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EVALUATING THE IMPACT OF SUNDAY TRADING DEREGULATION[1]

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Abstract

1.   During the past few decades a number of European countries lifted the regulations that restricted the opening hours of shops on Sunday. In this paper we examine the impact of Sunday trade deregulation on employment, turnover, prices and market concentration utilising a difference-in-difference empirical framework and using data from 30 European countries over the period 1999-2011. We find robust evidence of significant positive impact of Sunday trading deregulation on employment. Turnover also increases, but not for all retail product categories. We find no evidence of a significant impact on prices. Our findings have important policy implications, particularly for governments that try to combat high unemployment in the aftermath of the economic crisis.

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1.   Introduction

2.   Over the last two decades many OECD countries have recurrently debated the laws and regulations concerning retail opening hours and in particular Sunday opening. As a result of this debate many legal restrictions on opening hours have been relaxed, but still Sunday trading regulation varies widely across European countries. For example, in Sweden opening hours have been unrestricted for all stores since 1972, whereas in Germany it varies across parts of the country, as in 2006-07 the responsibility for opening hours was transferred from the federal to the state governments and many states have deregulated Sunday trading. In France, although Sunday opening is generally not allowed, there are many exceptions as around 500 cities are declared as tourist towns and have been fully deregulated since 2009, while in Norway shops are not allowed to open on Sundays. Given this mixed picture across countries our aim in this paper is to investigate the European experience of the impact of Sunday trading deregulation.

3.   Different groups have defended the existing laws for a variety of reasons. Religious organisations have sought to protect Sunday as a day of rest and spiritual pursuit. Labour unions defend these laws believing that it protects workers from working overtime, especially in societies with weak labour enforcement mechanisms, such as Greece. Small and independent retailers generally support the regulations in order to insulate themselves from competition on the basis of opening hours from larger, more efficient retailers. Finally, many people see merit in the idea of a common rest day, as it is evidently desirable to coordinate leisure with friends and family, believing that many positive externalities can arise from enjoying free time collectively.

4.   However, restricting Sunday trading also leads to various efficiency costs imposed on consumers, retail businesses and employees. Restricting trading hours impinges on consumer choice regarding when to shop, allows them less time to compare products and search for the best price and raises the opportunity cost of shopping time. Moreover, by narrowing the range of time available for shopping, it also forces consumers to shop concurrently leading to high congestion costs.

5.   Restricting Sunday trading also imposes efficiency costs on retail businesses as it does not allow them to fully utilise their capital investments. Moreover, by not being able to open on Sunday, retail shops may lose sales to other businesses that are allowed to operate on that day, such as cafes, restaurants and cinema theatres. Being able to operate on Sundays essentially provides businesses with an extra differentiation tool and allows them to match much better the preferences and consumption patterns of their customers.

6.   Finally, regulations restricting trading hours impose significant costs on some retail employees compared to others. Mandatory shop closure during Sundays is a disadvantage to those workers willing to fill non-traditional working hours, such as students or part-time workers (with women representing the largest fraction of those), while protecting those workers who are averse to work in such hours. This observation is far from meaningless at a time when youth unemployment is at historical highs across Europe, while in addition women labour force participation has been very low in many countries.

7.   Therefore, regulating Sunday trading requires careful balancing between social externalities and religious values on the one hand and the costs imposed to consumers, businesses and potential employees on the other.

8.   During the last two decades many European countries have deregulated Sunday trading. However, there is no systematic cross country evidence on the impact of these changes, only country case studies. We try to fill this gap by analysing the impact of deregulation in a difference-in-difference empirical framework using data from 30 European countries on retail prices, expenditure, employment and concentration over the period 1999-2011.

9.   Our results suggest that deregulation of Sunday trade has a significant impact on employment, stemming both from new market entries and from job creation in existing firms. Turnover also increases as a result of deregulation, but not for all retail goods. Despite higher employment and hence higher labour costs, we find no significant impact on prices, which can be partly explained by the positive impact of deregulation on the number of firms competing in the market.

10.   The rest of the paper is organised as follows. In Section 2, we review the theoretical and empirical literature that examines Sunday trading deregulation. Section 3 presents our empirical methodology, while Section 4 describes our data. Section 5 discusses the empirical results and discusses their implications. Section 6 concludes.

2.   Literature review

11.   The economic literature on Sunday opening focuses on four key issues: employment, prices, sales and market concentration.[4] We analyse each in turn.

2.1   *Employment effect*

12.   The effect of deregulating trading hours on the level of employment is theoretically ambiguous. On the one hand, employment is expected to increase for those retailers that will open on Sunday. On the other hand, the increased competition due to Sunday opening may force some retailers to exit the industry and as a result employment may fall. The net effect will depend on the relative magnitude of these two effects.

13.   The empirical literature provides strong and unambiguous evidence that lifting Sunday trading restrictions will increase employment. A study by the Civil Department (1991) in Sweden (reported in Pilat, 1997) found that deregulating opening hours increased employment by 1.5%. Gradus (1996) estimates a model of retail behaviour for the Netherlands and simulates the employment impact of deregulating store opening hours using evidence from the Swedish experience. Employment goes up mainly because of an increase in employed persons (rather than an increase in hours worked by existing employees). However, the magnitude of this effect depends on the average number of additional shopping hours as a consequence of deregulation.

14.   Burda and Weil (2005) studying Sunday trading restrictions (or blue laws as they are known in the USA), using a panel of states in the USA and individual data from the US Current Population Survey between 1969 and 1993, find that American blue laws reduce employment within the retail sector by 4.2%, which mainly comes at the cost of part-time employment. In a similar vein, Goos (2004) examines the same American Sunday trading restrictions using data from the quinquennial Economic Census of Retail Trade between 1977 and 1997. He finds that deregulation increases total employment by 4.4% to 6.4%. Finally, Skuterud (2005) performs a difference-in-differences study of the deregulation of the retail industry in Canadian provinces and finds that the relaxation and elimination of Sunday trading laws increased employment in deregulated industries by 5–12% between 1980 and 1998. He concludes that this increase was driven by an increase in threshold labour (i.e. increasing employment) that could not be met by simply increasing hours of existing employees.

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[4]   It is worth emphasising that arguments in favour of restrictions on Sunday opening based on positive externalities from communal leisure or for spiritual recreation have not been empirically examined formally as they are very difficult to quantify. Nonetheless, Gruber and Hungerman (2008) provide some interesting implicit evidence. They show that in the USA, when a state repeals its Sunday opening restrictions (blue laws), religious attendance and church donations fall. More interestingly, they find that repealing the "blue laws" leads to an increase in drinking and drug use and that this increase is found only among the initially religious individuals, who were affected by the blue laws.

2.2 Price effect

15. Similarly, the effect of deregulation on prices is also theoretically ambiguous. On the one hand, if Sunday deregulation implies an increase in competition (due to extended operating hours allowing more time for consumers to search and compare prices) then we would expect prices to fall. Clemenz (1990), assuming that consumers do not have perfect knowledge about prices and must gather information, which may be costly, predicts that, if longer shopping hours facilitate price comparison, deregulation could reduce prices by encouraging competition among retailers. Similarly, De Meza (1984) uses the Salop model to propose that deregulation can induce more competition and result in lower travel costs as well as lower prices. On the other hand, more recent research that endogenises the choice of opening hours (i.e. given the maximum allowed by law, retailers choose when and for how long to operate), such as Inderst and Irmen (2005), shows that deregulation might lead to some shops being open longer hours than others, but also that both types of shops will charge higher prices.

16. The empirical evidence on this topic also seems mixed. Tanguay, Vallée and Lanoie (1995) study a deregulation of shop opening hours in Quebec and find that the deregulation resulted in increased prices at large stores and reduced prices at smaller outlets. The authors hypothesise that the deregulation lowered access costs for larger stores, shifting consumer demand and allowing them to raise prices, while smaller stores were forced to lower prices to compete. Reddy (2012) analyses the more recent changes in Germany (2006-07) and provides some evidence that liberalisation resulted in a fall in prices. Burda and Weil (2005) analysing American blue laws find that retail prices were not significantly affected. Finally, Access Economics (2003) examining the deregulation in Australia concluded that there is very weak evidence for minor reductions in retail price growth.

2.3 Sales volume effect

17. The impact of deregulation on the volume of sales could be either neutral (consumers simply substitute away from purchases during the week and towards Sunday) or positive (consumers either spend more out of their income or redirect expenditure from other segments into retail). According to the Civil Department (1991), the deregulation in Sweden increased turnover by 5%. Goos (2004) finds that deregulation increases total revenue by 3.9% to 10.7% in the USA. Reddy (2012) finds no impact on sales in Germany. Finally, Prodromidis, Petralias and Petros (2012) provide empirical evidence that the extension of operating hours that took place in Greece in 2005 had a positive impact both on turnover and quantity sold. Therefore, although not unanimous, the empirical evidence seems to point towards a positive impact on retail sales, without exploring the particular channels through which this effect arises (i.e. whether it is a cross-industry substitution effect or a pure expenditure increase effect).

2.4 Market concentration effect

18. Finally, the impact of deregulation on market concentration is the least explored of the four key issues in the literature. In theory, concentration could increase if large shops are in a better position to take advantage of the lifting of Sunday restrictions and hence take trade away from the smaller shops. However, such reasoning is overly simplistic, as opening hours is just one of the many strategic variables (in addition to price, location, advertising, personal advice or services for example) available to competitors to protect and expand their market share. Moreover, we would expect a negative impact on small stores that are substitutes for large stores (for example, a small boutique vs. a large clothes department store), but a positive one for small stores that are complementary to the operation of large shopping centres (for example, a small café or bakery in a retail shopping mall or district).

19.   The existing empirical evidence does not indicate any significant negative effect. Goos (2004) finds that deregulation increases the number of shops by 1% to 2% in the USA. In Australia there appears to be no relationship between the proportion of small retail businesses and the stringency of trading hours regulation in each state and deregulation does not appear to have had any deleterious effect on the viability of small retail businesses (Productivity Commission, 2011). We should bear in mind, however, that the effect of Sunday trading deregulation on concentration is by definition a long run effect that is much harder to identify empirically than the short run effects on prices, sales or employment.

3.   Data

20.   To assess the European experience over the last two decades, we started by first constructing a Sunday regulation index. Our Sunday index takes values from 1 (least restrictive) to 6 (most restrictive) as you can see in Table 1. Our new index is based on the OECD product market regulation (PMR) indicator.[5] We preserved the basic idea of this indicator (no regulation=0, local regulation=4, national regulation=6) but extended it such that it has more categories that correspond to the variation observed in legislation across Europe.[6]
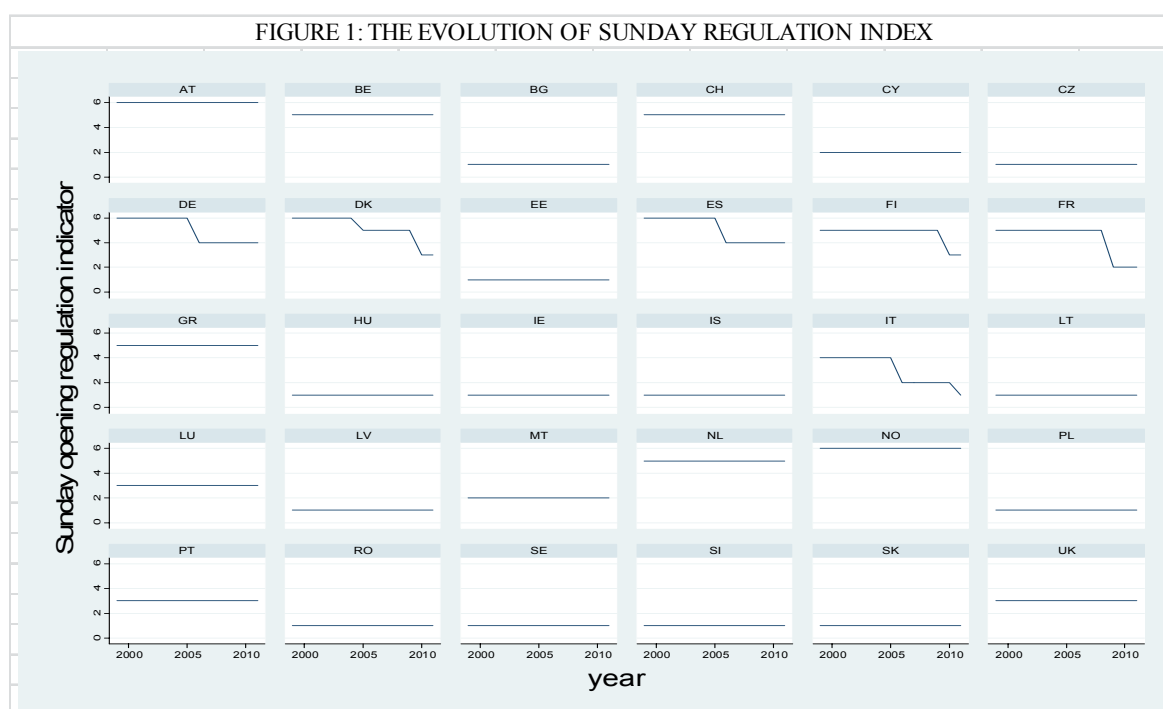
Table 1.   SUNDAY REGULATION INDEX

Scale	Description
1	No restriction
2	No restrictions in major cities and tourist destinations
3	Large shops can open only for a limited number of hours on Sunday
4	Varies across parts of the country, depending on local regulation
5	Shops can only open for limited number of Sundays
6	Shops are not allowed to open on Sundays

Source: Author's estimates based on the OECD product market indicator on regulation of shop opening hours and legislation search in secondary sources on timing and extent of reforms.

21.   We then rated each country's regulation concerning Sunday trading over time. Figure 1 presents the evolution of the Sunday regulation index for thirty European countries (EU-27, Norway, Iceland and Switzerland) from 1999 until 2011. Notice two important facts. First, the level of regulation varies across EU countries. In our estimation framework this will be controlled for by the inclusion of country-sector fixed effects. Second, the trend across Europe is towards liberalising Sunday opening hours' restrictions. In our empirical framework we essentially examine the experience of those countries that changed Sunday regulation (Germany, Denmark, Spain, Finland, France, Italy) compared to those that did not.

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[5]   In particular, it is based on the sub-question related to the regulation of shop opening hours.

[6]   The two indicators are highly correlated (correlation coefficient = 0.83).

FIGURE 1: THE EVOLUTION OF SUNDAY REGULATION INDEX

Notes: The figure presents information on the evolution of regulation erganding sunday opening across EU countries. The indicator takes the following values: 1 no restriction, 2 no restrictions in major cities and tourist destinations, 3 large shops can open only for a limited number of hours on Sunday, 4 varies across parts of the country, depending on local regulation, 5 shops can only open for limited number of Sundays, 6 shops are not allowed to open on Sundays.
Source: Authors' calculations based on information collected from various national sources.

22.   We also collected panel data on price level indices (EU27=100), real expenditure per capita (in PPS_EU27), real gross domestic product per capita (as a proxy for income), number of employees and number of firms from Eurostat[7] for three products (food, clothing & footwear and household furnishing, equipment and maintenance) and sixteen four digit retail sectors.[8] The choice of the three product groups was made under the assumption that they represent products with different product duration and thus purchase frequency. For example, one less day of shopping per week would disturb more the short cycle of food purchases that take place at least once a week for a given household, compared with the purchases of appliances, which typically take place much rarer. Hence, we expect food to respond stronger in the short run to changes in shopping hour regulations than appliances, whereas clothing should fall somewhere in between. Table 2 below presents some summary statistics on the data utilised.

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[7]   Eurostat (2013), Purchasing power parities (database), Annual detailed enterprise statistics for trade (database) and Structural Business Statistics (database), http://epp.eurostat.ec.europa.eu/ (accessed 18 June 2013).

[8]   The sixteen retail sectors are: other retail sale in non-specialized stores; other retail sale of food, beverages and tobacco in specialized stores; retail sale in non-specialized stores with food beverages or tobacco predominating; retail sale of alcoholic and other beverages; retail sale of books, newspapers and stationery; retail sale of bread, cakes, flour and sugar confectionery; retail sale of clothing; retail sale of electrical household appliances; retail sale of fish, crustaceans and molluscs; retail sale of footwear and leather goods; retail sale of fruit and vegetables; retail sale of furniture, lighting equipment and household articles; retail sale of hardware, paints and glass; retail sale of meat and meat products; retail sale of textiles; retail sale of tobacco products.

TABLE 2 - SUMMARY STATISTICS					
Variable	Observations	Mean	Standard Deviation	Min	Max
$\ln(\text{Price index})_{jct}$	1170	4.556	0.252	3.691	5.271
Regulation_{ct}	1170	0.077	0.267	0	1
$\text{Deregulation index}_{ct}$	1170	0.059	0.256	0	3
$\ln(\text{Expenditure})_{jct}$	1170	6.632	0.698	4.110	7.768
$\ln(\text{Employment})_{jct}$	4749	8.202	2.138	0	14.051
Regulation_{ct}	4749	0.077	0.266	0	1
$\text{Deregulation index}_{ct}$	4749	0.051	0.206	0	1.5
$\ln(\text{Number of Firms})_{jct}$	4749	6.910	2.064	0	11.491
$\ln(\text{Number of Firms})_{jct}$	4878	6.808	2.165	0	11.491
Regulation_{ct}	4878	0.077	0.267	0	1
$\text{Deregulation index}_{ct}$	4878	0.051	0.205	0	1.5

Notes: The above table provides summary statistics on the key variables used in Tables 2-4.
Source: Authors' calculations based on the Eurostat data on purchasing power parities and structural business statistics.

3. Empirical methodology

23.   Our empirical analysis is based on the following difference-in-difference specification:

$$\ln Y_{jct} = \alpha_{jc} + \alpha_t + \beta(\text{Sunday Regulation})_{ct} + \gamma Z_{ct} + \varepsilon_{jct} \qquad (1)$$

24.   The dependent variable in (1) is the logarithm of the variable of interest in product (or sector) j in country c in year t. Time fixed effects (α_t) and sector-country (α_{jc}) fixed effects control for global trends and sector-country time-invariant characteristics, respectively, whereas, Z_{ct}, includes additional controls (such as GDP per capita). The main variable of interest, *Sunday Regulation$_{ct}$*, is a binary indicator variable that takes the value one in the years when countries have deregulated Sunday trading.

25.   This estimation framework constitutes a difference-in-difference model, where countries that deregulate are the "treated" group, while non-reforming countries (that did not change their Sunday operation regulation) are the "control" group. Due to the inclusion of sector-country and time fixed effects, the impact of regulation on the dependent variable is identified from countries that changed their Sunday regulation and measures the effect of regulation in reforming countries, compared to the general evolution of the dependent variable (for example, prices or expenditure) in non-reforming countries.

26.   The fixed effect specification allows us to control for time-invariant sector-country differences that may influence both regulation and the dependent variable (prices, expenditure or employment). Furthermore, the specification also accounts for common global trends, such as the boom period during the nineties or the effects of the recent recession related to the financial crisis. Inclusion of these fixed effects allows for the most conservative estimation of the effects of Sunday opening deregulation.

27.   However, someone may argue that looking only at the changes on Sunday regulation might bias any evidence of the impact of regulation when using only a binary indicator for regulation. We tackle this possibility head-on by distinguishing between countries that have introduced substantial changes in their regulation (for example, Italy that moved from 4 in 1999 to 1 in 2011) and countries that introduced less

significant changes (for example, Germany from 6 in 1999 to 4 in 2011). Following Card and Kruger (1994), we transformed the Sunday regulation index to a Sunday deregulation index:

$$\text{Sunday deregulation index}_{ct} = \frac{\underset{t}{Max}(\text{S.Reg})_{ct} - \text{S.Reg}_{ct}}{\text{S.Reg}_{ct}} \quad (2)$$

28.   When the country has not changed its Sunday regulation, the deregulation index takes a value of zero. If instead the country has changed its Sunday regulation, the index takes larger values the more significant the reform is. This index takes advantage not only of the different timing of the deregulation across countries, but also of the widespread variation of the reforms that have taken place.

5.   Results and discussion

29.   Table 3 presents the results for the price indices and expenditure on the three products (food, clothing & footwear and household appliances).[9] We selected these products to represent the range of different price and income impact of Sunday regulation. The first two columns use the price index for each of these products as the dependent variable. In column (1), where we use the binary indicator for Sunday regulation, none of the coefficients are statistically significant, indicating that the countries that experience a change in regulation did not experience any differential impact on the price growth of these product compare to the control group of countries. A similar picture emerges from column (2), where we use the more sophisticated Sunday deregulation index, as none of the coefficients are statistically significant except for appliances, indicating an increase in price growth of 0.07%. Hence, looking at the available data across Europe on price indices, Sunday trading deregulation does not seem to impose any significant downward pressure on price growth.

30.   The next two columns use real expenditure per capita (in PPS_EU27) as the dependent variable. Both column (3) and (4) indicate that the only product significantly affected was food, where its expenditure increased between 0.18% (when using the Sunday regulation index) and 11% (when using the binary indicator for regulation). Apparently, regulating Sunday opening in appliances and clothing results mainly in redirecting the purchase of these items from Sunday to other days of the week, while in food at least some of the Sunday spending is redirected to other industries or altogether lost.

31.   In the last two columns we use the expenditure share for these products (over the overall expenditure) to examine whether the increased expenditure was the result of consumers redirecting expenditure from other segments into these products or not. Results in columns (4) and (5) seem to indicate that, holding expenditure fixed, there was some substitution away from other sectors and into food, but the magnitude of this effect is rather small (between 0.08% and 5%). Therefore, Sunday liberalisation seems to have a positive effect on expenditure, but not across all products, which is only partly attributed to attracting expenditure from other products.

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[9]   All reported standard errors are based on a generalized formula, along the lines of White's method of heteroskedasticity-consistent standard errors, allowing for country-sector level clustered heteroskedasticity and autocorrelation (Bertrand et al., 2004).

TABLE 3 - THE IMPACT OF SUNDAY OPENING ON PRICES AND EXPENDITURE						
	(1)	(2)	(3)	(4)	(5)	(6)
Estimation method	OLS	OLS	OLS	OLS	OLS	OLS
Dependent variable	$\ln P_{jct}$	$\ln P_{jct}$	$\ln Expenditure_{jct}$	$\ln Expenditure_{jct}$	$\ln ShareExpenditure_{jct}$	$\ln ShareExpenditure_{jct}$
Regulation$_{ct}$*Appliances	0.029		0.038		0.003	
	(0.020)		(0.037)		(0.028)	
Regulation$_{ct}$*Clothing	0.008		0.040		-0.003	
	(0.029)		(0.043)		(0.042)	
Regulation$_{ct}$*Food	-0.002		0.107***		0.049*	
	(0.019)		(0.030)		(0.026)	
Deregulation Index$_{ct}$*Appliances		0.034***		0.033		0.004
		(0.011)		(0.022)		(0.018)
Deregulation Index$_{ct}$*Clothing		0.020		0.020		-0.012
		(0.019)		(0.035)		(0.037)
Deregulation Index$_{ct}$*Food		0.002		0.094***		0.043**
		(0.015)		(0.023)		(0.017)
log(real income per capita)$_{ct}$	0.565***	0.570***	1.311***	1.297***	0.554**	0.550**
	(0.087)	(0.086)	(0.168)	(0.167)	(0.222)	(0.221)
Country-Sector FE	yes	yes	yes	yes	yes	yes
Time FE	yes	yes	yes	yes	yes	yes
Observations	1,170	1,170	1,170	1,170	756	756
Clusters	90	90	90	90	84	84

Notes: The dependent variable is the logarithm of the PPP adjusted price indices (EU27=100) in columns 1 and 2, the real expenditure per capita in columns 3 and 4 and the share of real expenditure per capita in columns 5 and 6. Regulation is a binary indicator that takes the value of one when the country changed its regulation regarding Sunday opening hours. Regulation index is calculated as follows: (max regulation indicator-current regulation indicator)/current regulation indicator. Standard errors clustered at the country-sector level are reported in parenthesis below coefficients: *significant at 10%; **significant at 5%; ***significant at 1%.
Source: Authors' calculations based on the Eurostat purchasing power parities dataset.

32.　　Table 4 presents the results on the impact of Sunday trading deregulation on employment and market concentration for sixteen four-digit retail sectors. In the first two columns we examine the net impact on employment using either the simple binary indicator for regulation (column (1)) or the Sunday deregulation index (column (2)). Nine out of the sixteen sectors experience a significant positive net impact on employment, with only three sectors having a negative net impact on employment.

33.　　In the next two columns we also examine the impact on employment, but now controlling for the number of firms in each sector. In other words, we examine whether surviving firms increase or decrease their hiring in countries that deregulated, compared to countries that did not change their Sunday regulation. Both columns (3) and (4) indicate that in five sectors (out of the nine with positive impact) there was a positive increase in employment for the firms already in the market, whereas the three sectors that experienced a decrease in net employment also experienced a reduction in the employees already working in these sectors. Therefore, as also indicated in the literature review, there is substantial evidence that Sunday trading deregulation leads to a significant increase in employment by pushing existing firms to hire more employees, but also by inducing new firm entry.

34.　　The last two columns examine the impact on market concentration by looking at the impact of deregulation on the number of firms in each sector.[10] Eight out of sixteen sectors have a positive and significant coefficient indicating that the number of firms in these sectors increased as a result of Sunday deregulation, compared to only two sectors that experienced a reduction in the number of firms and hence an increase in concentration. Unfortunately, we do not have data on the market shares or the size of these firms that would allow us to say whether sales moved towards larger firms or not. However, the fact that there is significant entry of new firms for the majority of these retail sectors seem to indicate that the market is pretty open and competitive and does not seem to become more oligopolistic in nature.

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[10]　　Ideally we would like to have the sales or market share for each of these firms to measure changes in concentration, but such data is not available. For this reason we utilise the number of firms as an imperfect proxy for the changes in market structure (entry and exit) as a result of deregulation.

TABLE 4 - THE IMPACT OF SUNDAY OPENING ON EMPLOYMENT AND CONCENTRATION						
	(1)	(2)	(3)	(4)	(5)	(6)
Estimation method	OLS	OLS	OLS	OLS	OLS	OLS
Dependent variable	$lnEmployment_{jct}$	$lnEmployment_{jct}$	$lnEmployment_{jct}$	$lnEmployment_{jct}$	$lnNumber of Firms_{jct}$	$lnNumber of Firms_{jct}$
Regulation$_{ct}$* Other retail sale in non-specialized stores	0.042	0.052	-0.386***	-0.427***	0.744***	0.877***
	(0.057)	(0.051)	(0.085)	(0.090)	(0.122)	(0.122)
Regulation$_{ct}$* Other retail sale of food, beverages and tobacco in specialized stores	0.376***	0.341***	0.271***	0.257**	0.218**	0.174*
	(0.079)	(0.129)	(0.073)	(0.100)	(0.102)	(0.100)
Regulation$_{ct}$* Retail sale in non-specialized stores with food beverages or tobacco predominating	0.124***	0.135***	0.099**	0.131***	0.056	0.016
	(0.038)	(0.050)	(0.049)	(0.045)	(0.048)	(0.050)
Regulation$_{ct}$* Retail sale of alcoholic and other beverages	0.207*	0.272***	0.075	0.107**	0.257*	0.320***
	(0.124)	(0.095)	(0.055)	(0.051)	(0.133)	(0.091)
Regulation$_{ct}$* Retail sale of books, newspapers and stationery	-0.434***	-0.565***	-0.081	-0.061	-0.677***	-0.971***
	(0.087)	(0.079)	(0.073)	(0.104)	(0.200)	(0.116)
Regulation$_{ct}$* Retail sale of bread, cakes, flour and sugar confectionery	0.225**	0.247**	0.111**	0.133**	0.235	0.233*
	(0.104)	(0.105)	(0.048)	(0.063)	(0.154)	(0.134)
Regulation$_{ct}$* Retail sale of clothing	0.168***	0.191***	0.101***	0.139***	0.142***	0.112**
	(0.042)	(0.042)	(0.034)	(0.027)	(0.043)	(0.050)
Regulation$_{ct}$* Retail sale of electrical household appliances	-0.511***	-0.582***	-0.267***	-0.254***	-0.464***	-0.629***
	(0.075)	(0.106)	(0.060)	(0.085)	(0.098)	(0.075)
Regulation$_{ct}$* Retail sale of fish, crustaceans and molluscs	0.053	0.017	0.041	0.038	0.035	-0.028
	(0.088)	(0.115)	(0.050)	(0.065)	(0.088)	(0.115)
Regulation$_{ct}$* Retail sale of footwear and leather goods	0.116**	0.161***	0.076*	0.111**	0.089**	0.107**
	(0.056)	(0.050)	(0.046)	(0.050)	(0.041)	(0.044)
Regulation$_{ct}$* Retail sale of fruit and vegetables	0.143	0.137	0.117	0.112	0.063	0.059
	(0.113)	(0.106)	(0.072)	(0.074)	(0.100)	(0.085)
Regulation$_{ct}$* Retail sale of furniture, lighting equipment and household articles	0.095	0.129**	0.051	0.075	0.098**	0.115**
	(0.062)	(0.051)	(0.063)	(0.055)	(0.050)	(0.052)
Regulation$_{ct}$* Retail sale of hardware, paints and glass	0.091**	0.102**	0.039	0.086**	0.113	0.042
	(0.036)	(0.040)	(0.049)	(0.043)	(0.100)	(0.107)
Regulation$_{ct}$* Retail sale of meat and meat products	0.015	-0.004	0.044	0.047	-0.046	-0.088
	(0.081)	(0.130)	(0.072)	(0.109)	(0.044)	(0.055)
Regulation$_{ct}$* Retail sale of textiles	-0.136***	-0.193***	-0.152***	-0.206***	0.043	0.037
	(0.049)	(0.039)	(0.040)	(0.028)	(0.052)	(0.049)
Regulation$_{ct}$* Retail sale of tobacco products	-0.139	0.104	-0.032	0.068	-0.161	0.099
	(0.273)	(0.217)	(0.104)	(0.085)	(0.319)	(0.249)
ln(real Income per capita)$_{ct}$	0.379*	0.376*	-0.031	-0.026	0.825***	0.800***
	(0.199)	(0.197)	(0.151)	(0.149)	(0.199)	(0.198)
ln(Number of Firms)$_{jct}$			0.512***	0.514***		
			(0.034)	(0.034)		
Country-Sector FE	yes	yes	yes	yes	yes	yes
Time FE	yes	yes	yes	yes	yes	yes
Observations	4749	4749	4749	4749	4878	4878
Clusters	447	447	447	447	448	448

Notes: Regulation is a binary indicator that takes the value of one when the country changed its regulation regarding Sunday opening hours. Regulation index is calculated as follows: (max regulation indicator-current regulation indicator)/current regulation indicator. Standard errors clustered at the country-sector level are reported in parenthesis below coefficients: *significant at 10%; **significant at 5%; ***significant at 1%.
Source: Authors' calculations based on the Eurostat Structural Business Statistics dataset.

35.   Based on the literature review and the econometric analysis of the European experience on Sunday trading deregulation, the most robust and significant evidence is that of the overall positive impact on employment. Results are not only statistically, but also economically significant: if one multiplies the average estimated coefficients on the retail sectors presented in Table 4, column (1), with the number of persons employed in these sectors for the treated countries before the change in legislation, the net increase in the number of people employed due to the Sunday trading deregulation is 52,752, or 49,354 if you consider only the sectors with a statistically significant coefficient. The results seem to indicate that the overall employment increase stems both from existing firms hiring more people, but also from new firms entering these sectors. The second important piece of evidence is that turnover of some retail goods also seems to increase and this effect is not driven by a pure substitution effect. However, the evidence on prices indices does not point towards a significant reduction.

6.   Conclusions

36.   During the last two decades many European countries have deregulated Sunday trading. Yet, there is no systematic evidence on the impact of these changes. In this paper we try to fill this gap by analysing the impact of deregulation in a difference-in-difference empirical framework using data from 30 European countries on retail prices, expenditure, employment and concentration over the period 1999-2011. First, we find significant and robust evidence of a positive overall impact on employment stemming both from the creation of jobs in new market entrants, but also from existing firms hiring more people. Second, we find that turnover in some, but not all, retail goods increases and that this effect is not solely

driven by an across retail products substitution effect. Third, we document a net increase on average in the number of firms across sixteen four digit retail sectors. Fourth, we find no significant impact on the price indices for the three product categories that we analysed.

37.   Future research should concentrate on the aspects that we consider to be the limitations of this paper. First, we used price level indices for a broad category of products. Given the heterogeneity of the results even across these broad categories, the impact of deregulation on prices of particular products could also vary significantly. It would be thus instructive to focus the analysis on particular important products, such as food staples (e.g. bread, milk). In addition, to examine the claim of small shopkeepers that such deregulation provides large chain shops with an advantage requires data not only on the number of firms but also on their market shares.

38.   Despite the data limitations, we believe that our findings have important policy implications. First, Sunday deregulation can be a powerful tool to reduce unemployment, which is particularly important today where in many countries the unemployment rate is particularly acute among new entrants to the labour market, while growing share of the unemployed are without a job for more than a year. Providing employment opportunities in times of high unemployment has also strong spill-over impact, alleviating the "hysteresis" effect, where the skill base of the labour force erodes due to prolonged absence from the labour market, which in turn reduces the economy's potential output.

39.   Second, the increase of turnover due to deregulation in some product categories could also improve the financials of retail enterprises. Even though opening a shop on Sunday as well implies increase of the costs that vary with opening hours, such as wages and energy, the shop's fixed costs (e.g. rent, interest payments) are spread over higher turnover. The overall impact for the financials of the enterprises may not necessarily be positive; however deregulation gives the entrepreneurs the chance to test this proposition in practice.

40.   Lastly, the lack of impact on prices can be seen as reassuring for government contemplating Sunday trade deregulation. The need for more employees could in principle lead to higher prices, with the shops passing the increased labour cost to the consumers. However, this effect seems to be offset by the increased competition in the markets, keeping the prices down.

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