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THE EFFECTS OF MARKET OPENING ON THE KOREAN RETAIL INDUSTRY*

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This paper studies whether the opening of the Korean retail industry in 1996 has positively affected productivity and efficiency in the retail industry over time. We have found that the productivity of firms in the Korean retail industry has improved significantly since the market opening and that market efficiency has increased in the sense that the higher productivity firms have a larger market share. However, this productivity improvement has not been observed uniformly among sectors. Rather, it has been concentrated at large discount stores, CVS, nonstore retailing, and other new venues. The new venues and concentrated markets have been structural changes in the traditional Korean retail market.

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Keywords: Retail Industry, Market Opening, Productivity, Structural Change

I. INTRODUCTION: KOREAN RETAIL INDUSTRY AND MARKET OPENING

Korea opened its retail industry fully to the outside world in 1996

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following the examples of Hong Kong and Taiwan. Although it was an inescapable decision for the trend of globalization and the commitment of Uruguay Round of GATT, it has brought up significant consequences to the Korean retail industry through the changes in retail systems, consumer behavior, and government policy. For example, since 1996, advanced management skills and retail systems have been transferred to a larger extent; fierce competition in the market have contributed to consumer welfare through low price and a variety of product mix; retailers' buying power towards manufacturers has increased; and unnecessary regulations on retail industry have been removed.

In 1989, the Korean government announced three steps opening project of the retail market within a 5-year wholesale and retail development plan. A final memorandum of understanding (MOU) was introduced to come to a settlement of Uruguay Round of GATT in December 1993. According to the MOU, the Korean retail market left the door open to foreign retailers since January 1, 1996. In 1998, it is evaluated that all legal barriers prohibiting entry of foreign retailers had vanished since foreigner's possession of real estate was allowed in full measure by an introduction of 'Foreign investment inducement promotion law[1].'

Before the market opening, the production of the Korean retail industry was mainly based on labor input rather than capital accumulation or productivity enhancement. Although the industry was largely considered as a relatively low productivity industry, there had not been many intensive attempts to raise its productivity. However, advanced retail systems adopted by new retail formats made the industry more capital-intensive or technology-intensive as the systems substitute labor with them. The advanced retail systems contributed to the development of retail process and changed a function of the retail industry in the Korean economy. The retail industry fulfills an intermediation between manufactures and consumers for efficient flows of products or information rather than just a place to purchase or sell products.

Doms, Jarmin, and Klimek (2003) and O'Mahony and van Ark (2005) concluded that productivity differences in the retail industry between

[1] We would appreciate the referees' valuable comments and suggestions. Regulations regarding the Korean retail industry should be included in the chapter to help understanding of readers. The Korean government had a planned schedule for opening the retail market.

countries might be explained by differences in adoption and investment of IT technologies. Most new retail formats are based on advanced IT technologies to reduce variable costs, to enhance operations, and to satisfy customer demands. Adoption of IT technologies may also play an important role in the success or failure in the retail industry. Since Korea leads the world trend of IT technologies, most new retail formats in Korea are able to adopt more efficient retail systems with relative ease. Development of retail systems has been connected to low prices and increases in consumers' welfare. Especially, the rapid increase in non-store retailing in Korea is directly linked to the development of IT technologies such as secure financial transaction and mobile communication.

The market opening also influenced the consuming trend in Korea by introducing a new retail environment. Consumers became more rational and changed their purchasing behaviors very rapidly. Dynamic changes in consumers' behavior lead to the market's competitiveness. Foreign retailers such as Wal-mart and Carrefour were forced out of the market because these retailers did not understand the changes in consumers' behavior in Korea[2]. In contrast, domestic retailers increase their competitiveness by satisfying the changes in consumers' behaviors. Some domestic retailers also try to advance into foreign markets based on the experience in the Korean market.

It is not clear whether the market opening directly affect productivity growth because foreign retailers entering the Korean market were a few. However, it is definite that the market opening lead structural changes in the Korean retail industry. First, numbers of businesses and employees in the retail industry has reduced after the market opening for the first time. A number of retailers have been decreased from 738 thousands in 1996 to 587 thousands in 2006 for 10 years. Also, about 200 thousands employment has been disappeared. New retail system such as chainstore system, and new retail and logistics system of retail enterprises lead development of new retail formats, for example, combination of off-line and on-line. These new system of large retailers also has sparked fierce competition with small retailers.

[2] Kim (2005).

Second, market share of large retailers has rapidly increased after the market opening. Market share of large retailers whose employees are more than 50 has increased from 11.4% in 1991 to 30% in 2005. However, market share of small retailers whose employees are less than 4 has decreased from 56.5% in 1991 to 24.5% in 2005. Since large retailers, especially large discount stores, expanded their stores to rural area, downwards of small retailer's revenue in that area has accelerated.

Third, in labor productivity, large retailers contributed to change into a labor-efficient retail structure with an increase in labor productivity. Revenue per an employee of large retailers rapidly increased from 76 million won in 1997 to 517 million won in 2005 while revenue per an employee of small retailers was only doubled at 99 million won in 2005.

As previous stated, entry of foreign retailers may be a foundation for strengthening the competitiveness of domestic retailers rather than quantitative growth in the Korean market even though there are only few foreign retailers entering the market. From this, it is deduced that efforts of domestic retailers to compete to foreign retailers and to survive in unforeseeable circumstances by the market opening indirectly enhance productivity growth of the retail industry[3].

Although it is asserted that they have contributed to the rise of efficiency in the Korean retail industry as a whole, these changes have not taken place uniformly among all sectors in the retail industry. In other words, the benefits from the changes have been restricted to a few sectors consisting of new retail formats such as large discount retailers, CVS, nonstore retailing, and so on. As a result, there have been significant structural changes in the retail industry depending on the rise and fall of sectors with different development paths after the opening market. Traditional formats which are usually small have been losing their own ground while new formats have been gaining their market shares rapidly. Although it is not certain that these retail formats have broadened the retail market in Korea, they seem to have substituted the traditional

[3] We would appreciate the referees' valuable comments and suggestions. It is more logical reasoning that the market opening indirectly influences productivity growth of the Korean retail industry through development and introduction of advanced retail system, and fierce competition rather than directly affects the growth. Therefore, productivity growth is the product of hard work of retailers in the Korean market.

formats in the retail industry.

A sign of structural changes is shown as total employment and total numbers of retailers have decreased since the market opening[4]. This is mainly because small retailers without competitiveness, which usually lean on labor inputs, were forced out of the market. Also new retail formats provide better shopping environment since they require more capital inputs such as IT technologies and a large space rather than labor input. New retail formats with achieving economies of scale have affected productivity of the retail industry in Korea[5]. These are major factors for structural changes in the retail industry.

A similar substitution of a new product for an old one has been widely observed in various manufacturing industries such as the typewriter (manual to electric; to dedicated word processors; to personal computers), lighting (oil lamps to gas; to incandescent lamps; to fluorescent lamps), and so on[6]. According to the product life cycle studies[7], the conditions a product is sold under will change over time: introduction, growth, maturity, and stability stages. It is noted that high production costs at the earlier stages prevents the dominance of a new product over an old one, and that a substitution takes place slowly with a certain period of coexistence of the old and new products in which neither product cannot dominate the other. In manufacturing, in spite of its better quality, a new product generally cannot overshadow an old one for its disadvantage in costs until it achieves enough productivity improvement by process innovation.

Contrary to these typical facts in product life cycles in manufacturing, innovation in services is said to follow a product life cycle that is the reverse of the traditional industrial cycle, which begins with product innovations and continues with process innovations[8]: incremental process innovation, radical process innovation, and product innovatio[9]. Therefore, once a new service starts its business, it already attains a high enough productivity level to compete with an old one. In the case of the Korean

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[4] Korea National Statistical Office (2007).
[5] Baek et al. (2005).
[6] Utterback (1994).
[7] Box (1993), Rey, Marine-Gil, Velasco et al. (2004).
[8] Abernathy and Utterback (1978).
[9] Barras (1986, 1990).

retail industry, it took a few years for new formats to be substituted for the old formats in terms of market share.

The purpose of this paper is simple and clear. First, we examine whether the various changes in the Korean retail industry after the market opening in 1996 increased the productivity by comparing productivity over time. Second, we examine whether there was a structural change in the Korean retail industry after the market opening -- substitution for traditional retail formats by new ones, and whether this was based on superiority of productivity in the new retail formats.

This paper is organized as follows. Section 2 presents the description of data used and outlines the methods for productivity measurement. Section 3 presents and discusses the results, and Section 4 summarizes our conclusions.

II. DATA AND METHODOLOGY

II.1. Data

Firm-level data by the Korea Investors Service (KIS) is used to examine in detailed patterns of productivity growth in sectors consisting of different formats in Korean retail industry during the period of 1986~2006. The KIS data contains information of the listed firms and the registered firms on the Korean stock market, and the audited firms. The information consists of financial statements, employment, indices of profitability, and so on. Gross margins, tangible fixed asset, and number of employees are used as output measure[10], capital input, and labor input, respectively, from the KIS dataset[11]. The summary statistics for each variable classified by formats are represented in Table 1.

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[10] The choice between sales and gross margin for output measure is conceptually an important issue, which is directly related to the definition of the retail industry. However, we did not examine this issue further and used gross margin for unavailability of data required in sales-based productivity estimation.

[11] Entry and exit of retailers are classified according to KIS assortment. KIS dataset classifies entry as appearance of new retailer's data and exit as extinction of retailer's data. Merger and acquisition (M&A) of retailers are included since the dataset contains overall changes in asset, debt, and capital which are based on financial statement. Also M&A do not significantly influence productivity growth because a methodology used in this research considers on ly residuals after calculating effects of capital and labor.

[Table 1] Summary Statistics (Unit: thousand Won, Persons)

Department Store	before 1996	after 1996
gross margin	54,329,566	197,582,022
	71,136,493	429,665,815
labor	1,275	1,323
	1,182	2,379
capital	130,068,150	615,716,174
	181,910,661	1,255,801,761
number of firms	20	27
observations	195	235
Large Discount Store	before 1996	after 1996
gross margin	19,349,131	47,193,777
	30,250,087	103,413,708
labor	661	717
	636	1,669
capital	47,479,141	165,836,622
	81,724,438	387,819,359
number of firms	14	29
observations	109	242
CVS	before 1996	after 1996
gross margin	35,378,468	146,513,945
	38,611,364	171,261,751
labor	1,381	912
	1,189	1,204
capital	140,365,314	346,554,176
	129,216,736	476,691,656
number of firms	3	6
observations	21	51
Nonstore Retailing	before 1996	after 1996
gross margin	8,929,334	41,018,880
	12,207,290	92,878,880
labor	117	170
	95	267
capital	14,471,887	24,593,159
	24,340,278	67,024,108
number of firms	7	51
observations	20	296

In order to generate real output series, CPI from National Accounts by Bank of Korea is used. The use of the CPI as a deflator in the retail industry output is widespread over many studies. Different CPI to each of the sectors of the retail industry is used to reflect a different commodity mix in each sector. The fixed capital formation deflator from National Accounts by Bank of Korea is used as a deflator for capital input.

II.2. Methodology

Firm-level total factor productivity (TFP) has been estimated as follows:

$$\Delta TFP_{it} = \Delta y_{it} - \alpha \cdot \Delta k_{it} - \beta \cdot \Delta l_{it} \tag{1}$$

where y_{it} denotes log of real gross margin of firm i at time t, and k_{it} and l_{it} denote log of capital and labor input of firm i at time t, respectively. α and β are estimated by least squares method to be 0.4034 and 0.5949, respectively[12].

In order to identify sources of sector-level or industry-level productivity growth, we have used a decomposition formula similar to the one in Foster, Haltiwanger, and Krizan (2002) based on firm-level productivity:

$$\begin{aligned}\Delta TFP_t = &\sum_{i\in C} s_{it-1}\Delta TFP_{it} + \sum_{i\in C}(TFP_{it-1} - TFP_{t-1})\Delta s_{it-1} \\ &+ \sum_{i\in C}\Delta s_{it}\Delta TFP_{it} + \sum_{i\in N} s_{it}(TFP_{it} - TFP_{t-1}) \\ &+ \sum_{i\in X} s_{it-1}(TFP_{it-1} - TFP_{t-1})\end{aligned} \tag{2}$$

where C denotes incumbent firms, N is entering firms, and X denotes exiting firms.

The first three terms on the right represent the contribution of incumbent firms to industry-level productivity growth: The first term

[12] The assumption of identical estimates over the whole retail industry would be controversial. (See Escribans and Guasch (2005)).

represents pure effect of each firm's productivity growth (effect 1). The second term represents the effect of each firm's share change (effect 2). The third term represents the effect of covariance of productivity and share (effect 3). The fourth and the fifth terms represent the contribution of entry (effect 4) and exit (effect 5) of retailers, respectively.

III. EMPIRICAL RESULTS

III.1. Market Opening and Total Factor Productivity

As shown in the last column of Table 2 and Figure 1, TFP growth in the retail industry as a whole notably differ over time when averaged over every five years from 1987 to 2006. The TFP growth rate after the market opening is relatively higher than before it, showing the possibility that the market opening in 1996 had a positive influence on the productivity in the Korean retail industry. In particular, the productivity growth rate for the five years after the market opening is highest, at 7.02%. It is significantly high even though the Korean financial crisis of 1998 is included in this period.

[Table 2] Decomposition of TFP Growth by Effects on the Korean Retail Industry

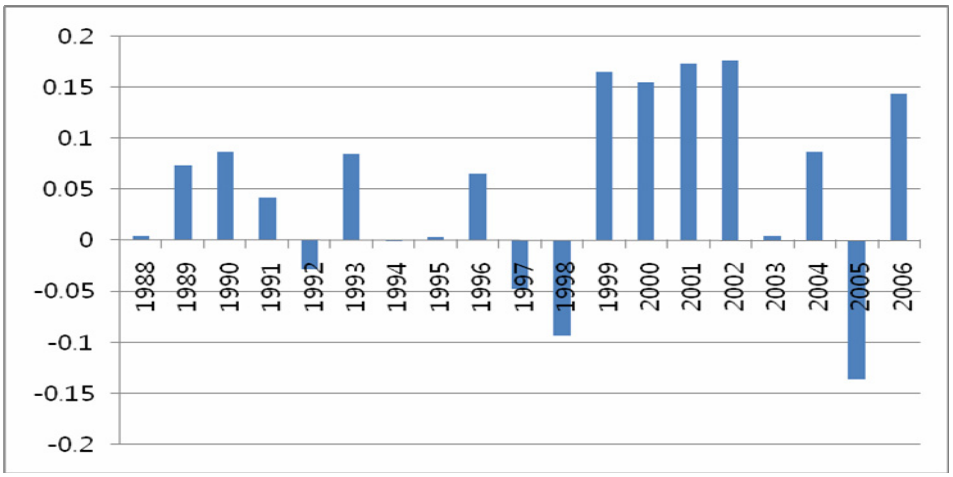
Years	Effect 1	Effect 2	Effect 3	Effect 4	Effect 5	Total
1987-1991	0.0498	-0.0099	0.0176	-0.0010	0.0000	0.0566
1992-1996	0.0291	-0.0623	0.0580	0.0036	0.0000	0.0283
1997-2001	0.0446	-0.0336	0.0601	-0.0009	0.0000	0.0702
2002-2006	-0.0688	-0.0481	0.1640	0.0059	0.0018	0.0548

Note: Average Annual Percentage Growth.

Table 2 also shows the decomposition of TFP growth by effects explained in Section 2. Effect 1, 2, and 3 indicate the productivity growth by the incumbent firms. Effect 1 represents pure growth in productivity of incumbents weighted by each market share. In other words, Effect 1 indicates that productivity growth through the efforts of incumbent retailers. It is one of the major factors in the productivity growth of the retail industry since it accounts for a critical portion of the total TFP

growth except in the 2002-2006 period. It means that the efforts by incumbent retailers to increase productivity growth significantly enhanced TFP growth in the Korean retail industry. Effect 1 from 1997 to 2001 is relatively higher than those in the other period. This also indicates that incumbent stores stimulated TFP to compete with foreign retailers and to survive in changed retail environment right after the market opening.

[Figure 1] Trend of TFP Growth in the Korean Retail Industry



In addition to Effect 1, Effect 3 significantly affected productivity growth. It is noticeable because the Effect 3 right after the market opening is larger than those before the market opening. This implies that retailers increase their market share based on productivity growth or that they accomplished productivity improvement by raising their market share. Whichever case it may be, TFP growth in retailers is positively related to increases in their market share, and the retail market has become more efficient.

Effects 4 and 5 indicate productivity growth by the entry of retailers or by exit of retailers, respectively. From 2002 to 2006, Effects 4 and 5 are 0.6 percent and 1.8 percent, respectively, meaning that TFP increased 0.6 percent by entry of retailers and 0.2 percent by exit of retailers. Except this period when the foreign large discount stores were sold to the domestic firms, the effects by entrants and exit are negligible since their market shares in the whole market are relatively small.

III.2. Structural Change and Total Factor Productivity

The result in the previous subsection shows the rapid increase in the TFP in the Korean retail industry and the positive effects of the market opening on retail industry's operational efficiency. However, it does not necessarily mean that the market opening directly caused the productivity improvement. Thus, in order to examine their relationship further, the contributions[13]of the different formats to the productivity improvement have been analyzed focusing on the new formats, which were primarily driven by the market opening.

As shown in Table 3, there are large differences in the contributions to productivity growth not only among sectors but over time. The contribution of the department stores to TFP growth has become lower since the market opening while department stores still take larger shares in the Korean retail market. This comes from the fact that the performance of department stores fell mainly because the gross margins of these stores also decreased. Contrary to the performance of department stores, the contributions of large discount stores and CVS are relatively stable deduced by both their rising market share and productivity growth. The market share of large discount stores and CVS increased from 9.56 percent in 1996 to 10.98 percent in 2006 and from 10.71 percent in 1996 to 13.92 percent in 2006, respectively. This stability of the contributions of large discount stores and CVS is one of the most important factor of structural changes in the Korean retail market, and the main cause of their being the major retail formats in the market.

[Table 3] Decomposition of TFP Growth by Formats in the Korean retail market

Years	Department Stores	Large Discount Retailers	CVS	Nonstore Retailing	Total
1987-1991	0.0501	0.0034	0.0037	0.0000	0.0566
1992-1996	0.0115	0.0028	0.0084	0.0026	0.0283
1997-2001	0.0318	0.0011	0.0088	0.0218	0.0702
2002-2006	0.0118	0.0059	0.0086	0.0286	0.0548

Note: Average Annual Percentage Growth.

[13] The contribution of each format is calculated as a sum of market share-weighted total factor productivities of individual firms included in each format.

The most impressive change among sectors is the TFP surge in nonstore retailing. The TFP contribution of nonstore retailing after the market opening is over 2 percent while TFP growth from 1987 to 1991 is negligible. Nonstore retailing, whose major components are homeshopping through television and the internet have grown rapidly since the market opening. While its market share was just 1.70% in 1996, it has steadily grown to 13.45% in 2006. It is very high even compared to the market share change in other new formats such as large discount stores and CVS during the same period. Productivity growth of nonstore retailing is expected to be higher than other retail formats since growth of nonstore retailing is mainly based on IT technologies. Also, the introduction and growth of the open-market stimulates growth of nonstore retailing. This may explain whether differences of productivity of retail formats have influenced structural changes in the Korean retail market. This is because these retail formats with higher productivity have performed better than traditional retailers representing small retailers and department stores.

The study shows the same results as a study by Foster et al. (2002). Foster et al. concluded that new retailers in the market showed higher productivity during their first few years than did incumbent retailers leading the retail industry to be more productive. Large discount retailers, CVS, and nonstore retailing exhibit higher productivity for a few years after their entry than other incumbent retailers. We can conclude that the new formats since the market opening account for a major portion of productivity growth in the retail market rather than incumbent retailers. These productivity growths of new retail formats led the structural changes in the Korean retail industry.

IV. CONCLUSION

The market opening in 1996 provided a favorable market environment for the entry of foreign retailers and the growth of retailers in Korea. The new retail formats have significantly increased their shares in the retail market since they rapidly expanded their businesses based on higher productivity growth. However, due to this fierce competition and the rapid substitution for old formats by new ones, we have experienced a

remarkable structural change in the retail industry since the market opening.

From the perspective of efficiency and following consumer's welfare, the changes for the 10 years can be seen as desirable. Moreover, these changes are expected to continue by other new formats in the retail industry. Especially, the number of players in the open market is expected to increase productivity growth, not only in nonstore retailers, but also for the whole retail industry as the open market shows rapid productivity growth. Category killers may raise productivity growth in the Korean retail industry and will increase their market share in developed countries because the retailers show higher productivity growth based on the specialization of commodities. However, regulations such as the pharmaceutical affairs law prohibit growth of these retail businesses in Korea. In order to develop the Korean retail industry, regulations which hinder these retailers' business should be reexamined because the new retail formats are one of major factors in increasing productivity of the whole retail industry.

Although we have confirmed that the productivity in the Korean retail industry has improved through the advent of new formats since the market opening, we should be cautious in the interpretation of the results. Since only listed and registered firms on the Korean stock market and the audited firms are included in empirical analysis, the performances of the traditional sectors which mainly consist of small and medium-size retailers may be relatively underestimated. This means that 'real' TFP growth in the Korean retail industry may be biased from the results. In spite of this limitation for the data unavailability in the traditional sectors, the productivity improvement through the new formats can be considered significant since the market opening in 1996.

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