

**A STUDY ON THE RELATIONSHIP  
BETWEEN IMPORT PENETRATION, BUSINESS DIVERSIFICATION  
AND FIRM PERFORMANCE**

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**Abstract:** This research attempts to examine the effects of import penetration in an industry on the firms' decision of business diversification and provide an integrative framework including the determinants and results of the business diversification. The research results are as follows. First, the import penetration doesn't affect the degree of business diversification. Second, the more profitable their core business industry, the lower the degree of business diversification against the import penetration. In addition, both technology-related assets and marketing-related assets are necessary for business diversification when faced with the import penetration. Finally, the inverted U-shaped

relationship is supported between the degree of business diversification and firm performance.

**Key Words:** import penetration, business diversification, firm performance

## **1. INTRODUCTION**

The diversification strategy has been the main topic for over 30 years in the strategic management. Korean scholars have also conducted the research on it. However, most of the research has focused on the relationship between diversification strategy and the performance, and, to make matters worse, the results are not conclusive.

The increasing pressure of global competition especially since the late 20th century has been considered as a critical change and threat in business. This intensifying global competition mostly comes in a form of increasing import to the domestic firms. We label the competition in the form of imports *import penetration*. Although there has been the potential assumption that this intensifying import penetration would influence the firm's decision about business diversification, neither logically built model nor empirically tested research exists in Korea.

In sum, this research is conducted with the following objectives; to empirically test the effect of the import penetration in an industry on the firms' decision of the business diversification and to provide an integrative framework including the determinants and the results of the business diversification.

## **2. MODEL AND HYPOTHESES**

The model building in this research starts from the structure-conduct-performance framework. According to this framework, the industrial structure decides how long the

firms in that industry can enjoy the above-average returns. In this study, import penetration in an industry is considered as the structure and the business diversification as the conduct of a firm. Hence, the basic framework of the research can be presented as Figure 1.



Figure 1. The Basic Framework of the Research Model

However, not every firm in an industry which is under same industrial structure behaves equally. The differences should be explained by their proprietary resources, the ability to use them efficiently, etc. In other words, a firm's behavior is affected by not only external but also internal environment.

In addition, this research focuses on the core business industry which records the highest ratio of sales among businesses in a firm, because the unfavorable change in a firm's core business industry is more likely to prompt the firm to behave more strategically than that in a firm's non-core business industry. Consequently, the final model is built like Figure 2.

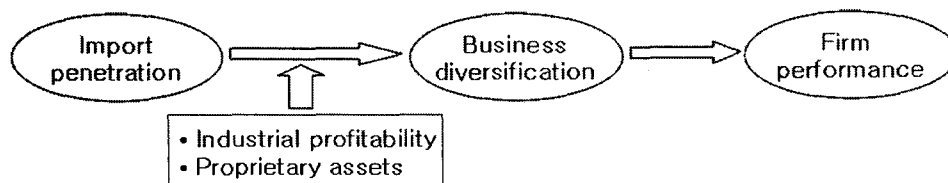


Figure 2. The Final Research Model

## 2.1 Import Penetration and Business Diversification

A change of competitive condition caused by intensifying import penetration may force

a firm to spend more resources information-processing, monitoring and coordinating. Moreover, as Lawrence and Lorsch (1967) argue, the more diversified a firm, the more different the dispositions among managers. In turn, it takes more time to process information and to make decisions, and the activities of the firm become less efficient than before. Given that managerial resources are limited, the attention devoted to non-core businesses might cause the opportunity cost of keeping it away from the core business. Hence, if import penetration within an industry in which the firm's core business is situated grows in intensity, the firm should move against it by restructuring its business-portfolio. In other words, the firm is expected to focus the managerial resources on the core business and reduce its degree of business diversification.

*H1: The degree of business diversification will be negatively related to the intensity of import penetration.*

The firm's decision to lower the degree of business diversification in response to the import penetration might be influenced by industrial profitability. Some research on diversification reports that the level of the diversification is negatively related to the industrial profitability (e.g., Rumelt, 1982; Delios and Beamish, 1999). It implies that the business diversification is a means of escaping from the unprofitable industry and seeking a new profit-maker. Along the same line with previous research, industrial profitability is expected to affect the negative relationship between the import penetration and the degree of business diversification. If the core business of a firm is situated in a more profitable industry, the opportunity cost of keeping the managerial resources in non-core businesses will be raised. Therefore, the firm has more propensities to lower the level of business diversification and focus on the core business in response to the import penetration.

*H1a: The more profitable the core business industry of the firm is, the more negative the relationship between the intensity of import penetration and the degree of business diversification will be.*

Proprietary assets may also affect the relationship between the import penetration and the degree of business diversification. Proprietary assets are differentiable from those of other firms, can be transferred across host countries, and don't depreciate (Caves, 1996). For business diversification strategy to succeed, the firm should have its own assets that can be exploited across the businesses. For a firm which has already established the asset-based barriers, the pressure to improve the operational efficiency and, hence, to defeat the foreign competitors might be relieved. On the other hand, a firm which has not established enough proprietary assets will be forced to more rapidly respond to the changes. The lack of assets also prompts the firm to focus on their core business away from non-core businesses and, consequently, reduce the degree of business diversification (Bowen and Wiersema, 2005).

*H1b: For the firm with less technology-related assets, the relationship between the intensity of import penetration and the degree of business diversification will be more negative.*

*H1c: For the firm with less marketing-related assets, the relationship between the intensity of import penetration and the degree of business diversification will be more negative.*

## **2.2 Business Diversification and Firm Performance**

Business diversification refers to expansion into new business markets which a firm has not experienced. Most literatures on strategic management state that the firm can leverage its competences across the business lines and this lowers cost and improves performance. Some empirical studies have supported the positive relationship between business diversification and firm performance. Montgomery (1985) found that highly diversified firms had higher profitability than less diversified firms.

However, research results were not always positive. Delios and Beamish (1999) found

no significant relationship between degree of product diversification and performance levels for the sample with 399 Japanese manufacturing firms. In addition, the significantly negative relationship was found between diversification and profitability in the Kang(2005)'s research which examined for the sample with 217 Korean firms.

These discrepancies across studies may result from unlike measure or methods or from underlying non-linearity in the relationship between diversification and performance.<sup>1)</sup>

Tallman and Li (1996) suggest that firms in early stage of the diversification tend to focus on related diversification and, hence, they have more chances for synergy effects. The superior performance of related diversification has been empirically evidenced (e.g, Geringer et al, 1989). From these results, the increasing performance can be expected for firms in the early stage of business diversification.

Delios and Beamish (1999) found that high levels of product diversification reduced the investments in R&D (only for low product diversification sample) and marketing (for full sample). It implies that firms implementing product diversification strategy can leverage the existing competences across different product lines, which means achievement of scope economies. However, in the subsample of high product diversification firms the expenditures on R&D increased according to the degree of product diversification. It can be interpreted as insufficient exploitation of existing technologies and increasing needs for development of new technologies for the highly diversified firms.

In sum, it is hypothesized that the business diversification improves performance by a moderate degree, but too high degree of business diversification hampers it. In other words, the relationship should be non-linear and inverted U-shaped.

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1) J. Michael Geringer, Stephen Tallman and David M. Olsen, "Product and international diversification among Japanese multinational firms", *Strategic Management Journal*, Vol.21 Issue 1, 2000, p.54

*H2: Firm performance will vary negatively with the square of degree of business diversification.*

### **3. METHODOLOGY**

#### **3.1 Sample**

The sample consists of the manufacturing firms publicly listed in the Korean Stock Exchange in September 2006. Among the 454 firms, ones for administration were eliminated. In addition, the sample should include only firms which have been listing since 2003 and firms of which all the data for this research are available. Next, we also eliminated firms smaller than the median value of firm size in consideration of the stronger tendencies for larger firms to diversify. The resulting sample consisted of 180 manufacturing firms.

#### **3.2 Variables and Measurement**

##### **1) Main variables**

Import penetration was measured by the ratio of imports to total domestic purchases in the core business industry of the firm in 2003 (Bowen and Wiersema, 2005). However, it was difficult to find the data about total domestic purchases at the industry-level. Alternatively, we measured it by total sales of domestic firms minus exports plus imports in a given industry. The data for import were collected through the KITA.

The number of businesses which a firm operates was used as a proxy variable to measure the degree of business diversification in consideration of availability of data. The data for the number of businesses which a firm operates were obtained in the KISFAS.

Two accounting-based measures were chosen as indicators of firm performance; return on assets (ROA) and return on sales (ROS). The data were gained from KISFAS.

## **2) Moderate variables**

Industrial profitability was measured by the average ROA in the 3-digit KSIC core industry of the firm in 2003 (Bowen and Wiersema, 2005). All the data were obtained from the database of the Bank of Korea.

Technological and marketing assets have been considered as representative firm-specific capabilities to help firms achieve competitive advantages and above-average returns (Kogut and Chang, 1991; Caves, 1996). We used R&D intensity for a proxy of the technology-related assets and advertising intensity for that of the marketing-related assets. R&D intensity was measured as the R&D expenditures divided by the firm's total sales in 2003, while advertising intensity was measured as the expenditures on advertising and promotion divided by the firm's total sales in 2003. The related data were obtained from the KISFAS.

## **3) Control variable**

Firm size was employed as a control variable because it is expected to be related to levels of diversification and performance. It was operationalized as the amount of total assets. In addition, to avoid the effects of extreme differences of the amounts of total assets among firms in the sample, it was calculated with the natural logarithm. The data were also collected from the KISFAS.

## **3.3 Method of Statistical Analysis**

In this research, path analysis with Amos 5.0 was employed to examine the relationships between the three main variables; import penetration, business



diversification and firm performance. Next, to analyze the role of moderate variables in the main relationships, the full sample was divided into two groups on the basis of the median of each moderator; industrial profitability, technology assets and marketing assets. Then regression analysis procedure was used to examine the non-linear relationship between business diversification and performance.

## **4. RESULTS**

### **4.1 Examination of Overall Models**

The fitness of the models must be checked at first. Commonly used estimates are followed;  $\chi^2$ , GFI (Goodness-of-Fit Index), AGFI (Adjusted Goodness-of-Fit Index), RMR (Root-Mean-square Residual), CFI (Comparative Fit Index) and NFI (Normed Fit Index). In this research, some of  $\chi^2$  are much higher compared to df and some of RMR are extraordinarily high. However, the sample size is big enough, the acceptance of RMR is up to this researcher's decision and most of the other indices are over or nearby 0.90. Hence, the models are considered to be worth analyzing.

### **4.2 Examination of the Hypotheses**

Figure 3 presents the results of path analysis on the relationships between the main variables. The detailed results are followed. First is about the effects of import penetration on business diversification. It shows import penetration doesn't significantly affect the degree of business diversification ( $\gamma_{11} = .065$ , C.R. = 1.601,  $p > .10$ ). In result, H1 is rejected and it implies the intensity of import penetration doesn't influence a firm's decision about the business diversification alone. Next is about the influence of the business diversification on the firm performance. Though, we would not conclude whether the hypotheses are supported or rejected here. It is not the linear but the non-linear relationship between the diversification and the performance that we would examine. The related hypothesis (H2) will be tested using the regression analysis later.

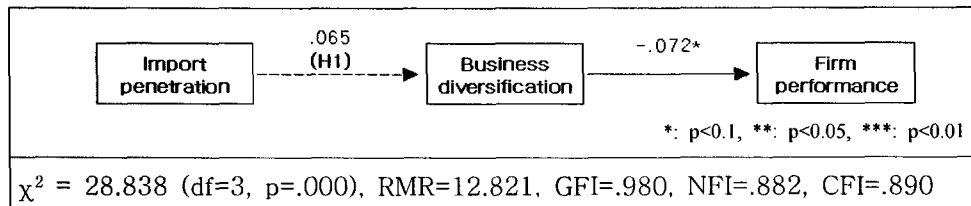


Figure 3. The Effects of Import Penetration

Then, the role of each moderator is tested in the relationship between import penetration and business diversification. First is on how the relationship changes along with the industrial profitability. In firms situated in a highly profitable industry, the import penetration is negatively and significantly related to the degree of business diversification ( $\gamma_{11} = -.187$ ,  $t = -3.219$ ,  $p < .01$ ). On the other hand, if a firm's core business is in a less profitable industry, the effect of import penetration on the degree of business diversification becomes insignificant ( $\gamma_{11} = .048$ ,  $t = .901$ ,  $p > .10$ ). That is, the more profitable the core business industry is, the more the firm focuses on the core business. In result, H1a is supported.

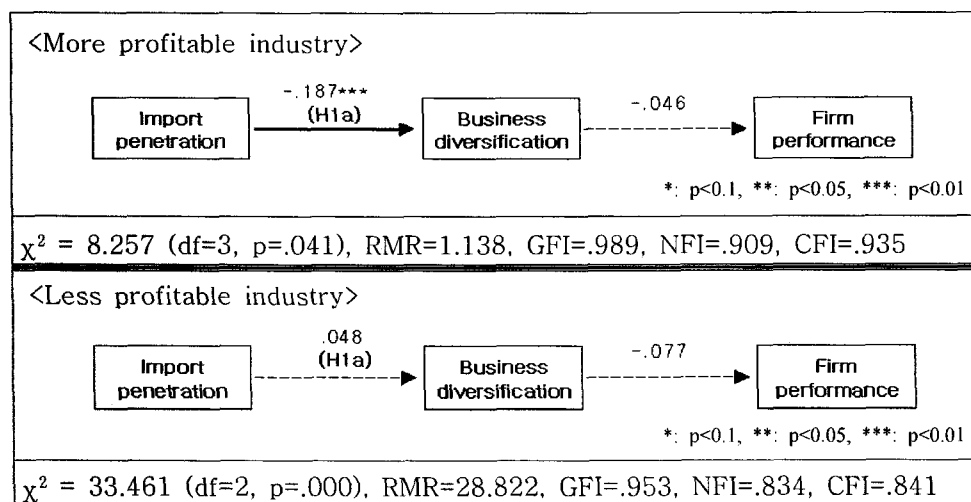


Figure 4. The Moderate Effects of Industrial Profitability

Figure 5 is about the role of technology-related assets as a moderator in the

relationship between import penetration and business diversification. In a firm with more technology-related assets, the degree of business diversification is positively and significantly related to the import penetration ( $\gamma_{11} = .120$ , C.R.= 2.088,  $p < .05$ ). If a firm has more technology-related assets, it moves against import penetration through increasing the level of business diversification. In firms with less technology-related assets, the effect of import penetration on business diversification is not significant ( $\gamma_{11} = -.058$ , C.R.= -.998,  $p > .10$ ). That is, a firm with enough technology assets is shown to increase the degree of business diversification in response to the import penetration, but in a firm which owns less amount of technology assets a significant relationship is not reported. In result, H1b is rejected.

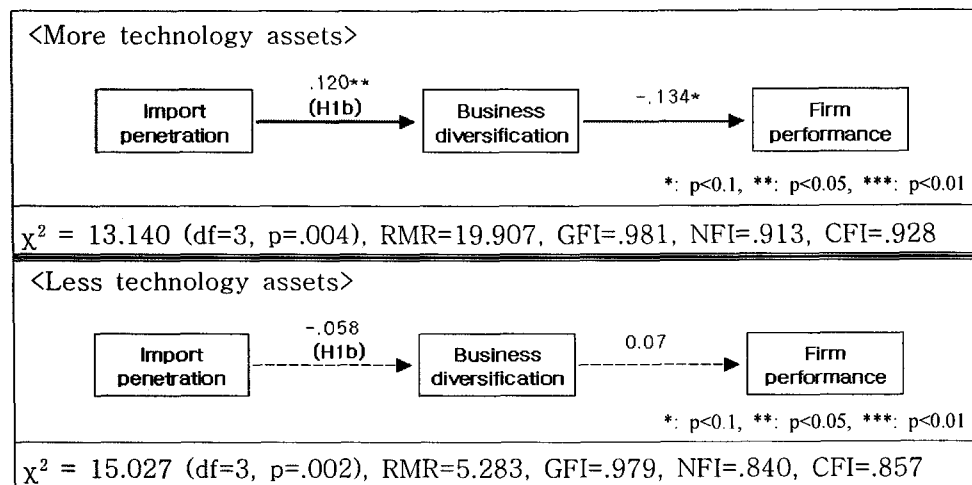


Figure 5. The Moderate Effects of Technology-related Assets

The last moderator is the amount of marketing-related assets. The import penetration gives a positive and significant effect on business diversification ( $\gamma_{11} = .226$ , C.R.= 3.968,  $p < .01$ ) in a firm with more marketing-related assets, as shown in Figure 6. In contrast, in a less marketing-intensive firm, the effect is not significant ( $\gamma_{11} = -.089$ , C.R.= -1.582,  $p > .10$ ). It implies the more a firm has marketing-related assets, the more it diversifies the business portfolio. The results reject H1c.

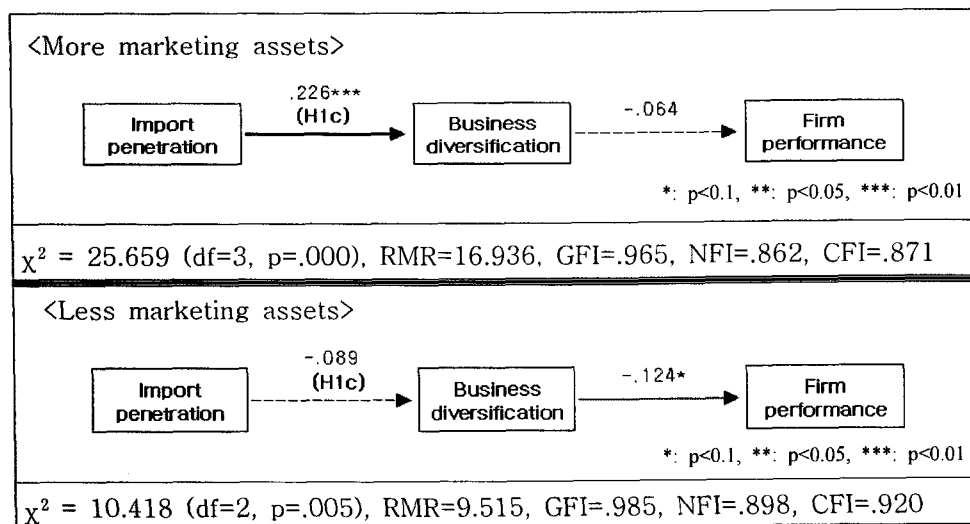


Figure 6. The Moderate Effects of Marketing-related Assets

Next is to analyze the relationships between the business diversification and the firm performance. Although Figure 3 presented that performance was negatively and significantly related to the degree of business diversification, we delayed discussing the result. It was the non-linear and inverted U-shaped relationship that we would like to examine. Therefore, the regression analysis was attempted. As Table 1 shows the results, the firm performance is negatively and significantly related to the squared degree of business diversification. The result supports H2 which expected the non-linear and inverted-U shaped relationship. As explained in the note to Table 1, the effect of business diversification on performance is positive until the degree of business diversification, which was measured by the number of businesses in a firm, approaches 2.25. However, beyond this level, the relationship is negative. In other words, when the degree of business diversification is approximately 2.25, the performance peaks out.

Table 1. The Effects of Business Diversification on Performance

	unstandardized $\beta$	t-value
constant	-.227	-5.514***
degree of business diversification	.009	1.155
squared degree of business diversification	-.002	-1.693*
firm size	.014	6.698***
$R^2$		.081
Adjusted $R^2$		.076
F		15.797***

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

*Note:* The estimated regression equation for the curvilinear model regarding business diversification(BD) and performance(PER) will be

$$PER = -0.227 + 0.014 + 0.009BD - 0.002(BD)^2.$$

To show where the turning point is, a derivative of the curvilinear regression equation is taken with regard to BD:

$$\frac{d(PER)}{d(BD)} = -0.004BD + 0.009 \text{ that will be zero if } BD = 2.25.$$

## 5. CONCLUSION

### 5.1 Discussion

This research examined the impact of import penetration on business diversification in Korean manufacturing firms and that of business diversification on the firm performance. The explanations of the results for the effects of import penetration on the business diversification are followed. First, import penetration is not shown to significantly influence the degree of business diversification. This result suggests that the degree of the business diversification may be decided in consideration of other factors rather than the intensity of import penetration.

However, some industry-level and firm-specific factors change the direct effect of the import penetration on the business diversification. The first moderator is the industrial profitability. The result shows that if a firm's core business is in a profitable industry,

it moves against the import penetration through lowering the degree of business diversification and focusing on the core business. This is also supported by Bowen and Wiersema (2005).

The second moderator is the amount of technology-related assets a firm owns. The result suggests that firms with more technology-related assets are likely to diversify the business-portfolio against the intensifying import penetration. That is, firms with more technology-related assets cope with the threat of import penetration in their core business industries by developing new business markets which allows to exploit their existing redundant technologies.

The last moderator is marketing-related assets. In the subsample of firms with more marketing-related assets, the business diversification is positively related to the import penetration while in the subsample of less marketing-related assets the effect was not significant. This means if a firm has marketing-related assets enough, they can move against the intensifying import penetration through business diversification. However, if a firm lacks the assets, the diversification is difficult to implement.

Next, the discussion about the relationships between the diversification and the performance is followed. In the regression analysis, the performance was shown to vary negatively with the squared degree of business diversification. It implies that business diversification improves the firm performance by a certain point but begins to damage the performance beyond the point. This result seems to provide Korean manufacturing firms with an important implication about the extent by which they implement business diversification and it was the level of 2.25 businesses in this research.

## **5.2 Suggestions for Future Studies**

In the light of some limitations, we can suggest the guideline of future studies. That is, the better results can be expected with multidimensional indices for business

diversification. In addition, a modified research model can be suggested. For example, the intensity of import penetration may influence the industrial profitability, and, in turn, it is likely to affect diversification strategy decision. The analysis on this path seems to be worth attempting.

We hope the model and methods presented in this paper can contribute to subsequent theoretical and empirical studies on this topic.

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