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Retail decentralization and land use regulation policies in suburban and rural communities: The case of the Île-de-France region

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ARTICLE INFO

Article history:

Received 26 September 2016

Received in revised form

11 January 2017

Accepted 4 February 2017

Available online xxx

Keywords:

Land use policy

Retail development

Île-de-France

Small stores

Rural communities

ABSTRACT

The capacity for a suburban or a rural community to maintain retail activities in its town centre have often been considered as an indicator of its viability. But, since the 1970s, the expansion of new forms of retail, such as hypermarkets, shopping malls or retail parks has created a highly competitive environment for the small town centre retail units. Consequently, several central and local governments have developed rules in order to prevent an excessive development of large decentralized stores. In this paper, our goal is to assess the efficiency of land use regulation aiming at protecting existing retail units and its broader impacts on the size and localization of the retail stores in the Île-de-France region, the most populated area in France. The data we use over the 1975–2013 period include the evolution of small retail units, large retail stores and total retail floor space built at a local level. Using spatial statistics and econometric models we study the effects of land use regulation on retail patterns and local restrictiveness towards new large stores in the municipalities of the region over the last 40 years. We conclude that land use policies have impacted retail patterns in the region and that suburban and rural authorities, where town centre activities are crucial to their quality of life, are more restrictive towards large retail stores than urban ones.

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1. Introduction

Since the 1970s retail expansion has been characterized by the massive arrival of large decentralized stores in the majority of the OECD countries. Rural and suburban communities surrounding large metropolis have experienced great changes as a consequence of urban sprawl. One of the most prominent components of this evolution is the fact that these areas have been colonized with large decentralized car-dependent stores (Ronse, Boussauw, & Lauwers, 2015), that this massive expansion is one of the examples of how human activity can cause changes in our landscapes and have caused loss of high quality agricultural land. Moreover, large stores have entered in competition with the town centre local small shops, causing failure amongst them. The loss of these retail units has become a growing concern for local stakeholders, residents and public authorities as it threatens the vitality and the quality of life of these areas where many people own their home (Ravenscroft, 2000; Thomas & Bromley, 2002).

The socio-economic impacts of what has been called retail decentralization (Berry, 1967) have been assessed since the 1980s. Benefits include decrease of the prices of the goods sold in the stores. External costs can include the loss of existing small retail units (Basker, 2005; Jia, 2008) and car dependency to reach retail facilities. Most of the developed countries have taken compulsory measures to control the expansion of large stores to protect their small retail units; like Spain, Italy, Great Britain, Sweden, France, etc. but the results are still controversial.

France and more specifically the Paris region have faced a retail expansion and decentralization for a long time. Land use policies have been characterised by the use of entry barriers and incentives since the first measures of the central government aimed at controlling urban development in the 1950s (Delsaut, 2001). Since 1973 large retail stores development have been controlled by an entry barrier through local zoning boards in charge of deciding whether a large retail project should be accepted or not. There is an ongoing economic debate about the efficiency of such tools to correct market failure, in particular land market failure. We aim first at contributing to this debate by providing some insights about the efficiency of the entry barrier applied to large retail stores.

In this paper, we consider the French retail land use policy in the

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Ile-de-France region and assess its efficiency in controlling the size and the localization of retail development. This region, the most populated French one, contains 42.9% of the total amount of French large stores (above 500 employees) (Lanoe et al., 2010). It has experienced a massive retail expansion, as about 15 million sq. mt of retail floorspace was built between 1975 and 2013, corresponding to 20% of the total current floorspace in France. Moreover, land use conflicts and pressure about land use efficiency in this region are particularly strong and constitute a supplementary challenge for land use policies (Torre & Darly, 2014). And finally, we choose the regional level as we aim to study the advisability of incorporating indicators of spatial changes and urban patterns monitoring into regional planning. Thereby we hope to give some insights to policymakers and regional planners in order to better control future development of regions under rapid economic change, following the findings of Vaz (2016) and under pressure to preserve agricultural land (Vaz, Painho, & Nijkamp, 2015). Our main focus is on the effects of national regulations on retail patterns. Does the French retail land use regulation have an impact on retail patterns in the Ile-de-France region? Are there spatial disparities in the restrictiveness of local authorities towards large new stores between urban, suburban and rural authorities and how can we explain them?

In order to investigate this question, we use two successive methodologies. First, we focus on spatial descriptive statistics showing the evolution of retail patterns indicators such as the number of retail shops opened, their size in terms of employees, the retail floor space and retail employment at the municipal level in the Ile-de-France region between 1975 and 2013. Then, we use linear regression models in order to assess the role of land use regulation in the evolution of retail patterns. We divide our article in six sections. In section 1, we give a review of the documented impacts of French and other countries' retail land use policies based on an international literature review. In section 2, we provide a description of French land use regulation and its evolutions from 1970 to 2014. In section 3, we describe our data and methodology. In section 4, we provide descriptive statistics of retail expansion in the Paris region and study the global impacts of the retail land use policy in the region. In section 5, using spatial statistics we assess the spatial disparities in the local use of the policy. And finally in section 6, using linear regression models, we provide some explanations for these spatial disparities.

2. Retail land use regulation and its impacts: international literature review

Given the rapid growth of the cities, the subsequent urban sprawl and the need for various infrastructures, retail regulation is a common feature in European countries. It has led to the implementation of several rules by local federal governments or local administrations, examined by several studies trying to assess the impacts of these measures. Most studies focused mainly on the impacts of land use policies on employment and productivity of retail units. But some studies provide insights into the impacts of land use policies on retail market structure and on small retail units' survival. We give a review of their main findings by separating the impacts of regulation on employment and productivity and then, on small retail units' survival and retail developments' localization.

2.1. Impacts on retail productivity and employment

In the United Kingdom, between 1988 and 1996, restrictive policies towards retail land use were implemented in order to avoid out-of-town retail development and encourage developments

within town centres. The impacts of this land use policy, known as the Town Centre First policy on employment and retail productivity have been documented. Cheshire, Hilber, and Kaplanis (2015) used a dataset from one of the leading retailers in the United Kingdom to assess the impacts of the Town Centre First policy on the sales of 331 of these retailers' stores. They used approval rates for major residential development in local planning authorities as a proxy for local restrictiveness of the regulatory policy. They found that in authorities where the approval rate for planning applications is higher, the productivity - measured by sales of the retail stores - is higher. They concluded that retail regulation has a negative impact on stores' productivity. However, this study does not address the effects of retail regulation on small retail stores as the smallest stores included in the study have net floorspace of just above 8000 sq. ft. and employ a minimum of 32 persons.

In Sweden, all stores are required to make a formal application to the local government and it is extremely rare that all applications are approved by a local authority. Maican and Orth (2012) used a dynamic structural model to assess the role of retail entry regulation in the productivity of the retail trade during the 1996–2002 period in Sweden. They produced a combination of three variables to measure the stringency of regulation across local markets; the number of approved applications divided by the population density, the number of approved applications relative to the number of stores, and the number of approved applications relative to the number of zoning plans. They produced measures of store productivity and aggregate productivity in local markets using detailed data on all stores in the Swedish retail industry. They finally found that across all subsectors, store productivity increases by 1.8 percent on average per additional approved application. Therefore, they concluded that retail regulation has a global negative impact on stores' productivity.

In Italy, the 1998 policy required regional boards to set a maximum amount of retail floorspace to be authorized every few years. Schivardi and Viviano (2011) studied the impacts of this retail entry barrier and assessed its impacts for the 2000–2003 period. They compared performances at the local level before and after 2000, the year in which regional regulations came into effect, using a fraction of population in each region divided by the chosen retail floorspace maximum authorized by each regional board as an indicator of regional stringency in retail regulation. Their linear regressions for productivity, profit margins and employment in retail stores in 1998 and 2003 revealed that regulation negatively affects stores' profit margins, stores' productivity and labour input by hours worked. They did not directly test for effects on employment because large stores employ mainly part-time staff. However, an analysis by Viviano (2006) showed that the same entry barrier depressed employment growth.

Bertrand and Kramarz (2002) assessed the impacts of the French retail land use regulation on local retail employment. They used the decisions taken by the French regional zoning boards' in 95 *Départements* between 1975 and 1998 to assess whether the territorial disparities in retail employment could be accounted for partly by differences in 'restrictiveness' towards retail development of the different boards. They found that an increase of the board's approval rate led to an increase of local retail employment and in part-time employment. They consequently concluded that retail regulation depressed employment growth.

2.2. Impacts on small retail units' survival and retail developments' localization

Retail land use policies in most countries aimed both at encouraging new retail developments to be localized in city centres and at protecting existing retail units. Some authors focused on the

impacts of retail land use regulation on the number of stores (small or large) or on the localization of the new stores.

Sadun (2013) observed a decline in planning grants between 1996 and 2003 in the United Kingdom and statistically assessed the consequences of this decline on independent and chain stores. She found that this decline in planning grants accounted for 4%–22% (according to the local authority) of the employment growth experienced by small formats, and 6% and 26% of the employment decline experienced by independent retailers over the time period 1998 to 2004. She also found that the expansion of smaller stores by chains had a significant negative effect on independent retailers, which is in line with numerous American studies about the effects of chain stores on independent stores (Basker, 2005; Haltiwanger, Jarmin, & Krizan, 2010; Jia, 2008; Paruchuri, Baum, & Potere, 2009). She then assumed that since the number of major retail application granted has dropped between 1996 and 2003 following the restrictive policies towards out-of-centre retail developments, retail regulation has provoked the decline in major retail application submissions and grants. On this assumption, she concluded that retail regulation is to be held responsible for the decrease of independent stores' employment and a number of independent stores.

Griffith and Harmgart (2012) produced a similar study using directly a model of entry that enables to consider the impact that planning regulation has had on market structure in the English supermarket industry taking into account other factors than land use regulation, such as commercial considerations. They used a 2002 database of over 7000 grocery stores which covers all chain stores and all other large stores, as well as around 80% of independent small stores. They produced linear regression models to assess the impacts of retail regulation on numbers of stores of different formats (less than 5000 sq. mt., between 5000 and 15,000 sq. mt., between 15,000 and 30,000 sq. mt., above 30,000 sq. mt.). Contrary to Sadun (2013), they chose the approval rate of retail planning applications between 1996 and 2001 to measure the territorial disparities between local authorities' restrictiveness towards retail development. They estimated the parameters of the profit function, controlling for demographic factors as well as planning policy in order to assess consumers' loss consequent to the loss of number of stores. They found that the impact of planning regulation is strongest, and only statistically significant, for the very big stores (over 30,000 square feet), that is to say retail regulation did not have a significant impact on the number of stores of less than 30,000 sq. mt. They concluded to an overall loss to consumers of up to £10 million per annum as very big stores tend to offer lower prices.

In France, Bertrand and Kramarz (2002) found that the proportion of people working in shops employing less than 9 persons is negatively impacted by the increase of retail provision and board's approval rate (that is to say in local *Départements* that do not apply regulation in a stringent way). This secondary result provides evidence that retail regulation may have protected small shops. Moreover, this negative effect is stronger in rural *Départements*, showing that rural small retail units are more vulnerable facing the competition of large stores and that retail regulation can play a greater role in protecting them. Another French study was conducted by Shearmur and Alvergne (2003) about the effects of land use regulation on employment localization and decentralization. They were interested in the *Villes nouvelles* policy led in the 1970s by the French central government to concentrate new populations and to avoid urban sprawl. The authors examine whether the deployment of jobs across the Paris region, which has had a clear and consistent regional planning framework over the past 30 years, has been influenced by this policy. They concluded that it has succeeded since 14.2% of the

population now live within or directly adjacent to a *Ville nouvelle* and that 11.9% of all employment is located in the same area. The *Villes Nouvelles* experienced the fastest growth in employment in the Ile-de-France region during the 1978–1994 period. Collectively, their share of Ile-de-France employment rose from 2.7% to 6.6% during the same period.

Globally, the results of these studies show that retail regulation depresses employment and retail productivity. However, one study addresses only the impacts of regulation on large stores (Cheshire et al., 2015) and not on small stores. Another study (Griffith & Harmgart, 2012) shows that retail regulation has no impact on stores below 30,000 sq. mt. and finally one study (Bertrand & Kramarz, 2002) finds that retail entry barrier impacts positively the number of stores employing less than 9 persons.

As we could see, while several studies assessed the consequences of retail regulation on large stores' productivity or employment, only a few have provided statistical evidence of its impacts on small stores population or stores decentralization. We aim at giving some insights into this issue to contribute to filling this gap.

3. Retail land use regulation in France since 1973: evolutions, implementation and impacts

Land use planning in France has been characterized by a strong central intervention after the Second World War. Local administrations were lately comforted in their capacities to intervene in land markets through the devolution process, started in the beginning of the 1980s. This evolution concerns retail land use regulation as well. In this part, we give insights into the evolution of the land use policies as far as retail development is concerned from 1973 to 2015.

3.1. 1973–1993: saving the mom and pop stores

Facing the intense expansion of new retail forms such as the supermarket (since 1958) or the hypermarket (since 1963) and the pressure of small retail units' owners, the French central government started to put into place an entry barrier for large stores in the early 1970s. In 1969, boards specialized in retail planning were created at the *Département* level. They were composed of 20 members; including 9 members of the local elected personnel, 9 representatives of local retail shops (with 6 from the « small and medium » companies sector) and 2 representatives of civil society named by the *Préfet*. In 1973, the Royer bill required any retail development projects above 1000 sq. mt of selling space in cities with less than 40,000 inhabitants and above 1500 sq. mt. in cities with more than 40,000 inhabitants to ask for an authorization of these boards before applying for a planning permission. This was the beginning of the retail land use regulation in France, which still remains in place with the same spirit nowadays.

At that time, the government's priority was to save small retail units and avoid “wasting retail provision”. This legislation has been criticized because it seemed to be aimed at preventing competition rather than planning retail development (Joye, 2007; Monnet, 2008). The first years following the Royer bill have been known for the highest refusal rates in boards' meetings; in 1976, 44% of retail development projects were refused by boards and 57% in 1977, including a 83% refusal rate for hypermarkets only (Cliquet, Garets, Basset, & Perrigot, 2008). But in the 1980s, refusal rates became much lower.

3.2. 1993–2008: stopping decentralized large retail stores production

In the 1990s, following a few reports from high authorities such as the Senate (François-Poncet, Larcher, Huchon, Luart, & Perrein, 1994) or the Council of economic and social affairs (Rossi, 1997) pointing out the failure of the Royer legislation to put a brake on retail expansion and decentralization, the French central government took some more restrictive steps towards retail development. A first bill came into effect in 1993 known as the *Sapin* bill. It required any retail project above 1000 sq. mt. to submit a detailed economic impact study including the impacts the new opening store would have on the local retail market (on existing retailers and employment market) and the local retail densities. The composition of the boards was changed; they had 6 members only, including 4 local elected personnel (2 elected in the concerned municipality), retail professionals were no longer part of them; only a consumers' representative and a representative of the central government remained.

Three years later, in 1996, the new government decided to implement even stronger policies towards retail development. At that time, the situation was critical according to central government's representatives: « *I am not against large stores, but the equilibrium point has been reached* » (A. Guellec, French deputy, 1996), « *We have gone too far. Retail provision is now close to reaching the saturation point. We must control it* » (J.P. Raffarin, French ministry of small companies and retail affairs, 1996). Indeed, between 1984 and 1990, supermarkets openings went at a rate close to one per day in France. Between 1988 and 1993, the average annual rate of hypermarkets and maxi discount stores' openings were respectively close to 6.6% and 25.3% (Monino & Turolla, 2008). In the food retailing sector, the market shares of small retail units dropped from 66.7% in 1970 to 30.5% in 1996, hypermarkets' market shares increased from 3.6% in 1970 to 36.8% in 1996. Finally, between 1966 and 1998, numbers of independent stores such as bakeries, textile stores, convenience stores and butcher's shops decreased from half to 85% according to the goods they sold (Chardon & Dumartin, 1998).

In 1996, the government installed a six-months ban for any board to deliver an authorization for retail development before the new Raffarin bill came into force. The flagship measure of that bill was that the threshold for retail projects to meet the requirement of boards' submission went from 1000 sq.mt to 300 sq.mt. Moreover any retail development projects over 6000 sq.mt had to go through a demanding public process called a public inquiry usually used only for heavy national transport infrastructure. These policies are known to have impacted at least in the short run retail developers' strategies and retail stores patterns (Monino & Turolla, 2008; Monnet, 2008).

3.3. 2008–2015: European pressure, new retail forms and laissez-faire

Between 1999 and 2004, small retail units' sales decreased by 7%, while, during the same period, retail sales globally increased by 7% (Insee, 2005). Over 11% of retail stores with less than 400 sq.mt of selling space closed down between 1982 and 1991 (Insee, 1998). French land regulation towards retail development evolved in 2008 following pressure from the European commission. In 2003, Aldi, the German giant discount retailer lodged a complaint to the European commission against the Raffarin bill for breaching the principle of freedom of trade previously agreed upon in order to guarantee market competition. The judgement was given in favour of Aldi. Since then, the European commission has kept urging France to change its retail land use regulation.

In 2006, the European directive « services » came into force and it became even more evident that French legislation was out of the European regulation framework. In 2008, the *Loi de modernisation économique* was implemented to meet the European requirements. The threshold for retail projects to meet the requirement of boards' submission went back to 1000 sq. mt of selling space. The boards went from 6 to 8 members, local elected personnel stayed in the majority. The requirement of a public inquiry for projects over 6000 sq.mt. of selling space was abolished (see Fig. 1). For the first time, the criteria taken into account in the boards were written down; boards have to exclude any social and economic aspects and only take their decisions based on land use efficiency, landscape preservation, and other environmental aspects, such as public transportation provided within the proposed site. Indeed, the European directive permits all regulation aiming at promoting an efficient use of land resources.

4. Main questions and data description about the Île-de-France region

Our focus in this paper is twofold. First we aim at studying the global impacts of retail land use regulation on retail patterns. Then, we assess the restrictiveness of French local authorities towards the entry of new large retail stores and provide some insights to explain why some local authorities are more restrictive towards large retail development.

We choose to focus our study on the Île-de-France region. This region has experienced massive retail decentralization. Since we are more interested in the surroundings areas of Paris, we exclude Paris city from all our analysis, which is mapped in white in the centre of the region.

4.1. Data description 1 - local restrictiveness towards large stores and local authorities' typology

In order to study the spatial disparities in the process of retail development restrictiveness of local authorities, we use two databases. The first one contains the retail floorspace in sq.mt submitted to the local zoning boards and the retail floorspace that has been accepted by these boards between 2003 and 2014. These data allow us to calculate the approval rates of large retail projects in each municipality of the region, based on the following index:

Average annual rate of approval between year t and year $t+1$ in the municipality i :

$$\sum_{t=1}^t \frac{\text{retail floorspace accepted in the municipality } i}{\text{retail floorspace submitted in the municipality } i}$$

Since the threshold for the requirement to ask for a permission to the boards switched from 300 sq. mt to 1000 sq. mt. in 2008, we calculated one approval rate for each of the two following periods: 2003–2008 and 2009–2014. We chose the municipal level, even if the zoning boards operate on a larger scale. Indeed, the time-period we considered comes after the 1993 *Sapin* bill, which greatly changed the composition of the boards. Since then, local mayors have become the majority on the boards. Moreover, according to the municipality where the project is submitted, most of the members of the boards differ. The local elected mayor of the municipality concerned by the retail project submitted has to be present. Finally, our discussions with the local planners revealed that local mayors would readily side with the mayor of the concerned municipality, as they can be in his/her position at the next project considered.

The second database we use to study the spatial differentiation in the restrictiveness of local authorities is the typology of the

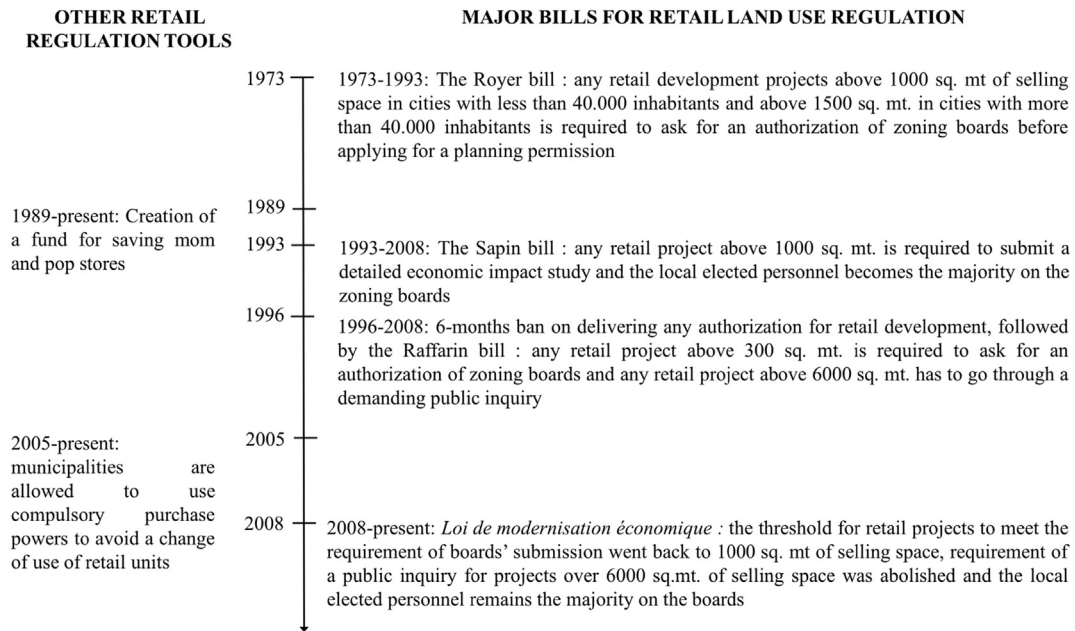


Fig. 1. Retail land use regulation in France: evolution between 1973 to present.

municipalities produced by the National French Institute for Statistics (INSEE). This typology has been elaborated using the evolution of population, housing and employment densities. The urban municipalities are located within a dense urban environment including an employment level above 10,000 jobs. The suburban municipalities have known a steep increase in housing units located around employment centres. The rural municipalities have a low residential density, low increase in population and are located further away from the employment centres. In the Île-de-France region, there are 395 urban municipalities, 673 suburban municipalities and 212 rural municipalities. They respectively group 6,200,329 residents (64.2% of the population in the region), 2,953,986 (30.6% of the population) and 503,566 residents (5.2% of the population), corresponding to a total of 14.8% of the whole population of France.

4.2. Data description 2 - retail development indicators

In order to study retail patterns, we used a third database on request from Insee. Retail floorspace allowed and built in each French municipality is taken down yearly by the Department for Environment, Energy and Sustainable Development and consolidated within the database *Sitadel*. We use the retail floorspace built each year from 1975 to 2013 in the municipalities of the Île-de-France region.

The fourth database, named *Connaissance locale de l'Appareil productif*, has been provided by INSEE. Its access is restricted as it is protected by the French National Committee for statistical secret, which agreed to let us use it for the purpose of our research work. This database includes each retail unit in France, it gives information about the number of employees in FTE, the opening date, the localization at the municipality level. We used it with a dual purpose. First it allows us to rank the stores according to their size in terms of employees; with 0–3 employees for small retail stores, with 4–19 employees for intermediary stores and with more than 20 employees for large stores. Second, it allows us to give some insights into the effects of land use regulation on retail employment at the municipality level.

Our fifth database is an inventory of all stores in each

municipality in the Île-de-France region. It includes hypermarkets (above 2500 sq.mt of selling space), supermarkets (between 400 and 2499 sq. mt), bakeries and butchers. Finally, we used socio-economic variables from the French National Institute of Statistics to produce the independent variables in our linear regression models.

4.3. Summary statistics

Table 1 provides a description of the different variables used in the study and of their respective descriptive characteristics.

5. The global impacts of the national policy since the 1990s in the Île-de-France region - descriptive statistics

First, we use descriptive statistics to give some insights into the global effects of retail land use regulation on retail patterns.

5.1. Has the policy impacted the total amount of retail floorspace built?

In order to make an assessment about retail floorspace densities in the Île-de-France region we use data about the retail floorspace built yearly between 1975 and 2013 in each municipality. The results obtained are described in Figs. 2–4.

Fig. 2 illustrates retail floorspace added yearly between 1975 and 2013 in the Île-de-France region. In total, between 1975 and 2012, more than 15 million sq.mt of retail floorspace were built in the region, which corresponds to 20% of the current total of retail floorspace in France. The results reveal a slowdown in retail development between 1989 and 1997, which has been even stronger after 1994, when more restrictive policies towards retail development were implemented. In 1997, retail floorspace added reached the lowest value between 1975 and 2013. Fig. 3 suggests that fewer municipalities were concerned with new retail developments from 1993 to 1998: the number of municipalities where retail floorspace was built dropped from 350 in 1989 to 176 in 1997.

Fig. 3 also provides evidence of a specialization of some

Table 1
Summary statistics of the data.

Quantitative Variables	Obs.	Mean (SD)	Max	Min
Municipality				
Retail floorspace built between 1975 and 2013 (in sq. mt.)	1280	12,100.0 (28,873.43)	273,500	0
Number of stores total	1280	105.4 (233.4489)	2717	0
Number of stores with 0–3 employees FTE in 2013	1280	88.64 (197.7261)	2253	0
Number of stores with 4–19 employees FTE in 2013	1280	13.64 (33.02733)	436	0
Number of stores with more than 20 employees FTE in 2013	1280	3.12 (8.469,543)	98	0
Retail floorspace of stores above 1000 sq. mt in 2013	1280	3915 (10,555.15)	88,980	0
Number of bakeries in 2014	1280	3.761 (8.183,721)	80	0
Number of butchers in 2014	1280	1.871 (4.412,801)	41	0
Number of hypermarkets in 2014	1280	0.1383 (0.4,189,829)	3	0
Number of supermarkets in 2014	1280	0.9961 (2.115,319)	22	0
Employment in FTE in 2013	1280	369.7 (1018.485)	10,882	0
Average approval rates in retail zoning boards 2003–2008 ^a	295	87.60 (26.93,604)	100	0
Average approval rates in retail zoning boards 2009–2014 ^b	247	93.32 (21.15,671)	100	0
Submitted retail projects to boards between 2003 and 2008 in total sq. mt.	1244	1798.9 (6518.949)	77,063	0
Submitted retail projects to boards between 2009 and 2014 in total sq. mt.	1244	1604 (6357.481)	69,570	0
Population 2013	1280	7545.2 (14,813.54)	117,126	25
Qualitative Variables	Obs	Variation types		
Villes nouvelles	1280	Villes nouvelles: 70 Others: 1210		
Typology Insee municipalities	1280	Rural: 212 Suburban: 672 Urban: 395		

^a Sample restricted to municipality that have at least one retail project submitted between 2003 and 2008.

^b Sample restricted to municipality that have at least one retail project submitted between 2009 and 2014.

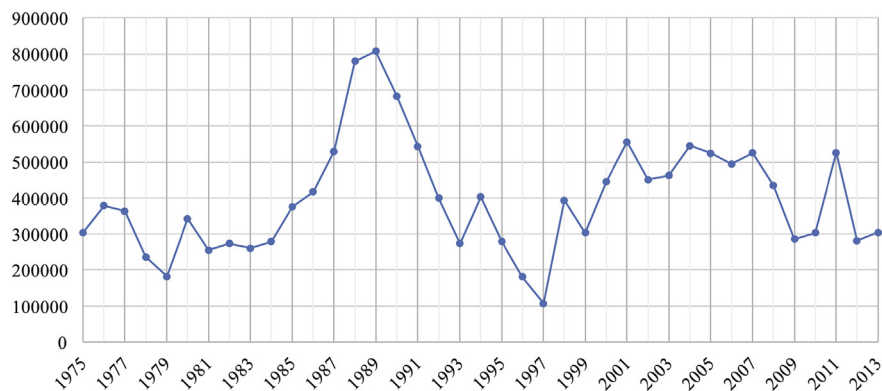


Fig. 2. The evolution of retail floorspace built yearly in the Île-de-France region (in sq. mt.).

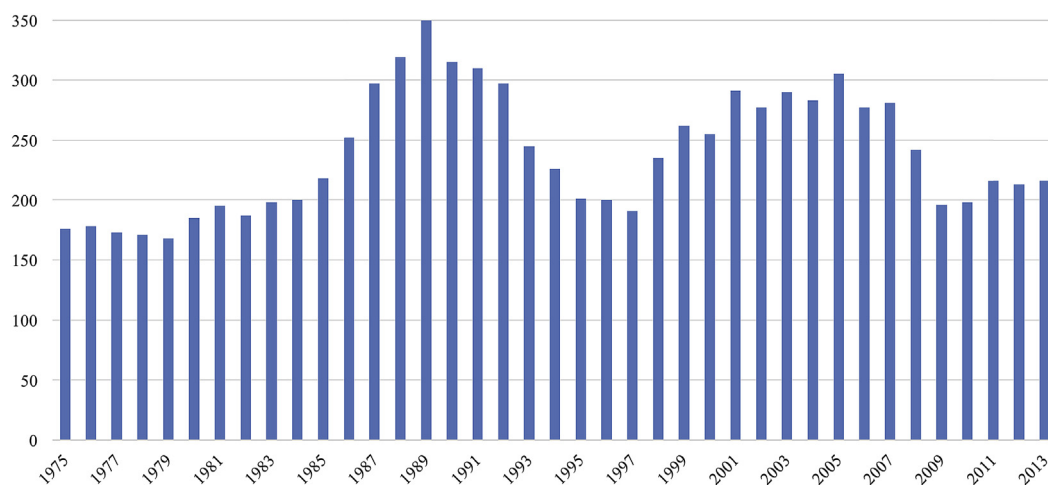


Fig. 3. Number of municipalities in which retail development was added in the Île-de-France region.

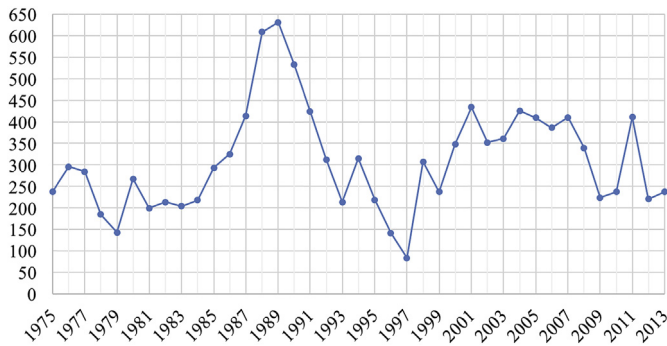


Fig. 4. Average size of the retail development projects according to the year of construction in the Île-de-France municipalities.

municipalities in retail development, as in the Île-de-France region 20.5% of them took in 90% of retail floorspace expansion between 1975 and 2013. We illustrate this specialization in Fig. 5 and show that many of the municipalities located near the *Villes Nouvelles* (see par.1.2 for an explanation on this policy) took in large amounts of retail development. Finally in Fig. 4, one can observe that both changes in regulation in 1993 and 2008 have impacted the size of retail projects as the average floorspace for each retail project reached a minimum of 562 sq.mt in 1997 (average floorspace between 1975 and 2013 was 1632 sq.mt.) and has experienced decrease in 2008 and 2009.

The years 1993 and 1996 were efficient in restricting retail development in the short run, but, until 2000, retail floorspace was added yearly at higher levels than in the 1980s, which leads us to wonder whether these policies were efficient in the long run. These results are in accordance with previous studies on the impact of land use regulation, such as Monino & Turolla's ones (2008). They studied the impacts of the 1993 *Sapin* bill and 1996 *Raffarin* bill on the food retailing sector focusing on the rates of openings of hypermarkets (over 2500sq.mt), supermarkets (between 400 and 2499 sq.mt) and maxi discount stores. They spotted the temporal shocks on these rates between 1988 and 2006 and tested whether these temporal shocks could impact the rate of openings. They

concluded that retail regulation had significantly impacted the three opening rates in the short run but not significantly impacted the supermarkets and discount stores' opening rates in the long run as maxi discount stores were still opening more than 100 stores per year after 2001. They found that the *Raffarin* bill constantly slowed down the rate of openings of hypermarkets. It has to be noticed that this study doesn't include other retail forms such as shopping centres and retail parks which have seen their rates of openings increasing in the 1990s.

5.2. Has the policy impacted the number of large stores and small retail units?

In this part, we are interested in founding out if the policy had a different impact on retail stores according to their size. That is the reason why we study separately the number of large stores and small retail units. Figs. 6 and 7 respectively show the annual growth in large stores openings between 1981 and 2013 and the number of large stores opened each year between 1975 and 2013. We clearly notice that at the beginning of the 1990s, both annual growth rate and number of stores opened remains constant before the 1993 and 1996 bills, corroborating the results of Monino and Turolla (2008) that showed the decrease in the rates of openings for supermarkets and hypermarkets was already happening before the bill came into force. This result is in accordance with the results of Fig. 2 as well as the decrease in the retail floorspace added yearly started in 1989.

In Fig. 6, the heavy increase in the number of large stores opened in 2000 can be accounted for by the 1996 bill which depressed retail development for two years after the bills came into force. Monino and Turolla (2008) found similar results as they showed that the bills had a short run impact only (from 1997 to 1999) and the opening rates went back to high levels in 2000. Moreover, the 2009 and 2010 years were characterized by a decrease in annual growth rates of large store openings and a decrease in the number of stores opened, which did not last as in 2011, the annual growth rate went back to 23%.

Fig. 7 reveals that the number of openings of small retail stores has known an annual growth rate of 46% in 2009 as the number of small stores opened almost doubled the year after the 2008 bill

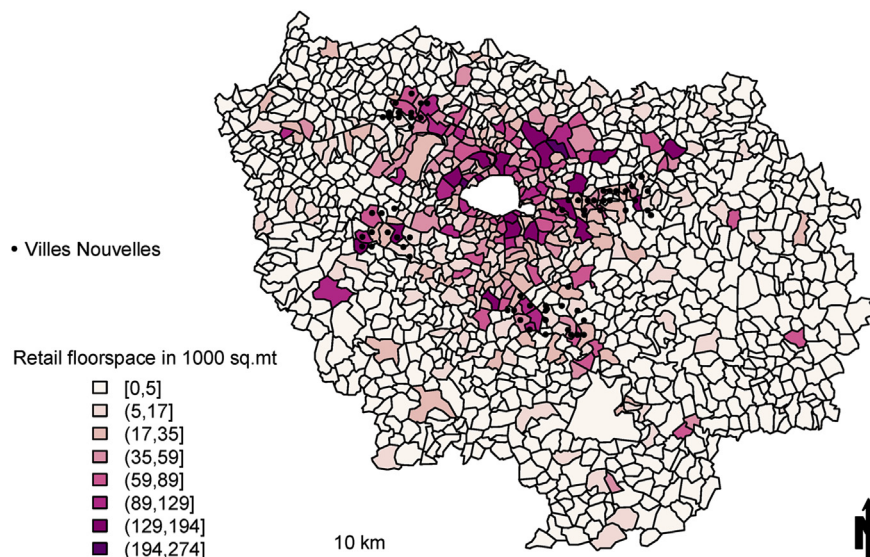


Fig. 5. Retail floorspace built between 1977 and 2012 and the *Villes Nouvelles*.

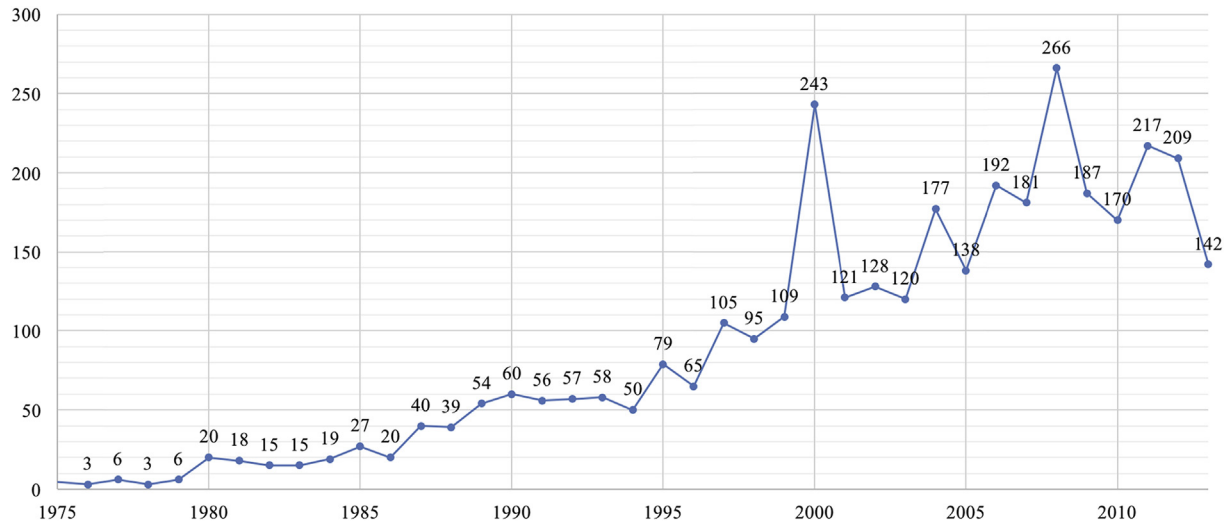


Fig. 6. Openings of large retail stores between 1974 and 2013.



Fig. 7. Annual growth rate in small stores openings between 1981 and 2013.

came into force (from 5150 opened in 2008–9526 in 2009). It was the highest annual growth rate since 1980. As the bill elevated the requirement point to boards' submission from 300 sq. mt. to 1000 sq. mt., all stores between 300 and 1000 sq. mt. did not need the boards' approval to open. The 2008 bill seems to have boosted the number of stores with less than 4 employees FTE, which can correspond to the stores with 300–1000 sq. mt. of selling space, as no constraint lay on them anymore after the bill came into force.

We conclude, from these statistics, that land use regulation has had an impact on the size of the new retail projects in the Île-de-France region. When the requirement threshold to boards' submission changed in 2008, the openings of stores and small retail units were strongly affected. The developers adapted their projects and chose to open smaller stores in order to avoid submission to the boards.

6. Spatial disparities in the local use of the retail land use regulation in the 2000s. More results on the Île-de France region

6.1. High global approval rates

Between 2003 and 2008, 87.60% of the retail projects proposed by developers to the zoning boards were accepted in the region Île-de-France, whereas this rate went up to 93.32% between 2009 and 2014. This result proves that the national policy has not significantly served to control large retail development in the region (cf Fig. 8). Since local mayors are the majority on the boards, these high rates can be explained by the incentives for mayors to have large retail developments settling in their municipalities rather than in one of the neighbouring municipalities. If it is the case, their small retail units would suffer anyway from the competition of large retail development. Moreover, they would not even benefit from

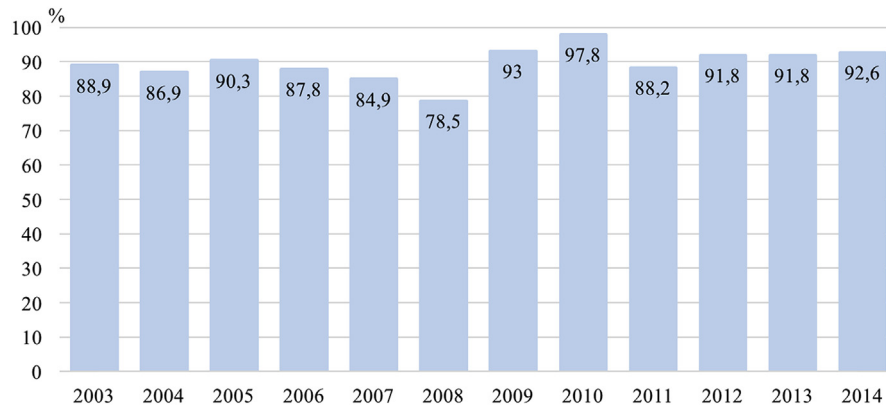


Fig. 8. Rate of approval of retail development projects in the zoning boards in the Île-de-France region.

the economic tax because this tax is collected at a municipal level (so the other municipality near where the store is settled would be the one benefitting from the tax).

6.2. Hiding spatial disparities between municipalities

Between 2003 and 2008, 295 municipalities, grouping about 50% of the total population, were concerned with developers' proposals for retail development. Amongst these municipalities, only 31 decided to grant less than 50% of the proposed development. Between 2009 and 2014, 245 municipalities were asked for retail development and 34 of them granted less than 50% of the projects. In order to explain the disparities between the local use of the policy, we mapped together the approval rates that are below 100% (points) and the retail floorspace built (grey-coloured municipalities). Fig. 9 shows the approval rates of stores above 300 sq. mt. for the 2003–2008 period and the retail floorspace for the 1975–2003 period; whereas Fig. 10 reveals the approval rates of stores above 1000 sq. mt. for the 2009–2014 period and the retail floorspace between 1975 and 2009.

Visually we could see that most of the municipalities that haven't accepted all large stores had already large amounts of retail floorspace on their territory. We can then conclude that local

mayors resort to the retail land use policy to control the amount of retail floorspace once it is already highly represented. Otherwise, they accept almost 90% of the projects, leading to a non-use of the policy.

Moreover, in Table 2, we provide evidence that rural and suburban municipalities have been relatively more restrictive to large retail stores than urban municipalities for the 2003–2008 period. Indeed, the average approval rates in suburban and rural areas concerned with request for large retail stores are much higher than those in urban municipalities. It means that suburban and rural municipalities have been refusing large stores projects in a higher proportion. On the contrary, urban municipalities are characterized by high approval rates of the projects for large stores, meaning they are less restrictive towards large retail developments.

7. How can we explain the spatial disparities in the use of the policy? -empirical analysis

In the previous part of the paper, we showed that amongst municipalities that are concerned by requests for large stores, the ones that are more restrictive towards large retail development are also those where retail development is already highly represented. Moreover, we found that a rural or a suburban municipality is more

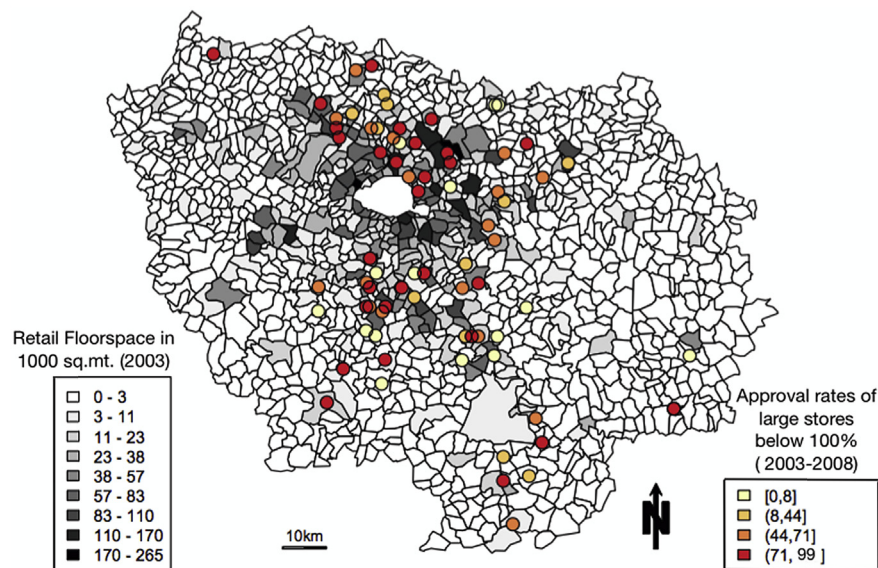


Fig. 9. Correlation between retail floorspace in 2003 and approval rates of retail development projects between 2003 and 2008 (approval rates below 100% only).

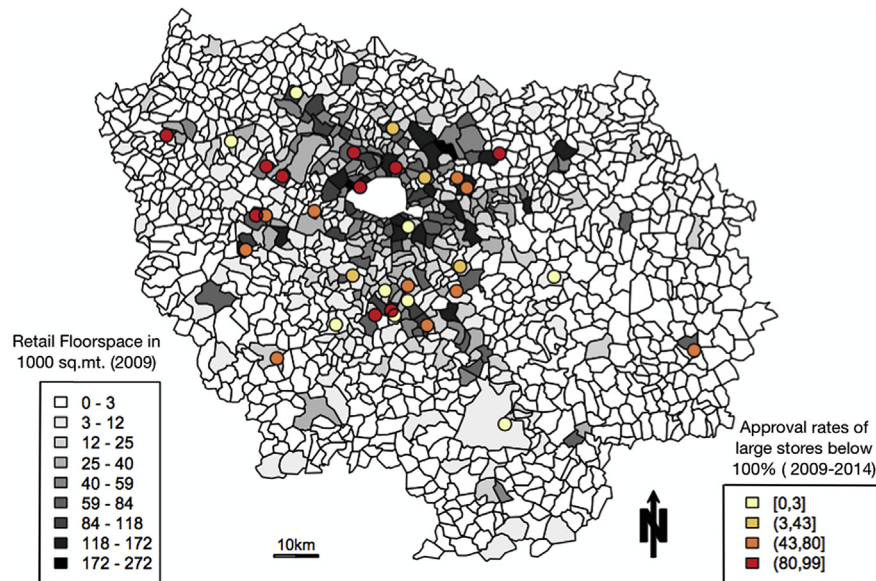


Fig. 10. Correlation between retail floorspace built between 1975 and 2009 and approval rates of retail development projects between 2009 and 2014 (approval rates below 100% only).

Table 2

Spatial disparities between urban, suburban and rural municipalities in approval rates of the large retail projects.

Period 2003/2008	Urban	Suburban	Rural
Total Municipalities	395	672	212
Municipalities where large retail development have been submitted to the boards	184	86	25
Municipalities where approval rates of large retail development have been below the average (87.6%)	38	24	8
Percentage of municipalities where approval rates were below the average (87.6%)	20.7%	28%	32%

likely to refuse a large store than an urban municipality is. Now, we try to bring some explanations to these observations. Our hypothesis is that local mayors refuse new large stores development because they wish to protect their small retail units from the heavy competition the new stores can bring.

The higher importance of small retail units in rural and suburban communities than in urban municipalities can then explain why in rural and suburban areas the refusal rates of large stores are higher. In these municipalities it is more vital for the quality of life and attractiveness to protect town centre small retail units. To verify this hypothesis, we use multiple linear regression to assess the impacts of large stores on small retail units. Amongst the different types of shops, we choose to consider for this analysis the impacts of large stores on the number of bakeries and butchers. Bakeries and butchers are categorized as food specialized stores and are more likely to be independent from the large retailers (about 85% of the stores in this category are independent) (Omalek & Rioux, 2015). Moreover, they are frequently open and participate actively to the attractiveness of the communities in rural and suburban areas.

7.1. Empirical models

Model 1: $Nb_bakeries_i = \theta_1 Nb_LARGE_STORES_i + \theta_3 Nb_INTERMEDIARY_STORES_i + \gamma Pop_i + VN_i \alpha_i + \varepsilon_i$

Model 2: $Nb_butchers_i = \theta_1 Nb_LARGE_STORES_i + \theta_3 Nb_INTERMEDIARY_STORES_i + \gamma Pop_i + VN_i \alpha_i + \varepsilon_i$

Where (i denotes local authority); $Nb_bakeries_i$ is the number of bakeries in each municipality in 2014; $Nb_butchers_i$ is the number of butchers in each municipality in 2014; $Nb_LARGE_STORES_i$ is the number of retail units employing more than 19 persons in 2013; $Nb_INTERMEDIARY_STORES_i$ is the number of retail units employing 4 to 19 persons in 2013; Pop_i represents the population in 2012 and VN_i indicates whether the municipality i is part of the *Villes Nouvelles* policy or not.

We realized multiple tests of robustness testing for the years' effects and the different types of retail units.

Models	Multiple R square	Adjusted R square	Residual standard error	p-value
1	0.9204	0.92	2.162 on 1273 degrees of freedom	<2.2e-16
2	0.8359	0.8351	45.9 on 1218 degrees of freedom	<2.2e-16

7.2. Results

The results presented in Table 3 show that the number of small independent shops, such as bakeries and butchers, is lower where the number of large stores is higher. Our models don't prove the causal link between the number of large stores and the number of small retail units, but they demonstrate a negative correlation between these two types of stores., and more specially between the number of small shops given an increase of the number of large

Table 3
Impact of large stores on small retail units (N = 1280).^a

Variables	Model 1: Dependant variable: Number of bakeries	Model 2: Dependant variable: Number of butchers
	Coefficients (Standard Error)	
Constant	–1.214e-01 (1.037e-01)	–1.399e-01 (8.084e-02)
Number of stores with more than 20 employees	–9.410e-02 *** (1.758e-02)	–7.672e-02 *** (1.370e-02)
Number of stores with 4–19 employees FTE	4.306e-02 *** (5.322e-03)	3.312e-02 *** (4.148e-03)
Population	4.926e-04 *** (8.636e-06)	2.458e-04 *** (6.731e-06)
Villes nouvelles	–1.775e+00 *** (3.311e-01)	–1.158e+00 *** (2.581e-01)

^a Signif. codes: 0 '***' 0.1.

ones Moreover, it shows that even where economic activities were encouraged to settle in the *Villes nouvelles*, the number of bakeries and butchers is actually lower. The study of INSEE showed a heavy decrease of the number of small retail units as well, particularly in peripheral areas (Andrieux et al., 2013). It confirms the hypothesis that small retail units have been impacted negatively by large stores, because of the heavily competitive environment they imposed.

These findings are supported with other international studies that provide evidence that the heavy competitive environment caused by the expansion of large retail stores is harmful for small retail units, particularly in suburban and rural areas (Basker, 2005; Bertrand & Kramarz, 2002; Ficano, 2013; Jia, 2008). This effect can explain why mayors in suburban and rural areas resort to the land use retail regulation policy. Indeed, the loss of small retail units stores, located in the town centres, is often badly perceived by the population of suburban and rural communities. Town centre activities and retail sales are key components of vitality in these communities, and induce local mayors to try to restrain the number of big stores in their areas.

8. Conclusion

In this paper, we aimed at studying the impacts of retail land use regulation in the Ile-de-France region, a French region which has been characterized by a massive expansion of large decentralized stores. Our results lead us to the conclusion that land use policies have impacted retail patterns in the region, as both land use regulation on retail stores and the *Villes nouvelles* policy impacted the number and size of stores in the municipalities of the Ile-de-France region.

However, we found out that, from the 2000s, this policy has become less efficient as it relied more on the discretion of local municipalities, which were not globally restrictive towards large retail developments. Indeed, through local taxation, municipalities have an incentive to welcome economic activities. However, using spatial statistics, we showed that this situation was hiding local disparities as some suburban and rural municipalities, particularly the ones in which large amounts of retail floorspace have already been built, were more restrictive towards large retail stores.

The use of linear regression models, in order to provide explanation for such disparities, proved that the numbers of large stores and small retail units are negatively correlated. We conclude that suburban and rural municipalities, contrary to the urban municipalities, are resorting more to the national retail land use regulation because small retail units are more essential to these areas for their attractiveness and their quality of life than they are for urban municipalities. It appears finally that retail land use regulation has become one of the public tools used by local elected personnel,

particularly in suburban and rural areas, to protect their small retail units and consequently the quality of life of their communities.

Acknowledgments

The authors would like to thank the Region Ile-de-France (DIM R2DS program) (grant number: 2013-04) for the financial support, the French National of Statistics (INSEE) and the French National Research Agency (ANR) as part of the « *Investissements d'avenir* » program (reference: ANR-10-EQPX-17 – Centre d'accès sécurisé aux données – CASD) for their support in accessing to the data on retail development.

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