

## EXPLAINING SUNDAY SHOP POLICIES\*

BY

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### *Summary*

Sunday shop opening is deregulated to the municipal level in the Netherlands. Despite positive effects on economic growth and employment, many municipalities restrict Sunday shop opening. Based on 2003 data we will show that diverse local characteristics, as the size of municipalities and religious and political affiliation, play a major role in decisions about Sunday shop opening. The evidence is consistent with the hypothesis that municipal control results in a considerable variation in policies. As this variation is related to significant differences between municipalities, reasons exist to decentralize the decision on Sunday shopping opening.

**Key words:** economic regulation, decentralization, Sunday opening

**JEL Code(s):** D78, L51

### 1 INTRODUCTION

In the last decade European countries regularly debated about relaxing shop opening hours legislation. As an outcome of this debate some legal restrictions have been relaxed for example in the UK, the Netherlands and Germany. Sunday shopping became widely permitted in the UK in 1994 after the government succeeded in pushing the Sunday Trading Act through parliament. The Act places no restrictions on opening hours for small shops but restricts opening hours for shops with an area over 280 square metres between 10:00 and 18:00. Until June 1996 Dutch shops were not allowed to open on Sundays. Since June 1996 Sunday trading is allowed 12 times a year and on all Sundays in tourist regions. Moreover, since June 2003 German shops are allowed to open on four Sundays a year when there are special events like a fair.

It is well-known from the shop opening literature that regulation of Sunday opening reflects an interesting trade-off (see, for example, De Meza

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(1984), Kay and Morris (1987), Clemenz (1994), Gradus (1996)). As markets value externalities like social implications and religious values improperly, regulation tries to internalise them. On the other hand, this regulation reduces consumer choice. Whether benefits are higher than costs, may depend on regional or local circumstances. An important question is, therefore, which jurisdiction should make such a trade-off. Oates (1969) proves that welfare increases when the trade-off does take place at the level where externalities are valued homogeneously. This means in our case that an important question is whether municipalities differ with respect to the values attached to Sunday shop opening externalities. If this is the case, the municipal level seems to be the appropriate jurisdiction from an economic point of view.

The empirical literature presents only two studies that evaluate some of the reasons for liberal or restrictive shopping laws. Price and Yandle (1987) discuss for 25 US states the Sunday closing laws in 1970 and 1984. In 1970 they found evidence for a number of explaining variables for restrictive opening policies, including religious affiliation, political influence and the participation of women in the labour force. However, the 1984 results offer much less explanatory power. Ferris (1991) presents evidence for 45 Ontario cities. From this data it follows that higher female labour participation will decrease the probability of choosing early closing hours and that cities with a greater population density have more liberal laws. Due to data problems, this article provides weak evidence for religious affiliation.

The Dutch policy change in Sunday opening gives us the possibility to investigate which conditions are important for this opening. We will show, using a dataset for all municipalities, that the preferences of consumers and shop owners and the political affiliation play a crucial role in explaining this. It is therefore important to describe the preferences of shop owners and consumers and their political affiliation properly, as shown in section 2. In section 3 the data are described. Section 4 presents the estimation results and section 5 concludes.

## 2 PREFERENCES OF SHOP OWNERS AND CONSUMERS

The basis for our analysis is the explanation of the decision Dutch municipalities made regarding the opening of shops on Sundays. We estimate an ordered probit model which measures the extent of shop opening days on Sundays.<sup>1</sup> As endogenous variable we have a variable ( $SO_i$ ) describing the Sunday shop policy of municipality  $i$ .  $SO_i$  takes the value one for municipalities which do not allow open shops on Sunday, six for municipalities

1 As an alternative we estimate also a binary probit model. In this model  $SO_i$  takes the value zero for municipalities which do not allow open shops on Sunday and one for municipalities which allow open shops on all Sundays. We will discuss the results of this model only if they differ from the ordered probit model. Full results are available on request.

TABLE 1 – SUNDAY OPENING IN DUTCH MUNICIPALITIES

Sunday policy ( $SO$ )	Municipalities	% of total
1. Zero Sundays open	155	32
2. Only special days (max 5) like Boxing day	18	4
3. Less than 12 Sundays per year	129	26
4. 12 Sundays per year	96	20
5. More than 12, less than all per year	70	14
6. All Sundays per year	21	4
Total	489	100

which allow open shops on all Sundays and values within one and six for municipalities that allow open shops on some Sundays. In these last cases the actual value depends on the number of Sundays for which shops are open (see Table 1).

The reasons for the differences in local Sunday shop policies are analysed by regressing  $SO_i$  on a number of municipal and consumer characteristics. First, let us focus on the interests of shop owners. Some shop owners will advocate that shop opening on Sundays raise the attractiveness of shopping, especially in shopping centres with a richer diversity of shops or more specialized shops (Grünhagen et al. (2003)). People are more interested to shop in municipalities with a large number of shops. Thus, we include the number of shops per inhabitants ( $SN_i$ ) to test whether municipalities with larger shopping possibilities have a more liberal Sunday shopping policy.

Varying the number of opening hours has also effects on costs. If the number of opening hours is extended, the threshold labour volume, which is the minimum capacity that must be present during opening hours, increases independently of the amount of sales (cf. Nooteboom (1983), Gradus (1996)).<sup>2</sup> As a consequence this creates economy of scale: threshold labour counts regardless of the volume of sales. Cost will increase more for small shops when opening hours are extended.

Moreover, large shops gain more from extending shop opening hours than small shops.<sup>3</sup> The same point has been made in allocation of time models. In these models not only the consumed item is taken into account, but also the foregone value of time used up. Extending shopping hours has the effects of lowering the value of time used by allowing shoppers to choose a more

2 The economic literature also points to substantial employment effects of longer opening hours, mainly due to an increase of threshold labour (e.g. Burda (2000), Goos (2005), Skuterud (2005)).

3 Thurik (1984) also stresses an other advantage for large stores of extending shop opening hours due to the fact that longer shopping hours lead to a more even distribution of customers which allows the shop to operate at a lower capacity level (e.g., number of cash points, storage facilities, etc.).

“convenient” time (cf. Morrison and Newman (1983), p. 110). As a result of extending opening hours, therefore, more goods will be bought at large stores as these generally take more travel time, but offer lower prices. Large stores strengthen their market position in this case (e.g. Tanguay et al. (1995)).

Therefore, for two reasons more restrictive regulation of opening hours tends to favour small stores and we include the average number of employees per shop for each municipality ( $SS_i$ ).<sup>4</sup>

Moreover, excessive shop opening hours in surrounding municipalities might generate competitive pressure. If customers can shop in surrounding municipalities, turnover will diminish in municipalities with closed shops on Sunday. Ferris (1991) argues that retailers view shop hours as an effective instrument to appropriate customers from rivals. We test this by including an impact factor measuring the extent of shop opening days in surrounding municipalities. This impact factor is calculated using the following equation:

$$EN_i = \sum_j SO_j \quad (1)$$

where  $EN_i$  is the impact factor of municipality  $i$ ,  $i$  is a vector of all municipalities,  $j$  is a vector of the municipalities with a liberal shop opening policy in the neighbourhood of municipality  $i$ .<sup>5</sup>

Second, we focus on consumers' interest with respect to shop opening on Sundays. Thum and Weichenrieder (1997) argue that the possibilities to shop during the week will be less for couples that work both. They will value unrestricted shopping hours higher than single income families due to higher real (opportunity) cost of time during weekdays. We include the incidence of household with a double income ( $HD_i$ ) to test this proposal.

An other consumer characteristic that might influence social demand for shop opening on Sundays is the size of the household. According to Eurostat (2003) parents of large households spent more time at home. We include the number of inhabitants per household ( $HS_i$ ) to test whether large households value a more liberal policy higher.

Ferris (1991) argues that differences in population density across municipalities may influence the relative demand for Sunday opening. Customers in low population density areas will value distance higher than longer shopping times, increasing the possibilities for small shop owners to resist opening on Sundays. To test this argument, population density ( $DE_i$ ) is also included.

Moreover, as large cities in the Netherlands are ethnically heterogeneous societies with a diverse attitude towards Sundays, they will put more empha-

4 The dispersion of shop size would be a better proxy. Unfortunately, we have only data for the average shop size.

5 Neighbourhood municipalities are defined as those municipalities that are no further away than 25 kilometres (17 miles). Alternative assumptions with different maximum distances are also tested.

sis on a liberal policy. Furthermore, as shopping on Sundays is used as a form of entertainment, larger municipalities have a better infrastructure for 'fun-shopping' (e.g. Jacobsen and Kooreman (2005)). Ferris (1991), on the other hand, argues that a rise in the number of inhabitants diminishes the number of open Sundays. In this view, free-rider problems increase with the number of individuals due to coordination cost. To test the effect of municipality size we include the number of inhabitants ( $IN_i$ ).<sup>6</sup> As the range is quite large, we include this variable in logs.

Besides, consumer characteristics can be based on regional differences as well. There is some evidence that especially the provinces bordering Belgium (Brabant, Zeeland and Limburg) with their more Burgundian tradition have a more liberal Sunday shop policy. Another reason is the difference in excises between Belgium and the Netherlands. According to Cnossen (2002) the excise on unleaded gasoline is 20% higher in the Netherlands. Furthermore, Sunday opening is allowed in Belgium for special stores as bakeries and furniture stores as well as for other stores in tourist municipalities. One can argue that cross-border shopping will speed up Sunday opening in these regions. Ferris (2000) found that intense cross border shopping between the US and Canada (due to a Canadian/US exchange rate that favoured US shopping) was a major stimulus to deregulate the closing law in Ontario. This is tested by including a dummy for the provinces ( $RE_{i,k}$ ) where Groningen is excluded as numeraire.

Third, the preferences of consumers and shop owners may reflect the preferences of politicians. The number of Sundays are set by the municipal council. Therefore, since 1996 many municipalities intensely debated about this number and the preferences of different Dutch political parties have become clear. Orthodox protestant parties (SGP and CU) are strictly against Sunday shop opening.<sup>7</sup> The larger Christian democratic party CDA is less strict as it accepts compromises more easily. Based on the belief that the Sunday has a special Christian function local politicians of SGP, CU and (sometimes) CDA often try to keep the shops closed at Sundays. Other parties try to achieve the same goal from a social point of view. Left-wing parties like the SP (Socialist Party) and PvdA (Social Democrats) sometimes play together with Christian parties to reach a majority in the local political arena. Liberal parties like VVD (Conservative Liberals) and D66 (Left-wing Liberals) see Sunday shop opening as a good opportunity to increase the possibilities to shop and to stimulate the local economy. Furthermore, local political parties are important as well in the Netherlands and in most municipalities they are related

6 Note that there may be also higher coordination costs when the number of shops increases. This effect will be included in the coefficient for SN.

7 On a national scale these parties are small (each about 2% of total votes). However, the influence of these parties is large for some municipalities as the voters are regionally concentrated.

to entrepreneurs. Therefore, in general they favour Sunday shop opening.<sup>8</sup> Because the Sunday opening decision is taken in the municipality council, the power of local political parties depends on the relative number of aldermen ( $AL_{i,p}$ ).<sup>9</sup> We include the share of aldermen from party  $p$  in total aldermen. In the estimations the share of aldermen of local parties is excluded.<sup>10</sup>

However, the policy outcome does not only depend on the direct balance of power in the municipality council, but also on the influence of church members on the political parties (see also Ferris (1991, p. 1397)). Although church and state are separated in the Netherlands, local church members often try to influence the policy debate. Therefore, municipalities with more active church members may show more restrictive Sunday policies.<sup>11</sup> Recently, Gruber and Hungerman (2006) show for the US that allowing Sunday retail activity will lower church attendancy levels. To test this effect we include the percentage of inhabitants that are active church members ( $CH_i$ ).<sup>12</sup>

### 3 DATA

Data for 282 Dutch municipalities on the incidence of shop opening on Sundays ( $SO_i$ ) come from a website which gives information for the situation in 2003 ([www.koopzondag.com](http://www.koopzondag.com)). Data for the other 207 municipalities are gathered using website information of these municipalities, the results of an enquiry and direct contact with municipal representatives. We finally have data for all 489 municipalities. There are no data available for years before 2003.

Table 1 shows how many municipalities allow for open shops on Sunday. Of all municipalities 32% have always closed shops on Sundays. The other extreme, all Sundays open shops, is allowed in 4% of the municipalities. In 66% of the municipalities Sunday opening is allowed in the range of only spe-

8 This point is based on a suggestion of a referee.

9 Mayor and aldermen form the executive board. The mayor, whose executive power is limited, is appointed by the central government. The aldermen are elected by the municipal council every 4 years. As a result of the proportional representation system only in a small minority of the municipalities one of the parties (most times CDA or PvdA) has a majority in the municipal council. In general, a coalition of parties has to be formed that governs the municipality for 4 years. Each coalition party has one or more aldermen, based on the size of the parties. The total number of aldermen in a municipality depends on the number of inhabitants. As long as the coalition is stable, policies proposed by the aldermen will in general be accepted by the council.

10 Note that local aldermen have a high share in the Netherlands (27%).

11 A different interpretation of the church attendance variable is that when the number of people going to church increases, the market size of Sunday shoppers decreases. This means that shop owners will have fewer incentives to open their shop on Sundays.

12 In the Netherlands a large part of church members never attends church services. The included variable is related to members that attend church services at least once per week.

cial Sundays like Boxing day (which is called second Christmas day in the Netherlands) to all Sundays.<sup>13</sup>

Data for the impact factor of neighbouring municipalities ( $EN_i$ ) follow from the information on  $SO_i$  and the average distance between municipalities. Data for the other explaining variables are for 2003 and from the CBS (the Dutch Central Bureau for Statistics).<sup>14</sup> The exogenous variables are summarized in Table 2.

#### 4 RESULTS

Table 3 presents the estimations results. In the second and third column the coefficients and standard errors are presented. The last six columns present marginal effects of these estimates on the six shop opening categories.<sup>15</sup> If we look at the three categories of variables, the least evidence is found for the interests of shop owners. As the coefficient for the number of shops is significant and positive, municipalities with a larger number of shops have a higher probability of a more liberal Sunday policy. For instance, the probability of 12 Sundays (i.e. when  $SO = 4$ ) rises with 3.2% if the number of retail shops in a municipality increases with one standard deviation. The interests of small shop owners, i.e. size of shops, are insignificant and not in accordance with the 1970 results presented by Price and Yandle (1987). Interestingly, competitive pressure of neighbouring municipalities does not influence shop policies.<sup>16</sup>

The results for consumer preferences are more robust and, according to the marginal effects, larger. Municipalities with less households with a double

13 Note that we use the term Sundays also for days like Easter Monday. Traditionally shops were not open on Sundays and special days like Easter Monday, Whit Monday and Boxing Day (Bank Holiday). Currently, most municipalities may open shops on 12 Sundays and special days, except for Christmas day, Easter Sunday and Whit Sunday. Municipalities in tourist regions may open shops on every Sunday.

14 All variables are available per municipality, except for the active church member variable. This variable is available for 42 regions. In section VI we discuss the use of explaining variables from the same year as for  $SO_i$ .

15 The coefficients of ordered probit models are not easy to interpret. We, therefore, calculate marginal effects using the usual techniques (Greene (1997)). To make the marginal effects comparable all marginal effects are based on a shock of one standard deviation, except for the dummy variables ( $RE$ ) which are evaluated by comparing probabilities when they are set to 0 and 1 respectively.

16 These two conclusions depend on the estimation model. In the binary probit estimation the probability of any shop opening increases if shops are larger and a lower probability of closed shops on all Sundays is found when competitive pressure increases. Maybe, competitive pressure has more influence on the decision to allow open shops or not and less on the decision how much Sundays shops may open their doors. Estimations with other values for the maximum distance defining neighbouring municipalities (10, 15 or 50 km) show that competitive pressure is not always significant. We conclude that there is only weak evidence for the influence of competitive pressure.

TABLE 2 – DESCRIPTIVE STATISTICS

	<i>Average</i>	<i>Max</i>	<i>Min</i>	<i>St.dev.</i>
<b>Interests of shop owners</b>				
Retail shops per 1000 inhabitants ( <i>SN</i> )	6	18	0	2
Size of shops in employees per shop ( <i>SS</i> )	5	15	2	2
Impact factor surrounding municipalities ( <i>EN</i> )	36	91	0	23
<b>Interests of consumers</b>				
Households with double income as % all ( <i>HD</i> )	41	56	22	5
Inhabitants per household ( <i>HS</i> )	2.5	3.6	1.8	0.2
Population density in ha per inhabitant ( <i>DE</i> )	0.55	255	0.02	16
Inhabitants * 1000 ( <i>IN</i> )	33	737	1	56
Province ( <i>RE</i> ) <sup>a</sup>				
Groningen	5	1	0	22
Friesland	6	1	0	24
Drenthe	2	1	0	15
Overijssel	5	1	0	22
Flevoland	1	1	0	11
Gelderland	15	1	0	35
Utrecht	7	1	0	25
Noord-Holland	13	1	0	34
Zuid-Holland	19	1	0	39
Zeeland	3	1	0	16
Noord-Brabant	14	1	0	35
Limburg	10	1	0	30
<b>Political variables</b>				
Aldermen as % of total aldermen ( <i>AL</i> )				
SGP: Orthodox protestants	2	50	0	8
CU: Orthodox protestants	3	50	0	9
CDA: Christian democrats	30	100	0	18
SP: Socialistic party	1	60	0	5
PvdA: Social democrats	17	67	0	18
GL: Green left	2	50	0	7
VVD: Conservative liberals	16	67	0	18
D66: Progressive liberals	2	33	0	6
Active church members as % of inh. ( <i>CH</i> ) <sup>b</sup>	13	28	5	5

Notes: <sup>a</sup>The average equals the number of municipalities per province as a % of the total number of municipalities

<sup>b</sup> Number of inhabitants that attend church services at least once per week divided by total inhabitants.

income and larger families have a higher probability to have more restrictive Sunday policies. This is similar to Ferris (1991) and Price and Yandle (1987), where higher female participation stimulates Sunday opening. This result is



TABLE 3 – ESTIMATION RESULTS SUNDAY OPENING

	Coef	Stand. Error	Marginal effects on <i>SO</i> category:					
			1	2	3	4	5	6
Interests of shop owners								
Number of shops ( <i>SN</i> )	1.03***	(0.35)	-5.8	-0.5	0.1	3.2	2.6	0.4
Size of shops ( <i>SS</i> )	0.03	(0.03)	-1.9	-0.2	0.0	1.1	0.9	0.1
Surrounding municip. ( <i>EN</i> )	0.00	(0.00)	0.4	0.0	0.0	-0.2	-0.2	0.0
Interests of consumers								
Double income househ. ( <i>HD</i> )	0.04**	(0.02)	-7.3	-0.7	0.1	3.9	3.3	0.6
Household size ( <i>HS</i> )	-1.75***	(0.54)	11.7	1.1	-0.2	-6.3	-5.3	-0.9
Population density ( <i>DE</i> )	0.10***	(0.04)	-5.5	-0.5	0.1	3.0	2.5	0.4
Inhabitants (log( <i>IN</i> ))	0.55***	(0.09)	-15.3	-1.4	0.3	8.3	6.9	1.2
Province ( <i>RE</i> )								
Friesland	0.16	(0.34)	-4.9	-0.5	-0.3	2.7	2.5	0.5
Drenthe	0.12	(0.41)	-3.9	-0.4	-0.2	2.1	1.9	0.3
Overijssel	0.85**	(0.37)	-20.5	-3.0	-9.2	10.4	17.1	5.2
Flevoland	0.69	(0.56)	-17.3	-2.5	-6.9	9.2	13.7	3.8
Gelderland	0.59*	(0.31)	-16.5	-2.0	-3.7	9.1	10.7	2.5
Utrecht	0.16	(0.35)	-5.0	-0.5	-0.3	2.8	2.6	0.5
Noord-Holland	0.29	(0.33)	-8.7	-0.9	-0.9	4.9	4.8	0.9
Zuid-Holland	0.52	(0.33)	-15.1	-1.7	-2.5	8.3	9.0	1.9
Zeeland	2.41***	(0.46)	-28.6	-5.5	-34.1	-8.4	27.9	48.7
Noord-Brabant	0.80**	(0.34)	-20.9	-2.8	-6.6	11.1	15.1	4.0
Limburg	1.21***	(0.35)	-26.3	-4.1	-15.2	11.2	24.6	9.7
Political variables								
Alderman ( <i>AL</i> ):								
SGP	-5.53***	(1.40)	13.8	1.2	-0.3	-7.5	-6.3	-1.0
CU	-1.86**	(0.76)	5.5	0.5	-0.1	-3.0	-2.5	-0.4
CDA	-0.13	(0.31)	0.8	0.1	0.0	-0.4	-0.4	-0.1
SP	-2.25**	(1.06)	3.5	0.3	-0.1	-1.9	-1.6	-0.3
PvdA	-0.33	(0.32)	2.0	0.2	0.0	-1.1	-0.9	-0.1
GL	-1.26*	(0.75)	3.0	0.3	-0.1	-1.6	-1.4	-0.2
VVD	-0.26	(0.32)	1.5	0.1	0.0	-0.8	-0.7	-0.1
D66	-1.33	(0.84)	2.8	0.2	-0.1	-1.5	-1.3	-0.2
Church members ( <i>CH</i> )	-0.09***	(0.02)	13.1	1.2	-0.2	-7.1	-5.9	-1.0
Log likelihood	-626.07							

Notes: All coefficients are insignificant except for coefficients with \*/\*\*/\*\* which denotes significance at the 90/95/99% level.

also in accordance with the theoretical result by Thum and Weichenrieder (1997). The population density variable (hectares per inhabitant) is significant and positive suggesting that Sunday opening is more likely in a less densely

inhabited area.<sup>17</sup> While the marginal effects are not large, this result is not in accordance with Ferris (1991).<sup>18</sup>

The coefficient of inhabitants makes clear that there is a positive effect on shop opening when municipalities are larger. At first sight this result is contrary to that of Ferris (1991). Based on data for 45 large and medium-sized cities in Ontario he finds a positive but insignificant relationship between size and Sunday opening. Our results indicate, however, that size does only matter if small and large municipalities are included. Therefore, our results may in fact be in accordance with Ferris (1991). Indeed, if we exclude the municipalities which have less than 20,000 inhabitants the coefficient for inhabitants is no longer significant.

The data show also evidence for the regional differences argument. The coefficients for the provinces Noord-Brabant, Zeeland, Limburg and Overijssel are significant at more than 95% (compared with the reference Groningen).<sup>19</sup> The marginal effects of these variables are quite large. These regressions imply that there is some evidence that cross-border shopping is an important element for the opening hour's policy in municipalities especially adjacent to Belgium. This is in accordance with Ferris (2000).

The results for political affiliation are quite clear and stronger compared with Ferris (1991) and Price and Yandle (1987). Interestingly, all coefficients for political affiliation are negative compared with the benchmark. This suggests that in general local parties favour shop opening. Municipalities with more orthodox protestant (SGP and CU) aldermen show a much larger probability to have conservative shop policies. For instance, one standard deviation increase in SGP-aldermen results in a nearly 14% higher probability that shops are closed at all Sundays.<sup>20</sup> Interestingly, the CDA-variable is insignificant. Although the Christian Democratic Party has a historical foundation in Christian religion, the influence on Sunday shop opening is apparently not present. Evidence exist that some non-Christian parties might also stimulate a restrictive policy. The coefficient for SP shows that social considerations might play a decisive role in the policy debate.<sup>21</sup>

17 Our conclusions do not change when the continuous variable is substituted for five urbanisation dummies.

18 However, in our binary model this variable is insignificant.

19 The coefficient of Zeeland is also significantly different from all other provincial dummies (based on a Wald-test). The coefficient for Limburg differs significantly from seven provincial dummies. The coefficient for Noord-Brabant only differs significantly from Groningen, Friesland, Utrecht and Zeeland.

20 Maybe the presence of SGP-aldermen is more important than the share in total aldermen. However, we cannot test this as estimations with both dummies for presence and share result in clear multicollinear results (insignificant coefficients for both variables).

21 Note that in January 2007 SP and SGP initiated a new national law aimed at reducing the number of shop openings in touristic regions.

The second variable measuring the influence of ideology, the incidence of active church members, is significant. Municipalities with more active church member citizens have more stringent Sunday policies. If active members increase with one standard deviation the probability of closed shops on all Sundays increases with 13%.<sup>22</sup>

To analyse the robustness of the estimations we test for multicollinearity, heteroskedasticity and endogeneity. None of these issues do drive our results. For instance, as the explaining variables refer to 2003, one could argue that some of them are not exogenous. To test for endogeneity problems we estimate with 1996 data for the variables where endogeneity might be present (*SN*, *SS*, *HD*, *DE* and *IN*).<sup>23</sup> On the basis of a Wald-test, all relevant coefficients are not significantly different from our initial model. Furthermore, we tested for spatial autocorrelation and found no evidence as well.<sup>24</sup>

## 5 CONCLUSIONS

Since 1996 the decision on Sunday shop opening is deregulated to the municipal level. They may allow for 12 open Sundays per year or even open shops on all Sundays when they are in a tourist region. Still, in 32% of the Dutch municipalities shops are closed on every Sunday in 2003. Drawing on various theoretical arguments an ordered probit model was estimated to explain the occurrence of restrictive Sunday opening. It is shown that especially political and religious affiliation, the number of inhabitants and regional differences are important to explain the variation between municipalities. The number of shops, population density and household characteristics are significant as well, although their influence is smaller according to marginal effects. There is very weak evidence for excessive competition with neighbouring municipalities, while cross-border shopping may play a role.

The evidence is consistent with the hypothesis that municipal control over Sunday shopping hours results in a considerable variation in policies. As this variation is related to significant differences between municipalities, deregulation to the local level allows municipalities to take account of local characteristics. Clearly, by taking into account these differences a clear-cut case exist to decentralize the decision on Sunday shopping opening compared with rules on a national level.

22 Interestingly, variables representing the incidence of church members that are less active (in terms of the number of times they attend services) are not significant. Results are available upon request.

23 We do not have data before 1996. However, it is not reasonable to assume that already in 1996 significant effects result from changes in Sunday shop opening in the second part of 1996 as all variables require considerable time to change. Note furthermore that we do not use the results with the 1996 data in the former paragraph as we have less data for 1996 (448 instead of 489).

24 Full sensitivity analyses are available on request.

In this paper we only investigate the policy decision by the municipality. Less restrictive policies do not necessarily imply that all shops are in fact open at Sundays. There is some evidence that especially food and furniture stores make use of a more liberal policy. In large cities also shopping centres and special stores are open. Future research might generate more insight in the opening decision of shop owners when data are available about the opening hours of individual shops.

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