

# Disclosure Effects of Korean Firms' Divestment from China\*

Chune Young Chung<sup>†</sup>

School of Business Administration, Chung-Ang University, Seoul, Korea

Justin Morscheck

School of Business Administration, Gonzaga University, WA, USA

Kyung Su Park

School of Business Administration, Chung-Ang University, Seoul, Korea

JKT 23(5)

Received 25 April 2019

Revised 16 June 2019

Accepted 14 August 2019

## Abstract

**Purpose** – We examine the disclosures on foreign divestment from China by 77 Korean firms between 2007 and 2016 to identify the effects (and their determinants) on parent firm value.

**Design/methodology** – We analyze how divestment affects firm value by examining the disclosure of divestment from China by Korean firms. Then, we examine the determinants of these disclosure effects using cross-sectional regression analyses.

**Findings** – We find negative effects on parent firm value in the short and medium term, and both the KOSPI and KOSDAQ stock markets show negative correlations between foreign divestment and firm value. The parent firm's financial condition and profitability and the reason for divesting are statistically significant determinants.

**Practical implications** – Most Korean firms in China belong to the manufacturing industry. As a result, divestment signifies a loss of important manufacturing bases and assets.

**Originality/value** – We analyze foreign direct divestment, which has not been studied in detail previously owing to a lack of data. In addition, this research is the first to compare the disclosure effects in the KOSPI market with those in the KOSDAQ market for the same period.

**Keywords:** China, Disclosure Effect, FDD, FDI, Firm Value, Korean Firm

**JEL Classifications:** D12, F14, O53

## 1. Introduction

Globalization is an important issue in today's rapidly changing business environment. In this context, firms compete against both domestic and global companies. Consequently, many firms are not limiting their central business activities to a specific location. As they formulate strategies targeting global companies as partners or rivals, their expansion to other countries has increased significantly. Foreign direct investment (FDI) by Korea began in 1968. Owing to changes in the business environment, such as an increase in wages in Korea and the intensification of global competition, FDI became more prevalent in the 1980s. After reaching USD 10 billion in 2006, FDI showed a rapid increase, reaching USD 20 billion by 2007. Since 2011, the value of FDI has fluctuated around USD 30 billion.<sup>1</sup>

As of 2015, Korea's FDI by region shows that Asia has the largest share (USD 11.1 billion; 40.7%), followed by North America (USD 6.2 billion; 22.7%) and Latin America (USD 4.6

\* We wish to thank the seminar participants at Chung-Ang University, Fudan University, and the 2019 Korea Trade Research Association Conference for their helpful comments and constructive suggestions. The authors contributed equally to this work. The standard disclaimer applies, and all errors are our own.

<sup>†</sup>Corresponding author: bizfinance@cau.ac.kr

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billion; 16.9%). These three largest markets comprise 80.2% of the total. In terms of individual countries, the United States has the largest share (USD 5.56 billion), followed by China (USD 4.67 billion), which includes Hong Kong (USD 1.81 billion); Japan (USD 1.72 billion); Vietnam (USD 1.5 billion); and Singapore (USD 1.4 billion). These five countries form the majority of Korea's FDI. Along with the United States, China is the most important host country for investment by Korea.

However, since 2008, Korean firms that had invested in China have been finding it increasingly difficult to find labor and to manage tax and financing issues. These challenges stem from changes in the policies of the Chinese government with regard to foreign companies. After declaring the 11th Five-Year Plan in 2006, the Chinese government began changing its approach from "attracting quantitative growth investment" to one of "attracting qualitative growth investment." This agenda was adopted because China had attracted excess investment, owing to its rapid growth. Therefore, the necessity of adopting preferential policies for foreign firms has naturally diminished. Accordingly, the Chinese strategy for FDI is changing to one of strengthening labor and environmental regulations, abolishing tax benefits for foreign firms, strengthening M&A regulations and antitrust laws, and prioritizing the quality of foreign funds.

Given this transformation in China, Korean firms' investments have been decreasing steadily, with increasing cases of divestment. Many of Korea's small and medium-sized enterprises (SMEs) have not been able to respond effectively to the changes in the Chinese government's policies, having entered the market with little preparation, based only on the tax benefits and cheap labor proposed by the Chinese government in the past.

Despite the necessity of researching this topic, previous studies have tended to focus on investment strategies and challenges in the Chinese market. This is because most firms that fail (in terms of foreign investment) tend not to disclose this to the public (Seo Min-Kyo, 2008). Fortunately, the Korea Exchange has transformed its disclosure requirements with regard to firms disposing of shares in other countries. We expect this to increase the number of studies on Korea's divestment from other countries, including China.

This research analyzes how divestment affects firm value based on the disclosure of divestment from China by Korean firms. Then, we examine the determinants of these disclosure effects using cross-sectional regression analyses.

This study is meaningful in that it analyzes foreign direct divestment (FDD), which has not been studied in detail previously owing to a lack of data. In particular, despite many Korean firms having invested in China, very few studies target China. In addition, this research is the first to compare the disclosure effects in the KOSPI<sup>2</sup> market with those in the KOSDAQ<sup>3</sup> market for the same period.

Previous works on the disclosure effects of foreign divestment can be divided into studies on Korean firms and studies on foreign firms. Studies on firms of non-Korean countries report that the disclosure of foreign divestment increases the value of the firm (e.g., Kim Ki-Hyun, 1995; Mathur, Gleason, and Singh, 2006). However, studies on Korean firms report a reduction in firm value (e.g., Seo Min-Kyo and Lee Hyun-Chul, 2005; Yoo Yong-Hi and Lee

<sup>1</sup> Source: The Export-Import Bank of Korea (<http://www.koreaexim.go.kr>). As of 2011, all data related to foreign investments by Korea refer to the Export-Import Bank of Korea database.

<sup>2</sup> Korea Composite Stock Price Index. The KOSPI market, a benchmark stock market of Korea, has listed global corporations such as Samsung Electronics, Hyundai Motor, POSCO, and LG Electronics since it opened in 1956. It also refers to the stock composite price index for the KRX main board.

<sup>3</sup> Korea Securities Dealers Automated Quotations. The KOSDAQ market was launched in July 1996 to provide funds for startup companies and SMEs in areas such as information technology, biotechnology, and culture technology.

Chul-Min, 1999).

Therefore, we attempt to resolve these conflicting results.

Furthermore, the existing literature classifies host countries into only two categories, namely developed countries and developing countries. Only Yi Ka-Youn, Park Kyung-In and Yu Ting-Ting (2013) independently analyze the disclosure effects of divestment in a specific country. Hence, this research is valuable because it does so for China, the largest host country for Korean FDI.

Given the above motivations, this research has three objectives. First, it analyzes how the disclosure of FDD from China by Korean firms affects firm value. Second, it compares the disclosure effects of FDD between the KOSPI and KOSDAQ markets. Third, it investigates the specific determinants of the effect on firm value of the aforementioned disclosure by Korean firms.

To examine the above-mentioned effects, we extract cases of the disposal of stocks previously established in China and Hong Kong. Here, we use an event study of abnormal returns of stock prices and, thus, focus on listed companies in the Korean stock markets. The analysis period is January 1, 2007, to December 31, 2016 (10 years).

This study is distinct from previous works in that it independently analyzes the disclosure effects of foreign divestment from China, which is geographically adjacent to, and hosts the largest FDI from Korea. Furthermore, this study is significant in that it is the first to compare the effects of the disclosure of FDD between the KOSPI and KOSDAQ markets. Korean firms' investments in China are decreasing (divestment is increasing). As such, studies such as this are expected to be helpful to Korean firms that need to decide whether to invest in or divest from China. Moreover, investors in Korean stock markets and banks can use these determinants to assess the valuations of firms investing in China. Lastly, we analyze how Korean firms' disclosures of FDD from China affect the parent firm value and identify the determinants of these disclosure effects.

The remainder of the paper is organized as follows. As a theoretical basis for the study, Section 2 reviews the literature related to FDD and the effects of such disclosure on the stock market. Section 3 discusses Korean firms' FDD and FDI related to China, and Section 4 presents the hypotheses and methodology used to analyze the impact of Korean firms' FDD from China on firm value. Finally, Section 5 concludes the paper.

## 2. Literature Review

### 2.1. Literature Review on Korean Firms' Divestment from China

The causes of Korean firms' divestment from China can be divided into three main factors: China's political and legal environment, macroeconomic factors, and the management of Korean firms.

#### 2.1.1. Chinese Political and Legal Factors

*Adoption of Social Insurance* Wang Jing-Hao (2016) notes that China's enforcement of the national social insurance system enabled interregional migration. As a result, social insurance fees for laborers from other areas increased, and the burden of wages for Korean firms increased accordingly. Similarly, Qin Li-Dong (2008) reports that Korean firms bear 20.7% of the costs of corporate social insurance, and 17% of the costs of medical insurance, thus intensifying the burden on these firms.

*a) Reduction and Abolition of Various Incentives*

According to Chae Hyung-Sik (2008), Shao Hao-Li (2011) and Wang Jing-Hao (2016), China reduced the tax privileges granted to foreign firms in exclusive industrial zones, which had been implemented to achieve economic growth. Consequently, Korean firms that entered China to benefit from these incentives and low wages are now facing difficulties. Furthermore, Hwang Jae-Han (2006) states that the Chinese government is concerned about the drain of national wealth by disguised foreign investments, which has led to stern tax investigations of foreign firms.

*b) Increase in the Minimum Wage*

According to Chae Hyung-Sik (2008) and Wang Jing-Hao (2016), to improve the Chinese people's quality of life of and stimulate the domestic economy, the government has steadily increased the minimum wage. These increases have placed a heavier burden on Korean firms that entered the Chinese market expecting a cheaper labor force.

*c) Strengthened Investment Regulations for Qualitative Growth*

Kim In-Cheol (2006) and Chae Hyung-Sik (2008) state that the environmental policy in China has been transformed from one of "recovery after pollution" to comprehensive measures that prevent pollution in the first place. This has resulted in additional environmental costs and less profitability. Furthermore, Lee Si-Young (2012) notes that the Chinese government has adopted the Environmental Effects Evaluation System and Emission Credit System to strengthen preventive functions and protect the environment. According to Wang Jing-Hao (2016), in 2010, the government expanded the list of processing trade goods to reduce emissions and curtail energy usage. The increased prohibition on the processing of trade goods encompasses 44 items, including steel making, which resulted in many Korean firms in this industry withdrawing from China. Lee Yong-Hee (2008) argues that the enactment of Chinese antitrust laws has restricted the expansion of Korean firms in industries such as conductor manufacturing, telecommunication, and LCD manufacturing, as well as others that have comparative advantages.

*d) Complicated Liquidation Process*

Shao (2011) notes that the liquidation process in China is excessively complicated, often taking more than a year of administration before being concluded, and including various difficulties during business withdrawal. Furthermore, according to Lee Chul-Hee (2009), when foreign-funded enterprises that were established fewer than 10 years previously try to liquidate, the Chinese government demands a lump-sum payment of all privileges granted to them. In addition, the government has enacted a law that demands that these firms pay the liquidation costs and several delayed social insurance fees. As such, the excessive costs incurred during the liquidation process are also a cause of divestment.

*2.1.2. Chinese Macroeconomic Factors*

*a) Appreciation of the CNY*

Nai Ji-Hao (2015) argues that the Chinese government is appreciating the CNY to respond to the pressure of inflation in the domestic market and to international pressure. She notes that the appreciation of the CNY is hindering the competitiveness of Korean firms.

*b) Rise in the Price of Raw Materials*

Chae Hyung-Sik (2008) states that the sharp increase in the international oil price and other

raw material prices after 2005 led to increased financial difficulties for Korean firms.

*c) Labor shortage*

According to Zhao He-Hui (2015), Chinese workers try to avoid difficult and dangerous labor, leading to a labor shortage for Korean firms. For example, this has led to Korean firms in the labor-intensive sewing industry finding it difficult to fulfill orders from clients.

*2.1.3. Korean Firms' Management Factors*

*a) Lack of Personnel Management Ability*

According to Jon Kyong-Tae (2002), the Chinese government sees Korean firms as having the most severe labor conflicts and the most frequent labor-management disputes of foreign firms. Jon Kyong-Tae (2002) believes that this stems from a lack of experience in managing foreign subsidiaries' personnel, and a lack of understanding of Chinese culture and labor-related regulations and rules. Qin Chi-Hu (2008) argues that Korean firms find it difficult to secure professional technicians and skilled workers because foreign-funded enterprises often do not provide stable employment conditions. As a result, most Chinese workers tend to work in such firms on a temporary basis. Furthermore, despite the expectation that the Korean Chinese living in China would smoothen communication between Koreans and Chinese, effective communication is difficult owing to the North Korean pronunciation, a mixed Chinese dialect, and a lack of understanding of technical jargon.

*b) Lack of Understanding of the Local Market*

Jon Kyong-Tae (2002) notes that the investment purpose and business environment should be considered comprehensively when selecting an investment area. However, many Korean firms focus only on geographical proximity and on employing the Korean Chinese living in China. Hence, excessive competition within regions among Korean firms has contributed to the increase in withdrawals from China.

*c) Poor Financial Status*

According to Qin Chi-Hu (2008), many Korean firms become insolvent owing to medical and unemployment insurance fees, resulting from laws that did not exist when the firms entered China. In addition, Jon Kyong-Tae (2002) states that investments in China by Korean firms are on a relatively small scale compared to those by firms from other countries. Furthermore, insufficient additional financing after the initial investment has led to financial difficulties.

*d) Shortage of Information*

Jon Kyong-Tae (2002) notes that Korean firms are profit-seeking and lack cohesiveness in terms of cooperation or affiliation with other firms. As a result, the author concludes that individual firms have inadequate information about new Chinese government policies and lack the ability to cooperate to share information.

**2.2. Literature Review on the Effects of FDD Disclosure**

As examined above, research on FDD began in the 1970s, when multinational enterprises from developed countries entered a maturation period, paving the way for reinvestment and divestment to become the new flows of foreign investment. Most previous studies on FDD are based on case studies and on empirical research on the theories and determinants of

divestment. However, few studies have examined the effects of FDD disclosure. Those that have can be divided into studies on Korean firms and studies on non-Korean firms.

For the period 1984 to 1987, Ittner and Oyon (1993) carried out an empirical analysis of how the disclosure of the exit of US firms from South Africa affected the stock prices of the parent companies. They found a negative relationship between the disclosure of divestment and firm value, although the result was not statistically significant.

Kim Ki-Hyun (1995) analyzes the stock price reactions of 205 US firms after they disclosed voluntary foreign divestment between 1980 and 1988. The results show that withdrawals from developed countries led to significant and positive cumulative average abnormal returns (CAAR), whereas withdrawals from developing countries had a significant and negative influence on stock prices.

Borde, Madura and Akhigbe (1998) analyze 111 cases of foreign divestment by US firms for the period 1979 to 1991, finding statistically significant positive CAAR before and after the date of disclosure. Mathur, Gleason and Singh (2006) analyze 664 cases of foreign divestment by US firms for the period 1985 to 2001, finding statistically significant positive CAAR before and after the date of disclosure. However, unlike Kim Ki-Hyun (1995), Borde, Madura and Akhigbe (1998) and Mathur, Gleason and Singh (2006) find no significant changes in stock prices after disclosing divestment from developing countries.

Cooney, Finn and Karl (2004) analyze 267 cases of foreign divestment by Australian firms for the period 1994 to 2000, finding statistically significant positive CAAR before and after the date of disclosure. Coakley, Hardy and Wang (2008) analyze 165 cases of foreign divestment by UK firms for the period 1986 to 1995, finding statistically significant positive CAAR before and after the date of disclosure.

As shown above, most studies on non-Korean firms show statistically significant positive CAAR before and after the date of disclosure. Furthermore, many studies confirm the existence of positive abnormal returns after the disclosure of withdrawal from developed countries, but no significant changes in stock prices are observed after withdrawals from developing countries.

The first work to study the disclosure effects of foreign divestment by Korean firms was that of Yoo Hyun-Seung and Lee Young-Ho (1999). The authors analyze 30 cases of foreign divestment disclosure for the period 1980 to 1998, finding negative stock price reactions on the date of disclosure only. Furthermore, 23 of the 30 Korean firms exited from the same industries as those of their parent companies. The authors explain that this occurred either because the comparative advantages of the parent companies were not transferred smoothly, or because the comparative advantages of the parent companies themselves were poor.

Seo Min-Kyo and Lee Hyun-Chul (2005) analyze 34 disclosure cases of the disposal of investments in foreign stocks by Korean firms for the period 1980 to 2001, confirming the existence of statistically significant negative CAAR.

Based on the research by Seo Min-Kyo and Lee Hyun-Chul (2005), Seo Min-Kyo (2008) analyzes 104 cases of disclosure for the period 1996 to 2005, again confirming the existence of statistically significant negative CAAR. Furthermore, the empirical analysis in this work finds that the disclosure of foreign divestment by Korean firms reduces the stock price of those firms (parent companies). This differs from the findings for non-Korean firms. Furthermore, a cross-sectional analysis of the determinants shows that the financial condition of the parent companies (i.e., debt ratio), industry relevancy, and relative scale of foreign investment exert a significant influence on the CAAR. The difference occurs because Korean firms tend to have a high dependency on foreign markets, unlike firms in developed countries. Thus, most foreign divestment stems not from strategic reasons, but from failures in business management. The research concludes that foreign investment should be

considered more carefully.

Sul Won-Silk and Kim Young-Joo (2009) analyze 49 disclosure cases of the disposal of foreign stocks by Korean firms listed on the KOSPI market for the period 2001 to 2008, finding statistically significant negative CAAR throughout the short- and medium-term periods after the date of disclosure. Furthermore, after carrying out a cross-sectional regression analysis to verify the determinants, they find that the location of the foreign subsidiary and the financial condition of the parent company have statistically significant negative coefficients.

Kim Chi-Hyun (2009) analyzes 66 disclosure cases of the disposal of foreign stocks and investment securities by Korean firms listed on the KOSPI market for the period 2001 to 2008, finding statistically significant negative CAAR. Furthermore, a cross-sectional regression analysis to verify the determinants shows that the location of the foreign subsidiary and the size of the parent company exert a statistically significant influence on the CAAR.

Kim Soo-Jung and Cho Young-Gon (2010) analyze 51 cases of foreign divestment disclosure by Korean firms listed on the KOSDAQ market for the period 2001 to 2008, finding statistically significant negative CAAR after the date of disclosure. Furthermore, they find that the statistically negative response becomes significantly larger toward the medium term after the date of disclosure. Moreover, the location of the divestment, reason for divestment, and foreign intervention rates are found to be statistically significant determinants.

Yi Ka-Youn, Park Kyung-In and Yu Ting-Ting (2013) analyze 36 disclosure cases of divestment from China by Korean firms listed on the KOSPI market for the period 2002 to 2011, finding statistically significant negative CAAR after the date of disclosure. They find that the statistically negative response becomes significantly larger toward the medium term after the date of disclosure. Moreover, after carrying out a cross-sectional regression analysis to verify the determinants, they find that the reason for a withdrawal and the timing of a withdrawal exert a statistically significant influence on the CAAR.

For companies from developed countries, divestment disclosure leads to positive stock returns because the foreign divestment means a firm can reclaim financial capital by disposing of non-mainstream areas and reinvesting in other business areas (cross-subsidizing effect). Furthermore, because poor financial conditions are the main reason for liquidation, divestment is interpreted as a chance to improve the firm's overall financial condition (financial hypothesis effect) (Yi Ka-Youn, Park Kyung-In and Yu Ting-Ting, 2013). In contrast, Korean firms depend heavily on foreign markets, owing to the country's small domestic market. Thus, divestment seems to be a factor that lowers the growth rate of a firm and is deemed to be an investment failure by investors, resulting in a pessimistic expectation of the future cash flow of the parent company (Yoo Hyun-Seung and Lee Young-Ho, 1999). The Korean market provides a unique environment in which to investigate a market's reaction to a divestment announcement, owing to the existence of Chaebols (Korean family-oriented business conglomerates). According to Liu Chang et al. (2018), Chaebols such as the Samsung, Hyundai, SK, LG, and Lotte groups comprised 61 business conglomerates with 1,696 subsidiary companies as of April 2015, with a total market value exceeding KRW 2,258 trillion. As such, they account for a substantial proportion of the listed firms. Hence, the Korean market exhibits a relatively high level of information asymmetry, owing to the influence of Chaebols, less strict announcement policies, the weaker monitoring role of institutional investors, and high ownership concentration. Additionally, the volatility of stock prices in the market is high because of the high proportion of individual investors in the market. Under such conditions, investors may be more sensitive to divestment announcements.



### 3. Hypothesis Development

Since the studies on foreign divestment in the 1970s, many researchers have proposed theories and determinants of foreign divestment. However, there remain few studies on how foreign divestment affects the firm value of the parent company, particularly in the case of Korea. This stems partly from firms not properly disclosing foreign divestments, which are deemed to be investment failures in Korea. Fortunately, the Korea Exchange now requires that firms disclose their investment in other corporations, as well as the disposal of such shares. Accordingly, relevant research on this topic is expected to grow.

Other than studies conducted in Korea, research on foreign divestment has focused primarily on developed countries, such as the United States or the United Kingdom. Studies that target US firms (Borde, Madura and Akhigbe, 1998; Kim Ki-Hyun, 1995; Mathur, Gleason and Singh, 2006) confirm the positive disclosure effects of foreign divestment. Furthermore, Cooney, Finn and Karl (2004), who target Australian firms, and Coakley, Hardy and Wang (2008), who target UK firms, find positive effects of disclosure. Thus, the disclosure of foreign divestment in developed countries yields positive effects, in general.

In contrast, studies on Korean firms all report statistically significant negative stock reactions. Yoo Hyun-Seung and Lee Young-Ho (1999), who were the first to examine the disclosure effects of foreign divestment by Korean firms, hypothesize that because most FDD by Korean firms results from poor business performance, their disclosure leads to negative stock reactions. Indeed, the study confirms the existence of negative CAAR before and after the date of disclosure. Seo Min-Kyo and Lee Hyun-Chul (2005), Seo Min-Kyo (2008) and Sul Won-Silk and Kim Young-Joo (2009) also find statistically significant negative CAAR before and after the date of disclosure. Unlike other studies, Kim Soo-Jung and Cho Young-Gon (2010) analyze the disclosure effects of foreign divestment by firms listed on the KOSDAQ market, and again find statistically significant negative stock reactions.

The existing literature on the disclosure effects of foreign divestment can be summarized as follows. Whereas non-Korean firms show statistically significant positive CAAR before and after the date of disclosure, Korean firms show statistically significant negative stock price reactions upon the disclosure of foreign divestment.

For companies from developed countries, divestment disclosure leads to positive CAAR because the foreign divestment results in an expectation that firms will enhance their efficiency (Borde, Madura and Akhigbe, 1998; Kim Ki-Hyun, 1995). However, Korean firms depend heavily on foreign markets. Thus, it is highly likely that foreign divestment by such firms stems from poor business performance. Therefore, this divestment is deemed to hinder the survival and growth of these firms, yielding a negative response in the market (Seo Min-Kyo, 2008; Yoo and Lee, 1998). This leads to Hypothesis 1-1.

*Hypothesis 1-1: The disclosure of foreign divestment from China by Korean firms exerts a negative influence on the firm value of the parent company.*

However, we also allow for an alternative explanation. It is widely held that investments in China are more likely to be forfeited by the government than are investments in other countries. If a stock market reflects other factors efficiently, such decisions will give the market a positive signal. That is, the negative effect on stock prices requires a different explanation.

Too few studies target Korean firms, and most of those that do focus on KOSPI-listed firms. Seo Min-Kyo (2008) analyzes the disclosure effects of foreign divestment by integrating



KOSPI-listed firms and KOSDAQ-listed firms, but does not analyze each market independently. Kim Soo-Jung and Cho Young-Gon (2010) were the first to study firms listed on the KOSDAQ market only. However, no existing studies have compared the disclosure effects for firms listed on the two markets over the same period.

The two largest stock exchange markets in Korea, the KOSPI and the KOSDAQ, differ greatly in terms of the characteristics of the firms listed on each market. Firms listed on the KOSDAQ are relatively small in scale and less internationalized. Furthermore, most firms listed on the KOSDAQ are SMEs, which reportedly have different reasons and locations for foreign investment than those of larger firms. This difference based on the size of a firm sends different signals to the market after foreign divestment, yielding different market responses upon disclosure. Thus, it is necessary to conduct empirical research to clarify how the characteristics of the firms listed on each market (i.e., KOSPI and KOSDAQ) affect the markets' reactions to the respective stock prices.

**Table 1.** Comparison of KOSPI-Listed Firms and KOSDAQ-Listed Firms (End of 2016)  
(Unit: %, Hundred Million KRW)

Category	Age of the Firms	Staff Size (median)	Distribution of Firm Size		Total Assets (median)
			Large Firm	SME	
KOSPI	39.4	1,609	87.4	12.6	39,795.6
	(42)	(379)			(4,122.3)
KOSDAQ	21.2	206	40.0	60.0	1,329.3
	(19)	(133)			(815.3)

Source: KisValue (2016).

No existing works directly compare the divestment disclosure effects for firms listed on the KOSPI and the KOSDAQ. However, because we study Korean firm divestments from China, we can use the conclusions of previous studies on disclosure effects by separating the divesting regions into developed countries and developing countries. Yoo and Lee (1999) note that Korean firms advance foreign markets when entering developed countries, and enjoy a comparative advantage in production costs when entering developing countries. For example, the facilitation of exports and low wages make up 32.3% and 20.7%, respectively, of the reasons for Korean firms entering China from 2000 to 2007.<sup>4</sup> Accordingly, it seems reasonable to classify China as a developing host country for FDI by Korean firms.

Sul Won-Silk and Kim Young-Joo (2009) examine the foreign divestment disclosures of KOSPI-listed firms, finding that the negative disclosure effects are larger when firms exit the markets of developed countries. The authors interpret this to mean that Korean firms enter developed countries with the intention of advancing the foreign markets. Thus, divestment from developing countries suggests problems in the production process, whereas divestment from developed countries implies a loss in the market, which is a less favorable situation. Considering that most firms listed on the KOSPI are large companies, their withdrawal from developed countries has a stronger negative effect on their stock price.

Kim Soo-Jung and Cho Young-Gon (2010) examine the divestment disclosure of KOSDAQ-listed firms, concluding that the negative disclosure effects are larger when exiting from developing countries. Because KOSDAQ-listed firms are mainly SMEs, these firms place greater weight on foreign investment in developing countries for production costs,

<sup>4</sup> The research period is 2007 to 2016. Thus, the reasons for entering China by Korean firms that disclosed foreign divestment during this period were obtained using the arithmetic average of data gathered for the period 2000 to 2007.

whereas in developed countries, they focus on technology acquisition or advancing the market. Accordingly, the authors conclude that withdrawing from developing countries exerts stronger negative effects.

In summary, China can be considered a developing country in terms of the reasons for investment by Korean firms. In addition, because more than 80% of Korean firms' investment in China stems from SMEs, we predict that the disclosure of divestment from China in the KOSDAQ market will bring about a negative market response. Thus, based on the conclusions in the literature, we establish Hypothesis 1-2, as follows.

*Hypothesis 1-2: The disclosure of divestment from China by Korean firms exerts a greater apparent influence on the KOSDAQ market than it does on the KOSPI market.*

However, the differences in traits do not necessarily lead to greater, seemingly negative effects on stock market performance. Hence, there might be stronger homogeneity in the traits related to stock market performance, in terms of both returns and risks.

Previous studies identify the following factors as determining the disclosure effects of foreign divestment: the scale of divestment, location of divestment, reason for divestment, dependency of the parent company on the foreign market, financial condition of the parent company, size of the parent company, scope of foreign market regions, development opportunities, and industry relevance to the parent company. Based on this literature, we examine the following four determinants of disclosure effects: the scale of divestment, financial condition of parent company, profitability of the parent company, and reason for divestment.

We assume that a larger scale of divestment leads to a more negative market response to the disclosure. Borde, Madura and Akhigbe (1998) examine US firms, and report that the scale of divestment has a statistically significant negative correlation with the CAAR. However, Kim Ki-Hyun (1995) and Cooney, Finn and Karl (2004) do not find statistically significant results. Seo Min-Kyo (2008) studies Korean firms, reporting that the scale of divestment has a statistically significant positive correlation with the negative response to stock prices. However, Sul Won-Silk and Kim Young-Joo (2009) report that, while the scale of divestment does have a negative correlation with the CAAR, the result is statistically insignificant. Studies such as those of Kim Soo-Jung and Cho Young-Gon (2010) and Yi Ka-Youn, Park Kyung-In and Yu Ting-Ting (2013), among others, do not identify consistent directions of the dependent variable with regard to the scale of divestment, and their results are all statistically insignificant. Considering that most Korean firms exit from foreign markets because of poor business performance, such divestment is expected to incur losses. This yields the following hypothesis.

*Hypothesis 2-1: The larger the scale of foreign divestment from China by Korean firms, the greater the negative effect of the divestment disclosure will be on the parent firm value.*

This study hypothesizes that the financial condition of the parent company affects the disclosure effect on Korean firms divesting from China. Mathur, Gleason and Singh (2006), Seo Min-Kyo (2008) and Sul Won-Silk and Young-Joo Kim (2009) report that the debt ratio of the parent company has a negative correlation with the CAAR before and after the date of disclosure. Cooney, Finn and Karl (2004) report that, although not statistically significant, a poorer financial condition or cash flow has a negative effect on firm value after the disposal of assets. In general, firms with a high debt ratio are more likely to use the financial capital

reclaimed by selling off foreign subsidiary companies for debt redemption or operating funds, thus sacrificing attractive investments. Accordingly, a firm with a higher debt ratio is more likely to experience a decrease in firm value, because it cannot invest the reclaimed financial resources in attractive investment projects (Mathur, Gleason and Singh, 2006). Furthermore, exiting from foreign markets reduces the firm's future cash flow. This yields the following hypothesis.

*Hypothesis 2-2: The worse the financial condition of the parent company, the more negative the effect of the divestment disclosure will be on the parent firm value.*

This study hypothesizes that the profitability of the parent company affects the disclosure effect of foreign divestment from China by Korean firms. Manufacturing businesses make up more than 80% of the total amount invested in China by Korean firms. Such firms usually have higher initial investments than those of firms in other industries and, in general, hold higher-value assets in the form of manufacturing facilities. Therefore, we expect that the value of the shares of a foreign subsidiary make up a relatively high proportion of the total assets of the parent company. Indeed, because the domestic market in Korea is relatively small, foreign markets are very important to Korean firms, and foreign assets are likely to be deemed major assets of these firms. As a result, foreign divestment is considered to hamper the growth of a firm and, thus, is expected to provoke a negative reaction in the stock market (Seo Min-Kyo, 2008; Yoo Hyun-Seung and Lee Young-Ho, 1999). In particular, the higher the parent firm's return on assets (ROA), the more negative the impact of the divestment will be on the firm value, because this will lead to a decrease in future cash flows.

*Hypothesis 2-3: The higher the ROA of the parent company, the greater the negative effect of the divestment disclosure will be on the parent firm value.*

This study hypothesizes that the reason for divestment will affect the disclosure effects of divestment from China by Korean firms. Borde, Madura and Akhigbe (1998) report statistically significant differences in market reactions, depending on the reason for the foreign divestment. Cooney, Finn and Karl (2004) classify the reasons for divestment as strategic divestment (to be used in other strategic investment), and non-strategic divestment (used to repay debt). Whereas strategic divestment shows statistically significant positive stock reactions, non-strategic divestment shows no statistically significant response in terms of stock prices. Kim Soo-Jung and Cho Young-Gon (2010) classify the reasons for divestment as either financing or non-financing reasons, concluding that financing reasons lead to larger negative disclosure effects. Moreover, Yi Ka-Youn, Park Kyung-In and Yu Ting-Ting (2013) classify the reasons for divestment as either financial restructuring or the enhancement of managerial efficiency, concluding that the former shows statistically significant negative disclosure effects. Accordingly, the conclusions in the literature show that when foreign divestment is chosen for financing purposes, it is highly likely that the reclaimed funds will be used for debt repayment or as operating funds, rather than for reinvesting for future growth. As such, investors tend to regard foreign divestment as negative information.

*Hypothesis 2-4: If divestment occurs for financial purposes, the disclosure of divestment will have a greater negative effect on the parent firm value.*

As in the case of null hypotheses 1-1 and 1-2, we also allow opposite relationships in hypotheses 2-1 to 2-4, which are tested empirically in the following section.

#### 4. Sample and Research Design

To examine the disclosure effects of divestment from China by Korean firms, this study extracts cases of the disposal of stocks in China and Hong Kong. These samples are gathered from disclosures of a “disposal of stocks and investment certificates of other corporations” provided by the Listing Disclosure System of the Korea Exchange (<http://kind.krx.co.kr>). We consider firms listed on the KRX for 2007–2016. In particular, we collect financial information from Data Guide Pro, which is supplied by FnGuide, a South Korean financial data provider. The database compiles financial information for firms listed on the KRX, and is equivalent to the Compustat database in the United States. The database is often used in Korean market studies, and has proven to be reliable. The data on the KOSPI and KOSDAQ indices are extracted from the Korea Exchange website (<http://www.krx.co.kr>). Missing data are referenced from the relevant firms’ annual reports provided by the Financial Supervisory Service’s electronic disclosure system (<http://dart.fss.or.kr>).

Among the raw data, the samples that fit the purpose of this study are as follows. First, for multiple divestment announcements by a firm in a given year, the study considers only the first disclosure in order to mitigate a compounding effect of the announcement. Second, throughout the event period, the daily stock price should be continuous. Third, throughout the event period, there should be no abnormal fluctuations in the stock price due to a capital reduction, or other reasons.

**Table 2.** Disclosure Statistics of Korean Firms’ FDD from China by Year

Category	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	Total
KOSPI	6	5	3	6	5	4	4	6	2	3	44
China	6	3	2	3	4	3	3	5	2	2	33
Hong Kong		2	1	3	1	1	1	1		1	11
KOSDAQ	5	4	3	4	3	4	2	1	3	4	33
China	3	3	3	3	2	3	2		2	4	25
Hong Kong	2	1		1	1	1		1	1		8
Total	11	9	6	10	8	8	6	7	5	7	77

The analysis period is January 1, 2007, to December 31, 2016 (10 years). The date of first disclosure is set as the date of the event ( $t = 0$ ), and if the disclosure occurs after the market closes, the date of the event is set as the next opening day of the stock market. We select 77 samples (44 for the KOSPI market and 33 for the KOSDAQ market) that satisfy the above criteria. Listings on the KOSDAQ are similar to those on the NASDAQ. The KOSDAQ opened in 1996 to make funds more readily available to small and mid-size firms and venture firms. The listing requirements for the KOSDAQ are more relaxed than those of the KOSPI, which has resulted in a greater number of small and mid-size firms being listed on the former.

An event study is conducted to analyze the disclosure effects of FDD from China by Korean firms. The basic goal is to examine abnormal price changes of relevant stocks and the scale of the changes before and after the date of disclosure. Hence, the focal point of the event study is verifying whether abnormal returns exist around the time when specific information is disclosed to the stock market. To confirm abnormal price changes, the normal rates of returns under normal circumstances must be known. Here, a normal rate of return refers to the expected rate of return under the condition that the event did not occur. Then, the abnormal return is calculated as the difference between the actual rate of return and the normal rate of

return. If an abnormal return refers to the difference between the observed rate of return and the expected rate of return, then it cannot occur in an efficient market.

Studies that use systematic event study methods include those of Brown and Warner (1980 and 1985), who provide several cases in their empirical analyses, as well as research results.

Bowman (1983) systematizes the event study process into the following four stages of simple forms: (1) identify the event of interest; (2) model the security price reaction; (3) estimate the excess return; and (4) analyze the results. Because our study focuses on the Korean stock market and its reaction to the disclosure of the Korean firms' divestment from China, we rely on previous studies that have investigated the market's reaction to corporate events in the Korean market. For example, Kim Kyung-Soon, Park Jin-Woo and Chung Chune-Young (2012), Chung Chune-Young, Lee Jong-Hyeon and Park Jin-Woo (2014) and Chung Chune-Young, Kim Joo-Hwan and Park Jin-Woo (2017) utilize the event study we employ here to capture market reactions to various corporate events, such as stock splits, unfaithful disclosures, and IPOs. Given that event studies have been used extensively in previous studies on the Korean stock market, we adopt the same approach for our empirical analyses.

Specifically, the techniques used to measure abnormal returns can be categorized into three models:

- Mean-adjusted returns model

While the expected rate of return of a certain stock  $i$  under analysis might have various values in a time series, this model assumes that the stock value has a constant value, on average. Thus, the abnormal return of stock  $i$  at time  $t$  is:

$$AR_{it} = R_{it} - K_i,$$

where  $K_i$  refers to the simple arithmetic mean of stock  $i$ 's rate of return in the estimation period.

- Market-adjusted returns model

$$AR_{it} = R_{it} - R_{mt},$$

where  $R_{mt}$  refers to the index rate of the return on day  $t$ . This model sets all constant values of each stock  $\alpha_i$  in the market model to zero and  $\beta_i$  to one, and assumes a limited case of the market model.

- Market model

$$AR_{it} = R_{it} - (\hat{\alpha}_i + \hat{\beta}_i R_{mt}),$$

where,  $\hat{\alpha}_i$  and  $\hat{\beta}_i R_{mt}$  are estimates of the regression coefficients calculated during the estimation period. This technique was first utilized by Fama, Fisher, Jensen and Roll (1969) to analyze the information effects of the disclosure of stock splits in the NYSE.

In this study, we use both the market-adjusted returns model and the market model.

The date of first disclosure is set as the date of the event ( $t = 0$ ), and if the disclosure takes place after market closing, the date of the event is set as the next opening day of the stock market. The period analyzed includes 151 trading days, from 120 trading days before the date of disclosure ( $t - 120$ ) to 30 trading days after the date of disclosure ( $t + 30$ ). During this period, the estimation period takes up 90 trading days, from 120 trading days before the date of disclosure ( $t - 120$ ) to 31 trading days before the date of disclosure ( $t - 31$ ). The event period is set as 30 days before and after the date of disclosure ( $t +/- 30$ ):

$$R_{it} = \alpha_i + \beta_i R_{mt} + e_{it}, \quad (1)$$

where:

$R_{it}$ : day  $t$  rate of return of stock  $i$

$R_{mt}$ : day  $t$  rate of return of benchmark market index (KOSPI or KOSDAQ)

$e_{it}$ : day  $t$  error term of stock  $i$ .

Using the coefficient estimates from formula (1),  $\hat{\alpha}_i$  and  $\hat{\beta}_i$ , we estimate whether abnormal returns occurred during the event period, as in formulae (2) and (3). Formula (2) refers to the daily abnormal returns (AR) of each sample, and formula (3) refers to the daily average abnormal returns (AAR):

$$AR_{it} = R_{it} - (\hat{\alpha}_i + \hat{\beta}_i R_{mt}), \quad (2)$$

$$AAR_t = R_{it} - (\hat{\alpha}_i + \hat{\beta}_i R_{mt}), \quad (3)$$

where  $N_t$  denotes the number of samples on day  $t$ .

The CAAR from  $t_1$  to  $t_2$  is obtained by cumulating the daily AAR of the relevant period. The CAAR is represented by formula (4):

$$CAAR(t_1, t_2) = \sum_{t=t_1}^{t_2} AAR_t \quad (4)$$

The test statistics used to test for the statistical significance of  $AAR_t$  and  $CAAR(t_1, t_2)$  follow formulae (5) and (6):

$$t_{AAR_t} = \frac{AAR_t}{\hat{S}(AAR_t)} \quad (5)$$

$$AAR_t = \frac{1}{N_t} \sum_{i=1}^{N_t} AR_{it}$$

$$\hat{S}(AAR_t) = \sqrt{\frac{1}{(90-1)} \sum_{t=-120}^{-31} (AAR_t - \overline{AAR_t})^2}$$

$$\overline{AAR_t} = \frac{1}{90} \sum_{t=-120}^{-31} AAR_t$$

$$t_{CAAR(t_1, t_2)} = \frac{CAAR(t_1, t_2)}{\hat{S}(CAAR)} = \frac{1}{\sqrt{\tau}} \frac{CAAR(t_1, t_2)}{\hat{S}(AAR_t)} \quad (6)$$

$$CAAR(t_1, t_2) = \sum_{t=t_1}^{t_2} AAR_t$$

$$AAR_t = \frac{1}{N_t} \sum_{i=1}^{N_t} AR_{it}$$

$$\hat{S}(AAR_t) = \sqrt{\frac{1}{(90-1)} \sum_{t=-120}^{-31} (AAR_t - \overline{AAR_t})^2}$$

Here,  $\tau$  refers to the period from  $t_1$  to  $t_2$ . That is,  $\tau = t_2 - t_1 + 1$ .

To identify the determinants of abnormal returns due to the disclosure of FDD from China by Korean firms, we perform a cross-sectional analysis based on the following model:

$$CAAR(t_1, t_2) = \alpha + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5 + \beta_6 X_6 + \beta_7 X_7 + e_i \quad (7)$$

**Table 3.** Definition of Independent Variables and their Expected Signs

Independent Variables	Definition of Variables	
X <sub>1</sub>	Scale of Divestment	$\ln(\text{Disposal amount}/\text{Book Value of Capital} \times 100)$
X <sub>2</sub>	Financial Condition of the Parent Company	Debt Ratio: $\ln(\text{Total Debt this year} \div \text{Equity Capital in the previous year} \times 100)$
X <sub>3</sub>	Profitability of the Parent Company	ROA: $\text{Current Net Income} \div \text{Total Assets} \times 100$
X <sub>4</sub>	Reason for Divestment	Strategic Enhancement of Business Management = 0, Financial Restructuring = 1
X <sub>5</sub>	Firm Size	Natural logarithm of sales for firm <i>i</i> in year <i>t</i>
X <sub>6</sub>	Firm Age	Number of years since the firm was established: year <i>t</i> minus the year of firm establishment
X <sub>7</sub>	Market Dummy	Dummy variable, equal to one for firms listed on KOSPI 200, and zero otherwise

We define the control variables in the above equation following the literature, for consistency. In particular, our variable construction follows Cooney, Finn and Karl (2004), Seo Min-Kyo (2008) and Kim Soo-Jung and Cho Young-Gon (2010), who also examine foreign divestment. In addition, X<sub>2</sub> is measured as the natural logarithm of total debt this year to the equity in the previous year, which helps to mitigate the endogeneity problem. The dependent variable is defined as CAAR(0, +3), referring to the CAAR from the event date (*t* = 0) to three days after the date of the event. The independent variables are established by referencing the existing literature on Korean firms, and include the scale of divestment, financial condition of the parent company, profitability of the parent company, and reason for divestment.

## 5. Empirical Results

To verify *Hypothesis 1-1* and *Hypothesis 1-2*, we use an event study to analyze whether abnormal returns appear before and after the date of disclosure. The test for *Hypothesis 1-1* analyzes all 77 samples. The test for *Hypothesis 1-2* analyzes separate samples of disclosures in the KOSPI market (44 samples) and in the KOSDAQ market (33 samples).

### 5.1. Analysis Results of the CAAR (Overall Sample)

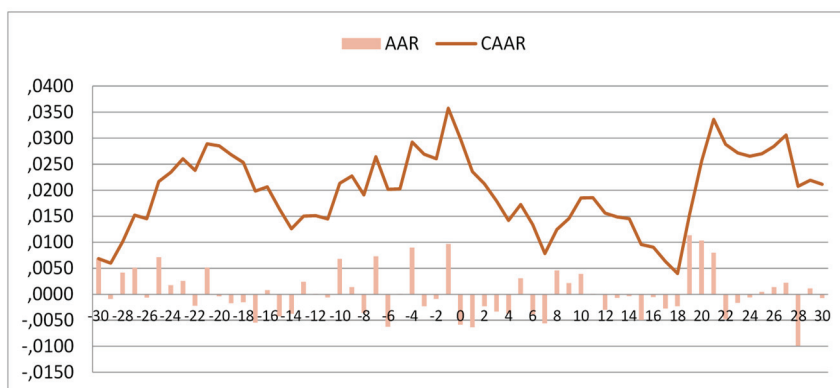
The first column of Table 4 shows the analysis results of the CAAR in each period, calculated using the market-adjusted model, and Fig. 1 shows the CAAR during the event period. The second column of Table 4 shows the analysis results of the CAAR for each period using the OLS market model, and Fig. 2 shows the CAAR during the event period obtained using the same model. We analyze the CAAR before and after the disclosure date, with each period divided further into a short term and a medium term.



**Table 4.** Analysis Results of the CAAR (Overall Sample)

Category		Market-adjusted Model		OLS Market Model	
		CAAR	p-value	CAAR	p-value
Before the Disclosure	CAAR(-5, 0)	0.0097	0.2040	0.0120	0.1803
	CAAR(-3, 0)	0.0007	0.4722	0.0046	0.3290
	CAAR(-1, 0)	0.0039	0.3055	0.0036	0.3186
Before and After the Disclosure	CAAR(-1, +1)	-0.0025	0.3749	-0.0029	0.3688
After the Disclosure (Short-term)	CAAR(0, +1)	-0.0122	0.0235**	-0.0136	0.0214**
	CAAR(0, +3)	-0.0178	0.0070***	-0.0208	0.0020***
	CAAR(0, +5)	-0.0185	0.0199**	-0.0265	0.0013***
After the Disclosure (Medium term)	CAAR(0, +10)	-0.0173	0.0712*	-0.0281	0.0126**
	CAAR(0, +20)	-0.0101	0.2740	-0.0248	0.1208
	CAAR(0, +30)	-0.0146	0.2189	-0.0225	0.1757

Note: \*\*\*:  $p < 0.01$ ; \*\*:  $p < 0.05$ ; \*:  $p < 0.1$ .

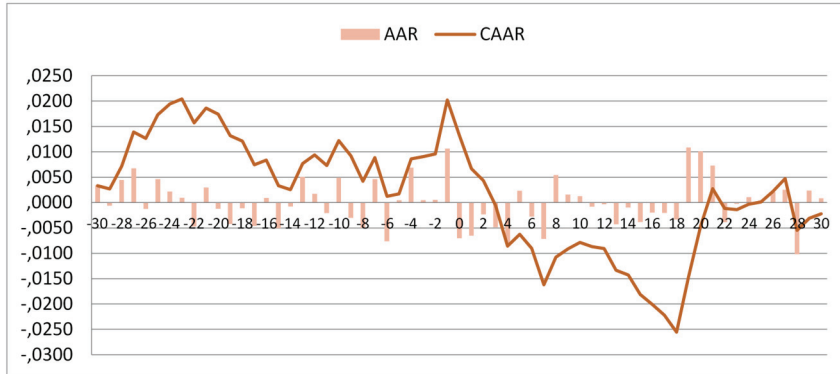
**Fig. 1.** The Trends in the CAAR and AAR Throughout the Event Period, Obtained Using the Market-Adjusted Model (Overall Sample)

Both models show a positive CAAR from -5 days to the day of disclosure, but no statistically significant results are obtained. Furthermore, as expected, both models yield a negative CAAR before and after the date of disclosure, but the results are again not statistically significant.

As shown in the first column of Table 4, in the market-adjusted model, there are negative CAAR values of -1.22%, -1.78%, and -1.85% for +1 day, +3 days, and +5 days, respectively, after the date of disclosure, and the results are statistically significant. Moreover, in the OLS market model shown in the second column of Table 4, there are negative CAAR values of -1.36%, -2.08%, and -2.65%, respectively, with high statistical significance. In particular, both models show a steady decrease in the CAAR, which signifies a continuous reduction in firm value after the disclosure of FDD from China by Korean firms. Examining the medium-term

results after the date of disclosure, both models show steady negative CAAR values and, with the exception of the CAAR up to +10 days after the disclosure, the results are nonsignificant.

**Fig. 2.** The Trends in the CAAR and AAR Throughout the Event Period, Obtained Using the OLS Market Model (Overall Sample)



In summary, the disclosure of FDD from China by Korean firms is found to exert a negative effect on stock prices, and is found to steadily diminish the firm value after the date of disclosure. Accordingly, *Hypothesis 1-1* is supported.

To verify *Hypothesis 1-2*, we test separate cases of disclosures in the KOSPI market (44 cases) and the KOSDAQ market (33 cases), and then analyze the CAAR for each sample.

## 5.2. Analysis Results of the CAAR (KOSPI Market)

The first column of Table 5 shows the results of the event study on the CAAR before and after the date of disclosure using the market-adjusted returns model. Fig. 3 shows the trend of the CAAR throughout the event period. The second column of Table 5 shows the results of the event study on the CAAR before and after the date of disclosure using the OLS market model. Fig. 4 shows the trend of the CAAR throughout the event period. Here, the CAAR is analyzed by separating it into periods before and after the disclosure date, with the latter divided further into a short and medium term.

Both models show a positive CAAR from -3 days to the day of disclosure, but no statistically significant results are obtained. Furthermore, as expected, both models yield a negative CAAR before and after the date of disclosure, but the results are again not statistically significant.

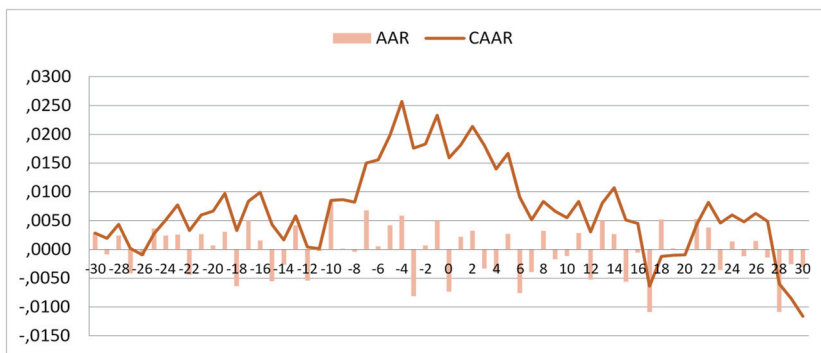
As shown in the first column of Table 5, in the market-adjusted model, the CAAR shows negative values of -0.52%, -0.53%, and -0.66% for +1 day, +3 days, and +5 days, respectively, after the date of disclosure, but the results are not statistically significant. Moreover, in the OLS market model shown in the second column of Table 5, the CAAR shows negative values of -0.85%, -1.68%, and -1.98%, respectively, with the results for +3 days and +5 days after the date of disclosure being statistically significant. Examining the medium term after the date of disclosure, both models show a steady negative CAAR, and the abnormal returns decrease toward the medium term. In particular, as in the OLS market model, there are no statistically significant results from +3 days to +30 days after the date of disclosure. This signifies that the disclosure of FDD from China by Korean firms continuously reduces the firm value.

**Table 5.** Analysis Results of the CAAR (KOSPI Market)

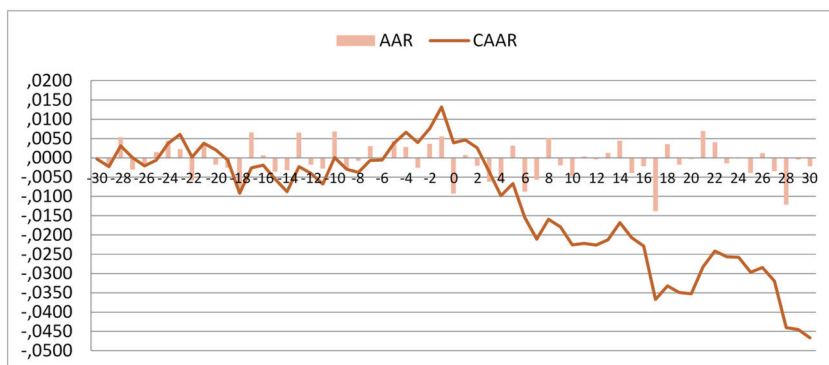
Category		Market-adjusted Model		OLS Market Model	
		CAAR	p-value	CAAR	p-value
Before the Disclosure	CAAR(-5, 0)	0.0004	0.4831	0.0044	0.3226
	CAAR(-3, 0)	-0.0098	0.1065	-0.0027	0.3794
	CAAR(-1, 0)	-0.0024	0.3647	-0.0037	0.3034
Before and After the Disclosure	CAAR(-1, +1)	-0.0002	0.4908	-0.0030	0.3660
After the Disclosure (Short-term)	CAAR(0, +1)	-0.0052	0.1638	-0.0085	0.1187
	CAAR(0, +3)	-0.0053	0.2313	-0.0168	0.0232**
	CAAR(0, +5)	-0.0066	0.1988	-0.0198	0.0187**
After the Disclosure (Medium term)	CAAR(0, +10)	-0.0178	0.0783*	-0.0358	0.0104**
	CAAR(0, +20)	-0.0242	0.1086	-0.0484	0.0369**
	CAAR(0, +30)	-0.0350	0.0762*	-0.0599	0.0228**

**Note:** \*\*\*:  $p < 0.01$ ; \*\*:  $p < 0.05$ ; \*:  $p < 0.1$ .

**Fig. 3.** The Trends in the CAAR and AAR Throughout the Event Period, Calculated Using the Market-Adjusted Model (KOSPI Market)



**Fig. 4.** The Trends in the CAAR and AAR Throughout the Event Period, Calculated Using the OLS Market Model (KOSPI Market)



### 5.3. Analysis Results of the CAAR (KOSDAQ Market)

The first column of Table 6 shows the results of the event study on the CAAR before and after the date of disclosure using the market-adjusted model. Fig. 5 shows the trend of the CAAR throughout the event period. The second column of Table 6 shows the results of the event study on the CAAR before and after the date of disclosure using the OLS market model. Fig. 6 shows the trend of the CAAR throughout the event period. The CAAR is analyzed by separating it into periods before and after the disclosure date, which is divided further into a short and medium term.

Both models show a positive CAAR from -5 days to the day of disclosure, but no statistically significant results are obtained. Furthermore, as expected, both models yield a negative CAAR before and after the date of disclosure, but the results are not statistically significant.

As shown in the first column of Table 6, in the market-adjusted model, the CAAR shows negative values of -2.16%, -3.46%, and -3.43% for +1 day, +3 days, and +5 days, respectively, after the date of disclosure, and the results are statistically significant. Moreover, in the OLS market model shown in the second column of Table 6, the CAAR shows negative values of -2.02%, -2.61%, and -3.53%, respectively, and are statistically significant. Examining the medium term after the date of disclosure, both models show a steady negative CAAR until +10 days after the date of disclosure and a positive CAAR at +20 and +30 days after the date of disclosure, but the results are nonsignificant. Thus, we conclude that the disclosure of FDD from China by Korean firms diminishes the parent firm value, at least in the short term.

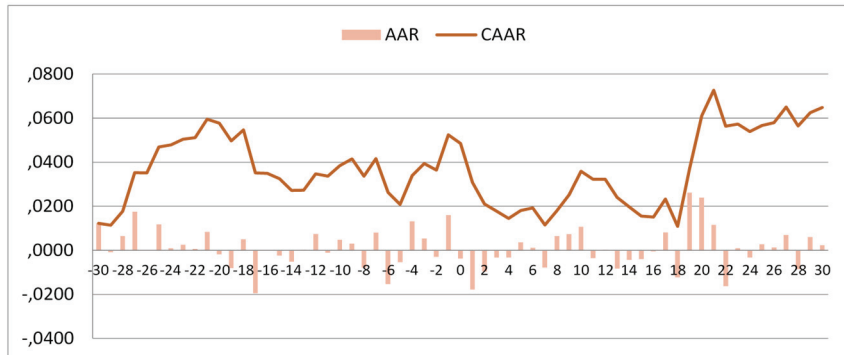
**Table 6.** Analysis Results of the CAAR (KOSDAQ Market)

Category		Market-adjusted Model		OLS Market Model	
		CAAR	<i>p</i> -value	CAAR	<i>p</i> -value
Before the Disclosure	CAAR(-5, 0)	0.0223	0.1902	0.0220	0.2166
	CAAR(-3, 0)	0.0146	0.2296	0.0143	0.2508
	CAAR(-1, 0)	0.0121	0.2150	0.0134	0.1887
Before and After the Disclosure	CAAR(-1, +1)	-0.0056	0.3631	-0.0028	0.4341
After the Disclosure (Short-term)	CAAR(0, +1)	-0.0216	0.0431**	-0.0202	0.0520*
	CAAR(0, +3)	-0.0346	0.0065***	-0.0261	0.0208**
	CAAR(0, +5)	-0.0343	0.0303**	-0.0353	0.0148**
After the Disclosure (Medium term)	CAAR(0, +10)	-0.0165	0.2278	-0.0178	0.1992
	CAAR(0, +20)	0.0087	0.3849	0.0068	0.4206
	CAAR(0, +30)	0.0125	0.3385	0.0274	0.2444

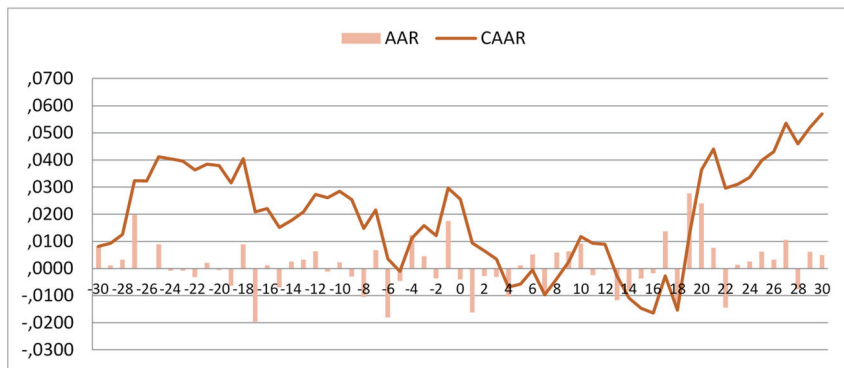
**Note:** \*\*\*:  $p < 0.01$ ; \*\*:  $p < 0.05$ ; \*:  $p < 0.1$ .

Combining the analysis results for the two stock markets, the KOSPI market shows significant negative values of the AAR on the day of disclosure, and significant negative values of the AAR +1 day after the disclosure. In the case of the CAAR, significant negative values are found from the day of the disclosure to the medium term for the KOSPI market, and from the day of disclosure to the short term for the KOSDAQ market. Hence, the results confirm that the disclosure of FDD from China by Korean firms is indeed a factor that reduces the firm value.

**Fig. 5.** The Trends in the CAAR and AAR Throughout the Event Period, Calculated Using the Market-Adjusted Model (KOSDAQ Market)



**Fig. 6.** The Trends in the CAAR and AAR Throughout the Event Period, Calculated Using the OLS Market Model (KOSDAQ Market)



However, the two markets yield different responses to the disclosure effects. First, while the KOSPI market shows a statistically significant negative daily AAR on the day of disclosure, the KOSDAQ market shows a statistically significant negative daily AAR +1 day after the disclosure. This result signifies that the disclosure of FDD is reflected more efficiently in the KOSPI market. Furthermore, this conclusion is comparable with those of previous studies, such as Choi Myung-Hyun, Lee Woo-Jin and Kim Min-Soo (2000) and Seon Jung-Hoon and Lee Ji-Soo (2015), who report that the KOSDAQ market has lower liquidity and reflects information more slowly than the KOSPI market does.

Second, while the KOSPI market shows a statistically significant negative CAAR from the day of disclosure to the medium term (+30 days), the KOSDAQ market shows the same from the day of disclosure to the short term (+5 days). This differs from the result of Kim Soo-Jung and Cho Young-Gon (2010), who examine the disclosure effects of FDD by KOSDAQ-listed firms and find a statistically significant negative CAAR until the medium term (+30 days) after the day of disclosure.

Summarizing these results, we conclude that the disclosure effects of FDD are more evident in the KOSPI market than they are in the KOSDAQ market, because the information on FDD

is reflected more effectively in the former market. This is evidenced by the significant negative stock price reaction on the day of disclosure and the longer impact of the negative CAAR. Therefore, *Hypothesis 1-2* is rejected.

To identify the determinants of the disclosure effects of FDD from China by Korean firms, we perform a cross-sectional regression analysis. The dependent variables are  $CAAR(0, +1)$ ,  $CAAR(0, +3)$ , and  $CAAR(0, +5)$ ; the independent variables are the scale of divestment, financial condition of the parent company (debt ratio), and profitability of the parent company (ROA). The reason for divestment is established as a dummy variable.

Table 7 presents the analysis results of the descriptive statistics of the quantitative variables used in the cross-sectional regression analysis. For the actual analysis, we use the natural logarithm values of the scale of divestment and the debt ratio of the parent company.

Table 8 presents the analysis results of the correlations between the dependent variables used in the cross-sectional regression analysis. The reason for divestment is employed as a dummy variable: if the intention is to enhance the efficiency of business management, the variable takes the value zero; if the intention is to restructure the financial condition of the company, the value is one. There are 34 cases in the first category, and 43 in the second category. The analysis shows that the correlation between the reason for divestment and the profitability of the parent company is statistically significant. That is, the more tilted the reason for divestment is toward restructuring the financial condition of company, the more likely it is that the profitability of the parent company will be low.

**Table 7.** Basic Statistics of Quantitative Variables (Unit: Hundred Million KRW)

Category	Mean	Median	Standard Deviation	Max	Min
Amount Disposed	579	111	1,872	15,283	0
Book Capital	1,070	160	3,191	23,138	26
Total Debt	8,657	905	17,818	78,880	15
Net Assets	6,149	1,016	16,423	107,290	84
Current Income	206	8	1,870	12,777	-
Total Assets	15,461	2,372	32,058	186,175	5,306
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Category	Mean	Standard Deviation	Max	Min
Scale of Divestment	1.57	4.05	34.25	0.01
Debt Ratio of Parent Company	1.74	2.13	12.62	0.03
Profitability of Parent Company	-0.02	0.11	0.16	-0.43

**Table 8.** Analysis Results of Correlations Between Variables.

Variables	Scale of Divestment	Financial Condition	Profitability	Intention of Divestment
Scale of Divestment	1.000			
Financial Condition	-0.041	1.000		
Profitability	0.133	-0.128	1.000	
Intention of Divestment	-0.192	0.062	-0.383**	1.000

**Note:** \*\*\*:  $p < 0.01$ ; \*\*:  $p < 0.05$ ; \*:  $p < 0.1$ .

Table 9 shows the results of the cross-sectional regression analysis obtained from the market-adjusted model, and Table 10 shows the results of that from the OLS market model. First, we obtain a variance inflation factor (VIF) for each independent variable to check for multicollinearity. In general, the presence of multicollinearity is suspected when the VIF value is above 10. Here, the maximum VIF value is 1.20. Thus, there is no multicollinearity.

The results from the market-adjusted model shown in Table 9 indicate that the scale of divestment shows no consistent directionality, and the results are statistically insignificant. Therefore, this variable is not a determinant of the disclosure effect. In contrast, the financial condition of the parent company, profitability of the parent company, and reason for divestment are found to have negative coefficients, as expected, and the results are statistically significant. In the cross-sectional regression analysis calculated using the OLS market model (Table 10), the scale of divestment is again not a statistically significant determinant. However, the financial condition of the parent company, profitability of the parent company, and reason for divestment are found to have statistically significant negative coefficients. Accordingly, *Hypothesis 2-1* is rejected, and *Hypotheses 2-2, 2-3, and 2-4* are supported.

**Table 9.** Results of the Cross-Sectional Regression Analysis Using the Market-Adjusted Model

Category	CAAR(0, +1) (p-value)	CAAR(0, +3) (p-value)	CAAR(0, +5) (p-value)
Intercept	0.121* (0.081)	0.097** (0.048)	0.042 (0.761)
Scale of Divestment ( $X_1$ )	-0.076 (0.124)	-0.076 (0.343)	-0.067 (0.152)
Financial Condition ( $X_2$ )	-0.212* (0.067)	-0.312* (0.078)	-0.251* (0.094)
Profitability ( $X_3$ )	-0.214 (0.126)	-0.189 (0.276)	-0.171 (0.845)
Intention of Divestment ( $X_4$ )	-0.217*** (0.002)	-0.187*** (0.003)	-0.311* (0.087)
Firm Size ( $X_5$ )	-0.124* (0.059)	-0.214* (0.089)	-0.242 (0.162)
Firm Age ( $X_6$ )	-0.022 (0.125)	-0.042 (0.106)	-0.051 (0.862)
Market Dummy ( $X_7$ )	0.023 (0.345)	0.051 (0.256)	0.058 (0.362)
Adj-R <sup>2</sup>	0.189	0.187	0.176
F-statistic	3.981***	3.211**	2.124*
Number of Samples		77	

**Note:** \*\*\*:  $p < 0.01$ ; \*\*:  $p < 0.05$ ; \*:  $p < 0.1$ .

The financial condition of the parent company, measured using the debt ratio, shows a negative coefficient, as expected. In general, firms in financial difficulty have a high debt ratio, and even if cash flows into the firm after liquidating foreign subsidiary companies, the firm prefers to use the funds to repay debt. Thus, the firm is more likely to sacrifice good investment opportunities. Accordingly, investors deem foreign divestment to be a negative event for companies in poor financial condition. Furthermore, foreign divestment used to



restructure the financial condition of a company is found to exert negative effects on the firm value. This might also be because the funds reclaimed from the divestment are likely to be used to repay debt and to operate the company, rather than as an investment in the core business for future growth. Thus, investors deem divestment from China as being a more negative event.

**Table 10.** Results of the Cross-Sectional Regression Analysis Using the OLS Market Model

Category	CAAR(0, +1) (p-value)	CAAR(0, +3) (p-value)	CAAR(0, +5) (p-value)
Intercept	0.098** (0.019)	0.089** (0.020)	0.067 (0.176)
Scale of Divestment ( $X_1$ )	-0.012 (0.281)	-0.028 (0.312)	-0.018 (0.120)
Financial Condition ( $X_2$ )	-0.129* (0.074)	-0.151** (0.022)	-0.143** (0.051)
Profitability ( $X_3$ )	-0.154* (0.069)	-0.321* (0.075)	-0.140 (-1.140)
Intention of Divestment ( $X_4$ )	-0.276** (0.021)	-0.351** (0.043)	-0.156 (0.383)
Firm Size ( $X_5$ )	-0.299** (0.018)	-0.113 (0.232)	-0.243 (0.646)
Firm Age ( $X_6$ )	-0.176* (0.059)	-0.181 (0.113)	-0.118 (0.436)
Market Dummy ( $X_7$ )	0.098 (0.231)	0.076 (0.731)	-0.129 (0.334)
Adj-R <sup>2</sup>	0.182	0.188	0.165
F-statistic	2.343**	2.122**	1.187
Number of Samples		77	

**Note:** \*\*\*:  $p < 0.01$ ; \*\*:  $p < 0.05$ ; \*:  $p < 0.1$ .

The profitability of the parent company is measured using the ROA and, as expected, has a statistically significant negative coefficient. Manufacturing businesses make up more than 80% of the total amount invested in China by Korean firms. Thus, the share value of subsidiary companies in China is likely to be a major asset of the parent company. Furthermore, a higher ROA, which signifies the profitability of possessed assets, indicates a greater reduction in future cash flows owing to the loss of important manufacturing bases. Thus, investors deem divestment from China by Korean firms with a higher ROA as being a more negative event.<sup>5</sup>

<sup>5</sup> As the number of sample firms is not large relative to the sample period, we also consider a panel regression approach as a robustness check. In particular, we use Petersen's (2009) panel regression estimation with robust standard errors, and find that our main results remain unchanged. The results are available upon request.

## 6. Conclusion

China hosts the largest amount of Korean FDI. However, with the rise in wages and inflation, and the fast-changing investment environment in China, Korean firms that have invested in China are confronting an increasingly difficult business environment. As a result, these firms' investments in China peaked in 2007, but have since been decreasing, with cases of divestment increasing. However, despite the material increase in FDD from China by Korean firms, few studies have examined this issue. Moreover, there are almost no studies on the effect of the disclosure of FDD from China by Korean firms listed on the country's stock markets. Furthermore, no studies have compared the disclosure effects of KOSPI-listed firms and KOSDAQ-listed firms, despite significant differences between the two in terms of the size of the listed firms and the forms of FDI. Therefore, we examine 77 samples of Korean firms that disclosed their divestment from China during the period 2007 to 2016, analyzing the effects on the parent firm value and identifying the determinants of the disclosure effects.

The results of the analysis show that the disclosure of FDD from China by Korean firms exerts a negative effect on the day of disclosure, and thereafter. The daily AAR obtained using the OLS market model is  $-0.70\%$ , and the statistically significant negative response increases until +10 days after the date of disclosure. This conclusion differs from those of studies based on developed countries, but is similar to those on Korean firms.

Furthermore, this study separates the KOSPI market and the KOSDAQ market in order to compare their disclosure effects. Both markets show negative disclosure effects after the date of disclosure, but there are differences in the forms of these effects. First, the daily AAR on the day of disclosure in the KOSPI market (calculated using the OLS market model) is  $-0.93\%$ , and the negative response increases after the disclosure and is statistically significant. In contrast, the daily AAR at +1 day after the disclosure in the KOSDAQ market is  $-1.62\%$ , and the negative response after the disclosure is only statistically significant in the short term (+5 days). This differs from the result of Kim Soo-Jung and Cho Young-Gon (2010), who study the disclosure effects of FDD by KOSDAQ-listed firms, and find a statistically significant negative CAAR until the medium term (+30 days) after the day of disclosure.

Moreover, this study analyzes the determinants of the disclosure effects using a cross-sectional regression analysis. The results show that the financial condition of the parent company, profitability of the parent company, and reason for divestment are statistically significant determinants. First, a poor financial condition and divestment intended for restructuring the financial condition are found to magnify negative disclosure effects. This might be because firms in financial difficulty have a high debt ratio, in general, and even if cash flows into the firm after liquidating foreign subsidiaries, the firm prefers to use the funds to repay debt, thus making it more likely that the firm will sacrifice good future investment opportunities. Accordingly, investors deem FDD to be a negative event for companies in poor financial condition. Furthermore, the higher the profitability of the parent company, measured as the ROA, the more negative is the response by the stock price of the Korean firm to the disclosure of FDD from China. Because Korean firms' investments in China are concentrated in manufacturing businesses, divestment from China is likely to reduce future cash flows, owing to the loss of manufacturing bases. Hence, the disclosure of foreign divestment from China by Korean firms with a higher ROA is more likely to bring about a larger reduction in future cash flows. Accordingly, investors deem divestment from China by Korean firms with a higher ROA as being a more negative event.

This study is limited to firms divesting from China. Thus, the unique characteristics of divestment from China compared with areas other than China are not identified.

Accordingly, a follow-up study that compares divestment from different countries over the same period is necessary to present a more in-depth research conclusion. Furthermore, in this study, the determinants of the disclosure effects are selected from previous studies on divestment by Korean firms, most of which examine divestment worldwide. Thus, these variables are not necessarily specific to the Chinese market. Hence, a more in-depth study is required to select determinants from a perspective that considers the rapidly changing investment environment in China. Lastly, owing to the limited availability of data, this study does not consider other variables that could affect Korean firms' divestment. We leave this to future research.

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