

## ENTRY BARRIERS IN RETAIL TRADE\*

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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. Liberalising entry has a positive effect on investment in ICT, increases employment and compresses labour costs in large shops. In areas with more stringent entry regulation, lower productivity coupled with larger margins results in higher consumer prices.

Liberalisation 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.<sup>1</sup> This article 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 industrialised 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 *et al.*, 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.<sup>2</sup> 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 authorised 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

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<sup>1</sup> Already in the early 1990s, Baily (1993) claimed that the higher degree of liberalisation 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 *et al.* (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.

<sup>2</sup> See for example Bertrand and Kramarz (2002) for France, Griffith and Harmgart (2008) and Haskel and Sadun (2009) for the UK, Schaumans and Verboven (2008) for Belgium.

(Djankov *et al.*, 2002; Klapper *et al.*, 2006). We use the cross-sectional variation in entry ceilings, normalised 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 set of indicators. Our main performance measures are profit margins and productivity; in addition, we also consider ICT adoption, employment, labour 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 75th percentile of the barrier distribution recorded higher margins by about 8% with respect to those in the area at the 25th 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 labour 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 and Case, 2000; Bertrand and 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 towards zero. 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 favourable 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 that studies market structure and performance in retail trade. Haskel and 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 analyse 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 and 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 and Harmgart (2008) use an approach similar to Bresnahan and 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 assess the relation between regulation and shop profitability. Schaumans and Verboven (2008) also build on Bresnahan and 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 and Leibtag, 2005) and slightly lower wages for retail sector workers (Dube *et al.*, 2007). The effects on sectoral employment are more controversial and subject of an ongoing debate (Basker, 2005*a*, 2006; Neumark *et al.*, 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 article is organised as follows. Section 1 describes the 1998 law that reorganised the regulation of the sector and documents the construction of the entry barriers indicator; it also introduces the data. Section 2 describes the empirical approach. The main results are discussed in Section 3. The IV estimates and the main robustness checks are reported in Sections 4 and 5 respectively, while Section 6 concludes.

## 1. Data Description

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

### 1.1. *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 modernisation of the Italian retail sector by reducing entry barriers and administrative formalities. Following the trend towards the decentralisation of decision making

Table 1  
*Regional Regulations, Summary Statistics*

	Constraints:		Opening allowed:			Allowed to open:	
	New admissible floor space (sq.m.)	PAFS	Between hours:	For no more than hours:	Maximum no. of days of sales	All the week	In the night
Piedmont	NO	0.000	7-22	13	110	YES	YES
Valle d'Aosta	14,000	0.009	7-22	13	100	YES	YES
Lombardy	289,691	0.031	5-24	13	120	YES	YES
Trento	21,917	0.021	7-20	13	60	NO	YES
Bolzano	61,076	0.008	6-23	FREE	144	NO	YES
Veneto	67,600	0.067	7-22	13	101	YES	YES
Liguria	76,425	0.021	FREE	FREE	60	YES	<i>np</i>
Emilia Romagna	NO	0.000	7-22	13	120	NO	NO
Tuscany	96,450	0.037	5-24	FREE	120	YES	YES
Umbria	17,300	0.048	7-22	13	120	YES	YES
Marche	NO	0.000	7-22	FREE	107	YES	NO
Lazio	363,806	0.015	<i>np</i>	<i>np</i>	84	YES	<i>np</i>
Abruzzo	40,000	0.032	7-22	13	90	YES	NO
Molise	45,000	0.007	7-22	13	107	YES	YES
Campania	214,540	0.027	7-22	13	104	<i>np</i>	<i>np</i>
Apulia	99,040	0.041	7-22	12	116	YES	NO
Basilicata	31,500	0.019	<i>np</i>	<i>np</i>	120	<i>np</i>	<i>np</i>
Calabria	26,419	0.077	7-22	13	90	YES	NO
Sicily	532,018	0.010	7-22	12	120	NO	YES
Sardinia	28,180	0.059	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. *np* indicates that the regional regulation has no provision for that specific issue.

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.<sup>3</sup> Given that no information is available on how single municipalities used to 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.

<sup>3</sup> 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 authorised 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.

The Bersani Law defined three types of establishments:

- (1) small (also called neighbourhood stores): up to 150 square metres of sales space;
- (2) medium-sized: between 150 and 1,500 square metres; and
- (3) large establishments: over 1,500 square metres.

In cities with more than 10,000 inhabitants, the thresholds are raised respectively to 250 and 2,500 square metres. The law eliminated authorisation 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 authorisation procedures with the result that no new permits could be issued in the absence of a regional zoning plan.<sup>4</sup>

The commercial zoning plans of all regions<sup>5</sup> 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,<sup>6</sup> and for each of them established the maximum floor space for new large stores that could be authorised 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 conditions, a point to which we will devote a large part of our effort. However we also note that there is some anecdotal 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.<sup>7</sup>

<sup>4</sup> During this period, large store openings were possible only if the corresponding permit was issued before March 1998.

<sup>5</sup> 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.

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

<sup>7</sup> 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 the Technical Appendix, Section A, available online at <http://www.res.org.uk/economic/ta/tahome.asp> or with the online version of this article).

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 the Technical Appendix, Section A, available on the JOURNAL homepage at <http://www.res.org.uk/economic/ta/tahome.asp> or with the online version of this article), generally the more so the more liberal previous regulation had been. This can be interpreted as evidence that some regions realised only *ex post* that their plans allowed for 'too much entry', giving rise to political pressure from the incumbents to curb competition.<sup>8</sup> This implies that revised plans are likely to be much more dependent on the local evolution of the sector, however it also 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 may 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 authorised 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 unforeseen shocks that can hit a local market after its approval. In the Technical Appendix we describe the procedure followed to construct the 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 metres. 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 0.29. The mean is equal to 0.038 (corresponding to 26.3 metres per 1,000 inhabitants), the median to 0.024 (41.6 metres per 1,000 inhabitants); the standard deviation is 0.05. 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 Centre, there is no clear geographical pattern among the others: for example, much of the North-East has fairly stringent limits, while the contrary

<sup>8</sup> 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 it intended to revise the local regulation fully, 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).

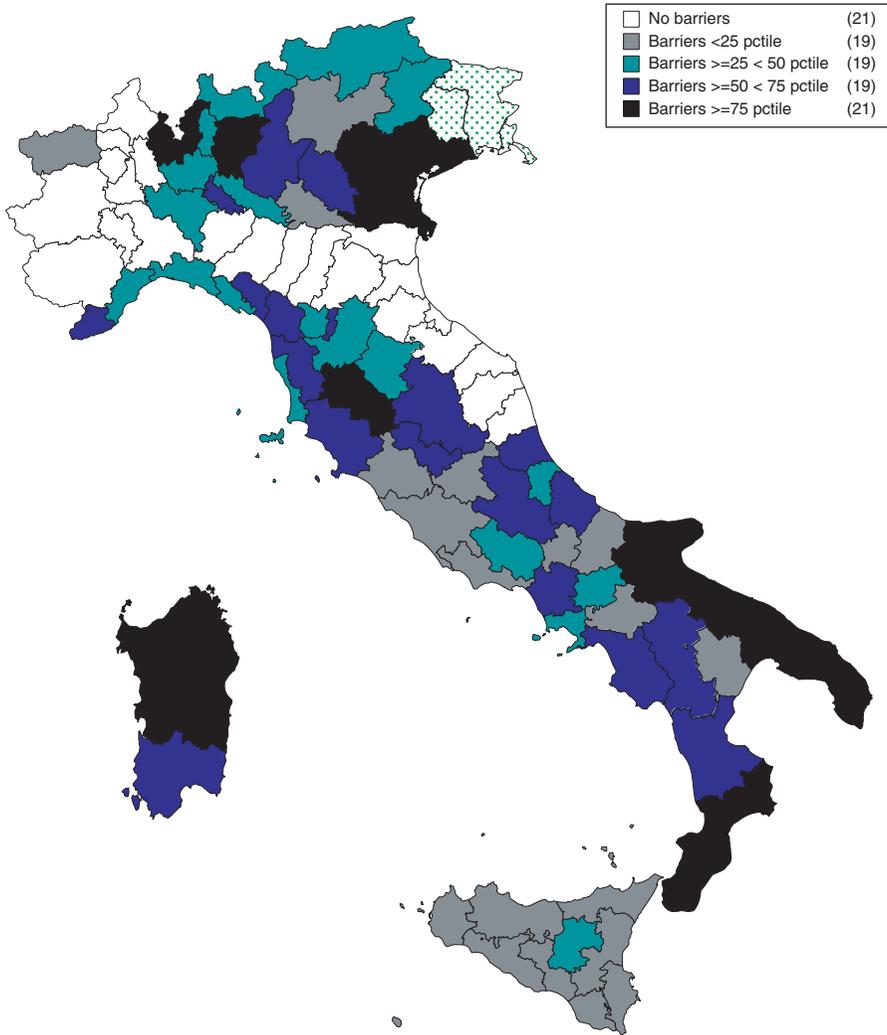


Fig. 1. PAFS in Italian Provinces

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.

occurs in Sicily. Actual values of PAFS by province are reported in the Technical Appendix Table A.1.

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.

## 1.2. *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 labour market outcomes at the level of province. We briefly describe the data in the main text, reporting the details in the Technical Appendix, Section 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, labour 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 us to link firms over time, so that the data can only 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 more 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 1993–7 period, collected only for firms with at least 20 employees, we use this cutoff to identify medium–large firms.<sup>9</sup> 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 establishment-level but only firm-level data, so that the geographical localisation of multi-establishment shops is problematic. The potential consequences of these limitations on our analysis are mitigated by the features of the Italian industrial structure, characterised by the prevalence of small, single establishment firms (Pagano and Schivardi 2003). In the Technical Appendix, Section C, we show that this is the prevalent mode of organisation in retail trade. To minimise 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 establishment firms, and find 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 also include

<sup>9</sup> We have experimented with different cutoffs, particularly the 16 employees threshold, at which the labour market regulation might induce some discontinuities in firms’ behaviour (Schivardi and Torrini, 2008). We found very similar results.

Table 2

*Means of Firm-level Key Variables in Years 1998 and 2003 (level and log, standard deviation in parentheses)*

	[1]		[2]		[3]		[4]		[5]	
	Profit margins		Productivity		Labour costs		ICT adoption		N. Workers	
	1998	2003	1998	2003	1998	2003	1998	2003	1998	2003
<i>(a) Firms 1-99</i>										
Level	0.10 (0.27)	0.11 (0.16)	118.99 (160.34)	106.88 (104.58)	10.50 (3.20)	12.37 (4.64)	0.12 (0.33)	0.15 (0.36)	10.82 (14.21)	17.52 (2.16)
Log	-2.41 (0.97)	-2.41 (1.13)	4.42 (0.78)	4.39 (0.72)	2.29 (0.38)	2.43 (0.44)			1.81 (1.02)	2.16 (1.23)
No. obs.	1,203	1,348	1,203	1,149	1,162	1,354	1,175	1,325	1,367	1,640
<i>(b) Firms 20-99</i>										
Level	0.06 (0.10)	0.06 (0.11)	105.43 (65.76)	112.94 (85.56)	12.52 (3.45)	14.42 (4.51)	0.34 (0.48)	0.33 (0.47)	38.37 (17.90)	43.47 (20.47)
Log	-3.02 (1.07)	-2.96 (1.10)	4.51 (0.55)	4.54 (0.60)	2.49 (0.27)	2.62 (0.30)			3.56 (0.41)	3.67 (0.45)
No. obs.	184	407	171	411	177	396	143	365	209	496

*Source and notes.* Authors' calculations, Istat data (*Company Accounts 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] labour 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] No. workers is average employment at the level of firm.

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

We also analyse 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.<sup>10</sup> 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 labour market, both at the national and the local level. We use this survey to derive labour market variables at the level of the province.

Table 2 reports descriptive statistics for the firm-level variables used in the regressions for the total and the restricted samples 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 (Foster *et al.*, 2002). Real sales per hour worked are used as a measure of retail trade labour productivity. One problem with computing real sales is that different degrees of liberalisation might imply differences in price inflation, making the use of a common price deflator problematic: in particular, price increases due to lower competition would

<sup>10</sup> 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'.

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 (see also Technical Appendix, Section B).

Since the survey also reports software expenditure we also study the effect of PAFS on this variable. However, since it is 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 labour cost, measured by the ratio of total annual gross pay to hours worked, net of social security contributions. Table 3 reports the ratio between population and the change in existing floor space between 2000 and 2003, the ‘food and beverage’ price index and the labour market outcomes used in the regressions. For each Italian province we compute the hours worked (per week) in 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.

Table 3

*Means of Province-Level Key Variables in Years 1998 and 2003 (level and log, standard deviation in parentheses)*

	[1]	[2]		[3]		[4]	
	Pop. / Entry	Food and beverage CPI		Hours worked		Hours worked in retail over total hours	
	(2003–2000)	1998	2003	1998	2003	1998	2003
<i>(a) All firms</i>							
Level	0.19 (1.13)	1.05 (0.02)	1.18 (0.03)	2675.14 (2012.78)	2659.56 (2137.75)	0.11 (0.03)	0.11 (0.03)
Log		0.04 (0.15)	0.16 (0.03)	7.71 (0.56)	7.70 (0.56)		
No. obs.	99	19	19	99	99	99	99
<i>(b) Firms 20+</i>							
Level				217.67 (282.56)	343.27 (376.01)	0.03 (0.02)	0.04 (0.02)
Log				5.04 (0.90)	5.48 (0.95)		
No. 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 CPI 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] Food and beverage CPI is the yearly average, 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; in Panel (b), the share is computed considering only workers in firms with at least 20 employees for both the numerator (retail trade firms) and the denominator (the total firm population).

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.

## 2. 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 and 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:

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

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,  $T_t$ ,  $R_j$  and  $S_k$  are dummies for the years, the areas (99 administrative provinces),<sup>11</sup> and the sub-sectors (7 retail sub-sectors according to the three-digit ISIC classification) and  $\varepsilon_{ijt}$  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 2000–3. Under the assumption that, conditional on the other controls, the  $PAFS$  indicator is uncorrelated with  $\varepsilon_{ijt}$ , the coefficient  $\alpha_1$  identifies the effect of entry barriers on  $y_{ijt}$ .

<sup>11</sup> In Italy there are 103 provinces, of which 4 are located in Friuli Venezia Giulia and excluded from the sample.

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	No. Workers in 1998
PAFS	2.106 (0.872)*	0.022 (0.021)	-0.906 (0.693)	0.352 (0.404)	0.300 (0.585)
No. obs.	99	99	1,327	1,496	1,683
R <sup>2</sup>	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 Accounts System*) in [3]–[5]. The dependent variable is: [1] the ratio of population to the total net change in existing large store floor space from 2000 and 2003 at the level of province; [2] the ratio between population at the level of province and existing floor space in year 2000; [3] the log of gross operating surplus over total sales at the level of the firm; [4] the log of total real sales over hours worked per year at the level of the firm; [5] 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). All models include macro-area fixed effects (North-West, North-East, Centre and South). \*\*\*Statistically significant at 1%; \*\* at 5%; \* at 10%.

Equation (1) is based on the assumption that PAFS were a binding constraint on 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 0.07, half of that of Germany and France and a third of that of the US.<sup>12</sup> 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 was net actual entry by year 2003 (i.e. including exists) lower than that allowed by regulation. 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 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.<sup>13</sup>

<sup>12</sup> 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 highest, the value of this index is one half of that of the US.

<sup>13</sup> 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' behaviour even in the absence of actual entry.

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 explore the correlation between regulation and pre-existing conditions further, 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 different 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 the possibility of endogeneity. Regulation might be endogenous with respect to specific, time-varying shocks to the retail sector that influence regulation and performance.<sup>14</sup> 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 both potential endogeneity and measurement error, we also pursue an instrumental variable approach. We follow the previous literature (Besley and Case, 2000; Bertrand and 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  $\alpha_1$  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 1993–7, where  $D$  is now a dummy equal to 1 for the years 1995–7 and 0 otherwise. In this regression  $\alpha_1$  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.

<sup>14</sup> We consider the possibility of *aggregate* local factors below.

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,  $\alpha_1$  would also capture these unobserved factors. We can again provide evidence supporting our identification assumption. Following Bertrand and 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  $\alpha_1$  not significantly different from zero would indicate that our measure of entry barriers is not capturing some overall correlated effects, as it only correlates with outcomes in retail trade.

### 3. Results

In this Section we analyse the effects of entry barriers on profit margins, productivity, ICT adoption, prices, hours worked and unit labour 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 the Technical Appendix, Section C.

#### 3.1. 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(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 2 columns relate to the total sample. In column [1] the coefficient on the PAFS indicator is positive (0.83) and statistically significant at 5%: higher barriers are related to higher profits. To assess the economic significance of this estimate, we compute the interquartile effect, defined as  $\hat{\alpha}_1 \times (\text{PAFS}_{75} - \text{PAFS}_{25})$ , where  $\text{PAFS}_f$  is the  $f$ th percentile of the PAFS distribution. Given that the dependent variable is in logarithms, the interquartile effect readily measures the percentage change in gross operating surplus over sales that occurs when moving from the 25th (0.00787) to the 75th (0.05455) percentile of the PAFS distribution, keeping everything else equal. For this estimate, the interquartile effect is 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. To tackle this issue directly, 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 interacted with the post 1999

Table 5  
*Profit Margins and Productivity Regressions*

	[1]	[2]	[3]	[4]
	Firms 1–99		Firms 20–99	
<i>(a) Profit Margins</i>				
PAFS × Post99	0.825 (0.384)**	0.556 (0.241)*	1.635 (0.709)**	1.615 (0.537)***
Dummy for no limits on entry × Post99		−0.088 (0.035)**		0.008 (0.184)
No. Obs.	8.633	8.633	1.213	1.213
R <sup>2</sup>	0.139	0.139	0.129	0.129
<i>(b) Productivity</i>				
PAFS × Post99	−0.481 (0.177)***	−0.310 (0.115)***	−0.554 (0.191)***	−0.647 (0.290)**
Dummy for no limits on entry × Post99		0.056 (0.039)		−0.014 (0.036)
No. Obs.	8.583	8.583	1.265	1.265
R <sup>2</sup>	0.140	0.140	0.149	0.149

*Source and notes.* Authors' calculations. Istat data (*Company Accounts 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. 2000–3). 'Dummy for no limits on entry' 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. 2000–3). All regressions include year (6), province (99) and sub-sector (7) dummies. Standard errors adjusted for clustering at the level of the province in parentheses. \*\*\*Statistically significant at 1%; \*\* at 5%; \* at 10%.

dummy. The results in column [2] show that the PAFS coefficient drops to 0.56 and the coefficient on the dummy is negative and statistically significant, indicating that profits in the liberal regions were lower than elsewhere.

Columns [3]–[4] 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. In terms of the interquartile effect, going from the 25th to the 75th 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). The coefficients on this dummy are not 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 assess 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  $d\pi/dPAFS = \partial\pi/\partial PAFS + \partial\pi/\partial size \times \partial size/\partial PAFS$ . We compute the pre-reform correlation between profits and firm size, equal to  $-0.36$ , and that of size on

PAFS in the post-reform period ( $-0.63$ ). The product between the two is equal to 0.22, or approximately 30% of the total effect. These simple calculations therefore indicate that both composition and within firm effects are at play.<sup>15</sup>

We have performed a large number of robustness checks. To make sure that pre-existing conditions do not affect both the regulation and the subsequent performance, we have added the interaction between population over initial floor space and the post 1999 dummy; we have also experimented with an interaction term between this variable and PAFS; to account for potential mean-reversion effects, we have included the average profit margins in 1998 calculated at the level of the province, interacted with the post 1999 dummy. We found no substantial differences with the baseline specification: if anything, the effects increase slightly. 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 Technical Appendix, Section 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.

### 3.2. *Productivity*

We measure labour 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 1.2. The regression results are reported in Table 5(b). In the total sample the estimated coefficient on the PAFS indicator is negative ( $-0.48$ ) and significant at 5% (s.e. 0.18). It drops slightly in absolute value in the specification including the dummy for provinces in the three liberal regions ( $-0.31$ ), whose coefficient is positive (as expected), although not statistically significant (column [2]). 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 ( $-0.55$ ) and is significant at 5%. Moving from the first to the third quartile of the PAFS 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.

### 3.3. *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 variable.

<sup>15</sup> Of course, this simple decomposition has to be taken with a grain of salt. In particular, it uses the correlation between size and profits without attempting to identify the causal relation. In fact, our estimate might be biased towards zero, as a firm receiving a positive shock to profits might also increase in size. Our decomposition can therefore be taken as an upper bound of the within firm effect.

Table 6  
*Additional Outcomes Regressions*

	[1]	[2]	[3]	[4]	[5]
	Food and beverage CPI	ICT adoption	Hours worked	Hours worked in retail over total hours	Unit labour costs
(a) All firms					
PAFS × Post99	0.069 (0.028)**	-0.225 (0.123)*	0.233 (0.262)	0.009 (0.032)	-0.018 (-0.117)
No. Obs.	113	8,477	590	590	8,155
R <sup>2</sup>	0.972	0.123	0.921	0.598	0.095
(b) Firms 20+					
PAFS × Post99		-0.788 (0.417)*	-1.064 (0.512)*	-0.050 (0.022)*	0.262 (0.088)**
No. Obs.		1,307	590	590	1,622
R <sup>2</sup>		0.112	0.733	0.686	0.220

*Source and notes.* Authors' calculations. Istat data, *Food and beverage price index* in [1], *Company Accounts System* in [2] and [5] and *Labour Force Survey, April wave* in [3] and [4]. [1] Food and beverage CPI are the CPI components (yearly averages, 19 administrative regional capitals). Year (6) and region (19) dummies are included; [2] The dependent variable is a dummy equal to 1 if the firm has positive ICT expenditure during the reference year. Year (6), province (99) and sub-sector (7) dummies are included; [3] The dependent variable is the log of the sum of weekly hours worked in the retail trade sector. Province level data. Year (6) and province (99) dummies are included; [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. In Panel (b), the share is computed considering only workers in firms with at least 20 employees for both the numerator (retail trade firms) and the denominator (the total firm population). Province level data. Year (6) and province (99) dummies are included; [5] The dependent variable is the log of the ratio between total annual labour costs and total annual hours worked. Year (6), province (99) and sub-sector (7) dummies are included. 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 parentheses. 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%.

*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 1.2, these data are available for each regional administrative capital. The price analysis is therefore restricted to the 19 provinces in which the regional administrative capital is located. 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 25th to the 75th percentile of the PAFS distribution would increase prices by 0.3 percentage points.<sup>16</sup>

*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 *et al.* (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 rationalised. 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.<sup>17</sup>

We address this issue by using the probability of having non-zero expenditure on software.<sup>18</sup> 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 and 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 Labour Force Survey. We measure labour 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 labour. 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 1.2 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

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

<sup>17</sup> 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 liberalisation. The beneficial effects of removing entry barriers for a modern efficient organisation of supply is also found by Viviano (2008), who shows that more liberal entry regulation has been accompanied by a generalised increase in size of more traditional stores.

<sup>18</sup> We have also experimented with ICT expenditure over sales, finding similar results, although the estimates are less precise.

10%). Going from the 25th to the 75th percentile of the PAFS distribution would decrease hours worked in large stores by around 5%.<sup>19</sup> Since the increase in hours worked in large stores might be associated to some general trend affecting employment (for instance, some general policy favouring 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 stores 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 and PAFS (Table 6, column [4]). Going from the 25th to the 75th percentile of the PAFS distribution would decrease the share of hours worked in large stores in total hours worked by 0.2%.

Also wages might be affected by entry regulation but, as for employment, the effects are ambiguous from a theoretical point of view. On one hand, more competition could lead to a reduction in wages, if workers share the rents deriving from market power; on the other, the increase in labour demand and the higher productivity that follows liberalisation could increase wages. Unfortunately, we do not have access to wages paid in the retail trade sector from 1998 to 2003. The 'Company Accounts System', however, includes data on labour costs, measured as total labour cost, net 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 25th to the 75th percentile of the PAFS distribution would increase large store labour costs by 1%. The evidence on labour costs suggests that employees might suffer from liberalisation 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.

#### 4. 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 hand, 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 liberalise entry if the sector is expected to earn large profits in the future (and vice versa): this would imply that the fixed-effects estimates

<sup>19</sup> 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.

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 1, 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 and 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 *et al.*, 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) analyses the electoral results of 2006 according to the voters' occupational status. He finds that self-employed and retailers voted massively for the centre-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 Centre South, with that of Lega Nord (LN), more present in the North. These two parties differ in some ideological aspects,<sup>20</sup> 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.<sup>21</sup> 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 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

<sup>20</sup> Lega Nord is in favour of federalism, whereas Alleanza Nazionale is a nationalist party.

<sup>21</sup> 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.

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) × Post99	0.091 (0.006)***	0.088 (0.017)***	0.090 (0.006)***	0.096 (0.015)***
Second stage				
PAFS × Post99	2.164 (1.273)*	3.914 (1.322)**	–1.147 (0.562)*	–4.151 (1.538)**
First stage statistics				
F-stat of excluded instruments	10.83	10.88	10.84	10.88
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
No. obs.	8,633	1,213	8,583	1,265

*Source and notes.* Authors' calculations. Istat data, *Company Accounts 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 parentheses. 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 F-statistic of excluded instruments and the Anderson-Rubin statistic for the hypothesis that the coefficient on PAFS is not significant correspond 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%.

parties of the extreme right is clearly conducive to more stringent regulation, with a highly significant coefficient. 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. 0.83) and in the restricted sample (3.91 vs. 1.64). The implied interquartile effects (moving from the 25th to the 75th percentile of the PAFS distribution) are 10% and 18% respectively. Also the coefficients of the productivity regressions are negative and significant, and increase in absolute value compared with the fixed-effects estimates (from –0.48 to –1.15 in the full sample and from –0.75 to –4.15 in the restricted one, with implied interquartile effects of –5% and –19%). 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, or very close to significance, at standard levels.

The IV analysis lines up with the findings of the previous Sections. Moreover, it indicates that, if anything, endogeneity would bias the estimates towards zero, a result in line with that of Bertrand and Kramarz (2002) for the French case. The larger IV estimates are consistent with measurement error in the PAFS measure. Moreover, they

also point to a specific channel of reverse causality: local politicians internalise 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 pressure. Finally, since the IV estimates are a local average treatment effect (LATE), the larger estimates might be due to treatment-effect heterogeneity: the impact of PAFS on profits and productivity might be larger in the provinces in which the regulation is more sensitive to voters' preferences.<sup>22</sup>

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.

## 5. Ruling out Alternative Explanations

We next address two alternative explanations of our results. First, we control for the possibility that entry barriers are correlated with the *growth* of profits or productivity; second, we check whether our liberalisation measure is proxying for some other, more general local policy.

### 5.1. *Checking for Differences in the Underlying Trends*

To control for the possibility that barriers are correlated with underlying trends, we repeat our regressions for the period before the introduction of the law, i.e. 1993–7. 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 1.2, 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 1993–7 in two, 1993–4 and 1995–7, and check for correlated differences in trends before the Bersani Law (i.e.  $D$  is equal to 1 for years from 1995 to 1997). Since we have only 19 regions and standard errors can be imprecisely estimated when the number of clusters is relatively small, standard errors are clustered by year and 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 in line with those in Table 5, although larger in absolute value. This might be due to the fact that the aggregation at the regional level reduces the extent of measurement error, that, as shown in the previous Section, might bias the estimates towards zero. Instead, for the

<sup>22</sup> See e.g. Angrist and Pischke (2009, ch. 4) for a general discussion.

Table 8

*Falsification 1: Correlation Between Profit Margins and Productivity in 1993–7 and PAFS at Level of Region*

	[1]	[2]	[3]	[4]
	Period 1993–7		Period 1998–2003	
	Profit Margins	Productivity	Profit Margins	Productivity
PAFS × Post94	−0.134 (0.273)	0.233 (0.891)		
PAFS × Post99			3.723 (1.738)**	−0.838 (0.516)*
No. Obs.	9,772	9,772	1,328	1,361
R <sup>2</sup>	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 1995–7. In models [3] and [4] PAFS is interacted with a dummy variable equal to 1 for years 2000–3. All regressions include year (5 for 1993–7, 6 for 1998–2003), region (19) and sub-sector (7) dummies. Standard errors adjusted for clustering at the region-year level in parentheses. \*\*\*Statistically significant at 1%; \*\* at 5%; \* at 10%. Significance levels based on a t-distribution with degrees of freedom equal to the number of clusters minus the number of regressors.

1993–7 period the entry barrier indicator is not significantly correlated either with profits or with productivity in the 'post' period, that is in the years 1995–7. 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.

## 5.2. Other Sectors

A second possibility is that our results are driven by some omitted variables capturing, for example, a more general attitude by 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 centres).

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
(a) Hotels and restaurants				
PAFS × Post99	0.442 (0.531)	−0.764 (0.860)	0.348 (0.385)	0.088 (0.747)
No. Obs.	5,347	1,042	4,640	1,176
R <sup>2</sup>	0.083	0.156	0.047	0.155
(b) Other low wage service sectors				
PAFS × Post99	0.075 (0.412)	0.154 (−0.849)	0.586 (0.449)	0.637 (0.874)
No. Obs.	12,356	1,855	8,497	2,381
R <sup>2</sup>	0.038	0.073	0.089	0.187

*Source and notes.* Authors' calculations. Istat data, *Company Accounts System*. Hotels and restaurants correspond to the ISIC 551–554 sectors and other low wage service sectors to ISIC 747–748 (cleaning, packaging, call centres). 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 2000–3. 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 parentheses. \*\*\*Statistically significant at 1%; \*\* at 5%; \* at 10%.

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. The estimates are very imprecise (never statistically significant) and do not point in any particular direction: in particular, they bear no resemblance to the Table 5 results. 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.

## 6. Conclusions

The lack of competition in the service sector has long been recognised as one of the structural weaknesses of the European economy (Nicoletti and Scarpetta, 2003). In this article, 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 labour 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 liberalisation policies by incumbents.

The available evidence for retail trade indicates that liberalisations are especially beneficial for low-income people: consumers enjoy lower prices (Griffith and Harmgart, 2008) and employment increases (Bertrand and 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 and Giavazzi, 2007). This indicates that the political economy aspects of the regulation are key to understanding how liberalisation should be pushed through the political agenda. This is what we plan to work on in the future.

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Additional Supporting Information may be found in the online version of this article:

**Appendix A.** Regional Regulations.

**Appendix B.** Data Details.

**Appendix C.** Robustness Checks.

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## References

- AGCM (2007). 'Qualità della e performance 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. and Prantl, S. (2009). 'The effects of entry on incumbent innovation and productivity', *Review of Economics and Statistics*, vol. 91(1), pp. 20–32.
- Alesina, A. and Giavazzi, F. (2007). *Il Liberismo è di Sinistra*, Milan: Il Saggiatore.
- Alesina, A., Ardagna, S. and Trebbi, F. (2006). 'Who adjusts and when? On the political economy of stabilizations', *IMF Staff Papers*, Mundell-Fleming Lecture, vol. 53, pp. 1–49.
- Alesina, A., Ardagna, S., Nicoletti, G. and Schiantarelli, F. (2005). 'Regulation and investment', *Journal of the European Economic Association*, vol. 3(4), pp. 791–825.
- Angrist, J.D. and Pischke, J. (2009). *Mostly Harmless Econometrics: An Empiricist's Companion*, Princeton: Princeton University Press.
- Baily, M. (1993). 'Competition, regulation, and efficiency in services industries', *Brooking Papers: Microeconomics*, vol. 2, pp. 71–130.
- Basker, E. (2005a). 'Job creation or destruction? Labor-market effects of Wal-Mart expansion', *Review of Economics and Statistics*, vol. 87(1), pp. 174–83.
- Basker, E. (2005b). 'Selling a cheaper mousetrap: Wal-Mart's effect on retail prices', *Journal of Urban Economics*, vol. 58(2), pp. 203–29.
- Basker, E. (2006). 'When good instruments go bad: a reply to Neumark, Zhang, and Ciccarella', University of Missouri Department of Economics Working Paper No. 07–06.
- Bertrand, M. and Kramarz, F. (2002). 'Does entry regulation hinder job creation? Evidence from the French retail industry', *Quarterly Journal of Economics*, vol. 117(4), pp. 1369–413.
- Besley, C. and Case, A. (2000). 'Unnatural experiments? Estimating the incidence of endogenous policies', *ECONOMIC JOURNAL*, vol. 110(467), pp. F672–94.

- 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'*, pp. 93–107, Bologna: Il Mulino.
- Bresnahan, T. and Reiss, P. (1991). 'Entry and competition in concentrated markets', *Journal of Political Economy*, vol. 99(5), pp. 977–1009.
- Djankov, S., La Porta, R., Lopez-de Silanes, F. and Shleifer, A. (2002). 'The regulation of entry', *Quarterly Journal of Economics*, vol. 117(1), pp. 1–36.
- Dube, A., Lester, T. W. and Eidlitz, 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 No. iirwps-126-05.
- Foster, L., Haltiwanger, J. and Krizan, C. (2002). 'The link between aggregate and micro productivity growth: evidence from retail trade', NBER Working Paper No. 9120.
- Gaiotti, E. and Lippi, F. (2004). 'Pricing behavior and the introduction of the euro: evidence from a panel of restaurants', *Giornale degli Economisti e Annali di Economia*, vol. 63(3–4), pp. 491–526.
- Gordon, R. (2004). 'Why was Europe left at the station when America's productivity locomotive departed?', NBER Working Paper No. 10661.
- Griffith, R. and Harmgart, H. (2008). 'Supermarkets and planning regulation', CEPR Discussion Paper No. 6713.
- Haskel, J. and Sadun, R. (2009). 'Regulation and UK retailing productivity: evidence from micro data', CEPR Discussion Paper No. 7140.
- Hausman, J. and Leibtag, E. (2005). 'Consumer benefits from increased competition in shopping outlets: measuring the effect of Wal-Mart', NBER Working Paper No. 11809.
- ISAE (2002). 'La liberalizzazione del commercio al dettaglio: una prima verifica', Rapporto Trimestrale ISAE.
- Jia, P. (2008). 'What happens when Wal-Mart comes to town: an empirical analysis of the discount industry', *Econometrica*, vol. 76(6), pp. 1263–316.
- Klapper, L., Laeven, L. and Rajan, R. (2006). 'Entry regulation as a barrier to entrepreneurship', *Journal of Financial Economics*, vol. 82(3), pp. 591–629.
- Leibenstein, H. (1966). 'Allocative vs. "X-Efficiency"', *American Economic Review*, vol. 56(3), pp. 392–415.
- Mayer, N. (1986). *La Boutique Contre La Gauche*, Paris: Press de la Fondation Nationale de Sciences Politiques.
- Neumark, D., Zhang, J. and Ciccarella, S. (2008). 'The effects of Wal-Mart on local labor markets', *Journal of Urban Economics*, vol. 63(2), pp. 405–30.
- Nicoletti, G. and Scarpetta, S. (2003). 'Regulation, productivity and growth: OECD evidence', *Economic Policy*, vol. 18(36), pp. 9–72.
- Pagano, P. and Schivardi, F. (2003). 'Firm size distribution and growth', *Scandinavian Journal of Economics*, vol. 105(2), pp. 255–74.
- Sadun, R. (2008). 'Does planning regulation protect independent retailers?', CEP Working Paper No. 888.
- Schaumans, C. and Verboven, F. (2008). 'Entry and regulation: evidence from health care professions', *RAND Journal of Economics*, vol. 39(4), pp. 949–72.
- Schivardi, F. and Torrini, R. (2008). 'Identifying the effects of firing restrictions through size-contingent differences in regulation', *Labour Economics*, vol. 15(3), pp. 482–511.
- van Ark, B., Inklaar, R. and McGuckin, R. (2002). 'Changing gear, productivity, ICT and services industries: Europe and the United States', Groningen Centre for Development and Growth, Research Memorandum No. GD-60.
- Viviano, E. (2008). 'Entry regulations and labor market outcomes: evidence from the Italian retail trade sector', *Labour Economics*, vol. 15(6), pp. 1200–22.