Entry barriers in Italian retail trade*

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Abstract

The 1998 reform of the Italian retail trade sector delegated to the regional governments the regulation of entry of large retail shops. We use the local variation in regulation to determine the effects of entry barriers on firm performance for a representative sample of retail trade firms. We address the endogeneity of entry barriers through local fixed effects and using political variables as instruments. We also control for differences in trends and for area-wide shocks. We find that entry barriers are associated with substantially higher profit margins and substantially lower productivity of incumbent firms. Liberalizing entry has a positive effect on investment in ICT, which the recent literature has shown to be the main driver of the remarkable sectoral productivity growth in the US. Consistently, more stringent entry regulation results in higher inflation: lower productivity coupled with higher margins resulted in higher consumer prices.

JEL classification: L5, L11, L81

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1 Introduction

Liberalization is arguably the most strongly advocated policy to improve economic performance, especially in continental Europe. From the labor market, attention has progressively shifted to product markets (Blanchard & Giavazzi 2003, Alesina, Ardagna, Nicoletti & Schiantarelli 2005), particularly for services, where substantial barriers to competition are still in place. Indeed, there is a widespread consensus that anti-competitive regulation is the main cause of the US-Europe difference in productivity growth in the service sector in the recent years.[1]

Notwithstanding this emphasis on liberalization policies, robust quantitative evidence on the effects of liberalization is still scant. A series of studies point to a positive effect of liberalization on economic performance. However, most of them are based on cross-country comparisons with qualitative indicators of regulation (Baily 1993, Nicoletti & Scarpetta 2003, van Ark, Monnikhof & Mulder 1999), which makes it difficult to quantify properly the costs of barriers to competition. Moreover, cross-country studies are plagued by omitted variable problems: for example, countries with more regulated product markets also tend to have more regulated labor and financial markets. They also face serious endogeneity and reverse causality issues: countries whose firms have particularly low productivity might impose a more stringent regulation to shelter them from competition.

We consider one sector in one country: retail trade in Italy.[2] Although losing in generality, this allows us to tackle the problems mentioned above. Moreover, differences in productivity growth between the US and Europe have been highest in retail trade, which alone explains a large fraction of the total gap (Gordon 2004, van Ark, Inklaar & McGuckin 2002). Understanding the sources of such differences for that sector is therefore of interest in itself, beyond the general lesson on regulatory barriers.

The case of Italy offers a great opportunity to study the effects of regulation. The retail trade sector, characterized by the prevalence of traditional small shops, underwent a major regulatory change in 1998, when a law was issued to modernize it. A central feature of the new law is that it delegated to local authorities the regulation of entry of medium and

[1] Already in the early 1990s, Baily (1993) claimed that the higher degree of liberalization is a major factor behind the higher labor productivity of services in the US. In particular, restrictions to competition "... can prevent the most efficient producers from entering an industry or from expanding. It can also slow down the diffusion of innovations and allow managers to operate with excess labor ...".

[2] In this respect, our paper is closer to Bertrand & Kramarz (2002), who consider the effects of entry barriers in the French retail trade sector. Differently from us, they focus on employment.

large shops. Contrary to the stated objectives, many regions have used that power to raise substantial entry barriers. Indeed, seventeen out of twenty regions established stringent ceilings to the floor space that could be authorized for entry or expansion of large shops. We use the inverse of such ceilings, normalized for local population, as the measure of the entry barrier: the lower the ceiling, the more restrictive the regulation of entry. Being predetermined, this indicator does not share the endogeneity problem of actual entry, which crucially depends on the attractiveness of the local market.

We study how entry barriers influence the store performance at the local level. The firm data come from the "System of Company Accounts", a representative survey run by Istat, the National Institute for Statistics. We restrict the analysis to firms already in the market in the year the regulation came into effect as, due to the survey design, there is not enough information to assess the performance of new shops. We first analyze the effects of entry barriers on profit margins and productivity; we then move on to investigate the source of productivity differences, considering whether, as suggested by the literature (Aghion, Bloom, Blundell, Griffith & Howitt 2005), competition increases investment in ICT, the main source of innovation in the sector.[3] Finally, we also study whether differences in barriers translate into differences in consumer prices, as lower margins and higher productivity would imply.

The effects of the entry barriers are estimated using a diff-in-diff approach, that is comparing performance at the local level before and after 2000, the year in which local regulations came into effect. This controls for fixed local conditions. We also control for the initial level of floor space over population to account for the possibility that new admissible floor space is related to existing floor space, and, through a full set of year dummies, we control for overall trends in productivity.

We find that entry barriers play a substantial role in explaining local performance. According to our estimates, large stores in the province at the 75^{th} percentile of the barriers distribution recorded higher margins by about 16% with respect to those in the province at the 25^{th} percentile. The same exercise for productivity implies a difference of about 5%. These results are robust to a number of checks. In particular, we show that entry barriers are not correlated with predetermined trends in productivity: when running the same regression

[3]Indeed, the US-Europe comparisons mentioned above point to the different rates of ICT adoption as the main driver of productivity differences.

in the period before the inception of the law, we find zero correlation between barriers and performance. Moreover, entry barriers in retail trade have no effects on performance in the "Hotels and Restaurants" and "Other Non Professional Services" sectors, which are the most similar to the retail trade one. This excludes the possibility that they are proxying for generally less favorable legislation for new business activity.

As a final check, we also run IV regressions, using political variables as instruments (Besley & Case 2000). In particular, we instrument the barrier indicator with the local election timing and with the share of votes of the extreme left and right (both likely to oppose liberalizations) in the general elections. We find that the effects become even stronger under this specification, suggesting that measurement error and/or endogeneity issues might actlually bias downward the flexed effects estimates.

We also find that increased competition increases the propensity to invest in ICT, even if the effect less clear cut than that on profits and productivity. Finally, consistently with lower margins and higher productivity, price inflation of goods in the "food and beverages" retail trade sub-sector –the retail trade segment where the presence of large stores is highest– is positively related to the barrier indicator.

The implications of our analysis are clear. Entry barriers produce one category of winners and many losers. The winners are incumbents, which enjoy substantially higher profits. On the other side, economic efficiency is reduced and consumers are harmed through a less efficient distribution system and higher prices.

The rest of the paper is organized as follows. Section 2 describes the 1998 law that reorganized the regulation of the sector. Section 3 describes the empirical approach and the data. Results are discussed in Section 4, while the robustness checks are reported in Section 5. The last section concludes.

2 The local retail trade regulation

The Italian trade sector is currently regulated by the Bersani Law (*Decreto legislativo n. 114/1998*), issued in March 1998. The law was drafted to increase competition and favor the modernization of the Italian retail trade sector, by reducing entry barriers and administrative formalities. Following a tendency to decentralize decision-making that began in the early 1990s, the law delegates substantial regulatory power to local authorities. This makes the case of Italy interesting to study, as local legislation induced significant variations in

regulation within a single country, with a high degree of homogeneity in other institutional features.

Local governments are responsible for shop opening hours, night openings, promotional activities and so on. Arguably, the most important aspect is the entry or enlargement of large stores. We will focus the analysis on precisely this aspect, as entry barriers are the most effective instrument to restrict competition (Djankov, La Porta & Lopez-de Silanes 2001, Klapper, Laeven & Rajan 2004). Before the Bersani Law, opening small and large outlets alike required a permit from the town council.[4] The Bersani Law defined three types of establishments: (1) small (also called neighborhood shops): up to 150 square meters; (2) medium-sized: between 150 and 1,500 square meters; and (3) large establishments: over 1,500 square meters. In cities with more than 10,000 inhabitants, the thresholds are raised respectively to 250 and 2,500 square meters.

The law eliminated authorization for small establishments, which are now only required to notify their opening to the town council on the principle "silence signifies assent". The council has 60 days to stop the new opening, but only for a given set of reasons. Instead, a system of prior authorization holds for medium and large stores. Medium stores have to apply to the town council as before the Bersani Law. Large store openings or enlargements are regulated at the regional level. Each regional government must draw up a commercial zoning plan for the development of large stores, consistently with environmental and urban considerations. The Italian regional governments also set up regional boards, called *"Conferenza dei servizi"*, to process applications and verify that openings comply with the regional zoning plan.[5] The Italian regional governments were obliged to draw up their local commercial regulations by April 1999. In the meantime, the law blocked any pending authorization procedures so that no new permits could be issued in the absence of a regional zoning plan.[6]

[4]The first national regulation concerning the retail trade sector was the "*Regio decreto legge no. 2174*" of 1926. This law laid down that any commercial opening had to be authorized by the town council, which could approve or reject applications at its discretion. To increase transparency in the approval procedure, in 1971 a new national law (*Legge n. 476/1971*) established that the authorities had to set explicit rules for the location of new establishments, according to a town plan. Local plans regulated the opening of new retail trade establishments until the Bersani Law came into effect.

[5]The regional governments are also competent to determine the composition of the regional zoning boards. Most of them are composed of regional and municipal councillors, as well as consumers' and small shopkeepers' representatives.

[6]During this period, large store openings were possible only if the corresponding permit was issued before March 1998.

There is a growing consensus that, contrary to its objectives, the consequences of the Bersani Law were in most cases to strengthen entry barriers for large stores (see ISAE (2002) and AGCM (2007) for evidence and a review of the literature on this topic). First, no regional government met the deadline for issuing the regional regulation. As a consequence, from the inception of the Bersani Law in March 1998 until roughly the first part of 2000, no new opening permits were issued. Second, only three regions, Piedmont, Emilia Romagna and Marche, set general guidelines for the application procedure without any prior limit on the new admissible floor space for new stores. The remaining 17 regions set stringent ceilings for entry, following a roughly similar approach. They divided the region into areas, often coinciding with the administrative province, and for each of them they established the maximum floor space for new large stores that could be authorized during the next 3-5 years.[7] Entry ceilings can be used to construct ideal measures of entry restrictions. First, actual entry crucially depends on the attractiveness of the local market, in addition to entry restrictions. Moreover, since it is predetermined, this variable also avoids the problems associated with other variables used in the literature, such as the share of rejected applications (Bertrand & Kramarz 2002).[8]

We examined each regional regulation and computed the maximum floor space that can be authorized for entry of large store expansion in each province.[9] We excluded Friuli, a North-East region, which, due to special powers deriving from being a border region (*regione a statuto speciale)*, decided not to comply with the Bersani reform. To account for the size of the market, we take the ratio of the population (in thousands) to the admissible floor space (henceforth, PAFS) in the province and use this variable as our preferred measure of entry barrier: the higher the ratio, the higher the entry restrictions. Correspondingly, for

[7] Some regions explicitly set the time limit for their regional zoning plans, others did not indicate a period of validity for the limits. Nowhere were limits revised before 2003.

[8] Applications depend on the applicant's assessment of the likelihood of being accepted, so that few applications might be submitted in regions where they are more likely to be rejected, making this indicator problematic.

[9] Some regional regulations express the total floor space increase as a percentage of existing floor space. To derive our measure of entry barriers we multiplied this increase by the total floor space reported in the census conducted by Italian Ministry of Industry and Trade. This records the aggregate existing floor space, the aggregate number of large outlets and the total number of employees by province since 1999. Two regions, Puglia and Calabria, set the maximum number of stores that could be licensed in each area. In order to get a measure of the corresponding floor space we multiplied the number of openings allowed by the average surface of the large stores existing in a given area. Moreover, in order to get a province indicator, when two or more areas are located in the same province, the corresponding admissible floor space is the total. When an area extends over two provinces, the admissible floor space is assigned to the province whose territory includes the largest number of towns in the area.

the provinces in the 3 regions without pre-set limits we set the ratio to zero.

There are very sizable differences in PAFS. They vary from a minimum of zero for the 3 liberalizing regions to a maximum of .29. The mean is equal to .038 (corresponding to 26.3 meters for 1,000 inhabitants), the median to .024 (41.6 meters for 1,000 inhabitants); the standard deviation is .05. Figure 1 gives a graphical representation of the PAFS for the Italian provinces, distinct by percentiles. While the three regions with no pre-set ceilings are all in the North and Center, among the others there is no clear geographical pattern: for example, much of the North-East has fairly stringent limits, while the contrary occurs in Sicily.

We also compute the ratio of the population to existing large store floor space in 2000, and report it in Figure 2. These data are drawn from the data of the Italian Ministry of Industry and Trade, which reports aggregate data at the regional level on large store floor space and employment since 1997 and at the province level from 2002. In fact, additional floor space could be correlated to the existing one: for example, there could be a catching up process that would imply that the laggard regions in would choose a less restrictive regulation. We find no clear correlation between the existing floor space and the restrictions imposed by the regional boards. For example, in the three regions that did not impose any prior limit (Piedmont, Marche and Emilia Romagna), the ratio between existing floor space and population was higher than the national average. Similarly, some regions with a low stock of large stores surface (e.g. Campania, Basilicata and Sardinia) imposed high entry barriers. The correlation coefficient between existing surface and total admissible surface is *.14*. This indicates that our measure of barriers does not simply reflect the catching up of regions that lag behind in terms of development of large stores. A clear North-South divide emerges in terms of initial conditions: southern regions had lower levels of large store development in 2000, indicating a lag in the modernization of the sector.

3 Data and Empirical Model

We now turn to the description of the empirical approach used to determine the effects of entry barriers. We start by describing the data and then move on to the empirical model.

3.1 Data

The measure of entry barriers has been described at length in Section 2. The empirical analysis is based on two additional datasets: one on firms and one on prices.

Data on firms are derived from the Italian survey "System of Company Accounts" (*Sistema dei conti delle imprese*), conducted every year since 1992 by the Italian Institute for Statistics (Istat). The survey is conducted according to EU Regulation 58/97 ("Structural Business Statistics", SBS) and provides information on many aspects of firms' activity. The basic sample units are firms that entered the market at least one year before the reference period. The sampling procedure divides firms into two groups according to a given size threshold: all firms with a number of employees above the threshold are included in the sample; firms below the threshold are randomly selected and not followed over time. The sample is stratified by region, sector and employment size.

From 1993 to 1997 the threshold was 20 employees; in 1998 it was increased to 100 employees. This change in the sample design, as well as changes in the survey questionnaire, prevents full comparability of information over time. Moreover, for reasons of confidentiality, Istat does not allow access to the data on firms with more than 100 employees from 1998 onwards. We therefore use data on retail trade firms (ISIC 52[10]) with no more than 100 employees for the period 1998-2004.[11] According to aggregate statistics published by Istat and based on the same data (Istat 2004) in 1998 firms with no more than 100 employees were 99.9% of total retail trade firms (87.0% of total employees, 74.9% of total aggregate sales).

We have also selected all born before 2000, i.e. firms already operating when entry barriers were set up, for a total of more than 1,500 observations each year. We have excluded entrants after the reform because, up to 2004, only 22 large stores born after 2000 are present in the survey, making it hard to assess the contribution of entrants. Moreover, it is well known that, due to start-up costs, time-to-build and selection effects, firms' productivity right after entry is generally lower than that of incumbents (Foster, Haltiwanger & Krizan 2002), as full productive potential is realized only after a few years. We therefore restrict

[10] Excluding ISIC 5231 "Dispensing chemists", 5232 "Retail sales of medical and orthopedic goods" and ISIC 5250-5274, i.e. retail sales of tobacco, second-hand goods and repairs. Shops in these sub-sectors are typically small. We have also excluded retail sales activities not carried out in stores.

[11] For years 1993-1997 we have access only to data on 20+ firms. In 1998-2004 the total sample size of the surveys amount to about 50,000 observations each year. The response rate is around 40%.

the analysis to incumbents, leaving the consideration of the direct effects of entry to future work, when a longer time series for entrants will be available.

The survey reports the number of employees, hours worked, labor costs, sales, investments, hardware and software expenditure and the administrative province where the main branch of the firm is located. Unfortunately, information is not available on either the number of establishments per firm (as well as other plant-level information) or the retail floor space. However, firms are required to report the number of employees working in establishments located in regions other than where the main branch is located. To minimize geographical misplacement, we selected only the firms with at least 50% of the workforce employed in the region of the main branch.

The barriers we are considering apply to large outlets (see above). As long as there is some market segmentation between large, medium and small stores, we should expect that any effect of entry restrictions is stronger in the population directly affected by the regulation (and in its closest segment, i.e. medium stores) than for small shops. Moreover, the Bersani Law also liberalized entry of small firms throughout the country, without regional variation. This change of system is likely to have independent effects on small firms, making their inclusion in the analysis questionable. We will therefore perform the analysis on two samples: the *total sample* (i.e., all firms with less than 100 employees, given that those with more than 100 are not available), and that of medium and large firms (the *restricted sample*). According to the Ministry of Industry and Trade (see footnote 9), average employment in stores defined as "large" is 24, with a standard deviation of 8; we define as medium and large firms those with at least 16 employees.[12] According to Istat data (Istat 2004) these firms account for 10% of sales. The final total sample amounts to more than 11,000 firms and the restricted one to 2,375 firms.

We also study the effects of entry barriers on the "food and beverages" yearly average price index at the local level, produced each month by Istat since 1996 for each regional administrative capital. We focus on this index because Italy large outlets are relatively more numerous in the "food and beverages" sub-sector than in other sub-sectors. For example, according to Istat aggregate data (Istat 2004), in 1998 the share of employees in

[12]There are other reasons to choose the 16 employee threshold. First, employment protection legislation applies to different degrees to firms below the 16 employee threshold. Schivardi & Torrini (2005) show that the threshold does induce some discontinuities in firms' behavior. Moreover, small, family firms are likely to have less clean balance sheet information and to use more unreported work (such as family help or irregular workers), making the computation of profit margins and productivity less reliable.

firms with more than 16 workers was equal to 40% of total employment in the "food and beverages" sub-sector and to 14% in "clothing" and "household equipment". The share of nominal sales in total sales of firms with more than 16 employees was 60% in the "food and beverages" sub-sector and 27% in the "clothing" and "household equipment" sub-sectors. Thus, we expect that "food and beverages" prices strictly depend on developments of large stores, while in the latter sectors the contribution of large stores to prices is likely to be less important.

Table 1 reports descriptive statistics for the variables used in the regressions for the total and the restricted sample. Profit margins are defined as the log of the ratio between gross operating surplus and sales. Sales (in logs) are commonly used as a proxy of value added in retail trade (see e.g. Foster et al. 2002). Real and nominal sales per hour worked are used as a measure of retail trade labor productivity. One problem with computing real sales is that different degrees of liberalization might imply differences in price inflation, making in problematic to use a common price deflator: in particular, price increases due to lower competition would erroneously translate into productivity differences. To overcome this problem, real sales are obtained using the regional consumer price indexes, including also the food and beverage index described above. The sectoral classification of price data differs from the one of firms. Prices are distinct for the following groups of goods: (1) food and beverages; (2) clothing; (3) household equipment.[13] We have divided firms into the same 3 groups according to the type of good sold (and derived from their ISIC classification) and deflated firms' nominal sales by the yearly average of the corresponding regional consumer price indexes. ICT investment is measured by the probability that a firm has positive expenditure in hardware and software; the pattern in this case is less clear-cut. We also report average firm size.

3.2 The model

Our empirical approach is based on the comparison of performance according to the degree of entry restrictions imposed by local regulation. Of course, this type of exercise has to tackle the problem of endogeneity of the entry regulation. Consider the case of a province where profit margins are particularly high before 2000 and potentially more affected by entry; firms in this province are likely (and have resources) to exert political pressure for a

[13] COICOP classification: Codes, 01, 03 and 05.

restrictive entry regulation. In this case, we would observe ex-post high entry barriers and high profits in this province, but the causal relation would be questionable. In the rest of this section we illustrate our empirical framework, stressing how we address the endogeneity issue.

Our preferred estimates will be based on province fixed effects and include years from 1998 (ie. before the reform came into place) to 2004. As discussed by Besley & Case (2000), fixed effects models have clear advantages on a pure cross-sectional analysis. By considering the within-province variation before and after 2000, we control for area-specific factors, so that only within-province variability in profits is used in the estimation of the barriers' effects. By comparing regions with different levels of regulation at the same point in time, we also control for aggregate factors, such as any general trend in productivity. The approach is implemented with the following regression:

$$y_{ijt} = \alpha_0 + \alpha_1 D * BAR_j + \alpha_2' X_{ijt} + T_t + R_j + S_i + \varepsilon_{ijt} \quad (1)$$

where y_{ijt} is the relevant outcome for firm i in area j in year t, D is a dummy equal to 1 for the years 2000-2004, BAR_j are the indicators of entry barriers of area j following the inception of the Bersani Law, X_{ijt} are time-variant controls, T_t, R_j and S_i are year, area (103 administrative provinces) and 5 retail trade sub-sector dummies (ISIC at 3 digits) respectively; ε_{ijt} is an error term. The coefficient α_1 captures the effect of entry barriers on y_{ijt}. Common trends are accounted for by year dummies; province dummies control for fixed local attributes.

The fixed effects approach controls for any fixed attribute that might determine policies and outcomes, addressing the most likely endogeneity concerns. Still, one might argue that entry barriers might be correlated with different *trends* (as opposed to levels) in firms' performance, which would invalidate the causal interpretation of α_1 in terms of entry regulation. Following up on the example above, this would be the case if provinces where profits are growing relatively faster are those where firms exert more pressure for entry restrains. We can provide evidence to support the validity of this identification assumption against correlated differences in trends. If the level of barriers is correlated with unobservable factors also determining the trend of y_{ijt}, one would reasonably expect that these factors influenced firms' performance even before the local inception of the Bersani Law, i.e. before 2000. Thus, we run regressions such as 1 for the period 1993-1997, where D is now a dummy

equal to 1 for the years 1995-1997 and 0 otherwise. In this regression α_1 is a measure of correlation of entry barrier and differences in trends observed before the inception of the Bersani Law. Thus, a test for $\alpha_1 = 0$ can be interpreted as a test for the lack of correlation between policies in 2000 and past differences in trends.

The above approaches are vulnerable to local shocks (uncorrelated both with the levels and the trend of performance) that influence both performance and regulation. In fact, there could be general economic factors that influence performance in retail trade and are correlated with retail trade regulation. For example, regional boards that pass more stringent entry regulations might generally adopt a legislation that is less conducive to economic growth. In this case, α_1 would also capture these unobserved factors. We can again provide evidence supporting our identification assumption. Following Bertrand & Kramarz (2002), we will run regression 1 for firms belonging to other, similar sectors, such as hotels and restaurants and other non-professional services. An estimate of α_1 not significantly different from zero would indicate that our measure of entry barriers is not capturing some overall correlated effects, as it only correlates with outcomes in retail trade.

We still need to account for local shocks, specific to the retail trade sector and occurring just at the time of the reform. This seems a more unlikely but still possible event. While we think that the actual importance of such shocks is bound to be rather limited, we will anyhow address it using an instrumental variable approach. We will use political variables as instruments to model entry barriers. We defer the description of the approach to Section 6 where we implement it.

4 Results

In this section we analyze the effects of entry barriers on profit margins, productivity, investment in ICT, wages and prices. We regress these variables on the measure of entry barriers after 2000 and on year, province and sub-sector dummies, according to the specification in (1). As firm control, we include size, measured by the number of employees. Larger firms tend to have lower profit margins, higher productivity and greater propensity to invest in ICT. By controlling for size, therefore, we are isolating the direct effects of entry barriers on incumbent performance, net of any size structure variation induced by the different degree of liberalization. Given that liberalizing the entry of large stores will most likely result in an increase in average size, our results can be seen as a lower bound of the total effects of

barriers. The literature also suggests to include other local factor that could potentially influence firms' outcomes and policies (Besley & Case 2000). Economic indicator at the provincial level are almost non existent. We include the unemployment rate as a measure of the local business cycle. We report regressions for both the total and the restricted samples.

4.1 Profit margins

The most likely effect of an increase in competition is a reduction in profit margins. If our measure of entry barriers is actually capturing variations in competitive pressures, we should find that profit margins are lower for firms located in provinces with a lower PAFS. And this is exactly what we find. Table 2 reports the results for the profit margin regression. The dependent variable is the log of the gross operating surplus over sales at the level of the firm. The first two columns relate to the total sample. The coefficient on the the PAFS indicator is positive (.75), with a p-value of .06. To give a better appreciation of the effect, moving from the 25^{th} (.00787) to the 75^{th} (.05455) percentile of the PAFS distribution would increase margins by 3.5%, a non negligible effect. Not surprisingly, we also find that size is negatively correlated with profit margins: larger stores have lower intermediation margins; the local unemployment rate is never statistically significant.

As argued above, one possibility is that the PAFS is correlated with the pre-existing local conditions of the sector, particularly in terms of existing floor space. While we have shown that this does not seem to be the case, to further exclude this possibility, in the second column we also include the population over floor space in 2000, i.e. at the time of the reform. The effect of this variable is insignificant and all other coefficients are unchanged, confirming that pre-existing conditions are not a source of distortion of the estimates.

The next two columns report the results of the same regressions restricted to the population of medium and large size shops, most likely to be directly affected by the entry regulation. The results clearly support this presumption: all effects become larger and statistically more significant. The coefficient on the PAFS is 3.4 and significant at 1%. Going from the 25^{th} to the 75^{th} percentile of the PAFS distribution would increase profits by around 16%, a very sizeable effect. Also in this case the inclusion of the initial value of the population over floor space does not change the estimated coefficients. All in all, we conclude that entry barriers exert a strong effect on profits, the more so for the population of firms directly affected by the regulation, in line with the assumption of a certain degree

of market segmentation between small and large shops.

4.2 Productivity

We measure labor productivity as real sales per hours worked. The problem with measuring productivity is that the differences in the profit margins outlined above should translate also into differences in prices, an issue that we will investigate later. In fact, if the degree of liberalization is negatively correlated with price changes, then using a common price deflator will introduce a spurious negative correlation between real sales and liberalization. To overcome this problem, we use the regional deflators described in Section 3.1.

The regression results are reported in Table 3, organized like the previous one. In the total sample, the estimated coefficient on the PAFS indicator is is negative (-.59) with a p-value of .06. Results do not change when introducing the initial level of population over floor space. Neither firm size nor the unemployment rate are correlated with productivity.

When we consider the restricted sample, the estimate doubles in absolute value (-1.12) and is significant at 5% (p-value of .04). Moving from the first to the third quartile of the distribution implies a decrease in productivity of around 5%. Results are unchanged when we introduce the initial level; the coefficient on this variable is negative and significant, a further indication that competition fosters productivity growth. We also find that, in this subsample, size is positively related to productivity, with a semi-elasticity of 9%. One possible explanation of the difference with the total sample is that the large number of small shops in the total sample makes it harder to properly detect a size effect. It also suggests that measurement error for small shops might be a relevant concern.

We have repeated the exercise using nominal sales as the dependent variable. Results are very similar to those obtained with regional price deflators, indicating that the price differences, if any, are not large enough to have a substantial influence on the productivity measurement.

4.3 ICT Investment

Why does competition increase productivity? Along with the traditional channels, based on the idea that market power generates production inefficiencies (Leibenstein 1966), competition may foster innovation and, through this, productivity growth of incumbents, as found for example by Aghion, Blundell, Griffith, Howitt & Prantl (2005). In the case of

retail trade, process (as opposed to product) innovation is the main determinant of productivity growth. This implies that ICT ivestment should be a fundamental determinant of productivity growth, as such technologies allow logistics, inventory management etc. to be rationalized. For example, van Ark et al. (2002) attribute the substantial differences in productivity growth in retail trade between the US and Europe mainly to the different rates of ICT adoption. In turn, these could be due to the fact that entry restrictions slow down the rate of diffusion of new technologies among incumbents, which face a lower risk of lagging behind more efficient entrants.[14]

We address this issue by using the probability of having non-zero expenditure on ICT.[15] The results of the probit regressions are shown in Table 4, where we report the marginal effects. We find support for the hypothesis that competition fosters ICT adoption, even if the evidence is not clear cut. In the total sample there is a negative correlation between entry barriers and the probability of positive ICT investment, significant at 10%. The estimated coefficient becomes larger in absolute value in the total sample, but the precision of the estimates deteriorates (p values of .22 in the two regressions). Not surprisingly, firm size strongly increases the probability of ICT investment, as found for example by Fabiani, Schivardi & Trento (2005) for a sample of Italian manufacturing firms. More surprisingly, we find a positive correlation between the unemployment rate at the local level an adoption propensity.

4.4 Prices

A natural conclusion of the previous analysis concerns prices. In fact, consumers should enjoy lower prices because of both the decrease in profit margins and the productivity increase. Ideally, one would need store level prices, such as those coming from scanner data; unfortunately, we do not have this type of information. As an alternative, we use the component of the CPI for "food and beverages". As mentioned in Section 3.1, these data are available for each regional administrative capital, a level of geographical aggregation coarser that the entry barrier measure, which is computed for provinces. They are monthly data

[14] Alesina et al. (2005) study deregulation in the transportation, communication and utilities sectors and find that it is associated with a spur in capital accumulation, particularly following entry liberalization. The beneficial effects of removing entry barriers for a modern efficient organization of supply is also found by Viviano (Forthcoming), who shows that more liberal entry regulation has been accompanied by the diffusion of chain stores.

[15] We have also experimented with ICT expenditure over sales, finding similar results.

from 1996 to June 2004. This price series is longer than that of firms, allowing for a better estimate of the province fixed effects. Of course, the price of goods depends on the whole production chain; however, to the extent that the other components of the production chain are tradable, changes should be common across areas: for example, producer prices of food should have little local variability, as such goods are traded on a fairly integrated national market. Regional variations in final prices are therefore most likely to be attributed to the contribution of the retail trade sector.

The results are reported in Table 5. The coefficient on the barriers indicator is positive, showing that higher barriers are associated with stronger price increases, and highly statistically significant. In quantitative terms, the effect is fairly modest: moving from the 25^{th} to the 75^{th} percentile of the PAFS distribution would increase prices by approximately half a percentage point. It should be noted that the post 2000 was a low inflation period (annual inflation rate was around 2%), so this effect is not negligible. The results are identical when including the indicator of initial conditions in year 2000. Finally, we also find some evidence of a classical Philips curve: provinces with higher unemployment rate recorded lower increases in prices. Overall, this evidence indicates that entry barriers translate into higher prices for final consumers.[16]

5 Robustness checks

In unreported regressions, we have experimented with several variations of of our basic specification. First, we have used alternative controls for local economic conditions, such as value added per capita, which should measure any aggregate changes in productivity. We have also changed the employment threshold that defines a large store, using 20 and 50 employees. We find that they are seldom significant and have no bearing on the results. We have also explored time differences in the effects. One should expect that the effects might take some time to show up in the data. As it turns out, estimating separate effects of the barrier for each year after 1999 gives very imprecise results, as the sample used for each estimate is too small. We have re-estimated the model dropping the observations for the year 2000. In fact, the inclusion of 2000 is questionable, as the regional regulation where issued exactly in that year. The results are in line with the expectation: all the effects

[16]Similar conclusions on the relation between competition and price changes are reached by Gaiotti & Lippi (2004) in their study of the effects of the changeover to the euro on the prices of restaurants.

become slightly stronger, in line with the idea that 2000 might have been a transition year.

We next addresses two alternative explanations of our results. First, we control for the possibility that entry barriers are correlated with the *growth* of profits or productivity; second, we check whether our liberalization measure is proxying for some other, more general, local policy. For the sake of brevity and data constraints,[17] we only perform the analysis for profit margins and productivity. Moreover, we select the restricted sample, where the effects where stronger in our baseline exercise, and for which therefore we are more likely to find evidence against the causal interpretation of our empirical findings (results using the total sample are similar).

5.1 Checking for differences in the underlying trends

To control for the possibility that barriers are correlated with underlying trends,we repeat our regressions for the period before the introduction of the law, i.e. the 1993-1997. If our indicators are capturing differences in trends among areas, we should find that, when running the same regressions for the period before the law was passed, the entry barrier coefficients should still be significant.

As mentioned in Section 3.1, from 1993 to 1997 the sample design of the System of Company Accounts survey included all firms with more than 20 employees and only a representative sub-sample of smaller firms. Moreover, before 1998, the data only indicated the region where firms were located and not the province. Therefore, we derive a regional indicator of entry barriers, equal to the sum of the admissible floor space in each province divided by the regional population. The final sample size, comprising firms with more than 16 employees, amounts to 9,501 observations.

The results are reported in Table 6.[18] We split the period 1993-1997 in two, 1993-1994 and 1995-1997, and check for correlated differences in trends before the Bersani Law. Standard errors are clustered by region. Results are clear cut: the entry barrier indicators are not significantly correlated either to profits or to productivity changes in the pre-reform period, indicating that entry barriers have actually induced a change in the trends rather than being correlated with some pre-existing underlying trends.

[17] Data on ICT expenditure are not collected before 1998. Data on regional price indices are not available before 1996.

[18] Given that data on local prices are not available before 1996, we use nominal sales to measure productivity.

5.2 Other sectors

A second possibility is that our results are driven by some omitted variables capturing, for example, a more general attitude of local governments towards business activity. Consider the case of a region with a very pro-market approach to the local economy. Such a region might undertake a series of policies that stimulate the economic activity in general, in addition to setting low entry barriers in retail trade. In this case, the entry barrier indicator may be proxying for a full set of economic policies. This is limited by the fact that most of the economic policy decisions are taken at the central level; however, in recent years regions have constantly gained areas of influence, so that this possibility cannot be excluded a priori. We directly tackle this issue empirically by controlling for any correlation between entry barriers in retail trade and performance in other relatively similar sectors. If entry barriers in retail trade are capturing more general policies, then we would expect them to be correlated with performance also in other similar sectors, even if these sectors are not directly influenced by the barriers.

We have chosen the two service sectors most similar to retail trade in terms of employment, regulation of activity and technology: hotels and restaurants (ISIC 551-554) and other low wage service sectors (ISIC 747-748: cleaning, packaging, call centers). These sectors should respond in a similar way as the retail sector to general policies. For consistency, we have selected firms with at least 16 employees (but experimented with other thresholds, finding no differences). Table 7 reports the results of this exercise. No coefficient is statistically significant and signs are sometimes the opposite of those of the original regressions. This is true for both profit margins and productivity and both in the Hotels and restaurant and the Other low wage services sectors.

Overall, these results indicate that profit margins and productivity in these similar service sectors are not correlated with the entry barriers in retail trade. This, in turn, allows us to rule out the possibility that such indicators are capturing some general characteristic of the local policy and conclude that the effects we find for the retail trade sector are due to the entry barriers themselves.

6 Instrumental variables

The analysis so far has accounted for fixed local attributes, differences in trends and common local factors. We are left with the possibility that regulation is endogenous with respect to specific, time varying shocks to the retail trade sector, that influence regulation and performance. For example, the opening of a new highway might affect firms' productivity and profit margins and also influence regulation, as potential entrants exert political pressure to obtain building permits in the proximity of the new facility. Although we think that the actual importance of local, retail-trade specific shocks is bound to be at best limited, to account also for this possibility in this section we will pursue an instrumental variable approach. We follow the previous literature (Besley & Case 2000, Bertrand & Kramarz 2002) and use political variables as instruments.

The regulation of entry, even if drafted at the regional level, pertains the provinces. As a consequence, it seems natural that politicians at the provincial level exert an influence on the regulation of their province. The timing of local elections offers a source of exogenous variability in such pressures. Local elections in Italy occur every 5 years but at different dates across provinces, as early elections are called when a coalition breaks up before the regular end of the term (not an unusual event in Italian politics). In fact, out of the total 103 provinces, 78 held the elections in 1999, 6 in 2000, 5 in 2001, 10 in 2002 and 4 in 2003. The election timing supplies a valid instrument. First, it seems plausible that it influences political choices. Following the seminal contribution of Alesina & Drazen (1991), a large literature has shown that timing is an important factor in the reform process. In particular, it is often claimed that reforms that hurt special interests are more likely to be carried out at the beginning of the legislature. At the same time, we see no obvious reasons for which the election timing at the province level should be correlated with changes in performance of retail trade firms. Local political crises are usually due to fights within local political groups. We therefore use as instruments a set of dummies for the election timing.

Political preferences of the population are also likely to be a determinant of the local regulation. It is well known that parties from the extreme of the political spectrum are less in favor of liberalization policies. Extreme left parties are in general against free markets and extreme right parties favor a corporative view of the economy.[19] It seems therefore

[19]Extreme left parties include: Rifondazione Comunista and Verdi; extreme right parties include Movimento sociale, Alleaza nazionale and Lega Nord.

likely that, in areas where such parties are strong, there will be more pressures to draft stringent entry regulations. We use the results of the general elections of 1996,[20] i.e. two years before the inception of the Bersani Law, to determine the political preferences of the local population in terms of liberalization policies. We choose the general elections because people are more likely to vote according to their political values, while in local elections the choices might not be independent from the regulation of the retail trade sector itself: a small shopkeeper might vote for a right wing party not because of ideology, but because it guarantees more protection from competition of large stores. The maintained assumption is that, *conditional on the other controls*, political preferences (as expressed in general elections) are not related to *changes* in performance in the retail trade sector.

To implement the IV, we interact the instruments with the post reform dummy: in fact, the barrier indicator is only turned on for such period. The results of the first stage regressions are reported in Table 8. The excluded dummy is for provinces that held election in 2003, the most distant date from when the regulation came into place. Consistent with expectations, the dummies are all positive, meaning that provinces where elections were scheduled before 2003 had, *ceteris paribus*, a more stringent regulation of entry. The coefficient on the dummy is smaller for provinces that held the election in 1999, before the regulation came into place.[21] In terms of political preferences, a higher representation of the extreme right parties is clearly conducive to a more stringent regulation; the correlation with the left is less clear cut, as the linear term has a negative and the quadratic a positive coefficient. One problem with interpreting these results is collinearity: the electoral share of extreme left and right tend to be correlated across provinces. In any case, the indicators are jointly significant, supplying additional exogenous variability to the entry barriers indicator.

Table 9 reports the results of the second stage regressions. The first two columns for profit margins confirm the results of the previous analysis: higher barriers generate higher profits, both in the total and in the restricted sample. Moreover, the IV coefficients are higher than the OLS ones: marginally in the restricted sample (3.6 vs. 3.4), substantially in the total sample (2.7 vs. .75). A similar pattern emerges for productivity: the coefficients are negative, statistically significant and larger in absolute value than those of the OLS

[20]The results of the general election of 1996 are available only for election districts, roughly coinciding with administrative regions. In 1996 there were 27 election districts, one for eache region with the exception of Piedmont, Veneto, Lazio, Campania, Sicily (two districts) and Lombardy (three districts).

[21]Of course, given that regions were already drafting regulations in 1999, it seems likely that political pressures were already felt at that stage of the drafting process.

estimates (-1.9 vs. -.6 in the total sample and -2.2 vs. -1.1 in the restricted one). A similar patter occurs with the price regression (unreported): the coefficient raises from .11 to .13. The specification tests are passed in all cases apart from the profit regression with the restricted sample, which fails the Sargan overidentification test.

The IV analysis lines up with the findings of the previous sections. Moreover, it indicates that, if anything, endogeneity would downward bias the estimates, a result in line with that of Bertrand & Kramarz (2002) for the French case. A possible explanation is measurement error in the barrier indicator: in fact, as explained above, we had to make some choices to obtain the measure for all provinces; moreover, there are also other aspects of the regulation that could impact performance that we do not capture directly with this indicator. Another explanation is that local politicians internalize the sectoral performance when deciding entry: for example, in a province where the retail trade shops are expected to make high profits in the future, politicians might decide to set a lower level of entry restrictions to contain profit growth. This would induce a negative correlation between profits and barriers, thus dampening the estimated effects of the restrictions. All in all, IV estimates further reinforce the conclusion that entry regulation impacts on the sectoral performance according to a textbook interpretation of the effects of entry barriers.

7 Conclusions

The lack of competition in the services sector has long been recognized as one of the structural weaknesses of the Italian economy (Barca & Visco 1992). In this paper, we have exploited local variation in entry regulation in Italian provinces to study the effects of entry barriers on economic performance. We find that barriers exert a strong influence on incumbents' performance, increasing profit margins and prices, reducing productivity and ICT investment. Our results indicate that the costs of regulation are substantial.

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Table 1: Summary statistics

	All		16+ employees	
	Pre	Post	Pre	Post
	Profit margins			
Mean	-2.15	-2.09	-3.19	-3.03
St. Dev.	0.04	0.03	0.08	0.05
	Productivity			
Mean	9.02	9.02	9.2	9.1
St. Dev.	0.05	0.02	0.04	0.03
	Probability of ICT spending			
Mean	0.15	0.14	0.57	0.44
St. Dev.	0.01	0.01	0.05	0.02
	Firm size			
Mean	1.06	1.06	3.27	3.29
St. Dev.	0.02	0.01	0.03	0.02
Sample size	2,791	8,305	592	2,156

Source: Authors' calculations based on Istat data. Profit margins are log of gross operating surplus over total sales; productivity is the log of real sales over hours worked; probability of ICT spending is the share of firms with nonzero expenditure on software and hardware; firm size is the average number of workers.

Table 2: Profit margin regressions

	Sample:			
	All firms		16+ employees	
Barriers	.75	.75	3.44	3.44
	(.06)	(.06)	(.00)	(.00)
Initial space		-.51		.05
		(.70)		(.99)
Firm size	-.36	-.36	-.18	-.18
	(.00)	(.00)	(.00)	(.00)
Unempl. rate	0,14	0,14	-1.13	-1.13
	(.80)	(.80)	(.40)	(.40)
R^2	.27	.27	.19	.19
Sample size	10,052	10,052	2,375	2,375

The dependent variable is the log of gross operating surplus over total sales at the level of the firm; Barriers is population over additional floor space (for province with no limits,the corresponding value is set to zero); Initial floor is population over total floor space at the beginning of the period. i.e. in 1998. Barriers and Initial floor are interacted with a dummy equal to 1 in the post-reform period (i.e. after 1999). Firm size is the log of the number of employees; Unempl. rate is the province level unemployment rate. All regressions include year (5). province (103) and sub-sector (5) dummies. P-values adjusted for clustering at the level of the province in brackets.

Table 3: Productivity regressions

	Sample:			
	All firms		16+ employees	
Barriers	-.59	-.59	-1.12	-1.11
	(.06)	(.06)	(.04)	(.05)
Initial space		-.87		-5.39
		(.48)		(.00)
Firm size	.0	.0	.09	.09
	(.99)	(.99)	(.00)	(.00)
Unempl. rate	-.66	-.66	-.52	-.54
	(.14)	(.14)	(.41)	(.43)
R^2	.13	.13	.2	.2
Sample size	10,007	10,007	2,371	2,371

The dependent variable is the log of real sales over hours worked; Barriers is population over additional floor space (for province with no limits,the corresponding value is set to zero); Initial floor is population over total floor space at the beginning of the period. i.e. in 1998; Barriers and Initial floor are interacted with a dummy equal to 1 in the post-reform period (i.e. after 1999). Firm size is the log of the number of employees; Unempl. rate is the province level unemployment rate. All regressions include year (5). province (103) and sub-sector (5) dummies. P-values adjusted for clustering at the level of the province in brackets.

Table 4: Probability of positive ICT spending regressions

	Sample:			
	All firms		16+ employees	
Barriers	-.16	-.17	-.33	-.33
	(.07)	(.07)	(.22)	(.22)
Initial space		-.25		-1.42
		(.54)		(.34)
Firm size	.09	.09	.13	.13
	(.00)	(.00)	(.00)	(.00)
Unempl. rate	.48	.48	1.24	1.25
	(.02)	(.02)	(.02)	(.02)
Pseudo R^2	.17	.17	.09	.09
Sample size	10,077	10,077	2,363	2,363

Probit estimates. marginal effects. The dependent variable is a dummy equal to 1 if the firm has positive ICT spending and 0 otherwise; Barriers is population over additional floor space (for province with no limits,the corresponding value is set to zero); Initial floor is population over total floor space at the beginning of the period. i.e. in 1998; Barriers and Initial floor are interacted with a dummy equal to 1 in the post-reform period (i.e. after 1999). Firm size is the log of the number of employees; Unempl. rate is the province level unemployment rate. All regressions include year (5). province (103) and sub-sector (5) dummies. P-values adjusted for clustering at the level of the province in brackets.

Table 5: Price regressions

Barriers	.112	.112
	(.00)	(.00)
Initial space		-.11
		(.76)
Unempl. rate	-.105	-.107
	(.044)	(.044)
R^2	.97	.97
Sample size	171	171

Yearly prices in food and beverages (excluding tobacco) at the regional level. The time period is 1996-2004; Barriers is population over additional floor space (for province with no limits,the corresponding value is set to zero); Initial floor is population over total floor space at the beginning of the period. i.e. in 1998; Barriers and Initial floor are interacted with a dummy equal to 1 in the post-reform period (i.e. after 1999). P-values adjusted for clustering at the level of the region in brackets.

Table 6: Pre reform regressions (1993-97)

	Profit margins	Productivity
Barriers	-1.03	.101
	(.531)	(.733)
Firm size	-.250	.043
	(.00)	(.006)
Unempl. rate	2.96	-.971
	(.247)	(.223)
R^2	.15	.15
Sample size	8,783	1,552

The dependent variable is the log of gross operating surplus over total sales at the level of the firm in the first column and the log of real sales over hours worked in the second. Because of data constraints the sample refers to firms with 20+ employees. Barriers is population over additional floor space. set to zero for provinces without pre-set limits and interacted with a dummy equal to 1 after 1996. Firm size is the log of the number of employees; Unempl. rate is the province level unemployment rate. All regressions include year (5). province (103) and sub-sector (5) dummies. P-values adjusted for clustering at the level of the region in brackets.

Table 7: Profit margins and productivity in other service sectors

	Hotels		**Other Services**	
	Prof. marg.	Prod.	Prof. marg.	Prod.
Barriers	-.28	.03	.55	.33
	(.80)	(.97)	(.52)	(.49)
Firm size	-.33	-.07	-.2	-.16
	(.00)	(.03)	(.00)	(.00)
Unemployment rate	3.03	.02	-2.31	-.1
	(.33)	(.99)	(.12)	(.92)
R^2	.17	.17	.08	.24
No.	1226	1390	2439	2927

The dependent variable is the log of gross operating surplus over total sales at the level of the firm in the first and third columns and the log of real sales over hours worked in the second and forth ones. Barriers is population over additional floor space. set to zero for provinces without pre-set limits and interacted with a dummy equal to 1 in the post-reform period (ie. after 1999). Firm size is the log of the number of employees; Unempl. rate is the province level unemployment rate. Hotels and restaurants correspond to the ISIC 551-554 sectors and other low wage service sectors to ISIC 747-748 (cleaning. packaging. call centers). All regressions include year (5). province (103) and sub-sector dummies (4 for Hotels and restaurants and 2 for Other services. P-values adjusted for clustering at the level of the province in brackets.

Table 8: IV: first stage regression

	Coeff.	P-value
Election 1999	.02	.00
Election 2000	.03	.00
Election 2001	.03	.00
Election 2002	.03	.00
Right	.01	.00
Right^2	-.0001	.00
Left	-.06	.00
Left^2	.0023	.00
Firm size	-.0003	.08
Unempl. rate	-.12	.00
Partial R^2	.21	

The dependent variable is the PAFS. Average firm size is the average of log of the number of employees at the province level in the period 1998-1999; unemployment rate is the average province level rate. The model also includes the share of firms by retail trade sub-sector on total retail trade firms at the province level. P-values in brackets.

Table 9: IV regressions

	Profit margins		**Productivity**	
	All firms	16+	All firms	16+
Barriers	2.73	3.56	-1.9	-2.24
	(.03)	(.05)	(.01)	(.05)
Firm size	-.36	-.11	0	.08
	(.00)	(.00)	(.90)	(.01)
Unemployment rate	.38	-1.56	-.83	-1
	(.52)	(.15)	(.08)	(.12)
R2	.26	.23	.13	.2
Sample size	10,052	2,283	9,995	2,125
Anderson-Rubin statistic	18.95	26.01	24	15.63
(95 % C.V.)	15.5	15.5	15.5	15.5
Partial R-squared	.21	.23	.22	.22
Sargan statistics	11.17	18.28	11.82	11.46
(p-value)	.13	0	.11	.12

The dependent variables are respectively the average of the log of profit margins at the province level. the average of the log of productivity at the province level. and price indices. for each regional administrative capital (95). Firm size is the average of the log of firm size at the province level. The models also include the average unemployment rate at the province level and the share of firms by retail trade sub-sector on total retail trade firms at the province level. P-values in brackets.

Figure 1: New admissible floor space over population in Italian provinces

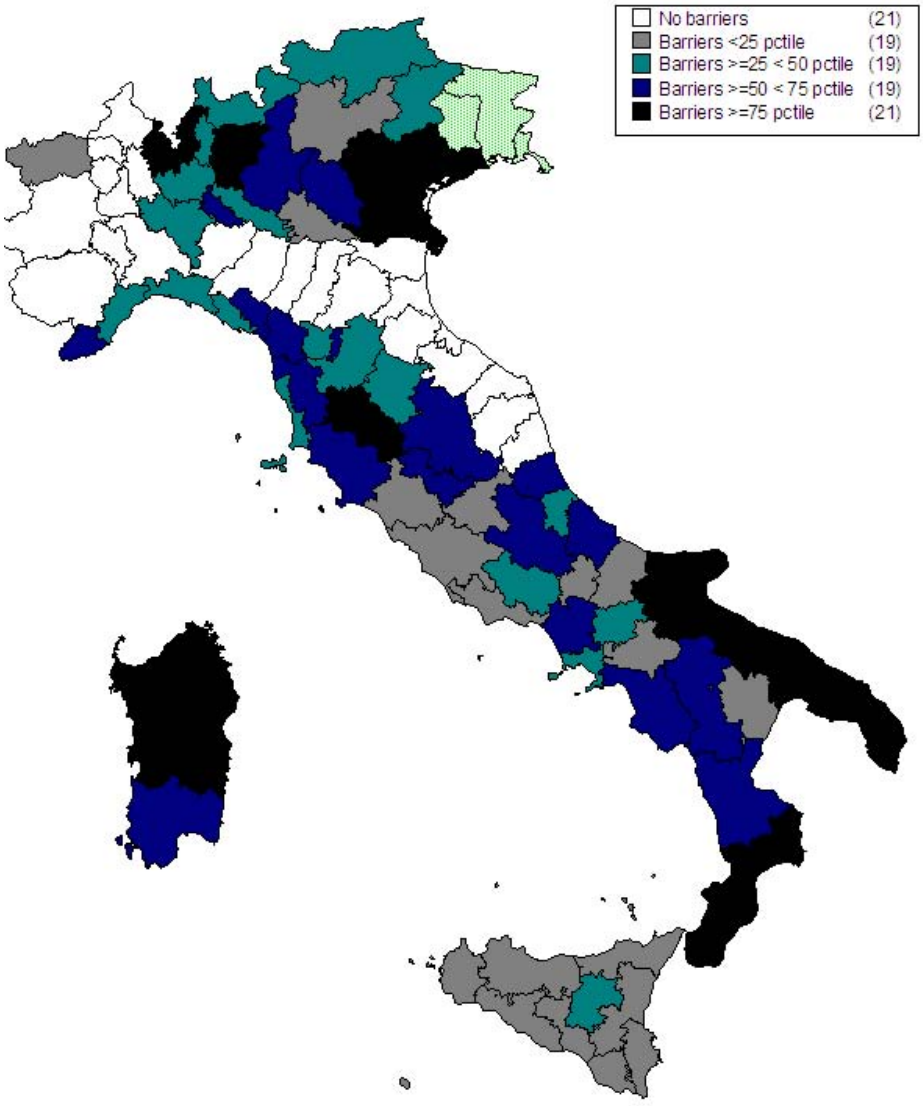

Figure 2: Initial floor space over population in Italian provinces