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Radius Restriction and Firms' Survival: Evidence from the Coffee Franchise Industry

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Abstract

This paper investigates the effects of distance restrictions on the survival of coffee shops in Korea, which were implemented by South Korea's Fair Trade Commission to limit the opening of new shops by headquarters to protect franchisees' territorial rights. Using Cox proportional hazard regression analyses, we find that the radius restriction reduced the hazard rates of all coffee shops significantly. However, selective regulation on five big brands affected interbrand competition and changed the landscape of the coffee franchise industry. Different benefits across different coffee brands also widened the gap between small brand coffee shops and the rest.

Keywords: radius restriction, business territory, competition, survival analysis, franchise, Cox regression model, coffee industry
JEL Classification: L20, D21, R11

1 Introduction

With 284 stores in 2014, Seoul was the city with the most number of Starbucks in the world, followed by New York City with 277 stores, even though the price of a Starbucks "tall-sized Americano" in Seoul of 4,100 won ($4.01) was 1.63 times that in New York (*Korea Times*, 2014).[1] The coffee boom in South Korea (hereafter, “Korea”) derived not only from consumers’ demand for coffee or for a Western coffee culture but also from the growth of coffee franchises, which have increased rapidly. From 2008 to 2014, the number of coffee stores in Seoul rose annually at an average rate of 13.34%.

Franchising has grown rapidly in Korea not only in the coffee industry but also in bakeries, pizza shops, family restaurants, and many other industries.[2] According to Korea’s Fair Trade Commission (hereafter, “KFTC”), the size of the franchise industry in Korea, only 45 trillion won in 1999, increased to 77 trillion won in 2008 and 86 trillion won in 2013.

However, franchisors’ rapid expansion led to a high concentration of stores in the same business territory, resulting in cannibalization between franchisees of the same brand and excessive competition between franchise stores.[3] Both incumbent and independent franchisees lost sales, which stimulated small shops and incumbent franchisees to complain about large franchisors' stranglehold and territorial encroachment.

To address this problem, the KFTC introduced a minimum distance regulation in 2012 to protect incumbent franchisees’ territorial rights from competitors’ expansion, by constraining

[1] Seoul is the world's most Starbucks-filled city (http://www.koreatimesus.com/seoul-is-the-most-starbucks-filled-city-in-the-world/). Moreover, according to *Quartz* magazine research, Korea took third place among OECD countries in 2014, with 12.55 stores per million residents, following Canada and the United States (http://www.huffingtonpost.ca/2014/05/27/starbucks-canada-leads-world_n_5399685.html).

[2] In 2016, the size of the Korean franchise industry increased to more than 1,000 trillion won. Using approximate figures, there were 4,300 franchise headquarters, 5,200 brands, and 219,000 franchisees in the country.

[3] The number of applications to the Council for the Mediation of Franchise Business Transaction Disputes, an organization that mediates disputes between franchisers and franchisees, increased 1.5 times from 291 in 2008 to 733 in 2011.

new coffee shop openings. The minimum distance between franchise outlets was set when a large franchisor opens a new outlet in several franchise industries such as a bakery, coffee shop, convenience store, or fried chicken or pizza franchise.

Requiring a certain distance from another establishment when opening a new store is a direct way to regulate entry. Many countries have licensing regulations and minimum distance requirements for certain businesses, such as liquor stores, gun shops, and drugstores, either to restrict their proliferation or prevent their concentration.

However, the KFTC's implementation of minimum distance requirements between franchises from 2012 to 2014 is rare in the global franchise industry for a couple of reasons. First, while minimum distance restrictions protect franchisees' territorial exclusivity, unlike in Korea, this is an individual legal issues between franchisors and franchisees in Western countries.[4,5] Second, such contractual protection now is difficult to find in any country. It started to disappear in the 1990s in the United States and also became increasingly infrequent in France (Emmerson, 2009).[6] Third, a minimum distance requirement was imposed not on every brand belonging to the same franchise but specifically on large brands selected by the criteria of sales and/or number of stores.

Rather, its selectivity is closely related to government regulation of large retailers in many countries that targets specific brands or stores. While they do not use a minimum distance restriction, France, Spain, and Japan limit the entry of large or medium-sized retailers in local communities to protect small businesses. Many local governments in the United States also have store cap ordinances that constrain store sizes to prevent the entry of big-box retailers

[4] Regarding state-level intervention in the U.S., a proximity clause in the 1992 Iowa franchise law prevented franchisors from opening a store within a three-mile radius from an existing establishment, in cities with a population of 30,000 or more. This regulation (Iowa code 523H.6, 1992) is similar to the KFTC's restriction. However, in 1995, Iowa's clause was replaced with adverse impact guidelines (Blair and Lafontaine, 2005).

[5] In addition, although this is a private contract matter, shopping centers may impose radius restrictions to prevent tenants in a particular shopping center from opening another store within a certain radius (Eckert and West, 2008.

[6] Emmerson (2009) pointed out that as franchise systems mature, franchisors do not need to entice franchisees with exclusive territories. In addition, the exclusivity clause restricts the growth and expansion of a franchisor.

(Zhou, 2017). Some empirical literature suggests that while the exit rate of big retailers decreased due to entry restrictions, competition between small retailers became more fierce and exit rates increased (Igami, 2011; Sadun, 2014). However, Jia (2008) showed that the entry of big-box retailers such as Walmart and Kmart adversely affected existing stores' profit and hastened their exits. Others point out that entry regulations reduce employment and efficiency in the retail sector (Bertrand and Kramarz, 2002; Schivardi and Viviano, 2011; Sadun, 2015; Zhou, 2017). Meanwhile, most studies point out that competition from either large or small stores decreases small stores' survival rates (Basker, 2005; Jia, 2008; Sadun, 2014; Viviano, 2008).

This paper examines the impacts of the KFTC's minimum distance restriction on the survival of coffee shops. We attempt to answer three main questions: 1) how the distance restriction affects the survival of coffee shops and which coffee shop brands are more affected, 2) how much competition exists between brands, and 3) where does distance competition take place. Estimation results show that the restriction significantly increased the survival of coffee shops, whether or not coffee shops were subject to the regulation. However, the impacts were different across the segments of coffee brands. In terms of duration, the gap between small brand and the rest brand coffee shops increased. Coffee shops in the big and medium brands faced stronger competition from the same kind of coffee shop. However, medium brand coffee shops competed strongly with small brand coffee shops and foreign-brand coffee shops. Medium brand coffee shops competed with brands of all sizes. So the entry restriction on big brand coffee shops may have provided a better environment for medium brand coffee shops. Moreover, in Korea, actual competition arose for coffee shops within a 100 meter radius. The 500 radius standard may be too strong or excessive threshold in some areas if actual competition occurs in smaller areas.

The contribution of this paper is threefold: first, this paper is one of the first studies to investigate the impacts of the KFTC's minimum distance restriction by applying a rigorous regression approach to extensive registration data in Korea. Second, it provides a better understanding of the coffee franchise industry by examining the competition and survival of coffee shops across big, medium, small, and foreign brands. Third, our empirical results provide policy implications, specifically that the radius restriction had unintended effects on franchisors' business by changing the competition structure and assisting franchisors free from the restriction while extending their coffee shops' survival.

The remainder of this paper is organized as follows: Section 2 reviews the KFTC's distance restriction in Korea and the coffee franchise industry. Section 3 introduces an empirical model and explains the data. Section 4 presents estimation results and robustness checks. The conclusion is presented in Section 5.

2. Distance Restriction Guidelines and the Coffee Franchise Industry

2.1 Distance Restriction Guidelines

To protect the territorial rights of franchisees and to ease cutthroat competition, the KFTC established "Model Franchise Transaction Standards," which imposed a distance between franchise outlets. Franchisees, small businesses, and self-employed business owners welcomed this distance restriction because they expected it to restrict entry of large franchise shops and protect their local businesses. Starting with bakery franchises in April 2012, the KFTC expanded this rule to fried chicken and pizza franchises in July 2012 and to coffee chains in November 2012.

Specifically, the regulation required a minimum distance between franchise outlets for large franchises that met certain conditions when opening a new store.[7] The distance restrictions were as follows: 250 meters between convenience stores, 500 meters between coffee shops and bakeries, 800 meters between fried chicken franchises, and 1,500 meters between pizza franchises. Existing outlets built closer together were exempt from this restriction, but when an existing store closed, replacement franchisees became subject to the restriction. So when an existing shop closed in a saturated market, it was almost impossible to open a shop with the same brand. In addition, because the restriction did not apply to franchisors' outlets directly managed by a corporation, foreign chains such as Starbucks and Coffee Bean & Tea Leaf (hereafter, "Coffee Bean") were also exempt from the restrictions.

While this guideline had no legal enforceability, most franchisors considered it to be practically binding and followed it. Therefore, in terms of the total number of stores and total sales, the growth of large franchise stores stagnated.[8] By contrast, small- and medium-sized independent stores enjoyed strong growth and considered the guideline to be quite effective.

However, franchisors subject to the distance restriction argued that because intensity of competition may depend on location and each franchise's individual brand traits, the uniform distance restriction standard is not appropriate, adding that if the rule caused entry barriers through restrictive licensing, it could damage corporate management's strategic autonomy and restrict diversity in consumers' choices. Franchisors also claimed that the arbitrary selection of target brands may cause unintended consequences, such as harming the survival of other brand

[7] For instance, coffee shop franchisors owning more than 100 stores, with sales over 50 billion won (equivalent to USD 46 million as of November, 2012), sales and bakery franchisors owning more than 1,000 stores or 100 or more stores with sales over 1 trillion won (equivalent to USD 920 million as of November, 2012) are under the restriction.

[8] The top nine brands, except Starbucks, Coffee Bean, and Caffè Pascucci, experienced the sales growth dropping from 42.4% in 2011 to 9.3% in 2012 (Source: news.mt.co.kr)

stores, because the rules were implemented to protect a certain group of top-brand franchise companies.

In August 2014, to alleviate excessive regulation, the KFTC rescinded the distance restrictions, but in responding to franchisees' concerns, it amended the Fair Franchise Transaction Act so that all businesses (i.e., all the franchise retailers) become legally bound to the business territory stated in their franchising contracts. That is, each of the franchise store owners is able to negotiate its operational territory or to set minimum distances between stores when signing a contract with franchise brand owners. While consultation between the franchisor and franchisee could reasonably adjust these territories, the franchisor was restricted from operating similar shops within the franchisee's territory without justifiable reasons. The KFTC claimed that this modification would more strongly and effectively regulate transactions between franchisers and franchisees.

Despite these actions, debates regarding franchisors' intrusion on franchisees' business rights have continued because contract agreements often include clauses more favorable to franchisors, who have greater bargaining power. Recently, to protect small businesses, lawmakers initiated a revision to the Fair Franchise Act that prohibits a new opening of the same brand store within a 1-kilometer radius of the existing franchise store. Since Starbucks opened stores aggressively, thanks to its exemption from the distance restriction, other lawmakers suggested legislation of a "Starbucks Act" to restrict the distance between Starbucks coffee shops.[9]

2.2 The Coffee Franchise Industry in Korea

[9] In 2016, Starbucks Korea became the first coffee company in Korea with sales of over 1 trillion Korean won. In 2017, Starbucks Korea ranked fourth in sales and number of stores among all Starbucks in the world.

According to the 2017 Coffee Market Report, sales in the Korean coffee market rose to approximately 6.4 trillion won (USD 5.4 billion) in 2016, 30.6% higher than in 2013. Coffee shops, which account for 62.5% of the total coffee market (4 trillion won), played an important role in this rapid growth, while instant coffee and pod coffee also took significant shares. According to the Korea Consumer Agency, Starbucks was the largest coffee shop, with over 1.2 trillion won in sales.[10] The next four largest coffee shops were A Twosome Place (Korean), with 200 billion won in sales, Ediya (Korean), with 154 billion won in sales, Coffee Bean (American), and Caffé Bene (Korean). Starbucks is considerably larger than any of its competitors.

Beginning in November 2012, the KFTC's minimum distance restriction applied to franchisors that owned more than 100 stores, with annual sales of over 50 billion won (equivalent to USD 46 million in November, 2012).[11] These franchisors were prohibited from opening new outlets within 500 meters of their existing stores. This 500-meter minimum radius criterion was set by considering the average distance of 476 meters between Starbucks outlets in Seoul. The five largest coffee franchisors subject to this restriction included Angel-in-us Coffee, A Twosome Place, Caffé Bene, Holly's Coffee, and Tom N Toms Coffee, as shown in Figure 1. Two foreign chains, Starbucks and Coffee Bean, were exempt from the restrictions because their outlets are directly managed from company headquarters, and they met certain sales criteria.

Table 1 shows the number of stores across franchise groups, based on the KFTC distance restrictions. The top five coffee brands subject to the distance restriction increased from 296 locations at the end of 2008 to 1,468 at the end of 2011. The domestic brand Caffé Bene had the largest number of stores in 2011, just before the implementation of the distance restriction,

[10] While the Korean coffee market was small until the 1990s, the entry of Starbucks in 1999 brought changes in Korean's consumption of coffee, an example Western cultural integration.
[11] US$ 1 = W1,087, as of November 2012.

followed by Angel-in-us Coffee and Starbucks.[12] Caffé Bene, Angel-in-us Coffee, and A Twosome Place in the big brand group grew rapidly, with compound annual growth of over 100% from 2008 to 2011.

New coffee shops often were clustered in the same geographic area, which caused fierce competition, deterioration of profitability, and declining sales. For instance, at the end of 2011, the Gangnam-Gu district and Jongro-Gu in Seoul had 1,128 and 819 coffee shops, respectively.[13]

After the distance restriction was introduced, growth of medium brand coffee shops exceeded those of big brands. Ediya Coffee in particular, a medium brand not subject to the restriction, increased its number of stores aggressively and became the largest brand in Seoul in 2014. By contrast, sales growth for Caffé Bene and Angel-in-us, the two largest big brands subject to the restriction, slowed noticeably. As noted earlier, Starbucks, which was not subject to the restriction, doubled its number of stores since 2011.

3. Model and Data

3.1 Empirical Model

We employ Cox's semiparametric proportional hazard model (1972), as follows:

$$h_i(t; x_i) = h_0(t) \exp(\mathrm{x}_i'\beta)$$

where t is the elapsed time since the entry of store i, $h_i(t; x_i)$ is the hazard function for store i at time t, x_i is a vector of explanatory variables that affects store i's survival (or exit), and β

[12] Coffee shops in Seoul and other metropolitan areas began to expand in 2006.Most importantly, the opening of the domestic brand Caffe Bene's first store in 2008 triggered an aggressive expansion of franchised coffee shops.
[13] Gangnam-Gu and Jongro-Gu had 28.5 (73.7) and 34.2 (88.6) coffee shops per square kilometer and square mile, respectively.

is the vector of coefficients, measuring the influence of observed characteristics. The term $\exp(x_i'\beta)$, which depends only on the explanatory variables, shifts the baseline hazard function $h_0(t)$, which depends only on the duration of a store's survival.[14]

The list of variables is in Table 2. As explanatory variables that control store characteristics, we include the size (floor space) and business type (full-service or casual coffee shop) of store *i*.[15] Based on the KFTC's criteria in the distance restriction guideline, we categorize franchise brands into four groups: big brands subject to the restriction (*Big*), medium brands (*Medium*), small brands (*Small*), and exempted brands (*Exempt*).[16] The franchise category dummy variables (*Big*, *Medium,* and *Small*) are also included to consider possible intrinsic characteristics of each respective franchise category.

We capture the degree of competition that store *i* faces with the number of stores competing with each other within a certain radius.[17] In line with the KFTC's distance restriction, we start with the number of stores across categories within 500 meters. In our extension, we also investigate distances of 100 and 300 meters as the distance within which the survival of each store is influenced by competitors.[18]

The region fixed effects are also included to control regional characteristics such as regional industry structure, income, population, rent, and geographic characteristics.[19] Some macroeconomic variables, such as the GDP growth rate and interest rates, are also included.

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[14] Unlike a Weibull or lognormal specification, there are no assumptions about the form of the baseline hazard function . In fact, it "partials out" the baseline hazard function.

[15] Coffee stores in our dataset are classified into full-service and casual restaurants. Under Article 21 of the Food Sanitation Act, amended by presidential decree in Korea, casual restaurants sell light foods such as tea, ice cream, fast food, and snacks, but not alcoholic beverages. Full-service restaurants can sell alcohol with food.

[16] For more details on the criteria, refer to Section 2.2.

[17] The distance between coffee shops and the number of coffee stores within a specific radius is calculated based on an address's coordinates (i.e., latitude and longitude).

[18]Business territories may differ based on goods, brands, or locations. For instance, in the gas station industry, Hosken et al., (2008) considered the number of stations within a 2.4-km radius (equivalent to 1.5 miles), whereas Eckert and West (2005) employed a two-km radius. Ashenfelter et al., (2007) used variables based on 5 miles, 5–10 miles, and 10–20 miles for the Staples–Office Depot merger case in the office superstore industry.

[19] Korea consists of 17 administrative divisions: nine provinces, one special autonomous province, six metropolitan cities, and one special city (Seoul). The country is subdivided into a variety of smaller entities at the

Lastly and most importantly, as the variable of interest, we include the regulation dummy variable, *Reg*, that takes a value of 1 during the distance restriction period and 0 otherwise. If the regulation eased competition, it likely decreased coffee shops' hazard ratio. However, the regulation might vary across coffee shops. Therefore, we include the interactions between the regulation dummy variable and the franchise category dummies (*Reg·Big*, *Reg·Medium,* and *Reg·Small*).

3.2 Data Sources and Descriptive Statistics

Our data set covers the period of January 2008 to July 2014, which includes periods of no regulation (January 2008–October 2012) and regulation (November 2012–July 2014). The data, which comes from the Korean local administration data open system,[20] includes name, address, licensing date, closure date, and store size for each coffee store operating in Korea. Franchise information was collected from the KFTC's franchise business information system.[21] Based on the KFTC's criteria in the distance restriction guideline in Figure 1, the five Korean big brands (*Big*) that operate more than 100 stores with over 50 billion Korean won in sales were subject to the distance restriction. However, two foreign brands (*Exempt*), Starbucks and Coffee Bean, were exempt from the restriction because their stores are directly managed through company headquarters. Among the Korean brands not subject to the restriction were eight medium brands (*Medium*) with less than 50 billion won in sales that operated more than 100 stores..[22] Macroeconomic data, such as GDP growth and interest rates, were obtained from the Korea Statistical Information Service (KOSIS).

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municipal level: city (si), county (gun), and district (gu). Our data set contains data on coffee shops in 229 districts (si/gun/gu) out of 264 municipal districts in Korea. In the estimation, we include regional fixed effects at the municipal level.

[20] http://www.localdata.go.kr. This system includes licensing data from about 440 industries closely related to daily life, such as bakeries, coffee shops, and hospitals.

[21] https://franchise.ftc.go.kr

[22] One brand, Gong-cha, which could be classified as a medium brand, was included in the small-brand group in the empirical analysis because it entered the market near the start of the regulation.

For the data set from January 2008 to July 2014, we include coffee shops in existence since 2000. Among them, we exclude coffee shops that were in business for less than 30 days because such a short duration could have been caused by a contract problem, not from competition.[23] In the final data set, 14,670 coffee shops exited the market during the sample period while 44,968 coffee shops were operating, i.e., right-censored, in July 2014.

Table 3 shows the dynamic entry and exit of coffee shops. In the pooled sample, entry rates range between 29.20% and 38.20%, and exit rates range between 7.13% and 7.87%. While the total number of coffee stores kept increasing, all categories experienced dramatic growth in 2010–2011.[24] However, the introduction of the distance restriction in 2012 brought some changes to entry and exit patterns across franchise categories. In the regulated big brand group, the entry rate dropped significantly while the exit rate rose. As a result, the net growth rate declined dramatically. In contrast, high entry rates and slightly lower exit rates for medium and exempted foreign brands contributed to a positive net growth rate after the regulation.[25] The distance restriction helped medium-sized and foreign, exempted brands expand their franchises, while at the same time curbing big brands' expansion. However, since small brand coffee shops have the greatest number of stores, entries, and exits in this category maintained a similar pattern both before and after the restriction.

Table 4 shows that the average duration of coffee shops across franchise categories is approximately three years (1,116 days). A Starbucks or Coffee Bean shop enjoys the longest median lifespan of 2.88 years (1,052 days), followed by big and small brand coffee shops. Medium brand coffee shops have the shortest median duration of 1.73 years (629.75 days).

[23] Our empirical results do not change either qualitatively or quantitatively when we include coffee shops in business for 30 days or less.

[24] Entry rates of big and medium brands were highest in 2010 (95.09% and 73.04%, respectively), while those of small and exempted brands were highest in 2011 (38.95% and 26.56%, respectively).

[25] For instance, one of the big brands, *Caffé Bene*, that jumped to the largest franchise brand in terms of the number of stores from 2010 to 2012, experienced slower growth afterwards and relinquished its first place standing to *Ediya* (1,366 stores in 2015), which belongs to the medium-sized brand group.

However, as noted in the standard deviation, the duration varies considerably. The initial contract period for big and medium brands is usually three years, after which period most contracts can be renewed. However, it is believed that the success of a franchise store can be determined in as little as 1–2 months. So it is not surprising that many coffee shops exit the market before the end of their contract period.

Figure 2 shows the number of exits by duration, from 2008 to 2014. As noted above, most coffee shops leave the market 1–2 years. This proportion rose until 2012 and has declined since. A similar trend is seen for companies exiting the market in one year or less. However, the number of companies remaining in business for 2–5 years rose since 2012, suggesting that the minimum distance restriction may have lengthened their survival period.

Table 5 shows the number of coffee shops within walking distance of each other, which was used as proxy for the degree of competition in the regression. Forty coffee shops, on average, exist within a 500 meter radius. They consist of two big-brand shops, one medium-sized brand shop, and one Starbucks or Coffee Bean. The average, though, varies noticeably between neighborhoods. The maximum number of coffee shops within a 500-meter radius is 685, comprised of 20 big brand, 18 medium brand, and 31 exempted brand shops.

4 Estimation Analysis

4.1 Graphical Analysis of the Non-Parametric Kaplan–Meier Survival Functions

As a preliminary analysis, we estimated survival probability using the non-parametric Kaplan–Meier (hereafter, K–M) estimator. The K–M survival function calculates the probability of surviving up to time *t* or beyond. Figure 3 shows the estimated survival function for two subsamples of our data: coffee shops affected by the KFTC regulation and those not

affected. The smooth line corresponds to the former group, and the dashed line corresponds to the latter group. While the survival probability decreases steadily for both groups, it is higher for the group affected by the regulation. The Figure indicates that a firm's survival rate increased by up to 50% during the first two years of the regulation.

4.2 How the Distance Restriction Affected the Survival of a Coffee Shop?

Table 6 reports the results of Cox proportional hazard regressions. Specification (1) includes the regulation dummy (*Reg*) to measure the impacts of distance restrictions on the average survival of all coffee shops. Specifications (2)−(3) include the franchise group dummy variables (*Big, Medium, Small*) that consider different survival rates of coffee shops based on intrinsic characteristics unobservable to economists. The base group consists of exempted-brand coffee shops (*Exempt*), whose interactions with regulation dummies (*Reg·Big, Reg·Med, Reg·Small*) are also included to capture how the regulation affects each group's survival rate, relative to that of the base group.

Our discussion below focuses largely on the most extended specification (3), whose base group consists of Starbucks and Coffee Bean, which are exempt from the restriction. First, before the regulation, Starbucks and Coffee Bean had the lowest hazard rates, followed by big, medium and small brands. As shown in Table 3, the coefficients of Big, Medium, and Small are 0.325, 0.583, and 0.832, respectively, and hazard rates of big, medium and small brand coffee shops are 38.4%, 79.1%, and 129.7% higher than those of the base group, Starbucks and Coffee Bean.[26] Small brand coffee shops, which account for the largest proportion of coffee shops, have quite high entry and exit rates compared to other groups.

[26] In specification (3), before regulation ($R = 0$), hazard ratios for big, medium- and small-sized brand groups relative to the base group of Starbucks and Coffee Bean are $\frac{h(t \mid x, B = 1, R = 0)}{h(t \mid x, B = 0, R = 0)} = \exp(0.309) \approx 1.362$,

Second, we find that the distance restriction improved all coffee shops' survival across all categories. Note that the negative coefficient of *Reg* is −3.625, which implies that after the regulation, the hazard rate of the base group, Starbucks and Coffee Bean, decreased and its duration increased. The ratio of the base group's hazard rate before and after the regulation is 0.027. For big and medium brands, since the coefficients of *Reg·Big* and *Reg·Medium* are not statistically significant, the hazard ratios before and after the regulation are the same as those of the base group. However, the coefficient of *Reg·Small* is significantly positive as 0.839. This implies that while small coffee shops' hazard ratios decreased after the regulation, its impact on small coffee shops' survival is less than for other types of coffee shops.[27]

In short, the distance restriction achieved its goal of protecting the business territory of franchisees. It lowered hazard rates and extended the duration of five big brand coffee shops. Moreover, it benefited all other coffee shops. While entries of other brand coffee shops free from the entry restriction rose, their hazard rates decreased and their duraiton increased. The five big franchisors were only the ones that did not benefit from the regulation, since they could not expand their business as much as before.

The distance restriction influenced the relative competiveness of coffee franchisors. Different benefits of the regulation across groups widened the gap between small brand coffee shops and the rest. For instance, the difference in the hazard rates between the small brand group and the base brand group changed from 2.314 to 4.923.[28]

$\frac{h(t \mid x, M=1, R=0)}{h(t \mid x, M=0, R=0)} = \exp(0.623) \approx 1.864$, and $\frac{h(t \mid x, S=1, R=0)}{h(t \mid x, S=0, R=0)} = \exp(0.839) \approx 2.314$, respectively, holding others constant.

[27] The hazard ratio of the small brand group, before and after the regulation, is $\frac{h(t \mid x, S=1, R=1)}{h(t \mid x, S=1, R=0)} = \exp(-3.614 + 0.755) \approx 0.057$, holding others constant, while the hazard ratios of all other groups are 0.033.

[28] Under the regulation, the ratio is $\frac{h_i(t \mid x, S=1, R=1)}{h_j(t \mid x, S=0, R=1)} = \exp(0.839 + 0.755) \approx 4.923$, holding all others constant.

Regarding other control variables, the size of a coffee shop, interest rates, and the existence of food service all lowered the hazard rate. Korea's GDP growth rate is not be related to the hazard rate, possibly because Korean's coffee consumption was only modestly affected by the ups and downs of the economy.

4.3 Degree of Competition: Who Affects Whom and By How Much?

Using the number of coffee shops as a proxy, we find that the degree of competition in a neighborhood increased the hazard rates of coffee shops. In specifications (1)–(2), coefficients of the total number of coffee shops within a 500-meter radius, used as a proxy for the degree of competition, are significantly positive. That is, the fact that concentration lowers coffee shops' survival is consistent with the results of some previous studies (Shaver and Fsyer, 2000; Sorenson and Audia, 2000; Staber, 2001; Folta, et al., 2006)

We also examine whether different types of coffee shops-big, medium, small, and foreign brands- influence the degree of competition and hence hazard rates. In specification (3), while the number of big and medium brand coffee shops increased hazard rates, the number of small coffee shops did not. For instance, as the number of big and medium brand coffee shops increases, the hazard rate of a coffee shop increases by 5.8% and 13.8%, respectively. However, the number of Starbucks and Coffee Bean shops decreased the hazard rates of coffee shops.

One possible explanation for different impacts on the survival of a coffee shop, especially the number of Starbucks and Coffee Bean, could be cluster effects,[29] i.e., the concentration of coffee shops near Starbucks and Coffee Bean that spurred South Korea’s coffee culture and consumption. New coffee shops would have chosen a location by considering a district's characteristics, including commercial facilities and population, which could affect profitability

[29] Alfred Marshall, in 1890, noted that clusters can generate positive externalities by sharing information, forming a business district, or attracting customers.

and returns（Kalnins and Lafontaine, 2004). The odds of a coffee shop surviving could improve if it were located near a Starbucks or Coffee Bean shop (Falck, 2007; Wennberg and Lindqvist, 2010).

We also investigated which group has more influence on the survival of each group's coffee shops. We carried out the same Cox regression, separately, for big, medium, small and exempted groups. Table 7 shows each brand group's competitors. For big and medium brand coffee shops, those in the same group were the most influential competitors and had the largest impact on the hazard rate. The next most important competitors to big, small, and foreign-brand coffee shops are medium brand group coffee shops. That is, while competition within groups is stronger than between them, medium brand group coffee shops provided the greatest competition compared with all other groups probably because their features such as quality, brand name, and price are more or less between those of big and small brand coffee shops.[30]

By contrast, because their coefficients are negative, statistically insignificant, or very close to zero, small and exempted group coffee shops had little impact on big and medium brand coffee shops' hazard rates.. The survival rates of small-brand coffee shops were harmed most by medium-sized brand coffee shops, followed by big brand coffee shops. However, Starbucks and Coffee Bean lowered the hazard rate of small-brand coffee shops. The cluster effect mentioned above seems to exist for small brand coffee shops located near Starbucks and Coffee Bean. A greater demand for coffee near Starbucks and Coffee Bean may exist and small coffee shops, with lower prices, that do not compete with Starbucks and Coffee Bean in terms of quality or brand name, may benefit from it.

[30] While we could not incorporate price data due to its unavailability, foreign-brand coffee shops have the highest average prices. The average price of coffee from five big-brand coffee shops is about ten percent lower than that of foreign coffee shops. Medium brand coffee shops' prices are about 20 percent lower than those of big-brand coffee shops.

4.4 Effective Competition Distance: At What Radius Does Competition Take Place?

We examined how the degree of competition within various radiuses (100, 300, and 500 meters) influences the survival of a coffee shop.[31] Based on our most extensive model in specification (3) of Table 6, we included the total number of coffee shops within a 100- and 300-meter radius. The results are shown in Table 8.A. In specifications (1)-(3), the coefficients of *Ntotal* are all significantly positive, which implies that the number of coffee shops increases their hazard rate. We also observe that the magnitude of the coefficients decreases with the size of the radius.

In specification (4), therefore, we include the total number of coffee shops within a 100-meter, 100–300 meter, and 300–500-meter radius. We find that only the coefficient of *Ntotal* within a 100-meter radius is significantly positive. It seems that effective competition between coffee shops takes places within a 100-meter radius.

We further examined which coffee shop brand affects the survival of a coffee shop. Table 8.B shows that the number of medium brand coffee shops has the greatest impacts on their survival, followed by that of big-brand coffee shops. The impact of small brand coffee shops is small, and becomes insignificant with radius. On average, compared to big and medium brand groups that have one or two coffee shops within a 500-meter radius, small brand group has much lower 36 coffee shops. So small brand coffee shop growth likely has little impact on the survival of a coffee shop. Exempted-brand coffee shops, though, do have a negative impact on hazard rates, becoming more significant as the radius increases, probably because only one exempted-brand coffee shop generally exists within a 500-meter radius.

[31] The business territory may differ across goods, brands, or locations. For instance, in the gas station industry, Hosken et al., (2008) considered the number of stations within a 2.4-km (1.5 mile) radius, whereas Eckert and West (2005) employed a 2-km radius. For the Staples–Office Depot merger case in the office superstore industry, the variables were 5 miles, 5–10 miles, and 10–20 miles (Ashenfelter et al., 2007).

4.5 Extension and Robustness Check

We further extended our analysis by examining how the impacts of the restriction vary across brands. We included dummy variables for each brand, 12 in the big and medium group categories, added its interaction terms with the regulation dummy in specification (3) in Table 6, and obtained similar results as specification (3).[32] Most coefficients of the interaction terms are statistically insignificant, in line with previous results showing that a decrease in hazard rates for big and medium brand coffee shops after the regulation is the same as those of Starbucks and Coffee Bean. However, looking at each brand closely, one franchise in both the big and medium-sized brand groups benefited more than others.

For a robustness check, we perform regressions using alternative Weibull and exponential base hazard functions and obtain similar results.

5 Conclusion

According to the KFTC, in 2016, 114 franchise stores opened and 66 closed every day in Korea. Social loss was estimated at 2,407 billion won from these closures, caused by excessive competition and cannibalization in the coffee franchise industry. The boom in fried chicken and coffee shop outlets may be due to the "baby boomer" generation (individuals born between 1955 and 1963), who established these franchises after retirement rather than engaging in purely entrepreneurial activity (*Korea Herald*: Oct 5, 2015). Store closures must have affected this demographic group more than any other.

Serious concerns about economic and social damage, as well as cannibalization and abuse of franchisors' power, led to the KFTC's radius restriction on selected large franchisors. This

[32] The results are not reported in this paper due to space limitations. They are available upon request.

action, which also protected franchisees' business territory, is a rare experiment in government intervention of a worldwide franchise industry.

This paper's findings accessed registration data of 75,486 retail coffee shops, operating from 2008 to 2014. Its results suggest that the restriction had a positive impact on the survival of coffee shops. The regulation increased the duration of the five selected big franchisors as well as that of small, medium, and foreign brands. The restriction benefited all franchisees and lowered hazard rates. However, different impacts across big, medium, small, and exempted foreign brands changed the relative competitiveness of coffee shops. The gap between small coffee shops and larger ones became more pronounced.

While strong competition arose within each group, medium brand coffee shops were strong competitors to all other coffee shops. Because the five big franchisors are regulated, with the rest enjoying free market entry without any restriction, hazard rates for these franchisees dropped. This may have accelerated their business expansion and changed the landscape of the coffee franchise industry. At present, Ediya, which once belonged to the medium brand group, now has the largest number of stores, and Starbucks, which belongs to the exempted foreign-brand group, also rapidly increased its number of stores. For other franchisors, though, the restriction caused sluggish expansion. That is, while the KFTC's distance regulation was successful in protecting franchisees' overall duration by restricting competition between selected brands, it also affected inter-brand competition, changed the competitive structure, and provided unintended gains to franchisors free from the restriction. This was not the intended goal of the distance regulation. Moreover, actual competition seems to occur in smaller areas than the regulation's 500-meter standard. Therefore, this uniform 500-meter radius restriction may be an excessive threshold in some areas.

This paper sheds light on competition in the Korean coffee franchise industry and investigates policy challenges in protecting franchisees' business territory by imposing a

distance restriction. Issues related to franchisees' efficiency and consumers' welfare was not considered because of data unavailability. Future studies could investigate how a change in the radius restriction would affect franchisor–franchisee contracts and the survival of coffee shops.

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TABLE 1. Number of Coffee Shops, by Franchise Brand

Group	Brand	2008	2009	2010	2011	2012	2013	2014
Big brands Subject to the Distance Restriction (*Big*)	Angel-in-us	78	143	240	377	535	660	779
	A Twosome Place	6	22	79	144	228	321	463
	Caffé Bene	10	63	230	493	609	686	742
	Hollys Coffee	137	156	200	246	283	315	354
	Tom N Toms	65	95	150	208	252	297	338
	Subtotal	296	479	899	1,468	1,907	2,279	2,676
Medium Brands (*Medium*)	Caffè Pascucci	-	6	41	110	181	252	304
	Caffe Tiamo	53	75	112	139	158	168	177
	Coffee Bay	2	5	6	16	69	145	296
	Coffine Gurunaru	5	9	18	31	47	63	75
	Droptop	-	-	-	7	45	114	172
	Ediya Coffee	140	179	250	365	516	713	1031
	Yogerpresso	18	64	134	193	252	292	435
	Subtotal	218	338	561	861	1,268	1,747	2,490
Exempted Brands (*Exempt*)	Starbucks	180	205	247	313	401	510	651
	The Coffee Bean & Tea Leaf	84	113	126	143	157	164	168
	Subtotal	264	318	373	456	558	674	819
Small Coffee Shops (*Small*)		10,334	12,678	16,466	22,028	27,713	34,043	42,835
Total		11,112	13,813	18,299	24,813	31,446	38,743	48,820

Notes: 1. Stores are counted at year-end and exclude stores that closed during the year.
2. Brands are divided into four groups based on the distance restriction. For more details on the groups' criteria and classification, refer to Figure 1 and Section 2.2.

TABLE 2. List of Variables and Descriptive Statistics

Variable	Definition	Mean	Std.	Min.	Max.
Franchise Category Based on the Regulation (Figure 1)					
Big	Takes a value of 1 if store *i* belongs to the big-brand group subject to the restriction, and 0 otherwise.	0.05	0.23	0.00	1.00
Medium	Takes a value of 1 if store *i* belongs to the medium brand group, and 0 otherwise.	0.04	0.20	0.00	1.00
Small	Takes a value of 1 if store *i* belongs to the small-brand group, and 0 otherwise.	0.89	0.32	0.00	1.00
Exempt	Takes a value of 1 if store *i* belongs to the foreign-brand group exempt from the restriction, and 0 otherwise.	0.02	0.14	0.00	1.00
Locational Competition					
NTotal	Total number of coffee shops within a 500-meter radius.	39.97	74.89	0.00	685.00
NBig	Number of five big-brand coffee shops subject to the restriction within a 500-meter radius.	1.87	2.67	0.00	20.00
NMedium	Number of medium-sized coffee shops within a 500-meter radius.	1.34	1.89	0.00	18.00
NSmall	Number of small and individual coffee shops within a 500-meter radius.	35.77	71.18	0.00	662.00
NExempt	Number of Starbucks and Coffee Bean stores within a 500-meter radius.	0.99	2.31	0.00	31.00
Regulation					
Reg	Takes a value of 1 during the regulation period (XX 2012~July 2014), and 0 otherwise.	0.89	0.31	0.00	1.00
Reg·Big	Takes a value of 1 for store *i* that belongs to the five regulated brands during the regulation period, and 0 otherwise.	0.05	0.22	0.00	1.00
Reg·Medium	Takes a value of 1 for store *i* that belongs to the seven medium brands during the regulation period, and 0 otherwise.	0.04	0.19	0.00	1.00
Reg·Small	Takes a value of 1 for store *i* that belongs to small brands during the regulation period, and 0 otherwise.	0.78	0.41	0.00	1.00
Reg·Exempt	Takes a value of 1 for store *i* that belongs to a foreign-brand group exempt from the restriction during the regulation period, and 0 otherwise.	0.02	0.13	0.00	1.00
Control Variables					
GDPgrowth	Real GDP growth rates.	3.19	1.31	0.70	6.50
IR	Benchmark interest rate of the Bank of Korea.	2.50	0.43	2.00	3.25
Size	Floor space of stores.	81.47	109.38	0.00	24,075
Full service	Takes a value of 1 if store *i* is registered as a full-service restaurant serving foods and alcoholic beverages, and 0 otherwise.	0.37	0.48	0.00	1.00
Brand	16 major franchises' brand dummy variables in Figure 1.	0.11	0.32	0.00	1.00
Region	229 regional dummy variables at the municipal level.	1.00	0.00	1.00	1.00

TABLE 3. Entry and Exit of Coffee Shops Across Franchise Categories (2008-2014)

Franchise Category		**Year**						
		2008	2009	2010	2011	2012	2013	2014
Big Brands Subject to the Distance Restriction (*Big*)	Number of stores	301	489	912	1,495	1,957	2,330	2,765
	(Growth Rate, %)		(62.46)	(86.50)	(63.93)	(30.90)	(19.06)	(18.67)
	Entry	131	203	465	575	442	441	395
	(Entry rate I, %)		(67.44)	(95.09)	(63.05)	(29.57)	(22.53)	(16.95)
	(Entry rate II, %)		(1.68)	(3.12)	(2.91)	(1.65)	(1.30)	(0.95)
	Exit	5	10	13	27	50	51	89
	(Exit rate I, %)	(1.66)	(2.04)	(1.43)	(1.81)	(2.55)	(2.19)	(3.22)
	(Exit rate II, %)	(0.04)	(0.07)	(0.07)	(0.10)	(0.15)	(0.12)	(0.17)
Medium Brands (*Medium*)	Number of stores	226	345	577	881	1307	1795	2556
	(Growth Rate, %)		(52.65)	(67.25)	(52.69)	(48.35)	(37.34)	(42.40)
	Entry	94	126	252	316	430	530	746
	(Entry rate I, %)		(55.75)	(73.04)	(54.77)	(48.81)	(40.55)	(41.56)
	(Entry rate II, %)		(1.04)	(1.69)	(1.60)	(1.61)	(1.56)	(1.79)
	Exit	8	7	16	20	39	48	66
	(Exit rate I, %)	(3.54)	(2.03)	(2.77)	(2.27)	(2.98)	(2.67)	(2.58)
	(Exit rate II, %)	(0.07)	(0.05)	(0.08)	(0.07)	(0.12)	(0.12)	(0.13)
Small Coffee Shops (*Small*)	Number of stores	11,264	13,748	17,854	23,891	30,045	36,900	46,514
	(Growth Rate, %)		(22.05)	(29.87)	(33.81	(25.76)	(22.82)	(26.05)
	Entry	2,358	3,402	5,098	6,954	7,532	8,850	10,893
	(Entry rate I, %)		(30.20)	(37.08)	(38.95)	(31.53)	(29.46)	(29.52)
	(Entry rate II, %)		(28.21)	(34.21)	(35.25)	(28.17)	(26.11)	(26.11)
	Exit	930	1,070	1,388	1,863	2,332	2,857	3,679
	(Exit rate I, %)	(8.26)	(7.78)	(7.77)	(7.80)	(7.76)	(7.74)	(7.91)
	(Exit rate II, %)	(7.71)	(7.18)	(7.04)	(6.97)	(6.88)	(6.85)	(6.98)
Exempted Brands (*Exempt*)	Number of stores	270	321	384	474	586	692	837
	(Growth Rate, %)		(18.89)	(19.63)	(23.44)	(23.63)	(18.09)	(20.95)
	Entry	71	54	61	102	114	154	147
	(Entry rate I, %)		(20.00)	(19.00)	(26.56)	(24.05)	(26.28)	(21.24)
	(Entry rate II, %)		(0.45)	(0.41)	(0.52)	(0.43)	(0.45)	(0.35)
	Exit	6	3	11	18	28	18	18
	(Exit rate I, %)	(2.22)	(0.93)	(2.86)	(3.80)	(4.78)	(2.60)	(2.15)
	(Exit rate II, %)	(0.05)	(0.02)	(0.06)	(0.07)	(0.08)	(0.04)	(0.03)
Total	Number of stores	12,061	14,903	19,727	26,741	33,895	41,717	52,672
	(Growth Rate, %)		(23.56)	(32.37)	(35.56)	(26.75)	(23.08)	(26.26)
	Entry	2,654	3,785	5,876	7,947	8,518	9,975	12,181
	(Entry rate, %)		(31.38)	(39.43)	(40.28)	(31.85)	(29.43)	(29.20)
	Exit	949	1,090	1,428	1,928	2,449	2,974	3,852
	(Exit rate, %)	(7.87)	(7.31)	(7.24)	(7.21)	(7.23)	(7.13)	(7.31)

Note: The number of stores is defined as the total number of incumbent and new stores in a given year. In each category, the entry rate is the number of new stores that began operation during a given year, divided by the number of stores operating during the preceding year, plus the exit rate during a given year. This is the number of stores that ceased operation divided by the number of operating stores.

TABLE 4. Duration of Coffee Shops Across Categories

Brand Groups	**Number of Observations**	**Mean**	**SD**	**Min.**	**Max.**	**Median**
Big Brands (*Big*)	10,004	895.09	661.29	31.00	4,674.75	763.75
Medium Brands (*Medium*)	7,483	846.92	761.60	31.00	4,999.75	629.75
Small Coffee Shops (*Small*)	166,097	1,137.69	1,063.16	31.00	5,474.75	788.25
Exempted Brands (*Exempt*)	3,462	1,313.22	1,030.39	31.25	5,006.75	1,052.38
Total	187,046	1,116.33	1,037.59	31.00	5,474.75	783.25

TABLE 5. Number of Coffee Shops within a 100, 300, and 500-Meter Radius

Number of Coffee Shops Across Categories	**Mean**	**Std.**	**Min.**	**Max.**
Within a 100-Meter Radius				
All Shops	4.32	7.03	0.00	69.00
Big Brand Shops	0.24	0.61	0.00	7.00
Medium Brand Shops	0.16	0.44	0.00	5.00
Small Brand Shops	3.81	6.63	0.00	68.00
Exempted-Brand Shops	0.11	0.40	0.00	6.00
Within a 300-Meter Radius				
All Shops	20.10	36.53	0.00	376.00
Big Brand Shops	1.01	1.58	0.00	13.00
Medium Brand Shops	0.70	1.12	0.00	9.00
Small Brand Shops	17.89	34.78	0.00	369.00
Exempted-Brand Shops	0.50	1.25	0.00	18.00
Within a 500-Meter Radius				
All Shops	39.97	74.89	0.00	685.00
Big Brand Shops	1.87	2.67	0.00	20.00
Medium Brand Shops	1.34	1.89	0.00	18.00
Small Brand Shops	35.77	71.18	0.00	662.00
Exempted-Brand Shops	0.99	2.31	0.00	31.00

TABLE 6. Estimated Result of the Cox Regression

	(1)		(2)		(3)	
	Coefficient	Hazard Ratio	Coefficient	Hazard Ratio	Coefficient	Hazard Ratio
Brand Category Variables						
Big			0.334**	1.396**	0.325**	1.384**
			(0.157)	(0.219)	(0.157)	(0.217)
Medium			0.632***	1.882***	0.583***	1.791***
			(0.160)	(0.301)	(0.160)	(0.287)
Small			0.866***	2.378***	0.832***	2.297***
			(0.124)	(0.295)	(0.124)	(0.285)
Regulation Variables						
Reg	-2.832***	0.059***	-3.411***	0.033***	-3.625***	0.027***
	(0.018)	(0.001)	(0.211)	(0.007)	(0.211)	(0.006)
Reg*Big			0.029	1.030	0.097	1.101
			(0.247)	(0.254)	(0.247)	(0.272)
Reg*Medium			-0.237	0.789	-0.099	0.906
			(0.253)	(0.200)	(0.254)	(0.230)
Reg*Small			0.639***	1.894***	0.767***	2.153***
			(0.211)	(0.400)	(0.212)	(0.455)
Degree of Competition						
TN	0.002***	1.002***	0.002***	1.002***		
	(0.000)	(0.000)	(0.000)	(0.000)		
NBig					0.057***	1.059***
					(0.005)	(0.006)
NMedium					0.138***	1.148***
					(0.007)	(0.008)
NSmall					0.000	1.000
					(0.000)	(0.000)
NExempt					-0.085***	0.919***
					(0.007)	(0.006)
Other Controls						
SIZE	-0.002***	0.998***	-0.001***	0.999***	-0.001***	0.999***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
IR	-0.452***	0.636***	-0.451***	0.637***	-0.443***	0.642***
	(0.020)	(0.013)	(0.020)	(0.013)	(0.020)	(0.013)
GROWTH	0.008	1.008	0.008	1.008	-0.001	0.999
	(0.005)	(0.005)	(0.005)	(0.005)	(0.005)	(0.005)
FULLSERVICE	-0.365***	0.694***	-0.455***	0.634***	-0.426***	0.653***
	(0.020)	(0.014)	(0.020)	(0.013)	(0.020)	(0.013)
Chi-Square Test	24607.29		25182.25		25792.76	
Log Likelihood	-132765.1		-132477.62		-132172.37	

Notes:
1. Numbers in parentheses are standard errors.
2. ***, **, * denote statistical significance at the 1%, 5%, and 10% level, respectively.
3. Brand dummies are included.
4. The number of observations is 187,046.

TABLE 7. Degree of Competition Within a 500-Meter Radius Across Franchise Groups

Subsample	Big brand group		Medium brand group		Small brand group		Exempted-brand group	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Reg	-3.856***	-4.093***	-4.331***	-4.498***	-2.773***	-2.858***	-5.163***	-5.532***
	(0.190)	(0.201)	(0.212)	(0.219)	(0.018)	(0.019)	(0.004)	(0.459)
NTotal	0.004**		0.004***		0.002***		0.004*	
	(0.002)		(0.001)		(0.000)		(0.002)	
NBig		0.181***		0.113**		0.053***		0.042
		(0.038)		(0.041)		(0.005)		(0.051)
NMedium		0.104*		0.275***		0.137***		0.230**
		(0.053)		(0.062)		(0.008)		(0.092)
NSmall		-0.003*		-0.001		0.000		-0.001
		(0.002)		(0.002)		(0.000)		(0.002)
NExempt		-0.037		-0.083		-0.089***		0.005
		(0.044)		(0.058)		(0.007)		(0.063)

Note: the same as Table 6.

TABLE 8. Degree of Competition

A. The total number of coffee shops within 100, 300, and 500-meter radiuses

Specification	(1) 100-meter	(2) 300-meter	(3) 500-meter	(4)
NTotal	0.015***	0.004***	0.002***	
	(0.001)	(0.000)	(0.000)	
NTotal (0-100m)				0.010***
				(0.002)
NTotal (100-300m)				-0.001
				(0.001)
NTotal (300-500m)				0.000
				(0.001)

Note: the same as Table 6.

B. The total number of coffee shops across groups within 100, 300, and 500 meter radiuses

	(1) 100 meter	(2) 300 meter	(3) 500 meter
NBig	0.044***	0.053***	0.057***
	(0.015)	(0.007)	(0.005)
NMedium	0.152***	0.147***	0.138***
	(0.020)	(0.010)	(0.007)
NSmall	0.012***	0.001***	0.000
	(0.002)	(0.000)	(0.000)
NExempt	-0.028	-0.078***	-0.085***
	(0.022)	(0.010)	(0.007)

Note: the same as Table 6.

FIGURE 1. Classification of Coffee Brands Based on the KFTC Standard of the Distance Restriction

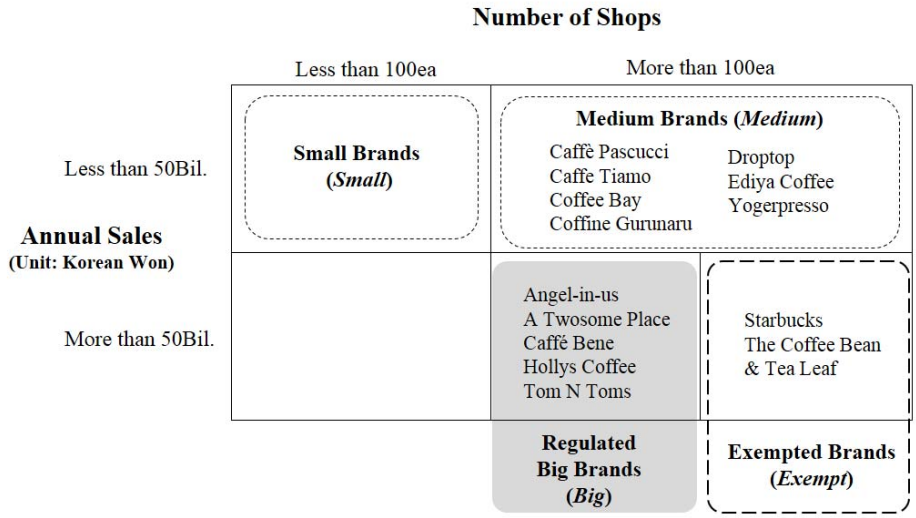


FIGURE 2. Percentage of Coffee Shops, by duration (2008-2014)

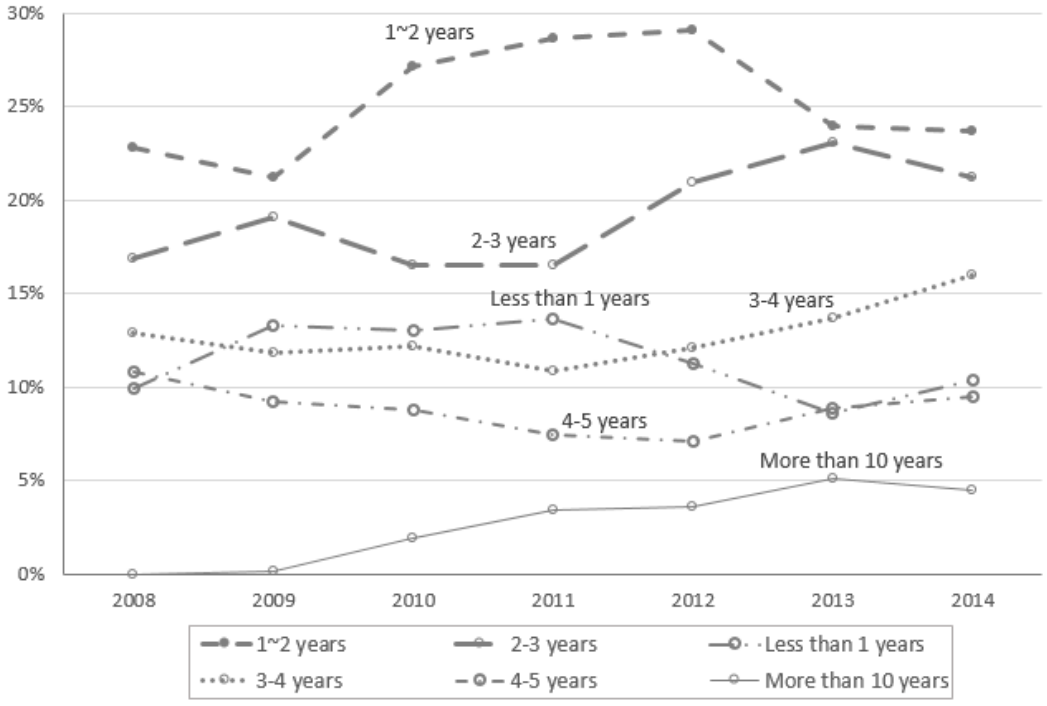
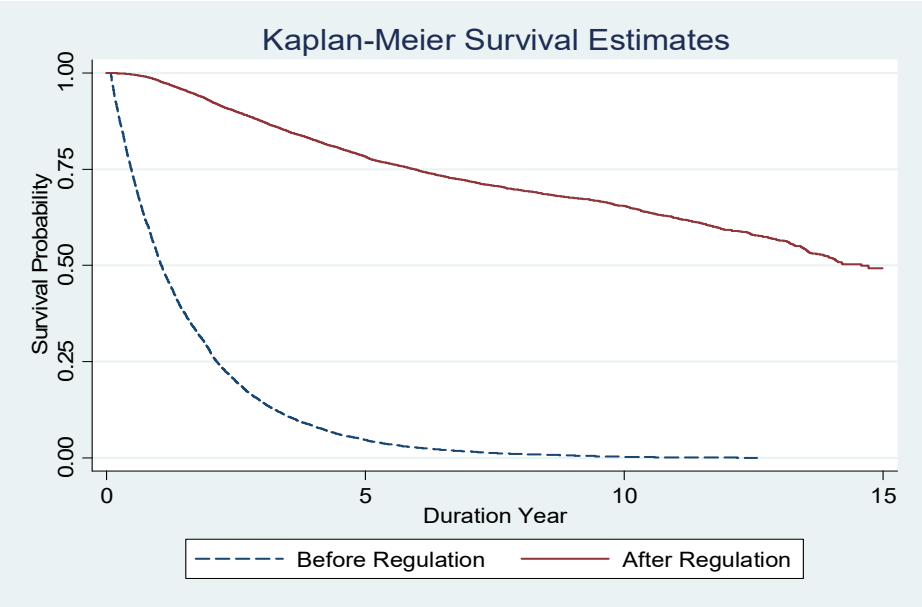


FIGURE 3. Empirical Survival function using the Kaplan–Meier Estimation



Notes: The smooth line corresponds to coffee shops that were affected by the KFTC's distance regulation (November 2012-July 2014) and the dashed line corresponds to coffee shops that were not affected, i.e., exited the market before the regulation (January 2008–October 2008).