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The Effect of Trade Liberalization on Food Retail Structure and Food Price Levels in Italy: and Empirical Analysis

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Abstract

In the last two decades the Italian food retail landscape has changed considerably also thanks to the LD 114/1998 and subsequent trade liberalization laws. In this study, we investigate the impact of LD 114/1998 on the structure of the Italian food retailing industry and on the food and beverage price index. We use difference-in-difference to compare the level of concentration, number of stores, average store size and in-store services in regions enacting changes mandated by the LD 114/1998, versus those which did not; we also measure both the direct and indirect (through change in retail structure) policy effects on food price levels. Results show that, once the endogenous nature of policy changes is controlled for, the policy appears affecting more smaller than larger outlets, although facilitating consolidation across store formats. The effects on price levels seem mixed, varying in function of the structural metric considered, however showing no overall effect. Last, the effect of the liberalization seems to be more modest in regions where the level of liberalization implemented is “low”.

Keywords: Retail Structure, Trade Liberalization, CPI for Food

JEL Classification codes: L81 L22 L52

1. Introduction

In the last decades food retailing in developed countries has experienced rising concentration levels and industrial consolidation (e.g. Dobson and Waterson, 1999; Hewitt, 2000). Along with “traditional” barriers to entry and the push for larger sizes, needed to reach economies of size and to acquire bargaining power with respect to suppliers (Dobson 2005), additional barriers may be set in place by trade regulations (Boylaud and Nicoletti, 2001). In spite of the ongoing process of policy harmonization, among European Countries there are still considerable disparities with regard to the restrictiveness of trade regulations, in term of zoning laws, opening days and hours,¹ as well as other restrictions (Boylaud and Nicoletti, 2001; Viviano et al. 2012).

Until the last decade of the twentieth Century, Italy had an obsolete and rigid retail trade regulation, based on decades-old laws (Law 426/71, and the Commerce law of 1927), resulting in one of the most restrictive regulation among OECD members (Boylaud and Nicoletti, 2001). A strict and capillary control systems of supply and demand as well as administrative barriers (all retail establishment had to register to the “Registro Esercenti il Commercio” – REC - (Registry of retailers)) resulted in high barriers to entry and in artificial limitation in the number of retail stores operating in a local market. Given these restrictions, and the economic disparities among the Italian regions, the 2001 Census of Industry and Services (ISTAT, 2001) presented the Italian food retailing industry as highly fragmented. Food stores in the Northern Italian regions had an average selling area exceeding 1,200 square meters /1,000 residents, while the average store size

¹ Difference in shopping hours/days restrictions are particularly marked across European Countries. While Sweden has had unrestricted opening hours since 1972, countries, like Denmark, Germany and the Netherlands, more connected to specific interest groups, presented opening weekend and evening opening hours restrictions (Gradus, 1996). In Ireland, Sweden, Portugal and United Kingdom there are almost no legal restrictions on Sunday shopping (Dijkgraaf and Gradus, 2005).

in southern provinces, ranged between 620 and 750 square meters /1,000 residents. Such structural differences in food stores presence, resulting in potential access disparities for the population, were the outcome of consolidation at the local level and structural and macro-economic factors, including economic growth, income and infrastructures presence (Cozzi, 2008), as well as heavily polarized retail policies.

With the Law Decree N. 114, of 31 March 1998, also called “Bersani Decree”, after Minister Pier Luigi Bersani, Italy begun a process of liberalization which would continue through the following decades (Heimler, 2009). The LD 114/1998 (“Riforma della disciplina relativa al settore commercio” – Trade sector reform) did not propose a full liberalization, but instead the removal of competition constrains, and the replacement of barriers to entry with a set of rules to ensure fair access to market (for example abolishing the REC). Other changes implemented by the Decree were: administrative definition of supply and demand; introduction of a regional authorization for the opening of large surfaces; and partial liberalization of opening hours.²

Although the LD 114/1998 was an important step towards a less regulated retail industry, it was, per se only partially successful. The decree was criticized and ostracized by incumbent retailers and their lobbies, fearing that an increase in competition could lead to lower profits (Heimler, 2009). As a result, its implementation was dissimilar across regions (Viviano et al. 2012): regional governments where the pressure from retail interest groups was more marked, resisted the liberalization process, while others responded promptly modifying their regulation to embrace a more liberal approach. Some regions left their regulations *de facto* unchanged for almost a decade, until the law 248/2006 pushed further towards de-regulation.³

In spite of the importance of this law, only few economic analyses of its impact on the structure of retail trade (or in particular of food retailing) exist (see AGCM, 2007; Viviano et al, 2012), and no rigorous econometric treatment has been given to assess the extent to which it was successful in its goals. If LD 114/1998 in fact produced a push towards more liberalization, it may have had considerable effect on the structure of the retail industry and, as a result, on consumers’ welfare.

If the policy was effective in facilitating entry and increasing competitiveness, one should observe an increased number of stores across store formats. An increased number of stores should result, at least in principle, in an increased consumers welfare, as it would lead to more access (and variety) and more competitiveness. However, a larger number of stores may not necessarily result in more competition: if additional entry occurred from the same incumbents already present in the market, one may observe an increase in concentration; otherwise, if the decreased entry barriers favored entry of other incumbent retailers, concentration levels should decrease. As empirical evidence supports the existence of a positive relationship between concentration and retail price levels (Dobson and Waterson, 1997, 1999; Chen, 2003), one may expect that, if the DL 114/1998 resulted in consolidation, the price paid by consumers may have in fact increased. However, the expansion of large retail formats may lead to a reduction in price

² The LD 114/1998 allowed stores to be open for a maximum of 13 hours daily (in working days) and in between the hours of 7 am and 10 pm with additional restrictions (e.g. holiday closing) that could be exempt for municipalities with touristic denomination and allowed for a full liberalization of the opening of small shops up to 250 m².

³ A final push came with the implementation of the *Bolkestein* Directive 12/12/2006, 06/123/CE which was implemented with the LD n.59 26/3/2010.

levels across the board (see for a discussion, Basker 2005). Thus, the impact of the regulation on price level through concentration may differ depending upon the type of food stores considered.⁴

Additionally, with lower entry barriers one may expect store size also to change. On the one hand, larger stores may offer broader assortments and also lower prices thanks to scale efficiencies and to their ability of acquiring lower prices from their suppliers (Dobson 2005). On the other hand, with less trade restrictions and more entry, retailers may engage in other forms of competition, for example increasing the level of service provided to consumers; this, in turn, may result in higher prices (e.g. Cotterill, 1986; Bonanno and Lopez, 2009). Thus, the impact of the Bersani Decree on prices may be multifaceted.

In this paper we assess the impact of the LD 114/1998 on the structure of the Italian food retailing industry and on the Consumer Price Index for food and beverages. To that end, we use a difference-in-difference approach comparing province-level retail structure measures and price levels in regions enacting mandates consistent with the LD 114/1998, versus those that did not. The measures of retail structure used are the Herfindahl-Hirschman Index (HHI), the number of stores, average store size, and the level of service offered to consumers. Since timing and nature of the intervention was endogenously determined by each regional government we take into account the non-random nature of the *treatment* using a control function approach (Cameron and Trivedi, 2005) and a set of exogenous variable likely to affect both policy implementation and food retail structure. Such variables include socio-economic and macro-economic indicators as well as the electoral results of regional elections, capturing the political climate in each region. Furthermore, we allow the impact of the Bersani Decree to differ across regions, classified according to their level of liberalization, following the classification provided by the Italian Antitrust Authority (AGCM, 2007). Results show that, once the endogenous nature of policy changes is controlled for, the policy seems to have a heterogenous effect on the structure of the retail industry, conditionally on the type of outlets considered and on the level of liberalization, suggesting that some sub-industries were penalized while others benefitted from the policy. Also, the decree seems to have help the consumer to have access to larger sores and more in-store services. Last, our analysis suggests that, even though we find the policy to have indirect effects on food price levels through changes in retail structure, the implementation of the LD 114/1998 had no overall effect on CPI for food.

2. Empirical Approach, Data and Estimation

We consider a province as the (local) geographic market of interest. Assume there are K food-store formats in a province, indexed by $k = (1, \dots, K)$ and consider a measure y_{kpt} of market structure for the store-type k in province p ($p=1, \dots, P$) and year t ($t=1, \dots, T$). Let B_{pt} be an indicator variable capturing whether a province p belonged to a region having enacted, at time t , a law to conform with the requirements of LD 114/1998. From a timing perspective, the implementation of the Bersani Decree came in two waves: Friulia Venezia Giulia, Tuscany, Calabria and Aosta Valley enacted regional laws in 1999, while other regions except Sardinia (which enacted its first trade law in 2006) implemented it in 2000 (AGCM, 2007). Thus, one can isolate the effect of the law estimating:

⁴ Similarly, Ciapanna and Colonna (2011) found that retail concentration and price levels in Italy to be positively correlated when looking at concentration at the parental group and at the store level, whereas a negative relationship exists when concentration is measured at the buying group level.

$$(1) \quad y_{pt}^k = \alpha_0^k + \alpha_B^k B_{pt} + \sum_1^T \beta_t^T D_t + \sum_1^P \beta_p^F F_p + \varepsilon_{pt}^k$$

where the average effect of the law is captured by the parameter α_B ; the indicator variables D_t and F_p , are time and area fixed effects, respectively, which account for structural and economic differences across markets and years through the β parameters, and ε_{kpt} is a mean zero error term, correlated across store formats in the same area or $Corr(\varepsilon_{kpt}, \varepsilon_{-kpt}) \neq 0$.

If a regional government implementation of the LD 114/1998 was a random process, the system of K equations exemplified in (1) – for each market structure measure y_{kpt} – could be estimated via Similar Unrelated Regression (SUR). However, Italian regions decided autonomously when (and how) implementing regulatory changes in response to the Bersani Decree, results in the group of “treated” regions, being non-randomly assigned over time. Thus, considering LD 114/1998 as a natural experiment, and the use of a Difference-In-Difference approach, will be inappropriate (Cameron and Trivedi, 2005). In other words, as unobserved factors affecting retail structure may also impact policy adoption, one will likely have biased estimates of α_B since $E(B_{pt}\varepsilon_{kpt}) \neq 0$.

Assume we observe a vector of socio- and macro-economic variables (X) and one of variables capturing the political preferences/climate in a given area (Z), both likely to affect the (local) structure of the food retailing industry as well as policy implementation. Assume that the error term in (1) takes the form $\varepsilon_{pt}^k = \sum_1^L \gamma_l X_{lpt} + \sum_1^N \delta_n Z_{npt} + u_{pt}^k$ where $E(B_{pt}u_{pt}^k) = 0$. Thus, we have

$$(2a) \quad y_{pt}^k = \alpha_0^k + \alpha_B^k B_{pt} + \sum_1^T \beta_t^T D_t + \sum_1^P \beta_p^F F_p + \sum_1^L \gamma_l X_{lpt} + \sum_1^N \delta_n Z_{npt} + u_{pt}^k$$

Assuming weak exogeneity of the vectors X and Z , $E(B_{pt}u_{pt}^k) = 0$ and $orr(u_{pt}^k, u_{pt}^{-k}) \neq 0$, one can obtain unbiased estimates of the system of equation (2a) via SUR. This method, referred to as the “control function”⁵ approach, allows to “expunge” part of the correlation between the treatment variable and the error term ε_{kpt} (Cameron and Trivedi, 2005; pg 869).

Even if we can properly identify the effect of LD 114/1998, using the approach illustrated above, obtaining an estimate of the average treatment effect (i.e. the parameter α_B^k) may not be economically meaningful as the Italian regions adjusted to the policy differently (see Appendix D in Viviano et al. 2012). To remediate to this limitation one can group the Italian regions according to their rankings in terms of level of liberalization, as indicated by the Italian Antitrust Authority (Autorità Garante della Concorrenza e del Mercato – AGCM, 2007) and assess the impact of the Bersani Decree on regions showing different levels of liberalization. According to the criteria adopted by the AGCM,⁶ the Italian regions can be divided into those with a high-level

⁵ See Heckman and Hotz (1989) and Besley and Case (2000) for a discussion of the control function as well as other methods and criteria to evaluate the impact of a policy when the conditions of a natural experiment do not subsist.

⁶ The nine metrics considered were: supply planning or restrictions to restrain stores presence in the territory; Zoning laws and urban planning; Extraordinary sales’ discipline; Opening days and hours; Excessive bureaucracy; Restriction (or suspension) of the release of licenses for proximity stores; Determination of touristic municipalities exempt to the mandates of store closing

of liberalization (*H*): Piedmont, Aosta Valley, Lombardy, Emilia-Romagna, Marche, Campania and Molise; medium-level of liberalization (*M*): Veneto, Tuscany, Abruzzo, Calabria and Basilicata; and a low level of liberalization (*L*): Liguria, Friuli Venezia Giulia, Trentino Alto Adige, Umbria, Lazio, Apulia and Sicily. Thus, allowing the impact of the Bersani Decree to vary for these three groups of regions one has:

$$(2b) \quad y_{pt}^k = \alpha_0^k + B_{pt} \sum_1^M \alpha_{Bm}^k R_m + \sum_1^T \beta_t^T D_t + \sum_1^P \beta_p^F F_p + \sum_1^L \gamma_l X_{lpt} + \sum_1^N \delta_n Z_{npt} + u_{pt}^k$$

Where R_m is an indicator variable capturing the group of regions region $m=\{H,M,L\}$ and each α_{Bm} captures the effect of the Bersani Decree for all the provinces in regions with High, Medium and Low liberalization on the k -th store format type.

In order to assess whether the LD 114/1998 resulted in a containment of retail food prices, we specify the following equations:

$$(3a) \quad CPI_{pt} = \lambda_0 + \lambda_B B_{pt} + \sum_1^K \theta_k y_{pt}^k + \sum_1^T \lambda_t^T D_t + \sum_1^P \lambda_p^F F_p + \epsilon_{pt}$$

$$(3b) \quad CPI_{pt} = \alpha_0 + B_{pt} \sum_1^M \lambda_{Bm} R_m + \sum_1^K \theta_k y_{pt}^k + \sum_1^T \lambda_t^T D_t + \sum_1^P \lambda_p^F F_p + \epsilon_{pt}$$

Combining the estimated coefficients of equations (2a) with those of (3a), the average effect of the trade liberalization on CPI can be calculated as follows:

$$(4a) \quad \frac{\partial CPI_{pt}}{\partial B_{pt}} = \frac{\partial CPI_{pt}}{\partial B_{pt}} + \sum_1^K \frac{\partial CPI_{pt}}{\partial y_{pt}^k} \frac{\partial y_{pt}^k}{\partial B_{pt}} = \lambda_B + \sum_1^K \alpha_B^k \theta_k$$

A similar expression can be obtained combining the coefficients of equations 2b and 3b, to measure the effects of the Bersani Decree on price levels conditional on the different levels of liberalization. The systems of equation 2a (2b) and equation 3a (3b) are estimated jointly using a Three Stage Least Squares estimator (3SLS)

Retail and CPI Data

The main database used in the analysis, comes from Nielsen and it contains yearly location records (at the province-level)⁷ of every food retail store operating in Italy from 1990 to 2012, by banner and store format (hypermarket, supermarket, discount stores and superette). The information available also includes total selling area in square meters, number of scales, checkouts, horizontal and vertical meters of refrigerator and deli counters. Given the focus of this analysis, our sample covers only the period 1996-2007 (included) for a total of twelve years

during Sundays, holidays and rest days; the simplification of burdensome regional regulations; the possibility to perform both wholesale and retail trade.

⁷ The data are disaggregated at the province level for a total of 110 provinces which belongs to 20 regions and four different geographical areas (North-West, North-East, Center and Sardinia, South and Sicily).

of data. The decision to exclude data prior to 1996 was made due to limitation on CPI data availability while the more recent years were excluded because of our inability to properly identify the effects of Law 248/2006 from those of the financial crisis which started two years after. After eliminating banners exiting the market, the data was aggregated at the province-year-format level obtaining, for each of the format, a balanced panel.

We computed a proxy of the Herfindahl–Hirschman Index (HHI) of industrial concentration for each of the four store formats in our data by treating selling area as a proxy for retailing output of each firm. Let s_{ik} be a proxy for the market share of food retail firm i in store format k , defined as $s_{ik} = \frac{\sum_j SM_{jik}}{\sum_i \sum_j SM_{jik}}$ where SM_{ijk} is the selling area, in square meters of store j , belonging to firm i , of store type k . Thus, the proxy for HHI_k is $HHI_k = \sum_{i,k} s_{ik}^2$. If the liberalization resulted in ease of entry, one should see the number of establishment to increase in each one of the market considered.

Other measures related to market structure, are the number of stores per province and the average size of store, which constitute proxies for the additional level of access to food provided to consumers. Also, in order to assess whether the liberalization process resulted in an increase of services and convenience to consumers, we combined the number of checkouts, scales and meters of deli and refrigerators (vertical and horizontal) in a Service Index varying from 0 (capturing the province-year pair presenting the lowest level of these five variables) to 100 (province-year pair with the highest level) using Principal Component Factor Analysis, as in Bonanno and Lopez (2009). Table 1 shows the descriptive statistics of the different retail structure metrics.

Table 1. Sample Statistics of Food Retail Store Metrics by Store Format (N=926)

Variable	Mean	sd	Min	Max
<i>Discount</i>				
Number	29.40	31.09	0.00	291.00
Herfindahl index	0.27	0.12	0.00	1.00
Average selling area (sq.m)	476.99	91.58	0.00	2000.00
Service Index	39.41	9.93	0.00	97.28
<i>Hypermarkets</i>				
Number	5.51	7.41	0.00	72.00
Herfindahl index	0.48	0.31	0.00	1.00
Average selling area (sq.m)	4425.41	1961.27	0.00	14476.00
Service Index	37.61	15.81	0.00	100.00
<i>Superette</i>				
Number	61.01	53.93	7.00	344.00
Herfindahl index	0.21	0.07	0.08	0.56
Average selling area (sq.m)	282.76	17.39	232.53	348.11
Service Index	51.90	6.24	34.27	74.43
<i>Supermarkets</i>				
Number	74.23	69.04	7.00	563.00
Herfindahl index	0.19	0.07	0.08	0.60
Average selling area (sq.m)	807.04	118.88	519.17	1172.69
Service Index	59.59	11.44	33.02	99.79

Source: Our elaboration on Nielsen data

The CPI data used was the province-level “Food products and alcoholic beverages” category, collected from the Italian National Institute of Statistics (ISTAT) website, and encompassing food purchases for households with dependent employment (base 1995=100), available from 1996 onwards.

Province-level controls

As indicated above, two sets of variables are included in the systems (2a) and (2b) to help identifying the impact of the Bersani Decree on food retail structure. In the first place, consistent with entry literature and literature on the structure of the supermarket industry (e.g. Berry 1992, Bresnahan and Reiss 1991, Ellickson, 2006, 2007; Jia 2008) we include measures of market size and market growth (from population data retrieved from ISTAT “Noi Italia”). As disparities in food retail diffusion in Italy indicates that stores tend to locate in areas with better macro-economic conditions (Beltramini and Taylor 1993; Cozzi 2008) we also included unemployment rate and per-capita income. Last, as presence of infrastructure and absence of crime rate are important determinants of store location (the former particularly for supermarkets and hypermarkets) we included the length of highways (in Km) and crime rate (mugging and street robberies). All the data is retrieved from the Italian Institute of Statistics (ISTAT).

We also control for differences in political preferences across regions, as they may capture different attitudes towards liberalization which may, in turn, impact how different Italian regions implemented LD 114/1998. To this end, we collected data on the results of regional elections which took place during the period of our data (1995, 2000, 2001, 2005 and 2006) by provincial voting district from the Italian Ministry of Internal Affairs (*Ministero dell’Interno*). In particular, we collected the number of seats assigned to each major political party belonging to a left wing or a right wing coalition, as well as the share of seats earned by the “green”, federalist parties and “other” parties. For Sicily, Sardinia and Trentino Alto Adige, this information was collected from regional governments’ websites. Since not all regions held elections in the same year, we also included an indicator variable indicating every election year for a given region in order to capture changes in attitude toward policy implementation likely to occur during an election year.⁸

The systems of equations 2a and 3a, and 3a and 3b are estimated in using 3SLS in STATA v 13.

3. Empirical Results

Table 2 contains the estimated parameters capturing the effect of the Bersani Decree (that is, α_B^k) for equations (2a) – top panel - and the effect of retail structure as well as the Bersani Decree (3a) – bottom panel; in table 2, HHI is the food retail metric of interest. The model was estimated via SUR, without (first column) and with (second column) the inclusion of the control function variables, and via 3SLS (third column).⁹ Complete results, omitted for brevity are available upon request to the corresponding author. The results in the top panel show how, without correcting for the potential endogeneity of the policy adoption, its effect on HHI is would be considerably biased. Also, the results in the bottom panel (equation 3a) show that, without

⁸ The intuition behind using this variable is similar to Levitt’s (1997), who used election cycles as an instrument for the size of the police force, in attempting to assess the impact of police presence on crime rates.

⁹ Detailed model performance statistics are omitted for brevity: however, it is worth mentioning that the econometric specification used seems to fit the data well. All the R^2 corresponding to the equations whose results are reported in tables 2, 3 and 4 approach, or are greater than 0.5.

considering for the endogeneity of food retail structure measure, one would find a modest impact of the HHIs on the CPI for food; furthermore, the direct effect of the policy on food and beverage price levels appears not statistically significant. When the system is estimated via 3SLS, and we allow for the effect of the Bersani Decree to impact price levels indirectly through changes in retail structure, we find that an increase in concentration of Discount stores may lead to lower prices, while the impact of the policy through channels other than retail structure will lead to an increase in price levels by 3 points (on average).¹⁰

Table 2: Estimated Coefficients: Equation (2a) and (3a); Retail structure metric is HH; different estimators

	SUR		SUR (Control function)		3SLS (Control Function)	
System (2a) Estimated α_B^k						
Discount	0.0518	**	0.0694	***	0.0741	***
	(0.0220)		(0.0225)		(0.0222)	
Hypermarket	0.0544		0.0249		0.0238	
	(0.0668)		(0.0676)		(0.0676)	
Superette	0.0178	*	0.0245	**	0.0239	**
	(0.0109)		(0.0111)		(0.0111)	
Supermarket	0.0112		0.0131		0.0128	
	(0.0087)		(0.0090)		(0.0089)	
Equation (3a)						
	Estimated Coefficients					
$HHI^{Discount}$	2.5433	*	1.2066		-42.6781	***
	(1.4362)		(1.4362)		(13.3113)	
$HHI^{Hypermarket}$	0.0627		0.0673		1.0342	
	(0.4732)		(0.4733)		(3.2703)	
$HHI^{Superette}$	-5.6788	*	-6.7839	**	1.1954	
	(2.9333)		(2.9347)		(26.7130)	
$HHI^{Supermarket}$	2.5007		2.6604		18.3385	
	(3.6537)		(3.6554)		(41.8977)	
B	1.0070		1.0943		2.9954	*
	(0.9624)		(0.9629)		(1.6126)	

Note: Standard errors in parentheses; * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

The estimated effects of DL 114/1998 on all retail structure variables, estimated using a control function approach are reported in the top panel of Table 3. The results show that the store format less impacted by the Bersani Decree were hypermarkets, for which we observe only a small positive effect on the service indicator. We find both the Discount stores and Superettes formats to have become more consolidated. While Discount stores numbers do not seem to be affected by the Bersani Decree in a statistically significant way, smaller stores are likely to have been replaced by larger ones, as the HHI increase is accompanied by an increase in average selling area of 71.6 square meters per store. The process of consolidation for smaller stores is more marked: HHI increases, the number of stores decreases by 22.8 per province, due to the policy and province, and the stores become slightly larger (+8.6 or circa 3%). As supermarkets,

¹⁰ In most cases, the coefficients for both sets of controls (macroeconomics and demographic controls and political preference controls) are jointly significant, indicating that they constitute relevant variables to be controlled for in equations 2a and 2b. We omit their discussion for brevity; full sets of results are available upon request.

the only statistically significant effect is that of a reduction in store numbers (-12 circa or 16% compared to the sample average).

Table 3: Estimated impact of the Bersani Decree on food retail structure (top panel) and of food retail structure on food price levels (Bottom panel). DID coefficients with control function(3SLS)

	HHI		Number Stores		Average selling area		Service index
System (2a)							
Discount	0.074 (0.022)	***	-0.355 (2.049)		71.617 (20.665)	***	2.371 (1.751)
Hypermarket	0.024 (0.068)		-0.737 (0.583)		151.869 (318.795)		4.621 * (2.806)
Superette	0.024 (0.011)	**	-22.756 (3.649)	***	8.608 (3.426)	**	2.276 * (1.208)
Supermarket	0.013 (0.009)		-11.923 (2.907)	***	-21.335 (17.022)		-0.375 (1.407)
Equation (3a)							
$y^{Discount}$	-42.678 (13.311)	***	0.030 (0.046)		-0.011 (0.017)		0.073 (0.106)
$y^{Hypermarket}$	1.034 (3.270)		0.313 (0.275)		0.000 (0.001)		-0.044 (0.042)
$y^{Superette}$	1.195 (26.713)		0.158 (0.034)	***	-0.163 (0.069)	**	-0.392 (0.256)
$y^{Supermarket}$	18.339 (41.898)		-0.077 (0.070)		-0.050 (0.035)		0.175 (0.119)
B	2.995 (1.613)	*	2.808 (1.104)	**	1.128 (1.760)		1.698 (1.170)
$\frac{\partial CPI_{pt}}{\partial y_{pt}^k} \frac{\partial y_{pt}^k}{\partial B_{pt}}$							
$y^{Discount}$	-3.163 (1.309)	**	-0.011 (0.063)		-0.779 (1.263)		0.172 (0.282)
$y^{Hypermarket}$	0.025 (0.105)		-0.231 (0.269)		-0.036 (0.112)		-0.201 (0.230)
$y^{Superette}$	0.029 (0.639)		-3.595 (0.933)	***	-1.403 (0.790)	*	-0.891 (0.729)
$y^{Supermarket}$	0.234 (0.558)		0.913 (0.863)		1.074 (1.141)		-0.065 (0.250)
$\sum_1^K \alpha_B^k \theta_k$			-2.923 (0.784)	***	-1.144 (1.525)		-0.986 (0.777)
$\lambda_B + \sum_1^K \alpha_B^k \theta_k$			-0.115 (0.972)		-0.016 (0.981)		0.713 (1.001)

Note: Standard errors in parentheses; * p<0.10, ** p<0.05, *** p<0.01

The middle panel of table 3 reports the estimated effects of retail structure and the average *direct* effects of LD 114/1998 on CPI for food and beverages. The results show only a limited effect of food retail structure on food price levels: a more concentrated discount store sub-industry seems to be associated with lower price levels, while the presence of a higher number – and smaller sized – superettes (perhaps less efficient) leads to high price levels.

Table 3: Estimated impact of the Bersani Decree on food retail structure by store formats in regions with low, medium and high level of liberalization (top panel) and effect of food retail structure on food price levels (Bottom panel). DID coefficients with control function (3SLS)

	Liberalization Level	HHI		Number of Stores		Average Selling area		Service Index	
Discount	Low	0.062 (0.024)	***	4.430 (2.142)	**	71.256 (22.096)	***	1.874 (1.871)	
	Medium	0.089 (0.024)	***	-2.229 (2.142)		73.113 (22.092)	***	2.561 (1.872)	
	High	0.076 (0.023)	***	-4.074 (2.122)	*	71.001 (21.872)	***	2.759 (1.854)	
Hypermarket	Low	0.066 (0.072)		-0.698 (0.622)		265.580 (340.316)		9.174 (2.972)	***
	Medium	0.005 (0.072)		-0.980 (0.622)		-53.956 (340.328)		1.958 (2.973)	
	High	-0.005 (0.071)		-0.566 (0.616)		208.703 (337.058)		2.032 (2.946)	
Superette	Low	0.011 (0.012)		-25.265 (3.869)	***	9.490 (3.659)	***	2.960 (1.281)	**
	Medium	0.030 (0.012)	**	-25.188 (3.865)	***	10.081 (3.656)	***	2.654 (1.287)	**
	High	0.033 (0.012)	***	-17.783 (3.827)	***	6.334 (3.616)	*	1.163 (1.277)	
Supermarket	Low	0.007 (0.010)		-10.220 (3.090)	***	-4.442 (18.160)		0.253 (1.504)	
	Medium	0.018 (0.010)	*	-15.500 (3.090)	***	-35.579 (18.113)	**	-0.211 (1.504)	
	High	0.014 (0.009)		-10.656 (3.061)	***	-26.979 (17.864)		-0.825 (1.490)	
Equation (3b)									
	$y^{Discount}$	-43.846 (15.036)	***	0.025 (0.049)		-0.012 (0.017)		0.111 (0.111)	
	$y^{Hypermarket}$	0.446 (3.358)		0.343 (0.277)		0.000 (0.001)		-0.065 (0.046)	
	$y^{Superette}$	9.306 (27.456)		0.156 (0.033)	***	-0.152 (0.070)	**	-0.546 (0.289)	**
	$y^{Supermarket}$	30.404 (42.646)		-0.078 (0.070)		-0.052 (0.030)	*	0.119 (0.136)	
Bersani	Low	2.382 (1.639)		2.949 (1.187)	**	1.887 (1.813)		2.531 (1.397)	*
	Medium	3.070 (2.030)		2.763 (1.208)	**	0.359 (2.020)		1.480 (1.397)	
	High	3.047 (1.829)	*	2.593 (1.144)	**	0.788 (1.795)		1.261 (1.333)	

Note: Standard errors in parentheses; * p<0.10, ** p<0.05, *** p<0.01

Interestingly enough the ceteris paribus effect of the trade liberalization policy, seems to indicate the LD to be associated with higher price levels. The indirect effects of retail structure changes due to the LD Bersani on food prices are reported in the bottom panel of table 3, and calculated using equation 4a. As we find an increase in concentration of the discount store format and a decrease in number of superettes, as well as their increase in size, we also observe, in most cases, that changes in retail structure triggered by the trade liberalization law has resulted in a

containment of food prices. However, when the overall effect of all of the retail structure metrics is taken into account, we find no evidence of a food price lowering effect due to the policy.

The estimated parameters resulting from the joint estimation of (3b) and (4b) for all the retail structure metrics considered are presented in table 4. The results show that the average effects presented in Table 3 mask some differences across regions and store formats regarding the impact of the policy. We focus on the results in the top panel first, depicting the effect of the policy on food retail structure. In the case of discount stores, we find an across the board increases in concentration due to the LD 114/2006, although more marked in regions with higher liberalization. With respect to the number of stores, we find that while regions with low liberalization saw an increased presence of these outlets, for areas with high liberalization we observe a similar numerical increase (circa 4 units). Thus, it appears that regions that embraced more thoroughly the change in regulation did not favour the expansion of this store format.

As for superettes, we find a statistically significant increase in concentration for regions characterized by medium and high liberalization levels. As we observe a less marked decline in number of stores in the high liberalization regions than in others (-17.8 vs. -25.2 circa), and a smaller increase in store size (10 square meters per stores in medium liberalization regions, 6.3 in high ones) in medium liberalization regions, the increase in concentration is likely to have occurred at the expenses of small storeowners. As the stores grow larger in the low and medium liberalization regions than in high liberalization ones, consumers seem to benefit from more services in these areas. For supermarkets, we observe only a small increase in concentration in medium liberalization regions, where we also observe a larger decline in number of stores and average selling area. In all cases, the number of these stores seems to have declined because of the policy. Last, for the large part, the Bersani Decree did not have a statistically significant effect on supermarkets across levels of liberalization.

The bottom panels of table 4 present the estimated parameters of equation 3b. The estimated parameters for the effect of food retail structure on price levels are remarkably similar to those illustrated in table 3, with the exception of the average supermarket store size now impacting price levels in a negative and statistically significant way (albeit at the 10% level). The direct impacts of Bersani Decree are also similar to those discussed above.

Table 5 presents the estimated marginal effects of the LD 114/1998 on CPI for food and beverages across liberalization levels and store formats. The most interesting features of this result is that, across regions with different levels of liberalization, the estimated effects of the policy on price levels are remarkably similar and do not differ considerably from those reported in Table 3. Thus, the Bersani Decree did not seem to have an effect on the levels of prices for food and beverages – a result which is robust to the level of liberalization adopted.

4. Discussion and Conclusions

With the Law Decree N. 114, of 31 March 1998, also called “Bersani Decree”, Italy begun a process of trade liberalization, still ongoing today. However, the Decree was received with resistance by some regional authorities which wanted to maintain the status quo and favour retail lobbies. In this paper, we investigate the effect of the LD 114/1998 on the structure of Italian

Food retailing and on the Consumer Price Index for food and beverages. To achieve that we used twelve years of province-level data on food stores location and characteristics and a difference-in-difference approach, accounting for cross equation correlation and process simultaneity, as well as correcting the endogenous policy adoption process. Given the different levels at which trade policies have been enacted by the different regional authorities, we assess those effects across regions classified according to their level of liberalization.

Table 4. Indirect effects of the Bersani Decree on food and beverage CPI by store formats in regions with low, medium and high level of liberalization.

Liberalization Level		HHI		Number Stores		Average selling area		Service index
Low	$y^{Discount}$	-2.718	**	0.110		-0.828		0.208
		(1.296)		(0.224)		(1.224)		(0.294)
	$y^{Hypermarket}$	0.029		-0.240		-0.063		-0.593
		(0.223)		(0.285)		(0.167)		(0.458)
	$y^{Superette}$	0.100		-3.952	***	-1.440	*	-1.616
	(0.314)		(1.000)		(0.839)		(1.063)	
	$y^{Supermarket}$	0.212		0.802		0.232		0.030
		(0.416)		(0.752)		(0.963)		(0.182)
	$\sum_1^K \alpha_B^k \theta_k$			-3.281	***	-2.099		-1.971 *
				(0.875)		(1.578)		(1.173)
	$\lambda_B + \sum_1^K \alpha_B^k \theta_k$			-0.332		-0.213		0.560
				(1.042)		(1.061)		(1.099)
Medium	$y^{Discount}$	-3.920	**	-0.055		-0.850		0.284
		(1.659)		(0.122)		(1.258)		(0.353)
	$y^{Hypermarket}$	0.002		-0.337		0.013		-0.126
		(0.037)		(0.342)		(0.086)		(0.212)
	$y^{Superette}$	0.277		-3.940	***	-1.529	*	-1.449
	(0.825)		(1.016)		(0.876)		(1.007)	
	$y^{Supermarket}$	0.544		1.216		1.857		-0.025
		(0.814)		(1.106)		(1.402)		(0.181)
	$\sum_1^K \alpha_B^k \theta_k$	-3.096	*	-3.116	***	-0.509		-1.317
		(1.791)		(0.843)		(1.783)		(1.005)
	$\lambda_B + \sum_1^K \alpha_B^k \theta_k$	-0.026		-0.353		-0.151		0.163
		(1.048)		(1.031)		(1.040)		(1.062)
High	$y^{Discount}$	-3.328	**	-0.101		-0.825		0.306
		(1.469)		(0.207)		(1.219)		(0.368)
	$y^{Hypermarket}$	-0.002		-0.194		-0.050		-0.131
		(0.036)		(0.259)		(0.139)		(0.211)
	$y^{Superette}$	0.303		-2.782	***	-0.961		-0.635
	(0.899)		(0.827)		(0.689)		(0.749)	
	$y^{Supermarket}$	0.420		0.836		1.408		-0.098
		(0.651)		(0.780)		(1.226)		(0.210)
	$\sum_1^K \alpha_B^k \theta_k$	-2.608	*	-2.241	***	-0.428		-0.559
		(1.586)		(0.706)		(1.565)		(0.837)
	$\lambda_B + \sum_1^K \alpha_B^k \theta_k$	0.439		0.352		0.360		0.703
		(1.030)		(1.020)		(1.024)		(1.055)

Note: Standard errors in parentheses; * p<0.10, ** p<0.05, *** p<0.01

Across model specifications, store formats, and estimation method, we do not find the LD 114/1998 to have resulted in an increased number of food outlets. If more entry occurred, it was counterbalanced by the exit of more, in all likelihood smaller (as we find in most cases a statistically significant, positive effect on store size) stores. We also observe, for some store formats, an increase in concentration, indicating that, instead of having new entrants, the policy is likely to have resulted in incumbent companies increasing their number of stores. Superettes appeared as the store format affected the most by the policy, while the impact on hypermarkets was minimal. This seems in line with Viviano et al. (2012) who state that all regional laws ratifying the directives of the Bersani Decree, still contained constraints for the expansion of large retail structure, justified by the objectives of maintaining a balanced development across the stores formats.

We also find that price levels for food and beverages were substantially unaffected by the policy. Even though consumers may have benefitted from larger stores (likely to result in more assortment and higher welfare) and, in part from an increased level of service, we find no evidence that the policy resulted in lower price levels.

This study is the first measuring the effect of the Bersani decree using an econometric approach; further analysis is needed to understand the different potential impacts of the law. For instance, a structural econometric model could attempt to capture entry and exit dynamics which seem to drive some of our findings. Furthermore using actual retail price data in place of CPI for food could be more suitable to disentangle more nuanced effects of the policy on consumers' prices and lead to a proper measurement of the policy welfare effects.

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