Doctoral Dissertation

The Relationship Between Globalization and Performance of Venture Firms in Korea

-The Moderating Effect of CEO International Experience-

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BUMJO KIM

College of Business Administration

Seoul National University

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지도교수 이동기

이 논문을 경영학박사 학위논문으로 제출함

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DEDICATION

To my family

Abstract

The Relationship Between Globalization and Performance of Venture Firms in Korea
-The Moderating Effect of CEO International Experience-

BUMJO KIM
College of Business Administration
The Graduate School
Seoul National University

This dissertation aims to empirically analyze whether and how globalization of venture firms affect performance of the companies. Also, this research aims to analyze whether and how CEO's international experience of venture firms moderate the relationship between globalization and performance. For this purpose, theoretical background regarding venture firms' globalization is described in this research, followed by statistical analysis based on samples of Korean venture firms listed in stock market. Performance of the venture firms is divided into two outcomes: financial performance and technological

innovation performance.

The first essay, entitled 'The Relationship Between Globalization and Financial Performance of Venture Firms in Korea,' aims to analyze the relationship between globalization and financial performance in Korean venture firms. Based on five-year panel data of 299 Korean venture firms listed in Kospi and Kosdaq during the period of 2011-2015, this study performed Hausman & Taylor test.

The statistical result shows that venture globalization and financial performance have 'U shape' relationship, which proves that the existing theory that previous researches have proposed can be applied to venture firms as well. This result explains that the venture firms, which usually lack the resources required to exploit globalization, face negative impact of globalization on financial performance due to liability of foreignness at the early stage of globalization. However, after certain point of globalization, venture firms eventually make use of globalization by acquiring knowledge and experience to do so.

Also, statistical result showed that international experience of venture CEOs reinforces the relationship between globalization and financial performance. This result supports the proposition of this paper that venture CEOs, whose capability has high impact on the

venture firms as founders, supplement required resources for globalization, such as knowledge, experience, and personal network.

The second essay, entitled 'The Relationship Between Globalization and Innovation Performance of Venture Firms in Korea,' aims to analyze the impact of globalization of venture firms in Korea on technological innovation performance. Sampling 247 venture firms listed in Kospi and Kosdaq, statistical analysis was performed using 2nd DB data.

The results shows that globalization and technological performance have 'U-shape' relationship in both export and FDI entry mode. This results support the main proposition that venture firms in early stage of globalization will face significant challenge due to 'liability of foreignness,' which leads to negative effect of globalization on technological innovation performance. However, the liability will be offset as the firm accumulates experience and knowledge that will help to overcome the liability of foreignness, which will eventually turn the negative effect into positive effect.

The other proposition that international experience of CEO of venture firms will help the firm overcome the liability of foreignness was supported only in FDI entry mode, not in export entry mode.

This result implies that the international experience might be more supportive in FDI where more direct and various interaction is required during the process.

Keywords: International management, Globalization, Export, FDI, Venture, high-tech SMEs, Financial Performance, Innovation Performance, Patent, CEO, International experience

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Chapter 1. Introduction

1.1. Research Background and Objectives

For venture companies, the importance of entering overseas market is continuously increasing. Since venture companies, the technology-intensive small and medium-sized enterprises (SME) require continuous investment in high R&D, it is necessary to expand the market and increase profits in a short period of time (Crick & Jones, 2000). Therefore, expanding the market through overseas expansion is a very important goal directly linked to the survival of venture companies (S. M. Park, 2002;Preece, Miles, & Baetz, 1999). In fact, many venture companies actively promote overseas expansion (Coviello & McAuley, 1999;Covin & Slevin, 1991;J. W. Lu & Beamish, 2001;McDougall & Oviatt, 1996).

As a result, studies on internationalization of venture companies are increasing, but the existing studies have the following limitations: First, most studies focus on the preconditions, procedures, patterns, and entry methods of internationalization of venture companies, and there are only a few studies that focus on the relationship between internationalization and performance (Coviello & McAuley, 1999;Miesenbock, 1988;Preece et al., 1999;Shoham, 1998;Wolff & Pett,

2000). Second, the majority of studies take the form of a survey in measuring company performance, so there is a limit to verifying the objectivity of performance (Coviello & McAuley, 1999;Covin & Slevin, 1991;J. W. Lu & Beamish, 2001;McDougall & Oviatt, 1996). Third, most existing studies use only the export method as an index of the internationalization level, so there are few studies that measures venture companies' foreign direct investment as the level of internationalization (J. Lee & Lee, 2015;Seokmin, 2011). The reason for these limitations is that it is difficult to identify the status of overseas expansion or financial information because most venture companies are small in size (J. W. Lu & Beamish, 2001).

In this study, the internationalization level is measured not only by export method but also by foreign direct investment method in identifying the relationship between internationalization and financial/innovation performance of venture companies and measured firm performance using secondary data rather than survey format.

In addition, this study focused on the role of the CEO, which has not been covered in many studies on internationalization of existing venture companies. From the viewpoint of resource-based view, the CEO's experiences are one of the core resources of the company and

play an important role in overcoming the problems faced by the company (Zahra & George, 2002). In particular, CEO's experiences can be a more important strategic asset in that venture companies have fewer resources than large companies in many cases. Therefore, if CEO of a venture company has international experiences, it will supplement resources needed for internationalization (Baum, Locke, & Smith, 2001;Chandler & Hanks, 1994;Feeser & Willard, 1990;H.-Y. Lee & Park, 2013;Teal & Hofer, 2003).

1.2. Organization of Dissertation

This dissertation is composed of two empirical studies on the relationship between venture firm's globalization and performance. The organization of the dissertation is as follows:

Chapter 1 describes overall introduction regarding this dissertation including motivation of research such as why globalization is important for venture firms, limitation of previous studies, and contributions of this dissertation.

Chapter 2 contains the first essay of the dissertation regarding the relationship between globalization and financial performance of venture firms.

Chapter 3 contains the first essay of the dissertation regarding the relationship between globalization and innovation performance of venture firms.

Chapter 4 summarizes the result of two sub essay, limitations, contributions and implications.

Chapter 2. The Relationship Between Globalization and Financial Performance of Venture Firms in Korea
-The Moderating Effect of CEO International Experience-

2.1. Introduction

For venture companies, the importance of entering overseas market is continuously increasing. Since venture companies, the technology-intensive small and medium-sized enterprises (SME) require continuous investment in high R&D, it is necessary to expand the market and increase profits in a short period of time (Crick & Jones, 2000). Therefore, expanding the market through overseas expansion is a very important goal directly linked to the survival of venture companies (S. M. Park, 2002;Preece, Miles, & Baetz, 1999). In fact, many venture companies actively promote overseas expansion (Coviello & McAuley, 1999;Covin & Slevin, 1991;J. W. Lu & Beamish, 2001;McDougall & Oviatt, 1996).

As a result, studies on internationalization of venture companies are increasing, but the existing studies have the following limitations: First, most studies focus on the preconditions, procedures, patterns, and entry methods of internationalization of venture companies, and there are only a few studies that focus on the relationship between internationalization and financial performance (Coviello & McAuley, 1999;Miesenbock, 1988;Preece et al., 1999;Shoham, 1998;Wolff & Pett, 2000). Second, the majority of studies take the form of a survey in

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In this study, the internationalization level was measured not only by export method but also by foreign direct investment method in identifying the relationship between internationalization and financial performance of venture companies and measured firm performance using secondary data rather than survey format.

In addition, this study focused on the role of the CEO, which has not been covered in many studies on internationalization of existing venture companies. From the viewpoint of resource-based theory, the CEO's experiences are one of the core resources of the company and play an important role in overcoming the problems faced by the

company (Zahra & George, 2002). In particular, CEO's experiences can be a more important strategic asset in that venture companies which have fewer resources than large companies in many cases. Therefore, if CEO of a venture company has international experiences, it will supplement resources needed for internationalization (Baum, Locke, & Smith, 2001;Chandler & Hanks, 1994;Feeser & Willard, 1990;H.-Y. Lee & Park, 2013;Teal & Hofer, 2003).

For empirical research, a statistical test was performed on 299 venture companies listed on KOSPI and KOSDAQ, and confirmed that there is a 'U-shaped'relationship between internationalization and financial performance. This means that if the level of internationalization is low, financial loss will occur due to liability of foreignness, but if the level of internationalization is higher than a certain level, the knowledge and experience accumulate and turn into profit, and this existing discussion can be also applied to venture companies (J. W. Lu & Beamish, 2001;Ruigrok & Wagner, 2003;Seokmin, 2011). On the other hand, the 'U-shaped' relationship between internationalization and financial performance is the same regardless of whether internationalization is achieved through export method or through foreign direct investment.

It was also found that the 'U-shaped' relationship between internationalization and financial performance of venture companies is regulated in the positive (+) direction by CEO's international experience. This supports the argument that the CEO's international experience in venture companies complements the knowledge and experience required for internationalization.

The composition of this paper is as follows: In Section 2, the existing studies are reviewed and hypotheses are presented in this study. And Section 3 describes the empirical research method, Section 4 describes the results, and Section 5 describes conclusions and implications based on empirical results

2.2. Theory and Hypotheses

2.2.1. Internationalization and Financial Performance of Venture Companies

Academic research on internationalization of venture companies was carried out relatively recently. There are various opinions about the definition of a venture company, and some scholars define it as a

company invested by venture capital, a newly established company, or a company that is based on new technology development (Bantel, 1998;Kazanjian, 1988;A. Miller & Camp, 1986;Storey & Tether, 1998). It is also used in the same sense as a high R & D Firm.

Also in Korea, a number of studies have been conducted on the definition and characteristics of venture companies. The Korea Venture Business Association defines a venture company as 'a new small enterprise individuals or a small number of entrepreneurs commercialize new technologies and ideas that are expected to generate high profits, even if the risks are high on their own basis. ' In general, a venture company can be defined as a technology-intensive SME that conducts business by developing advanced technologies (Jeong, 2010;C. W. Lee, 2005).

Especially in Korea, the government is leading venture companies. Therefore, the criteria for venture companies are also determined by the certification process based on the law. In order to be recognized as a venture company under the law, it should be a SME and included in one of the following three types: First, it is funded by venture capital, which is generally the same as the standard recognized in the United States. The second is a company that invests

high costs in Research & Development, which is classified as a technologically innovative company. The third is companies that received technology-related investments from government-affiliated institutions such as the Korea Technology Finance Corporation. To summarize the three criteria above, a venture company is a small or medium-sized company that has received investment from government or venture capital or a technologically innovative SME.

The previous studies on the criteria and characteristics of domestic venture business certification report that venture certified companies are similar to technologically innovative SMEs or high-tech SMEs, as shown in the example that approximately 80% of technologically innovative SMEs are certified as venture companies. Since a number of previous studies on domestic venture companies also defined venture certified companies as venture companies, this study defined venture companies based on the same criteria (J. M. Kim, 2007;M.-j. Kim, Chae, & Ha, 2016).

The traditional internationalization theory argued that the internationalization process of companies is a step-by-step process to advance overseas after securing competitiveness and awareness in their country. The competitive advantage of a company is essential to

offset costs incurred because the environment of the country the company advanced differs from the domestic environment, that is, liability of foreignness and generate profits. In the OLI theory (Ownership-Location-Internalization Theory) (Hymer, 1976), Dunning (1988) emphasized the need for competitive advantage in the home country, the superior position of the investment area, and efficiency in terms of internalization as prerequisites for foreign direct investment. As a result, according to traditional theories, venture companies and SMEs often do not have the competitive advantage to overcome liability of foreignness and lack various resources such as knowledge, experiences required for internationalization, so there is little possibility of incentive for internationalization or success.

Entering the 1990s, however, the phenomena that are difficult to be explained with the traditional internationalization theory occurred, such as active internationalization of small and medium-sized venture companies. Furthermore, venture companies which are aggressively pursuing internationalization from the beginning of their startup, so called, International New Ventures or Born Global companies increased (McDougall & Oviatt, 1996;McDougall, Shane, & Oviatt, 1994;Oviatt & McDougall, 1997). To explain this phenomenon, new

and diverse interpretations are being raised in recent years, which argue that the gradual overseas expansion argued by traditional internationalization theories does not apply to venture companies. In order to secure high R & D cost, which is essential for venture companies, it is necessary to expand the market rapidly and generate profits. Therefore, expanding the market aggressively through overseas expansion is more important for venture companies than large companies (Barringer & Greening, 1998;Crick & Jones, 2000;Zahra, Ireland, & Hitt, 2000).

When a venture company without enough resources pursue internationalization, the first way to be considered is export (Reynolds, 1997). A company can achieve economies of scale through overseas exports (Kogut, 1985), which not only gives them more negotiating position in the market (W. C. Kim, Hwang, & Burgers, 1993), but also enables profit diversification (Ramaswamy, 1993). In addition, export is an important means of acquiring local knowledge of export destination countries (Kogut & Chang, 1996). In other words, venture companies can quickly gain access to foreign markets through export and acquire direct or indirect experience, thereby accumulating knowledge and information about overseas markets that

venture companies are difficult to acquire (Fina & Rugman, 1996;Root, 1998;Sullivan & Bauerschmidt, 1990). Therefore, it is well known that overseas expansion strategies using exports are suitable for venture companies that do not have abundant resources (Dalli, 1995;Zahra, Neubaum, & Huse, 1997). In addition to exports, foreign direct investment can be also an effective internationalization strategy for venture companies (Buckley & Casson, 1976). This is because venture companies can acquire strategically important resources or develop new knowledge (Rothaermel & Deeds, 2004) and resources through foreign direct investment (Shan & Song, 1997).

Apart from the active internationalization of venture companies, it is necessary to demonstrate empirically whether venture companies are generating substantial profits through overseas expansion (Christensen, Da Rocha, & Gertner, 1987). According to traditional internationalization theories, venture companies often lack the minimum knowledge, skills, experience, network, and awareness required to enjoy the benefits of overseas expansion (A. Rebecca Reuber & Eileen Fischer, 1997).

Most of existing studies that focused on the relationship between internationalization and financial performance were conducted with a

focus on large companies. These large company-centered studies argue that if a company successfully enters overseas, it will generate significant profits, but the inevitable cost during the process is also increasing. In other words, as the internationalization progresses, the number of overseas subsidiaries or trading companies increases, and the time, manpower, and monetary cost required to manage the local corporations or trading companies increase. As a result, if internationalization progresses beyond a certain level, the benefits of internationalization will be offset (Hitt, Hoskisson, & Kim, 1997). Therefore, the existing large company-centered studies reported the 'Inverted U-shaped' results that the higher the level of internationalization progress, the more positive impact on performance (Daniels & Bracker, 1989;Grant, 1987;W. C. Kim et al., 1993;Tallman & Li, 1996), but exceeding a certain level has a negative impact on performance (Barringer & Greening, 1998).

However, studies that examine the relationship between internationalization and financial aptitude for SMEs argue that this large company-centered logic does not apply to SMEs. This is because small and medium-sized enterprises (SMEs) have different characteristics from those of large companies in many aspects such as

governance, resources, and organizational structure (Carrier, 1994;K. G. Smith, Gannon, Grimm, & Mitchell, 1988). The existing studies focus especially on the lack of overseas knowledge, experience, local networks and organizational management skills of SMEs (Jarillo, 1989;McDougall et al., 1994;Ok & Back, 2015). In other words, large companies can overcome liability of foreignness in the early stage of overseas expansion by using idle resources in the enterprise, but SMEs can not compensate for liability of foreignness due to lack of internal resources, resulting in financial loss (Hymer, 1976). Therefore, most empirical studies on SMEs report the relationship between internationalization and financial performance as 'U-shaped' (J. W. Lu & Beamish, 2001;Ruigrok & Wagner, 2003;Seokmin, 2011).

Based on the above arguments, some scholars argue that the relationship between internationalization and financial performance is an 'S-shaped' form (Contractor, Kundu, & Hsu, 2003). In other words, SMEs do not have sufficient awareness or strategic assets to offset liability of foreignness in the early stage of internationalization. Therefore, internationalization has a negative (-) relationship with financial performance. However, if a certain level is reached, most companies will benefit from internationalization, which is converted to

a positive (+) relationship. In the case of a multinational company that has become more internationalized, it will become negative (-) again due to an increase in transaction costs (Hitt et al., 1997;Michael Geringer, Beamish, & DaCosta, 1989;Seokmin, 2011;Yung Chul & Ik Seung, 2006).

A venture company, which is the subject of this study, is expected to show a pattern similar to that of SMEs rather than large enterprises due to lack of resources. In other words, if the level of internationalization of venture companies is low, the relationship between internationalization and financial performance is expected to be negative due to liability of foreignness. However, if internationalization progresses beyond a certain level, the necessary knowledge and experience are acquired, so it is expected that the relationship between internationalization and financial performance will be converted into a positive (+) relationship, resulting in a 'U-shaped' relationship.

Some scholars argue that the effects of export and foreign direct investment methods on financial performance are different. In other words, internationalization through exports requires fewer resources, so the initial liability of foreignness does not occur, resulting in the

linear positive (+) relationship between export and financial performance (J. W. Lu & Beamish, 2001). However, if the company's core competencies are proprietary assets such as intellectual property, exporting may be a more dangerous entry method in that local sellers can abuse intellectual property if they are opportunistic (Hennart, 1982). Therefore, in many venture companies where patents and other intellectual assets are the main assets, proper seller selection, contract progress and trading partner management at the beginning of export have a great impact on profitability as a result. Therefore, even the export method cause the initial liability of foreignness, which is expected to offset the profit (Seokmin, 2011;Yung Chul & Ik Seung, 2006). Therefore, this study expects the same 'U-shaped relationship between export and financial performance as foreign direct investment.

Based on the above discussion, the following hypotheses can be derived.

Hypotheses 1-1. The degree of exports and financial performance of venture companies are in a non-linear relationship, and as export proportion increases, financial performance will decrease and will

increase after a certain level.

Hypothesis 1-2. The degree of foreign direct investment and the financial performance of venture companies in a linear relationship, as the degree of foreign direct investment increases, the financial performance will decrease and increase after a certain level.

2.2.2. CEO's International Experience

This study suggests that CEOs will play an important role in the relationship between internationalization and financial performance of venture companies. This is because traditional internationalization theories have defined competitive advantage and idle resources as important factors in internationalization, while recent studies on venture companies argue that the skills and knowledge of top decision makers are more important variables affecting the internationalization of venture companies (John H Dunning, 1980;McDougall et al., 1994;Miesenbock, 1988).

The resource-based view argues that the CEO's knowledge and experience are one of the core resources of the company, which play

an important role in overcoming the problems faced by the company and can further be a core competitiveness of the company. In particular, the international experience of CEOs and executives is known to have a significant impact on internationalization of the company (Carpenter, Sanders, & Gregersen, 2001;Zahra & George, 2002).

Generally, the CEO's international experience is known to have a positive effect on the level of internationalization of the company. One of the main reasons is that CEOs can reduce various risk costs in the international market environment if they have international experience (Crick & Jones, 2000;Herrmann & Datta, 2002;A Rebecca Reuber & Eileen Fischer, 1997). In other words, CEOs can help their organizations adapt to the various cultural and institutional environments they experience in the internationalization process based on their own international experience (Ricks, Toyne, & Martinez, 1990). In addition, the CEO's international experience can provide knowledge of the country that the company is entering, provide a network through foreign personal connections, and above all, this knowledge, experience and network can be a competitive advantage in companies because they are difficult to imitate (Athanassiou &

Nigh, 1999;Lublin, 1996).

On the other hand, the positive effects of knowledge and experience resources provided by the CEO are expected to be more evident in venture companies than in large companies, and this is because venture companies much less knowledge and experience required for internationalization than large companies, so the CEO's experience may be a relatively big help (I. K. Lee & Yang, 2016;Zahra & George, 2002). In addition, the CEO's experience in venture companies is one of the core resources, and their accumulated skills, experience, and management know-how take up a high proportion of major decisions (Baum et al., 2001;Chandler & Hanks, 1994;Feeser & Willard, 1990). Therefore, this study suggests that the international experience of CEOs of venture companies will serve as a complement to the scarce resources in achieving financial performance through internationalization (Feeser & Willard, 1990;H.-Y. Lee & Park, 2013;Teal & Hofer, 2003).

The claim that the international experience of CEOs of venture companies will have a significant impact on the internationalization and financial performance of venture companies can be also explained by the entrepreneurial activity of venture companies, that is,

entrepreneurship. Many scholars define the internationalization strategy of venture companies and the process of overseas expansion as part of international entrepreneurial activities (Barringer & Greening, 1998;Burgelman, 1983;Lumpkin & Dess, 1996). They report that the stronger the international entrepreneurial spirit of venture companies, the more positive impact it has on overseas expansion performance, and international experience is also a key measure of international entrepreneurship (M.-j. Kim et al., 2016;Yang & Jung, 2015). Therefore, venture companies with a lot of international experience are highly likely to promote overseas expansion performance based on high international entrepreneurial spirit.

On the other hand, the Upper Echelons Theory argued that the CEO and top management influence the financial performance of the company, but these influences acts in a way that regulates other factors (Hambrick & Finkelstein, 1987;Hambrick & Mason, 1984). That is, it is necessary to be careful to directly connect the characteristics of individual CEOs to the results of the entire organization, and it is important through which path the influence of the CEOs is linked to the outcome (Jackson, 1992;K. A. Smith, Kofron, & Anderson, 1995). Therefore, the previous studies analyzing the impact of CEO's

international experience on company performance also argue that the CEO's international experience is not an independent variable that directly affects performance, but a moderating variable that regulates the relationship between independent variables and company performance (Buyl, Boone, Hendriks, & Matthyssens, 2011;J. Lee & Lee, 2015).

In summary, this study expects that the international experience of CEO of venture company will positively influences the financial performance of the company, and internationalization will appear as a moderating effect in the process of creating financial profit, rather than directly affecting the financial performance. In other words, if a venture company is engaged in export or foreign direct investment, the CEO's international experience will appear as a form of moderator which leads the financial performance in a positive (+) direction. This pattern is expected to be the same for both export and foreign direct investment. The following hypotheses can be derived based on the above discussion.

Hypothesis 2-1. The international experience of CEOs of venture companies will moderate the relationship between exports and

financial performance in a positive (+) direction

Hypothesis 2-2. The international experience of CEOs of venture companies will moderate the relationship between foreign direct investment and financial performance in a positive (+) direction

2.3. Research Method

2.3.1. Sample and Data collection

In this study, companies listed on KOSPI and KOSDAQ among venture companies are selected as an object of study. As discussed above, venture companies were defined as companies certified as ventures in accordance with the criteria set by the government as the law. The following are the venture certification standards defined in the 'Act on Special Measures for the Promotion of Venture Businesses.' The first is a 'Venture Investment Company' funded by venture capital, the second is a 'research and development company' that conducts high R&D investment, the third is a 'technology evaluation assurance company' recognized by the government and the fourth is a 'Technology Assessment Loan Company' funded by the

government. Venture certified companies are registered in the Korea Venture Business Association (www.venture.or.kr).

According to the data released by the Korea Venture Business Association in May 2016, a total of 31,472 companies were certified as venture companies in Korea, and 340 companies among them were listed on the KOSPI or KOSDAQ. According to the Standard Industrial Classification of the National Statistical Office, there are 263 manufacturing companies, 42 broadcasting and communication service companies, 19 science and technology service companies, and 17 other companies. Most companies are engaged in manufacturing, information services, science and technology services, indicating that they are concentrated on manufacturing and technology-intensive industries.

On the other hand, according to the 'Act on Special Measures for the Promotion of Venture Businesses,' only SMEs can receive venture certification, but some companies such as 'Yeonghwa Metal Co., Ltd.' were found to exceed the SME standards based on sales. It was found that the venture certification is valid for 2 years, and the venture certification can be extended if some conditions are met. Therefore, as they were suitable for this study targeting SMEs, it was

necessary to re-classify only SMEs.

There are a number of previous studies on what appropriate SME standards are, and a number of criteria have been discussed, such as the number of employees of 500 or less (Beamish & W, 1999;J. W. Lu & Beamish, 2001;Wolff & Pett, 2000). A number of previous studies on domestic SMEs classify only SMEs under the Small Business Act as SMEs, so the same criteria is applied and 41 out of 340 listed venture companies were excluded so that 299 were finally selected as the subjects of this study.

The fiscal year-end closing data was used as the sample data, and five-year unbalanced panel data from 2011 to 2015 was used as the period. Sample data period was set as 2011 to 2015 to minimize the external impact of the company according to the Lehman Brothers event in 2008.

For the data collection of this study, primary sauces of data are TS2000 of the Korea Listed Companies Association, KISVALUE and KIS-LINE of the Korea Credit Rating Agency. Other sources for information about CEO's international experience are business reports for each company of the Financial Supervisory Service Electronic Disclosure System and 'Joins' people search information

(http://people.joins.com/) or newspaper articles if additional verification or supplementation is required.

2.3.2. Variables

Return on assets (ROA) of the parent company was used as a dependent variable representing profitability for analyzing financial performance. Return on sales (ROS) is also used as an index of profitability (Hitt et al., 1997;Tallman & Li, 1996), but there was no significant difference in the results because ROS and ROA were highly correlated in previous studies (J. W. Lu & Beamish, 2001). In addition, since the proportion of advertising or the proportion of R & D used as a control variable in this study was calculated as the ratio to sales, there is a possibility of multi-collinearity with ROS, so ROA was finally used as a variable of financial performance.

Exports of internationalization explanatory variables were calculated as the ratio of exports to sales (Ruigrok & Wagner, 2003). In the case of foreign direct investment, which is another internationalization explanatory variable, both the number of foreign direct investment subsidiaries and the number of overseas expansion countries was studies at the same time in previous studies (Beamish & W,

1999;Ramaswamy, 1995). As a result, the two pieces of information are also expected to be highly correlated, so this study was carried out only with the number of foreign direct investment subsidiaries (J. W. Lu & Beamish, 2001).

Prior to defining the CEO's international experience, chief executive officer needs to be defined first because the criteria for CEO were defined in various ways in previous studies (Finkelstein, Hambrick, & Cannella, 2009). In this study, chief executive officer was defined as the CEO who is legally responsible for the preparation of a business report, and if there are two or more CEOs, it was recognized even if only one of them has international experience (J. H. Park, Sung, & Lee, 2014).

Work experience, education experience and birth are mainly used as the criteria for international experience, but due to the nature of Korean companies, there are few people who were born in foreign countries, so this study defined it as the experiences of working or studying abroad. Therefore, the fact whether the CEO has studied abroad (university degree or higher) or has lived and worked overseas before 2011, which is the target period of the study, was used as the criteria for international experience (Herrmann & Datta,

2002). Separate weight to the case of studying abroad and the case of working abroad was not assigned. Instead, values are assigned as follows; a value of 1 if there is an experience of working in foreign countries or 0 if not(J. Lee & Lee, 2015). As a result, CEOs of 53 out of 299 venture companies were found to have international experience (17.73%).

In addition, variables that are generally known to affect financial performance were included as control variables, and technical competence and marketing competence were calculated as R & D share of total sales and the proportion of advertising costs in total sales, respectively (Kotabe, Srinivasan, & Aulakh, 2002). According to the result of previous studies that financial constraints affect the company's financial structure, cash flow, debt ratio, and Tobin's Q were included as control variables (Ra & Lee, 2012). In order to control the size of a company, the natural log function was taken on the asset size and yearly dummy variables were added to control the seasonal effect (Hitt et al., 1997). Finally, an industrial classification code was added to control the industrial characteristics. The major classification code of the Korea Standard Industry Classification Code was used as the industrial classification code. The definitions of the

variables are shown in <Table 2.1> below.

Insert Table 2.1 about here

2.3.3. An Empirical Model

The panel regression analysis was conducted to reflect time-series effects in analyzing the empirical relationship between dependent variables and independent variables. On the other hand, the panel regression analysis can choose a random effect model and fixed effect model according to difference in basic assumption, and the random effect model is based on the assumption that the effects of individual specificities are not correlated with other explanatory variables, and the fixed effect model is based on the assumption that the effects of individual specificities are correlated with other explanatory variables. In the general panel regression analysis, it is necessary to choose according to the results of the Hausman test. However, it is

important to note that in the case of the model in this study, CEO International experience is a time-invariant variable which do not change according to time difference and it is one of main variables of the model. This is because, if the time invariant variables are included, in the fixed effect probability model, the coefficients of the variables are dropped without being measured in the fixed effect probability model, making it impossible to identify their influence (Baltagi, 2008;Hsiao, 2003). In this case, existing papers recommend the random effect model regardless of the results of the Hausman test, and recent studies recommend the Hausman & Taylor model as an alternative model (Hausman & Taylor, 1981;H.-G. Kang, 2005;Kwon & Hahn, 2013). The model uses tool variables to get a consistent estimator to make an estimation with a random effect model. In other words, instrumental variables classified as time-invariant endogenous variables, time-invariant exogenous variables, time-variant endogenous variables, and time-variant exogenous variables can be used to obtain consistent estimator and efficiency estimator in the Hausman & Taylor approach. In this study, random effect, fixed effect and Hausman & Taylor analysis method were all used for comprehensive statistical analysis because the results of the Hausman test showed that the

fixed effect was appropriate, but it is important to measure time invariant variables due to the nature of the study.

In the following <Equation 2.1>, the panel regression model was defined as an equation. Here, i, t, f, d and e refers to a company, year, company fixed effect, year fixed effect and error term, respectively.

<Equation 2.1> Return on assets (ROA)it=Company Size it+Cash flow it+debt ratio it+R & D Ratio it+Advertising Ratio it+Export Ratio it+Number of FDIs it+ CEO International Experience i+Year Dummy+Industry Dummy+f+d+e

On the other hand, in analyzing the moderating effect of the CEO's international experience, the statistical model included both the moderating effect for linear variable and the moderating effect for squared variable. However, what is important is to clarify in this study is how much the controlling variable of the CEO's international experience shifts the main effect in a positive (+) or negative (-) direction. In order to understand this, it is important to understand whether the moderating effect with linear variable is more significant

than squared variable. This is consistent with the statistical methodology carried out in previous studies because the moderating effect to be identified in this study is not the effect on the pole point of the quadratic function but the effect on the slope, that is, the directionality (J. W. Lu & Beamish, 2001).

2.4. Empirical Analysis

2.4.1. Descriptive Statistics and Correlations

Prior to the empirical analysis, descriptive statistics and correlations of independent variables and control variables are summarized in the <Table 2.2> to <Table 2.3> below. <Table 2.2> and <Table 2.3> show the basic statistics of venture companies and the correlation between variables of venture companies, respectively.

Insert Table 2.2 about here

In the correlation, the correlation between company size and foreign direct investment was found to be relatively high (0.3423), but it was found to be 1.36 in the Variance Inflation Factor (VIF) analysis, which is less than the general multicollinearity doubt value of 4, so it was included in the final model.

Insert Table 2.3 about here

2.4.2. Result of Empirical Analysis

<Table 2.4> and <Table 2.6> show the results of the Hausman & Taylor model based empirical analysis. <Table 2.4> and <Table 2.5> performed the analysis according to whether the foreign entry method is export or direct investment, while <Table 2.6> performed the analysis by integrating the two entry methods. As shown in <Table 2.4> ~ <Table 2.6>, the 'U-shaped' relationship between the export

and financial performance of venture companies argued in Hypothesis 1-1 shows that the coefficient of the linear variable was found to be negative and that of the square variable to be positive at the 1% significance level, indicating the conformance to the hypothesis of this study. Also in the relationship between foreign direct investment and financial performance assumed in hypothesis 1-2, the null hypotheses were rejected at the 1% significance level in all models, indicating the consistency with the findings of this study. This supported the argument of this study that when a venture company advances overseas, it has a negative (-) effect on financial revenues at an early stage due to liability of foreignness. However, when a venture company enters a foreign country beyond a certain level, it converts to positive (+) because knowledge and experience are accumulated.

Insert Table 2.4 about here

Insert Table 2.5 about here

2.5. Conclusion and Implications

As internationalization becomes a very important task for venture companies, many studies have been conducted, but most studies focus on the decision making factors of internationalization and the way of entry, so there are relatively a few studies on how it affects financial performance. Therefore, this study divided the internationalization of venture companies into export and foreign direct investment and statistically analyzed the effect of each internationalization on financial performance. As a result, it was analyzed to be the negative (-) effect at a low level of internationalization as with the hypothesis of this study and to be the positive (-) effect at a high level of internationalization. This is consistent with the hypothesis of this study that loss occurs because liability of foreignness exceeds the benefit of internationalization in the beginning of overseas expansion

in a venture company lacking resources required for internationalization, but as the level of internationalization increases later, experience accumulates, offsetting liability of foreignness and further creating profits.

In addition, the relationship between internationalization and financial performance of these venture companies was found to be moderated in the positive (+) direction if the CEO has studied or worked abroad. This implies that the role of CEOs is very important in venture companies and that the CEO's personal knowledge, experience and the network affect the creation of performance according to the internationalization of the venture company.

The results of this study provide very meaningful theoretical and empirical implications in the following points: First, it was found that CEO's international experience in venture companies is an important factor in realizing profit through internationalization. Second, the empirical verification of the relationship between internationalization and financial performance of venture companies was conducted, which have not been addressed much by previous studies. Generally, most existing studies used survey results in that the size of a company is small and it is difficult to collect financial data due to

the nature of venture companies, most of which are start-up companies. In addition, most studies on SMEs or ventures used the proportion of exports to measure the degree of internationalization, and this research was able to verify multiple aspects rather than single export indicators by analyzing foreign direct investment at the same time (J. H. Park et al., 2014).

On the other hand, the results of this study can help decision-making in the actual management environment of venture companies. In other words, the internationalization of venture companies has a negative (-) impact financially in the short term, and it is changed to a positive (+) effect of internationalization after the level of internationalization is raised to a certain level, so venture companies need to approach overseas expansion decision making from a longer-term perspective. Also, if the CEO of the venture company has international experience, the CEO's international experience should be actively used in creating profits through globalization. If a venture company is planning to enter overseas, they should actively consider appointment of a CEO with international experience.

Despite these contributions, this study has limitations in the selection of samples, which is that even though the number of

venture companies is over 30,000, the objects of the study were limited to the listed companies due to difficulties in collecting information. Therefore, if studies can be carried out by gathering information from earlier venture companies as well as listed companies in the future, it will help clarify the relationship between internationalization and financial performance more clearly. In particular, if the research is to concentrate on Born Global companies, it will be necessary to select only the companies that have entered the overseas market within a certain period of time after startup, for example, less than 6 years, to carry out the research (H.-Y. Lee & Park, 2013).

It would be also interesting to subdivide and compare venture companies according to their industrial characteristics, such as traditional industries including manufacturing industry, R&D intensive industries, or capital intensive industries. In addition, it will be a meaningful study to extend the samples to overseas venture companies rather than to limit the samples to Korean venture companies, or to compare the characteristics of Korean venture companies with overseas venture companies.

On the other hand, it would also be meaningful to divide the

characteristics of CEOs of venture companies more specifically and to study how each factor affects the relationship between internationalization and financial performance. For example, analyzing whether the venture company CEO is a founder or a major shareholder influences (J. H. Park et al., 2014), subdividing the CEO's international experience into studies and work and studying the effect of how long the period was or what kind of network he/she has overseas will help to specifically identify the CEO's influence in the internationalization of venture companies (Carpenter et al., 2001).

<Table 2.1> Measurement of variables

Type	Variable	Description
Dependent variable	Return on Asset(ROA)	Current income ／ assets
Independent and controlled variable	Export Ratio	Export / Sales
	Foreign direct investment(FDI)	Number of foreign direct investors
	CEO's international experience	If he／she has been educated or have worked overseas= 1, other cases= 0
	R & D Ratio	R & D expenses / sales
	Advertising Ratio	Advertising cost / Sales
	Tobin's Q	[Number of common stocks issued * closing price] + Number of preferred stocks issued * par value) + debt book value] / book value of assets
	Company Size	ln assets
	Debt ratio	Debt / equity
	Cash flow	Operating cash flow / sales
	Industrial classification	Classification Code of Korea Standard Industry Classification code used as dummy code
	Year dummy	Year dummy

<Table 2.2> Descriptive statistics

Variables	Observations	Mean	Standard Deviation	Minimum	Maximum
ROA	1459	0.0211	0.1404	-1.0321	0.8238
Export Ratio	1500	26.4135	30.6413	0	100
FDI	1500	0.7467	1.2836	0	11
CEO International Experience	1500	0.1767	0.3815	0	1
R&D Ratio	1500	0.1252	1.6977	0.0000	58.8378
Advertising Ratio	1500	0.0079	0.0216	0.0000	0.3562
Company Size	1459	24.6240	0.7093	20.7313	26.6700
Cash Flow	1448	-1.0230	31.8511	-1193	2.2557
Debt Ratio	1455	0.8568	1.4550	-8	25.5063
Tobin's Q	1455	1.8736	2.6535	0.0373	41.3455

<Table 2.3> Correlation Matrix

Variables	Export Ratio	FDI	CEO International Experience	R&D Ratio	Advertising Ratio	Company Size	Cash Flow	Debt Ratio	Tobin'sQ
Export Ratio	1								
FDI	0.2817***	1							
CEO International Experience	0.1158***	0.1173***	1						
R&D Ratio	-0.0292	-0.024	-0.0196	1					
Advertising Ratio	-0.0166	0.1084***	0.0648**	0.1566***	1				
Company Size	0.2315***	0.3423***	0.0065	-0.0653	-0.0402	1			
Cash Flow	0.0295	0.0198	0.0163	-0.1693***	-0.005	0.0383	1		
Debt Ratio	-0.003	-0.0249	-0.0775	0.1207***	-0.0722	-0.0881***	-0.034	1	
Tobin's Q	0.0499*	0.0067	0.1428***	0.0101	0.1367***	0.0318	0.014	-0.0729***	1.0000

* p<0.1, ** p<0.05, *** p<0.01

<Table 2.4> Hausman & Taylor (Export)

Variables	Control	Export			
	Model1	Model2	Model3	Model4	Model5
Export Ratio		-0.0001	-0.00174***	-0.00188***	-0.00233***
		(0.0002)	(0.0006)	(0.0006)	(0.0007)
Export Squared			0.0001***	0.0001***	0.0001***
			(0.0001)	(0.0001)	(0.0001)
Export x CEO International Experience				0.000891**	0.00312**
				(0.0004)	(0.0013)
Export Squared x CEO International Experience					-0.0001*
					(0.0001)
CEO International Experience	0.0036	0.0043	0.0093	-0.0201	-0.0386*
	(0.0166)	(0.0166)	(0.0167)	(0.0214)	(0.0235)
R&D Ratio	0.0016	0.0016	0.0017	0.0017	0.0017
	(0.0019)	(0.0019)	(0.0019)	(0.0019)	(0.0019)
Advertising Ratio	-0.592***	-0.597***	-0.596***	-0.587***	-0.595***
	(0.1920)	(0.1920)	(0.1910)	(0.1910)	(0.1910)
Company Size	-0.0180**	-0.0165*	-0.0152*	-0.0145	-0.0136
	(0.0088)	(0.0092)	(0.0092)	(0.0092)	(0.0091)
Cash Flow	0.0002	0.0002	0.0002	0.0002	0.0002
	(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.0001)
Debt Ratio	-0.0003	-0.0004	-0.0006	-0.0007	-0.0008
	(0.0025)	(0.0025)	(0.0025)	(0.0025)	(0.0025)
Tobin's Q	0.00281*	0.00283*	0.00307*	0.00315*	0.00308*
	(0.0017)	(0.0017)	(0.0017)	(0.0017)	(0.0017)
Constant	0.464**	0.429*	0.407*	0.393*	0.373*
	(0.2150)	(0.2250)	(0.2240)	(0.2240)	(0.2230)
Industry Dummy	Include	Include	Include	Include	Include
Year Dummy	Include	Include	Include	Include	Include
Observation	1,448	1,448	1,448	1,448	1,448
Wald chi2	18.64***	18.93**	27.76***	32.20***	34.16***

* p<0.1, ** p<0.05, *** p<0.01, '( )'is Standard Error

<Table 2.5> Hausman & Taylor (FDI)

Variables	FDI			
	Model1	Model2	Model3	Model4
FDI	-0.0141***	-0.0327***	-0.0349***	-0.0375***
	(0.0053)	(0.0086)	(0.0089)	(0.0093)
FDI Squared		0.00317***	0.00304***	0.00350***
		(0.0012)	(0.0012)	(0.0012)
FDIx CEO International Experience			0.0207**	0.0398**
			(0.0097)	(0.0183)
FDI Squared x CEOInternational Experience				-0.0037
				(0.0030)
CEOInternational Experience	0.0085	0.0110	-0.0103	-0.0183
	(0.0167)	(0.0167)	(0.0190)	(0.0201)
R&D Ratio	0.0015	0.0015	0.0015	0.0015
	(0.0019)	(0.0019)	(0.0019)	(0.0019)
Advertising Ratio	-0.542***	-0.552***	-0.589***	-0.566***
	(0.1920)	(0.1910)	(0.1910)	(0.1920)
Company Size	-0.0129	-0.0086	-0.0086	-0.0089
	(0.0089)	(0.0091)	(0.0090)	(0.0091)
Cash Flow	0.0002	0.0002	0.0002	0.0002
	(0.0001)	(0.0001)	(0.0001)	(0.0001)
Debt Ratio	-0.0006	-0.0007	-0.0008	-0.0009
	(0.0025)	(0.0025)	(0.0025)	(0.0025)
Tobin's Q	0.0026	0.0024	0.0026	0.0027
	(0.0017)	(0.0017)	(0.0017)	(0.0017)
Constant	0.3480	0.2500	0.2520	0.2600
	(0.2190)	(0.2210)	(0.2210)	(0.2210)
Industry Dummy	Include	Include	Include	Include
Year Dummy	Include	Include	Include	Include
Observation	1,448	1,448	1,448	1,448
Wald chi2	25.86***	33.52***	34.23***	35.20***

* p<0.1, ** p<0.05, *** p<0.01, '( )'is Standard Error

<Table 2.6> Hausman & Taylor (Export and FDI Together)

Variables	Model11	Model12	Model13	Model14	Model15	Model16	Model17
Export Ratio	-0.00158***	-0.00173***	-0.00216***	-0.00148**	-0.00155***	-0.00164***	-0.00212***
	(0.0006)	(0.0006)	(0.0007)	(0.0006)	(0.0006)	(0.0006)	(0.0007)
Export Squared	0.0001***	0.0001***	0.0001***	0.00015***	0.00015***	0.0001***	0.0001***
	(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.0001)
Export x CEOInternational Experience		0.000923**	0.00320**			0.000805*	0.00299**
		(0.0004)	(0.0013)			(0.0004)	(0.0013)
ExportSquared x CEOInternational Experience			-0.0001*				-0.0001*
			(0.0001)				(0.0001)
FDI	-0.0335***	-0.0336***	-0.0330***	-0.0354***	-0.0385***	-0.0348***	-0.0370***
	(0.0088)	(0.0088)	(0.0088)	(0.0092)	(0.0095)	(0.0092)	(0.0096)
FDI Squared	0.00312***	0.00321***	0.00327***	0.00300***	0.00356***	0.00308***	0.00346***
	(0.0012)	(0.0012)	(0.0012)	(0.0012)	(0.0012)	(0.0012)	(0.0012)
CEOInternational Experience				0.0204**	0.0435**	0.0174*	0.0305
				(0.0098)	(0.0184)	(0.0099)	(0.0193)
FDI Squared x CEOInternational Experience					-0.0044		-0.0023
					(0.0030)		(0.0031)
CEOInternational Experience	0.0157	-0.0148	-0.0341	-0.0057	-0.0151	-0.0292	-0.0514***
	(0.0169)	(0.0215)	(0.0236)	(0.0194)	(0.0203)	(0.0227)	(0.0249)
R&D Ratio	0.0015	0.0015	0.0016	0.0016	0.0016	0.0016	0.0016
	(0.0019)	(0.0019)	(0.0019)	(0.0019)	(0.0019)	(0.0019)	(0.0019)
Advertising Ratio	-0.543***	-0.536***	-0.548***	-0.581***	-0.552***	-0.570***	-0.567***
	(0.1920)	(0.1910)	(0.1910)	(0.1910)	(0.1920)	(0.1910)	(0.1920)
Company Size	-0.0081	-0.0075	-0.0066	-0.0085	-0.0087	-0.0076	-0.0072
	(0.0093)	(0.0093)	(0.0093)	(0.0093)	(0.0093)	(0.0093)	(0.0093)
Cash Flow	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002
	(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.0001)
Debt Ratio	-0.0008	-0.0009	-0.0010	-0.0009	-0.0010	-0.0009	-0.0011
	(0.0025)	(0.0025)	(0.0025)	(0.0025)	(0.0025)	(0.0025)	(0.0025)
Tobin's Q	0.0026	0.0027	0.0026	0.0028	0.00289*	0.0028	0.00282*
	(0.0017)	(0.0017)	(0.0017)	(0.0017)	(0.0017)	(0.0017)	(0.0017)
Constant	0.2470	0.2340	0.2150	0.2550	0.2620	0.2370	0.2310
	(0.2270)	(0.2260)	(0.2260)	(0.2270)	(0.2270)	(0.2260)	(0.2260)
Industry Dummy	Include	Include	Include	Include	Include	Include	Include
Year Dummy	Include	Include	Include	Include	Include	Include	Include
Observation	1,448	1,448	1,448	1,448	1,448	1,448	1,448
Wald chi2	42.83***	47.32**	48.82***	42.81***	44.36***	46.76***	49.74***

* p<0.1, ** p<0.05, *** p<0.01, '( )'is Standard Error

Chapter 3. The Relationship Between Globalization and Innovation Performance of Venture Firms in Korea
-The Moderating Effect of CEO International Experience-

3.1. Introduction

The role and importance of venture firms, so called high-tech SMEs, are emphasized around the world. In particular, venture firms are becoming more important in that they can lead technological and industrial innovation through new technology development (Acs & Audretsch, 2003; Macpherson & Holt, 2007). As a result, factors which affect innovation performance of venture firms have been studied steadily. However, the majority of previous studies have focused on how government grants affect the innovation of venture firms (Kang, Lee, & Oh, 2012; H. Kim, 2008), or how innovation performance of venture firms affects the financial performance of the firms (Kafouros, Buckley, Sharp, & Wang, 2008; H. M. Lee, Kim, & Kim, 2012; J. Park & Lee, 2011).

Among the factors affecting innovation performance of venture firms, this research focuses on globalization. Traditional globalization theories were negative to the overseas expansion of SMEs which usually lack distinctive competitive advantage (Hymer, 1976). However recent studies, contrary to traditional studies, suggest that venture firms should pursue internationalization aggressively. This recent

proposition stems from the argument that venture firms, compared with large companies, are relatively less capable of research and development internally due to the shortage of internal resources, therefore venture firms should try to achieve technological innovation by learning various knowledge and ideas coming from globalization (B. K. Kim & Park, 2014; McDougall, Shane, & Oviatt, 1994; Salomon & Shaver, 2005; Shan & Song, 1997). As a result, while traditional studies focused on how corporate innovation performance affects the level of globalization, recent studies are paying attention to how corporate globalization affects innovation performance.

Despite of recent uprising interests and new propositions, existing studies on the relationship between globalization and innovation performance still have several limitations. First, most previous studies have focused on large companies, and theoretical background on those research mostly relies on Transaction Cost theory. Venture firms are known to be different from large companies in diverse aspects, mostly due to low resource capability, and they are worthy of more attention and different approach (Hitt, Hoskisson, & Ireland, 1994; Hitt, Hoskisson, & Kim, 1997; Shan & Song, 1997). Second, most existing studies focus only on the export entry mode among diverse

entry modes, which eventually leads to the lack of research on FDI entry mode (Hwang & Cho, 2013; Mun & Choe, 2017; Salomon & Shaver, 2005). Third, most studies are based on the survey, not secondary data (J. P. Kim, 2012; E.-S. Lee, 2011; J. W. Lu & Beamish, 2001; Moon, 2013; S.-J. Park, Lim, & Lee, 2010).

In order to fill out the gap between existing studies and what is needed, this research aims to empirically identify the effects of venture firms' both export and FDI on technological innovation performance by using secondary data. In addition, this research aims to statistically prove that international experience of CEO of venture firms will help the firms to increase innovation performance throughout globalization.

The result of the empirical analysis of 247 listed venture firms showed that there is a 'U-shape' relationship in both export and FDI entry mode. This relationship is distinctive from the existing studies on large companies that showed positive (+) linear relationship or 'inverted U-shape' relationship, supporting the proposition of this study that venture firms face difficulties in deriving innovation performance at the early stage of globalization due to insufficient resources.

Regarding the second hypothesis, international experience of CEO was found to moderate the 'U‐shape' relationship between FDI and innovation performance to the positive direction, presenting that international experience of CEO is helpful for venture firms to achieve innovation performance in FDI entry mode (Zahra & George, 2002).

This research is composed of five chapters. In the following 2nd chapter, the definition of venture firms and theoretical background of previous studies regarding the relationship between globalization and innovation performance is described, followed by hypothesis of this research on how globalization of venture firms affects innovation performance. Third chapter describes the statistical methodology, sample selection and variables. After demonstration of the statistical results in 4th chapter, the contribution and limitations of this study is described in the last chapter.

3.2. Theory and Hypotheses

3.2.1. Globalization of venture firms and technological innovation performance

The most distinctive character of venture firms is the fact that they lead technological innovation (Macpherson & Holt, 2007). If venture firms propose new technologies through continuous technical innovation, existing companies is required to pursue innovation more vigorously in order to compete with the new technology. This reaction and mutual competition eventually leads to further technical innovation activities and outputs as well (Bollinger, Hope, & Utterback, 1983). Furthermore, Hitt and Hoskisson (1991) proposed that a new technology is the source of competitive advantage and that failure to acquire and improve these new technologies inevitably leads to failure in competition and business (Hitt, Hoskisson, & Harrison, 1991; Porter, 1990).

Ironically to the fact that innovation is essential for venture firms, most SMEs struggle with shortage of internal R&D capabilities compared with large enterprises. Therefore, it is important for venture firms to acquire the knowledge and ideas, necessary for technological innovation, from the outside of the firm (B. K. Kim & Park, 2014). Globalization such as export and FDI activities of venture firms provides the firms with opportunities to acquire variety of knowledge from local customers, distributors, competitors and business partners,

which eventually leads to product innovation, process innovation, or technological innovation (Salomon & Shaver, 2005). Recently, a number of venture firms such as 'born-global ventures' actively pursue globalization in early stage of foundation in order to acquire overseas knowledge (John H Dunning, 1994; Håkanson & Nobel, 1993).

Traditional internationalization theories have limitations in explaining the current active overseas expansion of these venture firms. According to traditional theories, in order to settle down in foreign countries successfully, firms need to have a competitive advantage such as brand awareness or technology competitiveness in advance of globalization (John H Dunning, 2001; Johanson & Vahlne, 1977; Vernon, 1966). This claim is based on the theory of 'liability of foreignness', arguing that a company that enters overseas is unfamiliar with the environment of a new country, known as 'newness' (Hymer, 1976; Stinchcombe & March, 1965), which incurs more costs than local companies. This comparative weakness pre-requires a competitive advantage that can offset these costs for globalization (Cassiman & Golovko, 2011; Duysters & Hagedoorn, 1996; Kyläheiko, Jantunen, Puumalainen, Saarenketo, & Tuppura,

2011). However, most venture firms are likely to lack such brand awareness or distinctive competitive advantage compared with large firms.

Dunning's OLI theory is one of the theories that can explain the recent active overseas expansion of venture firms. According to Dunning, companies pursue globalization not only to use existing competitive advantages, but also to find knowledge that can complement existing technologies (John H. Dunning, 2000). He argued that if a company decides to expand abroad in order to secure technology resources, the firm should go to a specific location where advanced technology of the industry is developed. However, most of studies that attempted to empirically identify Dunning's argument conducted the analysis at the country level or the industry level, which result in failing to empirically prove the relationship between globalization and innovation performance at the firm level (Cantwell, 1989, 1995; Itaki, 1991; Kogut, 1990; Kogut & Chang, 1991).

According to the resource-based view, it is essential for companies to develop new resources and competencies in order to secure a competitive advantage, and the firms can increase innovation performance by securing a variety of resources through globalization

(Hitt et al., 1997; Penrose, 1959). When competing in a technology-intensive environment, developing new resources and capabilities internally only is a high-risk decision with high uncertainty (Dierickx & Cool, 1989; Nelson & Winter, 1982). This is because technology that the firm has spent a lot of time at the expense of high costs could be found to be obsolete at the end of development, or not commonly used in the market due to the rapid technological change (Crandall, 1981). Therefore, in order to secure a continuous technological competitive advantage, it is necessary to be able to access various external information resources as well as technology development using internal capabilities, thereby reducing such risks. Globalization facilitates access to such a variety of knowledge resources that companies can maintain innovation capabilities (Kotabe, 1990).

Additionally, venture firms, which need constant technological innovation, are pressured to increase revenue and profit in order to pay off the high R&D cost, and globalization can provide the firm with opportunities for revenue soaring by letting the firm access to new markets through regional diversification. In high-tech industry where product life cycle is very short, heavy investment on R&D is

essential. Especially for SMEs, there are not many other alternatives to cover such high costs in large-scale R&D except for regional diversification because achieving economy of scale based on domestic market is not a viable option due to relatively small size of the firm (Kobrin, 1991).

Some scholars developed a resource-based view into a knowledge-based view, in which globalization is described as a process of knowledge development or organizational learning to secure knowledge competitiveness (Kogut & Zander, 1993; Love, 1995). Innovation in the knowledge-based view is the result of the processing of information and knowledge. In order for a company to achieve technological innovation, the research and development team should have access to a variety of information as much as possible (Nonaka & Takeuchi, 1995). Through globalization, companies can further improve their organizational learning abilities than companies operating domestically by not only encountering local customers, new markets and cultures but also acquiring new and diverse knowledge and ideas derived from the local company's knowledge spillover (Kurokawa, Iwata, & Roberts, 2007; Schumpeter & Opie, 1961; Von Zedtwitz & Gassmann, 2002). They argue that the interaction with

universities, scientists, research institutes and competitors as well as local customers can stimulate innovation by providing a variety of information (Mendonça, Pereira, & Godinho, 2004). As a result, the access to this new knowledge and the improvement of organizational learning capability result in the increase of innovation performance (Miller, 1996). In order for successful globalization with substantial innovation performance, a well-defined process of information management and organizational learning is needed to effectively acquire knowledge and information from abroad and process them to innovation (Hitt et al., 1997; Kafouros, 2006; Kafouros et al., 2008).

Export is the entry mode that is considered as the first choice in globalization to acquire overseas knowledge (Reynolds, 1997). It may be an effective tool for venture firms lacking resources because export entry mode require less initial resources than FDI entry mode (Dalli, 1995; Zahra, Neubaum, & Huse, 1997). Companies can not only obtain local information of the country but also diversify their profits through export (Kogut & Chang, 1996; Ramaswamy, 1993). Previous studies have shown that useful knowledge and experiences gained through export can enhance the efficiency of operation and promote innovation (Aw & Hwang, 1995; Bernard & Jensen, 1999). This claim

is called 'learning by exporting' in academia (Salomon & Shaver, 2005).

Some scholars argue that the learning effect through the export method is insignificant compared with FDI method because it is known that, in order to acquire and learn new knowledge resources, locating physically in the target country is inevitable (Almeida, 1996; Cantwell & Kotecha, 1993; Jaffe, Trajtenberg, & Henderson, 1993; Kogut & Chang, 1991; Marshall, 1920). Most technology and knowledge resources are in the form of tacit knowledge, so it is very important to interact with local technicians who have the necessary knowledge to learn, and it is difficult to bring the networks of engineers to home country because these network is configured in a complex manner in the local area (John H Dunning, 1998). Moreover, human resources such as engineers do not easily move their country of residence because of their living environment or family (Almeida & Kogut, 1999). Previous studies define this learning of knowledge through FDI as 'knowledge-seeking FDI' or 'technology-seeking FDI' (Bettis & Hitt, 1995; Granstrand, Hakanson, & Sjolander, 1992; Shan & Song, 1997).

However, scholars advocating 'learning by exporting' emphasize that

knowledge exchange not only with engineers but also with divers local contributors. For example, it is possible to acquire valuable knowledge for technological innovation from technical expertise of export brokers or local distributor as well as local technicians. It is also possible to acquire new knowledge by analyzing the products of local competitors, to get ideas from feedback of local customers, or to achieve new ideas by studying local customer needs (Salomon & Shaver, 2005; Vernon, 1979, 1992). Therefore the research stands that export entry mode should remain on the list of entry modes which promotes technological innovation of high-tech SME.

FDI entry mode varies in the forms of Greenfield investment, equity investment, merger or acquisition (M&A), or joint venture. In general, the Greenfield investment method is regarded as the most effective entry mode for acquiring foreign knowledge, because technological knowledge is usually tacit knowledge which engineers possess and hiring those engineers enable entering firm to learn necessary knowledge. From this perspective of knowledge sharing, because it is regarded that tacit knowledge is embedded in a specific country or a specific firm in many cases, joint venture or M&A with a local company may also be useful tools for acquiring tacit knowledge

(Kogut & Chang, 1991; Shan & Hamilton, 1991). The equity investment in a local company is the least risky mode from the perspective that it is very hard to anticipate which technology will be the standard in the future. By diversifying investment in many technological firms, a firm has an option to acquire the company and technological knowledge together if necessary in the future (Kogut, 1991; Shan & Song, 1997). In this study, export entry mode and all of three types of FDI described above are included in the category of globalization.

Based on arguments described above, many previous studies on large corporations have reported a positive (+) relationship between globalization and innovation performance (Hitt et al., 1997; Kafouros et al., 2008). The resource-based view proposes that companies can achieve necessary resources for technological innovation through globalization, and knowledge-based view and organizational learning view argue that access to new and diverse knowledge through globalization results in increased innovation performance through organizational learning and knowledge development process.

Some of large enterprise-centered studies argue that the relationship between globalization and innovation performance is 'inverted-U'

relationship, which is based on the transaction cost theory (Hitt et al., 1994). They propose that the globalization has a positive (+) effect on the innovation performance at a lower level of globalization, but the transaction cost is also increased at the same time, resulting in the degradation of innovation performance. The transaction costs herein exemplify the cost required for managing the complexity of the organization generated as the increase of foreign subsidiaries, which also includes costs required to understand trade barriers, legal system, and cultural diversity among the subsidiary countries and costs for logistics (Lei, Hitt, & Bettis, 1990). In addition, the transaction costs includes the managerial costs for coordinating conflicts of discretion between headquarter and local subsidiaries of multinationals (Bartlett & Ghoshal, 1988). As a result, if the globalization level exceeds a certain level, the increase in transaction costs will offset the benefits, and the relationship between globalization and innovation performance will change to a negative (-) relationship

Some scholars emphasize the increase of inefficiency in organizational learning process as the cause of this change to negative (-) relationship. They do not challenge the positive (+) relationship at the early stage of globalization because globalization increases the size

of a company, enabling stable and efficient R&D investment (Hitt, Hoskisson, & Ireland, 1990; Schumpeter & Opie, 1961). However, if a company becomes larger than a certain level, bureaucratic control through hierarchical order within the organization is supposed to be strengthened in order to manage a large organization (Hitt et al., 1990). As the bureaucratic control becomes stronger, the behavior style becomes stereotyped and people try to avoid risk. Eventually decision makers become risk-averse, so that they are more likely to fall into inertia where they rely on improving existing technologies rather than investing in R&D for new technologies (Collier, 1983). As a result, when the scale of a company exceeds a certain level through globalization, it has a negative impact on innovation performance (Egelhoff, 1988; Hannan & Freeman, 1984; Romanelli & Tushman, 1986).

For venture firms, however, the aforementioned change to negative (-) relationship is not applicable. This is because most of venture firms are not large enough to cause such bureaucratic control, risk aversion, or inertia (Collier, 1983; Hitt et al., 1990).

Rather, venture firms are more likely to struggle with difficulties in overcoming the liability of foreignness that occurs at a lower level of

globalization rather than transaction costs incurred at a higher level of globalization (Hymer, 1976). This is because venture firms lack sufficient brand, technology competitiveness, local information, experience, human network, organizational management capabilities and resources to overcome local unfamiliarity compared with large corporations (Hessels, 2008; Jarillo, 1989; J. W. Lu & Beamish, 2001; McDougall et al., 1994). Also FDI requires heavy initial investment, such as labor costs, facility investment costs and equipment costs than the export method, and most venture firms do not have enough slack resources to do so. Therefore, venture firms are likely to put their existing human resources, physical and financial resources to overcome liability of foreignness in order to overcome the difficulties in the early stage of overseas expansion. For example, when venture firms enters new countries, internal domestic sales or marketing organizations should be re-deployed in order to analyze new overseas markets, and management organizations should be committed to establishing export brokers or overseas corporations because extra resource is not available. R&D departments also should be involved in new product development or localization for new market, rather than ongoing domestic projects, which results in a temporary

reduction in R&D outcomes.

The difficulties that venture firms face in the early stages of globalization can be explained alternatively from the perspective of absorptive capability (Cohen & Levinthal, 1990; S.-Y. Park & Kim, 2014; Teece, 2007; Todorova & Durisin, 2007; Zahra & George, 2002). Although venture firms have access to diverse experiences and knowledge through globalization, they are likely to lack absorptive capabilities to acquire them. In order to acquire new knowledge sufficiently, it is necessary to have a prior understanding of related knowledge. However venture firms are likely to have a small range of knowledge due to their size and power limitations (Kafouros et al., 2008; B. K. Kim & Park, 2014). Also, it is necessary to have enough organizational capability to process knowledge input such as recognizing, assimilating and transforming the opportunity of new knowledge acquire, whereas venture firms are likely to lack such organizational management and control capability due to their relatively small size (Y. J. Kim, 2005; Lin, Wu, Chang, Wang, & Lee, 2012; Seo, Ode, & Ali, 2015; Tsai & Wang, 2009). Therefore, at the beginning of overseas expansion, engineers of venture firms spend most their time primarily on improving the absorptive capability by

learning new technical knowledge from new fields, and they allocate relatively small amount of time on improving existing technology, which result in temporary decrease of innovation performance.

The temporary inhibition of innovation performance experienced by venture firms in the early stage of globalization is likely to be overcome as the level of globalization increases. This is because venture firms can acquire local information, experience and networks in the process of increasing the number of overseas subsidiaries and the countries of entry, thereby offsetting liability of foreignness (Jarillo, 1989; McDougall et al., 1994). When the liability of foreignness is offset, globalization will have a positive (+) effect on innovation performance by securing resources such as various knowledge and information and by enhancing organizational learning as discussed above.

From the perspective of absorptive capability, as the experience from globalization of venture firms increases, the capability to acquire and process external technological knowledge also increases, which means that the absorptive capability can be improved. This is because the absorptive capability is strengthened through knowledge accumulation from internal or external sources, exemplified by new

knowledge acquisition by internal engineers, cooperation with local technological institution, or hiring local engineers, resulting in sufficient absorptive capability that can achieve innovation performance at a level of globalization beyond a certain level (Tsai & Wang, 2009).

Some of previous studies argue that the relationship between globalization and performance show 'S-shape' relationship (J. Lu, Beamish, & W, 2004). They propose that, at the beginning of globalization, internationalization impacts the performance of a company negatively, followed by a change to positive relationship due to resource increase. Then the relationship changes to negative relationship again because of increased transaction cost. However this study anticipate 'U-shape' relationship because this study uses SME samples which are not expected to experience excessive global expansion that result in rapid increase of transaction cost (J. W. Lu & Beamish, 2001)

The argument of this study on the relationship between globalization and innovation performance of venture firms can be summarized as follows: at a low level of globalization, the globalization will show negative (-) impact on innovation performance.

However, after a certain level, the negative (-) relationship will convert into a positive (+) relationship, which eventually show 'U-shape' relationship. The negative (-) relationship at the beginning of globalization can be explained by lack of resources enough to acquire new technological knowledge and to offset liability of foreignness. However, this negative (-) relationship changes to positive (+) relationship when the globalization level reaches a certain level by virtue of increased resources and capability for organizational learning.

Hypothesis 1-1: The relationship between the level of export and technological innovation performance of venture firms is nonlinear 'U-shape' relationship, with the slope negative (-) at low levels of export however positive (+) at higher levels of export.

Hypothesis 1-2: The relationship between the level of FDI and technological innovation performance of venture firms is nonlinear 'U-shape' relationship, with the slope negative (-) at low levels of FDI however positive (+) at higher levels of FDI.

3.2.2. CEO's international experience of venture firms

This study focused on the CEO's capability as a moderating factor that affects the relationship between globalization and innovation performance of venture firms. As a major decision maker, corporate CEO is known to have a significant impact on the organization's short-term and long-term performance throughout planning, allocation of resources, and decision making about R&D investment (Hambrick & Mason, 1984). Previous studies reported that, among the various abilities of the CEO, especially the capability to develop technological strength and efficient organizational management skill has the most significant impact on the performance of a company (Chandler & Jansen, 1992).

The CEO's role in venture firms is further emphasized because venture firms have fewer resources than large corporations, so CEOs themselves play an important human resource role in the enterprise. In particular, the CEOs of venture firms play a key role in the company's innovation capability because most venture firms are found based on the CEO's innovative idea. Also, in most cases, the technological strength of venture firms is based on the technology capability of the CEO himself/herself (Baum, Locke, & Smith, 2001;

Chandler & Jansen, 1992; Feeser & Willard, 1990; Jeong, 2010; I. K. Lee & Yang, 2016).

Of the various characteristics of CEOs of venture firms, factors affecting enterprise innovation performance include general characteristics such as CEO's career and academic background, professional expertise such as related industrial technology, psychological characteristics such as locus of control, achievement need and risk-taking tendencies, among which the knowledge and experience of the relevant field held by the CEO are known to have the greatest influence (Gartner, 1985; Jeong, 2010; Kaplan, Klebanov, & Sorensen, 2012; S. M. Park & Bae, 1998; Sandberg & Hofer, 1987). This study focuses on international experience as one of CEO characteristics that affect innovation performance.

Previous studies reported that CEO's international experience has a positive impact on the level of globalization and performance of the company (J. Lee & Lee, 2015; Roth, 1995). The international experience of CEOs of these venture firms is expected to have a more positive effect than that of large corporations, especially in the process of globalization of companies through export or FDI. Particularly venture firms which enter overseas from the very beginning of growth stage,

are called 'born-global venture firms,' and there is high possibility that the CEOs of the born-global venture firms have international experience. Also, if CEOs have international experience, the level of globalization at the time of IPO (initial public offering) is known to be very high (Bloodgood, Sapienza, & Almeida, 1996; McDougall et al., 1994; Oviatt & McDougall, 1994).

With regards to the reasons of CEO's positive effect, it is known that if a CEO has international experience, it can reduce various risk factors that may arise in the globalization process. For example, when a company enters overseas, cultural and institutional differences in each country may lead to difficulties in setting down to the local area, but if the CEO has previously studied or worked abroad, he or she can better understand these differences, allowing the company to adapt to a new environment efficiently (Crick & Jones, 2000; Herrmann & Datta, 2002, 2006; Ricks, Toyne, & Martinez, 1990).

The CEO's international experience also provides useful resources to venture firms such as knowledge, experience, foreign language skills, and human networks. If the CEO speaks a local language, the language skill helps the firm to forms a network with local technicians and universities. Or, CEO has information on the local

technology field, it directly helps venture firms to acquire ideas, knowledge, and technical information through globalization (Athanassiou & Nigh, 1999; Lublin, 1996; Teal & Hofer, 2003).

On the other hand, it can be explained that the CEO's international experience complements the insufficient absorptive capability of venture firms. The extent to which a company possesses pre-existing knowledge and experience when acquiring new knowledge and technical information has a great influence on the absorptive capability (Cohen & Levinthal, 1990; Zander & Kogut, 1995). Most venture firms are based on the expertise of CEOs, who is also founders in most case, and the knowledge and experience that venture firms try to gain through globalization are likely to be closely related to the CEO's expertise. Therefore, if the CEOs of venture firms have international experience, it is likely to be more efficient to acquire technological knowledge from abroad exploiting their own technical knowledge, experience and network (Cohen & Levinthal, 1990; Jeong, 2010; Sohn & Huh, 2017).

The claim that the international experience of the CEOs of venture firms will have a positive impact on innovation performance can also be explained by entrepreneurship. Scholars studying entrepreneurship

argue that the process of overseas expansion of venture firms is part of international entrepreneurial activities (Barringer & Greening, 1998; Lumpkin & Dess, 1996). According to them, the stronger the international entrepreneurship, the more likely that the performance of overseas advancement is positive, and the international experience is one of the important measures of international entrepreneurship (Keupp & Gassmann, 2009; M.-j. Kim, Chae, & Ha, 2016; Yang & Jung, 2015). Therefore, if a CEO has international experience, he/she is highly likely to have strong international entrepreneurship, which will help to create innovation performance when entering an overseas market.

In this study, it is expected that the CEO's international experience has a positive effect on innovation performance, but in the process, it will appear in the form of moderating effects that affect the relationship between globalization and innovation performance. This is because CEO's international experience is expected to enhance the firm's performance only when venture firms promote globalization (Bloodgood et al., 1996; McDougall et al., 1994; Oviatt & McDougall, 1994). A number of studies that have examined the relationship between CEOs' existing international experience and organizational

performance also argued that international experience has an effect on corporate performance in the form of moderating effects rather than a direct effect (Buyl, Boone, Hendriks, & Matthyssens, 2011; J. Lee & Lee, 2015; Reuber & Fischer, 1997). Therefore, the CEO's international experience will have a positive effect in the form of moderating the relationship between globalization and innovation performance rather than having a direct effect on innovation performance.

To summarize the above discussion, the CEO's international experience will help venture firms to enter overseas, acquire new technologies and knowledge and achieve innovation performance. This is because the CEO's international experience can provide essential resources such as language, knowledge, and network as well as the crisis management capability needed for overseas expansion. This aid appears in the form of moderating effects, which will adjust the relationship between globalization and innovation performance in a positive (+) direction. Thus, the following hypotheses are presented.

Hypothesis 2-1: The international experience of the CEOs of venture firms will adjust the 'U-shaped' relationship between export and innovation performance in a positive (+) direction

Hypothesis 2-2: The international experience of the CEOs of venture firms will adjust the 'U-shaped' relationship between FDI and innovation performance in a positive (+) direction

3.3. Research Method

3.3.1. Sample and Data collection

Scholars have various views on the definition of a venture firms. In many countries, a company invested by venture capital is defined as a venture firm (Kazanjian, 1988). Some scholars define a high-tech SME as a company based on new technology developed by investing majority of resources in R&D (Storey & Tether, 1998). Among venture firms, those trying to secure raw materials or human resources from foreign countries as early as the establishment are defined as 'born-global venture' (Oviatt & McDougall, 1994).

In Korea, the standards of venture firms are determined as laws by the government. This is in line with the fact that, unlike overseas, domestic venture firms are highly encouraged by the government since the IMF and the government is currently playing a leading role

in fostering venture firms through many government subsidy systems. According to the relevant laws, a company should be included in one or more of the following types to be certified as venture firms in Korea. First, it should receive funding from domestic or foreign venture capital. Second, it should invest more than a certain ratio of revenue in research and development. Third, it should be certified as outstanding technology company and invested by government agencies such as Korea Technology Finance Corporation.

According to previous studies analyzing the characteristics of domestic venture-certified companies, venture-certified companies have a similar meaning to high-tech SMEs, in which new technology development is the main business as shown in the example that approximately 80% of high-tech SMEs have obtained venture certification (Jeong, 2010; J. M. Kim, 2007; C. W. Lee, 2005). It means that the venture-certified firms are good representatives of high-tech SMEs. Therefore, like previous studies, this study also used the list of venture-certified companies as the list of venture firms (M.-j. Kim et al., 2016).

According to the Korea Technology Finance Corporation, a government-sponsored venture certification organization, 31,472

companies have obtained venture certification as of June 2015. Of them, 247 companies listed on KOSPI and KOSDAQ, which are Korean Stock Markets, were selected as final samples. With regards to the period of data samples, unbalanced panel data from 2011 to 2015 were used, which is the outcome of attempt to use recent data while minimizing the impact of the Lehman Brothers financial crisis in 2008. Most of the data used in this study were collected from KisValue which is the online DB operated by NICE Credit Rating Information Agency, and TS-2000 which is online DB operated by Listed Companies Association. For complementary checking on overseas subsidiaries and CEO information, other online resources were used such as KISLine of NICE Credit Rating Information Agency, business reports of Electronic Financial Disclosure System of Financial Supervisory Service, Joins person search, NAVER person search and press release materials. In order to collect patent information, WIPS which is an online patent information site was referred.

3.3.2. Variables

The number of patents applied by each company in the year was used as an index for measuring innovation performance, which is a

dependent variable in this study. Although there are some controversies as to whether the number of patents is the most appropriate index for measuring technical innovation performance (Hall, Jaffe, & Trajtenberg, 2001; Kotabe, 1990), this study used the number of patents as an proxy of innovation performance in that it is the most commonly recognized and accepted index in measuring technical innovation performance (Basberg, 1987; Hall et al., 2001; Henderson & Cockburn, 1994; Pavitt, 1985).

In this study, on the other hand, only the number of granted patents, not applied patents, was counted in calculating the number of patents for several reasons. Firstly, among all of the applied patents, some of patents are only granted in the end. Secondly, with respect to the purpose of this study, it is more relevant how much innovation performance was achieved, rather than how much ideas globalization generated. This is the method used by most studies that have identified patents as innovation performance (Shan & Song, 1997), with the exception of some studies which used the number of patents applied as innovation proxy mostly due to the limitation of data (Salomon & Shaver, 2005).

On the other hand, in order to identify the granted patents

precisely, additional 2 years of period was searched in order to check whether the applied patent had been finally granted or not. This is due to the fact that it takes several months or months until grant decision after patent application. According to data published on the Korean Intellectual Property Office online homepage (http://www.kipo.go.kr), the average screening period is about 16.8 months in Korea, which means that, in average, one year and five months is required until final decision of patent application. For example, in order to check whether a paten applied in January 2011 had been actually granted or not, it is required to check the approval result by June 2012 on average. Because, in this research, patent data applied between 2011 and 2015 was used, the patent list granted by December 31, 2017 was analyzed in order to verify whether the patent applied in 2015 was granted. This two-year period is expected to be appropriate in light of the domestic patent average processing period.

As a criterion for measuring exports among the independent variables of this study, the natural log of the export amount was used (J. W. Lu & Beamish, 2001), Some studies used export ratio as the proxy, which is calculated as the ratio of export revenue to total

revenue. However, this study used natural log of the export amount as measure of export level, which is adopted by most previous studies, in order to take consistency with previous studies on the relationship between existing globalization and innovation performance (Salomon & Shaver, 2005).

The FDI level, another index for globalization measurement, was calculated as the number of subsidiaries that entered overseas markets (J. Lu et al., 2004; J. W. Lu & Beamish, 2001, 2006). Some previous studies identified ratio of overseas sales to total sales as FDI level, which is mostly due to the difficulty of collecting data (Kafouros et al., 2008), By virtue of data availability of oversea subsidiaries, this research utilized number of subsidiaries as measurement of FDI level. On the other hand, some previous studies have estimated the number of countries where subsidiaries have entered as the measure of FDI level, and this study also used the number of overseas countries where subsidiaries have entered to verify consistency (J. Lu et al., 2004).

Traditional studies, on the other hand, argue that innovation performance affects the level of globalization, which has a reverse causality with this study. In other words, companies with high

innovation performances pursue internationalization in order to generate additional profit based on their competitiveness (Caves, 1996; Hymer, 1976). Some scholars have argued that globalization and innovation performance are in a two-way relationship that affect each other (Hitt et al., 1994). In this study, one-year time lag was allocated in order to allow the time required for export and FDI to be reflected in innovation performance while statistically controlling the likelihood of reverse causality and bidirectional relations. Salomon (2005) conducted a sensitivity analysis using time lag for 1, 2, and 3 years in analyzing the relationship between export and innovation performance, and all the periods were found to be significant as a result. Therefore, considering indifferent time lag of 1 ~ 3 year, this study shows only the result of one-year time lag (Salomon & Shaver, 2005).

Regarding the definition of CEO, the previous studies proposed various definitions (Finkelstein, Hambrick, & Cannella, 2009), because a representative director is defined as CEO in most studies, this study also accept the definition (J. H. Park, Sung, & Lee, 2014).

In the case of the CEO international experience, which was used as a control and moderating variable, previous studies defined it in

various ways, exemplified by whether the CEO was born overseas or lived abroad, whether the CEO studied abroad or worked overseas, or how many foreign languages the CEO can speak and so on (Miesenbock, 1988). In this study, dummy variables were created as follows: if the CEO has studied or worked abroad, it is 1 and if the CEO has not studied nor worked abroad, it is 0 (Herrmann & Datta, 2002). Some previous studies included birth in a foreign country as international experience, but due to the nature of Korean companies, the number of people born abroad was considered to be insignificant and excluded from the dummy generation criteria. Therefore, the definition of international experience in this study is the cases of having completed a bachelor's degree, master's degree or doctorate degree in a foreign country before 2011, or having worked in a foreign corporation, branch office, research institute or university. Separate weight to academic and work experiences was not given. Instead, result table of study abroad and work abroad was provided respectively at the robustness check section.

If only one CEO has international experience among co-CEOs, it was regarded to have international experience. Of the total 247 firms, CEOs of 63 companies have international experience. Of the total

venture firms, companies of which CEOs have international experience were found to be approximately 25.51%

On the other hand, studies analyzing the enterprise innovation performance include the company size as a control variable. This is because the company size is known to affect innovation performance. In measuring the company size, the natural log is taken on the number of employee (Salomon & Shaver, 2005) or the natural log on sales (Hitt et al., 1997), but this study adopted a method of taking the natural log on the asset scale. This is because, if sales are used as a basis, there is a possibility of multi-collinearity with the advertising ratio which is also calculated as ratio to sales.

R&D investment is also known to affect innovation performance (Cohen & Levin, 1989). Therefore, research and development investment variable was created by taking natural log on R&D investment amount. One-year time lag was given to take into account the time that R&D investment is reflected on innovation performance (Hitt et al., 1997; Salomon & Shaver, 2005).

Also, previous studies included advertising expenses as a control variable in that the advertising proportion targeting retail can also affect product innovation such as development of new products in

measuring innovation performance, so this study also included the control variable (Acs & Audretsch, 1988). The advertising ratio was calculated by the ratio of advertising expenses to total sales (Salomon & Shaver, 2005).

According to previous studies, the financial situation of an enterprise is known to affect innovation performance as well. Therefore, corporate financial performance and profitability indicators such as return on assets (ROA), cash flow, debt ratio, and Tobin's Q were added as control variables (Hitt et al., 1997).

Lastly, an industry classification code was added to control the impact of the industrial characteristics on innovation performance (Hitt et al., 1997). The industry classification code used major category code of the Korea Standard Industry Classification Code. The definition of variables is summarized in [Table 3.1].

Insert Table 3.1 about here

3.3.3. An Empirical Model

In this study, panel data from 2011 to 2015 were used and the panel regression analysis was performed firstly. The panel regression analysis is divided into a fixed effect model and a random effect model. The random effect model assumes that the specificity of an individual company is not constantly correlated with the coefficients of regression analysis formula, while the fixed effect model assumes that there is a constant correlation. In general, Hausman test results are used as a basis for selecting a fixed effect model and a random effect model. As a result of Hausman, in most model performed in this study, the null hypothesis that there is no correlation between the characteristics of an individual company and the coefficients of the regression analysis formula most models was adopted, indicating that the random effect model is more appropriate than the fixed effect model. These results suggest that the samples of this study were extracted randomly and represent the entire population properly.

In addition to random effect model of the panel regression analysis, Hausman & Taylor model was also performed as well. This mainly due to the fact that one of main variables of this study is international experience of CEOs of venture firms, which is dummy

variable that contains same value from 2011 to 2015. This time-invariant variable is not suitable for the assumption of panel regression analysis, especially in the fixed effect model where the time-invariant variable is automatically dropped in the regression analysis process, and the accuracy of the model is inevitably lowered (Baltagi, 2008; Hsiao, 2003). Thus, in the case of the panel analysis involving time-invariant variables, recent studies use the Hausman & Taylor model (Hausman & Taylor, 1981; Kwon & Hahn, 2013). The Hausman & Taylor model uses the instrumental variables to obtain a consistent estimator and re-estimates it as a random-effect model as a result. In the model, the variables are classified into time-invariant exogenous variables, time-invariant endogenous variables, time-variant exogenous variables, and time-variant endogenous variables in order to set instrumental variables and an efficiency estimator, and consistent estimator can be obtained by using them. Since the time-invariant variable is an important independent and control variable in this study, the statistical results were analyzed by the Hausman & Taylor model as well as the panel random effect model, and the results of both model are also presented in the final result table.

On the other hand, moderator variables including CEO's international experience, export and FDI were used to verify the hypothesis that the international experience of CEOs of venture firms modify the relationship between globalization and innovation performance. Moderator variables for both the linear and quadratic terms of export and FDI variables are added, however, the moderating effects on linear term of export and FDI is meaningful effect in this study. This is because of the fact that the purpose of this study is not to find out the moderating effect on the quadratic term, which means the movement of the peak of the graph, but to find out how much the 'U-shaped' curve adjusts in positive (+) or negative (-) directions(J. W. Lu & Beamish, 2001).

[Equation 3.1] described below explains the statistical formula used in the panel regression analysis model. In the equation, t, i, d, f, and e refer to year, firm, year fixed effect, firm fixed effect, and error term, respectively.

<Equation 3.1> Number of patents granted (number)it = Export amount natural log value it-1 + Number of FDI subsidiaries it-1 + R&D cost Natural log value it-1 + Advertising expenses compared to

sales it + Enterprise asset scale it + ROA compared to assets it + Cash flow it + Debt ratio it + Tobin's Qit+ CEO's international experience i + Year dummy + Industry classification dummy+ f + d + e

3.4. Empirical Analysis

3.4.1. Descriptive Statistics and Correlations

Prior to regression test, the results of the basic statistical analysis, the correlation analysis, and industry analysis are shown in [Table 3.2] ~ [Table 3.4].

[Table 3.2] and [Table 3.3] show the basic statistic and the correlation analysis, respectively. In the correlation analysis, most of the correlations were not high, but the correlation between the company size and the number of FDI subsidiaries was found to be relatively high (0.3162). Therefore, VIF (Variance Inflation Factor) test was performed and result between FDI and company size was found to be 1.37. This outcome is below 4, which is considered to be general guideline for multi – collinearity, therefore the variable was included in the final statistical model.

[Table 3.4] illustrates industry analysis. Majority of sample firms reside in manufacturing industry; 197 firms, 78% of total. Second is the IT and communication industry, covering 33 firms and 13%. The other industries cover rest 22 firms and 19%. Considering the fact that most technology-based companies are manufacturing companies, this summary of industry is consistent with the expectation of this study.

Insert Table 3.2 about here

Insert Table 3.3 about here

Insert Table 3.4 about here

3.4.2. Results of Empirical Analysis

The results of the statistical analysis for the hypotheses of this study are shown in [Table 3.5] - [Table 3.6] below. [Table 3.5] and [Table 3.6] showed the result of the panel regression analysis random effect model and the result of Hausman & Taylor model, respectively. The analysis result of the random effect model of panel regression analysis showed that the relationship between export and innovation performance is 'U-shaped' as claimed in Hypothesis 1-1.

The relationship between FDI and innovation performance was found to be 'U-shaped' as claimed in Hypothesis 1-2 of this study because the null hypothesis was rejected at the 1% significance level both in random effect model of panel regression analysis and the Hausman & Taylor model.

The claim of Hypothesis 2-1 that the CEO's international experience

moderates the 'U-shaped' relationship between export and innovation performance to the positive (+) direction was found not to be statistically significant both in the random effect model of panel regression analysis and the Hausman & Taylor model.

The claim of Hypothesis 2-2 that the CEO's international experience adjusts the 'U-shaped' relationship between FDI and innovation performance to the positive (+) direction was rejected at the 5% and 1% significance levels in the random effect model of panel regression analysis and the Hausman & Taylor model, respectively, indicating that it is statistically significant.

While the international experience of CEO of venture firms was found to be statistically helpful for FDI, the result was not statistically supported in export case, which required further research. Considering real-life management circumstances, it is probably true that the role of CEO in export is expected to be more limited than that in FDI. In the case of export, most of the duties are delegated to export brokers, while it is presumed that CEO is directly involved in the process of FDI deriving innovation performance, which is exemplified by searching for local information, selecting trading partners, and contracting with local company. Therefore, CEO's international

experience is expected to be helpful through various decision - making and business progress in FDI process, and the effect of such help is presumed to be clearer than the export method. However, there is a need for more systematic and theoretical research of this assumption. There is more detailed statistical validation in the robustness check section of this study.

For verification on divers measure, additional test were performed with FDI measure as 'the number of countries that entered overseas', and the result was found to have no significant difference from existing results, therefore no separate result table was included. And the industry classification code and year dummy were included in the statistical model but not shown in the statistical analysis result table for want of space.

Insert Table 3.5 about here

Insert Table 3.6 about here

3.4.3. Robustness Check

For the robustness check of the statistical result, visualization of the analysis was performed. First, graphical visualization was performed regarding hypothesis 1 that export and FDI has curve-linear relationship with the number of patents. The result of graphical visualization was shown in the [Figure 1] ~ [Figure 8] below.

[Figure 1] shows scatter graph regarding the relationship between export and the number of patents, and [Figure 2] shows line graph of it. The shaded area of [Figure 2] defines confidence interval area at the 5% significance level. Both graphics support the statistical result that export and the number of patents has 'U-shaped" relationship.

Insert Figure 3.1 about here

Insert Figure 3.2 about here

In the meantime, [Figure 3.1] and [Figure 3.2] shows that there several observations that has 0 value in export. These are the observations which has no export activity at the give year even though they have export activity in other year among 5-year panel data period or have FDI activity. In order to eliminate the possibility of data skewness, additional graphical illustrations were performed without 0 values in export, which were demonstrated in [Figure 3.3] and [Figure 3.4]. Consequently, the 'U-shaped' relationship between export and number of patents was observed as well, even without 0 values in export.

Insert Figure 3.3 about here

Insert Figure 3.4 about here

The same visualization process as export was performed with FDI. [Figure 3.5] shows scatter graph between FDI and number of patents, and [Figure 3.6] shows line graph between them. Both implies 'U-shaped' curve-linear relationship.

Insert Figure 3.5 about here

Insert Figure 3.6 about here

Also, there are observations that have 0 values in FDI due to same reasons as export scale. In order to eliminate the effect of 0, the relationship without 0 values in FDI is show the figures below. The 'U-shape'relationship was proved without 0 values in FDI.

Insert Figure 3.7 about here

Insert Figure 3.8 about here

In order to validate the moderating effect of CEO international experience in addition to direct effect of export and FDI on patents visually, graphical illustration was performed and the result is shown in the figures below. <Figure 3.9> illustrates the marginal effect of CEO international experience on the relationship between export and

patent, and <Figure 3.10> illustrates the marginal effect of CEO international experience between FDI and patent. Long-dashed line is the relationship between export scale and number patents without moderating effect of CEO International Experience, and Normal line is the relationship between export scale and number of patents with moderating effect of CEO International experience

<Figure 3.9> demonstrates that CEO international experience moderates the bottom of the curve downward, and make the slop more sharp after certain point of export level. This result implies 2 potential explanation. Firstly, after certain level of export, CEO international experience will accelerate the company to achieve patent generation throughout export. This is aligned with the proposition of this study that CEO international experience moderates the relationship between export and patent. Secondly, however, until the certain point of export, CEO international experience might accelerate the decrease of patent which result in lowered bottom of the graph. This conflicting effect of CEO international experience could have caused the result which was insignificant statistically. It is hard to explain why CEO international experience make the company struggle with liability of foreignness at early stage of export. Again, additional

research and hypothesis is required to explain this paradox of CEO international experience on export.

Unlike export, the result of graphical illustration of moderating effect on FDI is consistent with hypothesis and statistical result, which is shown in <Figure 3.10>. CEO international experience move the curve-linear relationship between FDI and patent upward, which implies that CEO international experience is helpful for a company to overcome difficulties coming from liability of foreignness.

Insert Figure 3.9 about here

Insert Figure 3.10 about here

Additionally, as mentioned earlier, same statistical analysis as previous Hausman & Taylor model was performed on sub-sample groups depending on whether CEOs of venture firms were educated overseas or CEOs have worked overseas. Among 63 CEOs who have international experience, 44 CEOs were educated overseas, which is 67.69%, and 35 CEOs worked overseas, which counts 53.85%. Statistical result of those analysis was presented in the <Table 3.7> and <Table 3.7> below.

As a result, the sub-sample of education overseas showed the same statistical result as the result of total sample. However, for the case of sub-same of work overseas, the statistical result showed that the moderating effect of CEO work overseas experience on the relationship between FDI and innovation performance is not statistically significant. This result is not consistent with that of total sample of this study as well as that of previous studies. Previous studies have argued that, regardless of whether CEO worked or studies overseas, CEO's international experience has similar effect on performance of the firms(Carpenter & Fredrickson, 2001).

Among several possible reasons regarding this discrepancy, data issue seems to be the most significant cause of this result. Firstly, the

number of sample data might be not enough for sub-sample statistical analysis. Only 35 CEOs of total 247 samples, which is 14.17%, have overseas working experience. Secondly, defining work experience overseas as dummy variable might not be an adequate measure. Several previous research on CEO oversea work experience measured the variable as the number of years CEO worked overseas(Carpenter & Fredrickson, 2001). Because the fact that, in Korea, detailed data of CEO's previous work experience is not available publically, it is not available to prove whether these latent data issue is the main cause of the result or not. Future research on this issue is recommended either by increasing size of sample date or by acquiring more detailed CEO data.

Compared with CEO overseas work experience, CEO overseas education experience data is relatively reliable not only because the sample size is bigger than that of CEO work experience, but also previous studies also measure CEO education experience as dummy variable or categorical variable(Carpenter & Fredrickson, 2001;J. H. Park et al., 2014).

Insert Table 3.7 about here

Insert Table 3.8 about here

3.5. Conclusion and Implications

The results of this study have the following implications: First, this study empirically identified how venture firms influence innovation performance throughout the globalization process. This study is of significance in that there are relatively fewer studies identifying the relationship between globalization and innovation performance with a focus on venture firms because the majority of previous studies have been focused on large corporations, which are multinational

conglomerates.

Second, this study proposed the 'U-shaped' relationship between venture firms and innovation performance based on theoretical support and verified it through the empirical results. The 'U-shaped' relationship of venture firms is different from the positive (+) or 'inverted-U' relationship presented in previous large enterprise-centered studies, which cannot be explained only with traditional theories such as organizational learning or transaction cost theory used in previous large enterprise-centered studies. In addition to these theories, this study proposed a resource-based view as a theory suited for venture firms, which is alternatively supported by absorptive capability and international entrepreneurship perspectives.

Third, it was verified that the relationship between FDI and innovation performance of venture firms is moderated by CEO's international experience. Despite the fact that CEOs of venture firms are categorized as more important core assets than CEOs of large corporations, there are only a few studies on how CEOs of venture firms affect the innovation of the enterprise. This study proved that the international experience of CEOs of venture firms helps to achieve innovation performance in the form of moderating effects during FDI

of a company.

Finally, the results of this study can give help to a practical business environment. Recently, many venture firms have taken steps into internationalization in order to acquire overseas knowledge. However, a longer-term approach is needed because such attempts may suffer from difficulties in early stage of globalization due to liability of foreignness, insufficient resources and absorptive capability. On the one hand, the international experience of CEOs of venture firms, if the CEO has, is an incentive that should be considered more aggressively because it can reduce related risks and costs

Despite of these contributions, this study has the following limitations. First, although this study is based on venture firms, only listed companies were selected as samples. Because listed venture firms are small portion of total venture firms, the statistical result does not reflect characteristics of all the venture firms, especially early stage of venture firms such as start-ups or born-global ventures. Further research with samples of such smaller or early-stage firms will be meaningful research that complements this present findings.

One of other limitations of this study is that the data period of the panel data used in this study is relatively short. Although this study

used panel data of seven years period from 2011 to 2017, 1-year time lag (t-1) was used on several variables such as export, FDI and R&D expense, which resulted in the usage of data during 6 years only. Moreover, the dependable variable of this study, number of patents granted, had to take application process period into consideration, which was set 2 years in this study. Consequently, the panel period used in the final statistical model was shortened to 4 years between 2012 and 2015. Considering the fact that globalization requires adequate time to realize the benefit into output such as innovation performance, another research with longer period of time data will increase the generality and reliability of the findings that this study uncovered.

In this study, the absorptive capability was claimed as a complementary theory, however, no empirical analysis specifically targeting absorptive capability was conducted. This is because the index for measuring the absorptive capability is still the subject of discussion. Some scholars argue that the concentration of R&D is a representative index of the absorptive capability, whereas some other scholars propose that the size, technological capability, organizational management capability of a company, or industrial structure should

be taken into consideration together as measures for absorptive capability (S.-Y. Park & Kim, 2014; Sohn & Huh, 2017). Therefore, many previous studies have performed survey in order to identify the company's absorptive capability. It is recommended for any further research that aims to focus on absorptive capability as main background to perform surveys.

In addition, it is also recommended for future research to subdivide current independent and dependent variables into detailed ones. In particular, since FDI can be divided into diverse types of FDIs such as marketing & sales office, manufacturing factory, or R&D center, it is a meaningful for future task to see how FDI by each type affects innovation differently. For example, what is the effect of local sales office on product-related innovation, how overseas manufacturing plants affects the innovation of the local production process, or whether a foreign R&D corporation has contributed to the acquisition of a patent in a completely new field that is different from the existing technology patents are interesting and important themes.

On the other hand, it will be meaningful to study the influence of partnerships with other companies, agencies, universities, research centers, or even local competitors on innovation performance. Previous

studies showed that, for venture firms, collaboration with universities or with other companies has a positive effect on technological innovation performance because it serves as a complement to insufficient knowledge and information (S.-Y. Park & Kim, 2014; Song, Lee, Yoo, & Lee, 2009). This is also because initial risks and costs are expected to be reduced if appropriate cooperation is accompanied when venture firms perform globalization for technical innovation. These potential future studies will help venture firms determine which collaboration strategies they have to choose in order to achieve technical innovation more quickly through globalization.

Focusing on diverse aspect of CEO will be also interesting subjects. Throughout previous researches on multinational companies, there are several characteristics of CES that is known for affecting innovation performances. It will be interesting to see how those proposed variables operated in venture firms. For example, the effect of CEO payment, incentive, personality, strategic behavior, social network, and attention of CEOs of venture firms on the relationship between globalization and innovation performance might be different from those of multinational conglomerates. Also functional heterogeneity, international experience, size, pay, commitment of TMT are the

potential variables that might impact the relationship between globalization and innovation performance. These potential moderators are outlined in the [Table 3.9].

Insert Table 3.9 about here

<Table 3.1> Measurement of variables

Type	Variable	Description
Dependent variable	Number of patents	Number of patents granted within the next two years among the patents applied for the year
Independent and controlled variable	Export scale	ln Exports
	Foreign direct investment(FDI)	Number of FDI subsidiaries
	CEO's international experience	If he/she has been educated or has worked overseas= 1, Other cases= 0
	CEO Study Abroad	If he/she has been educated overseas= 1, Other cases= 0
	CEO Work Abroad	If he/she has worked overseas= 1, Other cases= 0
	Return on assets(ROA)	Current net income/ Assets
	Research and development (R&D)	ln Research and development cost
	Advertising Ratio	Advertising cost / Sales
	Tobin's Q	[Number of common stocks issued * closing price] + Number of preferred stocks issued * par value) + debt book value] / book value of assets
	Company Size	ln assets
	Debt ratio	Debt / equity
	Cash flow	Operating cash flow / sales
	Industrial classification	Korea Standard Industry Classification code used as dummy code
	Year dummy	Year dummy

<Table 3.2> Descriptive statistics

Variables	Observations	Mean	Standard Deviation	Minimum	Maximum
Number of Patents	992	3.65	5.29	0	37.00
Export Scale	992	17.78	9.48	0	25.96
FDI	992	0.82	1.30	0	11.00
CEO International Experience	1240	0.25	0.44	0	1
CEO Study Abroad	1240	0.18	0.38	0	1
CEO Work Abroad	1240	0.14	0.35	0	1
Company Scale	990	24.76	0.62	21.91	26.36
R&D	992	15.55	9.16	0	23.48
Advertising Ratio	992	0.01	0.02	0	0.16
ROA	990	0.01	0.14	-1.03	0.53
Cash Flow	987	0.04	0.28	-2.31	2.26
Debt Ratio	987	0.77	1.27	-4.87	25.51
Tobin's Q	987	1.95	2.56	0.07	37.07
Tobin's Q	1455	1.8736	2.6535	0.0373	41.3455

<Table 3.3> Correlation Matrix

Variables	Export Scale	FDI	CEO International Experience	CEO Study Abroad	CEO Work Abroad	Company Scale	R&D	Advertising Ratio	ROA	Cash Flow	Debt Ratio	Tobin'sQ
Export Scale	1											
FDI	0.1243***	1										
CEO International Experience	0.0557*	0.0476	1									
CEO Study Abroad	0.0723**	-0.0158	0.7958***	1								
CEO Work Abroad	0.018	0.0798**	0.6946***	0.2968***	1							
Company Scale	0.1533***	0.3019***	-0.1083***	-0.1158***	-0.0779**	1						
R&D	0.1199***	0.0214	0.0564*	0.0334	0.0675**	0.0746**	1					
Advertising Ratio	0.031	0.1071***	0.17***	0.16***	0.0362	-0.0872***	0.0579*	1				
ROA	-0.0868***	-0.0676**	0.0542*	0.0064	0.0472	0.1656***	-0.0879***	-0.0962***	1			
Cash Flow	0.0168	0.0009	0.0101	-0.0036	-0.0347	0.1599***	-0.05	-0.1279***	0.5207***	1		
Debt Ratio	-0.0293	0.0146	-0.0107	0.0352	-0.0068	-0.0364	-0.0923***	-0.0389	-0.1055***	-0.0222	1	
Tobin's Q	0.0465	-0.0322	0.1795***	0.1643***	0.1224***	0.0001	0.1241***	0.1959***	-0.0003	-0.042	-0.0648**	1

* p<0.1, ** p<0.05, *** p<0.01

<Table 3.4> Industry Classification of Korean Headquarters

Industry Code(KSIC)	Industry	Number of Companies	%
2	Mineral	2	1%
3	Manufacturing	197	78%
7	Wholesale and retail	7	3%
10	IT and communication	33	13%
13	Science and technology service	13	5%

<Table 3.5> Pannel Regression Random Effect Model

Variables	Control	Export		FDI		CEO International Experience			
	Model1	Model2	Model3	Model4	Model5	Model6	Model7	Model8	Model9
Export Scale		0.0197	-0.1970			-0.220*	-0.240*	-0.235*	-0.280**
		(0.0170)	(0.1240)			(0.1240)	(0.1390)	(0.1240)	(0.1400)
Export Scale Squared			0.00942*			0.0107**	0.0114*	0.0114**	0.0133**
			(0.0053)			(0.0053)	(0.0060)	(0.0053)	(0.0060)
FDI				0.1930	-0.985***	-1.125***	-1.128***	-1.478***	-1.503***
				(0.1660)	(0.2830)	(0.2880)	(0.2880)	(0.3180)	(0.3210)
FDI Squared					0.217***	0.229***	0.229***	0.255***	0.257***
					(0.0422)	(0.0424)	(0.0425)	(0.0459)	(0.0460)
Export x CEO International Experience							0.0821		0.2060
							(0.2860)		(0.2890)
Export Square xCEO International Experience							-0.0029		-0.0092
							(0.0123)		(0.0125)
FDI x CEO International Experience								1.502**	1.607**
								(0.6590)	(0.6870)
FDI Square x CEO International Experience								-0.1400	-0.1510
								(0.1140)	(0.1170)
CEO International	0.5410	0.5070	0.4660	0.4790	0.6130	0.5510	0.2790	-0.4460	-0.4100
	(0.6460)	(0.6480)	(0.6460)	(0.6490)	(0.6500)	(0.6480)	(0.9590)	(0.7430)	(0.9870)

Variables	Control	Export		FDI		CEO International Experience			
	Model1	Model2	Model3	Model4	Model5	Model6	Model7	Model8	Model9
Experience									
Company Scale	1.414***	1.336***	1.268***	1.307***	1.521***	1.390***	1.382***	1.353***	1.357***
	(0.3730)	(0.3790)	(0.3800)	(0.3840)	(0.3830)	(0.3870)	(0.3880)	(0.3840)	(0.3850)
R&D	0.0248	0.0234	0.0253	0.0257	0.0314	0.0316	0.0318	0.0322	0.0320
	(0.0213)	(0.0214)	(0.0214)	(0.0214)	(0.0212)	(0.0212)	(0.0212)	(0.0211)	(0.0211)
ROA	-3.9970	-4.2690	-3.0410	-4.2050	-2.9680	-1.8000	-1.9930	-4.0640	-4.2420
	(10.5700)	(10.5800)	(10.5800)	(10.5700)	(10.4700)	(10.4700)	(10.4900)	(10.4700)	(10.4900)
Advertising Ratio	-0.1470	-0.0107	0.1020	-0.0647	-0.5850	-0.3310	-0.3370	-0.3780	-0.3320
	(1.2360)	(1.2410)	(1.2420)	(1.2380)	(1.2240)	(1.2270)	(1.2300)	(1.2270)	(1.2300)
Cash Flow	0.3090	0.3000	0.2350	0.2880	0.3840	0.3130	0.3250	0.2610	0.2720
	(0.5620)	(0.5620)	(0.5630)	(0.5620)	(0.5540)	(0.5540)	(0.5550)	(0.5540)	(0.5550)
Debt Ratio	-0.0270	-0.0241	-0.0366	-0.0236	-0.0323	-0.0442	-0.0417	-0.0233	-0.0285
	(0.1050)	(0.1050)	(0.1050)	(0.1050)	(0.1030)	(0.1030)	(0.1040)	(0.1030)	(0.1040)
Tobin's Q	0.0120	0.0112	0.0153	0.0166	-0.0040	-0.0033	-0.0033	0.0031	0.0034
	(0.0600)	(0.0600)	(0.0600)	(0.0601)	(0.0594)	(0.0593)	(0.0593)	(0.0593)	(0.0593)
Constant	-34.04***	-32.11***	-30.43***	-31.59***	-35.91***	-32.55***	-32.34***	-31.32***	-31.39***
	(10.0800)	(10.2200)	(10.2400)	(10.3000)	(10.2700)	(10.3600)	(10.3900)	(10.2700)	(10.3000)
Observation	987	987	987	987	987	987	987	987	987
Wald chi2	41.16***	42.41***	45.76***	42.42***	69.35***	76.18***	76.21***	83.84***	84.21***
Hausman Test	10.49	11.66	13.39	11.42	12.50	10.98	18.90	24.29*	36.25***

* p<0.1, ** p<0.05, *** p<0.01, '( )'is Standard Error

<Table 3.6> Hausman & Taylor Model

Variables	Control	Export		FDI		CEO International Experience			
	Model1	Model2	Model3	Model4	Model5	Model6	Model7	Model8	Model9
Export Scale		0.0241	-0.243**			-0.278**	-0.294**	-0.280**	-0.327**
		(0.0174)	(0.1230)			(0.1230)	(0.1390)	(0.1230)	(0.1400)
Export Scale Squared			0.0114**			0.0134**	0.0139**	0.0135**	0.0155***
			(0.0053)			(0.0053)	(0.0060)	(0.0053)	(0.0060)
FDI				0.0741	-1.322***	-1.442***	-1.437***	-1.788***	-1.818***
				(0.2200)	(0.3300)	(0.3340)	(0.3340)	(0.3710)	(0.3730)
FDI Squared					0.258***	0.265***	0.264***	0.292***	0.294***
					(0.0471)	(0.0471)	(0.0471)	(0.0507)	(0.0508)
Export x CEO International Experience							0.0753		0.2100
							(0.2860)		(0.2890)
Export Square xCEO International Experience							-0.0023		-0.0093
							(0.0124)		(0.0126)
FDI x CEO International Experience								1.866***	1.962***
								(0.6960)	(0.7250)
FDI Square x CEO International Experience								-0.197*	-0.207*
								(0.1170)	(0.1200)
CEO	0.0177	-0.0348	0.0280	0.0029	0.1700	0.1560	-0.2460	-1.0110	-1.0350

Variables	Control	Export		FDI		CEO International Experience			
	Model1	Model2	Model3	Model4	Model5	Model6	Model7	Model8	Model9
International Experience	(0.6770)	(0.6820)	(0.6760)	(0.6790)	(0.6790)	(0.6800)	(0.9890)	(0.7870)	(1.0250)
Company Scale	-0.0871	-0.2560	0.0079	-0.1170	0.3220	0.2840	0.2830	0.1780	0.1850
	(0.5190)	(0.5350)	(0.5160)	(0.5260)	(0.5160)	(0.5170)	(0.5190)	(0.5180)	(0.5190)
R&D	0.0609**	0.0596**	0.0569**	0.0609**	0.0629**	0.0606**	0.0599**	0.0609**	0.0611**
	(0.0279)	(0.0279)	(0.0277)	(0.0279)	(0.0272)	(0.0271)	(0.0271)	(0.0271)	(0.0271)
ROA	-1.4520	-1.5620	0.1200	-1.5690	0.0647	2.3230	2.4210	0.4000	0.3330
	(10.7500)	(10.7700)	(10.7600)	(10.7600)	(10.6200)	(10.6400)	(10.6600)	(10.6500)	(10.6800)
Advertising Ratio	0.6340	0.8000	0.9500	0.6670	-0.0105	0.3950	0.4820	0.4580	0.5250
	(1.3060)	(1.3110)	(1.3100)	(1.3100)	(1.2900)	(1.2890)	(1.2880)	(1.2860)	(1.2870)
Cash Flow	0.4810	0.4860	0.4610	0.4730	0.5930	0.5730	0.6160	0.5300	0.5400
	(0.5940)	(0.5930)	(0.5920)	(0.5950)	(0.5830)	(0.5800)	(0.5800)	(0.5800)	(0.5790)
Debt Ratio	0.0321	0.0351	0.0365	0.0349	0.0236	0.0219	0.0219	0.0542	0.0487
	(0.1100)	(0.1100)	(0.1100)	(0.1100)	(0.1080)	(0.1080)	(0.1080)	(0.1080)	(0.1080)
Tobin's Q	-0.0050	-0.0051	-0.0156	-0.0045	-0.0330	-0.0410	-0.0442	-0.0370	-0.0390
	(0.0652)	(0.0652)	(0.0648)	(0.0653)	(0.0640)	(0.0636)	(0.0635)	(0.0636)	(0.0635)
Constant	4.8430	8.6130	2.2220	5.5160	-4.8230	-4.2730	-4.1350	-1.4290	-1.5920
	(12.7200)	(13.0400)	(12.5800)	(12.8800)	(12.6000)	(12.5900)	(12.6600)	(12.6100)	(12.6500)
Observation	987	987	987	987	987	987	987	987	987
Wald chi2	6.21	8.36	13.34	6.32	37.88***	45.72***	45.90***	50.67***	51.38***

* p<0.1, ** p<0.05, *** p<0.01, '( )'is Standard Error

<Table 3.7> Hausman & Taylor Model (Education Overseas)

Variables	Control	Export		FDI		CEO International Experience			
	Model1	Model2	Model3	Model4	Model5	Model6	Model7	Model8	Model9
Export Scale		0.0243	-0.242**			-0.278**	-0.297**	-0.275**	-0.301**
		(0.0174)	(0.1230)			(0.1230)	(0.1320)	(0.1230)	(0.1320)
Export Scale Squared			0.0114**			0.0134**	0.0140**	0.0132**	0.0142**
			(0.0053)			(0.0053)	(0.0057)	(0.0053)	(0.0057)
FDI				0.0718	-1.323***	-1.443***	-1.446***	-1.557***	-1.578***
				(0.2200)	(0.3300)	(0.3340)	(0.3330)	(0.3550)	(0.3550)
FDI Squared					0.259***	0.265***	0.265***	0.290***	0.292***
					(0.0471)	(0.0471)	(0.0469)	(0.0492)	(0.0491)
Export x CEO Education Overseas							0.1450		0.1980
							(0.3520)		(0.3560)
Export Square x CEO Education Overseas							-0.0049		-0.0080
							(0.0154)		(0.0157)
FDI x CEO Education Overseas								1.909**	1.911**
								(0.8250)	(0.8560)
FDI Square x CEO Education Overseas								-0.384***	-0.382***
								(0.1450)	(0.1470)
CEO	-0.2530	-0.3250	-0.2390	-0.2540	-0.1130	-0.1470	-0.7990	-0.8890	-1.2060

Variables	Control	Export		FDI		CEO International Experience			
	Model1	Model2	Model3	Model4	Model5	Model6	Model7	Model8	Model9
Education Overseas	(0.7680)	(0.7750)	(0.7670)	(0.7690)	(0.7690)	(0.7700)	(1.2040)	(0.8820)	(1.2260)
Company Scale	-0.0934	-0.2620	-0.0006	-0.1220	0.3140	0.2750	0.2830	0.2410	0.2490
	(0.5190)	(0.5340)	(0.5160)	(0.5260)	(0.5160)	(0.5170)	(0.5170)	(0.5170)	(0.5170)
R&D	0.0608**	0.0595**	0.0569**	0.0608**	0.0629**	0.0605**	0.0598**	0.0588**	0.0585**
	(0.0279)	(0.0279)	(0.0277)	(0.0279)	(0.0272)	(0.0271)	(0.0270)	(0.0271)	(0.0270)
ROA	-1.0560	-1.1680	0.5060	-1.1940	0.5200	2.7910	3.7380	4.4540	5.1320
	(10.7300)	(10.7500)	(10.7400)	(10.7500)	(10.6000)	(10.6200)	(10.6600)	(10.7000)	(10.7400)
Advertising Ratio	0.6310	0.7960	0.9480	0.6620	-0.0126	0.3920	0.4990	0.4970	0.5700
	(1.3060)	(1.3110)	(1.3090)	(1.3090)	(1.2900)	(1.2880)	(1.2820)	(1.2870)	(1.2810)
Cash Flow	0.4830	0.4880	0.4630	0.4750	0.5950	0.5760	0.6230	0.5280	0.5690
	(0.5940)	(0.5930)	(0.5920)	(0.5950)	(0.5830)	(0.5810)	(0.5780)	(0.5790)	(0.5770)
Debt Ratio	0.0325	0.0355	0.0370	0.0352	0.0241	0.0224	0.0272	0.0518	0.0515
	(0.1100)	(0.1100)	(0.1100)	(0.1100)	(0.1080)	(0.1080)	(0.1080)	(0.1080)	(0.1080)
Tobin's Q	-0.0047	-0.0048	-0.0152	-0.0043	-0.0325	-0.0404	-0.0432	-0.0335	-0.0352
	(0.0652)	(0.0652)	(0.0648)	(0.0653)	(0.0641)	(0.0636)	(0.0633)	(0.0635)	(0.0633)
Constant	5.0440	8.8180	2.4730	5.6810	-4.5630	-3.9920	-4.0910	-3.1080	-3.2460
	(12.7100)	(13.0300)	(12.5800)	(12.8600)	(12.5900)	(12.5800)	(12.5900)	(12.5700)	(12.5800)
Observation	987	987	987	987	987	987	987	987	987
Wald chi2	6.21	8.42	13.37	6.32	37.91***	45.79***	46.50***	50.30***	51.36***

* p<0.1, ** p<0.05, *** p<0.01, '( )'is Standard Error

<Table 3.8> Hausman & Taylor Model (Work Overseas)

Variables	Control	Export		FDI		CEO International Experience			
	Model1	Model2	Model3	Model4	Model5	Model6	Model7	Model8	Model9
Export Scale		0.0240	-0.242*			-0.278**	-0.276**	-0.292**	-0.314**
		(0.0174)	(0.1230)			(0.1230)	(0.1330)	(0.1230)	(0.1340)
Export Scale Squared			0.0114**			0.0134**	0.0136**	0.0141***	0.0154***
			(0.0053)			(0.0053)	(0.0058)	(0.0053)	(0.0058)
FDI				0.0729	-1.326***	-1.445***	-1.444***	-1.683***	-1.714***
				(0.2200)	(0.3300)	(0.3350)	(0.3350)	(0.3540)	(0.3560)
FDI Squared					0.259***	0.265***	0.264***	0.269***	0.271***
					(0.0471)	(0.0471)	(0.0472)	(0.0489)	(0.0490)
Export x CEO Work Overseas							-0.0371		0.1100
							(0.3330)		(0.3350)
Export Square x CEO Work Overseas							-0.0002		-0.0072
							(0.0142)		(0.0144)
FDI x CEO Work Overseas								1.0250	1.3890
								(0.8440)	(0.8930)
FDI Square x CEO Work Overseas								0.0935	0.0345
								(0.1550)	(0.1620)
CEO Work Overseas	-0.1930	-0.2250	-0.1520	-0.2200	-0.0017	0.0421	0.8080	-1.3300	-0.5380
	(0.8340)	(0.8390)	(0.8320)	(0.8380)	(0.8390)	(0.8390)	(1.1800)	(0.9820)	(1.2380)

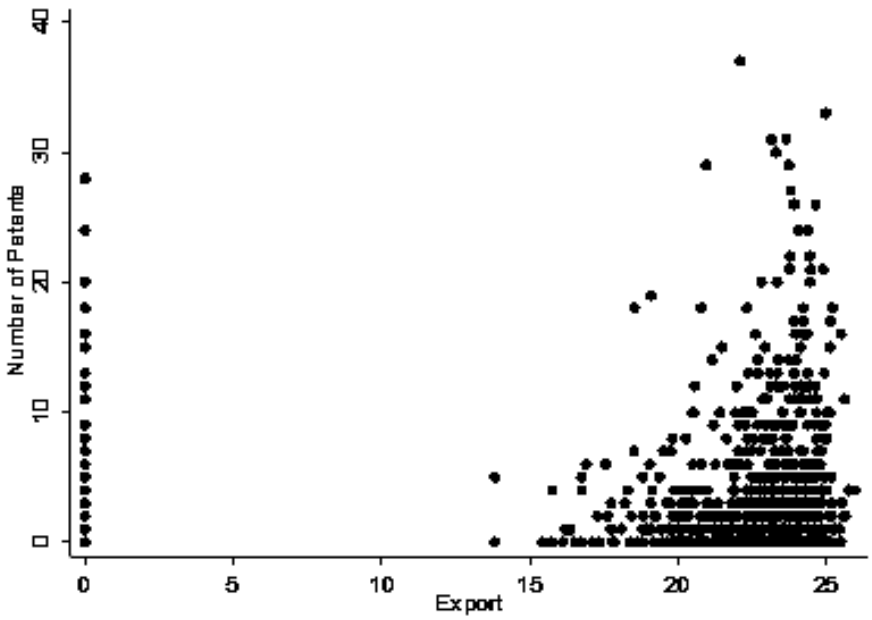
Variables	Control	Export		FDI		CEO International Experience			
	Model1	Model2	Model3	Model4	Model5	Model6	Model7	Model8	Model9
Company Scale	-0.0742	-0.2390	0.0185	-0.1030	0.3330	0.2930	0.3040	0.1760	0.1970
	(0.5160)	(0.5310)	(0.5130)	(0.5230)	(0.5120)	(0.5140)	(0.5150)	(0.5140)	(0.5150)
R&D	0.0605**	0.0592**	0.0567**	0.0605**	0.0625**	0.0604**	0.0598**	0.0592**	0.0594**
	(0.0278)	(0.0278)	(0.0277)	(0.0279)	(0.0272)	(0.0271)	(0.0271)	(0.0270)	(0.0270)
ROA	-1.3850	-1.5840	0.1860	-1.5200	0.3540	2.5640	3.3730	3.0000	3.4700
	(10.6700)	(10.6800)	(10.6800)	(10.6800)	(10.5400)	(10.5600)	(10.6000)	(10.5200)	(10.5400)
Advertising Ratio	0.6240	0.7860	0.9410	0.6560	-0.0201	0.3870	0.4740	0.5350	0.6470
	(1.3050)	(1.3100)	(1.3090)	(1.3090)	(1.2890)	(1.2870)	(1.2920)	(1.2870)	(1.2920)
Cash Flow	0.4800	0.4850	0.4600	0.4720	0.5940	0.5740	0.5530	0.5630	0.4990
	(0.5940)	(0.5930)	(0.5920)	(0.5950)	(0.5830)	(0.5800)	(0.5790)	(0.5800)	(0.5780)
Debt Ratio	0.0320	0.0351	0.0364	0.0348	0.0233	0.0216	0.0089	0.0368	0.0251
	(0.1100)	(0.1100)	(0.1100)	(0.1100)	(0.1080)	(0.1080)	(0.1090)	(0.1080)	(0.1090)
Tobin's Q	-0.0064	-0.0066	-0.0167	-0.0060	-0.0343	-0.0420	-0.0449	-0.0373	-0.0365
	(0.0651)	(0.0651)	(0.0646)	(0.0651)	(0.0639)	(0.0635)	(0.0634)	(0.0635)	(0.0634)
Constant	4.5630	8.2360	1.9930	5.2070	-5.0620	-4.4390	-4.8260	-1.4280	-2.0670
	(12.6400)	(12.9500)	(12.5000)	(12.7900)	(12.5100)	(12.5100)	(12.5400)	(12.5200)	(12.5300)
Observation	987	987	987	987	987	987	987	987	987
Wald chi2	6.14	8.29	13.30	6.25	37.94***	45.76***	46.70***	55.40***	56.67***

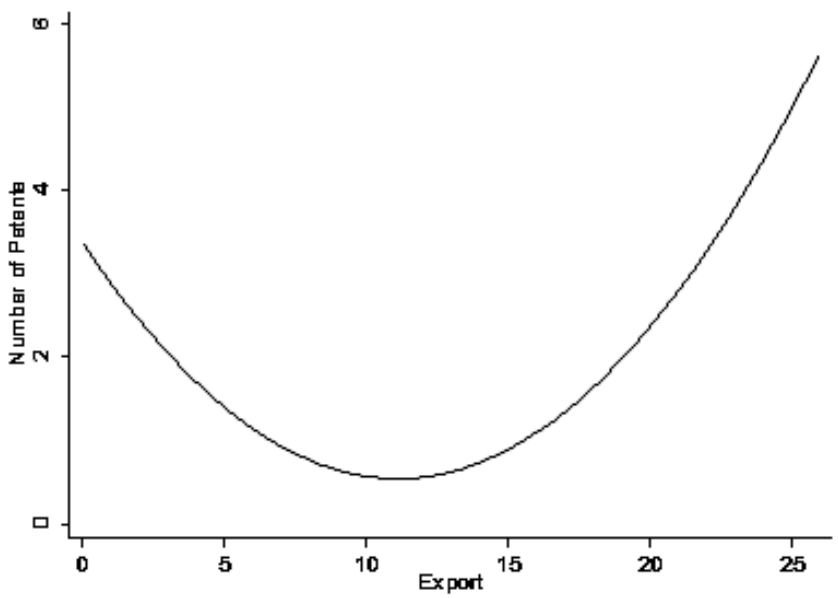
* p<0.1, ** p<0.05, *** p<0.01, '( )'is Standard Error

<Table 3.9> Potential CEO & TMT Moderators

Subjects	Variables	Scholar
CEO	International Work Experience	(Carpenter & Fredrickson, 2001)
	Age, stock ownership, functional experience, amount and type of education	(Barker III & Mueller, 2002)
	Educational Heterogeneity	(Carpenter & Fredrickson, 2001)
	CEO personality and strategy making behavior	(D. Miller, Kets de Vries, & Toulouse, 1982)
	Pay (Incentive)	(Balkin, Markman, & Gomez-Mejia, 2000; Carpenter et al., 2001)
	CEO Transformational Leadership	(Jung, Wu, & Chow, 2008)
	Attention emerging technology, existing technology, industry affected by new tech	(Eggers & Kaplan, 2009)
	Integrating social network and goal setting	(Pfeffer & Salancik, 2003)
	Others; from which industry, whether CEO experience, whether internal or external	Numerous scholars
TMT	Functional Heterogeneity	(Carpenter & Fredrickson, 2001)
	International Work Experience	(Bloodgood et al., 1996; Carpenter et al., 2001)
	Pay (Incentive)	(Sanders & Carpenter, 1998)
	TMT Size	(Sanders & Carpenter, 1998)
	TMT Commitment	(Mezias & Glynn, 1993)
	Tenure Heterogeneity	(Carpenter & Fredrickson, 2001)

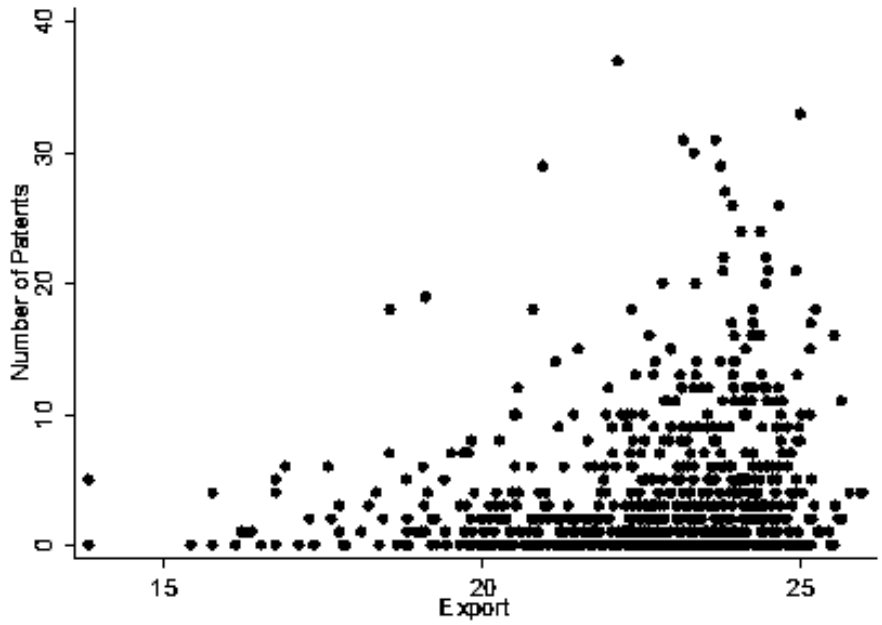
<Figure 3.1> Export and patent (Scatter)



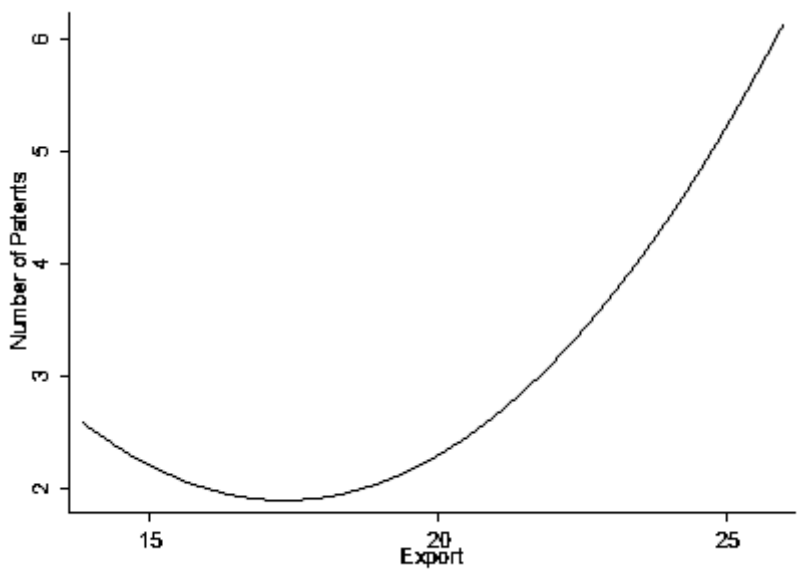


<Figure 3.2> Export and patent (Line)

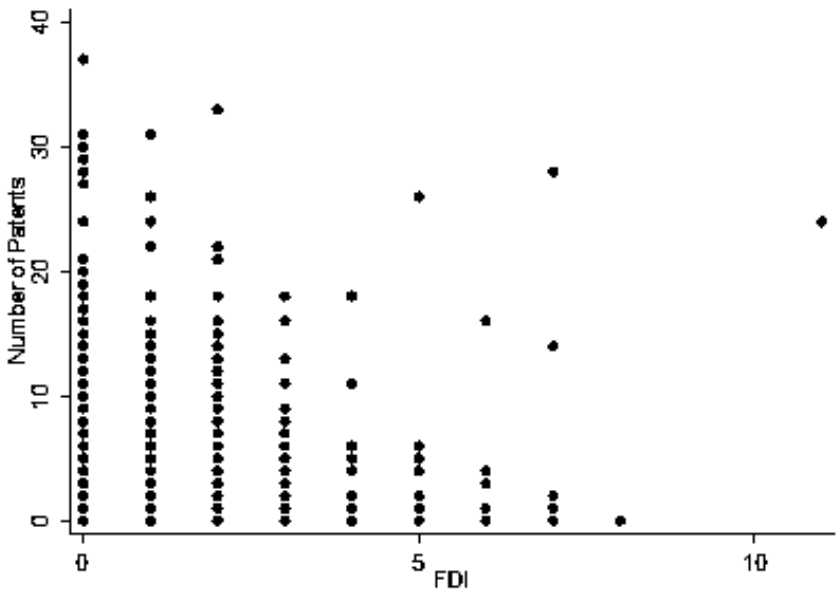
<Figure 3.3> Export and patent (Scatter) - Left Censored

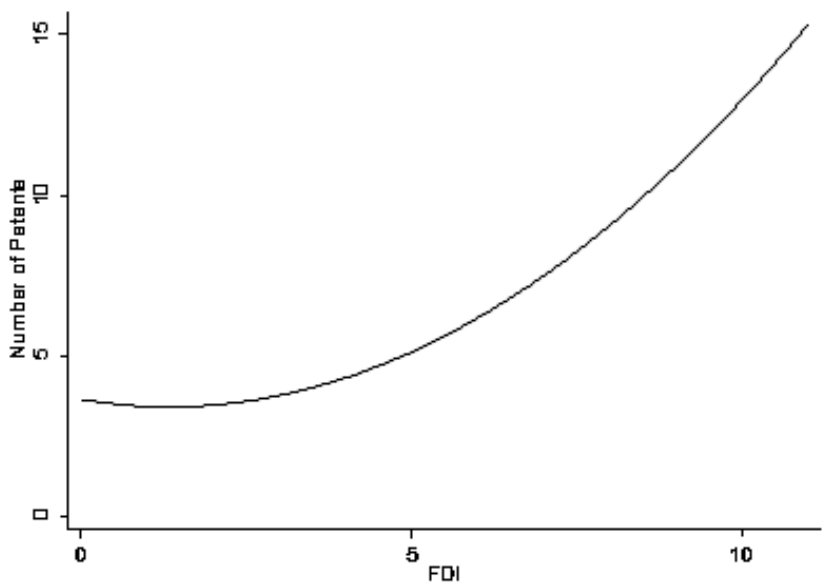


<Figure 3.4> Export and patent (Line)- Left Censored



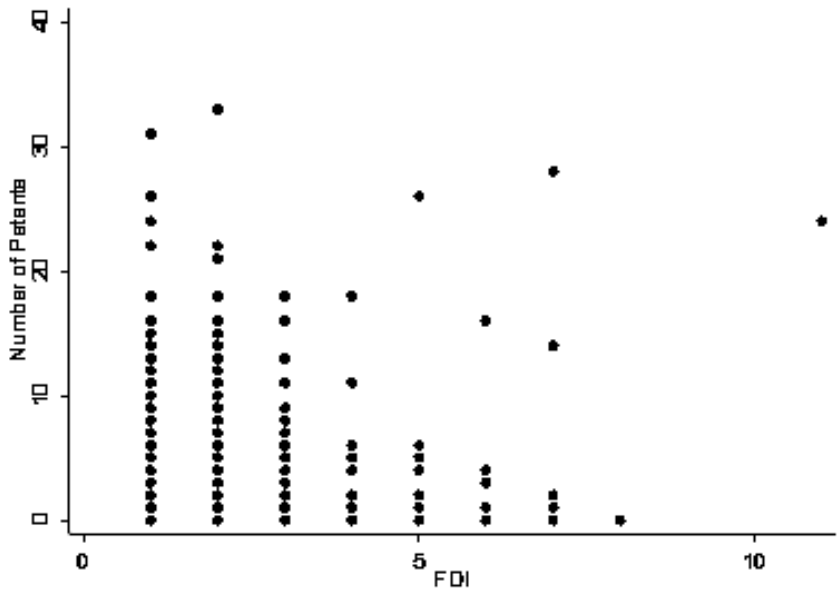
<Figure 3.5> FDI and patent (Scatter)



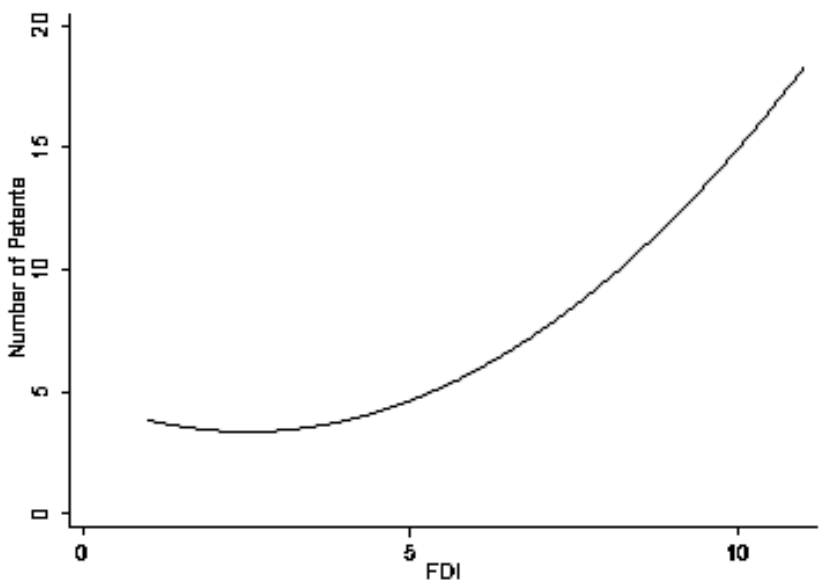


<Figure 3.6> FDI and patent (Line)

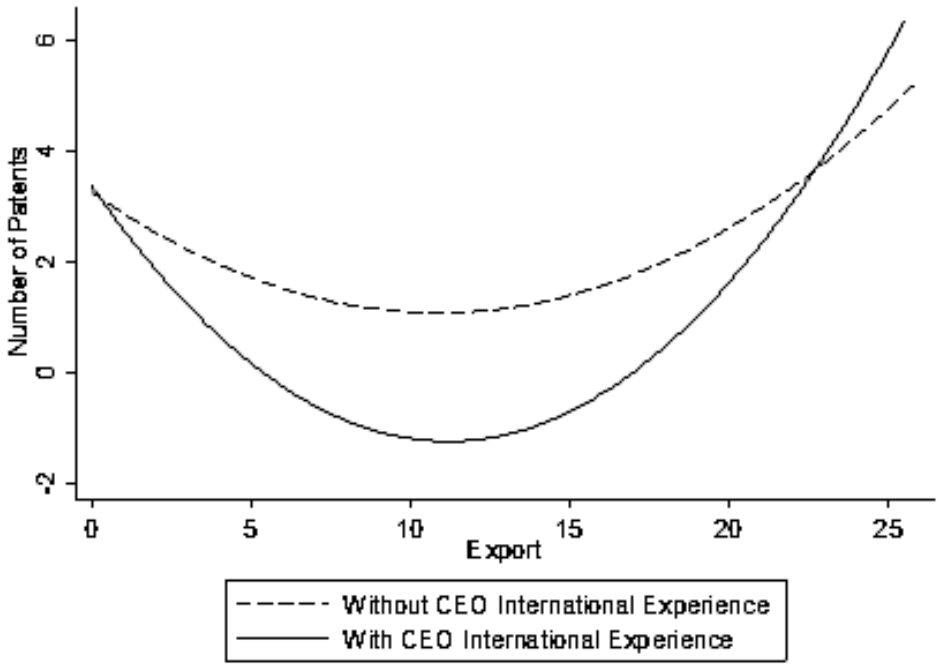
<Figure 3.7> FDI and patent (Scatter) - Left Censored



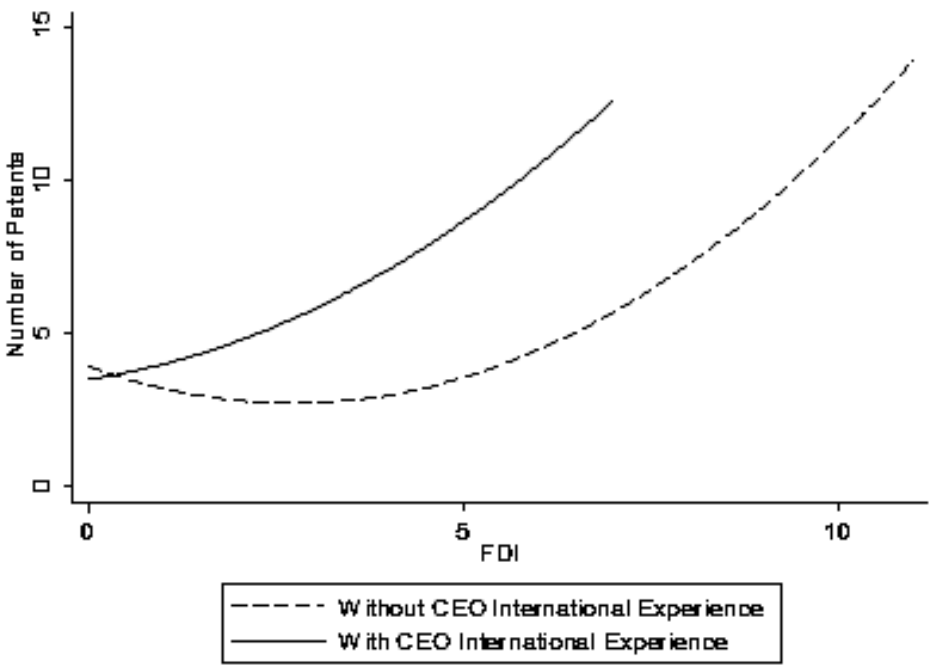
<Figure 3.8> FDI and patent (Line)- Left Censored



<Figure 3.9> Export and Patent – Moderating Effect of CEO International Experience



<Figure 3.10> FDI and Patent – Moderating Effect of CEO International Experience



Chapter 4. Overall Conclusion

4.1. Summary

This dissertation performed empirical analysis regarding how globalization of venture firms affect performance of the firms. In order to analyze diver aspects of firm performance, this research is divided into two essays: financial performance and innovation performance.

In the first essay, for empirical research, tatistical test for 299 venture companies listed on KOSPI and KOSDAQ, was conducted and it was confirmed that there is a 'U-shaped'relationship between internationalization and financial performance. This means that if the level of internationalization is low, financial loss will occur due to liability of foreignness, but if the level of internationalization is higher than a certain level, the knowledge and experience accumulate and turn into profit, and this existing discussion can be also applied to venture companies (J. W. Lu & Beamish, 2001;Ruigrok & Wagner, 2003;Seokmin, 2011). On the other hand, the 'U-shaped' relationship between internationalization and financial performance is the same regardless of whether internationalization is achieved through export method or through foreign direct investment.

It was also found that the 'U-shaped' relationship between internationalization and financial performance of venture companies is regulated in the positive (+) direction by CEO's international experience. This supports the argument that the CEO's international experience in venture companies complements the knowledge and experience required for internationalization.

In the second essay, the result of the empirical analysis of 247 listed venture firms showed that there is a 'U-shape' relationship in both export and FDI entry mode. This relationship is distinctive from the positive (+) linear relationship or the 'inverted U-shape' relationship which was supported in the existing studies on large companies, supporting the proposition of this study that venture firms face difficulties in deriving innovation performance at the early stage of globalization due to insufficient resources.

Regarding the second hypothesis, international experience of CEO was found to moderate the 'U-shape' relationship between FDI and innovation performance to the positive direction, presenting that international experience of CEO is helpful for venture firms to achieve innovation performance only in FDI entry mode (Zahra & George, 2002).

4.2. Contributions and Limitations

As internationalization becomes a very important task for venture companies, many studies have been conducted, but most studies focus on the decision making factors of internationalization and the way of entry, so there are relatively a few studies on how it affects financial performance. Therefore, this study divided the internationalization of venture companies into export and foreign direct investment and statistically analyzed the effect of each internationalization on financial and innovation performance.

The results of this study provide very meaningful theoretical and empirical implications in the following points: First, it was found that CEO's international experience in venture companies is an important factor in realizing profit and patents through internationalization. Second, this study conducted the empirical verification of the relationship between internationalization and financial/innovation performance of venture companies, which have not been addressed much by previous studies. Generally, most existing studies used survey results in that the size of a company is small and it is

difficult to collect financial data due to the nature of venture companies, most of which are start-up companies. In addition, most studies on SMEs or ventures used the proportion of exports to measure the degree of internationalization, and this study was able to verify multiple aspects rather than single export indicators by analyzing foreign direct investment at the same time (J. H. Park et al., 2014).

On the other hand, the results of this study can help decision-making in the actual management environment of venture companies. In other words, the internationalization of venture companies has a negative(-) impact financial and innovation outcome in the short term, and it is changed to a positive (+) effect of internationalization after the level of internationalization is raised to a certain level, so venture companies need to approach overseas expansion decision making from a longer-term perspective. Also, if the CEO of the venture company has international experience, the CEO's international experience should be actively used in creating profits and patents through overseas expansion. If a venture company is planning to enter overseas, they should actively consider appointment of a CEO with international experience.

Despite these contributions, this study has limitations in the selection of samples, which is that even though the number of venture companies is over 30,000, the objects of the study were limited to the listed companies due to difficulties in collecting information. Therefore, if studies can be carried out by gathering information from earlier venture companies as well as listed companies in the future, it will help clarify the relationship between internationalization and performance more clearly. In particular, if the research is to concentrate on Born Global companies, it will be necessary to select only the companies that have entered the overseas market within a certain period of time after startup, for example, less than 6 years, to carry out the research(H.-Y. Lee & Park, 2013).

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국문 초록

벤처기업의 국제화와 성과
-CEO 해외경험의 조절효과-

김범조
서울대학교 대학원
경영학과 경영학 전공

본 논문에서는 벤처기업이 수출이나 해외직접투자 등의 방식을 통해 국제화를 진행한 경우 기업의 성과에 어떠한 영향을 미치는 지에 대해 실증연구를 수행하였다. 한편으론 그러한 벤처기업의 국제화와 성과간의 관계에 있어 CEO가 해외경험을 보유한 경우 어떠한 조절 효과가 있는 지를 파악하고자 하였다. 이를 위해 벤처기업의 국제화와 관련된 이론적 배경들을 검토하는 한편, 국제화에 따른 기업의 성과를 재무적 성과와 혁신성과로 구분하여 2개의 독립적인 소주제를 구성하였다.

첫 번째 소주제 연구에서는 벤처기업의 국제화와 재무적 성과 간의 관계를 분석하기 위해, 한국 코스피 및 코스닥에 상장된 299개 벤처기업들을 대상으로 2011년부터 2015년까지의 패널데이터를 활용하여 Hausman & Taylor 모형 분석을 수행하였다.

실증분석 결과, 벤처기업의 국제화와 재무적 성과 간에는 'U자'형 관계가 있는 것으로 확인되었다. 이러한 'U자'형 관계는 벤처기업의 경우 해외진출 초기에는 외국인비용으로 인해 국제화가 재무적 성과에 부(-)의 영향을 미치나, 일정 수준 이상으로 국제화가 진행되면 지식과 경험이 축적되어 재무적 성과에 미치는 영향이 정(+)으로 전환된다는 것을 시사한다.

한편으로는 벤처기업 CEO가 해외경험이 있는 경우 국제화와 재무적 성과간의 관계가 정(+)의 방향으로 조절되는 것으로 나타났다. 이러한 결과는 벤처기업에서는 CEO의 해외경험이 국제화에 필요한 지식과 경험, 그리고 네트워크 등을 보완해주고 있음을 의미한다.

두 번째 소주제 연구에서는 벤처기업의 국제화와 기술혁신성과와의 관계를 분석하기 위해 한국의 코스피 및 코스닥 주식시장에 상장된 299개의 벤처기업을 선정하여 2차 자료를 활용한 통계적 실증분석을 수행하였다.

수행결과 수출 및 해외직접투자 방식 모두에서 국제화와 기술혁신성과 간에 'U자'형 관계가 있음이 확인되었다. 이는 벤처기업의 국제화 초기 단계에서는 외국인 비용을 극복할 수 있는 충분한 유휴자원이나 새로운 지식을 습득할 수 있는 흡수역량을 보유하지 못하여 국제화가 기술혁신성과에 부(-)의 영향을 미치나, 일정 수준 이상의 국제화 단계에서는 지식과 경험, 그리고 흡수역량 등이 보완되어 정(+)의 관계로 전환된다는

본 연구의 주장과 일치한다.

한편 이러한 벤처기업 국제화와 기술혁신성과 간의 관계를 CEO의 해외경험이 정(+)의 방향으로 조절한다는 본 연구의 주장은 수출방식 보다는 해외직접투자 방식에서 통계적으로 유의미한 것으로 파악되었다. 이는 벤처기업이 해외직접투자를 통해 기술혁신성과를 달성함에 있어 CEO가 보유한 해외경험이 도움이 됨을 시사한다.

주요어 : 벤처, 국제경영, 국제화, 재무적 성과, 기술혁신 성과, 특허, 수출, 해외직접투자, CEO, 해외경험

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