Entry Barriers in Retail Trade*

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Abstract

The 1998 reform of the Italian retail trade sector delegated the regulation of entry of large stores to the regional governments. We use the local variation in regulation to determine the effects of entry barriers on sectoral performance. 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 larger profit margins and lower productivity of incumbent firms. Liberalizing entry has a positive effect on investment in ICT, increases employment and compresses labor costs in large shops. In areas with more stringent entry regulation, lower productivity coupled with larger margins results in higher consumer prices.

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1 Introduction

Liberalization is arguably the most strongly advocated policy for improving economic performance, particularly in many service activities, where legal barriers to competition are widespread. Indeed, there is a 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] This paper considers the effects of entry regulation in the Italian retail trade sector. In addition to gaining insights on the effects of regulation in services in general, studying retail trade is of interest in itself. This sector employs approximately 10% of the workforce in all the industrialized economies. Moreover, differences in productivity growth between the US and Europe have been greatest in retail trade, which alone explains a large fraction of the total gap (Gordon 2004, van Ark, Inklaar & McGuckin 2002).

Retail trade is subject to substantial regulation in European countries. A small but growing literature, briefly reviewed below, considers the effects of such regulation on various measures of sectoral performance.[2] The case of Italy offers interesting insights. The Italian retail sector, which has a prevalence of traditional small stores, underwent a major regulatory change in 1998. A central feature of the new law is that it delegates the regulation of entry of medium-large stores to local authorities. As it turns out, local regulations differ substantially in their approach to competition: in particular, most regions have established stringent ceilings to the floor space that can be authorized for entry of medium-large stores at the local level. This constitutes an interesting policy setting, as entry barriers are the most effective instrument for restricting competition (Djankov, La Porta & Lopez-de Silanes 2002, Klapper, Laeven & Rajan 2006). We use the cross-sectional variation in entry ceilings, normalized for local population, to identify the effects of entry barriers on economic performance. This measure is predetermined with respect to the subsequent evolution, and therefore does not share the endogeneity problem of actual entry, which crucially depends on the attractiveness of the local market. We measure performance with a comprehensive

[1] Already in the early 1990s, Baily (1993) claimed that the higher degree of liberalization is a major factor behind the higher labour 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 labour ...". Alesina, Ardagna, Nicoletti & Schiantarelli (2005) show that regulatory reforms in some services industries have a positive impact on capital accumulation, which in turn might lead to higher labour productivity.

[2] See for example Bertrand & Kramarz (2002) for France, Griffith & Harmgart (2008) and Haskel & Sadun (2009) for the UK, Schaumans & Verboven (2008) for Belgium.

set of indicators. Our main performance measures are profit margins and productivity; in addition, we also consider ICT adoption, employment, labor costs and prices.

In the basic specification, the effects of the entry barriers are identified using local fixed effects, that is, comparing performance at the local level before and after 2000, the year in which local regulations came into effect. In this way, we control for fixed local conditions. We find that entry barriers play a substantial role in explaining local performance. According to our estimates, large stores in the area at the 75^{th} percentile of the barrier distribution recorded higher margins by about 8% with respect to those in the area at the 25^{th} percentile. The same exercise for productivity implies a difference of about 3%. We also find that a more liberal regulation has a positive effect on the propensity to invest in ICT, increases employment and reduces labor costs in large stores. Finally, consistently with lower margins and higher productivity, prices of goods in the "food and beverages" retail sub-sector – the segment with the greatest presence of large stores – are higher the more stringent the entry regulation.

These results are robust to a number of checks. We run IV regressions using political variables as instruments (Besley & Case 2000, Bertrand & Kramarz 2002). Specifically, we instrument the barrier indicator with the local share of votes of the right wing parties (traditionally protecting the interest of self employed and small retailers) in the general elections. We find that the effects become even stronger under this specification, suggesting that measurement error and/or endogeneity issues might actually bias the fixed-effects estimates downwards. We show that entry barriers are not correlated with pre-existing trends and 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. This excludes the possibility that entry barriers are proxying for generally less favorable legislation for business activity. We also experiment with different sub-samples and time periods. All in all, the evidence is fully consistent with the notion that barriers to competition increase firms' profits and reduce efficiency and innovation and that this, in turn, leads to higher prices for consumers.

Our approach adds to the growing literature studying market structure and performance in retail trade. Haskel & Sadun (2009) offer a comprehensive picture of developments in retail trade from 1997 to 2003 in relation to the regulatory environment in the UK. They also analyze the effects of a change in the planning regulation of 1996 that constrained

entry of out-of-town large shops. They find that larger chains shifted towards opening more small stores, with adverse consequences on productivity. Compared to our work, they do not use local measures of entry restrictions; moreover, they focus on productivity while we have a wider set of performance indicators. Local measures are introduced in Sadun (2008), who studies the employment effects of entry barriers in the UK. Consistently with the results of Bertrand & Kramarz (2002) for France and Viviano (2008) for Italy, she finds that a more stringent regulation depresses employment growth; moreover, restricting entry of large stores does not seem to help small, independent stores, as large retail chains respond to the restrictions by opening more small stores that directly compete with the independent ones. Griffith & Harmgart (2008) use an approach similar to Bresnahan & Reiss (1991) to determine the effects of planning regulation on the equilibrium configuration of local retail markets, again for the UK. They find that entry restrictions reduce the equilibrium number of large supermarkets; similarly to our results, they also find that restrictive planning regimes are associated with higher food prices. While they infer the effects of restrictions on profits through an equilibrium industry model, we directly asses the relation between regulation and shop profitability. Schaumans & Verboven (2008) also build on Bresnahan & Reiss (1991) to study the highly regulated pharmacies physicians in Belgium. They conclude that entry restrictions have a strong negative impact on consumers' welfare and are not necessary to ensure the availability of supply.

Arguably because entry is fairly unrestricted in the US from a regulatory viewpoint, the literature for that country has been concerned with the effects of entry of non-traditional retail outlets, mostly using the progressive expansion of Wal-Mart from Arkansas to the rest of the country as an exogenous increase in competition. Entry of Wal-Mart is associated with lower prices (Basker 2005*b*, Hausman & Leibtag 2005) and slightly lower wages for retail sector workers (Dube, Lester & Eidlin 2007). The effects on sectoral employment are more controversial and subject of an ongoing debate (Basker 2005*a*, Basker 2006, Neumark, Zhang & Ciccarella 2008). Like ours, all of these papers are based on a reduced form approach. Jia (2008) instead develops a structural model to determine the effects of national discount chains on small retailers and the extent of the economies of scale within a multi-unit retail chain. She finds that the expansion of large discount shops is a major determinant of the entry and exit decisions of smaller shops. She also finds evidence of scale economies for Wal-Mart. Overall, the results for the US confirm that more competition reduces profit

margins and might increase productivity, both within shops and through selection.

The rest of the paper is organized as follows. Section 2 describes the 1998 law that reorganized the regulation of the sector and documents the construction of the entry barriers indicator; it also introduces the data. Section 3 describe the empirical approach. The main results are discussed in Section 4. The IV estimates and the main robustness checks are reported in Sections 5 and 6 respectively, while Section 7 concludes.

2 Data description

We begin by describing in details the procedure to construct the measure of entry barriers and then move on to the other data sources used in the empirical analysis.

2.1 The Indicator of Entry Barriers

The Italian retail sector is currently regulated by the Bersani Law (*Decreto legislativo n. 114/1998*), passed in March 1998. The law was drafted to increase competition and foster the modernization of the Italy's retail sector by reducing entry barriers and administrative formalities. Following the trend towards the decentralization of 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 decide store opening hours (opening hours per day and opening time interval), whether shops can be opened all week and at night, the maximum number of sales days and so on (see Table 1). Arguably, the most important aspect is the entry of large stores. We focus the analysis on precisely this aspect, as entry barriers are the most effective instrument for restricting competition (Djankov et al. 2002, Klapper et al. 2006). Before the Bersani Law, opening either small or large outlets required a permit from the town council.[3] Given that no information is available on how single municipalities used to

[3]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 stores until the Bersani Law came into effect.

regulate the retail trade activity, it is impossible to construct indicators of regulation before 1998. We will therefore control for pre-existing conditions with local fixed effects.

The Bersani Law defined three types of establishments: (1) small (also called neighborhood stores): up to 150 square meters of sales space; (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 "no reply means approval". 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, taking into account 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. 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 representatives of consumers and owners of small stores. 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 with the result that no new permits could be issued in the absence of a regional zoning plan.[4]

The commercial zoning plans of all regions[5] but three (Piedmont, Emilia Romagna and Marche) set stringent limits to entry of large stores, following a roughly similar approach. They divided the region into areas, mostly coinciding with the administrative provinces,[6] and for each of them established the maximum floor space for new large stores that could be authorized and/or the maximum number of new large stores allowed until the next review of the zoning plan: once such limit was reached, no more entry would be allowed. We will use these limits as the main ingredient of the entry barrier indicator. Of course, we will have to account for the possibility that the drafting of the regulation was influenced by local

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

[5]We excluded Friuli Venezia Giulia, a region of the North-East, because, having special powers as a border region (*regione a statuto speciale)*, it decided not to comply with the Bersani reform.

[6]A province is an administrative area roughly comparable in size to the US counties. On average, there are 5 provinces within each region.

conditions, a point to which we will devote a large part of our effort. However we also note that there is some anecdotical evidence that the ceilings were set to a large extent in an unsystematic way, as the regional administrations had no previous experience in the field.[7]

The revision of the zoning plans occurred in different years. In fact, some regions explicitly set the time limit for their regional zoning plans, others did not indicate a period of validity for the limits. The first revisions of the plans started in late 2002. All new regulations tightened entry of large stores (see appendix A), generally the more so the more liberal previous regulation had been. This can be interpreted as evidence that some regions realized only ex post that their plans allowed for "too much entry", giving rise to political pressure from the incumbents to curb competition.[8] This implies that revised plans are likely to be much more dependent on the local evolution of the sector, on the other it confirms that entry regulations were initially set to a large extent without a coherent development plan. Therefore, we only consider the barriers set in the first wave of regional plans, to avoid endogeneity issues due to the fact that after 2003 the Italian regional authorities might have set new limits in response to the new opening occurred between 2000 and 2003.

We went through each regional zoning plan and constructed an indicator of the floor space that could be authorized for each province. Entry ceilings are a good measure of entry restrictions, with some clear advantages with respect to other indicators used in the literature. Actual entry crucially depends on the attractiveness of the local market as well as on entry restrictions. For example, entry will be higher in markets where expected profits are higher. The same problems occurs when considering applications for a building permit. A related advantage is that, since it is fixed at the beginning of the period, it is by construction independent from all the unforseen shocks that can hit a local market after its approval. In appendix A we describe the procedure followed to construct the

[7] In the process of data collection, we directly contacted many regional officials in charge of drafting the plans. We asked them what principles inspired the plans in general and the entry ceilings in particular. Regarding the latter, the typical answer was that they wanted an instrument to control entry but that, given that this was the first time that they regulated the sector and that the time frame to draw the regulation was rather short, they followed simple rules-of-thumb, not based on a systematic analysis of the local sectoral characteristics (see appendix A).

[8] A clear example is that of Marche, where fairly liberal regulation was initially approved (Regional Regulation 26/1999). In December 2002, however, worried by the rapid and unexpected increase in the number of large stores applying to open in the region, the regional government suspended large store openings (Regional Regulation 19/2002) and announced the intention to fully revise the local regulation, setting limits on the maximum number of large store openings. Following the same strategy, the regional authorities of Piedmont suspended new openings in 2005 and in 2006 issued a new restrictive regulation with quantitative limits on large store openings (Regional Regulation 59/2006).

admissible floor space for each regional zoning plan. Table 1 reports summary statistics of the regulation indicators, aggregated at the level of the region.

Entry ceilings are typically expressed in square meters. 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 barriers. Thus, the higher the ratio of the population to the admissible floor space, the greater the entry restrictions. Correspondingly, we set the ratio to zero in the provinces of the three regions without pre-set limits. PAFS vary from zero in these provinces to a maximum of .29. The mean is equal to .038 (corresponding to 26.3 meters per 1,000 inhabitants), the median to .024 (41.6 meters per 1,000 inhabitants); the standard deviation is .05. Figure 1 gives a graphical representation of the PAFS for the Italian provinces, by percentiles. While the three regions with no pre-set ceilings are all in the North and Center, there is no clear geographical pattern among the others: for example, much of the North-East has fairly stringent limits, while the contrary occurs in Sicily. Actual values of PAFS by province are reported in appendix B (Table 10).

The correlation between entry barriers and other aspects of the regulation, such as opening hours, Sunday openings, etc. is generally low in absolute value and negative for all indicators except the possibility of opening all week. This indicates that entry barriers are not likely to proxy for other aspects of the regulation. We postpone to the next section the discussion of the correlation between PAFS and pre-existing conditions in the provinces.

2.2 Other Data Sources

We now turn to the description of the four datasets we use for the empirical analysis: the main one is on firms, and the others are on actual entry of large stores, prices and labor market outcomes at the level of province. We briefly describes the data in the main text, reporting the details appendix B.

Data on firms are derived from the Italian survey "Company Accounts System" (*Sistema dei conti delle imprese*), carried out every year since 1992 by the Italian Institute for Statistics (Istat) and reporting the number of workers, hours worked, labor costs, sales, investments and the administrative province where the firm main branch is located. The basic sample units are firms that entered the market at least two years before the time of the interview. For confidentiality reasons, the survey does not allow to link firms over time,

so that the data can be accessed as a repeated cross-section. Moreover, Istat does not give access to the data on firms with at least 100 employees from 1998 onwards. A change in the survey design in 1998 prevents comparability with the pre 1998 data, collected with a different sample scheme and only for firms with at least 20 employees. We therefore use data on retail firms (ISIC 52) with less than 100 employees for the period 1998-2003.

The barriers we are considering apply to large stores. As long as there is some market segmentation between medium-large and small stores, we expect any effect of entry restrictions to be stronger in the population directly affected by the regulation, i.e. medium-large stores, than in small ones. Because the survey does not contain information on floor space, we use the number of employees to identify medium-large stores. We 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 accessible) and the sample of medium-large retailers (the *restricted sample*). According to the data of the Ministry of Industry and Trade, average employment in stores defined as "large" is 24, with a standard deviation of 8. Given that later we will also use data for the 1993-1997 period, collected only for firms with at least 20 employees, we use this cutoff to identify medium-large firms.[9] The final total sample amounts to more than 8,000 firm-year observations and the restricted one to more than 1,100.

These data have two main drawbacks for our purposes. First, we do not have access to firms with more than 100 employees. Second, we do not have plant-level but only firm-level data, so that the geographical localization of multi-plant shops is problematic. The potential consequences of these limitations on our analysis are mitigated by the features of the Italian industrial structure, characterized by the prevalence of small, single plant firms (Pagano & Schivardi 2003). In the appendix we show that this is the prevalent mode of organization in retail trade. To minimize geographical misplacement, we select only the firms with at least 90% of the workforce employed in the region of the main branch. We have also repeated the analysis selecting only single plant firms, finding similar results.

We also use data on actual expansion of large stores, aggregated at the province level, and produced by the Italian Ministry on Industry and Commerce from year 2000. These data refer to the change in the stock of large store floor space (i.e. they include also exits of

[9] We have experimented with different cutoffs, particularly the 16 employees threshold, at which the labor market regulation might induce some discontinuities in firms' behavior (Schivardi & Torrini 2008). We found very similar results.

large firms). Large stores are subdivided according to the surface, following a classification similar to the one implemented by the Bersani law.

We also analyze the yearly average "food and beverage" price index at the local level, published every month by Istat since 1996 for each regional administrative capital. We focus on this index because large outlets are relatively more numerous in this sub-sector than in others.[10] Thus, we expect that "food and beverage" prices will depend strictly on the development of large stores.

The last data source is the Labour Force Survey —*Rilevazione Trimestrale delle Forze di Lavoro*— conducted by Istat. This is the main source of information about the Italian labor market, both at the national and the local level. We use this survey to derive labor market variables at the level of province.

Table 2 reports descriptive statistics for the firm-level variables used in the regressions for the total and the restricted sample at the beginning and the end of the period (i.e. in 1998 and 2003). 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, Haltiwanger & Krizan 2002). Real 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 the the use of a common price deflator problematic: 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.

Since the survey reports also software expenditure we study the effect of PAFS also on this variable. However, since in not a core variable and we suspect that it might be affected by measurement error, we measure ICT adoption as the probability that a firm has positive expenditure on software. We also report average firm size and the unit labor cost, measured by the ratio total annual gross pay to hours worked, net of social security contributions. Table 3 reports ratio between population and the change in existing floor space between 2000 and 2003, the "food and beverage" price index, and the labor market outcomes used in the regressions. For each Italian province we compute the hours worked (per week) in

[10] For instance, in 1998 the share of value added of firms with at least 20 employees was roughly 60% in "food and beverage" and 27% in "clothing" and "household equipment".

the retail trade sector, by size of the firm (1-19 workers, 20+ workers, i.e. with no upper bound to the size of firms). We also compute the ratio between the hours worked in the retail trade sector and the hours worked in all sectors at the level of province, to net out possible province-level aggregate movements in employment.

The data in Tables 2 and 3 suggest that the reform was in general not very effective in improving efficiency: on average, profit margins rose and productivity fell (Table 2). In fact, 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 (ISAE 2002, AGCM 2007). Note that this is not a problem for our empirical strategy, as we only use the cross sectional variation in barriers to estimate their effects: all we need is differences in the degree of stringency across provinces.

3 Empirical Model

Our empirical approach is based on the comparison of performance according to the degree of entry restrictions imposed by local regulations. As explained above, our measure of entry barriers is fixed once for all in 2000, so it avoids the endogeneity problems of ex-post measures, such as actual entry. Although we have argued that regulation was to some extent random, we nonetheless need to account for the possibility that entry restrictions are at least partially set in relation to pre-existing conditions or to expected developments in the local market. 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 the resources) to exert political pressure for a restrictive entry regulation. In this case, we would observe ex-post high entry barriers and large profits in the province, but the causal relation would be questionable.

Our estimates are based on province fixed effects and include years from 1998 (i.e. before the reform) to 2003, as regional regulations started to be modified between the end of 2002 and the first semester of 2003. As discussed by Besley & Case (2000), fixed-effects models have clear advantages over a pure cross-sectional analysis. By considering the within-province variation before and after 2000, we control for area-specific fixed factors, so that only within-province variability in outcomes contributes to the estimation of the barriers' effects. By including year dummies, we also control for aggregate factors, such as any general trend in productivity; sub-sector dummies also control for potential differences

at the sub-sector level. The approach is implemented with the following regression:

$$y_{ijt} = \alpha_0 + \alpha_1 D * PAFS_j + T_t + R_j + S_k + \varepsilon_{ijt} \quad (1)$$

where y_{ijt} is the relevant outcome for firm i in area j in year t, $PAFS_j$ is the indicator of entry barriers of area j following the inception of the Bersani Law, T_t and R_j are year and area (99 administrative provinces).[11] Finally, S_k is a dummy for firm i sub-sector (7 retail sub-sector dummies according to the three-digit ISIC classification), and ε_{ijt} is an error term. Since the regulations were set between the end of 1999 and the first semester of 2000 and started to be revised between the end of 2002 and 2003, D is a dummy equal to 0 for years 1998 and 1999 and to 1 for the years 2000-2003. Under the assumption that, conditional on the other controls, the $PAFS$ indicator is uncorrelated with ε_{ijt}, the coefficient α_1 identifies the effect of entry barriers on y_{ijt}.

Equation 1 is based on the assumption that PAFS were a binding constraint to the development of the sector and consequently affected market structure. It might be that a market is close to saturation in terms of large outlets. In this case, a very high additional floor space would not imply a high entry potential, breaking the assumed relation between regulation and competitive pressures. While in theory correct, we believe that in practice this is not a problem in our sample. As stated above, the diffusion of large outlets in Italy was lagging behind that of other developed countries. According to the Stan OECD database, in 2003, that is *after* accounting for entry following the reform, the ratio of stores with more than 20 employees and the population (in thousands) was approximately .07, half of that of Germany and France and a third of that of the US.[12] We have also compared PAFS with actual subsequent entry. In most provinces the ceiling was reached in 2-3 years, suggesting that saturation is not an issue there: in fact, in only 17 of them net actual entry by year 2003 (i.e. including exists) was lower than that allowed by regulation.[13] As a preliminary check of the effects of barriers on competition, in Table 4, Column 1, we report the coefficient of an OLS regression of the ratio between population and actual expansion of large stores on PAFS. Actual expansion corresponds to the net change in the stock of large

[11] In Italy there are 103 provinces, of which 4 are located in Friuli Venezia Giulia and excluded from the sample.

[12] This picture does not change if we consider the Italian regions. According to Istat data in Lombardy -where the share of large stores in the population is the highest- the value of this index is one half of the value of the US.

[13] These are: Agrigento, Aosta, Benevento, Caltanissetta, Catania, Frosinone, Isernia, Latina, Lecco, Lodi, Matera, Messina, Napoli, Palermo, Taranto, Trento, Ragusa.

stores between 2000 and 2003. Since the dependent variable is the ratio between population and entry (for symmetry with PAFS), the positive and statistically significant coefficient implies that where entry barriers were larger the rate of expansion has been lower in the post reform years.[14]

The fixed-effects approach controls for any fixed attribute that might determine outcomes, addressing the most likely endogeneity concerns. Nevertheless, PAFS might be endogenous to the local structure of the retail sector. To further explore the correlation between regulation and pre-existing conditions, we compute the ratio of the population to existing large store floor space in 2000 (thousand/sq.m.), supplied by the Ministry of Industry and Trade. Additional floor space could be correlated to the existing space: for example, there could be a catching-up process whereby the laggard regions adopt less restrictive regulation. We find no clear correlation between the existing floor space and the restrictions imposed by the regional zoning plans. 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 store surface (e.g. Campania, Basilicata and Sardinia) imposed high entry barriers. Consistently, we find that the coefficient of a regression of the ratio of the population to existing large store floor space in 2000 on PAFS is not statistically significant from zero (Table 4, Column 2). We also regress the main firm characteristics, that is profit margins, productivity and firm size in 1998 on PAFS. The results, reported in columns 3-5 of Table 4, point to no systematic correlation between PAFS and pre-existing conditions: none of the coefficients is statistically significant. This suggests that barriers were to a large extent random and uncorrelated with pre-existing conditions.

Still, we do not completely ignore out the possibility of endogeneity. Regulation might be endogenous with respect to specific, time-varying shocks to the retail sector that influence regulation and performance.[15] 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. Moreover, our barrier indicator might be affected by measurement error. To account for

[14] Although actual entry is an important component of the effects of regulation, we do not use it directly as the main independent variable. First, we are interested in capturing the effects of regulation itself: actual entry, as argued above, depends on a potentially large number of additional factors. Second, entry threat might influence incumbents' behavior even in the absence of actual entry.

[15] We consider the possibility of *aggregate* local factors below.

both potential endogeneity and measurement error, we will also pursue an instrumental variable approach. We follow the previous literature (Besley & Case 2000, Bertrand & Kramarz 2002) and use political variables as instruments.

One can also 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 restraints. 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 PAFS 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.

Finally, the above approaches are vulnerable to local shocks (uncorrelated 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 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.

4 Results

In this section we analyze the effects of entry barriers on profit margins, productivity, ICT adoption, prices, hours worked and unit labor costs. We regress these variables on the measure of entry barriers after 2000 and on year, province and sub-sector dummies,

according to the basic specification in (1). We report regressions for both the total and the restricted samples, when available. In the main text we only report and comment the basic specifications. A large number of robustness checks are discussed in Appendix C.

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 5, Panel A reports the results for the profit margin regressions. The dependent variable is the log of the gross operating surplus over sales at the level of the firm. The first 3 columns relate to the total sample. In column [1] the coefficient on the PAFS indicator is positive (.83) and significant at 5%: higher barriers are relates to higher profits. To better appreciate the effect, moving from the 25^{th} (.00787) to the 75^{th} (.05455) percentile of the PAFS distribution would increase margins by 4%.

One concern is that some provinces might be saturated, so that increasing additional floor space has no bite on market outcomes. We have argued before that this is not likely to be the case. We now tackle this issue directly. First, we single out provinces in the three regions with no formal constraints. A value of zero in the PAFS indicator corresponds to an infinite amount of potential entry. Clearly, at some point entry would stop because of saturation. We therefore introduce a dummy equal to one for such provinces and repeat the regression with this dummy (labeled as NOPAFS). The results in column [2] show that the PAFS coefficient drops to .56 and the coefficient on the dummy is negative and statistically significant, indicating that profits in the liberal regions where lower than elsewhere.

In column [3] we add the interaction between PAFS and a dummy equal to 1 for the 17 provinces that did not exhaust all the additional floor space by 2003 (variable labeled as SAT). As mentioned in Section 2, these provinces are identified by the gross change in total existing surface: if it has been lower than additional floor space, we classify them as SAT. By including this variable the coefficient on PAFS is only identified by provinces that surely reached the threshold, and for which we can therefore reasonably expect that the market was not saturated. We find that again the basic coefficient does not change (.59 with a standard error of .19) while that on the interaction with SAT is not statistically significant. For the latter, it implies that the effects of the barriers for these 17 provinces

is not statistically different from that of the other provinces, in line with the interpretation that saturation was not an issue anywhere in the country.

Columns [4]-[6] report the results of the same regressions restricted to the population of medium-large sized stores (i.e. with 20-99 employees), which is most likely to be directly affected by the entry regulation. The results clearly support this assumption: all effects become larger and statistically more significant. The coefficient on the PAFS is 1.63. Going from the 25^{th} to the 75^{th} percentile of the PAFS distribution would increase profits by around 8%, a very sizeable effect. The estimate is very robust to the introduction of the dummy for the provinces in the three liberal regions (1.61) and the interaction between PAFS and the dummy for provinces that did not reach the constraint by 2003 (1.72). The coefficients on these two variables are never statistically significant.

It is interesting to explore the sources of the effects we find. The literature on firm level outcomes (particularly productivity) has devoted substantial attention to distinguishing between selection/composition effects vs. within firm changes (Foster et al. 2002). Although we cannot asses the direct role of entry, we can consider to what extent the changes in profits derive from within firm variations and from changes in the size composition of firms. In fact, the total effect of PAFS on profits can be decomposed as $\frac{d\pi}{dPAFS} = \frac{\partial \pi}{\partial PAFS} + \frac{\partial \pi}{\partial \text{size}} * \frac{\partial \text{size}}{\partial PAFS}$. We compute the pre-reform correlation between profits and firm size, equal to -.36, and that of size on PAFS in the post-reform period (-.63). The product between the two is equal to .22, or approximately 30% of the total effect. These simple calculations therefore indicate that both composition and within firm effects are at play.

We have performed a large number of robustness checks. First, to account for the potential effects of the pre-existing conditions on both the regulation and the subsequent performance, we have added the interaction between population over initial floor space and the post 1999 dummy, finding no change in the coefficient of PAFS. We have also experimented with an interaction term between this variable and PAFS. The interaction term is never significant and the coefficient of PAFS is unaffected. We have also included additional controls (other firm characteristics, local conditions), used different samples (single shop firms only, different size threshold) and time periods (excluding the year 2000). To save on space, we discuss these exercises in the appendix C. The main results have proven to be robust to all these modifications. We therefore conclude that entry barriers exert a strong effect on profits, the more so for large firms, directly affected by the regulation, in

line with the assumption of a certain degree of market segmentation between small and large stores.

4.2 Productivity

We measure labor productivity as real sales per hours worked. As explained above, to account for the possibility that prices themselves are influenced by the regulation, we use the regional deflators described in Section 2.2. The regression results are reported in Panel B of Table 5. In the total sample the estimated coefficient on the PAFS indicator is negative (-.48) and significant at 5% (s.e. .18). It slightly drops in absolute value in the specification including the dummy for provinces in the three liberal regions NOPAFS (-.31) and the interaction between PAFS and the dummy for the 17 provinces that did not hit the constraint by year 2003 (SAT). The coefficients on the first of the two variables is positive (as expected) and significant at 10% in column [3], the second is not statistically significant as in the regressions on profit margins. In terms of the sources of the effects, we found no systematic relation between size and productivity in the pre-reform period, so that all of the effect comes from within firm increases in productivity.

When we consider the restricted sample, the estimate increases in absolute value (-.75) and is significant at 5%. Moving from the first to the third quartile of the distribution implies a decrease in productivity by about 3%. Again, results do not change when including the additional controls. We have also performed the robustness checks discussed above for profit margins obtaining similar results. Overall, we conclude that entry restrictions impact negatively on productivity.

4.3 Additional outcomes

In this subsection we study some additional sectoral outcomes in relation to entry restrictions. To save on space, we only report the basic regression, that is the one with PAFS as the only explanatory variables.

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 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 beverage". As mentioned in Section 2.2, these data are

available for each regional administrative capital, a rougher level of geographical aggregation than the entry barrier measure, which is computed for provinces. Data are collected monthly; we use yearly averages from 1998 to 2003. 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 sector.

The results are reported in column [1] of Table 6. The coefficient on the barrier indicator is positive, showing that higher barriers are associated with higher prices, 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 .3 percentage points. It should be noted that post-1999 was a low inflation period (the annual inflation rate was around 2%), so this effect is not negligible.[16]

ICT adoption. - 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 (2009). In the case of retail trade, process (as opposed to product) innovation is the main determinant of productivity growth. This implies that ICT investment should be a fundamental determinant of productivity growth, as such technologies allow logistics, inventory management and so on 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 are less at risk of lagging behind more efficient entrants.[17]

We address this issue by using the probability of having non-zero expenditure on soft-

[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.

[17] 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 (2008), who shows that more liberal entry regulation has been accompanied by a generalized increase in size of more traditional stores.

ware.[18] The results of the probit regressions are shown in column [2] of Table 6, where we report the marginal effects. We find support for the hypothesis that competition fosters ICT adoption. 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 large firms sample (significant at 10%).

Labour market outcomes. - Many studies suggest that reducing the stringency of entry regulation has ambiguous effects on sectoral employment. Since deregulation increases productivity, it may lead to lower employment for a given level of output. However, fewer constraints and higher productivity may also lead to lower prices, greater demand and higher employment. Bertrand & Kramarz (2002) for France and Viviano (2008) for Italy evaluate the effects of retail trade entry regulation on employment growth and find that stricter regulations have sizeable negative impacts on employment growth. In Table 6, column [3], we report estimates where the dependent variable is the log of total hours worked in the retail trade sector at the level of province, obtained from the LFS. We measure labor input by hours worked, instead of number of employees, because large stores typically employ part-time workers and an increase in the number of employees is not necessarily associated with an increase in the use of labor. Hours worked are calculated for all firms and for the sub-sample of firms with at least 20 employees (with no upper bound, see Section 2.2 for details). For the retail trade sector as a whole, the effect of PAFS is not significantly different from zero. Instead, higher barriers are associated with lower hours in large stores (significant at 10%). Going from the 25^{th} to the 75^{th} percentile of the PAFS distribution would decrease hours worked in large stores by around 5%.[19] Since the increase in hours worked in large stores might be associated to some general trend affecting employment (for instance, some general policy favoring employment) at the local level, we have also considered the ratio between the total number of hours worked in the retail trade sector and the total hours worked in all sectors. If the increase in the hours worked in large store is driven by the rise in total employment, the effect of PAFS should be equal to zero. Again, for large stores we find a negative and significant correlation between this variable

[18] We have also experimented with ICT expenditure over sales, finding similar results, although the estimates are less precise.

[19] We have also checked that PAFS is negatively correlated with the total number of workers, finding again a negative relationship for employment in large stores. Instead the per-person average number of hours worked is not correlated with PAFS. This suggests that higher barriers negatively affects both large store full and part time employment.

and PAFS (Table 6, column [4]). Going from the 25^{th} to the 75^{th} percentile of the PAFS distribution would increase the share of hours worked in large stores in total hours worked by .2%.

Also wages might be affected by entry regulation, but, as for employment, the effects 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. Unfortunately, we do not have access on wages paid in the retail trade sector from 1998 to 2003. The "Company Accounts System", however, includes data on labor costs, measured as total labor cost, net of of social security contributions. In Table 6 we report the results of a regression where the dependent variable is the log of the nominal hourly gross pay. We cannot control for personal characteristics of workers and, consequently, for changes in the composition of retail trade workers after the inception of the local regulation. We find no systematic relation between entry barriers and pay in the sample of firms with 1-99 employees, and a positive coefficient (significant at 10%) in the sample of firms with 20-99 employees. Going from the 25^{th} to the 75^{th} percentile of the PAFS distribution would increase large store labor costs by 1%. The evidence on labor costs suggests that employees might suffer from liberalization in terms of lower compensation. This is in line with the findings for the US on the effects of the opening of Wal-Mart on local wages (Neumark et al. 2008). However, it should be interpreted with care, as we cannot control for personal characteristics.

5 Instrumental Variables

In this section we pursue an instrumental variable approach. Although the fixed effects estimates address the most likely endogeneity issues, one could still argue that PAFS is correlated with the error term. First, there might be local, time-varying shocks to the retail sector not accounted for by the fixed effects, that might also be related to regulation. The bias in the estimates could go either way. On one side, incumbents that expect to make large profits might spend more resources on lobbying for barriers, which would result in an upward bias of the fixed-effects estimates; on the other, the regulator might be more willing to liberalize entry if the sector is expected to earn large profits in the future (and vice versa): this would imply that the fixed-effects estimates are biased downwards. Another

potential problem addressed by IVs is measurement error in the PAFS indicator, which would result in downward biased estimates. In fact, as discussed in Section 2, to derive a uniform measure of barriers from the commercial zoning plans we had to make some assumptions, which might induce a certain degree of measurement error in our indicator.

We follow Bertrand & Kramarz (2002) and use political variables as instruments. The political economy literature has established clear links between the characteristics of the political system and the reform process (Alesina, Ardagna & Trebbi 2006). In particular, political preferences of the population are likely to be a determinant of local regulation. For France, Mayer (1986) shows that the self employed and small businesses owners, particularly shopkeepers, have a strong preference for right-wing parties. Although there is no such a rigorous study of the political preferences of shopkeepers for Italy, electoral studies offer a similar picture. For example, Biorcio (2006) analyzes the electoral results of 2006 according to the voters' occupational status. He finds that self-employed and retailers voted massively for the center-right coalition. To corroborate this hypothesis, we have used the 1999 wave of the World Value Survey, that reports the voting intention and the occupational status of respondents. We sum the votes of Alleanza Nazionale (AN), stronger in the Center South, with that of Lega Nord (LN), more present in the North. These two parties differ in some ideological aspects,[20] but both target owner of small businesses and self employed workers. The evidence is clear cut: the share of votes to AN and LN is approximately 25% among owners of services businesses vs. 14.5% in the rest of respondents.[21] For all the other parties, instead, the conditional and unconditional shares of votes are fairly similar, with a general lower share of votes from owners of services businesses to all left wing parties. It therefore seems likely that, in areas where AN and LN are strong, there will be more pressure to draft a stringent entry regulation.

We use the results of the general elections of 1996, i.e. two years before the inception of the Bersani Law, to determine the political preferences of the population at the local level. 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

[20] Lega Nord is in favor of federalism, whereas Allenza Nazionale is a nationalist party.

[21] These numbers refer to the work classifications identified by World Value Survey variables x1224-1225: Department managers trade; Restaurants and hotels; x1314: General managers retail trade; x1314 Managers of small enterprizes in wholesale and retail trade; x1315 Managers of small enterprizes of restaurants and hotels; x522 Shop, stall and market salespersons and demonstrators. Results are similar when we only use x1314: managers of small enterprizes in wholesale and retail trade, although the sample size becomes smaller and inference less reliable.

the regulation of the retail trade sector itself: the owner of a small store might vote for a right-wing party not because of ideology, but because it guarantees more protection against competition from 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 sector following the reform.

To implement the IV we interact the instrument with the post-reform dummy: in fact, the barrier indicator is only turned on for this period. The results of the first stage regressions are reported in the first row of Table 7. A larger representation of the parties of the extreme right is clearly conducive to more stringent regulation. A higher share of votes for these two parties increases PAFS (the effect is significant at 1%, the partial R2 is around 3%). In the second row we report the results of the second-stage regressions. First, consistently with previous results, higher barriers generate larger profits, both in the total and in the restricted sample. The IV coefficients are substantially higher than the fixed effects ones both in the total sample (2.16 vs. .83) and in the restricted sample (3.91 vs. 1.64). Also the coefficients of the productivity regressions are negative and significant, and increase in absolute values compared with the fixed-effects estimates (from -.48 to -1.15 in the full sample and from -.75 to -4.15 in the restricted one). We also report the Anderson-Rubin test (the F-statistics and the p-values) for the null hypothesis that the coefficient on PAFS is statistically not different from zero. This test is robust to potentially weak instruments. It confirms that all the coefficients on PAFS are significant at standard significance levels, or very close to significance.

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. This result is consistent with both measurement error and a specific channel of reverse causality: local politicians internalize the sectoral performance when deciding regulation. The fact that the change in the size of the estimates is larger for the total sample indicates that, if the problem is endogeneity, then regulators are more concerned with the effects of regulation on small stores. This squares with the common wisdom that owners of small stores are an important source of political support. 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.

6 Ruling out Alternative Explanations

We next address two alternative explanations for 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.

6.1 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. 1993-1997. If our indicators are capturing differences in trends among provinces, we should find that the entry barrier coefficients should still be significant when running the same regressions for the period before the law was passed.

As mentioned in Section 2.2, from 1993 to 1997 the sample of the Company Accounts System survey included all firms with more than 20 employees. 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 regional population divided by the sum of the new admissible floor space in each province. To make the samples as similar as possible, we consider firms with 20-99 employees (the restricted sample) and re-run the basic regressions, that is for the 1998-2003 period, using the same regional indicator. We split the period 1993-1997 in two, 1993-1994 and 1995-1997, and check for correlated differences in trends before the Bersani Law (i.e. D is equal to 1 for years from 1995 to 1997). Standard errors are clustered by region. Given that data on local prices are not available before 1996, we use nominal sales to measure productivity in both periods. The results are reported in Table 8. For the 1998-2003 period the estimates are very similar to those in Table 5, indicating that the regional aggregation does not invalidate our measure. Instead, for the 1993-1997 period the the entry barrier indicator is not significantly correlated either to profits or to productivity in the "post" period, that is in the years 1995-1997. This supports the conclusion that entry barriers have actually induced a change in the levels rather than being correlated with some pre-existing underlying trends.

6.2 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 enact a series of policies that stimulate 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 possibility is limited by the fact that most economic policy decisions are taken at the central level; however, in recent years regions have continually 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 fairly 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 to general policies in a similar way to the retail sector. For consistency, we have selected firms with 1-99 employees and at least 90% of workforce in the same region of the main branch. Table 9 reports the results of this exercise. No coefficient is statistically significant and signs are sometimes the opposite of those of the original regressions, both in the total and the restricted samples. This is true for both profit margins and productivity, in the hotels and restaurants as well as in the other low-wage service sectors.

Overall, these results indicate that profit margins and productivity in these 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 local policy and conclude that the effects we find for retail trade are due to the entry barriers themselves.

7 Conclusions

The lack of competition in the service sector has long been recognized as one of the structural weaknesses of the European economy (Nicoletti & Scarpetta 2003). In this paper, we exploit local variation in entry regulation in Italian provinces to study the effects of entry barriers on economic performance in retail trade. We find that barriers exert a strong influence on performance, increasing profit margins and prices, reducing productivity, ICT adoption, employment and increasing labor costs. Our results indicate that the social costs of regulation are substantial, as barriers to entry reduce efficiency and increase prices for consumers. At the same time, incumbents greatly benefit from them in terms of larger profits. This offers a clear rationale for the fierce opposition to liberalization policies by incumbents.

The available evidence for retail trade indicates that liberalizations are especially beneficial for low-income people: consumers enjoy lower prices (Griffith & Harmgart 2008) and employment increases (Bertrand & Kramarz 2002, Viviano 2008). Despite this, free market policies are often opposed by a vast spectrum of political parties, including those more representative of low-income individuals (Alesina & Giavazzi 2007). This indicates that the political economy aspects of the regulation are key to understanding how liberalization should be pushed through the political agenda. This is what we plan to work on in the future.

References

AGCM (2007), Qualità della e perfomance economiche a livello regionale: il caso della distribuzione in Italia. Studi e ricerche, Autorità Garante delle Concorrenza e del Mercato.

Aghion, P., Blundell, R., Griffith, R., Howitt, P. & Prantl, S. (2009), 'The effects of entry on incumbent innovation and productivity', *Review of Economics and Statistics* **91**, 20–32.

Alesina, A., Ardagna, S., Nicoletti, G. & Schiantarelli, F. (2005), 'Regulation and investment', *Journal of the European Economic Association* **3**, 791–825.

Alesina, A., Ardagna, S. & Trebbi, F. (2006), Who adjusts and when? On the political economy of stabilizations. IMF Staff Papers, Mundell-Fleming Lecture, 53: 1-49.

Alesina, A. & Giavazzi, F. (2007), *Il Liberismo è di Sinistra*, Il Saggiatore.

Baily, M. (1993), 'Competition, regulation, and efficiecy in services industries', *Brooking Papers: Microeconomics* **2**, 71–130.

Basker, E. (2005*a*), 'Job creation or destruction? Labor-market effects of Wal-Mart expansion', *Review of Economics and Statistics* **87**, 174–183.

Basker, E. (2005*b*), 'Selling a cheaper mousetrap: Wal-Mart's effect on retail prices', *Journal of Urban Economics* **58**, 203–229.

Basker, E. (2006), When good instruments go bad: A reply to Neumark, Zhang, and Ciccarella. University of Missouri Department of Economics Working Paper 07-06.

Bertrand, M. & Kramarz, F. (2002), 'Does entry regulation hinder job creation? Evidence from the French retail industry', *The Quarterly Journal of Economics* **117**, 1369–1413.

Besley, C. & Case, A. (2000), 'Unnatural experiments? Estimating the incidence of endogenous policies', *Economic Journal* **110**, F672–F694.

Biorcio, R. (2006), Professioni e scelte di voto: Una polarizzazione tra lavoro autonomo e lavoro dipendente, *in* ITANES, ed., 'Dov'è la vittoria? Il voto del 2006 raccontato dagli italiani', Il Mulino.

Bresnahan, T. & Reiss, P. (1991), 'Entry and competition in concentrated markets', *Journal of Political Economy* **99**, 977–1009.

Djankov, S., La Porta, R. & Lopez-de Silanes, F.and Shleifer, A. (2002), 'The regulation of entry', *The Quarterly Journal of Economics* **117**, 1–36.

Dube, A., Lester, T. W. & Eidlin, B. (2007), Firm entry and wages: Impact of Wal-Mart growth on earnings throughout the retail sector. UC Berkeley Institute for Research on Labor and Employment Working Paper Series iirwps-126-05.

Foster, L., Haltiwanger, J. & Krizan, C. (2002), The link between aggregate and micro productivity growth: Evidence from retail trade. NBER WP 9120.

Gaiotti, E. & Lippi, F. (2004), 'Pricing behavior and the introduction of the euro: evidence from a panel of restaurants', *Giornale degli Economisti e Annali di Economia* **63**, 491–526.

Gordon, R. (2004), Why was Europe left at the station when America's productivity locomotive departed? NBER WP 10661.

Griffith, R. & Harmgart, H. (2008), Supermarkets and planning regulation. CEPR DP 6713.

Haskel, J. & Sadun, R. (2009), Regulation and UK retailing productivity: Evidence from micro data. CEPR Discussion Paper 7140.

Hausman, J. & Leibtag, E. (2005), Consumer benefits from increased competition in shopping outlets: Measuring the effect of Wal-Mart. NBER Working Paper 11809.

ISAE (2002), La liberalizzazione del commercio al dettaglio: una prima verifica. Rapporto Trimestrale ISAE.

Istat (2004), I conti economici delle imprese. Collana di informazione, n. 19.

Jia, P. (2008), 'What happens when Wal-Mart comes to town: An empirical analysis of the discount industry', *Econometrica* **76**, 1263–1316.

Klapper, L., Laeven, L. & Rajan, R. (2006), 'Entry regulation as a barrier to entrepreneurship', *Journal of Financial Economics* **82**, 591629.

Leibenstein, H. (1966), 'Allocative vs. "X-Efficiency"', *American Economic Review* **56**, 392–415.

Mayer, N. (1986), *La boutique contre la gauche*, Paris, Press de la Fondation Nationale de Sciences Politiques.

Neumark, D., Zhang, J. & Ciccarella, S. (2008), 'The effects of Wal-Mart on local labor markets', *Journal of Urban Economics* **63**, 405–430.

Nicoletti, G. & Scarpetta, S. (2003), 'Regulation, productivity and growth: OECD evidence', *Economic Policy* **18**, 9–72.

Pagano, P. & Schivardi, F. (2003), 'Firm size distribution and growth', *The Scandinavian Journal of Economics* **105**, 255–274.

Sadun, R. (2008), Does planning regulation protect independent retailers? CEP Working Paper 888.

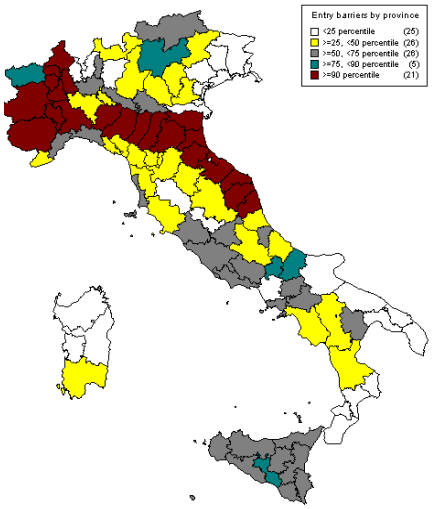
Schaumans, C. & Verboven, F. (2008), 'Entry and regulation – Evidence from health care professions', *RAND Journal of Economics* . Forthcoming.

Schivardi, F. & Torrini, R. (2008), 'Identifying the effects of firing restrictions through size-contingent differences in regulation', *Labour Economics* **15**, 482–511.

van Ark, B., Inklaar, R. & McGuckin, R. (2002), Changing gear, productivity, ICT and services industries: Europe and the United States. Groningen Centre for Development and Growth, Research Memorandum GD-60.

Viviano, E. (2008), 'Entry regulations and labor market outcomes: Evidence from the Italian retail trade sector', *Labour Economics* **15**, 1200–1222.

Figure 1: PAFS in Italian provinces



PAFS is population over additional floor space, set to zero for provinces without pre-set limits: the percentiles are computed within the group of provinces with non-zero limits. Source: our calculations based on regional regulations.

Table 1: Regional regulations, summary statistics.

	Constraints:		Opening allowed:		Maximum no.	Allowed to open:	
	New admissible floor space (sq.mt)	PAFS	Between hours:	For no more than hours:	of days of sales	All the week	In the night
Piedmont	NO	.000	7-22	13	110	YES	YES
Valle d'Aosta	14,000	.009	7-22	13	100	YES	YES
Lombardy	289,691	.031	5-24	13	120	YES	YES
Trento	21,917	.021	7-20	13	60	NO	YES
Bolzano	61,076	.008	6-23	FREE	144	NO	YES
Veneto	67,600	.067	7-22	13	101	YES	YES
Liguria	76,425	.021	FREE	FREE	60	YES	.
Emilia Romagna	NO	.000	7-22	13	120	NO	NO
Tuscany	96,450	.037	5-24	FREE	120	YES	YES
Umbria	17,300	.048	7-22	13	120	YES	YES
Marche	NO	.000	7-22	FREE	107	YES	NO
Lazio	363,806	.015	.	.	84	YES	.
Abruzzo	40,000	.032	7-22	13	90	YES	NO
Molise	45,000	.007	7-22	13	107	YES	YES
Campania	214,540	.027	7-22	13	104	.	.
Apulia	99,040	.041	7-22	12	116	YES	NO
Basilicata	31,500	.019	.	.	120	.	.
Calabria	26,419	.077	7-22	13	90	YES	NO
Sicily	532,018	.010	7-22	12	120	NO	YES
Sardinia	28,180	.059	7-22	13	123	YES	YES

Source: Authors' calculations based on regional regulations and personal interviews conducted by the Bank of Italy in 2005 to regional representatives on the regional boards. New admissible floor space is equal to the sum of new admissible floor space allowed in each province of the region. PAFS is population over additional floor space.

Table 2: Means of firm-level key variables in years 1998 and 2003 (level, standard deviation and log).

	[1]		[2]		[3]		[4]		[5]	
	Profit margins		Productivity		Labor costs		ICT adoption		N. Workers	
	1998	2003	1998	2003	1998	2003	1998	2003	1998	2003
					Panel A - Firms 1-99					
Level	0.10	0.11	118.99	106.88	10.50	12.37	0.12	0.15	10.82	17.52
St. dev.	0.27	0.16	160.34	104.58	3.20	4.64	0.33	0.36	14.21	2.16
Log	-2.41	-2.41	4.42	4.39	2.29	2.43			1.81	2.16
St. dev.	0.97	1.13	0.78	0.72	0.38	0.44			1.02	1.23
N. obs.	1,203	1,348	1,203	1,149	1,162	1,354	1,175	1,325	1,367	1,640
					Panel B - Firms 20-99					
Level	0.06	0.06	105.43	112.94	12.52	14.42	0.34	0.33	38.37	43.47
St. dev.	0.10	0.11	65.76	85.56	3.45	4.51	0.48	0.47	17.90	20.47
Log	-3.02	-2.96	4.51	4.54	2.49	2.62			3.56	3.67
St. dev.	1.07	1.10	0.55	0.60	0.27	0.30			0.41	0.45
N. obs.$^{(1)}$	184	407	171	411	177	396	143	365	209	496

Source and notes: Authors' calculations, Istat data (*Company Account System*). [1] Profit margins are equal to the gross operating surplus over total sales; [2] Productivity is equal to real sales over hours worked (euro); [3] Labor costs are equal to the ratio between total gross pay and hours worked (euro); [4] ICT adoption is equal to the share of firms with positive expenditure in ICT. [5] N. workers is average employment at the level of firm.

Table 3: Means of province-level key variables in years 1998 and 2003 (level, standard deviation and log).

	[1]	[2]		[3]		[4]	
	Pop. / Entry	Prices		Hours worked		Hours worked in retail over total hours	
	(2003 - 2000)	1998	2003	1998	2003	1998	2003
Panel A - All firms							
Level	0.19	1.05	1.18	2675.14	2659.56	0.11	0.11
St. dev.	1.13	0.02	0.03	2012.78	2137.75	0.03	0.03
Log		0.04	0.16	7.71	7.70		
St. dev.		0.15	0.03	0.56	0.56		
N. obs.	99	19	19	99	99	99	99
Panel B - Firms 20+							
Level				217.67	343.27	0.03	0.04
St. dev.				282.56	376.01	0.02	0.02
Log				5.04	5.48		
St. dev.				0.90	0.95		
N. obs.				99	99	99	99

Source and notes: Authors' calculations, data of the Italian Ministry of Industry and Trade in [1], and Istat (Food & beverage price index in [2] and *Labour Force Survey, April wave* in [3] and [4]). [1] Population over entry is equal to the ratio between population at the level of province and total net change in existing large store floor space from 2000 to 2003; [2] Prices are the CPI component: Food & beverage (yearly averages, 19 administrative regional capitals); [3] Hours worked in retail trade are equal to the sum of weekly hours worked by people employed in retail trade at the level of province; [4] Hours worked in retail over total hours is the share of hours worked in retail trade over total hours worked at the level of province.

Table 4: Cross-sectional regressions of performance indicators on PAFS.

	[1]	[2]	[3]	[4]	[5]
	Pop/Entry from 2000 to 2003	Pop/Existing floor sp. in 2000	Profit margins in 1998	Productivity in 1998	N. Workers in 1998
PAFS	2.106	0.022	-0.906	0.352	0.300
	(0.872)*	(0.021)	(0.693)	(0.404)	(0.585)
N. obs.	99	99	1,327	1,496	1,683
R2	0.095	0.018	0.0002	0.0001	0.0002

Source and notes: Authors' calculations, data of the Italian Ministry of Industry and Trade in [1] and [2]; Istat data (*Company Account System*) in [3]-[5]. [1] The dependent variable is the ratio between population and the total net change in existing large store floor space from 2000 and 2003 at the level of province; [2] The dependent variable is the ratio between population at the level of province and existing floor space in year 2000; [3] The dependent variable is the log of gross operating surplus over total sales at the level of the firm; [4] The dependent variable is the log of total real sales over hours worked per year at the level of the firm; [5] The dependent variable is the log of the total number of workers at the level of the firm. PAFS is population over additional floor space (for province with no limits, the corresponding value is set to zero). Model [2] includes geographical area fixed effects (North-West, North-East, Centre and South). Models [3]-[5] include province fixed effects. ***Statistically significant at 1%; ** at 5%; * at 10%.

Table 5: Profit margins and productivity regressions.

	[1]	[2]	[3]	[4]	[5]	[6]
	Firms 1-99			Firms 20-99		
			Panel A - Profit Margins			
PAFS*Post99	0.825	0.556	0.592	1.635	1.615	1.718
	(0.384)**	(0.241)*	(0.195)**	(0.709)**	(0.537)***	(0.523)***
NOPAFS*Post99		-0.088	-0.082		0.008	-0.016
		(0.035)**	(0.037)**		(0.184)	(0.184)
PAFS*SAT*Post99			1.660			5.693
			(2.511)			(4.341)
N. Obs.	8,633	8,633	8,633	1,213	1,213	1,213
R2	0.139	0.139	0.140	0.129	0.129	0.130
			Panel B - Productivity			
PAFS*Post99	-0.481	-0.310	-0.310	-0.753	-0.712	-0.744
	(0.177)**	(0.115)**	(0.166)*	(0.237)**	(0.241)**	(0.291)**
NOPAFS*Post99		0.056	0.057		0.001	0.003
		(0.039)	(0.028)*		(0.047)	(0.052)
PAFS*SAT*Post99			0.217			0.294
			(.741)			(1.322)
N. Obs.	8,583	8,583	8,583	1,265	1,265	1,265
R2	0.140	0.140	0.140	0.149	0.149	0.149

Source and notes: Authors' calculations. Istat data (*Company Account System*). In Panel A the dependent variable is the log of gross operating surplus over total sales at the level of the firm. In Panel B the dependent variable is the log of real sales over hours worked at the level of the firm. PAFS is population over additional floor space (for province with no limits, the corresponding value is set to zero). PAFS is interacted with a dummy equal to 1 in the post-reform period (i.e. 2000-2003). NOPAFS is a dummy variable equal to 1 for provinces with no limits to the entry of new large stores and interacted with a dummy equal to 1 in the post-reform period (i.e. 2000-2003). SAT is a dummy variable equal to 1 for the 17 provinces in which, by year 2003, the limits to the expansion of new large stores was lower than PAFS and that might be saturated. All regressions include year (6), province (99) and sub-sector (7) dummies. Standard errors adjusted for clustering at the level of the province in brackets. ***Statistically significant at 1%; ** at 5%; * at 10%.

Table 6: Additional outcomes regressions.

	[1]	[2]	[3]	[4]	[5]
	Prices	ICT adoption	Hours worked	Hours worked in retail over total hours	Unit labor costs
			All firms		
PAFS * Post99	0.069	-0.225	0.233	0.009	-0.018
	(0.028)**	(0.123)*	(0.262)	(0.032)	(-0.117)
N. Obs.	113	8,477	590	590	8,155
R2	0.972	0.123	0.921	0.598	0.095
			Firms 20+		
PAFS* Post99		-0.788	-1.064	-0.05	0.262
		(0.417)*	(0.512)*	(0.022)*	(0.088)*
N. Obs.		1,307	590	590	1,622
R2		0.112	0.733	0.686	0.220

Source and notes: Authors' calculations. Istat data, *Food and beverage price index* in [1], *Company Account System* in [2] and [5] and *Labour Force Survey, April wave* in [3] and [4]. [1] Prices are the CPI component (yearly averages, 19 administrative regional capitals). Includes year (6) and region (19) dummies; [2] The dependent variable is a dummy equal to 1 if the firm has positive ICT expenditure during the reference year. Includes year (6), province (99) and sub-sector (7) dummies; [3] The dependent variable is the log of the sum of weekly hours worked in the retail trade sector. Province level data. Includes year (6) and province (99) dummies; [4] The dependent variable is the ratio between the sum of weekly hours worked in the retail trade sector and the total weekly hours worked in all sectors. Province level data. Includes year (6) and province (99) dummies; [5] The dependent variable is the log of the ratio between total annual labor costs and total annual hours worked. Includes year (6), province (99) and sub-sector (7) dummies. In all models PAFS is population over additional floor space (for province with no limits, the corresponding value is set to zero). PAFS is interacted with a dummy equal to 1 in the post-reform period (i.e. 2000-2003). Standard errors adjusted for clustering at the level of the province in brackets. In models [2] and [5] the sample is based on firms with no more than 99 employees, in the other models the sample refers to all firm. ***Statistically significant at 1%; ** at 5%; * at 10%.

Table 7: Profit margins and productivity: IV regressions.

	[1]	[2]	[3]	[4]
	Profit Margins		Productivity	
	Firms 1-99	Firms 20-99	Firms 1-99	Firms 20-99
		First stage		
Share (AN+LN)	0.091	0.088	0.090	0.096
	(0.006)***	(0.017)***	(0.006)***	(0.015)***
		Second stage		
PAFS * Post99	2.164	3.914	-1.147	-4.151
	(1.273)*	(1.322)**	(0.562)*	(1.538)**
		First stage statistics		
Partial R2	0.026	0.024	0.026	0.034
R2	0.754	0.825	0.757	0.826
		Second stage statistics		
Anderson-Rubin (H0: $\alpha_1 = 0$)	2.613	10.886	2.755	2.694
p-value	0.106	0.000	0.097	0.101
R2	0.139	0.141	0.140	0.202
N. obs.	8,633	1,213	8,583	1,265

Source and notes: Authors' calculations. Istat data, *Company Account System*. The dependent variables are respectively the log of gross operating surplus over total sales at the level of the firm in [1] and [2] and the log of real sales over hours worked in [3] and [4]. Standard errors adjusted for clustering at the level of the province in brackets. The variable "Share(AN+LN)" is the sum of the share of votes to AN (Alleanza Nazionale) and LN (Lega Nord) at the level of province at the general elections on 1996. All models include year (6), province (99) and sub-sector (7) dummies. The Anderson-Rubin statistics for the hypothesis that the coefficient on PAFS is not significant corresponds to the statistics: F(1, 8,521) in model [1], F(1, 1,101) in model [2], F(1, 8,471) in model [3] and F(1, 1,153) in model [4]. ***Statistically significant at 1%; ** at 5%; * at 10%.

Table 8: Falsification 1. Correlation between profit margins and productivity in 1993-1997 and PAFS at level of region.

	[1]	[2]	[3]	[4]
	Period 1993-1997		Period 1998-2003	
	Profit Margins	Productivity	Profit Margins	Productivity
PAFS * Post94	-0.134	0.233		
	(0.290)	(0.549)		
PAFS * Post99			3.723	-0.838
			(1.710)**	(0.436)*
N. Obs.	9,772	9,772	1,328	1,361
R2	0.125	0.158	0.159	0.259

Source: Authors' calculations. Istat data, *Company Account System*. Because of data constraints, the sample refers to firms with 20-99 employees. In models [1] and [3] the dependent variable is the log of gross operating surplus over total sales at the level of the firm. In models [2] and [4] the dependent variable is the log of total sales over the total number of employees at the level of the firm. In all models PAFS is population over additional floor space at the level of region (for regions with no limits,the corresponding value is set to zero), calculated as the sum of new admissible floor space in the region, divided by regional population. In models [1] and [2] PAFS is interacted with a dummy variable equal to 1 for years 1995-1997. In models [3] and [4] PAFS is interacted with a dummy variable equal to 1 for years 2000-2003. All regressions include year (5 for 1993-1997, 6 for 1998-2003), region (19) and sub-sector (7) dummies. Standard errors adjusted for clustering at the level of the region in brackets. ***Statistically significant at 1%; ** at 5%; * at 10%.

Table 9: Falsification 2. Profit margins and productivity in *Hotels and restaurants* and *Other low wage services*.

	[1]	[2]	[3]	[4]
	Profit margins		Productivity	
	Firms 1-99	Firms 20-99	Firms 1-99	Firms 20-99
	Panel A - Hotels and restaurants			
PAFS* Post99	0.442	-0.764	0.348	0.088
	(0.531)	(0.860)	(0.385)	(0.747)
N. Obs.	5,347	1,042	4,640	1,176
R2	0.083	0.156	0.047	0.155
	Panel B - Other low wage service sectors			
PAFS * Post99	0.075	0.154	0.586	0.637
	(0.412)	(-0.849)	(0.449)	(0.874)
N. Obs.	12,356	1,855	8,497	2,381
R2	0.038	0.073	0.089	0.187

Source and notes: Authors' calculations. Istat data, *Company Account System*. Hotels and restaurants correspond to the ISIC 551-554 sectors and other low wage service sectors to ISIC 747-748 (cleaning, packaging, call centers). In columns [1] and [2] the dependent variable is the log of gross operating surplus over total sales at the level of the firm. In models [3] and [4] the dependent variable is the log of value added over total hours worked per year at the level of the firm. In all models PAFS is population over additional floor space in retail trade at the level of province (for province with no limits, the corresponding value is set to zero). PAFS is interacted with a dummy variable equal to 1 for years 2000-2003. All regressions include year (6), province (99) and sub-sector dummies (4 for hotels and restaurants and 2 for other services). Standard errors adjusted for clustering at the level of the province in brackets. ***Statistically significant at 1%; ** at 5%; * at 10%.

A Regional regulations

In this appendix we detail the procedure followed to construct our PAFS indicator. Before describing the process region by region, we explain the generale rules we followed. First, some regional regulations express the increase in total floor space 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, Apulia 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. We exclude Friuli Venezia Giulia, a region of the North-East, because, having special powers as a border region (*regione a statuto speciale)*, it decided not to comply with the Bersani reform.

- Piedmont: The law L.R.28/99 did not set limits to new openings, so during the period 2000-2004 there were no entry barriers in this region. The regional authorities of Piedmont suspended new openings in 2005 and in 2006 issued a new restrictive regulation with quantitative limits on large store openings (Regional Regulation 59/2006).
- Valle d'Aosta: The law No. 12 of 1999 and the Regulation No. 1088 of 2000 established the number and the total surface available for new opening.
- Lombardia: The laws 14/99, 22/00, 3/00 and the regulation 6-42614/99 regulate the sector for the period 2000-2002. The regional territory is subdivided in 21 areas, for which quantitative limits to the number and the total surface are established. The province of Brescia is subdivided into 4 areas, the provinces of Varese and Pavia into three areas, Sondrio, Milano and Mantova into 2, Cremona, Como, Lecco, Lodi and Bergamo into 1. The laws state that these limits are calculated on the basis of the ratio of existing square meters and local population but no explicit formula is provided. The regulations 7-871/03 and 7-15602/03 set new more restrictive limits for the period 2003-05 (5% increase in provinces with a ratio sq.m./population higher than the national average; 10% increase in provinces with a ratio sq.m./population lower than the national average).
- Autonomous province of Trento: The territory is partitioned into three areas and for each one the law 4/00 set limits to the total surface of new large store.
- Autonomous province of Bolzano: The laws 9/99, and the regulations 64/99 and 39/00 establish that in 2000-2001 the sum of the floor space of new large outlets cannot exceed 50% of existing surface (30% in some areas). The regulation 2150/02 establishes that in the period 2002-2006 the increase of the total large store floor space cannot exceed 8% of the existing surface.
- Veneto: Between 1999 and 2000 several regional laws regulated the retail trade sector (Regional Laws No. 37 and No. 62 of 1999, Regional Regulations No 2263, 2337, 4664 of 1999, and No. 934, No. 1312 and No. 3493 of 2000). The regional territory is subdivided in 18 small areas with quantitative limits to new floor space. These limits were reached in almost all the areas in 2001. Only in 2004 the regional authorities set new constraints for new openings (Law 15 of 2004) and increased the total new admissible floor space from 67,000 to 113,000 sq.m. to partly compensate the stop occurred between 2001 and 2004.

- Liguria: The law 19/99 and the regulations 2644/99, 29/99, 443/99 and 874/99 set both the total number and the maximum floor space that can be authorized in each area. In the province of Genoa the limits were reached in 2002. New constraints for all the region were set in 2005.
- Emilia Romagna: The laws No. 14 of 1999 did not set quantitative limits for new large store openings. In 2000 (Regional Regulation No. 1410 of 2000) the regional authorities of Emilia Romagna assigned the town authorities some power to veto new large store openings. Since this policy increased the administrative burden of large store openings, in 2003 the regional authorities simplified the procedures for large shopping centers (Regional Regulation No. 480 of 2003). The effects of these laws are controversial. Because of the absence of quantitative limits on new openings, in this paper we classify Emilia Romagna among the regions with no barriers.
- Tuscany: For the period 2000-2002 the law 28/99 and the regulations 4/99 and 5/00 subdivide the regional territory into 41 areas (10 in Florence, 7 in Livorno, 5 in Arezzo, 4 in Lucca, Pistoia and Siena, 3 in Grosseto, 2 in Massa-Carrara, 1 in Prato and Pisa) and set limits to new square meters. In 2002 the regional territory was subdivided into 4 areas and new limits were introduced (in general more stringent than the previous ones, see the regulation 26/02).
- Umbria: The law No. 24 of August 1999 is particularly restrictive, since it establishes that no more than 2 new outlets, not exceeding 5,500 sq. m. each, can be opened in the province of Perugia during the period 2000-2005. Additional outlets can be opened only if located close to the main roads of the region.
- Marche: In 1999 the authorities of Marche approved fairly liberal regulations (Regional Regulation 26/1999), coherently with the original spirit of the Bersani law. In December 2002, however, worried by the rapid and unexpected increase in the number of large stores applying to open in the region, they suspended large store openings (Regional Regulation 19/2002) and announced their intention to revise fully the local regulation, setting limits on the maximum number of large store openings. This revision was included in a new regional law enacted in 2005, which subdivides the region into local markets and set limits on the opening of new large stores in each local market (Regional Regulation 9/2005).
- Lazio: The new admissible floor space is expressed as of a percentage increase of the ratio between existing floor space and the population, calculated at the province level (Laws No. 33 of 1999 and No. 17 of 2000; Regulations No. 557 of 1999 and 247 of 2000. Rome was subdivided into 2 sub-areas). The law No. 131 of November 2002 set new percentages for the period 2003-2005.
- Abruzzo: The regional law No. 22 of 1999 identified 5 areas and established that only 1 new outlet of at most 8,000 sq. m. could be authorized in each area (2 areas in Pescara, 1 area in each of the other 3 provinces). Between 2003 and 2004 almost all the new admissible floor space was assigned (with the exception of the province of L'Aquila). The regional law was revised in 2005, with new quantitative limits to large store openings.
- Molise: The law 33/99 and the regulation 1808/99 set the number of outlets and the maximum floor space of new outlets (no larger than 15.000 sq. m.) for each of the 3 areas constituting the region (2 areas in the province of Campobasso, 1 in the province of Isernia).
- Campania: The Regional laws No. 2243 of 1999 and No. 1 of 2000 set both the number and the maximum floor space that can be authorized during the period 2000-2002. The law identifies 14 areas: 2 in the province of Caserta, 1 in Benevento, 4 in Naples, 2 in Avellino and 5 in Salerno. The law No. 2072 issued in June 2003 set new limits for the period 2003-2005.

- Apulia: The law 24/99 and the regulation 1843/99 set limits to the number of new openings for the period 2000-2003 (no more than 6 new outlets in the whole region). These limits were revised in September 2004 (Regional Regulation 2/2004). The new law establishes that no more than 17 new outlets can be opened during the period 2004-2007. At the regional level the total maximum new floor space cannot exceed 222,000 sq. m.
- Basilicata: The laws No. 19 of 1999, No. 16 of 2000, and the regulation 556/00 identify both the number and the maximum floor space that can be assigned by province to new establishments.
- Calabria: The laws No. 17 of 1999 and the Regulation No. 3418 of 1999 set very rigid rules to large store openings. The regional territory is subdivided in 17 areas (8 areas in the province of Cosenza, 4 in Reggio Calabria, 3 in Catanzaro and 1 in Vibo Valentia and Croton). The total number of new outlets cannot exceed than 27 in the period 2000-2004. This threshold was reached in 2003. New constraints were set only in 2005.
- Sicily: The Regional Laws No. 28/1999 and No. 165/00 and the Regional Regulations 12/7/00 subdivide the regional territory into areas and set the maximum floor space that can be authorized in each one as a function of the difference between existing large store surface and the regional average. The Regional Law 16/2002 set similar limits.
- Sardinia: As other regional authorities, also the Sardinia authorities established quantitative limits for new large store openings in 2000-2003. These are expressed as a function of the ratio between existing square meters and population (Regional Regulation 6/10/2000). New constraints are included in the Regional Regulation 1/2004 and the Regional Law 5/2005.

B Data details

Company Accounts System. - The survey is representative of the firm population. The sample is stratified by region, sector and size of workforce. 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. From 1993 to 1997 the threshold was 20 employees; in 1998 it was increased to 100 employees. From 1998 Istat conducts the survey according to EU Regulation 58/97 ("Structural Business Statistics", SBS). According to this regulation, the SBS surveys must be fully representative at the local level and for some firm class-size (typically 1-9 workers, 10-19, 20-49 and 50+). As a consequence in 1998 the sampling of firms across regions changed, as from 1993 to 1997 the sample over-weighted firms located in the Northern regions. Comparability of information over time is then unwarranted. The response rate is on average around 40%. Firms must have entered the market at least one year before the reference period. Since the interview mainly collects data on the previous year balance sheet, the survey refers in facts to firms operating for at least two years before the interview. We have excluded the subsectors ISIC 5231 "Dispensing chemists", 5232 "Retail sales of medical and orthopedic goods" and ISIC 5250-5274 "Retail sales of tobacco, second-hand goods and repairs". Stores in these sub-sectors are typically small and subject to additional regulation. We have also excluded retail sales not carried out in stores and data referred to firms located Marche in 2003, as in this region in 2003 all new store openings were stopped after a drastic change in the local regulation.

The quality of the information is high, as Istat carries out several internal consistency checks, comparisons with official balance-sheet data and a second round of interview in case of reporting anomalies. It also integrate missing data whenever possible. Istat provides also a direct measure of the gross operating surplus, corrected and with imputed values (including also of the compensation of self-employed). We use the corrected one, which -for retail trade firms- has only non-negative

values. If instead we directly construct the gross operating surplus from raw data (value added minus personnel costs divided by turnover), approximately 8% of the observations relate to negative or zero values, which are lost when taking logs. We have replicated all the results with raw data in levels finding similar results.

In terms of the coverage of the sample, according to aggregate statistics published by Istat and based on the same data (Istat 2004), in 1998 firms with more than 100 employees represented 1% of total retail firms, 17% of total employees and 25% of total aggregate sales (see Table 11). Our estimates with small and medium-large firms refer then to a sizeable share of the market and they capture how these firms react to entry restrictions applied large competitors.

Ideally, one would need store level data, as multi-plant stores might span multiple provinces. According to the data of the Ministry of Industry and Commerce, almost 80% of total retail trade stores are single-plant. Among firms with 1-100 employees, multi-plant firms are just 7% (17% of sales, 14% of total employment, see Table 11), whereas multi-plant firms are mainly food mega-stores not included in our sample. These aggregate figures reflect the fact that the Italian retail trade sector is based on family firms which typically own just one shop, directly managed by the household members. This is true also for medium stores, which often belong to a single family-firm, even if they carry out a franchise with larger (often wholesale) firms. Nevertheless, we have also run all our estimates on single-shop firms, obtaining very similar results. Firms are required to report both the number of establishments and the number of employees working in stores located in regions other than that of the headquarters. To avoid geographical miss-assignment ideally we would need to select only those firms with the majority of the workforce located in the same province (not the region) of the headquarter. To the best of our knowledge in Italy there is no dataset with information on the location of local units and of the corresponding headquarters. As a consequence we cannot assess directly what are the effects of this miss-assignment. However, in Italy the plants of a multi-plant firm tend to be located in very narrow geographical areas. The share of firms with at least 90% of the workforce employed in the same region of the main branch amounted to 99% in 1998 (see Table 11).

Italian Ministry of Industry and Commerce data. - Data from the Italian Ministry of Industry and Commerce are available at `http://www.attivitaproduttive.gov.it/osservatori/commercio/indice_grande_distribuzione.htm`. The Ministry on Industry and Commerce publishes also data on the flow of new floor space at the province level. However, these data are not regularly updated and are not reliable, as admitted in the documentation attached to the data: `http://www.attivitaproduttive.gov.it/osservatori/commercio/flussi_sede_fissa/nota.pdf`.

Price data. - The sectoral classification of price data differs from the one of firms. Prices are collected for the following groups of goods: (1) food and beverages; (2) clothing; (3) household equipment. We have divided firms into the same three groups according to the type of good sold (derived from their ISIC classification) and deflated firms' nominal sales by the yearly average of the corresponding regional consumer price indexes.

Labour force survey. - The LFS sample size is approximately 200,000 individuals, interviewed each quarter (January, April, July and October) and it is fully representative of resident Italian population. Individuals are required to report their working status, sector of employment, whether salaried, self-employed or unpaid family workers, and the total number of employees working in the same local unit as the interviewee. The basic sample units are *de facto* households. The sampling procedure is a two-stage one: the first stage consists of the selection of towns, which are divided into strata. All towns of the same administrative province are divided into two classes according to the population size of the town: above and below 20,000. All towns in the first group are sampled, while two towns in the second group are selected at random. The final LFS sample consists of more than 1,300 towns and 70,000 households on average, equal to roughly 200,000 individuals. The empirical analysis presented in this paper is based on rich LFS files referred to the April wave, kindly provided by Istat, which, compared to the standard public-use files, report information on both the province

of residence and the size of the units where people work. Size is collected as a categorical variable. Categories are: (1) single worker unit, (2) 2–5 workers, (3) 6–9 workers, (4) 10–15 workers, (5) 16–19 workers, (6) 20–50 workers, (7) 50–199 workers, (8) 200–500 workers, and (9) 500+ workers.

C Robustness checks

We have run regressions including firm size, measured by the log number of workers, as a control. 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 caused by the different degree of liberalization. The results are similar to those in Table 5. 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 including other local factors that could potentially influence firms' outcomes and policies (Besley & Case 2000). Economic indicators at the provincial level are almost non-existent. We include the unemployment rate as a measure of the local business cycle. We have used alternative controls for local economic conditions, such as value added per capita, which should measure any aggregate changes in productivity. We found no significant change with respect to the basic specifications.

We have also tested the robustness of the results with respect to a series of modifications to the basic specification. To check whether our results are influenced by the fact that we only have firm-level information we have carried out the estimates considering single-plant firms only. Sample size is now smaller and equal to roughly 7,000 units in the total sample and 1,300 in the restricted one. The results are basically identical to those reported in Table 5.

One might argue that PAFS are more effective at restraining competition in provinces with higher population density. Distance from other stores is one of the main sources of market power in this sector. In fact, a larger number of consumers concentrated in a small area implies a tighter competition between a given number of stores. On the contrary, if population is dispersed over a vast area, a given increase in floor space will result in a proportionally lower increase in competition. Thus, we have split the sample according to the value of the province population density (residents per square kilometer higher or lower than the national average). The results confirm that the effects of PAFS are substantially stronger in the provinces with higher density.

We have changed the employment threshold that defines a large store, using 15 and 50 workers. These modifications have no substantial bearing on the results. We have also explored time differences in the effects. One would expect the effects to take some time to show up in the data. As it turns out, estimating separate effects of the barriers for each year after 1999 gives very imprecise results, arguably because of small sample problems. We have re-estimated the model dropping the observations for the year 2000. In fact, the inclusion of 2000 is questionable, as the regional regulations were issued in precisely that year. The results are in line with expectations: all the effects become slightly stronger, bearing out the notion that 2000 might have been a transition year. Finally, we have carried out estimates for the sub-periods 1998-2002 (the dummy D is equal to 1 for the years 2000-2002) and 1998-2004 (the dummy D is equal to 1 for the years 2000-2004), to verify whether our main results are affected by the choice of the time period. We have also carried out estimates in which the period ends in the year of the issue of the new regional regulation (i.e. the dummy D varies across regions and is equal to 1 from 2000 to the year of the change in the regional regulation). We did not find substantial differences with the results presented in Table 5.

Table 10: PAFS of the Italian provinces. Years 2000-2003.

Region	Province	PAFS	Region	Province	PAFS	Region	Province	PAFS
Piedmont	Torino	0	Emilia R.	Piacenza	0	Abruzzo	Chieti	0.049
Piedmont	Vercelli	0	Emilia R.	Parma	0	Molise	Campobasso	0.008
Piedmont	Novara	0	Emilia R.	Reggio E.	0	Molise	Isernia	0.006
Piedmont	Cuneo	0	Emilia R.	Modena	0	Campania	Caserta	0.049
Piedmont	Asti	0	Emilia R.	Bologna	0	Campania	Benevento	0.022
Piedmont	Alessandria	0	Emilia R.	Ferrara	0	Campania	Napoli	0.025
Piedmont	Biella	0	Emilia R.	Ravenna	0	Campania	Avellino	0.016
Piedmont	Verbano C.O.	0	Emilia R.	Forli' C.	0	Campania	Salerno	0.036
Val d'Aosta	Aosta	0.009	Emilia R.	Rimini	0	Apulia	Foggia	0.097
Lombardy	Varese	0.126	Tuscany	Massa C.	0.036	Apulia	Bari	0.287
Lombardy	Como	0.101	Tuscany	Lucca	0.045	Apulia	Taranto	0.085
Lombardy	Sondrio	0.031	Tuscany	Pistoia	0.030	Apulia	Brindisi	0.086
Lombardy	Milano	0.024	Tuscany	Firenze	0.032	Apulia	Lecce	0.149
Lombardy	Bergamo	0.116	Tuscany	Livorno	0.022	Basilicata	Potenza	0.038
Lombardy	Brescia	0.040	Tuscany	Pisa	0.067	Basilicata	Matera	0.010
Lombardy	Pavia	0.025	Tuscany	Arezzo	0.029	Calabria	Cosenza	0.055
Lombardy	Cremona	0.024	Tuscany	Siena	0.083	Calabria	Catanzaro	0.079
Lombardy	Mantova	0.014	Tuscany	Grosseto	0.064	Calabria	Reggio C.	0.104
Lombardy	Lecco	0.020	Tuscany	Prato	0.045	Calabria	Crotone	0.151
Lombardy	Lodi	0.033	Umbria	Perugia	0.056	Calabria	Vibo V.	0.137
Bolzano	Bolzano	0.021	Umbria	Terni	0.035	Sicily	Trapani	0.010
Trento	Trento	0.008	Marche	Pesaro U.	0	Sicily	Palermo	0.009
Veneto	Verona	0.043	Marche	Ancona	0	Sicily	Messina	0.011
Veneto	Vicenza	0.071	Marche	Macerata	0	Sicily	Agrigento	0.009
Veneto	Belluno	0.029	Marche	Ascoli P.	0	Sicily	Caltanissetta	0.006
Veneto	Treviso	0.090	Lazio	Viterbo	0.016	Sicily	Enna	0.023
Veneto	Venezia	0.110	Lazio	Rieti	0.012	Sicily	Catania	0.009
Veneto	Padova	0.070	Lazio	Roma	0.015	Sicily	Ragusa	0.013
Veneto	Rovigo	0.152	Lazio	Latina	0.009	Sicily	Siracusa	0.010
Liguria	Imperia	0.032	Lazio	Frosinone	0.020	Sardinia	Sassari	0.071
Liguria	Savona	0.021	Abruzzo	L'Aquila	0.038	Sardinia	Nuoro	0.071
Liguria	Genova	0.019	Abruzzo	Teramo	0.036	Sardinia	Cagliari	0.049
Liguria	La Spezia	0.031	Abruzzo	Pescara	0.018	Sardinia	Oristano	0.071

Source: Authors' calculations based regional regulations. Istat data on population at the level of province in year 2000. 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. Bolzano and Lazio express the increase in total floor space 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. Apulia 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.

Table 11: The structure of the Italian retail trade sector. Share of firms, sales and workers by size class (1-99 and 100+) and type of firm. Year 1998 (percentages).

	Number of firms	Sales	Number of workers
Firms 100+ employees[(1)]	0.05	20.88	12.96
Firms 1-99 employees[(2)]	99.95	79.12	87.04
Of which:			
–*Single plant*	*92.73*	*62.17*	*72.73*
–*Chains*	*7.22*	*16.95*	*14.31*
Of which:			
– *Chains with at least 90% workforce in region of headquarter*	*7.20*	*16.56*	*14.09*

Source and notes: Authors' calculations. ([1]) Based on Istat data (*Company Account System*) aggregate data. ([2]) Based on Istat data (*Company Account System*) micro data. Chains are defined as firms with more than 1 local unit.