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ENTRY BARRIERS IN ITALIAN RETAIL TRADE

by Fabiano Schivardi[°] and Eliana Viviano[*]

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 medium and large retail outlets. Using a diff-in-diff approach, we find that entry barriers are associated with substantially higher profit margins and substantially lower productivity of incumbent firms. We also find that 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. Finally, in the most liberal regions yearly inflation in the CPI component "food and beverages" was approximately half a percentage point lower than in the other regions: higher productivity coupled with lower margins resulted in lower consumer prices.

JEL classification: L5, L11, L81

Keywords: entry barriers, productivity growth, technology adoption, retail trade.

Contents

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1. Introduction[1]

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.[2]

Notwithstanding this emphasis on liberalization policies, robust quantitative evidence on the effects of liberalization is still lacking. A series of studies point to a positive effect of liberalization on 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.[3] 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

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[1] We thank Giovanni Seri of Istat for helping us with the System of Company Accounts (*Sistema dei conti delle impresa*) and Alberto Alesina, David Card, Luigi Guiso, Francesca Lotti and Marcello Pagnini for useful comments. The views expressed here are our own and do not necessarily reflect those of the Bank of Italy.

[2] 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 ...".

[3] 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.

in itself, beyond the general lesson on regulatory barriers.

The case of Italy offers a unique 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 the delegation to local authorities the power to regulate the entry of medium and large shops. Contrary to the stated objectives, many regions have used that power to raise substantial entry barriers. 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 negative 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 performance of medium to large stores 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.[4] 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

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

control for overall trends in productivity.

We find that entry barriers play a substantial role in explaining local performance. According to the regression estimates, the elasticity of profit margins to admissible floor space over population is -14%, a very sizable effect. The elasticity of productivity is 5%. To better appreciate the implications, an area moving from the 25^{th} to the 75^{th} percentile of the floor space distribution would record a drop in profit margin of 21% and an increase in productivity of 7.5%. 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 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 business activity.

We also find that increased competition increases the propensity to invest in ICT, even if the effect is significant only when comparing the three regions without pre-set limits against all the others. Moreover, contrary to the diffuse concern that deregulation might hurt workers, we find no effect of entry barriers on wages. Finally, consistently with lower margins and higher productivity, prices of goods in the "food and beverages" retail trade sub-sector –the retail trade segment where the presence of large stores is highest– recorded an average yearly inflation half a percentage point higher in the regions with barriers, compared to the three regions without any pre-set limit.

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. Our results on wages, together with those of Viviano (2006) for Italy and Bertrand & Kramarz (2002) for France, showing that barriers have a detrimental effect on job creation, imply that workers too are harmed by regulation.

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.[5] 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

[5] 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.

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.[6] 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.[7]

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) 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 that could be authorized during the next 3-5 years.[8] 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).[9]

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[6] 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.

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

[8] 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, which covers the time period of this study.

[9] 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.

We examined each regional regulation and computed the maximum floor space that can be authorized for entry or large store expansion in each province.[10] To account for the size of the market, we take the ratio of the admissible floor space to the population (henceforth, AFSP) in the province and use (the negative of) this variable as our preferred measure of entry barrier: the lower the ratio, the higher the entry restrictions.

Table 1 reports the total admissible floor space per 1,000 inhabitants, aggregated at the level of the regions for clarity of exposition.[11] Regions are ranked in decreasing order of AFSP and divided into those with no prior ceilings, those below and those above the median value, a split that we will use in the regressions. The table also reports the total large store surface (per 1,000 inhabitants) in 1999, i.e. when the regional regulations came into effect, and the total AFSP (the sum of the two indicators). There are very sizable differences in AFSP. Among the 17 regions that set the ceilings, the range is from over 100 square meters per 1000 inhabitants for the most liberal regions (Molise, Val d'Aosta and Sicily) to below 15 for the most restrictive ones (Calabria and Basilicata). Moreover, there is no clear (negative) 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 (low AFSP).[12] 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.

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[10] 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.

[11] The Table does not report data on Friuli Venezia Giulia, since the regional authorities issued the local regulation in 2005, a period not covered by our analysis.

[12] The correlation coefficient between existing surface and total admissible surface is -.12.

Figure 1 gives a graphical representation of the AFSP for the Italian provinces. (Detailed data in AFSP are reported in Table A1 in the Appendix.) 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. If we consider the total floor space over population (existing floor space before the Bersani Law plus AFSP), reported in Figure 2, we instead see that a clear North-South divide emerges: southern regions have lower levels of large store development, indicating a lag in the modernization of the sector.

3. Empirical Model and Data

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

3.1 The model

We estimate the effects of entry barriers using a diff-in-diff approach. Entry barriers represent the treatment; their effect is estimated by comparing changes in performance indicators (profit margins, productivity, prices) for treated areas with those of non-treated areas (i.e. those without predetermined maximum floor space) before and after the reform that came into effect in 2000. By considering the within-province variation before and after 2000, we control for area-specific factors: provinces might have characteristics that systematically influence firms' performance, such as population density or public infrastructure; 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:

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

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 2000-2002, BAR_j are the indicators of entry barriers of area j following the inception of the Bersani Law, x_{ijt} are time-variant firm characteristics, Y_t, R_j and S_i are year, area (103 administrative provinces) and 5 retail trade sub-sector dummies (Ateco 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.

In addition to fixed local attributes and time trends, this approach is flexible enough to allow for further controls. Entry barriers might be correlated with different *trends* in firms' performance, which would invalidate the causal interpretation of α_1 in terms of entry regulation. 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 also 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 the choices of policy-makers after 2000 and past differences in trends.

However, one may also argue that entry barriers may be endogenous not only to past trends in y_{ijt}, but also to other contemporaneous economic factors different from 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 is not only a measure of the effects of sector-specific entry barriers, since it also captures these unobserved factors. We can again provide evidence for supporting our identification assumption. Following Bertrand & Kramarz (2002), we 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.

3.2 Data

The measure of entry barriers has been described at length in Section 2; it is based on the AFSP at the province level. We first use two dummies to distinguish between provinces with no limit (the excluded group) and those with limits below and above the median, computed for provinces with limits. We then directly include the log of AFSP, whose coefficient

is readily interpretable as an elasticity. For the regions with no limits, we set the indicator to zero and include a dummy, whose coefficient captures the effect of not imposing any pre-set ceiling on entry.

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 firms with no more than 100 employees for the period 1998-2002.[13] More precisely, we have selected all retail trade firms (Ateco 52[14]) born before 2000, i.e. firms already operating when entry barriers were set up, for a total of more than 300 observations each year. We have excluded entrants after the reform because, up to 2002, only 11 firms 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 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.

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[13] The total sample size of the survey amounts to about 50,000 observations. The response rate is around 40%.

[14] Excluding Ateco 5231 "Dispensing chemists", 5232 "Retail sales of medical and orthopedic goods" and Ateco 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.

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.

According to the Ministry of Industry and Trade (see footnote 10), average employment in stores defined as "large" is 24, with a standard deviation of 8. We selected firms with at least 16 employees, most likely to be subject to the entry regulation. We instead excluded small firms because the Bersani Law also changed their regulation, liberalizing entry 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.[15] In any case, the estimation exercises presented in Section 4 have also been carried out for different thresholds (firms larger than 10 employees, firms larger than 20 employees) with no relevant effects on results. The final sample amounts to more than 1,600 firms. Only 8% of them have more than 50% of the workforce employed in regions other than the region where the main establishment is located. The number of employees working in the same region as the main branch amounts on average to more than 70%. We end up with a total of 1,576 firm-year observations, one-third related to the pre-reform period and around 300 to regions with no pre-set constraints.

Table 2 reports descriptive statistics for the variables used in the regressions. Profit margins are defined as the ratio between gross operating surplus and sales. Note that, in line with the interpretation that regulation has on average become more stringent since the introduction of the law, profit margins have been substantially higher for the total sample in the post-reform period. Sales are commonly used as a proxy of value added in retail trade

[15] 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.

(see e.g. Foster et al. 2002). Real and nominal sales per hour worked are used as a measure of retail trade labor productivity. Real sales are derived using the regional consumer price indexes, produced each month by Istat since 1996 for each regional administrative capital and for the following groups of goods: (1) food and beverages; (2) clothing; (3) household equipment. More precisely, we have divided firms into the same 3 groups according to the type of good sold (and derived from their Ateco classification) and deflated firms' nominal sales by the yearly average of the corresponding regional consumer price indexes.[16] ICT investment is measured by the probability that a firm has positive expenditure in hardware and software. Hourly wages are derived as the sum of wages and salaries divided by total hours worked.

We also study the effects of barriers on the monthly "food and beverages" price index, using the same price series described above. This price index strictly depends on developments in the retail trade sector; moreover, in Italy large outlets are relatively more numerous in the "food and beverages" sub-sector. For example, according to the System of Company Accounts data, in 1998 the share of employees in 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 equal to 60% in the "food and beverages" sub-sector and to 27% in the "clothing" and "household equipment" sub-sectors. Thus, in the latter sectors, the contribution of large stores to prices is likely to be less important.

4. Results

In this section we analyze the effects of entry barriers on profit margins, productivity, investment in ICT, wages and prices.[17] We regress these variables on the measure of entry barriers after 2000 and on year, province and sub-sector dummies. As firm control, we include size, measured by the number of employees. Larger firms tend to have lower profit

[16] The categories (1) food and beverages; (2) clothing; (3) household equipment do not fully coincide with the Ateco 3 digit classification used for model (1). The categories are used only in order to obtain a suitable price index for firms' sales.

[17] For Friuli Venezia Giulia the AFSP is conventionally set equal to the lower bound of the AFSP distribution. See also footnote 11

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 market 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.

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 higher increase in admissible floor space over resident population. And this is exactly what we find. Table 3 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.

In the first column we separate the provinces between high, low and no constraints (the excluded category). We find that the firms in high constraint provinces have on average 39% higher margins than unconstrained ones (significant at the 10% level), while the values are smaller for low constraint provinces and not statistically significant. Not surprisingly, we also find that size is negatively correlated with profit margins; larger stores have lower intermediation margins. The elasticity is sizable, around 20%, and very stable across specifications.

In column 2 we introduce the log of the AFSP. The estimates imply large and statistically significant effects. Firms in provinces with no pre-set limits recorded an average drop in profit margins of 63%, compared with those in other provinces. The elasticity of profit margins to the AFSP is -14%, significant at 1%. To give a better appreciation of the effect, moving from the 25^{th} to the 75^{th} percentile of the AFSP distribution would reduce margins by 21%.

As argued above, one possibility is that the AFSP 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 last column we also include the log of the existing floor space over the population 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 our results.

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 3.2.

The regression results are reported in Table 4. With two dummies for low and high constraint provinces, we obtain a coefficient significant at 10% for the high ones: productivity growth is almost 15% lower than in those with no constraints, a very large effect. The effect of firm size is positive: the elasticity of sales per hours worked to employment is approximately 9%, indicating that large stores have higher labor productivity, a well-known fact in the literature.

Next, we introduce the AFSP (column 2). Results are again clear cut: the dummy coefficient is 0.2 (with a standard error of 0.1), indicating that provinces without limits recorded on average 20% higher productivity growth. The elasticity to AFSP is around 5% and significant at 5%. Moving from the 25^{th} to the 75^{th} percentile of the distribution would increase productivity by 7.5%.

Finally, we include the initial level of the floor space over population. The estimated coefficients are basically unchanged, again indicating that our results are not driven by some form of spurious correlation with the initial level of floor space per inhabitants. Differently from the profit margin regressions, the coefficient of the initial level is positive and significant at 10%. This is a further indication that competition fosters productivity growth.

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

results.

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.

We address this issue by using the probability of having non-zero expenditure on ICT.[18] The results of the probit regressions are shown in Table 5, where we report the marginal effects. We find that, in areas with no pre-set limits, the probability of having non-zero expenditure on ICT was 27% higher than elsewhere, with no significant difference between the low and high barrier provinces. This indicates that entry barriers can have strong negative consequences on the rate of adoption of new technologies and on the pace of restructuring that goes with it according to the literature (Caroli & Van Reenen 2001, Bresnahan, Brynjolfsson & Hitt 2002).[19] When we introduce the increase in the floor space over population variable, we find that the coefficient is positive but not statistically different from zero. One possible interpretation is that, contrary to profits and productivity, the effects of competition on ICT diffusion does not follow monotonically the increase in the AFSP. Indeed, diffusion

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

[19] 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 (2006), who shows that more liberal entry regulation has been accompanied by the diffusion of chain stores.

processes tend to be characterized by non-linear logistic shapes (Jovanovic & MacDonald 1994). Finally, and 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.

4.4 Wages

The effects of entry on wages are ambiguous from a theoretical point of view. On one side, more competition could lead to a reduction in wages, if workers share the rents deriving from market power; on the other, the increase in labor demand and the higher productivity that follows liberalization could increase wages. In Table 6 we report the results of a regression where the dependent variable is the log of the nominal hourly wage. We find no systematic relation between entry barriers and wages: if anything, areas with higher barriers have lower wages. We repeated the analysis separately for clerks and production workers, finding similar results.

The evidence on wages indicates that, at the least, employees do not suffer from liberalization in terms of lower compensation. Needless to say, this analysis is very preliminary and requires further work; in particular, being based on average wages at the level of the firms,[20] it does not take into account workers' characteristics. Nonetheless, it suggests that the effects of liberalization on wages are likely to be at best second order.

4.5 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 3.2, 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 from 1996 to June 2004. This price series is longer than that of firms and enables us to

[20] For example, Neumark, Zhang & Ciccarella (2005) claim that the entry of the Wal-Mart chain in an area has a negative effect on compensations.

extend the analysis until 2004 and to control for pre-existing differences in trends before the retail trade reform of 1998, i.e. in 1996-1997. Of course, the price of goods depends on the whole production chain; however, according to the System of Company Accounts data, in the "food and beverages" sub-sector in 1998 profit margins of wholesalers were 8%, while on average they were around 20% for retail trade firms, suggesting more room for a decline in margins in this sub-sector. Moreover, 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 an integrated market. Variations in final prices are therefore probably due to the contribution of the retail trade sector.

The results reported in Table 7 lend some support to the view that liberalization has a negative impact on prices. We find that low-constraint regions recorded a price increase almost 1% higher than the no-constraint regions. Surprisingly, the effect is smaller and not significant for the high constraint regions; similarly, the regressions with the continuous indicator give inconclusive results, possible because the higher level of geographical aggregation of the price data introduces substantial measurement error in the regressions.

In figure 3 we report the estimates for high and low constraint regions interacted with year dummies for each year from 2000 to 2004. This allows us to study the dynamics of the price effects of barriers. For the low constraint dummy, the effect is already apparent in 2001 and extremely stable: in each year, prices increased by half a percentage point more than in the no-constraint regions. For the high constraint dummy, the effect is positive and significant only starting in 2003; however, it increases faster, and in 2004 the difference with the unconstrained regions is the same as that for the low constrained ones, and equal to almost 2%. This suggests that the finding of no overall effect for the high constrained areas and for the continuous indicator in Table 7 might be due to some initial difference in the response of the various regions that tends to be overruled as time goes by and the effect cumulates.[21] Overall, this evidence indicates that entry barriers translate into non-trivially

[21] It is also plausible that large store entries started affecting prices from the time of their opening and not from the time since entry barriers where set up. According to conversations with the regional representatives at some regional boards, on average the opening occurs 6-8 months after the authorization if the commercial building already exists, otherwise it takes on average between 1 and 2 years. Since in many Italian regions the first authorizations were issued in 2000, it is reasonable to assume that new openings occurred from 2001

higher prices for final consumers.[22]

5. Robustness checks

This section 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,[23] we only perform the analysis for profit margins and productivity.

5.1 Checking for differences in the underlying trends

Using local dummies, our framework controls for the possibility that barriers are correlated with the *levels* of performance. One could still argue that the same possibility also applies to *changes*: for example, areas where profits are growing faster may have more resources to devote to lobbying local authorities and therefore obtain a higher level of protection. To control for this possibility, 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 3.2, 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 (as in Table 1). The final sample size, comprising firms with more than 16 employees, amounts to 9,501 observations.

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onwards. This might explain why differences in price developments are statistically significant from 2001 onwards.

[22] 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.

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

The results are reported in Table 8 for profit margins and 9 for productivity.[24] 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.

5.2 Other sectors

A second possibility is that our results are driven by some omitted variables capturing a more general attitude of local governments towards business activity. Consider for example 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 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, 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, which should respond in a similar way to general policies: hotels and restaurants (Ateco 551-554) and other low wage service sectors (Ateco 747-748: cleaning, packaging, call centers). For consistency, we have selected firms with at least 16 employees (but experimented with other thresholds, finding no differences). Table 10 reports the results for the profit margin regressions for our two preferred specifications (Model 1 and 2). No coefficient is statistically significant and signs are often the opposite of those of the original regressions. Table 11 repeats the same exercise for productivity. In this case, we find one significant coefficient for the low

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

wage sectors, but with the wrong sign: high entry barriers in retail trade are associated with higher productivity. All other coefficients are insignificant.

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. 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.

In terms of future work, we plan to further corroborate our results by instrumenting our measure of barriers. We believe that our approach controls for the most important sources of endogeneity; even so, it would be interesting to repeat the exercise with exogenous shifts in regulation.

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Tables and figures

Table 1: Admissible floor space. Regional averages.

Regions	Pre-reform floor / population (1)	Total admissible floor (2)	Admissible floor / population (3)	Post reform max. floor / population (1+3)
		No barriers		
Emilia Romagna	201			
Marche	215			
Piedmont	167			
		Low barriers		
Molise	135	45,000	137	272
Val d'Aosta	210	14,000	116	326
Sicily	88	532,018	105	193
Trentino Alto Adige	179	82,993	88	267
Lazio	157	363,806	69	225
Puglia	74	31,500	52	126
Liguria	120	76,425	47	167
		High barriers		
Campania	70	191,374	33	103
Lombardy	246	289,691	32	278
Abruzzo	207	40,000	31	238
Tuscany	178	96,450	27	205
Umbria	249	11,000	21	262
Sardinia	143	28,180	17	160
Veneto	240	676,00	15	255
Calabria	109	26,419	13	122
Basilicata	79	29,874	7	86
Italy	164			

Source: Authors' calculations based on data from the Italian Ministry of Industry and Trade and Istat. Admissible floor in square meters. Regions are ranked in decreasing order of admissible floor space over population.

Table 2: Summary statistics

	Pre-reform		Post-reform		Total	
	Mean	St. Err.	Mean	St. Err.	Mean	St. Err.
			Profit margins			
No constraints	0.055	0.010	0.055	0.010	0.055	0.007
Low constraints	0.058	0.005	0.064	0.008	0.062	0.006
High constraints	0.050	0.004	0.071	0.008	0.062	0.005
Total	0.053	0.003	0.066	0.005	0.060	0.006
			Real sales / hours worked			
No constraints	101.6	9.1	113.4	5.9	109.2	5.1
Low constraints	96.5	5.2	104.6	6.3	102.0	4.6
High constraints	113.1	5.9	119.8	8.4	116.9	5.4
Total	107.1	4.0	113.4	4.7	109.4	5.0
			Nominal sales / hours worked			
No constraints	109.5	9.1	127.1	6.4	120.9	5.5
Low constraints	102.2	5.4	117.2	6.8	112.4	5.0
High constraints	121.3	6.3	134.9	9.1	129.0	5.8
Total	114.6	4.2	127.4	5.1	120.8	5.4
			Prob. of positive ICT expenditure			
No constraints	0.633	0.128	0.701	0.062	0.677	0.061
Low constraints	0.500	0.070	0.360	0.061	0.405	0.048
High constraints	0.610	0.069	0.604	0.045	0.607	0.039
Total	0.585	0.049	0.536	0.035	0.563	0.049
			ICT expenditure/ sales			
No constraints	0.107	0.042	0.065	0.016	0.080	0.019
Low constraints	0.059	0.017	0.047	0.012	0.051	0.010
High constraints	0.062	0.016	0.056	0.010	0.059	0.009
Total	0.068	0.013	0.054	0.007	0.063	0.013
			Nominal wages / hours worked			
No constraints	10.9	0.4	12.8	0.6	12.1	0.4
Low constraints	11.1	0.4	12.3	0.5	11.9	0.3
High constraints	12.2	0.4	12.6	0.4	12.4	0.3
Total	11.7	0.3	12.5	0.3	12.2	0.3
			No. of employees			
No constraints	26.7	2.5	31.8	1.6	30.0	1.5
Low constraints	30.9	1.4	28.2	1.4	29.1	1.1
High constraints	29.6	1.7	31.1	1.2	30.5	1.0
Total	29.5	1.2	30.3	0.8	29.9	1.2

Source: Authors' calculations based on Istat data.

Table 3: Profit margin regressions

	Model 1		Model 2		Model 3	
No constraints			-0.629	***	-0.631	***
			(0.243)		(0.240)	
Low constraints	0.044					
	(0.209)					
High constraints	0.385	*				
	(0.224)					
AFSP			-0.140	***	-0.141	***
			(0.043)		(0.045)	
Init. floor/pop.					0.011	
					(0.030)	
Employees	-0.214	***	-0.217	***	-0.217	***
	(0.081)		(0.082)		(0.085)	
Rsq.	0.133		0.134		0.134	
No. Obs.	1,291		1,291		1,291	

The dependent variable is the log of gross operating surplus over total sales. Constraints is a dummy for provinces with no pre-set limits to new floor space; low (high) constraints is a dummy for provinces with constraints below (above) the medial level of those with no pre-set limits. Floor/population and number of employees in logs. Standard errors adjusted for clustering at the level of the province in brackets. * indicates significant at 10%, ** at 5% and *** at 1%.

Table 4: Productivity regressions

	Model 1		Model 2		Model 3	
No constraints			0.202	*	0.190	*
			(0.108)		(0.106)	
Low constraints	0.055					
	(0.077)					
High constraints	-0.144	*				
	(0.084)					
AFSP			0.053	**	0.049	**
			(0.026)		(0.024)	
Init. floor/pop.					0.067	*
					(0.037)	
Employees	0.085	*	0.087	*	0.087	*
	(0.050)		(0.049)		(0.050)	
Rsq.	0.146		0.144		0.145	
No. Obs.	1,576		1,576		1,576	

The dependent variable is the log of real sales over hours worked. Constraints is a dummy for provinces with no pre-set limits to new floor space; low (high) constraints is a dummy for provinces with constraints below (above) the medial level of those with no pre-set limits. Floor/population and number of employees in logs. Standard errors adjusted for clustering at the level of the province in brackets. * indicates significant at 10%, ** at 5% and *** at 1%.

Table 5: Probability of positive ICT spending regressions

	Model 1		Model 2		Molde 3	
No constraints			0.268	***	0.253	***
			(0.060)		(.067)	
Low constraints	-0.268	***				
	(0.071)					
High constraints	-0.276	***				
	(0.074)					
AFSP			0.014		.007	
			(0.022)		(.024)	
Init. floor/pop					.113	**
					(.044)	
Employees	0.155	***	0.154	***	.157	***
	(0.026)		(0.026)		(.026)	
Pseudo Rsq.	0.081		0.081		0.084	
No. Obs.	1,542		1,542		1,542	

Probit estimates, marginal effects. The dependent variable is a dummy equal to 1 if the firm has positive ICT spending and 0 otherwise. Constraints is a dummy for provinces with no pre-set limits to new floor space; low (high) constraints is a dummy for provinces with constraints below (above) the medial level of those with no pre-set limits. Floor/population and number of employees in logs. Standard errors adjusted for clustering at the level of the province in brackets. * indicates significant at 10%, ** at 5% and *** at 1%.

Table 6: Wage regressions

	Model 1		Model 2		Model 3	
No constraints			0.046		0.043	
			(0.053)		(0.052)	
Low constraints	-0.067	*				
	(0.039)					
High constraints	-0.065					
	(0.044)					
AFSP			-0.006		-0.008	
			(0.011)		(0.010)	
Employees	0.100	***	0.100	***	0.100	***
	(0.016)		(0.016)		(0.016)	
Rsq.	0.233		0.233		0.234	
No. Obs.	1,506		1,506		1,506	

The dependent variable is the log of total wages paid by firms over hours worked. Constraints is a dummy for provinces with no pre-set limits to new floor space; low (high) constraints is a dummy for provinces with constraints below (above) the medial level of those with no pre-set limits. Floor/population and number of employees in logs. Standard errors adjusted for clustering at the level of the province in brackets. * indicates significant at 10%, ** at 5% and *** at 1%.

Table 7: Price regressions

	Model 1		Model 2
No constraints			-0.005
			(0.003)
Low constraints	0.009	***	
	(0.003)		
High constraints	0.003		
	(0.003)		
AFSP			0.000
	(0.003)		(0.000)
Rsq.	0.948		0.948
No. Obs.	2,039		2,039

Monthly prices in food and beverages (excluding tobacco) at the regional level. The time period is 1996-2004. Constraints is a dummy for provinces with no pre-set limits to new floor space; low (high) constraints is a dummy for provinces with constraints below (above) the medial level of those with no pre-set limits. The model also includes monthly dummies and a dummy to control for differences in trend before year 2000. Standard errors within brackets. * indicates significant at 10%, ** at 5% and *** at 1%.

Table 8: Profit margin regression, 1993-97

	Model 1		Model 2	
No constraints			-0.016	
			(0.043)	
Low constraints	-0.051			
	(-0.800)			
High constraints	0.027			
	(0.560)			
AFSP			-0.015	
			(0.025)	
Employees	-0.265	***	-0.265	***
	(0.041)		(0.040)	
Rsq.	0.138		0.138	
No. Obs.	9,501		9,501	

The dependent variable is the log of gross operating surplus over total sales. Constraints is a dummy for provinces with no pre-set limits to new floor space; low (high) constraints is a dummy for provinces with constraints below (above) the medial level of those with no pre-set limits. Floor/population and number of employees in logs. The sub-periods are 1993-94 and 1995-97. Standard errors adjusted for clustering at the level of the province in brackets. * indicates significant at 10%, ** at 5% and *** at 1%.

Table 9: Productivity regression, 1993-97

	Model 1		Model 2	
No constraints			-0.011	
			(0.042)	
Low constraints	0.037			
	(0.039)			
High constraints	0.020			
	(0.034)			
AFSP			0.013	
			(0.013)	
Employees	0.054	***	0.054	***
	(0.021)		(0.021)	
Rsq.	0.093		0.093	
No. Obs.	11,423		11,423	

The dependent variable is the log of nominal sales over hours worked. Constraints is a dummy for provinces with no pre-set limits to new floor space; low (high) constraints is a dummy for provinces with constraints below (above) the medial level of those with no pre-set limits. Floor/population and number of employees in logs. The sub-periods are 1993-94 and 1995-97. Standard errors adjusted for clustering at the level of the province in brackets. * indicates significant at 10%, ** at 5% and *** at 1%.

Table 10: Profit margins in other service sectors

	Hotels				**Other services**			
	Model 1		Model 2		Model 1		Model 2	
No constraints			0.209				-0.270	
			(0.143)				(0.274)	
Low constraints	-0.077				0.180			
	(0.077)				(0.154)			
High constraints	-0.144				0.251			
	(0.094)				(0.179)			
AFSP			0.032				-0.019	
			(0.033)				(0.067)	
Employees	-0.201	***	-0.200	***	-0.145	**	-0.145	**
	(0.055)		(0.055)		(0.067)		(0.067)	
Rsq.	0.293		0.293		0.133		0.133	
No. Obs.	1,140		1,140		1,218		1,218	

The dependent variable is the log of gross operating surplus over total sales. Constraints is a dummy for provinces with no pre-set limits to new floor space; low (high) constraints is a dummy for provinces with constraints below (above) the medial level of those with no pre-set limits. Floor/population and number of employees in logs. Standard errors adjusted for clustering at the level of the province in brackets. * indicates significant at 10%, ** at 5% and *** at 1%.

Table 11: Productivity in other service sectors

	Hotels		**Other services**	
	Model 1	Model 2	Model 1	Model 2
No constraints		0.030		-0.166
		(0.120)		(0.101)
Low constraints	-0.067		0.103	
	(0.094)		(0.064)	
High constraints	-0.029		0.137 **	
	(0.097)		(0.066)	
AFSP		-0.006		-0.015
		(0.022)		(0.025)
Employees	-0.026	-0.026	0.002	0.002
	(0.024)	(0.024)	(0.033)	(0.033)
Rsq.	0.272	0.272	0.245	0.245
No. Obs.	1,140	1,140	1,398	1,398

The dependent variable is the log of value added over hours worked. Constraints is a dummy for provinces with no pre-set limits to new floor space; low (high) constraints is a dummy for provinces with constraints below (above) the medial level of those with pre-set limits. Floor/population and number of employees in logs. Standard errors adjusted for clustering at the level of the province in brackets. * indicates significant at 10%, ** at 5% and *** at 1%.

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

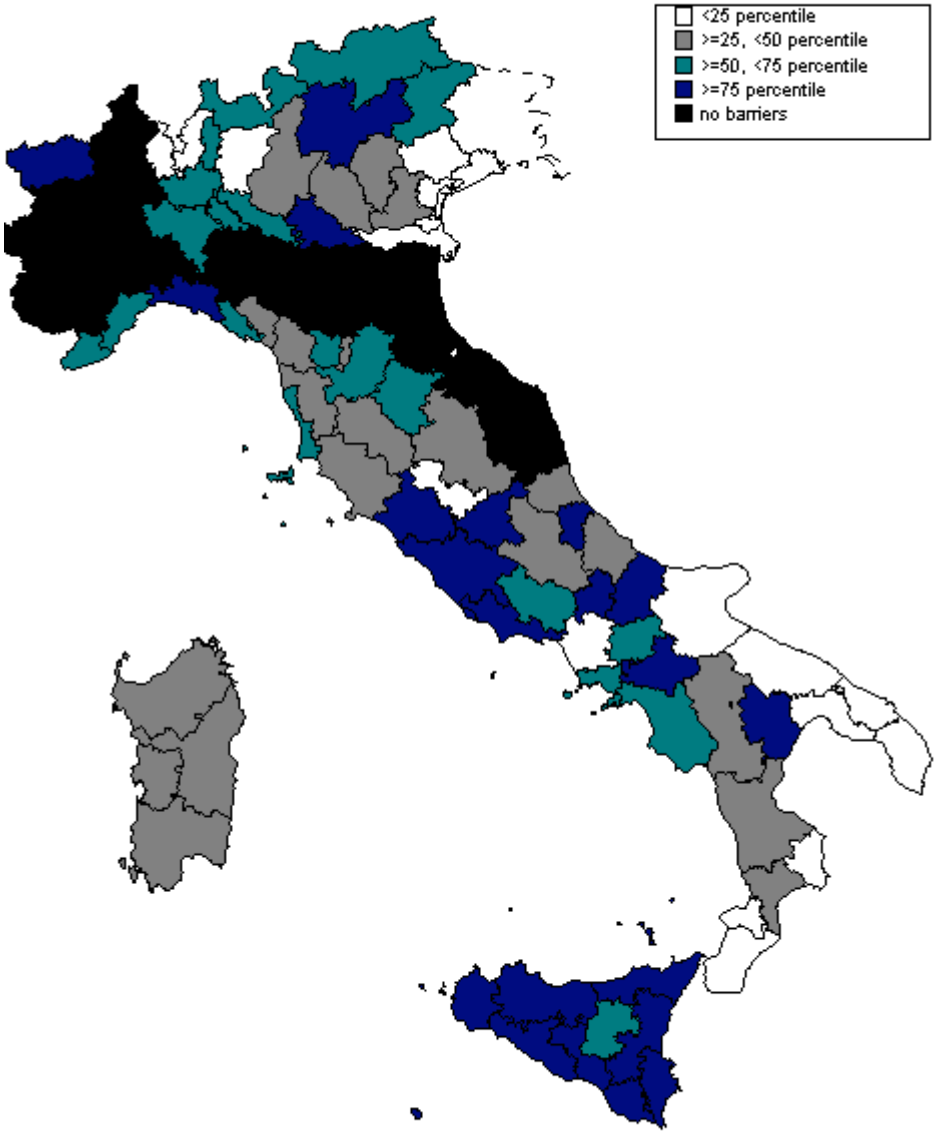


Figure 2: Total admissible floor space over population in Italian provinces

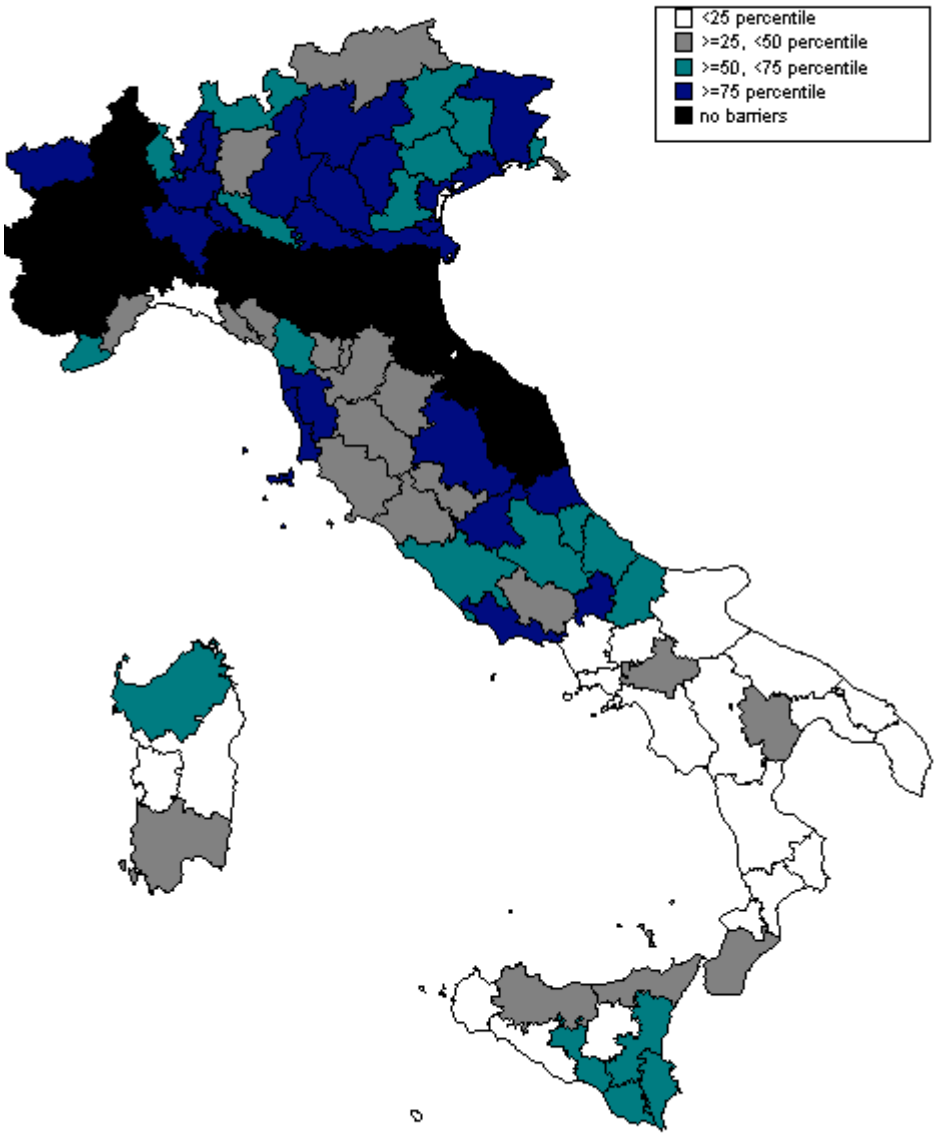
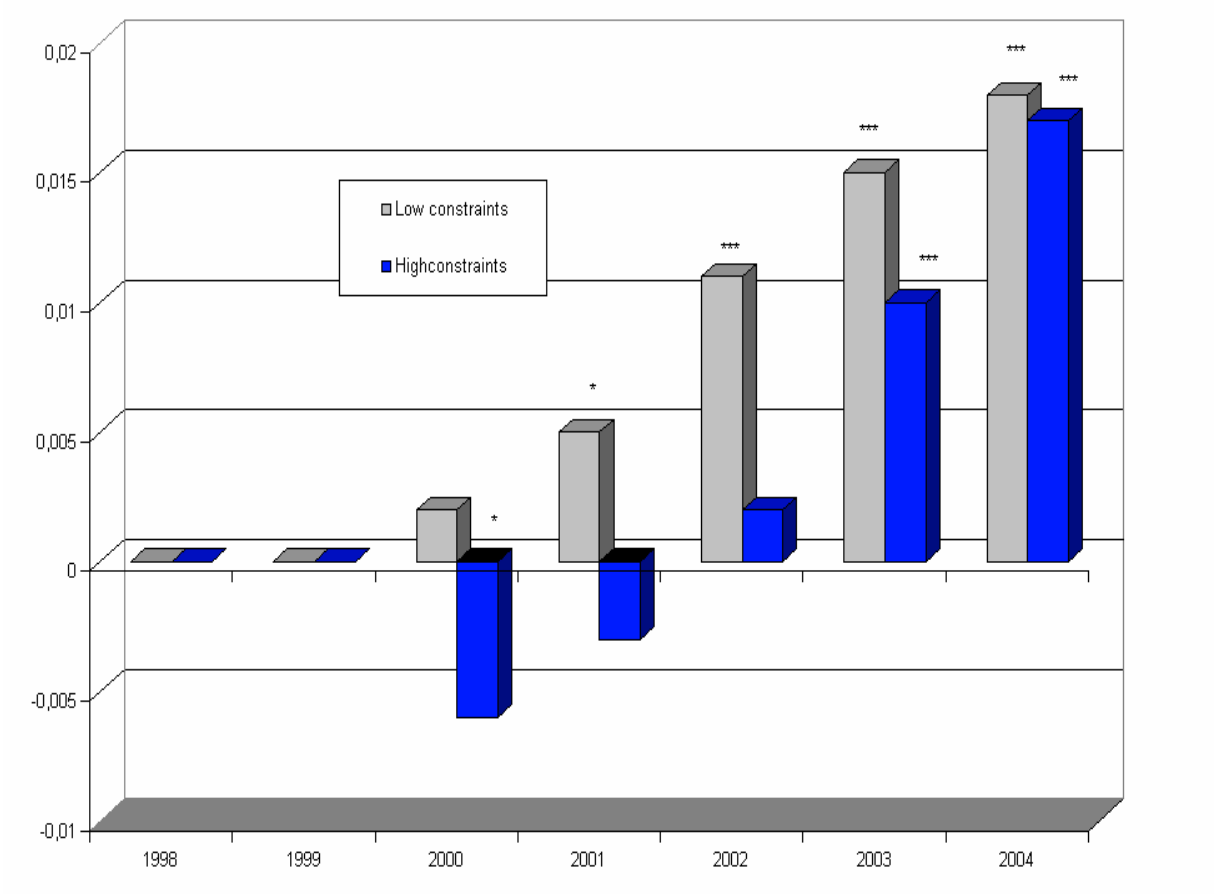


Figure 3: Consumer price index for food and beverages



The figure reports the estimate of the year dummies for regions with low and high constraints in deviation from the no constraint ones for the price regressions of Table 7. * indicates significant at 10%, ** at 5% and *** at 1%.

Appendix

AFSP, based on regional regulations, 2000-2002.

Region	Province	AFSP
Piemonte	TORINO	.
Piemonte	VERCELLI	.
Piemonte	NOVARA	.
Piemonte	CUNEO	.
Piemonte	ASTI	.
Piemonte	ALESSANDRIA	.
Piemonte	BIELLA	.
Piemonte	VERBANO-CUSIO-OSSOLA	.
Valle d'Aosta	AOSTA	116.2
Liguria	IMPERIA	31.3
Liguria	SAVONA	48.7
Liguria	GENOVA	54.0
Liguria	LA SPEZIA	32.1
Lombardia	VARESE	7.9
Lombardia	COMO	9.9
Lombardia	SONDRIO	32.4
Lombardia	MILANO	40.9
Lombardia	BERGAMO	8.6
Lombardia	BRESCIA	25.1
Lombardia	PAVIA	39.4
Lombardia	CREMONA	41.3
Lombardia	MANTOVA	71.9
Lombardia	LECCO	49.8
Lombardia	LODI	30.5
Trentino-Alto Adige	BOLZANO	47.2
Trentino-Alto Adige	TRENTO	128.4
Veneto	VERONA	23.1
Veneto	VICENZA	14.2
Veneto	BELLUNO	34.6
Veneto	TREVISO	11.2
Veneto	VENEZIA	9.1
Veneto	PADOVA	14.3
Veneto	ROVIGO	6.6
Emilia Romagna	PIACENZA	.
Emilia Romagna	PARMA	.
Emilia Romagna	REGGIO NELL'EMILIA	.
Emilia Romagna	MODENA	.
Emilia Romagna	BOLOGNA	.
Emilia Romagna	FERRARA	.
Emilia Romagna	RAVENNA	.
Emilia Romagna	FORLI - CESENA	.
Emilia Romagna	RIMINI	.
Marche	PESARO E URBINO	.
Marche	ANCONA	.
Marche	MACERATA	.
Marche	ASCOLI PICENO	.
Toscana	MASSA - CARRARA	28.0
Toscana	LUCCA	22.4
Toscana	PISTOIA	33.3

AFSP, based on regional regulations, 2000-2002. (cont.)

Region	Province	AFSP
Toscana	FIRENZE	31.3
Toscana	LIVORNO	45.4
Toscana	PISA	15.0
Toscana	AREZZO	34.2
Toscana	SIENA	12.1
Toscana	GROSSETO	15.7
Toscana	PRATO	22.1
Umbria	PERUGIA	17.9
Umbria	TERNI	28.5
Lazio	VITERBO	63.4
Lazio	RIETI	81.4
Lazio	ROMA	65.9
Lazio	LATINA	109.2
Lazio	FROSINONE	49.3
Campania	CASERTA	20.4
Campania	BENEVENTO	45.1
Campania	NAPOLI	40.7
Campania	AVELLINO	61.6
Campania	SALERNO	28.0
Abruzzo	L'AQUILA	26.3
Abruzzo	TERAMO	27.4
Abruzzo	PESCARA	54.3
Abruzzo	CHIETI	20.5
Molise	CAMPOBASSO	127.1
Molise	ISERNIA	163.9
Puglia	FOGGIA	10.3
Puglia	BARI	3.5
Puglia	TARANTO	11.8
Puglia	BRINDISI	11.7
Puglia	LECCE	6.7
Basilicata	POTENZA	26.3
Basilicata	MATERA	101.9
Calabria	COSENZA	18.3
Calabria	CATANZARO	12.7
Calabria	REGGIO DI CALABRIA	9.6
Calabria	CROTONE	6.6
Calabria	VIBO VALENTIA	7.3
Sicilia	TRAPANI	104.3
Sicilia	PALERMO	108.3
Sicilia	MESSINA	93.5
Sicilia	AGRIGENTO	111.6
Sicilia	CALTANISSETTA	173.2
Sicilia	ENNA	44.4
Sicilia	CATANIA	105.9
Sicilia	RAGUSA	76.8
Sicilia	SIRACUSA	101.2
Sardegna	SASSARI	14.0
Sardegna	NUORO	14.1
Sardegna	CAGLIARI	20.6
Sardegna	ORISTANO	14.1

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