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Does Planning Regulation Protect Independent Retailers?

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Abstract
Entry regulations against big-box retailers have been introduced in many countries to protect smaller independent stores. Using a new dataset from the UK, I show that in fact these entry regulations have been associated with *greater* employment declines in independent stores they were meant to protect. The reason is that when large retail chains are prevented from entering a new area with a big-box store, they typically enter instead using a smaller in-town store format. These smaller format stores compete more directly with independent stores. To causally identify this impact I use the changing nature of local political control in the UK from 1993 to 2003. Since local politicians directly control planning regulation in the UK, and political parties have very different views on the ideal amount of planning control, this provides exogenous variation in the ease of entry for big-box retailers. I estimate that 15% of the employment decline experienced by independent retailers between 1998 and 2004 can be attributed to the perverse effect of planning regulation.

Keywords: Zoning, Location, Retail, Regulation
JEL Classification: K2, L10, L81, L51

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I. Introduction

Planning regulations are often used to curb the entry of large out of town retail stores ("big-boxes"). These policies, which are widely adopted across OECD countries (Pilat, 1997, Ennis, 2008), find their justification in the need to prevent the possible negative externalities generated by big-boxes on local communities (e.g. congestion, damages to the environmental décor) and, in particular, to protect the survival of smaller retailers and the amenities they provide – such as personalized and local service - from new sources of competitive pressure[1]. In recent years, however, entry regulations have been severely criticized for their possible effects on the efficiency of the retail sector. Constraining the entry of big-boxes, it has been argued, could reduce economies of scale, and slow down the introduction of IT innovations complementary with large surfaces (McKinsey Global Institute, 1998, Holmes, 2001, Schivardi and Viviano, 2007, Basker at al., 2008). Furthermore, entry regulations could also hinder the reallocation of resources and employment between and within firms, which appear to be a major driver of productivity growth in the retail sector[2].

In spite of the wide interest generated by this debate, relatively little empirical evidence is currently available to evaluate the actual cost and benefits associated with planning regulations. In particular, the idea that restricting the entry of large retail stores can effectively change the nature of retail competition in favor of smaller, independent stores has never been empirically investigated[3]. This is primarily dictated by the institutional nature of planning policies, which tend to show very little variation within countries and over time, and are thus often indistinguishable from other country characteristics.

In this paper, I analyze the effects of planning on independent retailers exploiting a recent reform, which induced significant heterogeneity in the entry constraints faced by large retail stores over time and across UK areas. The reform was introduced in 1996 with the explicit aim to protect "town centre vitality" from the alleged draining effects of large out-of-town retail stores. The new planning guidelines imposed specific entry constraints on stores in edge-of-centre or out-of-centre locations not already included in local development plans, and on all

[1] For example, WalMartwatch, an interest group that challenges Wal-Mart expansion across the US, reports on its website: "You can stop superstore sprawl with one sentence. Just amend your zoning code to place a limit on the size of buildings" (http://walmartwatch.com/battlemart/go/cat/zoning_regulations).

[2] Foster et al (2002) document that between firms reallocation accounts for 90% of the impressive labor productivity growth experienced by the US retail sector between 1990 and 2000, and that most of the reallocation dynamics are from small to large retail establishments.

[3] Bertrand and Kramarz (2002) and Viviano (2008) analyze the employment effects of planning regulations in the French and Italian sectors, but do not focus explicitly on the interactions between big-boxes and independent retailers. See Section II for further details.

retail developments above 2,500 square meters. The new planning criteria substantially increased the entry costs faced by large retail stores, with new out-of-town developments having to comply with the "sequential test" (i.e. the proof that no other central location was suitable for the new shop) and the "test of need" (i.e. the proof that the new development was "needed" to meet local demand conditions). Furthermore, the admissibility of new large stores had to be judged upon their impact on centres within their catchment area, including their effects on economic growth, employment, and the existence of local shops and services. Crucially, since the reform decentralized the implementation of the new planning rules to local planning boards, the actual entry constraints effectively varied across different UK Local Authorities. This setting generated a great deal of heterogeneity in the restrictiveness of the planning policy across the UK, thus offering the unique opportunity to study the impact of the new entry restrictions within a single country.

In the empirical analysis, the planning restrictiveness is inferred from the number of planning applications for major retail developments (i.e., stores above 1,000 square meters) granted[4] by the Local Authority in any given year after the planning reform was introduced[5]. Using this measure, I look at the employment effects of the planning restrictions on overall retail employment and find that a less restrictive implementation of the planning reform (i.e. a higher number of major applications granted) results in *higher* overall retail employment growth, even controlling for time varying and fixed local characteristics. This result is in line with the findings of the studies done by Bertrand and Kramarz (2002) and Viviano (2008) on the employment effects of entry regulations in the French and Italian retail industry.

The main finding of the paper, however, is that the positive employment effects of planning applications are very similar across *both* retail chains and smaller, independent retailers. In other words, the idea that imposing stricter entry barriers on large retail stores protects independent retailers does not find any support in the data. This result has important implications, as it challenges the belief that the potential costs imposed by planning restrictions on the competitiveness and efficiency of the retail sector may be offset by their beneficial impact on smaller retailers.

[4] Using the number of grants instead of the share of applications granted is justified by the documented importance of pre-applications discussion between Local Authorities and potential applicants (Competition Commission, 2000). This implied that the share of applications granted was actually very high (on average 80% of the submitted planning applications were granted) in the period under consideration. In this context, using the share of applications granted may potentially underestimate the stringency of the planning regime. See Section II for more details.

[5] The focus on the post reform period is dictated by the availability of suitable micro data on retail employment. See Section IV for more details.

A possible concern with these results is that the number of granted applications may proxy for unobserved factors correlated with retail employment growth, but different from the restrictiveness of the regulatory policy. Therefore, I analyze the effect of the planning grants with an instrumental variable approach, which isolates the variation in planning grants determined by entry regulation, from that determined by local demand conditions. The IV strategy is similar to the one adopted by Betrand and Kramarz (2002), and the instruments exploit the fact that the concession of planning grants is effectively managed by locally elected politicians. Therefore, the political composition of the planning boards can be used to predict the number of planning applications granted by the Local Authority. I present evidence that planning grants decrease with increases in the share of Conservative politicians elected in the Local Authority, even controlling for the time varying socioeconomic characteristics of the electorate, and looking both across and within planning boards over time. This is consistent with the considerable political weight of middle-class homeowners and small retailers in the Conservative party. Reassuringly, the IV results confirm the positive relationship between planning grants and independent retailers' growth, delivering similar estimates to the one found with OLS.

The results on the employment effects of planning grants are robust to a number of checks. First, the positive effect of planning grants is found using alternative model specifications. Second, the results are robust to the introduction of additional time varying covariates (including a rich set of socio economic controls and Local Authority specific trends), which may spuriously drive both the OLS and IV results. Third, the impact of the planning grants is virtually unchanged when I use alternative timing assumption for the planning restrictions, or variants of the political instruments used in the baseline specification. Finally, I use a placebo experiment to show that planning grants have no correlation with the employment growth of the manufacturing sector, and therefore do not proxy for unobserved factors correlated with employment growth at the Local Authority level. The economic magnitude of the estimates is far from negligible. According to the estimates, the sharp decline in the entry of large retail stores following the 1996 planning reform accounts for about 15% of the decline experienced by independent retailers between 1998 and 2004.

Having established the robustness of the finding that planning grants have a positive effect on independent retailers, I then explore the drivers of this counterintuitive result. A possible mechanism is that the entry of large retail stores generated positive spillover effects on surrounding firms, including small and independent retailers (Gould et al, 2005). A rather

different interpretation of the positive impact of grants, however, is that large retail stores inhibit the development of central and smaller chain formats, which compete more directly with independent retailers. This interpretation fits well with the evidence that the planning reform - which targeted exclusively large, out of town stores - resulted in an unprecedented surge in the openings of small chain stores, led primarily by the top four UK retailers (ODPM, 2004, Griffith and Harmgart, 2008). It is also consistent with the fact that the new smaller chain formats operated in much closer proximity with independent retailers, and were therefore likely to influence directly their competitive environment at the local level.

In order to evaluate the plausibility of these alternative hypotheses, I proceed in two steps. First, I decompose the positive effects of planning grants along different margins of adjustments, looking separately at the employment contributions made by entrants, exitors and incumbents. This is because generalized spillover effects would be associated with an expansion of all types of independents, while competition effects are likely to be particularly important for exit rates. Second, I look directly at the relationship between planning grants and small chain stores, to directly test the idea that retail chains reacted to the restrictive measures against big-boxes with the introduction of smaller retail formats. In this exercise, I look separately at chains of different sizes to assess whether the substitution patterns between formats differ across large and small retail chains.

The empirical results are consistent with the idea that the positive effects of the planning grants on independent retailers can be attributed to the substitution between large and small chain stores, and to the competitive effects of small chain stores on independents. First, the positive effects of planning grants are entirely driven by a reduction in the exit rates of independents stores, suggesting that reducing large supermarkets entry (i.e. inducing more entry of small chain stores) had similar effects to an increase in competitive pressure for independent retailers. Second, planning grants are negatively associated with the employment growth of smaller chain stores. The negative correlation between planning grants for large store and small chain stores is particularly strong for outlets belonging to the largest UK retail chains (firms with more than 10,000 employees), confirming that the substitution pattern between big-boxes and small chain stores is particularly strong for the largest UK chains.

Overall, these findings suggest that the effects of planning regulations on the retail sector might be much more complex than previously thought. First, constraining the entry of large supermarkets may imply significant employment losses. Second, these losses might be important even for small, independent retailers, which are the supposed beneficiaries of the

planning policies. Third, planning regulations might interact with the store strategies of large retail chains, with important consequences for the industry competitiveness and retail market structure.

The remainder of the paper is organized as follows. Section II provides an overview of the existing literature. Section III describes the basic features of the UK planning regime and the 1996 reform. Section IV focuses on the econometric modeling and the identification strategy. Section V presents the main results on the relationship between planning and independent retailers. Section VI explores the relationship between planning and the store strategies of the major UK chains. Section VII concludes.

II. Literature Review

The paper is related to several strands of the literature. The employment effects of planning regulations were first investigated by Betrand and Kramarz (2002). Exploiting cross sectional and time series variation in the implementation of the French planning policy, they find that a more lenient approach towards planning regulation is associated with significant retail employment growth. As in this paper, Bertrand and Kramarz corroborate the OLS result with IV estimates, where instruments are based on local political representation. However, there are several important differences between the two contributions. First, Bertrand and Kramarz do not focus explicitly on independent retailers. Second, due to data limitations, their analysis does not break down the sources of employment growth between the different entry, exit and incumbent component. Finally, the drivers of the positive effects of lenient regulations on employment are not explored. Viviano (2008) investigates the employment effects a recent reform, which introduced significant heterogeneity in planning restrictiveness across Italian regions. She uses a difference in differences approach to show that entry regulations have a negative and sizeable impact on employment growth, including small retail trade shops. However, her analysis does not explore the sources of employment growth, or the mechanism behind the positive employment effects of lenient planning policies[6].

Although this paper provides the first analysis of the effects of the recent UK planning changes on independent retailers, other studies have looked at their impact on different

[6] Using similar data, Schivardi and Viviano (2007) show that entry regulations across Italian regions are also associated with higher profit margins and lower productivity of incumbent firms. Furthermore, they also show a negative effect of planning regulations on ICT investments and food prices. Unfortunately this analysis is not replicable in the UK context due to data limitations.

economic outcomes. Smith (2006) combines a random households survey with a dataset of store characteristics to investigate the effect of the planning reform on consumer and producer welfare. He concludes that the UK planning reforms imposed suboptimal store characteristics on both consumers and firms, forcing them to focus on small instead of middle-sized stores. Griffith and Harmgart (2008) investigate the effect of planning regulation on the UK market structure, namely on the changes in the composition of the UK retail industry between large out-of-town and small chain stores. Using a structural model of retail competition, they show that planning regulation has a statistically significant impact on the number of firms operating in a region, although the effects are halved once observable differences across Local Authorities in population density, employment and distance from town centres are taken into account. Reassuringly, the main results and the economic magnitudes presented in the current paper are robust to the inclusion of these additional fixed and time varying controls in the regressions. Furthermore, my analysis takes into explicit consideration potential biases arising from the endogeneity issues surrounding the entry of large supermarkets, while these are largely ignored in Griffith and Harmgart. Finally, Cheshire and Hilber (2008) look at the economic impact of planning constraints, which apply specifically to office spaces. Using a method proposed by Gleaser et al (2005), they provide evidence for the existence of a "regulatory tax" on the rental price of office spaces, which they quantify to be an "order of magnitude greater than the peak observed in the most restricted sector, in the most restricted markets in the US". The Cheshire and Hilber study also highlights the political economy determinants of planning policy, inasmuch business control makes a significant difference to the tightness of regulatory constraints on office building.

This paper is also related to the growing literature looking at the competitive effects of Wal-Mart and K-Mart stores on local competitors across U.S. counties. Basker (2005), for example, finds that Wal-Mart is associated with an overall positive effect on retail employment immediately after entry, which is halved after five years, when some small and medium retail establishments close. Using a different IV approach and Wal-Mart entry data, Neumark et al. (2005) find a negative effect of Wal Mart entry (-2% to -4%) on total retail employment and on payrolls per worker (-3.5%). Jia (2006) looks at the effect of Wal-Mart and Kmart entry on small discount retailers using a fully structural approach. She finds that Wal-Mart expansion from the late 1980s to the late 1990s explains about fifty to seventy percent of the net negative change in the number of small discount retailers. With respect to the existing literature, this paper provides the first explicit estimates of the big-box effect in a European context. This is

important, as the interactions between big-boxes and independent stores might be dramatically influenced in a context - such as the one prevalent in Europe - of higher agglomeration and density. Furthermore, analyzing the relationship between planning regulations and the store strategies of retail firms might help understanding the recent developments of the US retail industry, where national supermarket chains such as Wal-Mart and Safeway are starting to invest in small and urban formats[7].

III. Planning Regulation in the UK

In the UK, new developments need to comply with environmental and urban design considerations, which are described in general planning guidelines. While the broad characteristics of the planning regime have remained fairly constant over time, in recent years the attitude vis-à-vis big-box stores has significantly changed. Until the late 1980s, the liberalizing efforts of Mrs. Thatcher's government determined a laissez faire approach towards large retail stores, which coincided with a strong wave of retail decentralization, and a significant increase in big-box openings. However, in the early 1990s planning policies registered a drastic change. The main concern driving these changes was that large and peripheral retail stores were draining activities away from town centers, and causing their socio-economic decline. Therefore, in order to "sustain and enhance the vitality and viability of town centers", new entry regulations were introduced in 1993 and, more significantly, in 1996.

The new planning guidelines imposed specific entry constraints on stores in an edge-of-centre of out-of-centre location, which were not already included in local development, plans. The new regulations required new out-of-town developments to comply with the "sequential test" (i.e. the proof that no other central location was suitable for the new shop) and the "test of need" (i.e. the proof that the new development was "needed" to meet local demand conditions)[8]. Furthermore, the planning reform required the admissibility of these new

[7] Small chain formats were first introduced in the US by Tesco in 2007 with the "Fresh and Easy" brand. This move was followed by the decision made by Wal Mart to open its "Marketside" small-format community grocery stores. These formats involve the creation of neighborhood grocery stores primarily in suburban but also in urban neighborhoods. Interestingly, Wal Mart decision has been interpreted as a way to win the permission to open in markets that have been traditionally opposed to the typical Wal Mart big-boxes, such as the Bay Area in California.

[8] The Competition Commission (2000) interpreted the sequential test and the test of need in the following way: "Developers proposing new supermarkets outside town, district or local centers, where the proposal is not in accordance with an up-to-date development plan strategy that is consistent with national planning guidance, must demonstrate that: (a) there is a 'need' for the retail floor space proposed; and (b) there are no more central sites

developments to be judged upon their impact on centers within their catchment area, including their effects on economic growth, employment, and the existence of local shops and services.[9] These criteria had to be applied to all major shopping developments, defined as being above 2,500 square meters. However, since large retail stores are generally located out-of-town, the new guidelines implicitly introduced additional costs for all large supermarkets. Taken together, these changes meant that "guidance evolved from a position in which out-of-centre development was acceptable to one in which it should be seen as a last resort" (Competition Commission, 2000).

The reform generated a significant shock to the planning system, adding non-trivial monetary and non-monetary costs to the application process[10]. Perhaps unsurprisingly, this coincided with a stark reduction in the number of planning applications submitted for the opening of large retail stores. A study commissioned by the UK Government (ODPM, 2004) documents that the number of planning applications for "major" retail developments (i.e. developments above 1,000 square meters or above one hectare - hence subject to the new planning guidelines[11]) experienced a drastic fall in the immediate aftermath of the 1996 planning reform, from an average of approximately 1,400 annual grants between 1990 and 1995, to an average of 1,160 grants between 1996 and 2001, with an overall 16% decline in the number of grants between the two sub-periods. Figure 1a - which plots the evolution of retail planning grants over time using Local Authority level data[12] - reveals that this sharp decline cannot be attributed to a declining trend pre-dating the 1996 reform.

Interestingly, the planning reform also coincided with a rapid surge of small and central chain stores, which were exempted from the new regulations. Griffith and Harmgart (2008) show that the number of small convenience stores opened by the top four UK retail chains

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that are suitable or available for developing such a store, after having been flexible about format, scale, design and amount of car parking required in a genuine attempt to fit into the centre".

[9] The emphasis on employment and local shops and services was explicitly introduced in a clarification of the planning policy issued in 2005. "Local authorities should, where appropriate, seek to protect existing facilities which provide for people's day-to-day needs and seek to remedy deficiencies in local shopping and other facilities to help address social exclusion" (Planning Policy Statement 6: Planning for Town Centres, 2005)

[10] The Barker Review (2006) reports that applications for large retail stores cost an average of £70,000. In a recent inquiry conducted on the UK Grocery market, the Competition Commission (2000) reports an average cost of £50,000. The CC also reports that application delays for the major supermarkets could vary from a minimum of 4 months to a maximum of 24 months.

[11] The 1,000 square meters threshold is a lower bound for the concept of "large store" by industry standards, For example, Tesco – the leading supermarket chain in the UK – classifies large and medium stores as follows: Hypermarkets, 64,000 (5,946 square meters); Superstores, 31,000 square feet (2,880 square meters); Metro, 11,800 square feet (1,096 square meters). Small convenience stores (Express) are on average 2,100 square feet (195 square meters). www.tescocorporate.com/images/Tesco%20PLC%2030-mar-05.pdf.

[12] The planning data used to generate this graph is described in more detail below.

grew exponentially between 1997 and 2002, while the number of large supermarkets remained constant or declined over the same time period. The movement towards smaller convenience stores was strong enough to change dramatically the store profile of the major UK retail chains. Figure 1b (taken from Haskel and Sadun, 2008) plots the size distribution of stores belonging to national UK chains in the periods 1997/1998 and 2002/2003, and shows that the median size of a store belonging to a large supermarket chain fell from 75 to 56 employees over a relatively short time period. This trend is in clear contrast with the retail chains development in other countries. For example, over the same time period the average store size of national retail chains in the US - where superstore entry is largely unregulated - increased from 142 to 152 employees (Haskel et al, 2008).

The macro evidence thus suggests that the UK planning reforms were associated with significant changes in the market structure of the retail sector and in the equilibrium between big-boxes and small chain stores. However, in order to establish whether these changes can be causally attributed to the reforms and - ultimately - whether this had an impact on the employment of independent retailers, we need to shift our analysis to a much narrower geographical point of view. The institutional characteristics of the UK planning system allow precisely doing so. This is because the 1996 reform also considerably increased the discretionary power of Local Authorities[13] in the implementation of the planning guidelines. With the new regime, Local Authorities became directly responsible for the interpretation of the planning guidelines and, most importantly, for the selection of the large stores that could enter the area under their jurisdiction. This implied that number of applications granted by Local Authorities became a function of both local demand conditions, which generated the number of potential entrants in the market, *and* the activity of locally elected councilors[14], which determined the extent to which central entry regulations were binding in the Local Authority and, therefore, the selection of the actual entrants.

The significant cross sectional heterogeneity generated by the planning reform across English Local Authorities can be investigated using official planning data, drawn from the applications database maintained by the Office of the Deputy Prime Minister (ODPM) - the

[13] Local Authorities represent the lowest level of local government in the UK. Their boundaries coincide with well-defined socio-geographic entities (a town, or a city and its surroundings), with the major exception of London, which is subdivided into 32 Boroughs. In some areas there is a county council responsible for some services within a county, with several district councils responsible for other services, including planning. The units analyzed in this paper are district councils. There is a total of 434 Local Authorities across the UK, of which 354 only in England.

[14] The Barker review (2006) reports that, on average, 96% of retail applications for stores above 1,000 square meters between 2005 and 2006 were decided by elected politicians.

institution in charge of overseeing planning matters in England until 2006[15]. The ODPM kindly provided access to the list of all retail applications (use class A1 and A3[16]) processed between 1993 and 2003, classified by type of development (major of minor applications), relevant Local Authority, and year[17].

The main summary statistics describing the planning data at the Local Authority level, together with some basic information on the Local Authorities included in this analysis, are reported in Table 1. On average, over the period 1993-2003, Local Authorities approved only 2.6 large stores openings per year (or 0.022 applications per '000 people), with 22% of the sample granting zero applications in a given year. Crucially, however, the average number of planning grants varied substantially across Local Authorities. This is apparent from Figure 2, where all English Local Authorities are mapped according to the average number of major planning applications they granted between 1993 and 2003. Furthermore, planning grants also appear to vary significantly within Local Authorities over time, with Local Authority fixed effects and time dummies explaining only 48% of grants' variance.

Table 2 explores the correlation between planning grants and basic demographic and socio-economic variables[18], in order to verify whether the variation shown by the planning data can be at least partly explained by observable demand differences across Local Authorities. This exercise reveals that major retail grants are more likely in more populated areas (column 1), and in Local Authorities with a higher fraction of urban areas (column 2). In terms of demographics and income differences, Local Authorities with a younger population (expressed as the fraction of people below 15 years old, column 3), lower average income (column 4) and a lower percentage of college graduates (column 5), are characterized by a higher number of planning grants. When all the demographic and socio-economic variables are included in the

[15] Planning data for Scotland and Wales was not available for analysis. The ODPM was rebranded as the "Department for Communities and Local Government" in 2006, when the Deputy Prime Minister became a minister without portfolio and his office had purely secretarial functions.

[16] Class A1 is necessary to sell food (e.g. grocery stores) and A3 is necessary to sell hot food. Therefore, the data includes not only supermarkets, but also other large retail or leisure sites and restaurants.

[17] Unfortunately, the ODPM data does not provide the exact location of the development within a Local Authority, or the brand name of the applicant. This lack of information constraints the empirical analysis to Local Authority aggregates, and requires the assumption that Local Authorities behave as fairly independent markets. For this reason, Local Authorities for which the independence assumption is obviously inappropriate are excluded from the analysis. These are the 32 small and adjacent Local Authorities (Boroughs) representing London, and Local Authorities with a population of more than 400,000 people, whose complexity is not likely to be captured by the aggregated data. This corresponds to the exclusion of all Local Authorities in the 99th percentile of the distribution of population across Local Authorities. The Local Authorities of Birmingham, Bradford, Leeds, Liverpool, Manchester and Sheffield are dropped from the sample as a consequence of the selection.

[18] All the regressions reported in Table 2 include year dummies to control for countrywide shocks, and standard errors are clustered at the Local Authority level.

regressions, they all retain similar magnitudes and significance levels (column 6), with the exception of the variable describing the fraction of urban areas within the Local Authority, which turns negative and insignificant. These patterns are compatible with the notion that large stores – which focus their activity on the convenience of their offer – tend to target price sensitive consumers. On the other hand, they might also reflect the fact that poorer Local Authorities might be more willing to accept large retail developments for regeneration purposes[19]. Overall, demographic and socio economic characteristics appear to have a crucial role in accounting for the variation of retail planning grants across Local Authorities and. When included together (as in column 6), they explain 16% of the observed variance in planning grants[20], against the 0.016% explained by year dummies alone. Since these variables might also determine the employment of independent retailers, it is crucial to include them as additional controls in the empirical analysis of the effects of planning grants[21].

IV. Modeling the Impact of Planning on Independent Retailers

IV.A Basic Model

In order to analyze the impact of planning on independent retailers, I start from a primitive model, where the employment of independent retailers is a function on the number of large retail stores - "big-boxes" - active in the Local Authority:

$$emp_{jt}=\theta\, bb_{jt}+\gamma X_{jt}+\beta_t+\alpha_j+\mu_{jt} \qquad \text{(IV.1)}$$

where emp_{jt} is the natural logarithm of independent stores' employment in Local Authority j at time t; bb_{jt} is the number of big-boxes operating in Local Authority j at time t; β_t are year fixed effects; X_{jt} is a vector of time-varying Local Authority characteristics. The residual is composed by a constant (α_j) and a time-varying component (μ_{jt}). To control for the α_j - fixed factors that might affect the level of the retail employment aggregates in the Local Authorities - a first

[19] The option of using planning as a regeneration tool was explicitly stated in the 1996 national planning guidelines. (PPG6 1996)
[20] The population variable accounts for 87% of the increase in the R-squared.
[21] The importance of including demographic variables in analyzing the impact of planning on the retail sector is highlighted in Griffith and Harmgart (2008).

difference transformation can be applied to equation (IV.1). This leads to the following equation:

$$\Delta emp_{jt}=\theta\,\Delta bb_{jt}+\gamma\Delta X_{jt}+\Delta\beta_t+\Delta\mu_{jt} \qquad \text{(IV.2)}$$

In each period, the change in the number of big-boxes working in a Local Authority can be expressed in net entry terms, i.e. $\Delta bb_{jt}=bb\_entry_{jt}-bb\_exit_{jt.}$ Under the assumption that big-boxes have negligible exit (i.e. $bb\_exit_{jt-1}\approx 0$) given their high entry costs, we can express the growth of independents' employment as a function of the number of big-boxes entering the Local Authority, i.e.:

$$\Delta emp_{jt}=\theta\,bb\_entry_{jt}+\gamma\Delta X_{jt}+\Delta\beta_t+\Delta\mu_{jt} \qquad \text{(IV.3)}$$

The next step consists in finding a suitable empirical proxy for big-box entry. As discussed in Section II, the opening of a big-box requires a planning grant. Moreover, since the planning process entails non-trivial monetary and non-monetary costs, planning grants are almost inevitably transformed into actual stores. Therefore, the number of big-boxes entering a Local Authority at time t will be closely related to the number of planning applications for large stores granted by the Local Planning Authority, some time before the actual construction and opening of the store. In other words, defining as *s* the time that is needed to create a big-box from the moment the planning application has been granted, $bb\_entry_{jt}=grants_{jt-s}$. Since no further licenses are needed once the planning application is obtained, *s* essentially corresponds to a construction lag[22]. Although the precise delay will vary from case to case, official government reports and the assumptions made by retail developers suggest an average construction delay between one and two years[23]. In the main specification of the paper s=2, although several robustness checks are shown to investigate the importance of this assumption. These steps taken together lead to equation (IV.4), which represents the benchmark specification of this paper:

[22] Bertrand and Kramarz (2002), using a similar methodology for the French retail sector, allow for a four year period lag between a granted application and an actual entry of a store. In their case the longer lag is justified by the need to obtain a licence to run the store after the planning application has been granted.

[23] We include robustness checks to verify the sensitivity of this timing assumption, which is derived from ODPM (2004) and DTI (2004) reports. Similar construction lags have been estimated by the specialist magazine "The Builder", which reports in a cost model date April 1993 and average construction lag of 40 weeks. http://www.building.co.uk/story.asp?sectioncode=113&storycode=1025793.

$$\Delta emp_{jt}=\theta\, grants_{jt-s}+\gamma\Delta X_{jt}+\Delta\beta_t+\Delta\mu_{jt} \qquad \text{(IV.4)}$$

In order to estimate equation (IV.4) we need information on retail planning grants at the Local Authority level and information on the employment of independent retailers. The planning data was already introduced in Section II. Data on retail employment is drawn from previously untapped data files of the UK Census (Interdepartmental Business Register, IDBR)[24]. This source is the base of most micro level surveys run in the UK (see the Appendix for details). The files provide information on the exact location and employment of the population of retail stores active in the UK, for each year between 1998 and 2004. In particular, I focus on stores classified under the industry code "Non-specialized retail" (SIC 521). This sector represents 60% of total retail employment in the UK, and the largest share of single-establishment firms (Haskel and Sadun, 2008)[25]. Each retail establishment is allocated to a specific Local Authority via a five digits postcode. The availability of both an establishment and firm level identifier allows the distinction between independent retailers (i.e. single establishment retail firms) and retail chains. This also allows the identification of the overall size and the national coverage of retail chains, and the distinction between local and national retail chains which is crucial for the empirical analysis.

In all regressions, year dummies are included to capture aggregate economic shocks that might affect independents' employment. Since Local Authorities have very little discretion in setting their own policy, with the notable exception of planning matters, year dummies should control for most of the other policy changes that might have occurred over the period under study such as, for example, minimum wage policies[26]. We also include the variables analyzed in Table 2 to control for demand differences across Local Authorities, i.e. population, age, skills, income profile and urban characteristics. Finally, all regressions are weighted by the share of English population resident in the Local Authority to ensure representativeness. Standard errors are clustered at the Local Authority level to control for autocorrelation patterns of unknown form (Bertrand et al, 2004). Table A.1 in the Appendix provides the basic summary statistics for the variables included in the sample**.**

IV.B Using Local Political Power for Identification

[24] This is a major difference with respect to Bertrand and Kramarz (2002), where retail region-time specific employment aggregates were drawn from the French Labour Force Survey. Using store level data is clearly needed in this context, since the focus is on specific type of retailers rather than broad employment aggregates.
[25] The sector SIC 521 includes shops selling non-specialised food and/or beverages, newsagents and tobacconists.
[26] The minimum wage was introduced on a national basis in the UK in 1999. For more details see Draca, Machin and Van Reenen (2006).

A major problem in the estimation of equation (IV.4) relates to the endogeneity of big-box entry, since the same unobserved time-varying factors that influence the growth of independent stores are likely to play a significant role in determining the number of big-boxes opening in a market, and therefore the number of planning applications submitted to the relevant Local Authority. As discussed in Section II, UK planning reforms delegated to locally elected councilors the implementation of the entry regulations. The direct involvement of local politicians in the selection of new potential entrants generates a link between political power in the Local Authority and planning grants, which can be exploited for identification purposes. In particular, following Bertrand and Kramarz (2002), I use the shares of the political parties elected in the Local Authority to instrument for big-box entry. This is a valid IV strategy under the assumptions that a) the planning behavior of local politicians can be described by their party affiliation, and b) the changes in the political composition of the Local Authorities are exogenous to the $\Delta\mu_{jt}$ shocks affecting independents. The plausibility of these assumptions is discussed below.

Right Wing Parties and Retail Planning Grants

More than any other party in the UK, Conservatives have traditionally been associated with a strong opposition towards big-boxes, also defined as *Nimby*-ism (Not in My Backyard).[27] This opposition has been justified with concerns on the potential environmental impact of big-boxes[28], but it also reflected the political weight of middle-class homeowners and small retailers in the Conservative party. As discussed above, big-boxes have traditionally been feared for the competitive pressures they could generate on smaller retailers and the possible downgrading effect they might have on property values, due to increased congestion and impact on environmental décor[29].

[27]This view is broadly confirmed by the results of a recent survey commissioned by the Saint Consulting (a private group focusing on planning issues). The survey shows that the majority of people opposing new developments in their local areas voted Conservative. Moreover, Conservative others tended to oppose convenience food stores and supermarkets more than any other party. http://www.saintconsulting.ca/

[28] Greed (2000) reports that the Nimby attitude of Conservative politicians in the early 1990s reflected the need to capture the Green vote, since at the time 15% of voters were voting Green and this was seen as a serious threat to retaining a Conservative majority.

[29] For example, according to the British Election Study, in the 2001 general election small business owners (including retailers) were three times more likely to vote Conservative than any of the two other major parties. Small business owners accounted for 5.85% of all Conservative votes, against the 1.84% of Labour and 1.91% of Liberal Democrat votes. The British Election Study follows the "Goldthorpe-Heath" classification, which provides a total of eleven different socio-economic cells. The cell "Small proprietors, with Employment" is the one including independent retailers and where the difference between the Conservatives and the other parties is starkest.

The relevance of the Conservative party shares for the concession of retail planning grants can be directly analyzed combining ODPM planning data with the British Local Election Database[30] (BLED), which provides candidate-level information on the outcomes of all local elections that have taken place in the UK between the late 19th century and 2003. For the purposes of this paper, the data has been aggregated at the Local Authority level, and the sample constrained to the period 1993-2003 and to the 302 English Local Authorities that are at the base of the results presented in the econometric section.

Table 3 explores the relationship between Conservative and retail planning. Column 1 shows the correlation between the number of major retail applications granted by the Local Authority and a dummy identifying Conservatives absolute majorities in the council (the regression controls for year dummies). The correlation is indeed very strong, with a coefficient of -0.72, significant at the 1% level. Further analysis shows that even the *relative* majority dummy and the *share* of Conservative seats are associated with more restrictive planning outcomes (columns 2 and 3).[31]

A possible worry is that the negative correlation between grants and Conservative majorities could be driven by the unobserved demand characteristics of the Conservative electorate, such as differences in income or skills. Therefore, in column 4 we repeat the estimation including some basic demand variables that were found to be significantly associated with retail grants in Table 2[32]. Including these extra controls lowers the point estimate of the Conservative share, but it does not reduce its significance level, which remains at the 1%. A further concern is that the correlation between planning outcomes and Conservatives could be driven by unobserved trends at the Local Authority level. Columns 5 and 6 repeat the estimation including, respectively, regional fixed effects interacted with a year trends, and Local Authority fixed effects[33]. In both cases the point estimate is marginally lower in absolute value, but still significant at the 5% level. Finally, in column 7 we repeat the estimation controlling for the other political parties[34]. The coefficient on the Conservative share actually rises, and remains significant at the 5% level.

[30] The election data is described in the Appendix.
[31] The omitted category in column 3 is the share of seats going to all other parties.
[32] These are population growth between 1991 and 2001, the log of median hourly wages, the fraction of urban and village areas, and the percentage of people below 15 years and the percentage of people with a college degree in the Local Authority. Conservative majorities are more likely in areas with higher median hourly wages and a higher percentage of college graduates, while they are less likely in more populated and urban areas.
[33] We can use Local Authorities fixed effects since elections are rather frequent. In about half of the sample, a third of the council is elected every year. In the rest of the Local Authorities elections take place every four years.
[34] The omitted category is the share of seats going to the Labour party.

Exogeneity of political outcomes

A crucial issue for the validity of the IV approach is whether we can consider the changes in the political composition of the Local Authorities to be exogenous to the unobserved $\Delta\mu_{jt}$ driving the employment growth of independent retailers[35].

The first concern is that changes in the political composition of the local council could be directly determined by the employment growth of independent stores at the time of big-box entry. Note, however, that the instrumentation strategy exploits changes in the political composition *at the time the grant was given,* which is typically some time before the actual entry of the store (in most specifications we assume a 2 year delay). Therefore, a bias would exist if voters were to base their political preferences on the basis of mom and pops' employment growth at least two years *after* the elections, which is unlikely.

The second concern is that the political outcomes and the drivers of retail employment – and in particular that of independent retailers - could be driven by a common unobserved factor. For example, changes in the socio-economic characteristics of the electorate could result in variations both in political outcomes and shopping preferences. To address this issue, I include robustness checks with controls for the time varying socioeconomic characteristics of the Local Authorities (including income, industry composition and average educational qualifications attained by the local population).

Finally, a bias would arise in the IV estimates if the councilors could affect the retail sector via alternative channels. In fact, the power to set and collect a local property tax on non-residential property (known as the UK business rate) at the Local Authority level was abolished in 1990, when the central government decided to take this tax setting power away from Local Authorities and to establish the Uniform Business Rate (UBR)[36]. Therefore, planning was effectively the only area of responsibility of Local Authorities that could affect businesses directly during the sample (Duranton et al, 2006).

[35] We focus on the changes in the political composition, as the levels are controlled for by the first difference transformation.

[36] The reasons for the introduction of the UBR were essentially political. The Conservative government feared that left-wing councils could frustrate its liberalising efforts anti-business taxes (Cheshire and Hilbert, 2008).

V. Estimating the Effects of Planning Grants on Independent Stores

V. A. Main results

Table 4 examines the effects of planning grants on retail employment. Before focusing on independent stores, I start by looking at the relationship between grants and the employment growth of *all* stores classified in "Non-Specialized retail". All regressions are based on the specification of equation IV.4. Columns 1 to 5 are estimated by OLS. Column 1 shows the results of a regression of *total* retail employment growth on lagged planning grants, including as additional controls only a set of year dummies. Grants are significantly associated with positive total employment growth (coefficient 0.002, standard error 0.001). This result is in line with previous studies, which have documented - using different techniques and samples – the positive employment effects from more lenient regulatory approaches in the retail sector across French (Bertrand and Kramarz, 2002) and Italian regions (Viviano, 2008).

The key innovation of this paper, however, is to analyze whether the effects of the planning grants are heterogeneous across different types of retail firms. This issue is explored in columns 2 and 3, where the employment growth of stores belonging to retail chains is analyzed separately from that of independent retailers. Column 2 shows a very strong and positive association between planning grants and chains' employment growth (coefficient 0.002, standard error 0.001). This finding is consistent with the idea that grants proxy for large supermarkets, which are mostly opened by retail chains. The interesting fact to notice, however, is that grants also show a *positive and significant* association with the employment growth of independent retailers (column 3). The coefficient on planning grants is 0.001, significant at the 5% level.

In this simple specification, a possible worry is that the positive coefficient on planning grants may reflect spurious demand effects. However, column 4 shows that the positive effect of planning grants is actually higher when controls for population growth, income, fraction of young residents, fraction or urban and village areas and percentage of college graduates in the Local Authority[37], are included in the regressions. Finally, the OLS coefficient is robust to the introduction of regional-specific trends in the employment growth of independent retailers, which could potentially be correlated with planning grants and supermarket entry. In fact, the coefficient on planning grants is significant and of similar magnitude (0.004, standard error

[37] Income, population and skills were not significantly correlated with independents' growth. The percentage of young people is negatively and significantly correlated with independents' growth. Including a more detailed description of the population levels and age profiles left the main results virtually unchanged.

0.002) in column 5, where we include a full set on Local Authority fixed effects and their respective interaction interacted with a time trend.

The OLS results as mere associations may potentially suffer biases due to omitted unobservables described above. In order to infer something on the causality of the relationship between planning grants and independents, we turn to the IV estimates. In particular, we exploit the variation in the composition of the Local Authorities – which are in charge of making planning decisions – to predict planning grants for large retail stores. Column 6 presents the estimates of the first stage of the IV regression, where the number of planning grants at time t-2 is regressed on the share of Conservative seats in the Local Authority at time t-2, together with rest of controls included in the specification of column 4. In line with the results of Table 3 – which referred to the whole planning sample, spanning from 1993 to 2003 – a higher share of Conservative seats in the Local Authority is negatively and significantly correlated with planning grants, and therefore with big-box entry. Column 7 presents the 2SLS estimates, where the number of planning grants is instrumented with the share of Conservative seats in the Local Authority at time t-2. The 2SLS estimates of the coefficient on planning grants are positive, significant at the 5% level (coefficient 0.007, standard error 0.004). Although the IV estimates are higher than the OLS results, the Hausman test shows that the differences between the OLS and the IV estimates of column 5 are not statistically significant. The power of the political instrument is confirmed by the Kleibergen-Paap statistic (the equivalent to the Cragg Donald test with non i.i.d errors), which is beyond the threshold suggested by Stock and Yogo (2002) to identify weak instruments problems. Overall, the IV estimates confirm the result found with the simple OLS, i.e. big-box entry is associated with a positive effect on independents' growth.

In order to evaluate the magnitude of the estimates, I look at the employment growth of independent retailers between 1998 and 2004, and see how much of it can be accounted for by the change in the number of planning grants between 1996 and 2002 (where the different time period is to take into account the 2 year delay between obtaining the planning grant and starting the retail activity assumed in the baseline regressions). Between 1998 and 2004, the employment of independent retailers declined at an average yearly rate of 2% per annum, while on average 0.44 fewer planning applications were granted every year. According to the IV coefficient in Table 4, column 7, the estimated impact of the decline in planning grants is a yearly decline of 0.30% (0.44*0.007*100) in independent stores' employment. Therefore, the

decline in big-boxes accounts for roughly 15% (0.3/2) of the actual decline in the employment of independent stores between 1998 and 2004.

V.B. Robustness checks

Table 5 explores the robustness of the IV results to a series of different checks (the first column of Table 5 reports the baseline specification of Table 4, column 7). The first check relates to the fact that the (lagged) political instruments could be correlated with the same unobserved shocks driving retail employment[38]. To address this concern, column 2 reports the result of estimation where additional demographic and demand controls are included in the second stage of the regression[39]. All the additional controls are actually insignificant in the second stage. Furthermore, although the weak instrument test drops below the threshold 10% bias size, it is still below the 15% threshold (8.96) and the coefficient on planning grants remains significant at the 10% level and virtually unchanged in terms of magnitudes.

Another possible critique regards the timing assumption adopted to translate planning grants into proxies for the entry of large supermarkets. To test the sensitivity of the results with respect to the assumption that only grants accepted in t-2 enter at time t, column 3 analyzes the relationship between the level of independents' employment, and the stock of retail major applications granted between 1993 (the first year of the planning data sample) and t-2, including in the regression a full set of Local Authorities dummies. The coefficient on planning grants remains positive and significant at the 10% level (coefficient 0.004, standard error 0.002). As a further check on the timing assumption, column 4 looks at the relationship between independents' growth and the number of planning grants conceded between t-1 and t-3. The coefficient on this new entry measure remains positive and significant, and of similar magnitude with respect to the baseline estimates. This is the case also when we estimate the regression using two years averages to reduce the possible impact of measurement error in both the entry and the employment variables.

Column 6 re-estimates the baseline specification of column 1 using a different instrument set, which includes not only the share of Conservative seats, but also the shares of all the other parties' seats. Including all the other parties does not contribute much to the first stage, and the

[38] The existence of unobserved factors, positively correlated with independents' growth, and negatively correlated with the share of Conservatives, would be enough to generate a positive bias in the IV estimates.

[39] The additional controls are percentage of people working in manufacturing and retail, the log of population levels in 2001, an interaction term between log median hourly wage and a dummy equal to unity for any year after 1999 (this is to capture the possible differential effects of the minimum wage introduction), and the log of the total area (in hectares) covered by the Local Authority.

Kleibergen-Paap statistics on weak instruments drops below the critical value for a 15% maximal bias in the size of the IV estimates. However, the coefficient on large stores remains positive and significant.

Finally, column 7 shows the results of a placebo regression, which analyzes the relationship between the planning grants and the growth of manufacturing employment, and checks that the planning variables are not proxying for other economic shocks affecting the Local Authorities. This exercise shows that the effect of planning grants on the growth of manufacturing employment is insignificant (coefficient -0.005, standard error 0.005). This finding mitigates the concern that planning grants might capture something beyond the entry of a large supermarket.

VI. What drives the positive effect of planning grants?

The key result of Section IV is that independent retailers appear to benefit from the concession of planning grants for large retail stores. A possible reading of this finding is that large retail stores generate positive spillover effects on surrounding retailers, including independent stores. For example, Gould et al (2005) document that anchor stores in shopping malls generate externalities to other stores by attracting customers to the mall, and that this is reflected in the contracts underwritten by the other tenants.

A rather different interpretation of the positive impact of grants, however, is that large retail stores inhibit the development of central and smaller chain formats, which compete more directly with independent retailers. This interpretation fits well with the evidence discussed in Section II, from which it appears that the major UK retailers reacted to the new planning rules by substituting big-boxes with small and central chain shops. It is also consistent with the fact that the new smaller chain formats operated in much closer proximity with independent retailers, and were therefore likely to influence directly their competitive environment at the local level[40].

In order to analyze these alternative hypotheses, I proceed in two steps. First, I analyze the effects of the planning grants on the different components of independents' employment

[40] The idea that planning regulation can actually *increase* competition in the proximity of unregulated areas (in our case, in central areas) can be theoretically derived in a model of spatial competition. For example, Ridley at (2008) present a simple extension of the Salop (1979) model to show that an increase in the fraction of zoned areas within a specific market increases competition in non-zoned locations by forcing sellers closer together.

growth, namely incumbent's expansion or contraction (the intensive margin) and entry and exit (the extensive margin). This allows me to evaluate whether the grants acted as a common positive shock for all independents - in line with the externality argument - or whether they were particularly important in discouraging the exit of existing stores - as a reduction in competitive pressure would imply. Secondly, I look at the substitution patterns between large and small chain stores, in order to provide evidence that the surge in small and central chain stores can be directly linked to the heightened constrained imposed on large retail stores by the 1996 planning reform. The results of these exercises are discussed below.

VI.A Margins of Adjustment

In order to establish whether planning regulation had a differential impact across independent stores, I estimate the effect of planning grants on the employment growth contribution of incumbents, entrants and exitors separately, using the Davis and Haltiwanger (1992) decomposition. The Davis and Haltiwanger (1992) method calculates the employment growth rate of any independent store *i* within each Local Authority *j* at time *t* as:

$$g_{ijt} = \frac{emp_{ijt} - emp_{ijt-1}}{x_{ijt}} \qquad \text{(VI.1)}$$

where $x_{ijt} = \frac{emp_{ijt} + emp_{ijt-1}}{2}$ and emp_{jtk} is the employment of store k at time t in Local Authority j. This growth rate is symmetric about zero, and lies in the closed interval [-2,2], with deaths (births) taking value of -2 (2). By construction, total employment growth rate is the sum of the contributions to employment growth from entrants, exitors and incumbents (expanding and contracting). The different contributions to employment growth are defined as follows:

$$\Delta D_{jt} = \sum_{\substack{i \in I_{jt} \\ i \in D}} \left(\frac{x_{ijt}}{X_{jt}} \right) g_{ijt} \qquad \text{(VI.2)}$$

where D={Entry, Exit, Expanding Incumbents, Contracting Incumbents} and X_{jt} represents total average employment in Local Authority *j* at time *t*.

I regress each growth component for each sub-sample against the planning grants variable, using the same baseline IV specification on column 7, Table 4. The results of this exercise are reported in Table 6. The analysis shows that the effect of planning grants is indeed

heterogeneous across independent stores. Most notably, the positive effect of planning grants is mostly accounted for by a reduction of the *exit* component of independents', while the effects on incumbents and entrants are smaller and non significant.

VI.B Substitution patterns between large and small chain stores

As discussed in Section III, the UK planning reforms coincided with a drastic decline in the number of large store openings, and with an unprecedented surge in the number of small and central chain stores. The before and after comparison based on aggregate data, however, is not sufficient to conclude that the rise in small chain formats is directly and causally linked to the heightened constrained imposed on big-boxes. This is because similar trends could have been caused by other concurrent unobserved factors, such as demand shock, change in demographics etc[41]. Therefore, to assess the direct effects of the planning reforms on the surge of small chain stores, it is crucial to explicitly include in the analysis the possible influence of unobserved demand characteristics, as well as the potential endogeneity of the planning regime to local demand factors.

A simple way to evaluate whether a more restrictive implementation of the planning reform had an impact on the store strategies of retail chains, taking into account these possible concerns, is to estimate the relationship between planning grants and the employment of retail chains using the same econometric strategy discussed in Section IV (equation IV.4). In this setting, the first difference transformation controls for possible confounding fixed variables correlated with the presence of large stores in a local authority, while the IV strategy deals explicitly with the potential influence of omitted time varying demand factors correlated with planning grants.

In order to analyze the effects of the planning grants across different retail chains and formats, I subdivide stores in function of two distinct criteria. First, I look at whether the stores belong to a "major" (i.e. a retail firm with at least 10,000 employees across the UK) or a "minor" retail chain (any firm with less than 10,000 employees). This allows considering the effect of grants across different retail stores, which is crucial given the fact the high degree of concentration in the sector and the evident heterogeneity between major and minor retailers (Haskel and Sadun, 2008). The second classification looks at whether the store is "small" or "large" relative to the median employment of a typical "major" or "minor" retail chain. This

[41] Griffith and Harmgart (2008), for example, argue that the effects of planning regulation on retail market structure may be overstated if variation in demographic characteristics across markets is not controlled for.

allows analyzing whether the planning grants have an impact on the relative size of chain stores. The two criteria generate a total of four different stores types: small and large, belonging to minor retail chains, and small and large, belonging to major retail chains. The median employment of a minor chain is 11, and 27 for a major chain. According to this classification, minor chains account for about 50% of the total number of UK stores classified in the sector 521, but only for 18% of its employment (of which 15% only is accounted for by stores above 11 employees), while major chains account for 82% of the overall employment (74% only in stores above 27 employees). Finally, I aggregate the store level data on employment according to these criteria, the Local Authority where they are located and the relevant time period, and I then use these employment aggregates for the econometric analysis. The estimation is then based on the following econometric model:

$$\Delta emp^{q}_{jt}=\theta\, grants_{jt-s}+\gamma\Delta X_{jt}+\Delta\beta_{t}+\Delta\mu_{jt} \qquad \text{(VI.3)}$$

where Δemp_{jt} is the logarithmic employment growth of chain stores of type q in Local Authority j at time t, and q = {(minor, small), (minor large), (major small), (major large)}.

The results are shown in Table 7. For the sake of simplicity, the table focuses on the IV results, which follow the same methodology discussed in Section IV (i.e. the planning grants are instrumented with the share of Conservative councilors in the Local Authority). Columns 1 and 2 look at the impact of planning grants on minor retail chains, distinguishing between small and large stores. The results suggest that planning grants have a positive impact on large stores operated by minor retail chains. The positive effect of grants on the employment growth of large stores appears also when we condition the sample to stores belonging to major retail chains (column 3). This is not surprising, given that planning grants cover explicitly stores above 1,000 square meters, which are likely to fall in this category.

The most interesting result, however, appears from column 4, which looks at the effects of the planning grants on small stores operated by major retail chains. The estimates reveal that an additional planning grant *reduces* the employment growth of these formats by 0.024 percentage points. This confirms that the increase of small chain stores observed in the aggregate data can be directly linked to the more restrictive planning rules introduced in the UK in the mid 1990s, which constrained the entry of large retail stores. Furthermore, it suggests that the planning

reforms may have played an important role in shaping the market structure of the UK retail sector, and the store strategies of the major UK chains[42].

VI.C Discussion

The results presented in Section VI.A show that planning grants are associated with a slowdown of the exit process of independent retailers. This finding is in line with the idea that allowing large retail stores to enter a market (i.e. adopting a more lenient approach towards planning regulation) may actually *reduce* the competitive pressure faced by independents. A possible mechanism behind this paradoxical result is the substitutability pattern between large and small chain stores discussed in Section VI.B, which implies that allowing the entry of large retail stores slows down the entry of smaller chain formats competing more directly with independents.

Although these findings should be considered as merely suggestive at this stage, they nonetheless question the effectiveness of policies, which explicitly restrict the entry of large stores in protecting the survival of independent retailers. The main issue that is raised by the analysis of the UK experience is that the counterfactual of a market with fewer large stores is not a market with any entrants, but one with different - and potentially more competitive - stores.

VII. Conclusions

This paper investigates the effects of planning regulations on independent stores using a recent reform introduced in the UK. The results show that regulating the entry of big-boxes may actually *harm* employment of independent retailers. The reason is that when planning regulation prevents the entry of large supermarkets, retail chains enter instead using a smaller in-town store format. These smaller format stores compete more directly with independent stores, and accelerate their decline.

I exploit the differential restrictiveness of the planning reforms across UK Local Authorities to causally identify the impact of planning grants on independent stores. The analysis is based on a unique dataset, which combines information on the population of retail

[42] The link between large and small chain stores suggested by this result is at odds with the market definition adopted by the UK Competition Commission in several of its retail inquiries over the past ten years. In these reports, the Competition Commission has generally preferred to consider the large and small retail formats as two distinct markets (Competition Commission, 2000). This choice has played a crucial role in determining the feasibility of several takeovers of minor retail chains operating small stores by major retail chains operating large retail stores.

stores with an exhaustive list of the planning decisions made by 302 English Local Authorities, observed between 1998 and 2004. I rely on an instrumental variable approach to isolate the variation in planning grants determined by entry regulation from that arising from local demand conditions. In particular, I exploit the fact that locally elected politicians managed the majority of retail grants for big-boxes. This introduced a link between the political composition of the Local Authorities and planning grants

I show that Local Authorities that granted a higher number of planning applications registered *higher* employment growth of independent retailers. The positive effect of planning grants is found with both simple OLS estimates and IV regressions, where the grants are instrumented by the political composition of the local boards. According to the estimates, the sharp decline in big-box entry - which followed the 1996 reform - accounts for about 15% of the decline experienced by independent retailers between 1998 and 2004.

The empirical results are consistent with the idea that the positive effects of the planning grants on independent retailers can be attributed to the substitution between large and small chain stores, and the competitive effects of small chain stores on independents. First, the positive effects of planning grants are entirely driven by a reduction in the exit rates of independents stores, suggesting that reducing large supermarkets entry (i.e. inducing more entry of small chain stores) has similar effects to an increase in competitive pressure. Second, planning grants are negatively associated with the employment growth of small chain formats. The negative correlation between planning grants for large store and small chain stores is particularly strong for stores belonging to the largest UK retail chains (firms with more than 10,000 employees). This suggests a pattern of substitution between small and large chain stores.

This paper argues that entry regulations against big-boxes may paradoxically harm on mom and pop stores. This is a novel and controversial result, which casts serious doubts on the opportunity of using these policies to guarantee the survival of independent retailers. There are several issues surrounding these results that are worth exploring further. First, the short run effects of entry regulations may change in the long run, or impact differently central and peripheral independents. Second, while this paper focuses primarily on employment effects, large retail stores may also have an impact on the type of activity chosen by independents, for example shifting their activity towards a more specialized retail offer. These are clearly important issues to address, as they help qualifying the mechanisms generating the regulatory effects, and are left for future research.

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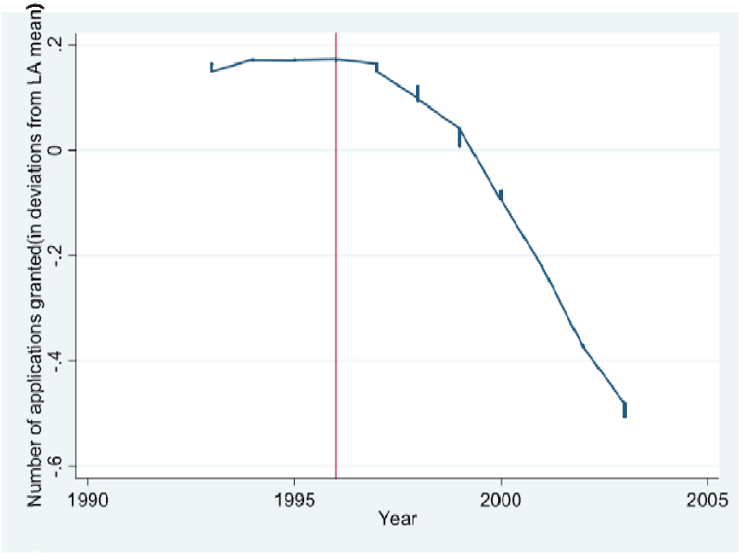
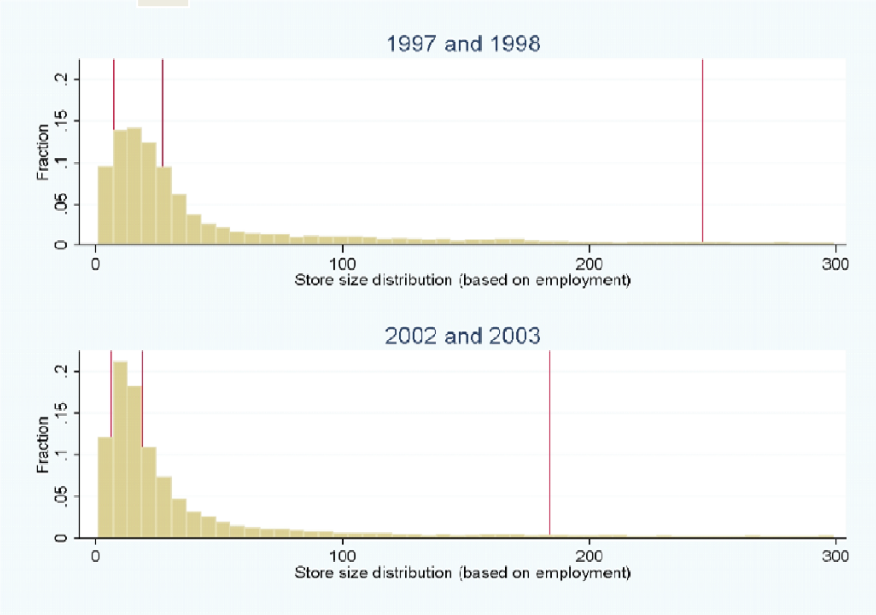
Figure Grants for Large Retail Stores over time



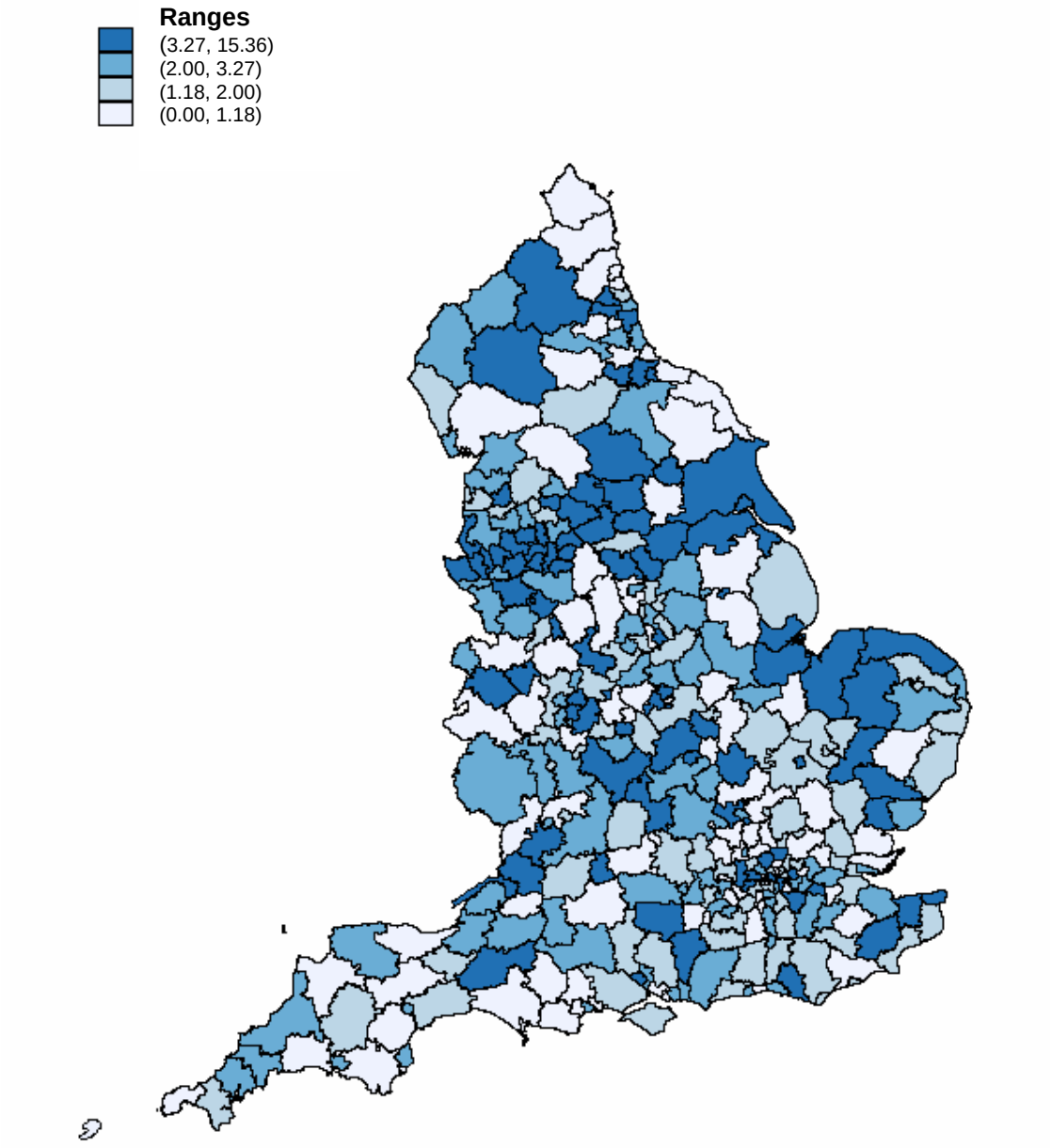
Notes: The graph reports the lowess estimate (bandwidth 0.8) of the number of major retail applications granted across 305 English Local Authorities, observed between 1993 and 2003. The graph plots deviations from Local Authority means

Figure 1b Average store size of UK retail firms over time



Note: Figures are histograms of shop employment for each shop within a national supermarket chain in 1997/8 (top panel) and 2002/3 (bottom panel). Vertical lines mark the 10th, 50th and 90th percentiles of the distribution. A national chain operates in 10 + UK regions. SIC521 is "non-specialised stores", mostly supern Source: Haskel and Sadun (2007).

Figure 2: Average Number of Planning Grants across English Local Authorities (1993-2003)



Notes: The map shows the average yearly number of planning grants given by 354 different English Local Authorities between 1993 and 2004. Source: ODPM data.

Table 1 - Planning Grants at the Local Authority Level - Summary Statistics

	Mean	Median	Standard Deviation
Planning Grants for Major Retail Developments	2.6	2	3.2
Share of Major Retail Planning Applications Granted	0.84	1	0.27
Average Population (person)	129,993	107,450	93,805
Population Density (person per ht)	9.5	4.5	10.8

Notes: The planning statistics are based on official planning data provided by the ODPM. The averages are computed across 302 English Local Authorities, observed between 1993 and 2003. Major planning applications refer to retail development above 1,000 square meters. The share of applications granted is computed as number of applications granted/number of application decided in a given year.

Table 2 - Planning Grants - Basic Correlations

	(1)	(2)	(3)	(4)	(5)	(6)
Dependent Variable	**Grants$_t$**					
Ln(Pop) **Log Population**	2.395*** (0.313)					2.346*** (0.367)
%Urban **Percentage urban areas**		2.142*** (0.378)				-0.274 (0.422)
%Young **Percentage people below 15 years**			40.387*** (9.141)			18.150** (8.243)
Ln(W) **Log median hourly wages**				-0.232 (0.706)		-1.213* (0.686)
%College **Percentage people with a college degree**					-12.011*** (3.306)	-6.667** (3.138)
Observations	3318	3318	3318	3318	3318	3318

Notes: * significant at 10%; ** significant at 5%; *** significant at 1%. The dependent variable in all columns is the number of major retail applications (above 1,000 square meters) granted by Local Authorities. The time period is 1993-2003. All estimates are based on 302 English Local Authorities. Errors are clustered at the Local Authority level to control for heteroskedasticity and autocorrelation of unknown form in the residuals. Sources: ODPM, Census 19991 and 2001, LFS, ASHE

Table 3 - Political Power and Planning Grants

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Dependent Variable				**Grants$_t$**			
Abs Maj Con **Dummy Conservative Absolute Majority**	-0.720*** (0.185)						
Rel Maj Con **Dummy Conservative Relative Majority**		-0.787*** (0.192)					
Sha_CON **Share of seats won by Conservative Party**			-2.068*** (0.522)	-1.415*** (0.419)	-1.056** (0.432)	-1.045* (0.533)	-1.536** (0.730)
Sha_LD **Share of seats won by Liberal Democrats**							-0.745 (0.698)
Sha_Other **Share of seats won by Other Parties**							-1.531* (0.843)
Observations	3318	3318	3318	3318	3318	3318	3318
Controls	-	-	-	a	a	a	a
Region F.E.*year	no	no	no	no	yes	yes	yes
Local Authority F.E.	no	no	no	no	no	yes	yes
Omitted group	Other absolute majorities and no absolute majorities	Other parties' relative majorities	All other parties' shares	All other parties' shares	All other parties' shares	All other parties' shares	Labour party's share

Notes: * significant at 10%; ** significant at 5%; *** significant at 1%. The dependent variable in all columns is the number of major retail applications (above 1,000 square meters) granted by Local Authorities. The time period is 1993-2003. All estimates are based on 302 English Local Authorities. Errors are clustered at the Local Authority Level to control for heteroskedasticity and autocorrelation of unknown form in the residuals. All columns include year dummies. Control "a" includes the log of population (average between 1991 and 2001), the percentage of urban areas, log median hourly wage, percentage of people below 15 years, percentage of people with a college degree (NSV 3 or 4) in the Local Authority. Columns (4) and (5) include regional fixed effects interacted with a year trend, column (6) includes Local Authority fixed effects. Sources: ODPM, BLED, Census 2001, LFS, ASHE.

Table 4 - Employment Effects of Planning Grants - Main results

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Dependent Variable	Δemp_t					**$Grants_{t-2}$**	**Δemp_t**
Type of Stores	**All**	**Chains**	**Indep.**	**Indep.**	**Indep.**		**Indep**
Estimation Method	**OLS**					**IV (First Stage)**	**IV (Second Stage)**
$Grants_{t-2}$ **Planning grants in t-2**	0.002*** (0.001)	0.002*** (0.001)	0.001** (0.001)	0.002** (0.001)	0.004* (0.002)		0.007** (0.004)
Share CON_{t-2} **Share of Conservative seats in t-2**						-2.755*** (0.626)	
Observations	1815	1815	1815	1815	1815	1815	1815
Additional Controls	no	no	no	a	a	a	a
Local Authority F.E.*year	no	no	no	no	yes	no	no
Hausman test (Ho: IV=OLS col 5), pvalue	-	-	-	-	-	-	0.997
Kleibergen-Paap rk Wald F statistic (10% Maximal Size Critical Value=16.38)	-	-	-	-	-	-	19.463

Notes: * significant at 10%; ** significant at 5%; *** significant at 1%. The time period is 1998-2004. All estimates are based on 302 Local Authorities. The dependent variable in column (1) is the employment growth of all stores classified in "Non specialized retail". The dependent variable in column (2) is the employment growth of chain stores classified in "Non specialized retail". The dependent variable in columns (3) to (6) is the employment growth of independent stores classified in "Non specialized retail". The dependent variable in column (7) is the number of planning grants for major retail applications at time t-2. Columns (1) to (6) are estimated by OLS, column (7) by 2SLS, where the instrument is the share of conservative councilors in the Local Authority at time t-2. Column (6) is the first stage regression of the 2SLS estimates shown in column (7). All columns include year dummies. Control "a" includes population growth between 1991 and 2001, the log of median hourly wages, the fraction of urban and village areas, and the percentage of people below 15 years and the percentage of people with a college degree in the Local Authority. Column (5) includes a full set of Local Authorities dummies, interacted with a time trend. All regressions are weighted by the share of population in the Local Authority. Errors are clustered at the Local Authority Level to control for heteroskedasticity and autocorrelation of unknown form in the residuals. The Kleiberg-Paap statistics is used instead of the Cragg Donald weak instrument test when errors are non i.i.d. Sources: ONS, ODPM, BLED, Census 1991 and 2001, ASHE.

Table 5 - Robustness Checks on IV Estimates

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Dependent Variable	$\Delta(emp_t)$						
Type of stores	Indep.						All
Industry	Non Specialized Retail – SIC 521						Manufacturing
Grants$_{t-2}$	0.007**	0.010*				0.005**	-0.005
Planning grants in t-2	(0.004)	(0.006)				(0.003)	(0.005)
Cumulative Grants$_{t-2}$			0.004*				
Sum of major retail grants, between 1993 and t-2			(0.002)				
Sum Grants$_{t-2}$				0.002**			
Sum of major retail grants between t-1 and t-3				(0.001)			
Average Grants$_{t-2}$					0.007**		
Major retail grants in t-2, 2 years average					(0.003)		
Observations	1815	1815	2105	1815	909	1815	1815
Additional Controls	a	b	a	a	a	a	a
Parties included as instruments	Cons.	Cons.	Cons.	Cons.	Cons.	All	Cons.
Hausman test (Ho: IV=OLS), p-value	0.997	0.831	-	0.718	-	0.998	-
Kleibergen-Paap rk Wald F statistic (10% Maximal Size Critical Value=16.38)	19.463	10.239	22.649	20.210	19.638	6.606	19.463

Notes: * significant at 10%; ** significant at 5%; *** significant at 1%. The time period is 1998-2004. All estimates are based on 302 Local Authorities. The dependent variable in columns (1), (2) and (4)-(7) is employment growth of independent (i.e. stand alone) stores classified in "Non specialized retail". The dependent variable in column (3) is the log of independents' employment. In column (5) all variables are transformed in 2 years averages. All columns are estimated by 2SLS. The instrument in all columns except (6) is the share of Conservative seats in the Local Authority. Column (6) includes as additional instruments the share of Liberal Democrats, Independents and "Other parties" seats. All columns include year dummies. Control "a" includes population growth between 1991 and 2001, the log of median hourly wages, the fraction of urban and village areas, and the percentage of people below 15 years and the percentage of people with a college degree in the Local Authority. Control "b" includes the variables listed in "a", plus the percentage of people working in manufacturing and retail, the log of population levels in 2001, an interaction term between log median hourly wage and a dummy equal to unity for any year after 1999, and the log of the total area (in hectares) covered by the Local Authority. Column (3) includes a full set of Local Authorities dummies. All regressions are weighted by the share of population in the Local Authority. Errors are clustered at the Local Authority Level to control for heteroskedasticity and autocorrelation of unknown form in the residuals. The Kleiberg-Paap statistics is used instead of the Cragg Donald weak instrument test when errors are non i.i.d. The first stage of the regressions is reported in Table 4, column 6. Sources: ONS, ODPM, BLED, Census 2001, ASHE, LFS.

Table 6 - Margins of Adjustment

	(1)	(2)	(3)	(4)	(5)
Estimation Method			**2SLS**		
Dependent Variable			**DH growth rate**		
Growth Components	**All**	**Entry**	**Exit**	**Expanding Incumbents**	**Contracting Incumbents**
$Grants_{t-2}$	0.013*	-0.004	-0.014*	0.002	-0.000
Planning grants in t-2	(0.007)	(0.005)	(0.007)	(0.002)	(0.001)
Observations	1815	1815	1815	1815	1815
Additional controls	a	a	a	a	a

Notes: * significant at 10%; ** significant at 5%; *** significant at 1%. The time period is 1998-2004. All estimates are based on 302 English Local Authorities and 1815 observations. The dependent variables are the different components of employment growth, computed using the Davis and Haltiwanger (1992) formula. Each cell reports the result a different regression of a growth component on the variable Grants(t-2). All columns include year dummies. Control "a" includes population growth between 1991 and 2001 , the log of median hourly wages, the fraction of urban and village areas, and the percentage of people below 15 years and the percentage of people with a college degree in the Local Authority. All regressions are weighted by the share of population in the Local Authority. Errors are clustered at the Local Authority level to control for heteroskedasticity and autocorrelation of unknown form in the residuals. The first stage of the regressions is reported in Table 4, column 6. Sources: ONS, ODPM, BLED, Census 2001, ASHE, LFS.

Table 7 – Substitution Patterns between Small and Large Chain Stores

	(1)	(2)	(3)	(4)
Estimation Method	**2SLS - Second Stage**			
Dependent Variable	Δemp_t			
Type of Retail Firms	**Small Chains**		**Large Chains**	
Store Type	**Above Median**	**Below Median**	**Above Median**	**Below Median**
$Grants_{t-2}$ **Planning grants in t-2**	0.026** (0.012)	-0.011 (0.010)	0.012* (0.007)	-0.024** (0.010)
Observations	1792	1758	1815	1813
Additional Controls	a	a	a	a

Notes: * significant at 10%; ** significant at 5%; *** significant at 1%. The time period is 1998-2004. All estimates are based on 302 English Local Authorities and 1815 observations. The dependent variables are the different employment growth rates, computed for chains and stores of different sizes. Each cell reports the result a different regression of each growth rate on the variable Grants(t-2). All coefficients are estimated by 2SLS, using as instrument for Grants(t-2) the share of Conservative seats in t-2. All columns include year dummies. Control "a" includes population growth between 1991 and 2001 , the log of median hourly wages, the fraction of urban and village areas, and the percentage of people below 15 years and the percentage of people with a college degree in the Local Authority. All regressions are weighted by the share of population in the Local Authority. Errors are clustered at the Local Authority Level to control for heteroskedasticity and autocorrelation of unknown form in the residuals. The first stage of the regressions is reported in Table 4, column 6. Sources: ONS, ODPM, BLED, Census 2001, ASHE.

DATA APPENDIX

1. Data Sources

1.A UK Census Data

The data on independent retailers is drawn from the Inter Departmental Business Register (IDBR), which is at the base of most surveys run by the UK Office for National Statistics (ONS). The business register is compiled using a combination of tax records on VAT and PAYE, including information lodged at Companies House and Dun and Bradstreet. The IDBR captures two broad measures. First, it measures the structure of ownership of businesses using three aggregation categories: Local Units, Enterprises and Enterprise Groups. A Local Unit is a single mailing address, so this is best thought of a store. An Enterprise is a chain of local units/shops under common ownership. An Enterprise Group is a group of enterprises under common ownership. Second, the IDBR holds turnover and employment data for both stores and firms. This is based mostly on tax data (plus old records from previous inquiries) – although generally the turnover data is deemed to be imprecise The Annual Register Inquiry (ARI) is designed to maintain the business structure information on the IDBR. It began operation in July 1999 and is sent to large enterprises (over 100 employees) every year, to enterprises with 20-99 employees every four years and to smaller enterprises on an ad hoc basis. The ARI currently covers around 68,000 enterprises, consisting of about 400,000 local units. It asks each enterprise for employment, industry activity and the structure of the enterprise, including having to report employment of its local units. The first available year for the retail sample is 1997. However, this data is deemed to be imprecise and is therefore the analysis starts in 1998. The geographical location of the stores is obtained matching a five digits postcode with a dataset of geographical coordinates. I exclude from the sample stores that become part of retail chain at some point of their life. This is done to minimize measurement error in the independent store tag.

1.B ODPM Applications Database

The data on major planning applications and grants were obtained from the Office of the Deputy Prime Minister (ODPM) – recently relabelled as the department for "Communities and Local Government". The ODPM is the main institution in charge of overseeing planning issues in England. For this purpose, the department keeps detailed records of all the planning activity taking place across the country. The data used in this analysis was obtained upon a simple telephonic request. It includes all major (above 1000sqm) and minor applications submitted and approved across all English Local Authorities between 1993 and 2003, classified under the category "Retail, distribution and servicing". The data is anonymized and available only at the Local Authority–year level.

1.C British Local Elections Database

The British Local Elections Database (BLED) is a unique source of information of local election results in Great Britain. It contains more than 150,000 individual election results since the 1973 wholesale local reorganization. The results are provided at the candidate level, and can be aggregated at the ward and at the Local Authority level via geographical identifiers[43].

[43] Councils are divided into electoral divisions - known in district councils as 'wards', and in county councils as 'electoral divisions'. Each ward can return one or more members - multi-member wards are quite common. There is no requirement for the size of wards to be the same within a district, so one ward can return one member and another ward can return two. Metropolitan borough wards must return a multiple of three councillors, whilst until the Local Government Act 2003 multiple-member county electoral divisions were forbidden.

The aggregation is simplified by the fact that there is no element of proportional representation, i.e. the candidates to receive the most votes in the elections win. The term of a councillor is usually four years. Councils may be elected wholly, every four years, or 'by thirds', where a third of the councillors get elected each year, with one year with no elections.

The variable used in the baseline regressions is the share of seats won by each party in the elections. In councils where the election takes place every four years, this variable coincides with the overall share of seats controlled in the council. In councils that elect a third of their councillors every year, this variable will only be proportional to the total share of seats in the council. The results are virtually identical using an estimate of the council composition. The only difference is that the sample is smaller, since for some Local Authorities – which have experienced discrete jumps in the number of councillors - the estimate is particularly noisy.

1.D Additional Data

The core retail data is complemented by additional sources (Census 1991 and 2001, Annual Survey of Hours and Earnings), which provide basic information on socio-economic characteristics - such as population, income and retail land prices - proxying for demand characteristics. As discussed in section IV, time unvarying characteristics are primarily controlled for by Local Authority fixed effects or by first differenced transformations.

2. The British Local Government

The structure of local governments in England has experienced several changes over time. In 1974, a two-tier administrative structure of (shire) counties and non-metropolitan districts was set up across the whole of England and Wales, except for the Isles of Scilly, Greater London and the six metropolitan counties. Council functions were divided according to the level at which they could be practiced most efficiently. In consequence, counties took on functions including education, transport, strategic planning, fire services, consumer protection, refuse disposal, smallholdings, social services and libraries, whereas the districts had responsibility for local planning, housing, local highways, building, environmental health, refuse collection and cemeteries. Responsibility for recreation and cultural matters was divided between the two tiers.

Following the Local Government Reorganisation in the 1990s major changes were implemented, such as the introduction of Unitary Authorities, single-tier administrations with responsibility for all areas of local government. Between 1995 and 1998 these were established in a number of areas across the country, especially in medium-sized urban areas, whilst other areas retained a two-tier structure. There are currently 46 unitary authorities in England, and 34 shire counties split into 239 (non-metropolitan) districts. London and the metropolitan counties retained their own structure.

3. Summary Statistics

Table A1 illustrates the basic summary statistics of the retail employment data aggregated at the Local Authority level. On average, an English Local Authority is characterized by a retail employment of 2,700 and 121 retail stores. Looking at the distribution of these figures between independents and chains, it is clear that independents account for the majority of the stores (67%), but for a much smaller portion of employment (11%). This reflects the stark differences in average store size between the two groups (3.55 for independents and 55.72 for chains). The two groups also differ in terms of their growth rates. Between 1998 and 2004, independents were characterized by an average annual employment growth of -4%, while retail chains grew by 4% per annum.

Table A1: Summary Statistics

Variable	Mean	Median	Standard Deviation
Number of Stores in SIC 521	113.28	96.00	63.65
Employment in SIC 521	2559.34	2244.00	1604.95
Number of Firms in SIC 521	92.60	78.00	49.91
Number of Independent Stores in SIC 521	70.63	58.00	43.47
Employment of Independent Stores in SIC 521	254.36	214.00	146.42
Number of Chain Stores in SIC 521	41.50	36.00	23.21
Employment of Chain Stores in SIC 521	2290.56	1992.00	1498.71
Employment Growth in SIC 521	0.02	0.02	0.11
Employment Growth of Chain Stores in SIC 521	0.03	0.02	0.12
Employment Growth of Independent Stores in SIC 521	-0.02	-0.01	0.10
Planning Grants$_{t-2}$	2.45	2.00	2.86
Share of Conservatives$_{t-2}$	0.31	0.30	0.22
Population Growth 1991-2001	0.01	0.01	0.01
Fraction of population below 15 years	0.19	0.19	0.01
Hourly wage (£)	7.97	7.76	1.30
Fraction of population with a college degree in 2001	0.18	0.18	0.05
Fraction of Urban Areas	0.70	0.74	0.27
Fraction of Village Areas	0.15	0.10	0.16

Notes: These summary statistics refer to the estimation sample (1815 observations, 302 Local Authorities, 1998-2004).

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