | -1.150*** | -0.617*** | -0.718*** | -0.350*** | -5.149*** | -0.209 |
| | (-4.43) | (-5.19) | (-5.58) | (-5.96) | (-5.29) | (-0.54) |
| *FOREIGN* | *0.176* | *0.186**** | *0.052* | *0.106**** | *0.628* | *0.285** |
| | *(1.21)* | *(2.87)* | *(0.69)* | *(3.42)* | *(1.38)* | *(1.74)* |
| *SIZE* | 0.056*** | 0.031*** | 0.030*** | 0.017*** | -0.030 | -0.055*** |
| | (4.49) | (5.66) | (4.60) | (6.15) | (-0.72) | (-3.62) |
| *MTB* | 0.022* | 0.019*** | 0.011* | 0.007*** | 0.008 | 0.035*** |
| | (1.80) | (3.82) | (1.87) | (3.03) | (0.22) | (3.17) |
| *LEV* | 0.097 | 0.032 | 0.034 | 0.013 | 0.243 | 0.131** |
| | (1.31) | (1.37) | (0.93) | (1.16) | (1.34) | (2.28) |
| *DTURN* | -0.003 | -0.006 | 0.006 | 0.002 | -0.003 | 0.013 |
| | (-0.06) | (-0.59) | (0.20) | (0.37) | (-0.01) | (0.52) |
| *SIGMA* | -0.842 | 0.131 | -0.505 | -0.170* | 2.943 | -1.082** |
| | (-1.14) | (0.70) | (-1.44) | (-1.87) | (1.24) | (-2.16) |
| *RET* | 0.063*** | 0.031*** | 0.028** | 0.014*** | 0.014 | 0.003 |
| | (2.66) | (3.46) | (2.24) | (3.06) | (0.16) | (0.13) |
| *ROA* | -0.414** | -0.330*** | -0.167* | -0.140*** | -1.601** | -0.323*** |
| | (-2.25) | (-7.12) | (-1.75) | (-5.96) | (-2.53) | (-2.76) |
| *CFO* | 0.040 | 0.020 | 0.035 | 0.011 | -0.255 | -0.237* |
| | (0.22) | (0.38) | (0.38) | (0.45) | (-0.45) | (-1.66) |
| *SALEVOL* | 0.047 | 0.039** | 0.006 | 0.014 | 0.065 | 0.082* |
| | (0.72) | (2.28) | (0.19) | (1.56) | (0.41) | (1.71) |
| *CFOVOL* | -0.038 | 0.167** | 0.007 | 0.085** | 0.038 | -0.002 |
| | (-0.14) | (2.44) | (0.05) | (2.42) | (0.04) | (-0.01) |
| *ABACC* | -0.313 | 0.056 | -0.215* | 0.009 | -1.441* | 0.114 |
| | (-1.39) | (0.90) | (-1.92) | (0.29) | (-1.73) | (0.74) |
| Year FE | Yes | Yes | Yes | Yes | Yes | Yes |
| Industry FE | Yes | Yes | Yes | Yes | Yes | Yes |
| Observation | 1,668 | 16,654 | 1,668 | 16,654 | 1,642 | 16,654 |
| Adjusted R$^2$ (Pseudo R$^2$) | 0.062 | 0.030 | 0.061 | 0.027 | 0.062 | 0.014 |

*Notes:* This table shows the estimation results of Equation (4), which tests the relation between foreign ownership and future stock price crash risk using different subsamples based on the business group (*chaebol*). See Appendix A for the variable definitions. Standard errors are clustered by firm (Petersen, 2009). Year and Industry fixed effects are included. Detailed variable definitions are provided in Appendix A. ***, **, and * denote significance at 1%, 5%, and 10% levels, respectively.

## TABLE 8. Long-Term effect: Foreign Ownership and Stock Price Crash Risk

| Dep. Variable = | NCSKEW | | | DUVOL | | | CRASH | | |
|---|---|---|---|---|---|---|---|---|---|
| | *(1) t+1* | *(2) t+2* | *(3) t+3* | *(4) t+1* | *(5) t+2* | *(6) t+3* | *(7) t+1* | *(8) t+2* | *(9) t+3* |
| Intercept | -0.630*** | -0.666*** | -0.904*** | -0.343*** | -0.358*** | -0.470*** | -0.472 | -0.376 | -0.905*** |
| | (-5.80) | (-6.40) | (-7.74) | (-6.48) | (-6.95) | (-8.25) | (-1.40) | (-1.10) | (-2.67) |
| *FOREIGN* | *0.163**** | *0.128*** | *0.125** | *0.085**** | *0.065*** | *0.057** | *0.176* | *0.226* | *0.204* |
| | *(2.66)* | *(1.98)* | *(1.92)* | *(2.87)* | *(2.09)* | *(1.80)* | *(1.14)* | *(1.35)* | *(1.19)* |
| SIZE | 0.036*** | 0.037*** | 0.041*** | 0.019*** | 0.020*** | 0.022*** | -0.042*** | -0.047*** | -0.045*** |
| | (7.11) | (6.78) | (7.34) | (7.67) | (7.52) | (7.99) | (-3.13) | (-3.21) | (-3.02) |
| MTB | 0.007 | 0.008 | -0.003 | 0.002 | 0.002 | -0.004 | 0.020* | 0.023* | -0.001 |
| | (1.44) | (1.47) | (-0.48) | (0.80) | (0.67) | (-1.21) | (1.70) | (1.87) | (-0.07) |
| LEV | 0.048* | 0.036 | 0.002 | 0.016 | 0.007 | -0.004 | 0.147** | 0.141** | 0.144* |
| | (1.87) | (1.26) | (0.05) | (1.32) | (0.53) | (-0.28) | (2.39) | (2.07) | (1.91) |
| DTURN | 0.001 | -0.001 | -0.004 | 0.003 | 0.003 | -0.000 | -0.006 | 0.063** | -0.017 |
| | (0.05) | (-0.09) | (-0.34) | (0.55) | (0.60) | (-0.08) | (-0.22) | (2.21) | (-0.53) |
| SIGMA | 0.095 | 0.031 | 0.457** | -0.124 | -0.116 | 0.071 | -0.315 | 0.219 | 0.184 |
| | (0.48) | (0.15) | (2.09) | (-1.31) | (-1.15) | (0.66) | (-0.60) | (0.41) | (0.34) |
| RET | -0.003 | -0.002 | -0.005 | 0.000 | 0.000 | 0.001 | 0.003 | -0.017 | 0.037 |
| | (-0.36) | (-0.17) | (-0.53) | (0.07) | (0.07) | (0.23) | (0.12) | (-0.67) | (1.37) |
| ROA | -0.246*** | -0.103* | -0.106* | -0.092*** | -0.036 | -0.031 | -0.467*** | -0.173 | -0.082 |
| | (-4.98) | (-1.96) | (-1.89) | (-3.83) | (-1.40) | (-1.10) | (-3.65) | (-1.33) | (-0.59) |
| CFO | 0.041 | -0.072 | -0.035 | 0.029 | -0.027 | -0.008 | 0.001 | -0.034 | -0.153 |
| | (0.79) | (-1.27) | (-0.60) | (1.14) | (-0.97) | (-0.28) | (0.01) | (-0.24) | (-1.02) |
| SALEVOL | 0.044** | 0.050** | 0.022 | 0.016* | 0.015 | 0.001 | 0.103** | 0.100* | 0.070 |
| | (2.31) | (2.44) | (1.09) | (1.66) | (1.47) | (0.09) | (2.13) | (1.92) | (1.27) |
| CFOVOL | 0.138* | 0.100 | 0.206** | 0.058 | 0.042 | 0.087** | -0.100 | -0.101 | 0.129 |
| | (1.77) | (1.19) | (2.34) | (1.51) | (1.01) | (2.00) | (-0.54) | (-0.49) | (0.60) |
| ABACC | 0.075 | 0.097 | -0.010 | 0.025 | 0.042 | -0.011 | 0.104 | 0.150 | 0.081 |
| | (1.10) | (1.37) | (-0.14) | (0.76) | (1.25) | (-0.28) | (0.61) | (0.87) | (0.40) |
| Year FE | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Industry FE | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Observation | 16,397 | 14,560 | 12,796 | 16,397 | 14,560 | 12,796 | 16,397 | 14,560 | 12,796 |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Adjusted R$^2$ (Pseudo R$^2$) | 0.025 | 0.023 | 0.022 | 0.026 | 0.025 | 0.024 | 0.015 | 0.013 | 0.010 |

*Notes:* This table shows the estimation results of Equation (4), which tests the relation between foreign ownership and future stock price crash risk after replacing dependent variables to different time period. See Appendix A for the variable definitions. Standard errors are clustered by firm (Petersen, 2009). Year and Industry fixed effects are included. Detailed variable definitions are provided in Appendix A. ***, **, and * denote significance at 1%, 5%, and 10% levels, respectively.

## TABLE 9. Robustness Tests

**Panel A: Alternative Specification**

| Dep. Variable = | (1) COUNT | (2) CRASH1 | (3) JUMP |
|---|---|---|---|
| Intercept | -0.497*** | -0.261 | 1.234*** |
| | (-4.67) | (-0.76) | (3.79) |
| *FOREIGN* | *0.091** | *0.250** | *-0.194* |
| | *(1.74)* | *(1.70)* | *(-1.45)* |
| Other Controls | Yes | Yes | Yes |
| Year FE | Yes | Yes | Yes |
| Industry FE | Yes | Yes | Yes |
| Observation | 18,322 | 18,322 | 18,322 |
| Adjusted $R^2$ (Pseudo $R^2$) | 0.017 | 0.015 | 0.026 |

**Panel B: Firm-Fixed effect**

| Dep. Variable = | (1) NCSKEW | (2) DUVOL | (3) CRASH |
|---|---|---|---|
| Intercept | -1.449*** | -0.932*** | 0.166* |
| | (-7.29) | (-9.44) | (1.70) |
| *FOREIGN* | *0.276*** | *0.162*** | *0.113*** |
| | *(2.83)* | *(3.31)* | *(2.43)* |
| Other Controls | Yes | Yes | Yes |
| Year FE | Yes | Yes | Yes |
| Industry FE | No | No | No |
| Firm FE | Yes | Yes | Yes |
| Observation | 18,322 | 18,322 | 18,322 |
| Number of Firms | 1,964 | 1,964 | 1,964 |
| Adjusted $R^2$ (Pseudo $R^2$) | 0.018 | 0.021 | 0.005 |

*Notes:* This table shows the estimation results of Equation (4), which tests the relation between foreign ownership and future stock price crash risk using different dependent variables or fixed effect. See Appendix A for variable definitions. Standard errors are clustered by firm (Peteren, 2009). Year and Industry fixed effects are included. Detailed variable definitions are provided in Appendix A. ***, **, and * denote significance at 1%, 5%, and 10% levels, respectively.

# 국문초록

# 한국 시장에서 외국인주주의 지분율과 주가 급락 위험의 관계

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본 연구는 한국 주식 시장에서 외국인주주의 지분율이 주가 급락 위험에 미치는 영향에 대해 살펴보았다. 1990 년대 후반 자본시장을 개방한 이후, 한국 시장에서 외국인주주의 지분율은 지속적으로 증가하고 있으며, 이들은 방대한 자금력을 바탕으로 이사회, 주주총회 등을 통해 우리나라 기업의 주요 경영의사결정에 관여하고 있다. 한편, 이들은 단기적인 투자 행위를 보이며, 단기적인 이익실현에 집중하여 투자 기업의 장기적인 성장잠재력을 위축시킬 수 있다는 우려 또한 불러일으켰다. 본 연구에서는 2001 년부터 2015 년 사이 KOSPI 및 KOSDAQ 에 상장된 회사들을 대상으로 외국인주주의 지분율과 주가 급락 위험의 관계를 다중회귀분석 함으로써, 한국 주식 시장에서 외국인주주의 지분율이 경영자와 투자자간의 정보비대칭성을 해소시키는 등 기업지배구조를 개선하는 역할을 하는 지 알아보았다. 연구 분석 결과, 외국인주주의 지분율과 주가 급락 위험 사이에 양의 상관관계가 존재한다는 것을 관찰하였다. 이는 외국인주주의 지분율이 높을수록 주가 급락 위험이 높아짐을 의미하는 것으로 외국인 주주가 한국 주식 시장에서 기업지배구조를 개선하여 기업의 가치를 높이는 역할을 한다기보다, 단기적인 이익을 추구하여 기업의 성장잠재력을 악화시켜 기업의 가치를 감소시키는 것으로 해석될 수 있다. 다음으로, 외국인 지분율을 기준으로 표본을 나누어 분석한 결과, 양의 상관관계는 외국인 지분율이 낮은 표본에서 두드러졌으며, 표본을 재벌기업과 비재벌 기업으로 구분하여 살펴 본 결과, 외국인 주주의 주가 급락 위험 증대 영향은 비재벌기업에 한정된 것으로 나타났다. 종합하면, 본 연구는 한국 주식 시장에서 외국인 투자자들이 기업내부의 모니터링을 통하여 기업지배구조를 개선하여 기업의 가치를 높인다기보다, 단기적 투자성향을 갖고 한국시장에 투자하여 기업의 성장 잠재력을 위축시킬 수 있다는 추가적인 증거를 제시하였다.

주요어: 외국인지분율, 주가 급락 위험, 기업 지배 구조
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