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# The Effects of Trading-Hour Regulations on Large Stores in Korea\*

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## Abstract

**Purpose** - This study empirically analyses the sale changes in large retail stores directly resulting from increased controls on those stores. More specifically, we discuss the economic impacts on Korean regulations that restrict trading hours and mandate statutory store closure 'holidays' twice per month.

**Research design, data and methodology** - we attempt to empirically analyse the economic effects of trading hours regulations through quantitative analysis of the sales revenue data of large retail stores. We introduce the data and methods of empirical analysis used to analyse the economic effects of trading-hour regulations on large retail stores. We use a panel regression to analyse the sales losses of large retail stores caused by the new constraints on business hours.

**Results** - The results of this study show that the sales of large retail stores fell by the average of 3.4% per month during the regulation periods. However, regulations affecting large retail stores have various economic impacts, including variations in sales, changes in consumption patterns, and influences on consumer welfare and national economy.

**Conclusions** - Such changes may also be captured by other metrics: accordingly, further researches are needed to measure the impact of regulations on economic indicators such as employment and GDP.

**Keywords:** Regulation, Sunday Trading, Large Discount Store, Panel Regression.

**JEL Classifications:** L51, L81, C23.

## 1. Introduction

On a regular basis, Governments seek to modify social and economic outcomes by implementing new regulatory controls or by removing existing ones. In this paper, we seek to analyse the effects of the unusual introduction of new regulatory controls in a sphere – Sunday trading – where it has become more usual to remove them. This gives us the opportunity to build on earlier research on the regulation of the retail market in Korea (Kim & Hallsworth, 2013). Our concern now, as then, is on how change affects people and communities. Indeed, as our research was in production, Choi and Jeong (2015) produced findings on

much the same topic area. This allows our attention to refocus on the underlying mindsets of de-regulation or re-regulation in spheres such as retailing which is, we believe, inherently a market-serving service sector activity. Essentially, whilst some trade, especially in non-food, is lost to the internet, there remains a social need to provide available food to local populations. This has attracted global interest in the last few decades as, in many advanced economies, the food retail system restructured away from small, local retail providers and became increasingly controlled by a few, very large organizations. This latter trend has been evident in most industrialized nations in the last few decades and in most sectors of the economy. It is, indeed, common to conflate market dominance with progress.

So, despite the demonstrable need to provide local people with socially-acceptable food, the changes in the retail system are all too often 'framed' and subsequently analysed from a purely competitive economic/ econometric viewpoint. Like many others, Choi and Jeong (2015) take this 'frame'. Hence they follow a long tradition of questioning

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if retail regulations negatively affect consumer consumption patterns and national economies independently of the rate of economic growth. When analysis is framed econometrically rather than socially. There is evidence to be found that government regulations hinder economic indicators and, by implication, employment (OECD, 1994, 2008). Bertrand and Kramarz (2002), Nicoletti and Scarpetta (2003), and Bassanini and Ernst (2002) all found that government regulations restrain competitiveness and productivity. However, such studies are indifferent to the social and ownership implications which usually imply a sea-change from small scale enterprises to corporate control by often transnational businesses. Worse still, data on smaller retail outlets is usually rather poor. So, when job gains in large stores are found, it may also be the case that job losses in small stores go un-noticed. The retail trade, we insist, remains inherently local and subject to cultural preferences – especially so with food. It may be of immediate economic interest to both purchasers and producers if more and better motor vehicles can be produced in one country than another. It is of no immediate interest to a hungry person in one country that more and better food products are available in another country. The important, but too often ignored, social dimension of retailing was evidenced by the failure of Wal-Mart and Carrefour in the Korean market. Accordingly, retail restraints often arise after pressure from interest groups such as small retailers, shop workers or religious bodies (Kay & Morris, 1987; Maher, 1995). Maher (1995) has claimed that the on-going ideological debate on the validity of retail regulations combines economic, social, and ethical issues. Ingene (1998) has made similar claims, stating that the United States government traditionally enacted and maintained “blue laws” due to pressure from the three distinct groups: religious, retail, and labour organizations. In 1984, Sweden announced the permanent abandonment of regulations on trading hours (Kay & Morris, 1987) and the British and United States governments have increasingly given their up “Sunday trading laws” or “blue laws”. Indeed, in March, 2016 British Conservative Government proposed legal changes to remove the remaining Sunday trading laws. The Government used arguments from the Sweden case – but lost the vote and so the Sunday restrictions remain.

Whilst retail restructuring towards the dominance of larger outlets began in the 1960s in Western Europe, the Korean retail industry began its rapid restructuring only in 1996 – as the result of removing regulatory controls and opening up its retail market. New retail formats, such as large discount stores, super-supermarkets (SSMs), and home-shopping services have developed rapidly, while the percentage of traditional retail markets and small retail stores has decreased (Kim & Hallsworth, 2013). Along with these structural changes, complications have arisen with new and existing retail formats, and the decline of small and medium-sized subsistence retail outlets has become a

political and social issue. Another key point when ‘framing’ debates on regulatory change in an economic mindset is that one needs to be cautious with definitions. Many countries still do not have agreed definitions for outlets such as Hypermarkets (France) Superstores (UK), Supercenters (USA) or Super-Markets (Korea). In many countries, too, data on basic facts such as the total number of shop outlets is missing as noted by Hallsworth (2010) and to which reference may be made. Accordingly, the apparent precision of econometric models – upon which Governments are urged to rely – can be undone by data deficiencies. Indeed, as also argued by Hallsworth (2010) there may be nationally-set standards but these may be interpreted (and hence applied) differently in different locations. Overall, the apparent infallibility of economically-framed arguments is hard to sustain: nevertheless we will seek to use best available data to attempt this sort of analysis. However, lacking formal definitions we will seek data on the effects of Sunday trading/opening hours legislation on whatever types of large new retail outlets we can find.

The importance of the topic of shopping hours flows from the fact that no self-employed business – no matter how efficient – can trade 24/7. As shopping hours increase, so does the market share of those businesses able to stay open because they have many low-paid employees working in shifts; and so the market restructures from small businesses to large. For example, in Britain, in 2004, Tesco alone had almost as much market share as the four biggest grocers had held 1982 whilst the four biggest grocers in 2015 have around 75% of the total market. In Korea, as the belief spread that the market takeover by large discount stores must result in decreased sales in traditional retail markets, regulations on large retail companies were strengthened and support provided for traditional small-format retailers. In Korea, the establishment of conventional commerce preservation districts was enacted in 2011 by revising the Distribution Industry Development Law. This prevented the establishment of SSMs etc. within one kilometre of traditional retail stores, in order to protect small business owners and owners of traditional stores (Kim & Hallsworth, 2013). In 2012, a law to enforce trading-hour regulations and statutory holidays in large retail stores and SSMs was also enacted. This was the first case of Sunday trading laws passed in a fast-growing ‘tiger’ economy.

In countries outside Korea, business regulations on large format retail superstores have also been put into place, and active research has been carried out on the economic impacts of large retail stores and regulations on these stores. Most research conducted in the 1980s and 1990s in advanced countries has discussed the negative effects of regulations on aspects such as the convenience of consumers, increases in apparent employment, and growing efficiency, based on either theoretical or empirical analyses. For instance, regulation on trading hours may cause inefficiencies in distribution, and consumer congestion, and

hence it could have predominantly negative effects. On the other hand, reduction of trading-hour regulation can lead to an increase in employment and sales – dominantly by larger retail stores (Ferris, 1990; Clemenz, 1990; Central Plan bureau, 1994; Gradus, 1996; Bertrand & Kramarz, 2002; Williams et al., 2006). These existing studies have all dealt with store-level reactions such as pricing effects and effects on competition between larger retailers and smaller retailers in advanced countries. To date, only a few researches have tried to deal with the effects that regulations have on large retail stores' sales at the store level in fast-developing countries. Unlike previous studies, this research addresses how the negative economic effects of retail regulations that have been observed in advanced countries apply to a fast-growing 'tiger' economy where, until very recently, traditional formats dominated.

The purpose of this study is to capture and estimate the economic effects of regulations on the retail industry in Korea. More specifically, it addresses regulations that provide support to small retailers that have lost their competitiveness because of decreases in sales resulting from growth in new formats such as SSMs. This study discusses the effects of these regulations. In advanced Western countries, retail regulations have been promoted for social and libertarian reasons rather than economic ones (Kay & Morris, 1987). Similar retail regulations in Korea superficially aim to ensure that workers are healthy and well-rested. In reality, however, their purpose is to assist small, traditional, local business owners whose price competitiveness is threatened by the aggressive commercial expansion of SSMs etc. In order to accurately measure the effects of those retail industry regulations which have a strong economic focus, this study will apply sales figures from large retail stores, produced by Statistics Korea - a publicly trusted organization. This study aims to detect any changes in sales of large retail stores before and after regulations, after limiting exogenous variables.

By using sales figures categorized by retail format that have been released by Statistics Korea, this study analyses the economic effects of regulations on trading hours and statutory holidays on large retail stores. To do so, we apply a panel regression model to empirically analyse effects on the sales of large retail stores resulting from trading hours regulations. We accept that there are other metrics that could have been chosen but restraints of time and resources make this our preferred approach. We strongly encourage further analysis that may capture change in other ways or provide further robustness criteria. Subtleties in changes in product categories may also be evidenced by other metrics which, again, we encourage.

## 2. Literature Review

Existing research on retail regulations can be divided into

two groups. The first of these includes research related to regulations and consumer behaviour. Dijkgraaf and Gradus (2007) have found that regulations decrease consumer options and that if such regulations are lowered, all consumers theoretically benefit. This is because when shopping hours extend and become flexible, they lead to reduced prices (Lanoie, Tanguay, & Vallée, 1994). This viewpoint prioritises the importance of low prices – which large firms with many outlets may have the buying power to achieve. It also neglects that such stores are usually less local in location and may impose travel costs on poorer shoppers. Furthermore it is often assumed that lower prices result from efficiency and not from the ability of large powerful retailers to dictate and control costs from suppliers. The second category includes research on retail regulations and their economic effects. The two continents that have extensively enacted regulations on retail superstores are Europe and North America. In Europe, research that measured the economic efficiency of retail regulations was conducted in the 1970s through the 1980s (Morrison & Newman, 1983; Thurik, 1984; Kay & Morris, 1987; Price & Yandle, 1987; Gradus, 1996). On the other hand, research that measured the economic effects of easing retail regulations has been more common since the 1990s (Lanoie, Tanguay, & Vallée, 1994; Grünhagen, Grove, & Gentry, 2003; Jacobsen & Kooreman, 2005; Skuterud, 2005). Research that has discussed the negative effects of regulations on the retail market as often addressed the economic effects of easing or deregulating regulatory hours.

The Central Plan bureau (1994) concluded that freedom in trading hours can increase employment. Gradus (1996) used Swedish data to show that when regulations on trading hours are eased, large retail stores benefit from increased sales and employment. Moreover, Kramarz (2002) predicted that employment would rise by over 20% in France if regulations on large retail stores were eased. Williams et al. (2006) claimed that the Sunday trading hours regulations on large retail stores enacted in England created external effects including a decline in retail effectiveness and increased daily congestion costs to consumers.

Many studies have also discussed the positive effects of trading hours regulations, such as decreases in costs, declines in working hours, and increased religious consideration. Morrison and Newman (1983) claim that trading hours regulations redistribute sales from large retail stores to smaller retailers, while Kay and Morris (1987) argue, based on empirical analysis, that costs and prices decrease when trading hours regulations are eased. Ferris (1991) presents the theory that trading hours regulations contribute to increased efficiency, while Flores (2011) discusses a model that shows that easing trading-hour regulations does not necessarily promote welfare. Vias (2004) and Goetz and Swaminathan (2006) have found that the existence of large retail stores negatively affects the growth of communities. Ingene (1988) has demonstrated that

the combined findings of existing studies show that trading-hours regulations generally have negative effects on large retail stores and department stores, and have positive effects on small retailers such as general merchandisers and variety stores.

**<Table 1>** Previous literature on the economic effects of Trading-Hour Regulations

| Indicators       | Author(s) and year of publication  |
|------------------|--|
| Negative effects | Lanoie, Tanguay, & Vallée (1994); Plan bureau (1994), Gradus (1996), Ingene (1988), Kramarz (2002), Grünhagen, Grove, & Gentry (2003); Jacobsen & Kooreman (2005); Skuterud (2005), Williams et al. (2006) |
| Positive effects | Morrison & Newman (1983), Kay & Morris (1987), Ferris (1991), Flores (2011)  |

In examining research on this topic, we were able to arrive at the following conclusions. Typically, retail regulations in Eastern European and North American countries have regulated large retail companies with management knowhow and chain affiliations, but not smaller stores or “mom and pop” businesses (Ingene, 1998).

Retail regulations in Europe and North America started with political and religious purposes, aiming to guarantee the freedom to engage in religious activities for employees that had to work on Sundays. However, as the modernization of the retail markets structure accelerated and the European and North American retail industry began to be taken over by large-scale chain retailers, regulations began to focus on protecting self-employed small retailers, who could not compete with larger retailers in areas such as marketing. Retail regulations have now mostly been annulled, based on comprehensive consideration of consumer utility and the national economy. In the United States, Sunday trading laws have even been either changed or annulled for being unconstitutional (Kennedy, 2012). With these points in mind, this study presents an approach that differs from prior research. First, we hope to empirically prove that the regulation of Sunday statutory holidays and trading hours decreases profits for chain retail companies by limiting their ability to address variables such as seasonality and economic depressions, as has been shown in European countries. Also, because already-advanced and fast-developing countries have different economic growth levels, as well as varied cultural and religious backgrounds, the effects of such regulations on consumers could be discriminatory. We hope to determine whether this is the case by considering the distinct characteristics of fast-developing countries as variables in measuring the effectiveness of regulations.

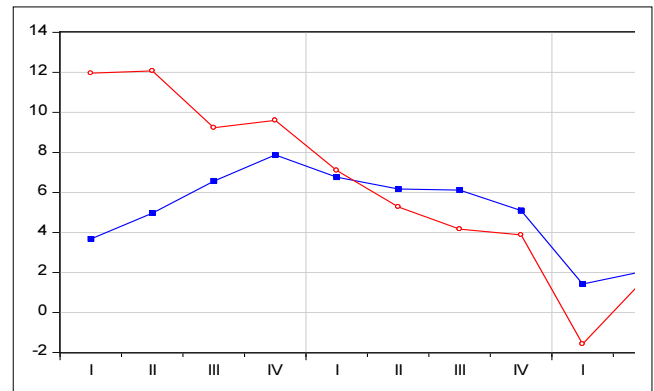
### 3. Data and Model

This section presents the variables affecting large discount

stores’ sales revenue and the panel regression model that we use to empirically assess the effects of regulations. In order to determine whether trading-hour regulations on large retail stores have actually decreased their sales revenue while revitalizing traditional retail stores and small to medium-sized retailers, we will compare sales revenue figures before and after regulations. We will do so for similar cases, with regard to factors such as regional characteristics, seasonal variations, and business fluctuations. In doing so, we will attempt to empirically analyse the economic effects of trading hours regulations through quantitative analysis of the sales revenue data of large retail stores. First, we introduce the data and methods of empirical analysis used to analyse the economic effects of trading-hour regulations on large retail stores.

#### 3.1. Factors affecting sales of large retail stores

In order to explore the effects that trading-hour regulations on large retail stores have had on consumers, we first need to understand how the sales revenue of large retail stores are influenced by regional characteristics and economic cycles. This study takes into consideration the “operation regulation variable”, regional consumer price indexes, populations, and a composite index as variables that affect sales revenue changes in large regional retail stores. Regional income variations that affect sales revenue by region are also considered as a variable. This is because household spending depends heavily on income levels.

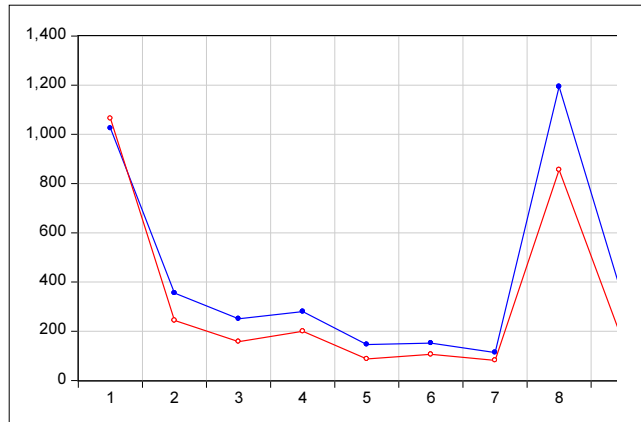


Note: The vertical axis of the graph denotes quarterly percentage changes over the same quarter of last year.

**<Figure1>** Changes in income and sales of large retail stores

<Figure 1> compares the year-on-year quarterly rate of change in Korean national income per capita with the sales of large retail stores. It shows how changes in spending patterns follow changes in income. For this study, we did not have access to monthly data on income, and therefore used a composite index as an index of regional economic cycles. Regional sales revenue also differs based on regional populations and price indexes, and <Figure 2>

depicts the relationship between regional monthly sales revenue and regional populations for the period under analysis. Regional populations, consumer price indices and economic indices are used as variables in our regression model, and have been collected from the Statistics Korea database.



Notes: 1) The vertical axis of the graph represents populations in 10 thousands, and sales in billion won, respectively.  
 2) Regional statistics are used for 1. Seoul, 2. Busan, 3. Daegu, 4. Incheon, 5. Gwangju, 6. Daejeon, 7. Ulsan, 8. Gyeonggi-do, 9. Gyeongsang-namdo.

<Figure 2> Regional population and average sales of large retail stores

In order to quantitatively analyse the economic effects of regulations on large retail stores, this study used monthly sales revenue data for each retail format from January 2010 to December 2012. Regional data from Statistics Korea was analysed for the nine regions of Seoul, Busan, Daegu, Incheon, Gwangju, Daejeon, Ulsan, Gyeonggi, and Gyeongnam. The summary statistics of each data are presented in <Table 1>.

<Table 2> Summary Statistics

| Variable                             | Mean      | StdDev    | Min       | Max        |
|--------------------------------------|-----------|-----------|-----------|------------|
| Regional Sales Revenue (million won) | 327,941.7 | 348,750.1 | 65,719    | 1,260,160  |
| Regional Price Index (year 2010=100) | 103.44    | 2.73      | 98.6      | 107.7      |
| Regional Population                  | 4,274,784 | 3,756,724 | 1,126,298 | 12,093,299 |
| Economic Index (year 2010=100)       | 104.9     | 4.1       | 97.0      | 111.3      |

Note: The sample size used in the regression analysis is 324, which consist of data on 9 regions for 36 months.

During the period of the analysis, regulations on large retail stores mandated statutory holidays and restricted trading hours. Most provincial governments enforced

mandatory statutory holidays on the second and fourth Sundays of each month. The regulations do not apply to stores that are small or located close to shopping malls, nor to retail formats with agricultural and fishery products consisting of more than 51% of sales. While the specific time schedules and forms of regulations differ regionally, the regulations addressed in this study were generally initiated in April 2012. These operational regulations were temporarily suspended or reduced between July and November 2012, following a court order that ruled the enactment of such regulations to be invalid. Yet after the municipalities made revisions to the regulations, it was ruled that trading-hour restrictions were fair. The regulations were then re-enacted in December 2012. This research uses data up to December 2012, and we set our model to capture the effects of temporarily easing or cancelling the trading-hour regulations following court orders in the latter part of 2012.

### 3.2. Panel regression analysis model

In a regression analysis based on panel data, random effects or fixed effects can be used, depending on the settings and on cross-sectional and time-series characteristics. Based on our consideration of these options, we use the cross-sectional characteristics of random effects in this study. In our formula,  $S$  represents the sales of large retail stores in region  $i$ , and  $X_t$  represents the factors that impact regional sales. Income, price levels, and populations are categorized as explanatory variables, as discussed above.

$$\log(S) = \mathbf{X}\beta + \delta D + \alpha_i + \gamma_t + u \tag{1}$$

The figure  $\beta$  in the formula represents sales changes in accordance with regional characteristics. When a regional price index is higher or a regional population is larger, total sales revenue is estimated to increase. Hence, we expect that all coefficient estimates of these variables will be positive (+). We also expect that regional income variations will affect sales revenue. In this study, as data on regional incomes are unavailable, we use the composite coincident index of business indicators as a regional economic index. The composite index is generated by Statistics Korea, using the following 7 economic indicators: namely, industrial production index, retail sales index, index of services, value of construction completed, shipment index, import, and number of employed persons. This study separates the entire data period into two stages—before and after the implementation of trading-hour regulations—in order to analyse changes in large retail stores' sales. In order to capture the effects of the trading-hour regulations, a dummy variable  $D_t$  is employed, which holds a value of 0 before the implementation of the regulations (up to March 2012) and during the temporarily suspended period (between July

and November 2012), and a value of 1 otherwise. Also,  $\alpha_i$  and  $\gamma_t$  represent the regional random effects and monthly random effects. Lastly,  $u_{it}$  represents the error term of the regression model on the observed value from the time  $t$  of region  $i$ , which is not explained by the variables listed above for the regional sales revenue changes.

The regression model in formula (1) above calculates the level of effect that each factor has on sales revenue changes, taking into consideration the many variables that may influence regional sales revenue changes. It has been set up to properly analyse changes in regional sales revenue as a dependent variable, and each variable can be analysed through a statistical significance test of its coefficient estimates. The focus of this regression analysis is to investigate whether and to what extent the changes in sales revenue induced by the regulations is negative and is of any statistical significance, which can be estimated by the coefficient. If sales revenue after the regulation is lower than those before the regulation, even after controlling for the fluctuations of prices caused by changes in other variables, this demonstrates that sales revenue fell due to the trading-hour regulations. Based on an analysis of the size and significance of the coefficient, we can discuss the actual level of economic effects resulting from the trading-hour regulations.

#### 4. Empirical Results

The purpose of the regulations on large retail stores was to inhibit consumer spending in those stores and contribute to the revitalization of traditional retail stores and small and medium-sized supermarkets. Therefore, we applied panel regression analysis to directly compare sales revenue changes before and after the trading hours regulations, while controlling for sales revenue changes caused by factors that influence regional sales. By doing so, we could calculate the sales revenue losses of large retail companies resulting from the regulations.

##### 4.1. Panel regression analysis using regional/monthly data

We used EViews program version 7.1 to estimate and analyse the results of the regression model. The random effects model and the fixed effects model were used in the regression analysis of the panel data, employing the model settings for the transverse section characteristics and time series characteristics. However, our research used the transverse random effects panel regression model because of the data specifications. We need to control with the panel data for unobserved sources of individual heterogeneity that vary across individuals but do not vary over time. Since the above reasons, panel regression analysis is an appropriate

method for this paper.

The Hausman test is generally conducted to check the appropriateness of the random effects model, but the panel regression model used for this study included the fixed description variable on a regional and monthly basis. As such, the appropriateness of the random effects model could be checked by comparing the coefficient estimates of the “regulation variable” of the model, set to suit the estimates of the two models. We confirmed that it was suitable to use the random effects model to determine the effect of large retail store regulations, as the estimates of both models were similar.

The results of the panel regression model, based on the use of regional data from January 2010 to December 2012, are presented in <Table 2>. The results of the regression model show that the determining coefficient ( $R^2$ ) had a value of 0.54, indicating that roughly 54% of the regional sales changes could be explained by changes in the factors taken into consideration for the quantitative analysis. Our findings also show that the signs and significances of the coefficient estimates correctly represent the assessed changes in sales. In particular, the coefficient estimate for the regional population is highly positively significant, which indicates that more sales are expected in areas with a larger population. The coefficient of the regional price index is positive, although it has a level of significance. The estimate of the economic cycle index is also positive, indicating that sales are affected by economic conditions.

<Table 3> Regression model of regional sales revenue

| Variable             | Coefficient Estimates | t-Statistics | Probability |
|----------------------|-----------------------|--------------|-------------|
| Constant             | -13.3267              | -6.8307      | 0.0000      |
| Regional Price Index | 1.0498                | 1.2599       | 0.2086      |
| Regional Population  | 1.0886                | 11.6515      | 0.0000      |
| Economic Index       | 0.9560                | 1.6709       | 0.0957      |
| Regulations Variable | -0.0343               | -2.3569      | 0.0190      |
| $R^2$                | 0.5404                | $\bar{R}^2$  | 0.5347      |

Notes: 1) Each variable represents explanatory variables that are included in equation (1).  
 2) Here the term ‘Probability’ indicates the p-value of each estimated coefficient.

The variable that is our focus in the results in <Table 2> is the “regulations variable”, which represents the sales revenue change rates of all large retail stores following the trading-hour regulations. We found that monthly sales revenue fell by roughly 3.4% after the regulations were implemented. The economic index used in <Table 2> is a national index and has limitations in analysing the effects of regional variations in income on the sales revenue of large retail stores. Taking this into consideration, we came up with

a model excluding the composite index, in order to examine the differences in sales revenue losses by large retail stores. Its results show how robust the estimate made by using the empirical analysis model is. The results of <Table 4>, which exclude the economic index, show that the estimate of regional population arrived at a result of 1, as in <Table 3>. The significance of the regional price index was estimated to be high, as was the case for the determining coefficient. The coefficient estimates of the “regulations variable” show that the sales revenue of all large retail stores fell by roughly 3% with the implementation of the trading hours regulations. The statistical significance of the result was high, with a low significance of the t-value of the coefficient estimate. In another analysis of the estimated results, carried out by applying the regression models for the same figures with different variables, estimates of the drop in the sales of large retail stores were similar, further demonstrating the effects of the regulations on sales.

**<Table 4>** Regression model of regional sales revenue (responsiveness comparison)

| Variable             | Coefficient Estimates | t-Statistics     | Probability |
|----------------------|-----------------------|------------------|-------------|
| Constant             | -15.2873              | -9.7869          | 0.0000      |
| Regional Price Index | 2.4124                | 14.0516          | 0.0000      |
| Regional Population  | 1.0944                | 11.7203          | 0.0000      |
| Regulations Variable | -0.0297               | -2.0705          | 0.0392      |
| $R^2$                | 0.5374                | $\overline{R}^2$ | 0.5330      |

Note: See notes to <Table 3>.

We used the data from January 2010 till December 2012 with the ban in effect between April 2012 and June 2012. Given the rather large duration (January 2010-March 2012) before the ban versus a short duration after (July 2012-December 2012), the results might have an upward bias, i.e., a larger reduction in sales than what actually happened. In order to see a robustness check, we re-estimate the regression model over a truncated period, June 2011 till December 2012, so that the durations before and after the ban are balanced. <Table 4> and <Table 5> present the results for the robustness check. The coefficient estimates of the regulations variable remain almost the same as those in <Table 2> and <Table 3>, respectively, and their statistical significance is not much affected.

## 5. Conclusion

### 5.1. Summary

We carried out this research to study the effects of new regulations in the retail industry of Korea, as a fast-growing ‘tiger’ economy, and to consider them with regard to the

annulment of similar retail regulations in European and North American countries. Our thorough review of existing research suggested that price-focused researchers inferred that retail regulations negatively affected national economies (Thurik, 1984; Price & Yandle, 1987). Retail regulations were first enacted in Europe and North America under the pressure of interested parties such as religious and labour groups (Maher, 1995), and were mostly eased or annulled once purely economic factors were prioritised. While the regulations on large retail stores in Korea were driven by pressure from interest groups – as in the past in Europe and North America – their goal was to give respite and encouragement to self-employed business owners whose competitiveness has decreased in the fast-growing Korean economy. For this study, we conducted an empirical analysis of sales loss factors affecting large retail stores, concentrating on the results of trading hours restrictions. A panel regression analysis was applied to sales revenue data from Statistics Korea, concerning stores with different retail formats. As Ferris (1990), Clemenz (1990), and Williams et al. (2006) demonstrated, we found that trading-hour restrictions caused losses in sales revenue among large retail stores. These findings have important policy implications, given the effects that retail regulations have on the national economy. This, of course, reflects the priority that is given, particularly in economic downturns, to issues of low price and economic efficiency rather than social, moral or community factors.

We believe that, unless the large retailers chose to absorb the cost increases, losses in sales among large retail stores could lead to decreases in employment and losses among the subcontractors that distribute to large retail stores as Bertrand and Kramarz (2002) and Viviano (2008) asserted. As demonstrated by Morrison and Newman (1983), such losses have a substitution effect, and may partially contribute to increases in the sales of small retailers. Even though all retail industry’s sales are decreasing only traditional market’s sales are showing increases. We found that retail regulation has the effect of lowering sales at large discount stores sales, but that such losses may be substituted by the increases in the sales of small retailers. It was the belief that the exact opposite effect exists that led to the failure of the British Sunday trading Bill in 2016. The results imply that the new regulations applied by the Korean government had the effect of protecting small retailers from the large stores’ business district expanding.

### 5.2. Implications

In order to appropriately establish related policies in the future, there is a need for continuous empirical analysis of the economic effects of regulations on large retail stores. We also noted that some trade, especially in non-food, is lost to the internet and the precise way in which this happens also needs closer study. Indeed, supporters of the

liberalization of Sunday trading in the March, 2016, British debate explicitly stated that they did not wish to see more trade lost to the internet. Internet shopping, however, is not constrained by any shopping hours and the winning argument was that the real victims of longer hours would be small shops. It follows that the losers from shorter hours will be the new-format “larger” stores that we have studied. So we again return to the topic of winners and losers. As noted, the long-run trend past decades is for global conglomerates to win and for small, local rivals to lose. This has generally been framed as progress and thus, inherently, good. Note, however, that very recent political developments in Britain and the USA imply that many localities believe that they have now lost too much to global patterns of change. We now see ‘populist’ local, social and political responses to wider economic trends reaching the national political stage.

### 5.3. Limitations and Future Task

However, our more limited case study focuses on retail change and we suggest that for a more accurate picture, statistical data on regional traditional retail stores and consumer spending must be systematically collected in the future. In many countries the ability to accurately assess change is compromised because available data often does

not cover all retail formats. This brings us back to our earlier point about data reliability. Most typically, data are good for large new modern stores – which are growing – but typically very poor for the vast numbers of smaller stores that are declining. Job growth figures in the former are often far more visible than job losses in the latter. Hopefully, in Korea, the accuracy and rationality of this future research can be ensured through the systematic analysis of seasonal and economic factors, as well as publicly trusted data from Statistics Korea. Comparative research involving data from different nations should also be conducted: based upon how much of the entire economy of each country is taken up by the retail industry. There is also a need to study how to rationally respond to the effects of regulations on diverse aspects of social welfare, as well as what the substitution effects of regulation policies are for traditional retail stores. Previous studies performed assessments of the regulatory impact using long-term data covering 10 years and or longer; however, in this study, we were forced to depend the data from one year prior to and one year after the enactment of regulations. In order to carry out a more accurate assessment of the regulatory impact, it is necessary to include data results from 10 or more years of implementing the regulations in the economic impact assessment.

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<Appendix>

The tables below present the results of the panel regression model in formula (1), but use different standards to analyse sensitivity. While the sizes of coefficients and/or levels of significance change in some case, most of the

results demonstrate a 3.4–3.6% drop in sales of large retail stores following the implementation of trading-hour regulations. Hence, we can conclude that standards for analysing sensitivity do not affect the main findings of this study.

<Table A1> Regression model without regional/monthly effects

| Variable             | Coefficient Estimates | t-Statistics | Probability |
|----------------------|-----------------------|--------------|-------------|
| Consistency          | -12.3798              | -3.7229      | 0.0002      |
| Regional Price Index | 0.2179                | 0.1102       | 0.9123      |
| Regional Population  | 1.1100                | 79.1065      | 0.0000      |
| Economic Index       | 1.5130                | 1.1103       | 0.2677      |
| Regulations Variable | -0.0359               | -0.9523      | 0.3416      |
| $R^2$                | 0.9519                | $\bar{R}^2$  | 0.9513      |

<Table A2> Regression model with random regional/monthly effects

| Variable             | Coefficient Estimates | t-Statistics | Probability |
|----------------------|-----------------------|--------------|-------------|
| Consistency          | -12.5439              | -4.8847      | 0.0000      |
| Regional Price Index | 1.2428                | 1.4390       | 0.1511      |
| Regional Population  | 1.0145                | 10.7865      | 0.0000      |
| Economic Index       | 0.8330                | 1.2355       | 0.2176      |
| Regulations Variable | -0.0338               | -0.8018      | 0.4233      |
| $R^2$                | 0.3118                | $\bar{R}^2$  | 0.3032      |

<Table A3> Regression model with random monthly effects

| Variable             | Coefficient Estimates | t-Statistics | Probability |
|----------------------|-----------------------|--------------|-------------|
| Consistency          | -12.2192              | -3.4482      | 0.0006      |
| Regional Price Index | 0.1121                | 0.0536       | 0.9573      |
| Regional Population  | 1.1100                | 79.7200      | 0.0000      |
| Economic Index       | 1.5840                | 1.0956       | 0.2741      |
| Regulations Variable | -0.0361               | -0.8739      | 0.3828      |
| $R^2$                | 0.9529                | $\bar{R}^2$  | 0.9523      |

<Table A4> Regression model with random regional fixed/monthly effects

| Variable             | Coefficient Estimates | t-Statistics | Probability |
|----------------------|-----------------------|--------------|-------------|
| Consistency          | 15.6937               | 2.2918       | 0.0226      |
| Regional Price Index | -0.9077               | -0.9333      | 0.3514      |
| Regional Population  | -0.7057               | -1.7691      | 0.0779      |
| Economic Index       | 2.4329                | 3.2418       | 0.0013      |
| Regulations Variable | -0.0363               | -0.8830      | 0.3779      |
| $R^2$                | 0.9985                | $\bar{R}^2$  | 0.9984      |