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The effect of legal barriers to entry in the Spanish retail market: a local market approach

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Abstract

Recent studies have shown that barriers to entry for large retail establishments in Spain have been increased in the last decade. Using information on local markets, we test whether the entry of large retail establishments was effectively limited by regional regulation and whether it effectively protected in-town shops from competition. We find that if entry barriers were reduced to their average level in 1997, the number of large retail establishments would increase by 11.7%. We also find that over-regulation in 1997 has improved in-town shops' market position, with their number increasing by 13.8%.

Keywords: Barriers to entry, retail distribution, regulation.

JEL classification: L11, L52, and L81.

1. Introduction

A study carried out by the Banco de España in 2007 showed that barriers to entry for large retail establishments promoted by Spain's autonomous regions have been increased over the last decade.[1] Only a few years prior to that study, the *Comisión Nacional de la Competencia* [2] had warned, in 2003, that regional barriers to entry for large retail establishments had "lowered competition… allowing incumbent firms to be less efficient, which has translated into higher prices" (CNC, 2003, p. 22). This contrasts with the European Single Market Program initiative that was launched more than two decades ago to deregulate markets and lower trade barriers (Nicoletti and Scarpetta, 2003; Chen, 2004) and with the European

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Union's Services Directive (Directive 2006/123/EC) that aims to facilitate the freedom of establishment for providers in the Internal Market. [3]

Why have regions decided to create entry barriers against large retail establishments? Why have they then imposed additional barriers to the initial ones? As pointed out by the *Comisión Nacional de la Competencia* in a 1995 report, "the objective of the [Spanish law that regulates the retail sector] is to protect traditional shops with the aim of slowing down the continuous decline in their market share […]. In addition, slowing down the creation of large retail establishments will reinforce the incumbents' market power, as they will not compete with new rivals. In contrast, if the entry of large retail establishments was not limited, retail competition would increase, and supply would thus be higher, with more variety and better prices".

Using an asymmetric model of oligopoly, Hoffmaister (2010) has shown that forcing (low-cost) large retail establishments out of the market changes the composition of the retail industry in favor of traditional shops. In the absence of barriers, (low-cost) large retailers drive prices below the traditional retailers' long-run break-even point thereby forcing the latter out of the market. To the extent that these shops are locally owned and operated, regional governments may thus be seeking to protect and enhance employment in these businesses as well as to shore up electoral constituencies.

Entry barriers may have a direct positive effect on retail prices if, as pointed out by the *Comisión Nacional de la Competencia*, incumbent firms are less efficient due to the lower competition pressure they face compared to a situation with no entry barriers. In this sense, indirect empirical evidence suggests that restricting the entry of large retail establishments might increase prices and markups [4]. Direct evidence is provided by Hoffmaister (2010) and Matea and Mora (2009) who analyzed the effect of barriers to entry on prices using a data set derived from an exhaustive study of Spanish regional competition policies. Hoffmaister (2010) took into account possible threshold effects that might characterize the effect of barriers on prices. He found that imposing a second or third barrier does not further increase prices, a result which is consistent with a signaling effect of establishing entry barriers, i.e. imposing a single barrier would seem to send a clear protectionist message. [5]

However, an additional channel through which barriers may affect prices in the retail market is through the number of competitors. Since the legal retail entry barriers in Spain are mainly designed to limit the entry of large retail establishments, they are likely to have effectively deterred the creation of new hypermarkets and shopping centers. [6] If there is a relationship between market structure and prices in this industry, the effect on prices is likely to be non-negligible. In this sense, Griffith and Harmgart (2008) have recently found that restrictive planning regulation is associated with a small but significantly higher food prices, and leads to a loss to consumers of up to £10m per annum.

Many papers have found a positive relationship between changes in concentration and changes in retail prices. For instance, Gómez-Lobo and González (2007) found that a 1%

increase in market concentration in local food retailing markets in Chile yields an increase in food prices of 0.05%. Pita, Brito and Lucena (2003) provide an empirical application to the Portuguese food retailing market and found that the price set by each firm depends positively on the degree of local market concentration. In the US, Cotterill (1986) and Newmark (1990) reached contradictory conclusions regarding this relation. Asplund and Friberg (2002) concluded that the relation between market structure variables and food prices in Sweden is of the expected sign but relatively weak. Similarly, Marion and Mazo (1998) found evidence of a positive relationship between changes in concentration and changes in the price indexes for food-at-home. In a recent study, Manuszak and Moul (2008) analyzed the relationship between prices and market structure for office supply superstores in the US, using a two-stage approach to avoid potential biases due to the endogeneity of market structure. They found a strong negative relationship between prices and market structure variables.

Anecdotal evidence also suggests that entry might have a notable effect on prices in local markets. For instance, the time paths of prices of three hypermarkets and the national average price are shown in Figure 1. These hypermarkets faced the entry of an important competitor in their local markets: Eroski opened a large establishment in Logroño in 2003, Carrefour opened an establishment in Vigo in 2003, and a new large establishment was opened in Malaga in 2005. [7] It is first worth noting that in 2001 the prices of these hypermarkets were similar to the national average. However, their prices dropped drastically after the entry of a new large establishment in their local markets (that is, since 2003 and 2005). This seems to indicate that restricting entry in local retail markets may harm consumers' welfare as they are paying higher prices for the products they purchase from nearby hypermarkets than those they would pay with free entry.[8]

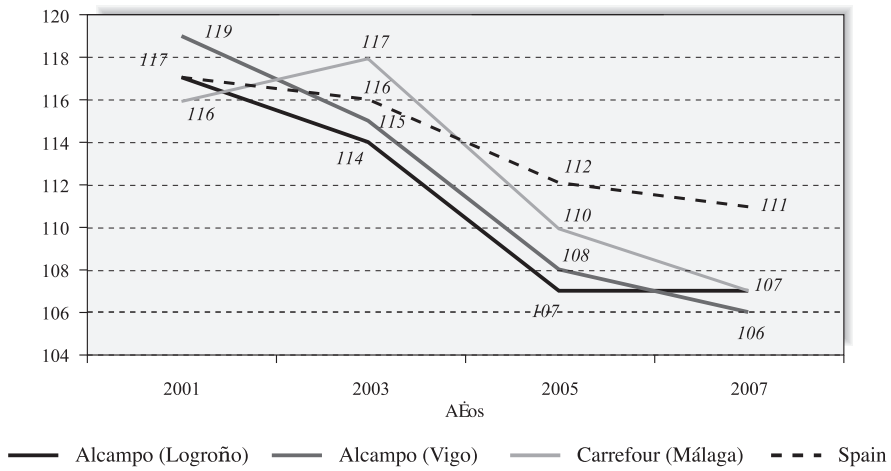


Figure 1. Effect of new entry on large retail establisment's prices.

In the present paper we try to test two of the *Comisión Nacional de la Competencia*'s statements in its 1995 competition report, namely, whether the entry of large retail establishments was effectively limited by regional regulation, and whether regional regulation effectively protected traditional shops from competition and improved their market share. As far as we know, this is the first attempt to assess the impact of restrictive regulation on entry into the Spanish retail industry. To achieve this objective, we estimate a reduced form model where the number of retail establishments in a particular local market is modeled as a function of a measure of regional barriers to entry as well as demand and cost drivers.

A more sophisticated version of this model, which has its roots in the model introduced by Bresnahan and Reiss (1991), has recently been estimated by Griffith and Harmgart (2008) for the UK grocery retail industry. They found that more restrictive planning regulation reduces the number of large retail establishments. They also found that the impact might be overestimated if the variation in demographic characteristics across markets (i.e. market heterogeneity) is not controlled for.

In order to control for market heterogeneity and aggregation errors that might bias our empirical results, in the present study we use a *local market* approach. Previous studies and reports on the Spanish retail market used a *regional* approach where geographical markets were broadly defined as a whole administrative region. Following Manuszak and Moul (2008), Gómez-Lobo and González (2007), and Ashenfelter et. al. (2004), our geographical markets are commercial areas, where each commercial area comprises the municipality of one of the main Spanish cities and its surrounding municipalities.

The empirical evidence in this study exploits the synthetic indictor of regional retail regulation recently constructed by Matea and Mora (2009), and a unique dataset derived from an extensive analysis of the location of each large retail establishments in Spain. This allows us to measure the distance between stores and to identify those stores which are competing directly with other stores in the same commercial area.

2. Empirical Model

The basic model to be estimated relies on a theoretical model where entry is thought of as a two-stage process: a firm incurs an entry cost, which includes the cost of barriers to entry, and then competes for business.

Following Manuszak and Moul (2008) the latent profit function for a particular entrant into a market *m* can be written as:

$$\prod\left(Z_m, F_R, N_{m,} v_m; \theta\right) = Z_m \delta - \alpha F_R - \beta N_m + v_m \tag{1}$$

where Z_m are demand and cost market-specific factors that impact on profitability in a geographical market *m* located in a particular region R; N_m is the total number of large retail es-

tablishments after entry; F_R, which is the most relevant variable, tries to capture the effect of regional legal barriers to entry; v_m is a noise term that captures unobserved factors in market m that impact on entrants' profits in market m; and $\theta = (\alpha,\delta,\beta)$ are unknown parameters of the latent profit function. In this model, barriers are viewed as a fixed cost (similar to an annual licensing fee) that shifts the establishment's average cost structure. We assume in the latent profit function (1) that firms' profits are decreasing in N_m, so that (1) can be interpreted as the reduced form of the expected present discounted value of profits that result from post-entry competition between firms and which all firms observe.

In the second stage, a firm enters whenever profits cover its entry cost. [9] The resulting number of retail competitors supplying the market in the long run can be obtained from the zero-profit condition. Assuming that all retail outlets are identical, the equilibrium number of firms in market m is characterized by the following equation:

$$\prod(\bullet) = Z_m\delta - \alpha F_R - \beta N_m + v_m = 0 \tag{2}$$

Rearranging (2), the endogenous number of firms in market m in the long run can be written as:

$$N_m = Z_m\delta' - \alpha' F_{Rm} + \varepsilon_m \tag{3}$$

where $\delta' = \delta/\beta$, $\alpha' = \alpha/\beta$, and $e_m = v_m/\beta$. This is the basic model to be estimated. This model is also a reduced-form model in the sense that its parameters are themselves functions of the structural parameters of the underlying economic relationship that determines the market structure (see Baker and Rubinfeld, 1999). Thus, equation (3) suggests that the profit-maximizing behavior and entry decision imply that barriers reduce the number of firms in the market. Once the effect of regional entry barriers is estimated, it is possible to estimate how the number of stores would change if entry barriers were eliminated. [10]

Instead of estimating a simple equation of market structure such as (3), several papers have estimated an ordered probit specification of (3) where the probability that a local market is supplied by a particular number of firms is modeled. This approach was first used by Bresnahan and Reiss (1991) in order to model the market structure in five different service and retail industries using data on the number of firms and population for a cross-section of geographic markets. Although they used a different functional form for the latent profit function, they found that there was a positive correlation between the number of firms and the population per firm over the range of approximately one to three firms in the market. They developed the insight that if the entry of additional firms into a market compresses the average markup of all firms in operation, then the market size needed to support an additional firm will be larger than if this competitive effect were absent. [11] Mazzeo (2002b) used this approach to model the number of motels located along U.S. interstate highways using data from a cross-section of local markets. Manuszak and Moul (2008) applied the same model in order to analyze the market structure for office supply superstores in the US, and Griffith and Harmgart (2008) did the same for the UK grocery retail industry.

We do not directly use Bresnahan and Reiss' approach, which entails estimating the probability that a local market is supplied by a particular number of firms, because the numbers of retail establishments in our local markets are much larger than the number of competitors in the aforementioned studies. Instead, we propose directly estimating the number of firms in a particular market as a function of entrants' profit determinants. If the effect on latent profits of the number of firms is roughly linear, we expect to get similar results to those obtained using an ordered probit model because both models are basically based on the same covariates (i.e., those that affect entrants' latent profits) and stochastic assumptions (e.g. normality). Hence, we can obtain reliable parameter estimates by using either the maximum likelihood techniques used in a typically ordered probit model or by using least squares, which is asymptotically equivalent to maximum likelihood. [12]

In order to test our two main hypotheses, we estimate equation (3) for two types of stores: i) small in-town supermarkets and other traditional specialized stores, such as bakeries, butchers, grocers, clotheswear shops, shoe shops, etc.; and ii) large, often out-of-town, hypermarkets and shopping centers, where the consumer spends the greatest weekly amount. The dominant model of consumer behavior in the retail market considers that consumers acquire the bulk of their demand in a one-stop shopping trip in large establishments; they subsequently top-up with additional items that were forgotten or unexpectedly needed in small stores and traditional shops.[13] Different store formats arise because of consumer preferences and shopping habits. For the one-stop shopping trip consumers prefer a large variety of different goods and therefore prefer a large store format. For the top-up shopping, on the other hand, a small convenient store that is in close proximity is preferred. For this reason the EC views these stores as complements rather than substitute formats. [14]

We distinguish between these two types of stores because they were affected differently by regional regulation. Based on the one-stop vs. top-up model of shopping behavior, we assume in our estimations that firms make decisions about entry into the large store format independently of the number of small and traditional stores, whereas the decision to enter into the small store format takes the number of large stores as given. [15]

3. Regional barriers to retail competition in Spain [16]

To measure the effect of entry barriers on the number of firms and, indirectly, on retail prices it is necessary to measure the level of entry barriers. In their 2003 report the *Comisión Nacional de la Competencia* identified seven barriers to retail competition at the regional level: 1) defining a large retail firm based on its location; 2) establishing multiple criteria to determine whether a firm is large; 3) defining a firm to be large when at least 25 percent is owned by a large firm; 4) establishing idiosyncratic requirements to license discount stores; 5) restricting the expansion or a change of a firm's ownership; 6) requiring financial viability plans to license commercial establishments; and 7) imposing outright bans on large retail outlets. These barriers protect incumbent retail establishments from potential competition

from large retail establishments by either increasing the cost of operating in a particular region or extending these costs to a broader range of firms.

Using the simple sum of the number of barriers identified by the Spanish Competition Authority, we show the level of entry barriers in each region in Table 1. [17] The dispersion of barriers to entry across Spain's autonomous regions is large, reflecting the high degree of regional autonomy in raising barriers to entry. Although all barriers have been employed by Spain's regions, the two most commonly used are those defining a large firm based on its location and outright bans. Both have been present in more than half of the regions during the sample period, 1996–2005.

Table 1
LEGAL BARRIERS RETAIL DISTRIBUTION BY REGION, 1996-2005

	Location definition of large firm	Multiple criteria to define large firms	Ownership definition	Idiosyncratic definition of large firm	Restriction in the transfer of ownership	Financial viability plan	Outright ban
Andalucía	×			×			×
Aragón	×						×
Asturias				×	×		×
Baleares	×	×	×				×
Canarias	×						×
Cantabria				×			×
C.-La Mancha							
Castilla-León	×						×
Cataluña	×				×	×	×
Madrid	×			×	×		
Valencia	×						
Extremadura	×						
Galicia	×						
La Rioja	×						
Murcia	×			×			
Navarra	×			×	×		×
País Vasco	×	×	×				×

Source: Comisión Nacional de la Competencia (2003) and Hoffmaister (2010).
Note: The symbol "x" denotes whether a specific region has imposed the barrier type listed in the column header at some time during the period 1996–2005.

The definition of "large retail establishment" is important because this kind of establishment needs to apply for a second license from the autonomous regional government in addition to the required municipal license. The definition of large retail establishments has varied across regions and has changed over time. A number of regions –including Aragón, Castilla-León, Cataluña, Galicia, La Rioja, Navarra, and Valencia– have employed location-based restrictions since the mid-1990s, and these have remained in place through to the end of 2005.

Most of the autonomous regions have at some point established outright bans that forbid opening large retail establishments in a particular region during a period of time. With the exception of Baleares and Cataluña, however, outright bans are a more recent phenomenon, mainly being introduced since 2001. Nowadays, only the Canary Islands and Baleares maintain outright bans for large establishments (see Matea and Mora, 2009, Table 7). Idiosyncratic license licensing requirements for discount stores have also been used in a number of regions since the late 1990s.

Matea and Mora (2009) have constructed synthetic indicators of retail market regulation using factorial analysis incorporating, among others, all the legal restrictions highlighted by the *Comisión Nacional de la Competencia* in their 2003 report. In Table 2 we reproduce their second figure, which includes the calculated values of the synthetic indictor of retail regulation for each autonomous region.

Table 2
RETAIL MARKET REGULATION LEVEL BY REGION

Region	1997	2007	Rate of growth (%)
Andalucía	35.3	50.7	43.8
Aragón	40.2	55.2	37.1
Baleares	43.5	52.4	20.5
Canarias	43.5	53.2	22.4
Cantabria	33.2	45.4	36.9
Castilla-La Mancha	33.0	40.0	21.4
Castilla León	37.6	48.8	30.0
Cataluña	42.2	53.7	27.3
Valencia	44.8	42.2	-5.9
Extremadura	33.0	54.9	66.5
Galicia	39.9	33.3	-16.7
Madrid	31.9	40.3	26.2
Murcia	35.3	50.1	42.0
Navarra	38.2	50.2	31.3
Asturias	35.5	61.8	74.2
Rioja (La)	39.3	37.0	-5.8

Source: Matea and Mora (2009).
Note: They do not provide the score for País Vasco as its inclusion worsened the factorial analysis and significantly changed the other scores. Here the regulation scores are expressed in 100 units, while in Matea and Mora (2009) they are expressed in 10 units.

Using this indicator they found that, in contrast to international developments, retail trade has become increasingly regulated in Spain. Indeed, most Spanish regions have imposed at least one barrier since 1996. The rising trend in regional barriers to retail competition contradicts the falling trend in international trade barriers among European countries. The differences in retail regulation among autonomous regions have also increased, i.e. regions that were relatively friendly to retail trade at the outset, such as Asturias and Extremadura, have caught up with the more restrictive practices in other regions. Hence, there are important differences in the temporal evolution of the retail regulation among autonomous regions.

4. The market

To measure the effect of entry barriers on the number of large retail establishments we need to define the relevant product and geographical market.

Since legal barriers to entry are more restrictive for large retail establishment than for medium establishments (i.e. supermarkets) and small and specialized stores (like bakeries, butchers, grocers, clotheswear shops, shoe shops, etc.), we will mainly focus our analysis on hypermarkets or shopping centers. The *Spanish Shopping Center Association* defines shopping centers as commercial units of relevant size, with a selling area usually not less than 1,500 m^2 and formed by several individual stores that do not belong to the same brand but which share a common image and a common management. Most of the shopping centers are formed by hypermarkets, i.e. stores with an aggregate selling area not inferior to 2,500 m^2 belonging to a brand where a broad range of products can be acquired through one-stop shopping.

A more critical issue for our analysis is defining the geographical arena in which the large retail establishments compete with each other. In some merger cases in the retail distribution sector the EC has carried out the analysis at the national level, based mainly on the fact that most of the strategic decisions (e.g. advertising campaigns, bargaining with suppliers/producers, client fidelization strategies and selection of the range of products sold) were made at the national level. Overlapping in the catchment area of the stores also favors the nationwide approach.

However, the EC decisions state that the coverage area of a given sales location (supermarket or hypermarket) is limited: 10 to 30 driving minutes are generally mentioned as the radius of coverage of a given store (although this radius may be up to 60 km for the larger stores. [18] On the other hand, several studies have previously established a relationship between prices and concentration in the retailing sector. The fact that local concentration affects prices in many price-concentration studies is an argument in favor of a local market analysis rather than a nation-wide approach when assessing the impact of entry barriers on the number of firms.

Most of the shopping centers in Spain are located in or around the main Spanish cities. Most of these cities are the capital of one of the 50 Spanish provinces. For a hypermarket or a shopping center, the boundaries of their market do not coincide with the boundaries of the municipalities where they are located. The reason is that in urban areas many people commute daily from their town of residence, enlarging the geographical market in which consumers shop. [19]

Given these considerations, our local markets are defined as the commercial areas formed by the municipality of one of the main Spanish cities and its surrounding municipalities. [20] On the other hand, it is important to note that these commercial areas can be viewed roughly as independent commercial markets due to the fact that the main Spanish cities

(which form the main or "lead" municipality of the commercial areas) are, in general, quite far away from each other with no other significant towns located between them.

To measure the number of large retail establishments in each of these commercial areas, we follow the radius (or isochrones) approach used by the competition authorities, and assume that a given store in the lead municipality of a commercial area competes directly with all other stores in the same location, and other stores in locations which, using the fastest road, are less than 30 kms away from the lead commercial area. Since the Competition authorities mention that the radius may be up to 60 km for the larger stores and stores bordered by large rural areas, we also carry out our estimations with a broader definition of the geographical market by adding other stores which are a little farther than 30 kms from the main city. [21]

5. Data set

As mentioned above we explain market structure variation using demand and cost drivers to capture differences across commercial areas where retail outlets are located, in addition to an indicator of regional regulation. This section summarizes the data we use.

Most of the explanatory variables have been obtained from the *Anuario Económico de España 2008*, a dataset elaborated by *La Caixa*, a Spanish savings bank. [22] This dataset includes demographic, economic and commercial information on all Spanish municipalities with more than 1000 inhabitants in January 2007. More significantly, this database also includes several variables that have been elaborated with the aim of measuring the demand for retail products in a particular municipality and in a particular commercial area. These commercial areas were defined in turn using gravity models, based on commercial flows between municipalities, and surveys filled in by the municipal authorities.

In our empirical application we analyze the determinants of retail market structure in 73 local markets, corresponding to the main commercial areas defined in the *Anuario*.We have excluded three commercial areas belonging to the Basque Country because Matea and Mora (2009) do not provide the regulation indicator for this region. For the same reason, Ceuta is also excluded.

As is customary in this literature, we can use the population (in thousands) of the commercial area, POPCA, to capture differences in demand size across local markets. However, given that this variable does not account for differences in per capita purchasing power across commercial areas, we also use a second demand variable, CONSUM, which captures the overall consumption capacity of the population living in the commercial area. This variable is normalized by the national level of population (expressed in units of 100,000 persons) and elaborated using information about population, number of home telephones, vehicles, bank offices, etc. Hence, the consumption capacity in a particular commercial area is measured not only as a function of population but also as a function of several purchasing power proxy variables. We expect a positive value for the parameters associated with POPCA and CONSUM.

To capture possible differences in demand structure among local markets (i.e. demand heterogeneity) we have included several variables. The first variable measures the proportion of overall demand represented by the main municipality. Here we have two alternatives: PROPOP if demand size is measured by population (POPCA), and PROCON if we use consumption capacity (CONSUM). We expect a positive value for the parameters of both these variables because hypermarkets and commercial centers are often located close to the most important cities in order to minimize consumers' driving costs, thereby increasing consumers' demand and their local market power. The second variable, DISTANCE, is the distance from the lead municipality to the other municipalities of the commercial area. This variable is constructed by averaging the distance from the lead municipality to all the municipalities belonging to a particular commercial area using population as weights. Since most large retail establishments are located in the main municipality and its surrounding municipalities, consumers' driving costs tend to be higher as the distance to the main municipality increases. Hence, we expect a negative value for the parameter associated with DISTANCE.

The number of competitors in a particular market depends on operating costs and fixed entry costs. Following Bresnahan and Reiss (1991) and de Juan (2006) we model these costs as a function of the characteristics of the local markets. To capture differences in retails costs across commercial areas, we have included three variables in our estimations. The first is the occupation rate (in percentage terms) in the commercial area, OCURATE. This variable is chosen as a proxy for labor wages and other labor expenses, and is constructed as a weighted average of the occupation rates of all the municipalities belonging to a particular commercial area. [23] Hence, we expect a negative effect of OCURATE on the number of retail outlets. It should be noted, however, that the sign of this coefficient might be not statistically significant if OCURATE also captures a demand effect.

The second cost variable is the population density (measured in inhabitants per km^2) of the main municipality and surrounding municipalities which are less than 30 kms away from the lead municipality of the commercial area, POPDEN. If we use a broader criteria (i.e. more than 30 kms) to count the number of competitors in a commercial area, this variable is adjusted to the new definition of the dependent variable. Since land prices tend to be high when the population density is high, this variable is expected to capture local fixed costs associated with the opening of new establishments, and we expect a negative effect on the number of retail establishments. [24]

The third cost variable is associated with the barriers created by regional legislation that limit entry of new large retail establishments. These barriers can be viewed as a fixed cost of entry for the retail outlets. In order to capture this cost we include the retail market regulation indicator developed by Matea and Mora (2009) as an explanatory variable (see Table 2). Since regulation has increased over time we include both a variable measuring the regulation level in 1997, REG97, and the difference between 1997 and 2006 of the two values that Matea and Mora provide for their regulation indicator, DIFREG. [25]

As mentioned in Section 3 above, the Matea and Mora (2009) indicator is measured at the autonomous region level, so both REG97 and DIFREG take the same value for all commercial areas located in the same autonomous region. We expect negative parameters for both variables. If these parameters are statistically significant we can conclude that legal entry barriers have effectively deterred the creations of new hypermarkets and shopping centers.

We also expect a different effect of REG97 and DIFREG for several reasons: i) the increase in the regulation indicator captures different entry barriers than those captured in REG97 that, in turn, might have either a higher or a lower deterrence effect than previous regulation; and ii) the effect on entry of the barriers promulgated in the last years is not completely observed.

The dependent variable in our empirical models is the number of large retail establishments, i.e. hypermarkets and shopping centers. As mentioned in the previous section, we include the stores located in and surrounding the main municipality of a particular commercial area. The locations of all hypermarkets and shopping centers are obtained from the list of all the shopping centers in Spain in 2007 (*Directorio de Centros Comerciales*) included in the *Anuario* elaborated by *La Caixa*. [26] This directory provides information on the location of each shopping center (namely the municipality and town each store belongs to), the store selling area, and other facilities.

The *La Caixa* database also provides details about the composition of each commercial area, including the distance of each municipality from the lead municipality of the commercial area they belong to. This has allowed us to count the number of establishments located in the main municipality of a particular commercial area and those located within a radius of a certain number of kilometers. We construct two dependent variables using this information. For the first, NUM30, we used the 30 kms criteria to count the number of competitors in a commercial area. Since competition authorities note that the radius may be larger than 30 kms, in order to analyze the robustness of our results to the definition of the geographical market we have also used a second dependent variable, NUM40, where we have used the 40 kms criteria.

Since population, or its consumption capacity, is included as explanatory variables, the parameter estimates of the other independent variables can be interpreted as a change in the per capita number of establishments. Hence, another option, which is common in the literature, is to use a per capita measure for the dependent variable. In consequence, we have also used the density of establishments (i.e. the number of large retail establishments divided by millions of inhabitants) as a dependent variable in order to analyze the robustness of our results. [27]

Finally, in order to check if regional regulation has effectively protected in-town shops from competition and improved their market position, we also use as a dependent variable the total number of in-town shops in the main municipality of the commercial area, IN-

TOWN. This variable includes medium-size establishments (i.e. supermarkets) and small, traditional, and specialized stores (such as bakeries, butchers, grocers, clothes wear shops, shoe shops, etc.). We have also carried out our estimations by distinguishing among three types of shops: i) supermarkets; ii) traditional food shops, and iii) non-food shops. The number of these types of shops yields three additional dependent variables: SUPER, TRADFOOD, and NONFOOD.

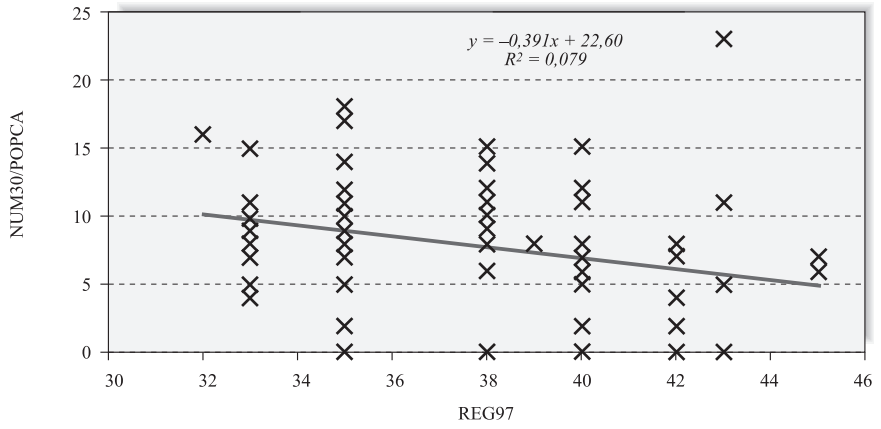
Compared to the large retail establishments models two comments are in order. First, the consumption capacity variable (CONSUM) and the occupation rate (OCURATE) in these models refer only to the main municipality of the commercial area. Second, as a proxy of fixed costs associated with the opening of new in-town shops we have used in these models the real estate price (measured in €/m^2) published by the Spanish Ministry of Housing for each province, REPRICE. Therefore, we expect a negative effect of this variable on the number of in-town shops.

A summary of the descriptive statistics for the above variables are shown in Table 3. This table describes the demographic characteristics and market structures that we observe in our 73 local markets.

Table 3
RETAIL MARKET REGULATION LEVEL BY REGION

	Mean	St. Dev	Min	Max
NUM30	6.0	13.9	0.0	113.0
NUM40	6.4	14.8	0.0	119.0
MUNPC	7.7	5.1	0.0	22.7
TRADFOOD	1563	2275	168	14415
SUPER	127	191	11	1255
NONFOOD	3128	5198	264	37205
INTOWN	5153	8118	465	56278
REG97	37.9	3.6	32.0	45.0
DIFREG	12.2	9.8	–7.0	35.0
CONSUM (Main municipality)	492	907	35	6780
CONSUM (Commercial Area)	1432	2328	52	15304
PROCON	37.6	12.1	13.2	67.3
POPCA	671	1070	26	7008
PROPOP	34.2	10.4	12.5	63.3
DISTANCE	27.3	11.6	4.9	59.3
OCURATE (Main municipality)	85.7	4.9	72.0	93.5
OCURATE (Commercial Area)	85.8	5.8	68.8	94.2
POPDEN	331.6	486.6	48.0	3381.9
RSPRICE	234.9	117.0	66.0	489.0

Figure 2 shows the relationship between the per capita number of large retail establishments and the level of regional barriers of retail entry developed by Matea and Mora (2009). This figure appears to indicate a decreasing relationship between the number of large competitors and regulation. Our subsequent analysis will investigate whether this relationship is robust to inclusion of additional covariates.



Note: NUM30/POBCA = number of large retail establishments divided by millions of inhabitants.

Figure 2. Per capita number of large retail establishments and regional regulation level.

6. Results

Several models have been estimated by OLS in order to check whether the parameter estimates are robust when different specifications of the basic model are estimated.

The results obtained for large retail establishments are presented in Table 4.

For all specifications of the dependent variable we reject the null hypothesis of no heteroskedasticity at the 5% percent level of significance using the Breusch-Pagan LM chi-squared test. Although accounting for heteroskedasticity does not produce significant changes in inference, we present hereafter the White Heteroskedasticity-Consistent t-ratios.

Based on the one-stop vs. top-up model of shopping behavior, we assume that demand from one-stop shopping is unaffected by the demand from top-up shopping. This assumption of independent demand for one-stop shopping allows us to estimate the entry model for large stores independently from small stores and traditional shops, and thereby to investigate the differential impact of regional regulation. [28]

The basic model is MODEL 1. This model includes the consumption capacity of the overall commercial area as a demand driver but ignores other variables that control for demand heterogeneity and cost differences. As expected, consumption capacity has a significant and positive effect on the number of large retail outlets, indicating that market size, reflected both in population and per capita purchasing power, is clearly an important determinant of market structure (see, for instance, Manuszak and Moul, 2008). Regarding the barriers to entry variables, the estimations show that regional regulation in 1997 has affected the number of large establishments located in a particular local retail market. [29] That is, REG97 has a negative and

Table 4
PARAMETER ESTIMATES.
LARGE RETAIL ESTABLISHMENTS

Dependent variable	MODEL 1		MODEL 2		MODEL 3		MODEL 4		MODEL 5		MODEL 6	
	NUM30		NUM30		NUM30		NUM40		NUM30		NUM30PC	
	Coef.	t-robust	Coef.	t-robust	Coef.	t-robust	Coef.	t-robust	Coef.	t-robust	Coef.	t-robust
Constant	20.228	2.104	24.928	2.713	19.186	2.815	19.276	2.792	12.780	1.712	26.464	2.360
REG97	–0.574	–2.285	–0.709	–2.891	–0.547	–2.523	–0.476	–2.384	–0.519	–2.258	–0.486	–3.454
DIFREG	–0.021	–0.358	–0.107	–1.620	–0.058	–1.649	–0.056	–1.625	–0.055	–1.657	–0.078	–1.701
CONSUM	0.006	4.721	0.006	5.303	0.007	5.227	0.008	5.806				
PROCON			0.123	2.604	0.124	2.558	0.120	2.423				
DISTANCE			–0.124	–2.190	–0.150	–2.278	–0.148	–2.053	–0.148	–2.041	–0.055	–1.034
OCURATE					0.003	0.034	–0.027	–0.320	0.065	0.752	–0.035	–0.035
POPDEN					–0.009	–1.444	–0.012	–1.484	–0.008	–1.363	0.002	2.102
POPCA									0.015	4.948		
PROPOP									0.131	1.994	0.127	0.127
R-squared	0.8823		0.9062		0.9212		0.9284		0.9171		0.7733	
Observations	73		73		73		73		73		73	
Br./Pagan Heter. test (d.f.)	481.1 (3)		514.9 (5)		254.8 (7)		266.0 (7)		282.2 (7)		32.6 (6)	

Note: CONSUM and OCURATE refer to the commercial area.

statistically significant coefficient, indicating that legal entry restrictions in 1997 have effectively deterred the creation of new hypermarkets and shopping centers. However, the estimated coefficient of DIFREG is not statistically significant. This suggests that the increase of regional barriers to entry for large retail establishments promoted in the last decade by Spain's autonomous regions has not deterred the creation of new establishments.

In order to check whether these results are robust to demand heterogeneity, we have extended the previous model by adding the proportion of consumption that correspond to the main municipality (PROCON), and the average distance from the main municipality of all municipalities of the commercial area (DISTANCE). As expected, while the effect of PROCON on the number of retail establishments is positive and statistically significant, the effect of DISTANCE is negative and statistically significant. Moreover, in MODEL 2 the coefficient of DIFREG is statistically significant at just outside the 10% level, indicating that the increase of regional barriers to entry in the last decade also seems to have had a deterrent effect on the creation of new establishments. Taken together these results suggest that differences in demand structure among local markets should be controlled for when analyzing the effect of regional barriers to entry on market structure.

In order to check whether these results are robust to cost differences among local markets, the next model (MODEL 3) includes two cost drivers: the average occupancy rate of the commercial area, OCURATE, and the population density of the main municipality and the municipalities which are less than 30 kms away from the lead municipality of the commercial area, POPDEN. The effect of both variables on the number of retail establishments is negative, as expected, but not statistically significant. The results regarding the barriers to entry variables are almost invariant to the inclusion of both cost drivers, with the exception of DIFREG which is now statistically significant at the 10% level. This again suggests that the increase of regional barriers to entry has deterred the creation of new establishments. However, since the estimated coefficient of REG97 is much higher than the estimated coefficient of DIFREG, we can conclude that the additional regulation had, on average, a lower deterrent effect than the regulation in 1997.

The remaining models are modifications of MODEL 3. In MODEL 4 we use a broader number of firms, NUM40, as a dependent variable. The main results are invariant to the use of this 40 kms criteria to count the number of competitors in a commercial area. Our results are therefore robust to the selection of a broader definition of the geographic market by adding stores not included in NUM30.

In MODEL 5 we replace CONSUM by the population in the commercial area, POBCA, and PROCON by the proportion of overall population corresponding to the main municipality, PROPOP. The main results are again invariant to the use of population and its geographical structure as demand drivers instead of consumption capacity which takes into account both population and per capita purchasing power.

Similar conclusions apply to the last model, MODEL 6, where we use a per capita measure for the dependent variable. Since the number of establishments has been normal-

ized by the overall population of the commercial area, this variable is dropped from the set of explanatory variables in this model. While the main results were almost the same and both regulatory variables are negative and statistically significant, the goodness of fit of this model is lower than that when we use the original number of establishments as the dependent variable.

In summary, these estimations together seem to indicate that regional regulation has affected the number of large establishments located in a particular local retail market, although the increase of regional barriers to entry in the last decade had, on average, a lower deterrent effect than the regulation in 1997.

A simulation exercise using the average value of the regulation variables allows us to roughly calculate how the number of firms would change if the entry barriers were (partially) eliminated. The average value of DIFREG is 12.2. Multiplying this by the estimated parameter value of 0.058 in MODEL 3 yields a value of 0.707. Thus, if the entry barriers were reduced to the average 1997 level, the number of large retail establishments in all the local markets would increase by less than one outlet. Given that the average number of hypermarkets and shopping centers in a commercial area is 6.04, this represents an 11.7% increase in the number of large competitors in a particular geographical market. These results corroborate the *Comisión Nacional de la Competencia*'s statement that the entry of large retail establishments was effectively deterred by regional regulation. This reduced number of large retail establishments is likely to have harmed consumers' welfare due to the reduced variety of retail products and the higher prices they probably pay for the products they purchase from nearby hypermarkets compared to those they would have paid with free entry.

In order to check whether the barriers to entry in the local retail markets also reduced the aggregate supply (variety) of retail products we have estimated several models using the aggregate selling area of all the large retail establishments belonging to the same commercial area as the dependent variable. The results were not conclusive. The parameter estimates of both regulation variables using the narrower definition of the relevant geographic area were not statistically significant at the standard levels of confidence. However, using the broader definition of the relevant geographic market, the parameter associated with the regulation level in 1997 was negative and statistically significant. Thus, we cannot conclude that the reduced number of large retail establishments has necessarily implied a reduction in the aggregate selling area of hypermarkets and shopping centers. This lack of statistical significance and the results in Table 4 would seem to suggest that regional regulation is restricting the entry of a large number of competitors in local markets, allowing the incumbent establishments to operate with a dimension that is large enough to impede the profitability of new establishments.

Next we try to check whether regional regulation has effectively protected in-town shops (i.e. supermarkets, bakeries, butchers, grocers, clothes wear shops, shoe shops, etc.) from competition and improved their market position. To this end we have estimated several mod-

els where the number of in-town shops in the main municipality of the commercial area [30] is explained using the explanatory variables CONSUM, OCURATE, RSPRICE, and the two regulation variables, REG97 and DIFREG. [31] Based on the one-stop vs. top-up model of shopping behavior, we assume in our estimations that the decision to enter into the small store format takes the number of large stores as given, in line with the assumption that these firms compete over residual demand after one-stop shopping. Hence, in estimating the resulting entry model for supermarkets and traditional stores we also include the number of large establishments, NUM30, as an explanatory variable. The parameter estimates are shown in Table 5.

Table 5
PARAMETER ESTIMATES. IN-TOWN SHOPS

Dependent variable	INTOWN		INTOWN		TRADFOOD		TRADFOOD	
	Coef.	t-robust	Coef.	t-robust	Coef.	t-robust	Coef.	t-robust
Constant	1734.161	0.863	4270.519	3.284	303.458	0.323	1584.416	1.954
REG97	118.971	2.014	24.502	0.792	58.230	1.732	10.519	0.482
DIFREG	13.236	0.936	1.541	0.195	12.372	1.781	6.466	1.231
CONSUM	8.956	16.339	12.295	11.251	2.453	9.626	4.140	11.890
OCURATE	–62.511	–2.662	–53.903	–2.428	–25.574	–1.720	–21.227	–1.468
RSPRICE	–1.299	–1.780	–0.505	–0.896	–0.491	–1.198	–0.091	–0.248
NUM30			–228.006	–3.397			–115.152	–5.109
R-squared	0.9884		0.9939		0.9554		0.9725	
Observations	73		73		73		73	
Br./Pagan Heter. test (d.f.)	371.7 (5)		100.7 (6)		186.0 (5)		52.3 (6)	
Dependent variable	**SUPER**		**SUPER**		**NONFOOD**		**NONFOOD**	
	Coef.	**t-robust**	**Coef.**	**t-robust**	**Coef.**	**t-robust**	**Coef.**	**t-robust**
Constant	186.147	2.268	263.867	4.811	419.892	0.378	1455.398	2.165
REG97	5.015	2.506	2.120	1.899	43.763	1.556	5.195	0.313
DIFREG	0.309	0.588	–0.050	–0.145	-0.091	–0.012	–4.865	–1.120
CONSUM	0.207	11.260	0.309	6.579	5.751	22.799	7.114	9.038
OCURATE	–4.064	–4.587	–3.800	–4.922	–18.324	–1.609	–14.809	–1.366
RSPRICE	–0.027	–0.698	–0.003	–0.094	–0.893	–2.524	–0.569	–2.070
NUM30			–6.987	–2.430			–93.087	–1.985
R-squared	0.9726		0.9817		0.9925		0.9948	
Observations	73		73		73		73	
Br./Pagan Heter. test (d.f.)	262.9 (5)		87.7 (6)		302.6 (5)		209.4 (6)	

Note: CONSUM and OCURATE refer to the main municipality of the commercial area.

The goodness of fit in all of the models is very high, with the demand driver CONSUM being the main explanatory variable, having a positive and statistically significant coefficient. [32] The occupancy rate coefficient also has the correct sign and is statistically significant. The real estate price coefficient is also negative, but only statistically significant for non-food shops. When the number of large stores is included it has a negative and statistically significant effect on the number of overall in-town shops and on the number of each type of these shops. It is worth noting that the inclusion of the number of large stores not only increases the goodness of fit of all models but also yields a drastic

reduction in the Breusch-Pagan heteroskedasticity test, indicating that the main source of heteroskedasticity is the presence of large competitors. In accordance with the parameter estimates of the in-town shops model, one new large establishment located in or near the main municipality reduces the number of in-town shops by 4.4%. The relative effect of an additional large retail establishment varies, however, from one type of shop to another. The traditional food shops are those most affected by the opening of a new large establishment, with a reduction of 7.4%, followed by supermarkets (5.5%) and non-food stores (2.9%).

When the number of large establishments is included, the effect of both regulation variables is not statistically different from zero except for supermarkets, where REG97 has a positive effect. This result indicates that regional regulation has not limited the number of supermarkets and traditional shops. Similar results were obtained by Griffith and Harmgart (2008) in their analysis of the UK grocery retail industry, wherethey only found a statistically significant (negative) impact of planning regulation for the very big stores (over 30,000 sq ft). On the other hand, the above results also indicate that neither of the regulation variables are capturing regional-specific cost common to both large and small stores which have nothing to do with regulation costs. If both regulation variables were correlated with common cost not observed by the econometrician, we would expect a negative impact for both large and small stores. However, we have only found a negative impact in our entry models for large stores.

The negative values of NUM30 together with the negative effect of regulation barriers on the number of large establishments suggest that regional regulation has indirectly protected in-town stores from competition. In order to measure the magnitude of this effect we can use the estimated coefficients of REG97 in the models where the number of large competitors has been dropped from the equation. These restrictive models are misspecified because a significant explanatory variable has been dropped. However, since we have found that REG97 reduces the number of large establishments, if NUM30 is dropped from the model the new coefficient of REG97 measures the decrease in the number of in-town shops resulting from abolishing the regional entry barriers to large establishments. Once NUM30 is dropped from the model the coefficient of REG97 is always positive and statistically significant for in-town shops, supermarkets, traditional food shops, and non-food shops. Hence, we can conclude that regional regulation in 1997 has effectively protected in-town shops from competition and improved their market position. We can catch some feeling about the magnitude of this protection if we compare the average regulation level in 1997 with the minimum level that corresponds to Madrid. In particular, if we multiply 118.9 (the coefficient on REG97) by 6 (the average level of REG97 minus the level in Madrid) we get a 13.8% increase in the number of in-town shops due to over-regulation in 1997. Note, however, that DIFREG is not statistically significant in MODEL 4, indicating that the increase in regulation over the last decade has not yielded a significant protection of in-town stores. If we split the in-town stores into supermarkets, traditional food shops, and non-food shops we get similar results, though the degree of protection varies among types of stores. The shops most

favored by over-regulation in 1997 are traditional food shops and supermarkets, with respective increases of 22.3% and 23.7% in the number of shops. For traditional food shops, DIFREG is positive and statistically significant. This suggests that this type of shops have also been better off with the increase in regulation during the last decade. Non-food shops have also benefitted from over-regulation in 1997, though their number would have increased by only 8.4%.

7. Conclusions and future agenda

Recent studies have shown that barriers to entry for large retail establishments promoted by Spain's autonomous regions have been increased in the last decade. In this study we try to test whether the entry of large retail establishments was effectively limited by regional regulation and whether regional regulation effectively protected traditional shops from competition and improved their market share.

Our results corroborate the *Comisión Nacional de la Competencia*'s statement that the entry of large retail establishments was effectively deterred by regional regulation. If the entry barriers were reduced to the average level in 1997, the number of large retail establishments in all local markets would increase by at least 11.7%. Although the results are not conclusive, it seems that regional regulation has not only restricted the entry of a large number of competitors in local markets but also allowing the incumbent establishments to operate with a dimension that is large enough to impede the profitability of new establishments. The final effect on consumers' welfare of regional retail barriers to entry will depend, however, on the incumbents' market power, the cost efficiencies associated with firms' size, the degree to which these cost efficiencies are translated to consumers (i.e. the cost-pass-through rate) and the utility from increasing the one-stop-shopping opportunities.

Finally, we also have found that traditional shops have not been limited by regional regulation. On the contrary, this regulation have effectively protected in-town shops from competition and improved their market position, increasing the number of in-town shops, formed by traditional food shops, supermarkets and non-food retailers by 13.8%.

In order to measure incumbents' market power and to further quantify the economic impact of regional retail barriers to entry we are extending our research by carrying out a price-concentration analysis. This model explains the variation in a particular price by variables related to cost, demand and market structure, and a set of dummy variables that allow the intercept to differ among relevant groups of observations. The change in the number of competitors estimated in the present paper together with the parameters of a price-concentration equation would allow us to compute the effect on prices of raising entry barriers to large retail establishments by autonomous regions. To achieve this objective we are collecting *firm-level* price data from the *Organización de Consumidores y Usuarios* (OCU), i.e. the Spanish consumers' association.

Notes

1. See Matea and Mora (2007). An extended version of this study, which analyses the same issues that are addressed in the present paper using regional data, has recently been published as a working paper of the Banco de España (See Matea and Mora, 2009).

2. Before September 2007 the Spanish Competition Authority was formed by the *Tribunal de Defensa de la Competencia (TDC)* and the *Servicio de Defensa de la Competencia* (SDC). Both institutions later merged into one which is called *Comisión Nacional de la Competencia (CNC)*.

3. Completion of the internal market in services is viewed as a major building block and contributor to higher growth and employment in the European Union, as services account for 60-70 % of economic activity in the EU Member States and about the same percentage of jobs. Not all the services sectors are affected by the EU Services Directive, but just a selection of them that amount up to around 40%.

4. See the assessment carried out by Djankov et al. (2002) based on survey measures of product market competition, or the study of the margin of operating income over sales carried out by Cincera and Galgau (2005).

5. As pointed out by the author, this result is likely a consequence of the (aggregated) price indices used in the study, which may hide the effect of barriers *on individual prices*. He suggested assessing the effect of barriers using series of individual prices, which were unavailable in his study.

6. Klapper, Laeven, and Rajan (2006) have found that barriers to entry have effectively deterred the creation (and increased the average size) of new firms in Europe.

7. The price indices were constructed by the Spanish consumers' association, OCU (*Organización de Consumidores y Usuarios*), and published in its monthly report. We also report the average national index as a benchmark. This allows us to isolate the competition effects from changes in the definition of the bundle of products over time and other common factors.

8. This picture is not easily extended to other local markets where there was an entry of a large retail establishment due to either a lack of information on the prices of the incumbent establishments or to the fact that entry happened at the beginning or at the end of the sample period.

9. One characteristic of this framework is that it ignores the dynamics of the entry process. Moreover, firms are not symmetric (in terms of size, reputation, quality, etc.). Modelling decisions when both entry decisions are discrete and firms are asymmetric is a complex task. Mazzeo (2002a) relaxed this symmetry assumption by introducing different types of products (or firms), conditioning the analysis on the number of entering firms of each type. However, Einav (2007) pointed out that the main restriction still remains (e.g. all potential entrants are ex-ante identical), and extending Mazzeo's model to more than two or three types is computationally unfeasible.

10. The estimated change in the number of competitors together with the parameters of a price-concentration equation (that we are estimating in an ongoing paper) would allow us to compute the effect on prices of raising entry barriers to large retail establishments by autonomous regions.

11. Campbell and Hopenhayn (2002) extended this insight and studied the implications of increased market size on the average size of firms in the market. In contrast to Bresnahan and Reiss, they find that this competitive effect persists even when there are a large number of firms in the market.

12. It should be noted, however, that the empirical exercise is carried out for just 73 observations and several independent variables.

13. Smith (2006) labeled these as secondary stores and defined those where the consumer spends the greatest weekly amount as primary stores.

14. Other papers that also make this distinction are Mazzeo (2002b), and Griffith and Harmgart (2008).

15. This assumption allows us to estimate a *recursive model* where no instrumental variables are required. Otherwise, we should estimate a system of equations where the number of different store formats (hypermarkets, supermarkets, specialized shops, etc.) is the dependent variable in some equations and the (endogenous) explanatory variables in other equations. Because of the simultaneous determination of the number of different store formats, the number of other store formats may be correlated with the error term, causing bias in the estimated parameters. An effective two-stage least-squares procedure relies on instruments that affect some store formats but not other formats. This makes it very difficult to address this endogeneity problem with the information available.

16. This section is mainly inspired by Hoffmaister (2006), and Matea and Mora (2007).

17. Following Djankov et al. (2002), Hoffmaister (2006) used this approach to construct an ordinal measure of the barriers to retail trade in the Spanish regions.

18. See the Promodes/Carrefour, Alcosto/Caprabo and Caprabo/Eroski cases.

19. Claycombe (2000) used commuting variables to estimate a price-concentration model. He found that concentration has a strong positive correlation with furniture and clothing prices in the US Metropolitan Statistical Areas.

20. This is the approach followed, for instance, by Manuszak and Moul (2008) and the FTC to define the relevant geographical market in the Staples/Office Depot merger case. Using confidential documents from the parties, the FTC concluded that metropolitan areas and regions arguably outside of a metropolitan area formed the relevant market. See also Claycombe (2000).

21. A recent example of the difficulties that arise when defining the relevant geographical market in the retail industry can be found in the remedies imposed by the *Comisión Nacional de la Competencia* to DIA in the acquisition of PLUS. (*http://www.cncompetencia.es/ControlConcentraciones/C-000107INFWEB.pdf*).

22. See *www.anuarieco.lacaixa.comunicacions.com/java/X?cgi=caixa.le_menuGeneral.pattern* for more details on this database.

23. This variable was constructed using the unemployment rate with respect to the working population provided by La Caixa, whose definition is quite similar to that used by the Survey of the Working Population (EPA).

24. In order to capture the fixed costs associated with the opening of new establishments in some industries, Bresnahan and Reiss (1991) used the price of the cultivated land. De Juan (2006) also used the housing price as a proxy for the fixed cost of bank branches.

25. As pointed out by one of the referees, this indicator should refer to 2006 (which is a yearly average) because the information included in the data set provided by La Caixa refers to January 2007.

26. This list includes small hypermarkets that might not be affected by the regional regulation on large establishments. This type of hypermarkets, however, only represents a 3.7% of all establishments included in the *Directorio*, and on average they were opened quite before the Spanish law that regulates the retail sector came into effect in 1996.

27. We are grateful to an anonymous referee for this suggestion.

28. From a theoretical point of view this assumption implies that the number of small supermarkets and traditional shops should not be included as an explanatory variable in the model. From an empirical perspective, this assumption also implies that the number of small supermarket and traditional shops is an endogenous variable as these firms compete over residual demand after one-stop shopping and their number thus depends in turn on the number of large stores. Since the reduction in large stores attributed to higher regional regulation yields an increase in the number of small stores (see the entry models we estimate for small stores), the inclusion of this endogenous variable will capture part of the negative impact of regional regulation on the number of large retail stores. However, even though the parameters are likely to be biased, both regulation variables are still negative and statistically significant when the number of small supermarkets and traditional stores is included in the model.

29. One might think that both regulation variables could be endogenous if the decision to introduce regulation depends on the presence of hypermarkets and shopping centers. However, we expect that this is not a relevant issue in this application due to the fact that regulation variables are defined at a regional level, and each region includes several local markets. That is, unobserved demand and cost shocks that affect the number of large establishments in a particular local market do not necessarily determine the regional regulation variables.

30. We focus our analysis in main municipalities as most large establishments are located in or nearby the main municipality, and hence we expect a stronger effect on in-town shops in the main municipality than in farther municipalities of the commercial area.

31. Recall that CONSUM and OCURATE only refer here to the main municipality, whereas they referred to the overall commercial area in the large retail establishments models.

32. We arrive at the same conclusion if we use population as the demand driver instead of consumption capacity. Using the former variable notably reduces the R-squared and hence the predictive capacity of the estimated model.

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Resumen

Estudios recientes realizados sobre el sector de comercio minorista en España han constatado el creciente número de barreras que en la última década limitan o desincentivan la apertura de grandes superficies comerciales. Usando datos a nivel local, en el presente trabajo se contrasta si la (prolífica) regulación regional de comercio minorista ha tenido un efecto significativo sobre el número de grandes centros comerciales en España y si dicha regulación ha protegido efectivamente al pequeño comercio, localizado tradicionalmente en los casos urbanos de las ciudades. En este trabajo se concluye que si las barreras a la entrada de grandes superficies se redujeran a los niveles de 1997, el número de grandes establecimientos aumentaría en un 11.7%. Asimismo se encuentra que la regulación regional de comercio minorista ha permitido mejorar la posición del pequeño comercio tradicional en torno a un 13.8%.

Palabras clave: Barreras a la entrada, comercio minorista, regulación.

Clasificación JEL: L11, L52 y L81.