

# Internationalization and Performance of SMEs in Masan Free Trade Zone (Korea): The Direct and Moderating Effects of Firm Size\*

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## Abstract

**Purpose** – This study analyzes the effect of internationalization represented as exporting on firm performance on the subject of SMEs operating in Masan Free Trade Zone which has shown poor performance recently despite its status as the oldest and largest free trade zone in Korea. We also analyze the effect of firm size on firm performance, and the moderating role of firm size in relation to internationalization and firm performance.

**Design/methodology** – This study uses multiple regression models for unbalanced panel data as the empirical tools for the estimation of the effect that internationalization has on firm performance (ROA or ROS). Our sample consists of 91 manufacturing SMEs among all 110 companies located in Masan Free Trade Zone as of 2017.

**Findings** – The degree of internationalization has a negative impact on firm performance. However, firm size turns out to have a positive effect and play a positive moderating role in the relation to internationalization and firm performance. This seems to be because most tenant companies operating in Masan Free Trade Zone are small firms whose costs of internationalization may exceed the benefits. Empirical results also show that longer CEO tenure has a greater negative effect on firm performance.

**Originality/value** – The originality/value of this paper can be found in 3 aspects. First, we conducted an empirical analysis on the relationship between the internationalization and firm performance of SMEs in a specific region, namely, Masan Free Trade Zone. Second, while most previous studies focused on listed medium companies, most of the sample of this study are small and medium non-listed enterprises. Third, it is witnessed that firm size has a positive moderating effect on the relation between internationalization and firm performance.

**Keywords:** Internationalization, Masan Free Trade Zone, Moderating Role of Firm Size, SME

**JEL Classifications:** F10, F23, M16

## 1. Introduction

A free-trade zone is a kind of special economic zone. According to “FDI Magazine”, published by the Financial Times in the UK in 2010, more than 3,500 free trade zones have

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been established and are operated in more than 130 countries around the world. One specific type of a free trade zone is an export processing zone (EPZ), which is intended to attract export-oriented foreign direct investment by offering barrier-free environments and special incentives to firms that operate within (Papadopoulos and Malhotra, 2007). The original form of EPZ is referred to as a geographically restricted, and often fenced-in, enclave. While most of less developed and newly industrialized countries such as China, Singapore, Malaysia, Korea, Jordan, and Mauritius, have successfully utilized EPZs as an instrument for economic development (Zeng, 2015), many African countries except Mauritius have been significantly less successful (Watson, 2001).

The Korean government has designated and established seven free trade zones including Masan Free Trade Zone. Masan Free Trade Zone (MFTZ), an export processing zone, located on the south coast of Korea, has the longest history and the highest records of sales and exports. It was selected by FDI Magazine in 2010 as the world's 25th future free trade zone, and was evaluated as the most successful example of an EPZ in the world, together with Kaohsiung in Taiwan. The export performance of MFTZ continued to increase after its establishment in 1970 until it reached the highest exporting records of US\$ 5.07 billion in 2008. Since then, export performance has declined, and, especially, after Nokia TMC, a leading mobile phone manufacturer which once accounted for nearly half of MFTZ exports, slashed its production in 2012, MFTZ exports decreased abruptly, dropping to US\$ 1.17 billion in 2017.<sup>1</sup> Also, due to rising labor costs in Korea, many other labor-intensive companies have left for more efficient production bases in China and other Southeast Asian countries. As a result, not only has the export performance of MFTZ greatly decreased, but the profitability of the tenant companies has also worsened. Besides, as FTA signing signaling trade liberalization has spread throughout the world, tenant companies can no longer enjoy preferential benefits and advantages from belonging to the zone except for low rent.

In general, exporting can be regarded as the first step to the internationalization of firms. Specifically, small and medium sized enterprises with limited resources, knowledge, and experience of internationalization usually depend on export when they first try to expand into foreign markets. Through internationalization, firms gain opportunities to expand their operation scopes (Rugman, 1981), taking advantage of economies of scale and scope (Cave, 1996). However, SMEs cannot fully exploit economies of scale and scope because of the constraint of human and material resources, and this is even worse for small enterprises.

Most Korean companies in MFTZ are SMEs, though some foreign-invested enterprises there are only production bases for foreign parent companies, so exporting is the only internationalization means. Given the sluggish exports and worsening profitability of tenants in this zone, it is questionable whether the exporting of the firms truly affects firm performances positively. From this questioning, we try to explore the relationship between internationalization and firm performance focusing on SMEs in MFTZ, and along with it, the efficacy of MFTZ. It is meaningful to investigate the effects of internationalization through the exports of SMEs in the EPZ (currently declining).

As measures of internationalization, several different aspects are used such as the ratio of exports to total sales, ratio of overseas sales to total sales, and the number of overseas subsidiaries, and so on. And the effect of internationalization on firm performance may differ depending on which of the above mentioned measures is used.

A literature review shows that scholars seldom agree on the relationship between internationalization and firm performance for SMEs. For example, where the ratio of export to total sales is used as the measure of internationalization, a positive relationship (Cantele

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<sup>1</sup> Nokia TMC withdrew from Masan Free Trade Zone in 2014.

and Campedelli, 2016; Noni and Apa, 2015), a negative relationship (Lu and Beamish, 2001/2006), an M-shaped relationship (Almodovar and Rugman, 2014), a U-shaped relationship (Benito-Osorio et al., 2016), and even no relationship (Ko Jae-Kyung, 2015) have been found. However, few or perhaps even no studies on this topic concern the relationship between internationalization and firm performance of SMEs in free trade zones, especially an export processing zone.

The shape or sign of effect of internationalization on firm performance may also vary depending on firm size. However, except for the study of Benito-Osorio et al. (2016), we were not able to find any research considering this. In their research classifying sample firms into large firms, medium-sized firms and small firms, they found the existence of a horizontal-S curve for large firms, a U-shaped form for medium-sized firms, and a negative relationship for small firms. Our study, in line with this study, has incorporated the moderating effects of firm size into the internationalization-performance model.

While previous studies on the effect of the internationalization of Korean SMEs on firm performance targeted companies listed on KOSPI or KOSDAQ which can be seen as relatively well equipped with human and material resources, nearly none of our sample companies within MFTZ are listed on either KOSPI or KOSDAQ with only one exception listed on KOSDAQ. This means that most companies in MFTZ may not have sufficient resources needed for internationalization. More specifically, they cannot afford to hire export professionals, and do not have the expertise to smoothly carry out exporting jobs. In these circumstances, it is very likely that they incur considerable costs associated with internationalization due to a lack of experience in foreign markets and constraints in resources. Despite having such adverse conditions for exporting, they still do have to engage in at least a certain amount exporting activity, because, to be qualified to enter and stay in this zone, SMEs in MFTZ are required to export more than 30 percent of total sales.<sup>2</sup> This requirement may work adversely for some companies which want to enter or stay in the zone to enjoy the benefit of low rent.

In this context, it is seen as worthwhile to investigate the relationship between internationalization and firm performance for SMEs operating in MFTZ, especially consisting of a number of small companies whose exporting may adversely affect firm performance.

This study can contribute to the literature in 3 different respects. First, this study tries to empirically analyze the relationship between internationalization and firm performance of SMEs in a specific region, namely, MFTZ, which the Korean government set up to encourage and promote exports. Second, while most previous studies focus on listed medium companies, this study includes small and medium non-listed enterprises in the sample as well. Third, we take into account the moderating role of the firm size in relation to internationalization and firm performance. This we expect will also fill the gap with the literature since few studies consider the moderating role of firm size.

## 2. History and Current Status of Masan Free Trade Zone

Over the past decades, free trade zones have been established worldwide at a record rate to attract new businesses and foreign investments. The aim is to facilitate trade and economic growth by eliminating tariffs, quotas and other taxes, and minimizing bureaucratic requirements such as customs procedures and disclosure requirements. The scope and the nature of FTZs vary across countries and jurisdictions, depending on the regime and type of

<sup>2</sup> It is required for large enterprises to export 50% or more of the total sales, and for medium-sized enterprises, 40% or more (companies with larger business sizes than SMEs).

activities allowed to take place in each zone, and can be described under a variety of names such as Free Zones, Export Processing Zones, and Special Economic Zones. As a result of FTZ proliferation in the dynamic context of internationalization, FTZs have come to play a central role in businesses for some leading manufacturers and for others in many countries.

In Korea, Masan and six other regions have currently been designated as free trade zones. Among these, MFTZ was set up as the first export processing free trade zone in 1970 to overcome the difficult economic situation in Korea and attract foreign companies to combine capital and advanced technology with Korea's cheap idle labor to create employment and promote exports. MFTZ not only has the longest history, but also shows more active production and export activities than any other zones in Korea. MFTZ, with a total area of 953,576 square meters, is located on Korea's southern coast, and, as of 2017, 110 companies operate their businesses within its boundaries including a subsidiary of a multinational corporation, Sony Korea. With one exception, all companies in MFTZ are SMEs, which is contrast to the number of large companies operating in the nearby Changwon National Industrial Complex. Resident companies in MFTZ include 46 precision equipment companies, 25 electronics companies, 13 machine nonmetallic companies, 5 metal machine companies, and others. Among these, 64 companies can be classified as foreign-invested, and 46 as domestic. Of all the foreign-invested entities, 11 companies are wholly foreign-owned and 53 are joint-ventures. Except for two wholly foreign-owned companies, the other 9 are Japanese-owned. Many of the joint ventures have small-percentage shares of foreign investment, often at only 10-20 percent. In a true sense, companies with such a small percentage share of foreign ownership cannot be regarded as foreign-invested. Yet, MFTZ attracted such foreign investments that would supposedly and deliberately take advantage of the benefits by meeting the qualification that firms with a foreign investment stake of more than 10 percent are allowed to reside in the zone even if their exporting activities are far below the limit. This law, the so-called Free Trade Zone law in Korea, was revised in April 2018 to eliminate any preferential benefits for foreign owned companies and to exclude companies with poor exporting performances.

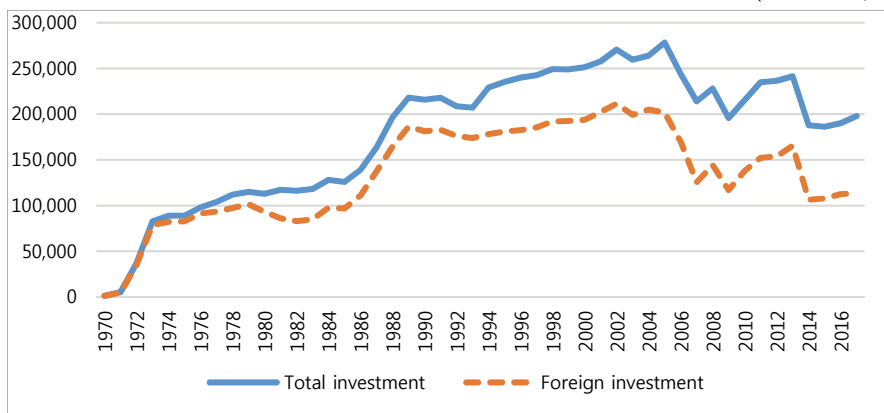
MFTZ has received investments from only a small number of countries including Japan. As of 2017, 76 percent of the foreign investment originated from Japan, 15% from the EU, and only nine percent came from other countries. Much of Japan's investment is attributable to the investment of many Japanese companies in the past to take advantage of Korea's cheap labor costs. In the early 1970s, the foreign investment balance accounted for more than 95% of the total investment balance in MFTZ, but the portion gradually decreased. As shown in Fig. 1 and 2, as the attractiveness of MFTZ as an investment destination due to the rise in labor costs in Korea has decreased, the amount of foreign investment has been on the decline since 2005, and the portion of foreign investment has been below 60% since 2014.

As shown in Fig. 3, the export performance of MFTZ reached its peak of \$5.07 billion in 2008, but since then, has gradually declined dropping to \$1.17 billion in 2017. Along with this decline in export volume, its contribution to Korea's total export has also contracted. Currently, MFTZ accounts for only 0.2 percent of Korea's total exports, and the overall export of all free trade zones in Korea accounts for only 0.4 percent of Korea's total export.

As mentioned earlier, the significant drop in exports of MFTZ since 2008 can be partially attributable to the withdrawal of Nokia TMC, which used to account for 50 percent of MFTZ's exports. Another factor is the relocation of production bases of foreign companies, mostly those labor-intensive in MFTZ, to China and other Southeastern Asian countries due to ever rising labor costs in Korea. Korea's labor costs per hour jumped from \$9.24 in 1997 to \$20.72 in 2012, far higher than \$2.10 in the Philippines and \$9.46 in Taiwan (U.S. Bureau of Labor Statistics, 2013). Third, because of the progress of trade liberalization such as FTAs

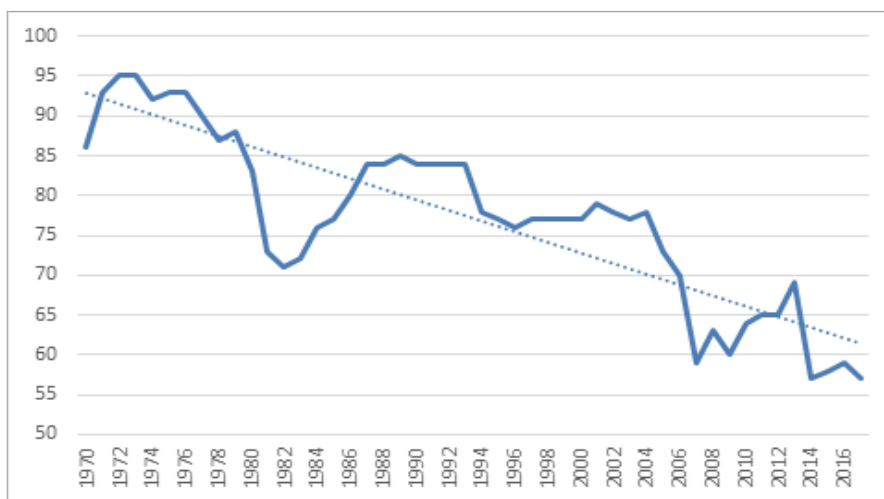
around the world, the benefits exclusively enjoyed in a free trade zone have relatively shrunk, resulting in a decrease in the attractiveness of free trade zones.

**Fig. 1.** Trend of Total Investment and Foreign Investment in Masan Free Trade Zone  
(Unit: US\$1,000)



Source: Masan Free Trade Zone Office (2018).

**Fig. 2.** Trend of the Ratio of Foreign Investment among Total Investment  
(Unit: %)

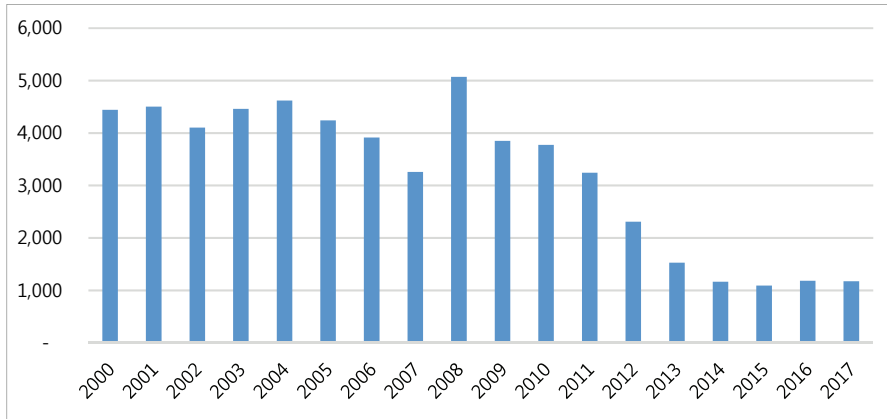


Source: Masan Free Trade Zone Office (2018).

The incentives offered to a tenant company in MFTZ include, one-sixth of market rent, exemption from the tariffs on foreign and domestic goods brought into MFTZ and value-added taxes on domestic goods and services supplied between tenant companies, and exemption from acquisition and property taxes for foreign- invested enterprises for a period of 10 years.

**Fig. 3.** Export Performance of Masan Free Trade Zone by Year

(Unit: US\$1 million)



Source: Masan Free Trade Zone Office (2018).

These benefits of MFTZ as a bonded area have become less attractive to tenant companies due to the expansion of FTAs and the reduction of worldwide tariff rates. Still, tenant companies may view it as beneficial to come and stay in the zone because the rent is much lower than market value, and because they can enjoy location advantages there since it is close to the port of Masan and the industrial city of Changwon where they can easily get access to convenient and efficient logistics and good-quality labor resources.

Given such incentives and location advantages, firms, mostly SMEs, in order to enter MFTZ, must meet the requirements as indicated in Table 1. For manufacturers or wholesalers, the export to total sales ratio must be 30% or more for one year or more during the 3 year period prior of the issuing date of the tenancy application. For knowledge service providers, whose export performance, in general, is much lower, the export ratio must be 5% or more. After entering MFTZ, manufacturing or wholesale enterprises shall maintain 30% or more of the export ratio, and knowledge service providers shall maintain 5% or more. Foreign-invested enterprises in the manufacturing industry must invest over 100 million won, and equity owned by foreign investors must be 10% or more. However, it was not compulsory that foreign invested enterprises should export a certain percentage of sales until the law was revised in 2018. The revision of the law for foreign-invested enterprises is supposedly aimed at improving export performances by requiring them to engage more actively in exporting activities to stay in the zone, as some foreign-invested enterprises, at that time, operated only in the domestic market without enthusiastically participating in exporting.

**Table 1.** Qualifications for Free Trade Zone Tenancy

Classification Standard	Requirements
Manufacturer, Wholesaler	During the 3 year period prior to the date of the tenancy application, the export ratio must be 30% or more for one year or more.
Knowledge Service Provider	During the 3 year period prior to the date of the tenancy application, the export ratio must be 5% or more for one year or more.

Source: Korean Act on Designation and Management of Free Trade Zone, Article10.

### 3. Theoretical Background and Hypothesis

The relationship between internationalization and firm performance is one of the most frequently addressed topics in international business research, and has produced various results. Internationalization of companies increases revenue, but it also entails costs (Geringer, Beamish and daCosta, 1989). Factors for an increase in revenue from internationalization can be found in economies of scale and scope, incomplete competitive markets, learning effects, new market opportunities (Cardinal, Miller and Palich, 2011; Hennart, 2011) and new resource acquisition (Munsteen, Datta and Francis, 2014). Factors for an increase in costs include liabilities of foreignness in dealing with foreign countries with different institutions and cultures (Marano et al., 2016). An abundant resource endowment acts as organizational slack and makes internationalization operations feasible (Chang and Rhee, 2011). Most of this prior research was conducted on large enterprises, but the effect of internationalization on firm performance may differ depending on firm size.

SMEs are, in general, more resource-constrained than large companies, and they often lack specialist executives and working-level employees to manage international operations, so they cannot sufficiently develop administrative procedures (Buckley, 1999). Suh, Bae and Kundu (2008) argued that “a lack of managerial time to deal with internationalization” can serve as a hurdle in the internationalization of Korean SMEs. In addition, SMEs may not be able to properly utilize the benefits of internationalization, such as economies of scale, economies of scope and incomplete competitive markets. Almor and Hashai (2004) argued that the performance of SMEs remains paradoxical due to difficulties in explaining how SMEs can compete successfully in foreign markets against large firms, despite limited resources.

Exporting and FDI are referred to as the most common strategies for internationalization. Exporting has been regarded as the first step to entering overseas markets, serving as a platform for future international expansions (Kogut and Chang, 1996, Lu and Beamish, 2001). Very often, but not always, companies try to make an FDI after they have fully developed international experience and capabilities through exporting. FDI is a more risky strategy than exporting because a firm cannot easily withdraw from a foreign market where market conditions are fluctuating. In other words, exporting provides a firm with more flexibility than FDI. A firm can easily change its geographic scope by adjusting export volumes in different foreign markets. These advantages from exporting matter more for SMEs which face resource constraints (Lu and Beamish, 2006).

As described earlier, the results of empirical studies on the relationship between internationalization and firm performance are not conclusive and give rise to many contradictions (Schwens et al., 2017). A basic explanation suggests that internationalization invokes both costs and benefits, and the prevalence of one over the other determines the direction of the results (Cantele and Campedelli, 2016). A summary of previous studies on the relationship between the internationalization and firm performance of SMEs is provided in Table 2.

Lu and Beamish (2001/2006) analyzed samples of SMEs in Japan. They found that internationalization had a negative impact on firm performance when export intensity (the ratio of export ratio to total sales) was used as the measure of internationalization, and they also found a U-shape relationship when the number of foreign subsidiaries or foreign countries was used as a measure of internationalization. They explained that the negative impact of overseas sales on firm performance was due to yen appreciation during the analysis period which caused the profitability of Japanese exports to deteriorate.

Majocchi and Zucchella (2003) analyzed Italian SMEs and argued that the export ratio to total sales did not have a statistically significant effect on firm performance, and that the



number of foreign countries to which each firm exported showed a U-shape effect on firm performance. In contrast to their findings, however, Cantele and Campedeli (2016) and Noni and Apa (2015) who also analyzed Italian SMEs found that the export ratio positively affected firm performance. Pangarkar (2008) examined Singaporean SMEs and found that internationalization positively affected firm performance. Chiao, Yang and Yu (2006) and Hsu, Chen and Cheng (2013) examined Taiwanese SMEs, and found that the relationship between internationalization and firm performance graphically depicted an inverted U-shape curvilinearity. Almodovar and Rugman (2014) examined Spanish international new ventures and showed an inverted U shape in the short-term (no more than three years) and a four phase M-curve relationship in the longer term of 15 years.

Ko Jae-Kyung (2015) examined Korean SMEs and found that the ratio of exports to total sales did not have a statistically significant effect on firm performance, and that the number of subsidiaries had a U-shape in firm performance. He also found that the number of foreign countries negatively affected firm performance. Cho Jae-Young and Lee Jang-Woo (2018) found that in Korean SMEs, the ratio of overseas sales to total sales and firm performance had an S-shaped relationship.

However, the research samples of Ko Jae-Kyung (2015) and Cho Jae-Young and Lee Jang-Woo (2018) consisted of all listed companies on Korea Stock Exchange, which means that the samples can be regarded as a pool of medium-sized companies with small firms not included. Thus, their research sample firms may have fewer or smaller resource constraints compared to our sample firms. If they had included small companies with harsher resource constraints for internationalization in the samples, their results might have shown a negative impact on firm performance.

Hosseini, Brege and Nord (2018) examined the internationalization-performance relationship in a sample of Swedish SMEs within the wood manufacturing industry. Their empirical results revealed a negative relationship between internationalization and performance. They explained that the reason for the negative impact of overseas sales on firm performance was that the wood manufacturing industry is locally based, builds its foundation on local customers' tastes, and it incurs significant costs for most companies to face the challenges of newness in the early stages of internationalization.

Tsai and Ren (2019) examined the moderating effect of internationalization on the relationship between strategic ambidexterity and firm performance in a sample of Taiwanese SMEs. The empirical results reveal that the degree of internationalization significantly and negatively moderates the relationship between strategic ambidexterity and firm performance. They explained that the reason for the negative moderating effect was that internationalization might lead the focal firm to face the complexity and uncertainty of market environment, which augment the potential costs and impediments to effective operations, offsetting the potential returns of internationalization.

Bagheri, Mitchelmore and Bamiatzi (2019) analyzed the relationship between internationalization orientation and international performance for SMEs in the U.K. The relationship between international orientation and international firm performance was found to be positive and significant.

Benito-Osorio et al. (2016) examined the relationship between internationalization and firm performance in a sample of Spanish firms. Their results found the existence of an S - curve when the whole sample was considered. However, they also showed a negative relationship for small firms, while showing a U-shaped form for medium-sized firms. Their findings suggest that the relationship between internationalization and firm performance is firm size-dependent.

Small firms are usually more resource-constrained and vulnerable to market competition



than medium-sized firms (Doukas and Lang, 2003). In fact, many SMEs (especially small ones) may suffer scale disadvantage, with an adverse impact on the likelihood of success of internationalization (Benito-Osorio et al., 2016; Yip, Biscarri and Monti, 2000). Moreover, particularly in the early stage of internationalization, SMEs have to confront diverse culture and market circumstances, yet they do not have enough skills and knowledge to tackle complex operations (Tsai and Ren, 2019). Other additional barriers for SME' internationalization (especially in the case of small companies) involve technical difficulties, documentation issues, and overseas market competition (OECD, 2009).

This study mainly targets smaller companies among SMEs that operate in MFTZ which are not listed on KOSPI or KOSDAQ, and therefore internationalization is expected to have negative impact on firm performance. Given this, we suggest:

*H1: Internationalization has a negative relationship with SME performance.*

Firm size is one of the indicators of a firm's organizational resource base or slack. It also indicates managerial and financial resources available to the firm, and to the extent that excess resources are available, a firm will look for opportunities for expansion, for example, an overseas market (Dhanarai and Beamish, 2003).

Larger enterprises can achieve economies of scale and economies of scope more easily by expanding into foreign markets, which can have a positive impact on firm performance (Gabbittas and Gretton, 2003; Wan and Hoskisson, 2003). In addition, larger companies can have a competitive advantage over those smaller ones because they can spend more on R&D, have more risk-taking abilities, and engage in price discriminatory behavior (Patibandla, 1995). Also, larger companies should be expected to have higher purchasing power, which means they can purchase input factors at a lower price. At the same time, they have more resources that can be used for building a distribution system (Moen, 2012). So, larger firms are expected to have higher firm performance (Barkema, Bell and Pennings, 1996; Yeoh, 2004; Zahra, Irland and Hitt, 2000).

On the contrary, SMEs may have limitations in the availability of resources (financial resources, management resources and information) that are necessary for firm' expansion abroad, as well as in the structure of ownership, organizational structure, and management systems (Shuman and Seeger, 1986). SMEs tend to fall behind larger companies in learning ability (Simonin, 1997), international diversity of operations (Erramilli and D' Souza, 1993), and survival chances in international markets (Sui and Baum, 2016). Consequently, mode of entry into overseas markets may also be different (Brush, 1992) from that of larger enterprises.

Firm size is a common indicator of the availability of slack resources (Mudambi and Zahra, 2007). Larger firms have more managerial resources to spare and are less affected by liabilities of smallness (Mudambi and Zahra, 2007). Firm size relates to resources under managerial control, including both physical and financial resources (Ito and Rose, 1999). Managerial resources are an important factor in exporting markets because foreign markets increase the complexity of conducting business (Preece, Miles and Baetz, 1998). Small firms are usually more resource-constrained and thus vulnerable to market competition (Doukas and Lang, 2003). Larger companies are thought to possess an above-average ability to seize profits, leverage a lower cost of capital, and to diversify firm-specific risks (Chiao, Yang and Yu, 2006). Because of this, small firms will have a greater tendency to remain in the initial stages of internationalization than medium – sized firms (Benito-Osorio et al., 2016).

Most studies analyzing the effect of internationalization on firm performance for SMEs use firm size as a control variable. They have produced mixed results in the sign of the firm size variable. Most (Almodovar and Rugman, 2014; Cantele and Campedelli, 2016; Chiao, Yang

and Yu, 2006; Cho Jae-Young and Lee Jang-Woo, 2018; Ko Jae-Kyung, 2015; Noni and Apa, 2015) have shown a positive effect of firm size, whereas Lu and Beamish (2001) found a negative effect, and even no relationship (Hsu, Chen and Cheng, 2013; Lu and Beamish, 2006; Majocchi and Zucchella, 2003; Pangarkar, 2008) has been found. Nakatani (2019) found that firm size had a positive impact on New Zealand firm' profit margins in a model that did not include internationalization variables.

Bank of Korea's Financial Statement Analysis, which analyzed corporate profitability using financial statements reported by Korean companies, also showed that large enterprises are much more profitable than SMEs. For example, Bank of Korea's Financial Statement Analysis for 2017 showed that large enterprises' ROA stood at 6.70% in the manufacturing industry, which was higher than the average SME' ROA of 2.76%. Japanese Ministry of Finance's Financial Statement Statistics of Corporations for all industries (September – December 2017) showed an average ROS of 4.2% for corporations with assets of less than 100 million yen, 4.4% for those with assets of 100 million yen to 1 billion yen, and 8.0% for those with assets of more than 1 billion yen.

If SMEs operating in MFTZ fail to overcome the complexity of overseas markets, and fail to achieve economies of scale due to a lack of resources, firm performance will worsen as the ratio of exports grows. Hence, it is assumed that companies with relatively larger sizes may have better technological capabilities, and better utilize economies of scale compared to those of a smaller size, and so they can achieve better firm performance through a higher ratio of exports.

Given this, we suggest:

*H2: Firm size will have a positive effect on firm performance.*

*H3: The relationship between internationalization and firm performance is positively moderated by firm size.*

**Table 2.** Empirical Studies on the Relationship between Internationalization and Firm Performance for SMEs

Author (Year)	Measurement of DOI	Analysis Target	Empirical Results
Lu and Beamish (2001)	Ratio of exports to total sales Number of foreign subsidiaries Number of foreign countries	Japanese SME	Negative U-shaped U-shaped
Majocchi and Zucchella (2003)	Ratio of exports to total sales Number of foreign countries	Italian SME	Not significant U-shaped
Chiao, Yang and Yu (2006)	Ratio of exports to total sales	Taiwanese SME	Inverted U-shaped
Lu and Beamish (2006)	Ratio of exports to total sales Number of foreign subsidiaries Number of foreign countries Composite index	Japanese SME	Negative U-shaped U-shaped Positive
Pangarkar (2008)	The dispersion of sales across geographic regions	Singapore SME	Positive
Hsu, Chen and Cheng (2013)	Composite measure of foreign sales to total sales and foreign assets to total assets	Taiwanese SME	Inverted U-shaped

**Table 2.** (Continued)

Author (Year)	Measurement of DOI	Analysis Target	Empirical Results
Almodovar and Rugman (2014)	Ratio of exports to total sales	Spanish international new ventures	Inverted U-shaped (short term) M-shaped (longer term)
Ko Jae-Kyung (2015)	Ratio of exports to total sales Number of foreign subsidiaries Number of foreign countries	Korean SME	Not significant U-shaped Negative
Noni and Apa (2015)	Ratio of exports to total sales	Italian SME	Positive
Cantele and Campedelli (2016)	Ratio of exports to total sales	Italian SME	Positive
Benito-Osorio et al. (2016)	Ratio of exports to total sales	Spain medium-sized firm Spain small firm	U-shaped Negative
Hosseini, Brege and Nord (2018)	Ratio of overseas sales to total sales	Swedish SME	Negative
Cho Jae-Young and Lee Jang-Woo (2018)	Ratio of overseas sales to total sales	Korean SME	S-shaped
Tsai and Ren (2019)	Ratio of exports to total sales	Taiwanese SME	Negatively moderating
Bagheri, Mitchelmore and Bamiatzi (2019)	Internationalization orientation	U.K. SME	Positive

## 4. Empirical Model

### 4.1. Sample and Data Collection

Our sample consists of 91 manufacturing SMEs among all 110 companies located in MFTZ as of 2017, with the exclusion of the remaining companies including 1 large company, companies with less than 3 years of operating history in the zone during the 2013-2017 analysis period, and those for which we were not able to collect financial data such as sales or export amounts. Some of the sample companies did not continue to operate in MFTZ during the five years of the analysis period. Analysis of only those companies that continued to operate in MFTZ during the analysis period may result in less reliable statistics due to the small sample size. For this reason, we had to include companies that did not continue to operate during the analysis period as well.

Our sample comprises 34 precision machinery companies, 21 electronics companies, 13 machine nonmetallic companies, 5 metal companies and others. Of these, 39 firms are domestically owned, and 52 companies are foreign invested which include 10 wholly foreign owned, 6 majority foreign invested, and 36 minority foreign-owned companies.

The sample also includes 1 KOSDAQ listed firm, 41 external audit firms, and 49 others. We collected some of the data from KIS-Value database, which offers financial and non-financial information for all publicly listed Korean enterprises and all Korean firms that have

received an audit from independent certified public accountants in accordance with Korean governmental regulations (external audit firms). This database can be said to be equivalent to the COMPUSTAT database which is more widely appropriated.

Data for small companies that did not receive an audit from independent certified public accountants were collected from NICE Information Services Co., Ltd which is Korea's No. 1 largest business information corporation. Non-external audit firms should receive a credit rating from NICE for the purpose of borrowing from banks, and this credit rating report includes both financial and non-financial information. The export amount of each firm was obtained from "Masan Free Trade Zone Status" booklet published by Masan Free Trade Zone Office. Korean companies usually do not disclose export performances because they are not obliged to do so, and because they may think the information confidential, which might eventually make data collection a harder job. We have, nevertheless, obtained these confidential data compiled by Masan Free Trade Zone Office for research purposes only with their special cooperation.

Data on CEO tenure and CEO international experience were obtained from Association of Enterprises in MFTZ.<sup>3</sup> As shown in Table 4, the average number of employees at the sample companies is 68.634 people. Most can be considered small companies.

**Table 3.** Variable Names and Definitions

<b>Name</b>	<b>Definition</b>
ROA	Return on assets
ROS	Return on sales
DOI	Ratio of export to total sales
Foreign Ownership	Shares of ownership by both foreign enterprises and foreign financial institution
Total Sales	Log of total sales
Total Assets	Log of total assets
Employees	Log of the number of employees
Debt Ratio	Ratio of liabilities to capital
Sales Growth	Annual sales growth
Firm Age	Log of the number of years that firm has been in existence
CEO Tenure	Log of the number of years that CEO had been in his current position
CEO International Experience Dummy	If CEO had educational or work experience outside Korea longer than 1 year, 1, otherwise 0.
R&D Intensity	Ratio of R&D investment to total sales
DOI x Total Sales	Ratio of export to total sales x Log of total sales
DOI x Total Assets	Ratio of export to total sales x Log of total assets
DOI x Employees	Ratio of export to total sales x Log of the number of employees

<sup>3</sup> This association is a non-profit organization to which the tenant companies of MFTZ belong as members.

## 4.2. Measures

### 4.2.1. *Dependent Variable*

In preceding studies, return on assets (Benito-Osorio et al., 2016; Cho Jae-Young and Lee Jang-Woo, 2018; Lu and Beamish, 2001, 2006; Majocchi and Zucchella, 2003; Sung Hyun-Jung, Jung Tae-Suk and Kim Seog-Soo, 2013), return on sales (Almodovar and Rugman, 2014; Kim Young-Bae and Ha Seong-Wook, 2013; Kim Hyo-Joon, Kim Young-Woo and Cho Keun-Tae, 2014; Tallman and Li, 1996) or Tobin's Q (Ramirez-Aleson and Espita-Escuer, 2001) were mainly used as the measure of performance. Our study measured firm performance using return on assets (ROA) or return on sales (ROS). However, it was not possible to use Tobin's Q as a measure of performance, since our sample companies are not those listed on KOSPI or KOSDAQ, and therefore their stock prices were not available.

### 4.2.2. *Independent Variables: Degree of Internationalization (Ratio of Export to Total Sales) and Firm Size*

Exporting has traditionally been considered the most prevalent mode of internationalization among SMEs (Benito-Osorio, 2016, Lu and Beamish, 2001). As a measure of internationalization, prior studies often used the ratio of overseas sales to total sales (Cho Jae-Young and Lee Jang-Woo, 2018; Contractor, Kumar and Kumar, 2007; Gaur and Kumar, 2009; Hossenini, Brege and Nord, 2018), the ratio of foreign assets to total assets (Gomes and Ramaswamy, 1999) or the number of nations in which the company operates (Lu and Beamish, 2001). However, since most Korean companies operating in MFTZ are small businesses, they do not have foreign subsidiaries, and foreign companies operating in the zone are mostly subsidiaries of foreign parent companies. Therefore, reflecting overseas parents' sales or assets as the degree of internationalization can significantly distort the results of the empirical analysis. Hence, the degree of internationalization is operationalized as the ratio of exports to total sales (Almodovar and Rugman, 2014; Benito-Osorio et al., 2016; Chiao, Yang and Yu, 2006; Lu and Beamish, 2001; Majocchi and Zucchella, 2003; Noni and Apa, 2015). Exports include not only direct exports but also local exports. According to the Foreign Trade Law of Korea, if a company receives a local letter of credit or purchase confirmation of a good or a toll processing from a foreign exchange bank and supplies it as a finished product or raw material to another company for export, for example, it is also regarded as an export.

In addition to these linear models of the relationship between internationalization and firm performance, this study also estimates models using the square and cubic variables of the DOI to verify any curve effect.

Firm size is also used as an independent variable, measured by total sales (Cantele and Campedelli, 2016; Hsu, Chen and Cheung, 2013; Pangarkar, 2008), total assets (Cho Jae-Young and Lee Jang-Woo, 2018) or number of employees (Almodovar and Rugman, 2014; Lu and Beamish, 2001/2006; Noni and Apa, 2015). Since these three variables are highly correlated, concerns of multicollinearity may arise when they are used together in the same regression equation. Therefore, our study employs each firm size variable in 3 different respective models.

### 4.2.3. *Moderating Effect Variable*

Firm size is one indicator of managerial and financial resources available in the firm, and to the extent that excess resources are available, a firm will look for opportunities for internationalization (Dhanaraj and Beamish, 2003). Supposing that internationalization may have a negative impact on firm performance due to resource constraints among SMEs in

MFTZ, firm size may have positive moderating effect on relationship between firm performance and internationalization. We expect to analyze the moderating effect of firm size by using the value of firm size multiplied by the export ratio (degree of internationalization). As variables of firm size, we use total sales, total assets and total number of employees. Because of the multicollinearity problem of using these together in the same model as explained above, Models 1 and 4 use total sales, Models 2 and 5 use total assets, and Models 3 and 6 use total number of employees as the firm size variable.

#### 4.2.4. Control Variables

Seven control variables are incorporated in this research based on prior studies. Corporate governance structures may affect SME' internationalization decisions and outcomes, so we control for foreign ownership (measured by the share of ownership of foreign enterprises and foreign financial institutions). However, other corporate governance variables such as family ownership or institutional ownership are not used because they are difficult to obtain from SMEs that are not listed. Cifti et al. (2019) and Kao, Hodgkinson and Jaafar (2019) analyzed and found that foreign ownership had a positive effect on firm performance.

Second, debt ratio (ratio of liability to capital) is incorporated as a control variable following the statement of previous studies that capital structure affects firm performance (Ibhagui and Olokoyo, 2018; Le and Phan, 2017). In most prior studies, a high debt ratio resulted in poor performance (Olokoyo, 2013; Zeitun and Tian, 2007).

Third, annual sales growth is controlled. Sales growth shows a positive impact on firm performance in most studies (Ahmad et al., 2018; Ghozali, Handiani and Hersugondo, 2018), whereas other studies have shown a negative impact (Markman and Gartner, 2002).

Fourth, firm age, operationalized as the log of the number of years that a firm has been in existence, is incorporated as a control variable. Firm age affects the technical learning of the enterprise (Dodgson, 1993) and the profitability of international business activities (Brush and Vanderwerf, 1992). However, there is also a theory that new firms can work better in foreign markets than those older. New firms depend on less specialized resources, so they can flexibly cope with environmental changes. On the other hand, old companies may not be able to respond flexibly to changes because they depend heavily on specialized resources that can operate efficiently only in current market conditions.

Fifth, CEO tenure is incorporated as a control variable. CEO tenure is measured by the log of the number of years of the CEO in the current position (Hsu, Chen and Cheng, 2013). If one knows the average CEO tenure, he or she can more easily understand the existing possibility of convergence interests or an entrenchment situation by the CEO (Ahmadi, Nakka and Bouri, 2018). Li (2018) found that CEO tenure had a positive impact on firm performance. However, with all the positive aspects associated with CEO tenure, the possibility of some negative aspects still exists. Finkelstein and Hambrick (1996) argued that CEOs with short tenures bring in fresh information and are willing to take risks, but over time, they rely more on past experience and develop a narrower frame of reference. Musteen, Baker and Baeten (2006) also suggested that long tenures are associated with a higher resistance to change.

Sixth, the dummy variable of CEO' international experience is used as a control variable. If a CEO had educational or work experience outside Korea longer than 1 year, it is set to be 1, and otherwise 0. The experience of studying and working in foreign countries may affect CEO' cognitive orientation significantly (Hsu, Chen and Cheng, 2013). These experiences may help a CEO in dealing with the uncertainties associated with overseas operations (Sambharya, 1996). Daily, Certo and Dalton (2000), Hsu, Chen and Cheng (2013) and Li

(2018) found that CEO' international experience had a positive effect on firm performance.

Lastly, R&D intensity is also controlled. We obtained this measure using the ratio of R&D investment to total sales. Generally, R&D investment can create an intangible asset, which will positively affect firm performance (Megna and Klock, 1993; Reynard, 1979; Zhu et al., 2017).

### 4.3. Analysis Method

This study uses multiple regression models for unbalanced panel data as the empirical tools for the estimation of the effect that internationalization (exporting) has on firm performance (ROA or ROS). Given the characteristics of the sample, this study estimates the empirical models with panel data specifications, since this method allows controlling for the unobserved or unmeasured heterogeneity of firms within the sample as long as errors are homoscedastic and independent (Benito-Osorio et al., 2016; Chang and Rhee, 2011). In a sense, panel data models minimize the risk of inconsistent estimators resulting from cross-sectional estimation when individual effects exist, which is likely to occur in our study given the number of idiosyncratic factors that could substantially affect firm performance (Baltagi, 2001; Benito-Osorio et al., 2016).

To facilitate causal inferences, we lagged all independent variables by one year (Benito-Osorio et al., 2016; Cantele and Camedelli, 2016; Cho Jae-Young and Lee Jang-Woo, 2018). This one year lag is consistent with previous studies which indicate that this gap reflects a typical planning cycle (Gringer, Tallman and Olsen, 2000), and may also control the potential endogeneity of our models (Benito-Osorio et al., 2016).

First, we performed a pooled regression using unbalanced panel data and LM tests of random effects. As a result of the LM test, the null hypothesis that no random effect exists was rejected. Next, we conducted Hausman test to analyze which one of the random and fixed effect was more appropriate. The result showed that the null hypothesis that the random effect is appropriate was rejected, and, therefore, the fixed effect regression proved to be suitable. In Models 1, 2, and 3, export ratio was used as the degree of internationalization variable. In Models 4, 5, and 6, the squared and triplicate variables of export ratio were added, respectively. In Models 1 and 4, total sales was used as the firm size variable. In Models 2 and 5, total assets was used as the firm size variable. In Models 3 and 6, the number of employees was used as the firm size variable.

The econometric specification for Models 1, 2, and 3 is shown in Equation 1, and for Models 4, 5, and 6 is shown in Equation 2.

$$\begin{aligned}
 ROA_{it} = & \beta_0 + \beta_1 DOI_{it-1} + \beta_2 Foreign\ Ownership_{it-1} + \beta_3 Size_{it-1} + \\
 & \beta_4 Debt\ Rate_{it-1} + \beta_5 Sales\ Growth_{it-1} + \beta_6 Age_{it-1} + \\
 & \beta_7 CEO\ Tenure_{it-1} + \beta_8 CEO\ International\ Experience_{it-1} + \\
 & \beta_9 R\&D\ Intensity_{it-1} + \beta_{10} DOI_{it-1} \times Size_{it-1} + \varepsilon_{it}
 \end{aligned}
 \tag{1}$$

$$\begin{aligned}
 ROA_{it} = & \beta_0 + \beta_1 DOI_{it-1} + \beta_2 DOI_{it-1}^2 + \beta_3 DOI_{it-1}^3 + \beta_4 Foreign\ Ownership_{it-1} + \\
 & \beta_5 Size_{it-1} + \beta_6 Debt\ Rate_{it-1} + \beta_7 Sales\ Growth_{it-1} + \beta_8 Age_{it-1} + \\
 & \beta_9 CEO\ Tenure_{it-1} + \beta_{10} CEO\ International\ Experience_{it-1} + \\
 & \beta_{11} R\&D\ Intensity_{it-1} + \beta_{12} DOI_{it-1} \times Size_{it-1} + \varepsilon_{it}
 \end{aligned}
 \tag{2}$$



**Table 4.** Basic Statistics and Correlations of Sample SMEs

Variables	Mean	SD	1	2	3	4	5
1. ROA	0.016	0.163	-				
2. ROS	-0.016	0.262	0.770***	-			
3. DOI	0.377	0.319	-0.015**	-0.090**	-		
4. Foreign Ownership	0.236	0.334	-0.083**	-0.014**	0.168***	-	
5. Total Sales (Million won)	28,842	58,073	0.049	0.051**	0.161***	0.230***	-
6. Total Assets (Million won)	22,274	31,254	0.017**	-0.005	0.084**	0.075**	0.745***
7. Employees	68.634	85.0745	0.117	0.070**	0.280***	0.396***	0.558***
8. Debt Ratio	3.899	20.316	0.055**	0.032**	-0.088**	-0.081	-0.038**
9. Sales Growth	0.066	0.508	0.214***	0.132***	-0.039	-0.008	-0.015
10. Firm Age	19.021	12.297	-0.014	-0.061	0.418***	0.254***	0.284***
11. CEO Tenure	7.818	6.122	-0.029**	0.001**	0.201***	-0.098**	0.060**
12. CEO International Experience Dummy	0.380	0.486	0.062**	0.070	0.182***	0.515***	0.167***
13. R&D Intensity	0.049	0.165	-0.012**	0.029**	-0.068**	-0.097**	-0.100*

Variables	6	7	8	9	10	11	12	13
1. ROA								
2. ROS								
3. DOI								
4. Foreign Ownership								
5. Total Sales (Million won)								
6. Total Assets (Million won)	-							
7. Employees	0.354***	-						
8. Debt Ratio	-0.052**	-0.034**	-					
9. Sales Growth	-0.013**	-0.043**	0.180***	-				
10. Firm Age	0.236***	0.300***	-0.141***	-0.113**	-			
11. CEO Tenure	0.025**	-0.063	-0.089**	-0.111**	0.357***	-		
12. CEO International Experience Dummy	0.155***	0.328***	-0.088	0.032**	0.237***	-0.113**	-	
13. R&D Intensity	-0.082	-0.130***	0.046**	-0.080	-0.119**	-0.114**	-0.117**	-

Note: \*  $p < 0.10$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$ .

## 5. Results

Table 4 reports the basic statistics and the correlation of all variables used in this study. As shown in Table 4, the average degree of export ratio of the sample firms is around 37.7%, the average level of ROA is 1.6%, which means firm performance is poor, and the average level of ROS is -1.6%. These figures are much lower than the average for Korea's manufacturing industry.<sup>4</sup> This table also shows that correlations between the independent and control variables except for firm size variables (total sales, total assets, and the number of employees) are not high enough to connote a multi-collinearity concern.

Table 5 reports the results of the panel regression with ROA as the dependent variable. Table 6 reports the results of the panel regression with ROS as the dependent variable. The results of the test using ROA as the dependent variable and those of ROS as the dependent variable are similar except for the debt ratio variable. Adjusted R-squared values appear to be at least 68%, meaning the explanatory power of the model is good. Also, Durbin Watson statistics are close to 2, which implies that error terms are not subject to autocorrelation.

We first check Hypothesis 1. The DOI variable is significant in most models in Table 5 and Table 6. In Models 1, 2 and 3, the coefficients of DOI variables are negative. Models 4, 5, and 6 are used to analyze whether there is an S-shape relationship between internationalization and firm performance. Linear variables, squared variables, and cubic variables are statistically significant, but when plotted on a graph, they show a downward straight line rather than an S-shape (Fig. 4). Therefore, Hypothesis 1 is supported. This result is consistent with that of Lu and Beamish (2001/2006) for Japanese SMEs and of Benito-Osorio et al. (2016) for Spanish small firms.

Main reasons for this negative impact of internationalization on firm performance may be explained as follows.

The average size of companies in the zone is too small to enjoy the benefits of economies of scale or scope from internalization, as witnessed in larger companies, and rather, their additional costs for exports exceed these benefits. In addition, most small firms do not have the technology to create high added values, and they also lack the capabilities for export marketing. Another feasible explanation for this low performance can be that firms deliberately inflate the ratio of exports to sales by diminishing the sales amount significantly in order to barely meet the requirements for staying as tenants in MFTZ. In reality, some firms manipulate their own sales records to be small by setting up separate corporations under the same ownership located outside of MFTZ and then attributing sales to those separate firms. Further, some other firms seem to export only to fill the required export amount despite low export profitability. Finally, the sample includes subsidiaries of foreign multinational enterprises that serve as production bases, which also can manipulate transfer prices for tax evasion and other purposes. It has been well documented that accounting and profitability measures can be easily manipulated for tax evasion purposes (Bamiatzi and Kirchmaier, 2014; Bagheri, Mitchelmore and Bamiatzi, 2019).

The advantages of an export processing zone, or bonded area which tenant companies can utilize may not mean a lot any more with the progress of trade liberalization such as FTAs and decreasing tariffs. Due to a rapid rise in the cost of production (especially labor costs) in Korea, labor-intensive foreign companies in the zone have moved to China and other Southeastern Asian countries, seeking lower cost labor, which also resulted in a sharp decline in the total exports from MFTZ.

<sup>4</sup> According to Bank of Korea's Financial Statement Analysis, the average ROA for Korean manufacturing SMEs is 2.92% and the average of ROS is 2.88% for the 2014-2017 period

**Table 5.** Results of Fixed Effect Panel Data Regression with ROA as the Dependent Variable

Variables	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
Constant	-1.886	-1.618	-1.092	-1.588	-1.138	-0.839
DOI	-0.265	-0.738***	-0.148***	-0.238	-0.801***	-0.074
DOI Squared				-0.427***	-0.531***	-0.333***
DOI Cubed				0.296**	0.390***	0.255***
Foreign Ownership	3.724	2.735	2.925	2.770	1.301	1.871
Total Sales	0.059***			0.054***		
Total Assets		0.057***			0.048***	
Employees			0.066***			0.065***
Debt Ratio	-0.000	-0.000	-0.000	-0.000	-0.000	-0.000
Sales Growth	0.021***	0.036***	0.037***	0.021***	0.038***	0.038***
Firm Age	0.034**	0.046***	0.091***	0.034**	0.049***	0.088***
CEO Tenure	-0.037***	-0.057***	0.061***	-0.035***	-0.055***	-0.058***
CEO International Experience Dummy	0.062*	0.064**	0.054**	0.058*	0.064**	0.053**
R&D Intensity	0.055*	0.026	0.013	0.044	0.006	0.001
DOI × Total Sales	0.015			0.023**		
DOI × Total Assets		0.044***			0.058***	
DOI × Employees			0.039***			0.045***
Hausman Test	42.104***	45.009***	38.413***	41.283***	45.082***	38.454***
Durbin Watson Stat.	1.979	1.949	2.034	1.966	1.924	1.985
Adjusted R <sup>2</sup>	0.726	0.683	0.747	0.680	0.758	0.758

**Note:** \*  $p < 0.10$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$ .

Hypothesis 2 is supported proving that firm size has a positive effect on firm performance. In all models, firm size has a significantly positive impact on ROA and ROS, which means that the profitability of firms may improve as firm size grows. This is in line with Cho Jae-Young and Lee Jang-Woo (2017) and Ko Jae-Kyung (2015), who analyzed the impact of internationalization on the firm performance of Korean SMEs.

Hypothesis 3 posits that firm size positively moderates the relationship between DOI and

**Table 6.** Results of Fixed Effect Panel Data Regression with ROS as the Dependent Variable

Variables	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
Constant	-2.198*	-2.060**	-1.080	-1.987*	-1.347	-0.724
DOI	-0.836***	-0.889***	-0.301***	-0.673***	-1.137***	-0.267***
DOI Squared				-0.436**	-0.669***	-0.301**
DOI Cubed				0.298**	0.525***	0.265***
Foreign Ownership	4.071	2.921	3.116	3.367	0.483	1.810
Total Sales	0.071***			0.069***		
Total Assets		0.082***			0.074***	
Employees			0.039***			0.033**
Debt Ratio	0.001***	0.001***	0.0001	0.001***	0.001**	0.000
Sales Growth	0.019**	0.033***	0.018***	0.017**	0.037***	0.020***
Firm Age	0.034**	0.030	0.085***	0.030*	0.021	0.070***
CEO Tenure	-0.032***	-0.047***	-0.045***	-0.031***	-0.041***	-0.033***
CEO International Experience Dummy	0.044	0.043	0.034	0.041	0.047	0.037
R&D Intensity	0.006	0.036	-0.042	0.010	0.023	-0.037
DOI × Total Sales	0.049***			0.049***		
DOI × Total Assets		0.053***			0.079***	
DOI × Employees			0.084***			0.087***
Hausman Test	32.568	31.704	25.262	32.072	31.334	25.073
Durbin Watson Stat.	2.087	2.069	2.039	2.076	2.149	2.053
Adjusted R <sup>2</sup>	0.796	0.765	0.696	0.768	0.747	0.688

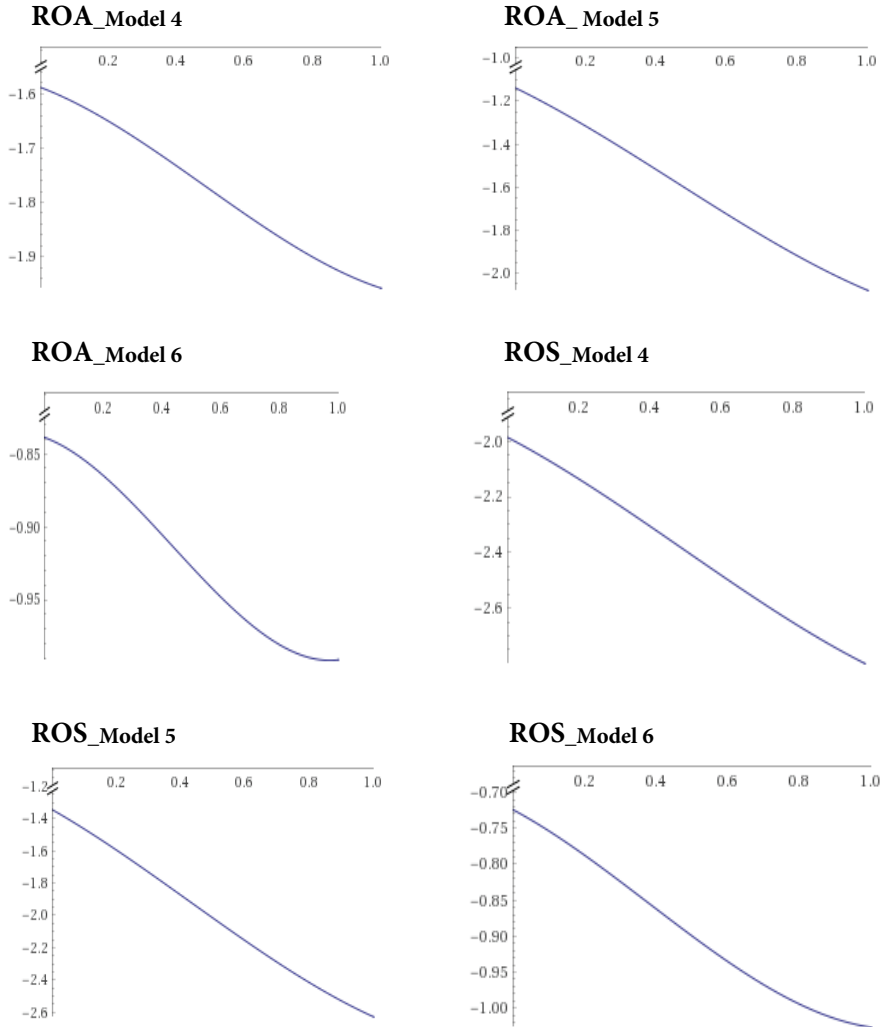
Note: \*  $p < 0.10$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$ .

firm performance. Interaction terms between DOI and firm size, except for those between DOI and total sales, have a significantly positive impact on ROA, while they have a significantly positive impact on ROS. Thus, Hypothesis 3 is supported. It means that the profitability of firms of a larger-scale may improve as the export ratio increases. In other words, it does not improve for firms of a relatively smaller-scale.

Among the control variables, sales growth and firm age are significantly positive, whereas CEO tenure is significantly negative for ROA and ROS. This means that among firms in MFTZ, companies with a long history, high sales growth and shorter CEO tenure are highly profitable by producing and/or selling competitive products.

When ROA is used as the dependent variable, CEO international experience is significantly positive while debt ratio and R&D intensity are insignificant. When ROS is used as the dependent variable, debt ratio is significantly positive, and CEO international experience and R&D intensity are insignificant.

**Fig. 4.** Impact of Internationalization on Firm Performance



## 6. Conclusion and Implications

### 6.1. Conclusion

MFTZ, as an export processing zone, is located near a port area in a large industrial city, which provides good location advantages. In order to promote exports from this zone, the Korean government offers tenant companies various benefits such as exemption of import customs clearance procedures, and low rent. However, due to the progress and worldwide spread of trade liberalization, the advantages of a bonded area have gradually become less attractive to firms. Nokia TMC's withdrawal from the zone due to their loss of competi-

tiveness in the mobile phone industry resulted in a significant fall of the total export amount of the zone. Along with this, the export amount has also plunged since many other companies, especially labor intensive foreign companies, moved production bases to China and other Southeast Asian countries due to the rising labor costs in Korea. On top of this, the profitability of the tenant companies in the sample has been very low, with an average ROA value of 1.6%. Even worse, the average value of ROS is negative.

The results of our empirical analysis on SMEs operating in MFTZ during the 2013-2017 period show that the higher the ratio of exports to total sales, the worse firm performance becomes. This may be because most firms operating in the zone during the analysis period were small firms with inadequate knowledge and resources to allocate to exporting activities, which may result in incurring additional costs rather than gaining benefits, such as economies of scale or scope, through internationalization, namely, exporting.

In fact, several measures can be used to measure the degree of internationalization of firms such as the number of foreign subsidiaries, the ratio of foreign assets to total assets, and so on, as shown in previous studies. However, none of our sample companies in MFTZ have any foreign subsidiaries. So, we have no choice but to use the export ratio as the only measure of internationalization in this study and assume that companies with a high export ratio have a high degree of internationalization even though they do not have any foreign subsidiaries or foreign assets. If we had been able to use the other measures described above and incorporated them into our analysis, we might have obtained a different result which might look like an S-shape or a U-shape. In this context, it may not be too abrupt to say that our result of downward linearity can be the fore part of the downward linearity of the S-shape or the U-shape where either shape starts. If so, it may also be safe to say that our sample companies are in the early stages of internationalization in accordance with both the U-model and S-model where internationalization has a negative impact on firm performance in the early stage of internationalization. In this respect, our result also complies with those of other researchers.

Another possible reason for the poor performance of exporting firms may be currency appreciation, as argued by Lu and Beamish (2001/ 2006), who studied Japanese companies. However, this cannot apply to the Korean case because the exchange rate of Korean won against the U.S. dollar during the study period fluctuated between 1,030 and 1,200 won, which can be said to be the equilibrium rate of exchange.

Next, we need to discuss the reasons for the low profitability of SMEs in MFTZ. While most high-tech companies, in general, generate high profitability and performance, those in our sample did not and failed to increase the overall performance of the zone, even if 42 of the companies out of the total 91 in the sample, almost 50%, can be classified as high tech.<sup>5</sup> This may be because most of these high tech companies remain small scale subcontractors that supply parts to other large enterprises.<sup>6</sup>

Firm size has a positive impact on firm performance, and it also has a moderating effect on

<sup>5</sup> According to the two-digit industry code, sample companies are concentrated in terms of sector classification, with 57% of the firms operating in four industry sectors: basic metal products sector (24 companies), electronic components, computer, radio, television and communication equipment and apparatuses sector (12 companies), fabricated metal products, except machinery and furniture sector (10 companies), medical, precision and optical instruments, watches and clocks sector (6 companies). Bank of Korea classified the three sectors above, except for fabricated metal products, except machinery and furniture sector, as high-tech industries, based on R&D intensity which is the proportion of R&D spending to output, in line with OECD standard.

<sup>6</sup> According to the Financial Statement Analysis of Bank of Korea from 2014 to 2017, four-year average ROA and ROS of large enterprises in these three high-tech sectors show 5.13%, and 5.45%, respectively, while those of SMEs show 2.89% and 3.13%, respectively.

the relationship between internationalization and firm performance. This result corresponds to that of Benito-Osorio et al. (2016). To summarize, this result suggests that the relationship between internationalization and firm performance may be size-dependent. This means that the profitability of firms may improve as firm size grows, and the profitability of firms with a relatively larger size improves as the ratio of export to total sales increases.

As expected, firm age and sales growth had a significant positive impact on firm performance while CEO' tenure had a significant negative impact on firm performance. CEO' international experience had a significant positive impact on ROA, but not significant on ROS.

To the best of our knowledge, few studies consider the moderating effects of firm size. In this respect, this study may contribute to the literature by filling this gap. It is also meaningful that, unlike other prior studies, this study included in the sample small firms whose financial and nonfinancial information was quite difficult to obtain because it is not reported publicly.

## 6.2. Implications for Managers

Exporting is quite an attractive means of internationalization, because it gives companies an opportunity to grow without major additional resource allocations and risks. In particular, from the viewpoint of Korean companies whose domestic market is relatively small, exporting can complement the small domestic market providing additional markets, and so exporting may not be an option but rather a necessity. In preceding studies, no consensus can be found on the impact of internationalization on firm performance, but more research is found to show that its impact is more positive than negative. Another study also shows that internationalization has a negative impact on firm performance in its early stages, but it has a positive effect when it reaches a mature stage. According to the study, internalization is inevitable for a firm's growth and survival.

Internationalization of SMEs in MFTZ, however, does not seem to affect firm performance positively, as shown in our empirical results. This result is different from the study of Cho Jae-Young and Lee Jang-Woo (2018) which shows the relationship between internationalization and firm performance as an S-shape for SMEs listed on KOSPI. This difference between results can be attributable to the different dataset of each study, that is, unlike the sample used by Cho Jae-Young and Lee Jang-Woo (2018) which consisted mainly of listed medium-sized firms, the sample for our study was made up of mostly small-sized firms.

Another reason may be that compared to the sample for Cho Jae-Young and Lee Jang-Woo (2018), who included various sectors of the manufacturing industry for all of Korea's listed SMEs, our sample is quite limited, including electronics, precision machinery, metal, and the like. Along with this, the ROA average of 1.6% representing SMEs' performance in MFTZ is also lower than that of the 2.7% shown by Cho Jae-Young and Lee Jang-Woo (2018), which altogether seem to cause the different results.

Most small tenant firms in MFTZ like all other SMEs in Korea are, compared to large corporations, considerably constrained in resource availabilities and capabilities, which can serve as a great hurdle for efforts to export. To overcome this disadvantage and to compete successfully in international markets, SME managers, including those in MFTZ, should make efforts to build the key resources and capabilities such as the financial, technological, managerial skills, as well as knowledge required for the process of internationalization, through which the probability of firm' growth and survival will also increase.

According to our results for CEO tenure in MFTZ, firm performance becomes worse as CEO tenure is extended. This may be because CEOs with longer tenures tend to mire in the inertia of the past with age, and have narrow views for management entrenching themselves.



This can be a serious problem, particularly, for SMEs, where a CEO with concentrated decision making power and a duality role has the utmost importance in accomplishing firm performance. Therefore, based on our research results, our suggestion to CEOs of SMEs in MFTZ is that they try harder to renew their mindset to widen their perspectives, especially with age, to achieve internationalization benefits.

### 6.3. Implications for the Korean Government

The property of MFTZ is government-owned, and tenant firms have only surface rights to the land of their facilities. Since the surface right to the land can be renewed again and again after the contract terms expire, the tenants can, in fact, continuously rent the land. In truth, since they do not have ownership of the land itself, they do not actively invest in building factories on it.

To promote tenant' investment in factory buildings, the government should consider a policy shift toward allowing land ownership to long-term tenants. Next, some companies operating in MFTZ want to expand or rebuild factories as they age, but they face the challenge of restrictions on height. In addition, it is also necessary to revise the system to allow tenants to re-rent factories to subcontractors, because currently this is not allowed by law. If tenants are allowed to do so and they can thus work with subcontractors in the same place, production efficiency will improve accordingly.

SMEs are in desperate need of government support in improving international competitiveness, as it is extremely difficult for them to survive international competition alone. In particular, they need government support in R&D since they cannot afford R&D spending, which is vital to survival and growth.<sup>7</sup> Fortunately, the Korean government has recently announced that it will take measures such as implementing export support projects in 2019, and supporting new technology development to enhance competitiveness and to boost the sagging MFTZ. In 10 years, as the Korean government expresses, 30,000 jobs will have been created and \$10 billion in exports will have been accomplished (Kim Yoo-Kyung, 2019). We hope these government schemes will bear fruits.

### 6.4. Limitations and Future Avenues of Research

This study also has its limitations, which should be addressed in the future. First, this study is aimed at SMEs in MFTZ for which export performance data are available. However, it will produce more convincing and feasible results if SMEs in other regions are also included in the sample. Based on the results of this study alone, it cannot be concluded that the internationalization of SMEs in Korea has a negative impact on firm performance, as the sample for this analysis is limited to SMEs in MFTZ, which may lead to a generalization fallacy.

Researchers cannot access data on the export and import amount of each company Korea Customs Service Office holds, as they do not disclose this data. It may help if Korea Customs Service Office provides researchers with export performance data. It is also difficult to obtain the data of listed or KOSDAQ-registered companies because it is not mandatory for them to disclose export or overseas sales. This data accessibility is needed for research purposes.

Second, this study adopts the export ratio as the measure of internationalization, reflecting the characteristics of the sample, but some other researchers have criticized and expressed

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<sup>7</sup> According to Bank of Korea's Financial Statement Analysis in 2017, large companies in the manufacturing industry spend 2.19% of sales on R&D, whereas SMEs spend only 0.80% of sales on R&D.

concern on the appropriateness of the measure. Thus, it might be advisable to use other alternative single-variable measures (e.g., overseas sales to total sales) that consider other aspects of internationalization which this study ignores, or design appropriate multi-item measures when analyzing companies in other regions rather than MFTZ.

Finally, this study considers only the effect of internationalization and the moderating effect of firm size on firm performance. It would also be interesting to study the interactive effects of internationalization and CEO attributes such as CEO tenure, CEO age, CEO educational level and CEO international experience. The role of the CEO in SMEs is more important than that of large enterprises because CEOs in SMEs tend to make most decisions on their own. It is true that some research attempts have been made to empirically test how the interactive effects of internationalization and CEO attributes affect firm performance, but existing literature is still rare (e.g., Ahmadi, Nakaa and Bouri, 2018; Musteen, Baker and Baeten, 2006).

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