The impact of Sunday shopping policy on the Dutch retail structure

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Preface

This master thesis is the final part towards successfully completing the Msc. program Management, Economics and Consumer Studies at Wageningen University. Through my interests in the retail industry, I decided to do this thesis at the department of Business Economics. I got the opportunity to start a challenging research on an actual and interesting topic.

I would like to thank several persons who supported me during my research. First of all I want to thank my supervisor Dr. Bonanno for his guidance, feedback and nice cooperation during the whole process. Besides that I want to thank Prof. Dr. Dijkgraaf for his dataset on shopping Sundays, Locatus for their data on the retail structure and Platformbinnenstadsmanagement Veenendaal for their cooperation in doing a survey among shopkeepers.

I have learned a lot during the process of writing a master thesis and I experienced it as a very interesting period.

Kay Loopik

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Contents

Abstract

In this study we investigate the economic effects of a more liberal Sunday shop policy on the retail industry in the Netherlands. The possible effects on the retail industry of such a policy are mixed. However in general the literature agrees that the costs of extending opening hours are greater for smaller retail outlets than for larger ones as a result of threshold labour costs, which gives large stores a competitive advantage over smaller ones.

To gain insight on the social and economic considerations made by shop owners towards opening their shop on Sunday, a survey was conducted amongst 176 shop owners in Veenendaal. We found that religious, social and economic considerations were of importance. The size and type of store were unimportant for the decisions made about being open on Sunday. An interesting finding is that shop owners located in the main street were twice as likely to be open on Sunday, than shops located elsewhere. Therefore it appears that the location of a retail outlet influences the decision of opening on Sunday.

To explore the impact of shopping Sundays on the retail structure in the Netherlands we divided 403 municipalities into 5 groups according to number of shopping Sundays and analysed the effect of the number of shopping Sundays on the number of retail outlets per inhabitant and the average size of a store. Our results suggest that a more liberal policy has a positive impact on the number of retail outlets per 1000 inhabitants. This was in contradiction to the hypothesis that shopping Sundays give a competitive advantage to large stores and therefore have a negative impact on the number of small stores and on the number of retail outlets overall. A possible reason for the positive effect is that retail outlets in municipalities with shopping Sundays have a competitive advantage over retail outlets in municipalities with fewer or no shopping Sundays. Retail outlets in municipalities with shopping Sundays can attract customers from surrounding municipalities which could increase the stores density of those municipalities.

Our results further suggest that a more liberal Sunday shop policy has a positive effect on the average store size. This was in line with our hypothesis. An exception to this were municipalities with 52 shopping Sundays, between municipalities with 0 or 52 shopping Sundays there was no significant difference detected in store size. An explanation for this observation could be that that these municipalities were touristic areas that tend to attract and maintain a lot of small shop.

1. Introduction

1.1. Background

The regulations concerning the opening hours for shops on Sundays, in the Netherlands, have a long history (Economische Zaken, 2010). The first law regulating shop opening hours dates back to 1930, which allowed shops to be open from Monday to Friday from 05.00 am to 08.00 pm; on Saturday from 05.00 am to 10.00 pm, and prohibited them from being open on Sunday. In 1934, this prohibition was revoked because of the deteriorated economic circumstances. Thereafter, mostly restrictive legislation followed. The proceeding law was introduced in 1951, where shops were only allowed to be open until 06.00 pm and once a week until 10.00 pm. Shops were obligated to stay closed on Sundays and forced to have holiday closures (Tweede kamer, 2010). In 1984, municipalities were given the option for shops to stay open during public holidays and on four Sundays per year. This was extended to eight shopping Sundays (SS) per year in 1993. Shops were also allowed to be open half an hour longer than previously, and the limit on the weekly opening hours was extended from 52 to 55 hours. These changes did not end the debate on shop opening hours since, compared to the surrounding European countries, the Netherlands still has the most restrictive policies of shop opening hours (Tweede Kamer, 2010).

The current regulations on shop opening times dates back to June 1996, as stated in the Dutch Trading Hours Act (Winkeltijdenwet). This regulation allowed for more flexibility concerning shop opening hours in response to various developments in Dutch society, such as diversification, the new role of the government, changing lifestyles and working patterns (Tweede Kamer, 2010). Although the legislation on shopping hours became more flexible, shops were still not allowed to open on Sundays; however, municipalities were given legal authority to allow stores to be open for twelve Sundays a year. Municipalities whose economy is strongly dependant on tourism, could however be categorised as touristic designations and be subject to less restrictions in determining the number of shopping Sundays allowed (Economische Zaken, 2010).

The percentage of municipalities with a permit allowing shops to open for more than twelve Sundays per year has steadily increased between 1998 and 2009. In 1998, the percentage was 16%, which increased to 18% in 2003, 20% in 2005, 33 % in 2007, and 34% in 2009 (Economische Zaken 2010, Van der Velden, 2009). In order to counter the increasing number of shopping Sundays and the loose interpretation of who falls under the category of 'touristic designation', therefore the 'Winkeltijdenwet' was amended in 2010. The 'Winkeltijdenwet' required municipalities to have 'autonomous' (independent from stores being open on Sundays) and 'substantial tourism' (in terms of employment in the tourism sector, number of tourists etc.) if they wanted to have more than twelve shopping Sundays per year (Economische Zaken, 2010). These definition of "autonomous and substantial" did not have a quantitative threshold and could therefore be interpreted in different ways by municipalities.

The goal of the 'Winkeltijdenwet' was to obtain a more restrained attitude by municipalities regarding Shopping Sundays, causing a fierce political and societal debate (Tweede Kamer, 2010). There are both economic and non-economic arguments in the debate on whether allowing shops to be open on Sunday. The economic arguments include: 1) the regulation of retail working hours; 2) limiting unfair competition between different types of retail operations; 3) the preservation of the existing market structure; 4) the control of retail costs (prevention of destructive competition), and 5) economizing on search and information costs by the harmonization of working hours (Burda, 2000).

Moral aspects, such as Sunday being a day of rest, and the safety and liveability of the neighbourhoods were also part of the discussion (Gradus, 1996). Municipalities were asked to take these factors into considerations (Econonimsche Zaken, 2010). In October 2012, The House of Representatives of the government supported an initiative thought up by the political parties D66 and Groenlinks to decentralize to a system of autonomy from a central government level to the municipalities. By removing the tourism designation policy of the 'Winkeltijdenwet', each municipality could allow shops to open for more than twelve Sundays a year. In June 2013 The Senate approved the initiative, and municipalities now have the freedom to increase the number of shopping Sundays without limitations. Sunday shop policies are to be discussed and decided at the municipality level.

Besides the public debate about Sunday shopping, the issue of the liberalization of business hours is described thoroughly in academic literature. The theoretical literature regarding the possible economic effects of the deregulation of shop opening hours showed mixed results (Gradus, 1996). The effect of deregulation of shopping hours on the competition between large and small companies has been studied by Nooteboom (1983, 2005). He argued that a relaxation of trading hours would increase the disadvantages to small shops over larger ones and accelerate their decline. Small retailers may fear that they are unable to compete against longer opening hours of larger stores. On the other hand, smaller shops were more flexible and had lower overhead costs than larger ones (Burda, 2000). Wenzel (2011) studied the decisions made by independent and chain retail stores about shopping hours. The decision of having more opening hours varied significantly depending upon differences in efficiency between independent and chain stores.

1.2. Research objective

The objective of this study is to investigate the economic effects of deregulating Sunday shop policy on the retail industry. Investigating the social and economic considerations of shopkeepers, regarding opening on Sunday, and analysing the influence of Sunday shop policy on the retail structure of the Netherlands.

- How did Sunday shop policy develop over time in the Netherlands? What are the points of discussion involving these policies, and what could be the effect of deregulation on the retail industry?

- What are shopkeepers attitudes with regard to Sunday shopping and its liberalisation? What are their social and economic considerations for opening on Sundays?

- What is the impact of shopping Sunday policy on the number and average size of retail outlets at a municipality level in the Netherlands?

1.3. Outline of the thesis

The research is structured as follows. First, in chapter 2 the results of a literature review about the history of the Dutch Trading ACT throughout the years and the economic effects of deregulating opening hours is described. Chapter 3 presents the survey investigating the attitude of shopkeepers with respect to opening the shops on Sundays and their social and economic considerations for this. Chapter 4 discusses the analysis of the impact of Sunday shop policy on the retail structure in the Netherlands. In chapter 5 we discuss the results from the previous chapters. Finally in chapter 6 the conclusions are presented.

2. Literature review

After providing a brief history of shop opening hours regulation in the Western world, the history of the Dutch Trading ACT and its effects on society throughout the years is described. Then, the evolution of the number of shopping Sundays in the Netherlands is covered in more detail. Finally, the literature on the economic effects of deregulation of opening hours will be reviewed.

2.1. Shop opening hours in the Western world

In the Western world, determination of the number of opening hours has been liberalized in a number of countries over the past five decades. Particularly the restrictions on Sunday shopping have been removed. The international trend towards allowing Sunday trading has been most extensive in North America, but has also occurred more recently in New Zealand and Western Europe (Retail industry, 2011).

In the United States, the number of states that restrict shops from being open on Sunday as steadily declined since the 1960's. The liberalization of Sunday trading also began in Canada in the early 1980s, whereas in Europe, only Belgium, Luxembourg, Sweden and Spain had taken any significant steps towards deregulating shops opening hours before the 1990s (Productivity commission, 2011). Sweden has allowed unrestricted opening hours for the retail sector since 1972 (Dijkgraaf and Gradus, 2005).

Before 1996, the opening hour legislation across Europe varied greatly. In some countries, especially those in southern Europe, consumer interests dominated and there were no legal restrictions for retail hours. Other countries, such as Denmark, Germany and the Netherlands had legal restriction for retail hours, resulting in regulations of weekend and evening opening hours (Gradus, 1996). At the end of the twentieth century, there was a fierce debate about deregulating retailing hours, in which the economic effects, as well as issues concerning social cohesion and religion, played an important role. In some Western European countries the regulation of shops opening on Sundays was intended to keep Sunday as a day of rest, as traditionally this day was meant for going to church (Dijkgraaf and Gradus, 2005). This debate led to the liberalisation of opening hours in several European countries (Nooteboom, 2006). For example, Germany liberalised retail hours in 1996, and extended closing times on weekdays from 6 pm to 10 pm, and on Saturdays from 2 pm to 4 pm (Dijkgraaf and Gradus, 2005).

Most Western European countries, many Canadian provinces and several American states still restrict opening hours on Sunday. Denmark and Finland only restrict the opening hours for large retail outlets. In the Netherlands, Belgium, Spain and Italy municipalities have some freedom to determine the Sunday retailing hours. In Ireland, Sweden, Portugal and the United Kingdom there are almost no legal restrictions on shops to open on Sundays (Dijkgraaf and Gradus, 2005).

2.2. History of the Trading Hours ACT

In the early nineties, the Netherlands had a conservative economic policy, compared to its neighbouring European countries. The integration and policies of the European Union had a great influence on the increasing liberalization of the economic policies of the Netherlands, gradually becoming more focused on stimulating a free-market economy. In 1994, the Dutch government introduced a policy towards the stimulation of market forces, deregulation and improved quality of legislation. One of the initiatives, was the liberalisation of opening hours under the Trading Hours ACT of 1996 (Bernardt, 1999). With the introduction of the Trading Hours Act the Dutch government intended to contribute building a stronger retail industry and was adopting a more liberal policy towards opening hours (Van Galen et al., 2006). Before the law was approved, the research institutions Panteia/EIM Business & Policy Research and Economic Policy Analysis (CPB) assessed the possible influences of relaxing opening hours on levels of employment, sales, staffing, entry and exit rates and the retail structure. Van Galen et al. (2006) and Bernardt (1999) studied the economic effects of liberalization of opening hours. One main finding of these studies was that the trend towards scale increase in the retail sector would continue after liberalization.

Estimating the exact effects on various economic aspects concerned was not possible due to the large variation of factors involved. Nevertheless, the CPB predicted that relaxing the restrictions on opening hours could increase the market dynamics, which as consequence would lower the prices of goods and have a positive effect on sales and employment (Van Galen et al., 2006). The introduction of the Trading Hours ACT gave rise to many objections, especially from the small and medium-sized enterprises (SME), as it was expected that deregulation could be more beneficial for large enterprises than for SME (Bernardt, 1999).

The Dutch Trading Hours ACT of 1996 is still in operation and determines the retail opening hours. One feature of this law is that the maximum number of opening hours, are determined centrally at

government level, but municipalities can, at a decentralized level, slightly amend the law. The most important directives of the law are:

Shops may be open from Monday to Saturday from 6 am to 10 pm

- Municipalities can set a maximum of 12 Sundays and public holiday days a year on which the shops can be open
- The national government can provide exemptions to the law
- Municipalities have the legal authority to give, within certain margins, dispensations and general exemptions
- Municipalities are allowed to expand their number of shopping Sundays if they benefit from cross-border traffic or constitute a touristic designation (Van Galen et al., 2006)

When the municipality obtains an exemption for Sunday shopping restrictions, they have to take at least the following interests into account:

- Employment and economic activity within a municipality, which includes the interests of small and medium sized shops
- Sunday as day of rest in the municipality
- Liveability, safety and public order in the municipality (Raadsorganen, 2013)

The relative importance of each of these economic interests depends on the situation the municipality is in.

2.2.1. Evaluation of the 1999 Trading Hours ACT

The Trading Hours ACT was evaluated shortly after its introduction to the law in 1996 (Bernardt, 1999). Several evaluations revealed that the Trading Hours ACT had resulted in the expansion in retail outlet opening hours, primarily in the evening, and especially for larger enterprises within the food sector and large home depots. Clothing and department stores were open more often on Sunday, relative to the other branches.

There was a trend towards extending opening hours of supermarkets, and the average number of opening hours per week increased from 55 hours in 1996, to 59 hours in 1997, up to 66 hours in 1998. The evaluation study further showed that larger firms extended their opening hours to a greater extent than small ones. The larger firms extended their opening hours by 42%, in contrast to 13% by the small- and medium sized ones. Of the top-100 firms, 78% of them extended their opening hours. With regard to smaller firms, those which had recently entered the market were more likely to extend their opening hours compared to the firms that were already established. An increase in employment was found to be particularly evident in large supermarkets and home depots, mostly amongst young people and the part-time workforce (Bernardt, 1999).

Years before the Trading Hours ACT was introduced, there had already been an on-going process of scale increase in the retail sector. So the introduction of the law probably did not cause this process, though it was probably accelerated by it. Many other factors have had an important role in the increase of scale in the retail sector. Examples of the influencing factors were: the establishment of large enterprises, the internationalizing of large retail concerns and the emergence of information technology (Bernardt, 1999).

2.2.2. Evaluation of Trading Hours ACT in 2005

In 2005, the Ministry of Economic Affairs requested the consultancy 'B & A' to evaluate the effectiveness of the Trading Hours Act, and to inform the Dutch House of Representatives of their results. B & A executed a poll on consumers and employees in the retail sector as well as shop owners. They also investigated the effects of the Trading Hours ACT on the dynamics of the market, looking into social and economic effects, competitiveness in the retail sector and on the functioning of the law as a municipal instrument. The most relevant findings will be presented below. For more details see Van Galen et al. (2006).

Consumers

The motivation for the Dutch Trading Hours ACT of 1996 was in response to various developments in Dutch society, such as diversification, changing lifestyles and working patterns which were still valid in 2005. There were less traditional households where women had time to shop during daytime opening hours. Employment of women was still on the increase, and a larger proportion of the inhabitants originated from non-Western cultures, who were not used to restrictions of opening hours.

For the consumer survey, B & A used a sample of Bloomerce Panels Europe. The sample was representative for the Dutch population in terms of gender, age and education. In 2005, 55.4% of the Dutch population occasionally visited a shop on Sunday, compared to 40% in 1998. Mostly adolescents and highly educated consumers in urban areas shopped on Sundays. Students, employed people and families with children utilized the opening of shops on Sunday to a greater extent than unemployed people or children. The most common reason to shop on Sundays was to socialise; the second most common reason was to buy forgotten groceries and the third reason was a lack of time on other days of the week.

Consumers were not always informed about the shopping Sundays: 45% of the people in the survey did not know the exact opening hours on Sunday, while 54% of the consumers did not know about Sunday opening at all. Consumers in municipalities with a greater frequency of shopping Sundays (25 - 52 shopping Sundays) were more content with the opening hours of supermarkets and other retail outlets than consumers living in municipalities with fewer shopping Sundays.

Regarding the question whether shops should be open every Sundays, 57% of the interviewed responded negatively to the idea, 22% were neutral and 20% had a positive opinion instead. Consumers living in municipalities that had between 20 and 52 shopping Sundays were more often in favour of a year-round shopping Sunday policy than consumers in municipalities with fewer shopping Sundays.

Longer opening hours of shops could have made a positive contribution towards the people's ability to combine their private life and work. There was no overall agreement regarding this effect amongst respondents. However, there was a clear distinction between the reactions of women and men. Women benefitted more than men from having longer opening hours and are more enabled to combine their private life's and work.

Employees

In the retail sector, 64% of the employees had never worked on a Sunday, 16% of the employees worked occasionally on a Sunday, 8% of the employees worked once a month on a Sunday, 3% of the

employees worked twice a month on a Sunday and 1% of the employees worked every Sunday. According to the respondents, the primary advantage of working on Sunday was the financial compensation. Among the employees, 33% had no problem with working on Sunday without extra compensation, while 66% only wanted to work only if it meant earning more money. Religion was a reason not to work on Sunday for only 7% of the total employees. A majority of the respondents did not want to work every Sunday.

Shop owners

Shop owners appreciated the Sunday rest day more than consumers did. Two-thirds of the respondents valued Sunday as a day of rest and considered it more important than being able to be open on Sundays. Small shop owners considered a free Sunday as more important than owners of larger stores. Out of all the shop owners, 16% valued Sunday rest days as important because of religious reasons.

2.2.3. Evaluation of the Trading Hours ACT in 2009

The Trading Hours ACT states that municipalities are not allowed to restrict opening hours from Monday till Saturday between 6 am and 10 pm. Municipalities have the legal authority to provide an exemption to the rules concerning the opening of shops on Sundays, public holidays and during the night time hours. These exemptions can be given for different reasons, such as an exemption because of tourism, an exemption because off cross-border traffic and an exemption because of a sudden special circumstance.

Stratus (2009) evaluated the Trading Hours ACT on the use, by municipalities, of the label 'touristic determination' and on the levels of satisfaction amongst municipalities about the amount of shopping Sundays. As shown in table 2.1, more than three-quarters were satisfied with the number of shopping Sundays in their municipality.

Table 2.1: Standpoint of municipalities on the number of shopping Sundays in 2009 (Stratus, 2009)

	Percentage of municipalities
Exactly enough shopping Sundays	78
Too few shopping Sundays	8
Too many shopping Sundays	2
Do not know the position	12

Municipalities increasingly used the tourism designation to increase the total number of shopping Sundays. The impression of some political parties was that municipalities had interpreted the tourism criterion too loosely over the years. The number of municipalities with more than 12 shopping Sundays had more than doubled in the period 1998 – 2009, while tourism had not increased by these numbers.

In 2009, the government tightened the regulations on the easing of Sunday shopping related to the touristic criteria. Municipalities were obliged to have autonomous and substantial forms of tourism if they wanted to benefit of the touristic designation. Substantial tourism in a municipality was determined using a qualitative threshold and ascertained at the municipality level. The importance of tourism for the municipal economy was a major criterion. Indicators of this could be income from the tourism sector, employment of the tourism sector and the number of visitors to certain touristic attractions. Along with te tourism being "substantial" it was also supposed to be autonomous, which

means that tourism has to be detached from retail activities and opening times. With these additional rules, the government wanted to limit the use of unjustified use of the label 'touristic determination' in municipalities (Economische Zaken, 2010).

The average daily turnover of shops in percentage of total weekly turnover was investigated by Van der Wouden et al. (2011) using Sunday shopping in Amsterdam as a case study. For the shops that were open on Sunday, their turnover was comparable to that of a week day. The major argument for opening on Sunday was profit inflation. One fifth of the shops that were closed on Sunday were considering the option to open their shops in the future.

2.2.4. Evolution of number of shopping Sundays

The history of retail on Sundays has shown that the percentage of municipalities allowing more than 12 shopping Sundays a year, steadily increased in the period 1998 – 2009. The number of shopping Sundays allowed at municipality level was only known for the years 2003 and 2012. This evolution of shopping Sundays is presented in figure 1. Please note that allowing shopping Sundays does not necessarily mean that shops are open on Sunday.
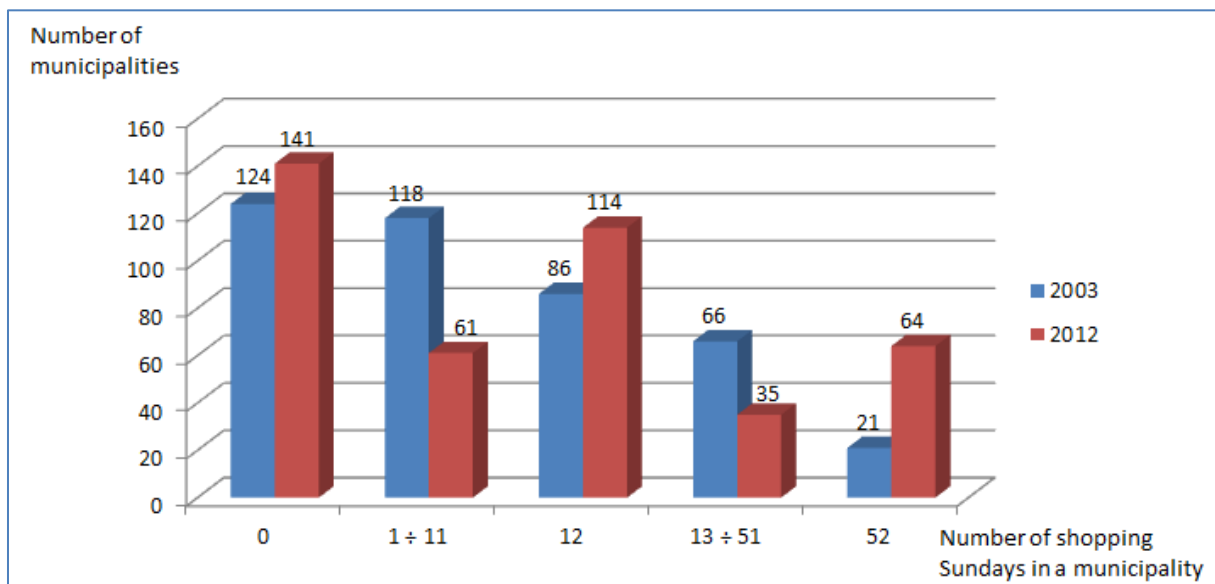

Figure 1: Number of shopping Sundays in 2003 and 2012 (Adapted from Dijkgraaf and Gradus 2007 and Raadsorganen, 2013)

As presented in figure 1, the number of municipalities with no shopping Sundays have increased from 124 to 141 between 2003 and 2012. Municipalities between 1 and 11 shopping Sundays saw the largest decrease from 118 to 61, while that of municipalities with 12 shopping Sundays increased from 86 to 114. The municipalities with a number of shopping Sundays between 13 and 51 declined from 66 to 35 while municipalities with year round shopping Sundays showed the greatest relative increase, from 21 to 64.

In 2005, the average number of weekly opening hours was 64.7 hours, of which 5.5 hours were on Sunday. Figure 2 shows the difference in the average number of opening hours from Monday till Saturday and Sunday, between the non-food and food retail outlets and between different sized stores. Stores in the food retail sector had longer opening hours compared to stores in the non-food retail sector. Non-food stores were open for 5.4 hours longer on Sunday compared to 6.2 hours in

food stores. There was a difference in opening hours on Sunday between stores of different size: small stores were open 5.4 hours, medium stores were 5.5 hours, and large stores 5.8 hours.
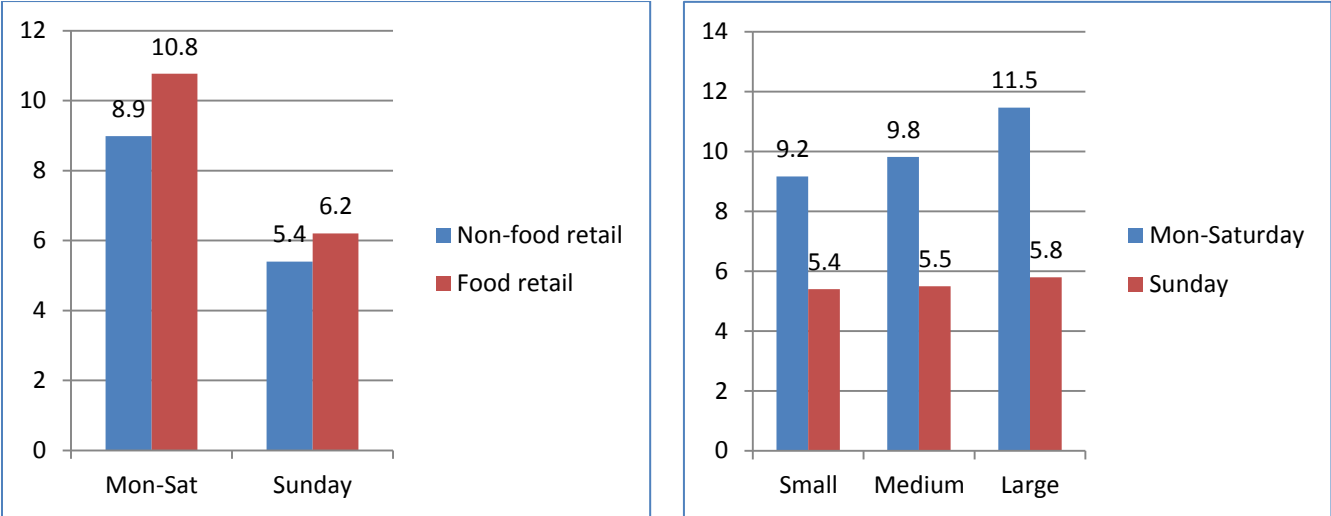

Figure 2: Opening hours of retail stores (Adapted from Van Galen et al., 2006)

2.3. Retail structure

To investigate the influence of shopping Sundays on the retail structure an understanding of retail structure is necessary. Retail structure pertains to the composition of retail outlets by size, mix, and distribution of retailers within a geographical area. The construct of retail structure is set apart from market structure. Market structure consist of elements to do with customer characteristics and market environment factors and have a major impact on the retail structure. Customer characteristics are variables such as age and income and environmental elements are variables such as mobility and population density (Miller et al. 1999).

As presented in figure 3, Miller et al (1999) indicate that the retail structure consists of three elements: personal service, scale and saturation levels. In their model retailers are divided into three categories, each with a different personal service level: limited-line specialists which are retailers with the highest level of consistency of product lines to fulfil complementary and specific end-use needs; Broad-line specialist which are retailers who offer a broader level of consistency of product lines to fulfil complementary and more generic end-use needs; General merchandisers which are retailer that offer relatively inconsistent product lines to fulfil non-complementary and independent market end-use needs.

The competition levels between these three types of retailer can be classified as intra-type, inter-type and inter-category competition. Intra-type competition involves competition between similar types of retailer, Inter-type competition exists when limited-line and broad-line retailers sell similar products, and inter-category competition occurs when specialists and general merchandisers sell similar products. The results of the study by Miller et al. (1999) on competition between the three types of retailer suggests a mutually beneficial relationship among different types of retailers, rather than an overwhelming advantage for larger stores. By understanding the retail structure, market level decisions such as how many stores, what size of stores and what level of service to provide in a particular market, can be improved upon (Karande and Lombard, 2005).
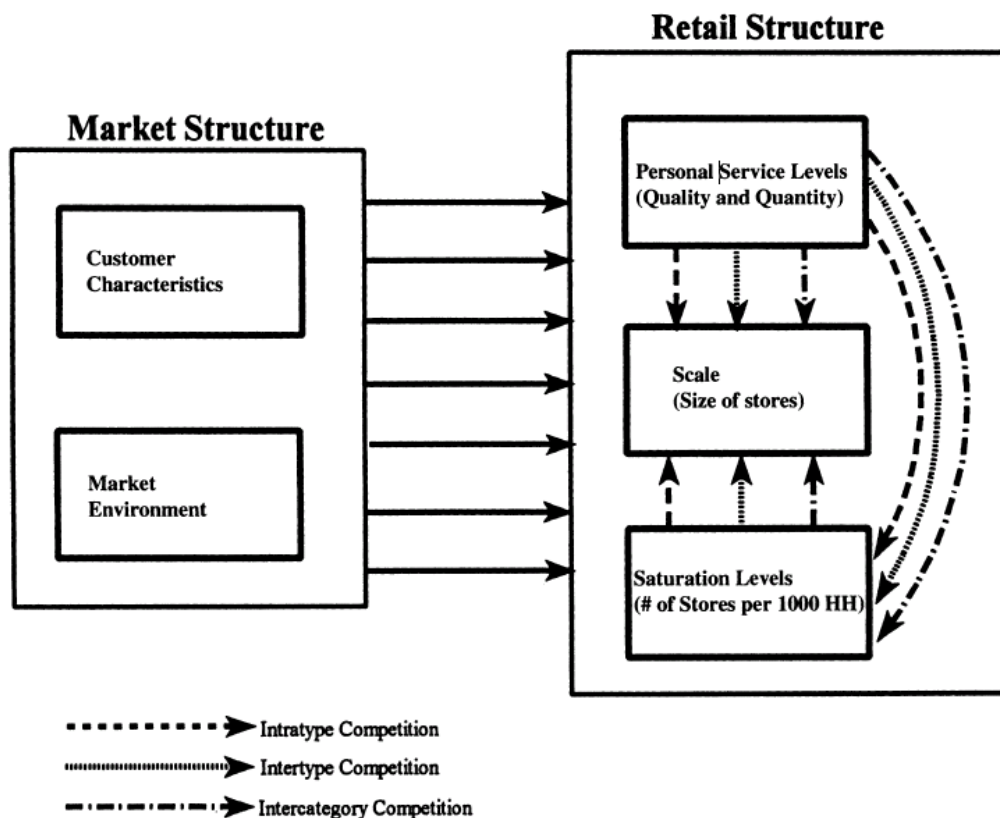
Figure 3: Market structure and retail structure (Miller et al. 1999)

2.4. The economic effects of deregulating opening hours

Regulations can cause lower levels of competition, inefficiencies and substantial costs to companies, sectors and on the economy as a whole. According to Blöndal and Pilat (1997), these costs can accumulate in four ways: first, firms can create fewer incentives to economise on resources, which in turn creates over-investment in capital, employment of excess labour or inefficient internal organization of the production processes; second, lower competition can result in higher wages and bonuses; third, regulation can prevent firms to take advantages of economies of scale; fourth, regulation can result in lower incentives for firms to innovate and to adapt quality and diversity of goods and services to satisfy changing consumer needs. In conclusion, stringent regulation in a certain sector can cause higher prices, higher costs, misallocation of resources, poor service quality and a lack of innovation.

In the retail sector, the arguments for the deregulation of opening hours were generally to offer more flexible shopping opportunities for the consumer, a wider choice of products, increased competition levels, a more pleasant urban environment and an expansion of economic activities. Nevertheless, opponents often argue that deregulation might have a negative effect on small businesses and community life. Besides attracting public debate, the subject of liberalisation of trading hours has attracted considerable interests within scientific literature in recent years (Wenzel, 2011).

The literature about the economic impact of deregulating opening hours in the retail sector is rather inconclusive (See for example Gradus, 1996; Huddleston and Huddleston, 2010). In this section we discuss the possible impacts of deregulation on the retail sector on costs, prices, sales, employment and retail structure.

2.4.1. Costs

The most common argument against the deregulation of opening hours was cost control. Consumers would tend to react to longer shop opening hours by redistributing their spending pattern without changing volumes purchased (Burda, 2000). The desirability for deregulation may be weakened if longer opening hours come with additional costs (Inderst and Irmen, 2005). The deregulation of opening hours has led to an extension of total opening hours, with both positive and negative cost effects. An initial effect of the increase in costs is a direct result of the extension of total opening hours; mainly, because of threshold labour costs (CPB, 1995).

Nooteboom (1983 and 2005) describes the concept of threshold labour, the minimum capacity of personnel required during the opening. In a shop with a single service counter, the threshold labour cost is proportional to the opening time. In a shop whit more personnel, threshold labour is equal to the sum of opening hours of each separately staffed department. Cost-effectiveness studies in different types of outlet and sector in the Netherlands, as well as in other countries, have shown a linear relationship between the amount of labour and shop size. The number of customers that visit a shop increases proportionally to their sales volume, therefore the minimum capacity of one person allocated per service point has to be increased to prevent customers from having to wait. Furthermore, there seemed to be considerable empirical evidence supporting that marginal labour costs varies compared with the number of opening hours (Goos, 2005). Figure 4 shows that an increase in scale of a shop results in greater labour productivity. An extension of opening hours would create an increase of threshold labour costs, resulting in an upward shift of the cost curve. The effect on costs is greater for smaller retail outlets than for larger ones (Nooteboom, 1983).
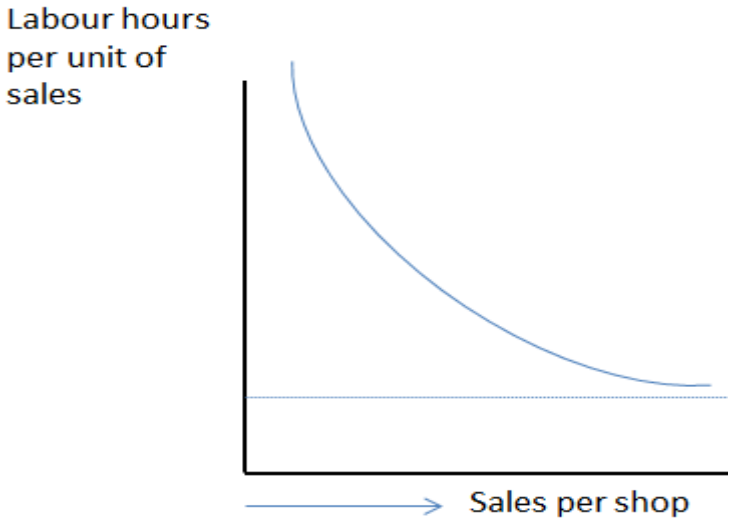

Figure 4: Economy of scale (Reproduced from Nooteboom, 2005)

Thurik (1984), conducted a study amongst large French retail stores to analyse the influence of weekly opening hours on labour productivity. This study revealed the phenomenon that supermarkets and department stores with relatively long opening hours were in general relatively

more labour productive. An explanation for this could be that sales peaks were flattened out throughout the day.

A second costs-increasing effect due to the extension of opening hours is that of increased wages for employees working irregular shift times. This came to a surcharge of around fifty percent for a late-night shift and a surcharge of one hundred percent on Sundays or public holidays. For part time employees the surcharge was around twenty five percent of their hourly wages (CPB, 1995). Kay and Morris (1987) noted that the existing 'double time' wages for working on Sundays could exceed the market rate required to attract the labour needed; therefore they considered the effects of a reduction to 50 percent surcharge. The reduction of the surcharge reduced the cost of a shopping Sunday but increased the total number of shopping Sundays, therefore there was little change in the total cost effects.

Beside the effect of increasing costs, there was also a reducing cost effect from extending opening hours. By extending the total number of opening hours, there was a cost advantage for stores due to the spreading of fixed costs over the day. Mainly because of the perceived advantages of cost reduction, large stores have traditionally favoured the deregulation of opening hours. Also employees could do maintenance work and replenish shelves during evening hours or Sundays, so that the additional personnel requirements were minimal (Grünhagen and Mittelstaedt, 2011).

2.4.2. Prices

The effects of liberalizing opening hours on retail prices are ambiguous. Clemenz (1990) used a simple model to analyse a market where consumers were imperfectly informed about prices, and where gathering information was costly and time consuming. His results showed that the liberalisation of opening hours was either ineffective or could result in lower prices as longer opening hours facilitate the possibility for consumers to compare prices.

Inderst and Irmen's (2005) theoretical model with asymmetric equilibrium configuration that with short-term implication of liberalisation, the choice for opening hours could result in higher prices. The long-term effects of liberalisation, due to the possibility demand may change because of either a response to price change, or more flexible opening hours, were not taken into account. Therefore, the exact long-term effects of deregulating the laws for increased opening hours on prices was indeterminate.

Tanguay et al. (1995) examined the price changes that occurred at retail outlets of varying sizes, when shop opening hours deregulation occurred in the province of Quebec, Canada, in 1990. They used a theoretical model to explore the effects of extending store opening hours on the prices charged for products, by stores of various sizes. Their model predicted that price levels in large stores would increase after liberalising opening hours; As a result of demands shifting from small outlets to large outlets. The authors associated larger shops with lower accessibility, as they are often on the periphery of cities and take more time to be reached, and small shops to be more local and hence customers require a shorter period of time to access the shop. A large shop has therefore to charge lower prices for products to fulfil customer demand. By deregulating opening hours, the value consumers previously attached to access time fell, and therefore the location disadvantage of large stores became less influential. The demand for larger stores also increased, while demand for smaller stores shrunk. This prediction was supported by the results of a test using a set of pooled, time-series and cross-section, data sets collected before and after the liberalisation for extending opening hours

in the province of Quebec. The increase in prices at larger stores suggested that consumers had to pay for greater shopping flexibility.

Burda (2000), and Burda and Weil (2004), found also that the deregulation of opening hours could cause an increase in retail prices. Some stores will stay open to the extent that consumers wish to shop at nonstandard hours, which requires more flexibility when planning in personnel and at higher wage rates. As a result, the higher wage rates will lower profit margins which would be compensated by an increase in retail prices.

Kay and Morris (1987) theoretical model showed that an inefficient Sunday trading equilibrium can. Competitive pressures will induce excessive opening hours of stores at times when costs are high, such as on Sundays. Therefore, stores as a whole would be better off if they are forced to be closed. However, empirical evidence shows, in the case of the UK, costs and demand conflict does not arise in practice, and the liberalization of opening hours will lead to lower costs and prices in the retail sector.

2.4.3. Retail sales

By deregulating opening hours there is a possibility that total sales could increase or that retail sales could stay constant. If the total sales increase by extending opening hours, the total consumption by consumers in the retail sector would have to increase. Therefore regulating opening hours would limit the total demand set by consumers (CPB, 1995). Gradus (1996) showed that, if opening hours were to be extended to a situation similar to that of Sweden, overall sales in the retail sector would increase by 1.2%. A study amongst consumers from municipalities in the province of Limburg showed that 34% of the expenses on Sundays were classified as additional expenses or were spent in other sectors (BRO, 2009). A survey among shop owners in the municipality of Roermond, showed that the majority of stores experienced an increase in total weekly sales since the introduction of shopping Sundays. Less than a third of the shop owners noticed a shift from sales from other days to Sunday (Raadsorganen, 2013). Halk and Takger (as cited in Nooteboom, 2005, p 11) found that after first expanding shopping hours some shops returned to their old schedule: 47% of these shops addressed their unfavourable location as the main reason for it. A complaint often heard from small shop owners was that extending opening hours, resulted in consumers generally using their facilities for supplementary shopping. Consumers bought only products they forgot to buy previously, as they purchased the bulk of their required weekly shopping at cheaper, larger stores, located further away (Nooteboom, 2005).

2.4.4. Employment

Regulation of the retail industry concerning opening hours, have been put in place to protect employees (Boyloud and Nicoletti, 2001). The employment implications of deregulation appeared to be complex. There was relative little evidence suggesting that deregulation lead to changes in employment (Huddleston and Huddleston, 2010). Gradus (1996) distinguished three counteracting effects caused by extending opening hours which could influence employment levels. 1) sales effect: where an increase in sales will correspond with an increase in labour; 2) the threshold labour effect: an increase in the number of opening hours will lead to an increase in labour; 3) the labour productivity effect, extending opening hours will impact positively labour productivity, so to result in a decrease in labour. The partial-equilibrium model, where they applied parameters from a Swedish study, estimated that the labour productivity could decrease by 0.37% if the number of opening

hours was extended by 1%. The problem with these estimates is that these simulations are based on data obtained in countries that had yet to experience deregulation (Skuterud, 2005). The empirical evidence from Sweden and the Netherlands shows an overall positive effect on labour, mainly because of an increase in threshold labour. Also, Goos (2005) showed that because of threshold labour, employment increased amongst deregulated industries.

Skuterud (2005) argues that deregulating opening hours has an overall positive effect on employment levels. He used a dynamic labour demand model to identify how retailers would satisfy their demands by obtaining Sunday labour. Using data from a sample of provinces in Canada he found that that there was an overall increase in employment, mainly driven by an increase in the level of threshold labour, and not by an increase in sales volume. The findings indicate also that gains in labour productivity were offset by an increase in threshold labour; also labour demand increased to a larger extent amongst larger stores compared to small ones. Increasing the working hours of existing employees in retail outlets was not enough to overcome the required increase in employment.

3.4.5. Retail structure

Deregulating opening hours changes the market environment and therefore influences retail structure. Most literature argues that deregulating opening hours had a positive effect on the increased scale of retail outlets (Gradus, 1996; Bernandt, 1999; Nooteboom, 2005). Because of the extent of the effects of deregulation leading to longer opening hours, it could be expected it would also accelerate economies of scale and therefore the trends of increasing store sizes and declining number of retail outlets.

The liberalization opening hours created a 'prisoner's dilemma' for shop owners, because it is unlikely that total sales in the retail sector can increase much because of longer opening hours. Therefore it would be in the best interest of all shop owners, to not extend opening hours. However by not extending opening hours while other retail outlets do, would result in a loss of sales, and therefore most retailers would increase their opening hours (Nooteboom, 2005).

Wenzel (2011) studied the differences in decisions made about opening hours, by retail chains and independent competitors. He showed, with a Salop-type model, that the impact of deregulation of opening hours depended significantly on the difference in efficiency between chain outlets and independent retailers. When the advantage in efficiency was small, the independent retailer would generally choose to open for a longer time period than the retail chain and could make positive gains from deregulation at the expense of retail chains. When retail chains had lower operating costs, either due to a more efficient organizational structure, purchasing power, or economy of scale (compared to independent retailers) the situation would be the opposite. In this case the chain store would increase their opening hours while the independent retailer is unable to match the longer period of shopping hours. This disadvantage, of having fewer opening hours, could lead to a decline in demand and profits. When these effects are strong enough, deregulation could lead to a decline in the number of small businesses.

Morrison and Newman (as cited in Gradus, 1996, p 249) argued that, if opening hours were extended, the volume of sales would increase in large retail outlets and decrease in small retail outlets. Prices in small shops were higher but accessibility costs for customers were lower, therefore, consumers choose small shops for small purchases. The accessibility costs for customer were

lowered by extending opening hours, which has been an advantage for larger retail outlets. Based on the existing literature, it is a well-grounded assumption that the retail structure has experienced developments as a consequence of the deregulation of opening hours. In general there has been a decrease in the total number of retail outlets and an increase in the average shop size.

3. Being open on Sunday: "A case study on Veenendaal"

As of the beginning of 2014, no shopping Sundays are allowed in Veenendaal. This has been a point of discussion ever since The House of Representatives supported decentralized the decisions over Sunday shopping policies, from the central government to the municipalities. At the request of Platform Binnenstadsmanagement Veenendaal, an organisation of shop owners located in the city centre of Veenendaal, a survey has been designed with the goal of understanding the attitude of shopkeepers in Veenendaal with respect to Sunday openings.

Veenendaal is inhabited by a considerable number of conservative Protestants, and this is why a relatively negative attitude towards Sunday opening is to be expected. Small shop owners considered a free Sunday as more important than owners of larger stores (Van Galen et al., 2006). That is why it is expected that larger stores would be more in favour of Sunday opening compared to small shops.

3.1. Materials and Methods

Several questionnaires regarding shopping Sundays have been used as examples in the formation of the questionnaire used in this research (O & S, 2011, Wouden, 2011 and I & O Research 2012). Furthermore, various shop owners, policy makers and city managers have been contacted to discuss what relevant and interesting questions to ask shop owners about shopping Sundays. A survey with 12 multiple choice and ranking questions was developed, and then tested on shop owners in Wageningen. After testing the survey, an online survey was created with SurveyMonkey (Survey monkey, United States).

A list was provided by the city manager of Veenendaal with the email addresses of 284 of the total 327 existing shop owners in Veenendaal. Before the online survey was sent out to the shop owners, the city manager notified them that they would receive an online questionnaire, with a request to fill it in. An email with a link to the online survey, which could be used only once, was sent to 284 shop owners in Veenendaal. From the 284 emails send, 16 email addresses were not valid. In total 268 valid email addresses of shop owners were collected, of which 176 responded and filled in the questionnaire (the response rate was 66 percent).

The data was imported in SPSS and a logistic binominal model was fitted to the data to assess the relationship between the likelihood of a shop owner wanting to open their shop on Sunday, and other differing variables. The variables likely to have an influence on the decision to be open on Sunday and could be divided in religious, social, economic and shop type variables. A logistic

regression was well suited for describing and testing the hypotheses about the relationships between dichotomous outcomes and one or more categorical predictor variables (Peng et al., 2002).

3.2. Results

The overall significance of the full model versus a model with intercept-only was tested using the Inferential Likelihood ratio test. From this test we could conclude that the logistic model was more effective than a model containing only a constant (χ^2 (13) = 42.311, p < .001). The model was able to correctly classify 87.3% of those who wanted to open their shop on Sunday and 59.4% of those who did not, for an overall success rate of 77.9%. The Hosmer & Lemeshow goodness-of-fit test yielded a χ^2 (7) of 8.508 and was insignificant (p > .05), suggesting that the model fairly accurately fitted the data.

From the 176 shop owners that completed the questionnaire 51% respondents wanted to open their shop on Sunday. In the analysis and prediction whether a shop owner wanted to be open on Sunday a dichotomous outcome was used (0 = not open 1 = open). The results of the analysis are presented in table 3.1.

Table 3.1. Binary Logistic Regression Analysis with depended variable of being open on Sunday

Variable	Coefficient	SE	Wald's χ^2	df	p	Exp(B) (Odds ratio)
Religious belief [1]	-1.260	.668	3.565	1	.059*	.284
Importance free day [2]	-.313	.146	4.582	1	.032**	.732
No staff [2]	-.406	.221	3.356	1	.067*	.667
Policy head office [2]	-.135	.296	.207	1	.649	.874
Staff too expensive [3]	-.721	.406	3.143	1	.076*	.486
Salary surcharge [3]	.159	.703	.051	1	.821	1.173
Cannibalisation of sales [3]	-.197	.114	2.984	1	.084*	.821
Not enough sales [3]	.214	.241	.789	1	.374	1.239
Consumers avoid shop [3]	.030	.092	.104	1	.747	1.030
Chain store [4]	-.182	.682	.071	1	.790	.834
Large shop [4]	.175	.730	.058	1	.810	1.191
Clothing store [4]	.347	.661	.275	1	.600	1.415
Main street [4]	.792	.317	6.228	1	.013**	2.207
Constant	1.702	.824	4.267	1	.039**	NA

Test	χ^2	df	p
Overall model evaluation			
Likelihood ratio test	42.311	13	.000
Goodness-of-fit-test			
Hosmer & Lemeshow	5.716	7	.573

Note: [1] = religious variable, [2] = social variable, [3] = economic variable and [4] = shop type variable. The dependent variable in this analysis was coded as, 0 = not open 1 = open. The independent Salary surcharge variable was coded as 0 = in favour of 100% salary surcharge, 1 = in favour of 0% - 75% salary surcharge. All other independent social and economic variables were coded as 0 = not a reason to be closed, 1 = a reason to be closed. For the shop type variables; chain store was coded as 0 = Independent shop, 1 = Chain store. Main street was coded as 0 = not located in main street, 1 = located in main street. Large shop was coded as 0 = 1-9 employees, 1 = 10 or more employees. Clothing store was coded 0 = not a clothing store, 1 = clothing store. Cox and Snell R^2 = .359 and Nagelkerke R^2 = .498. * $p < .10$, ** $p < .05$. NA = not applicable

The odds of being open were influenced in a statistically significant way by the following variables: Religious belief ($\beta(1)$ = - 1.260, $p < .10$), Importance of a free day ($\beta(1)$ = -.313, $p < .05$) , Staff too expensive ($\beta(1)$ = −.721, $p < .10$), No staff ($\beta(1)$ = -.406, $p < .10$), Cannibalisation of sales ($\beta(1)$ = -.197, $p < .10$) and Main street ($\beta(1)$ = .792, $p < .05$). All variables are explained in the section below.

Shop owners who identified Religious belief as a reason to be closed on Sunday were 3.52 (1 / .284) times less likely to be favourable towards being open on Sunday than those who did not. As Veenendaal is inhabited by a considerable number of conservative Protestants, who are in favour of Sunday as 'a day of rest', this result is expected.

Shop owners who identified the importance of Sunday as a free day as a reason to be closed on Sunday were 1.366 (1 / .732) times less likely to be favourable towards being open on Sunday than those that who did not identify this as a reason. For these shop owners free time is a significant

reason to stay closed on Sunday. Some shop owners explained that by opening on Sunday it would result in excessive work pressure for them. Of all the shop owners considering opening their shop on Sunday, more than 70 per cent intended to work in the shop themselves on this day.

Those who identified 'not having sufficient staff' as a reason to be closed on Sunday were a factor of 1.5 (1 / .667) times less likely to be in favour of opening on Sunday than those that who did not. Veenendaal is a town with a high percentage of religious people and therefore it could be relatively difficult to find individuals willing to work on Sunday.

Also policy made by a head office of a retail outlet is not a significant predictor of whether shops are willing to be open on Sunday or not. It could be that a shop owner was forced by the head office to be open or closed on Sundays. In our data, however, there was no evidence found that any head office of a store was influencing the decision of being open or not.

Shop owners who identified 'staff is too expensive' as a reason to be closed on Sunday were 2.06 (1 / .486) times less likely to be in favour of opening on Sunday than those that who did not. As most staff working in the retail sector have to be paid an extra wages to work on Sundays, the extra wages may represent a cost too high compared to the expected Sunday Sales. However the Salary surcharge variable (0 = in favour of 100% salary surcharge 1 = in favour of 0% - 75% salary surcharge) did not significantly influence the probability of a shop owner being in favour of opening on Sunday. Those who identified 'cannibalisation of sales' as a reason to be closed on Sunday were 1.22 (1 / .821) times less likely to be favourable towards being open on Sunday than those who did not. These shop owners feared that opening on Sunday would not generate extra sales but only create a shift of sales over the week. Surprisingly the variable 'not enough sales', did not significantly influence the decision of being closed on Sunday.

Fear that consumers were going to avoid the shop if opened on Sunday did not significantly influence the probability of being in favour of opening or not.

We found no evidence that franchisers or managers of chain stores were more likely to be open on Sunday than owners of an independent store. Also, the size of the retail outlet did not influence the decision to be open or not on Sunday. There is a possibility that small or independent retailers are afraid to be harmed by opening their shop on Sunday because they might not be able to match the longer opening hours of larger chain stores. We found no evidence of this in our sample.

From the evaluation of the Trading Hours ACT in 1999 it appears that clothing stores were open more often on Sunday than retail outlets in other branches. However we found no evidence to indicate that clothing stores were more likely to be favourable towards being open on Sunday than other stores.

From the results it appears that the location of a retail outlet influences the decision of being open on Sunday. Shop owners who were located on the main street were 2.20 times more likely to be favourable towards being open on Sunday than those that who were not located on the main street. As most of the traffic is in the main street, this will naturally lead to more sales. Consequently shop owners in the main street could profit more from shopping Sundays than those who were not located in the main street.

In sum, religious belief and most of the social variables influenced significantly the probability of shop owners of being in favour of opening on Sunday. From an economic point of view, only 'cannibalisation of sales' and 'staff too expensive' were valid reasons to be closed on Sunday. The other economic variables did not significantly influence the decision to be open or not on Sundays.

4. Impact of shopping Sundays on the retail structure

We aim to investigate the impact of shopping Sunday policy on retail structure in the Netherlands. We make the hypothesis that shopping Sundays lead to longer opening hours and would therefore increase the economy of scale in the retail sector. This would accelerate the decline of smaller stores and a decline in the number of retail stores overall. To test these relationships we formulated 4 hypotheses.

H_1: *Municipalities with shopping Sundays have fewer retail outlets per 1000 inhabitants compared to municipalities without shopping Sundays.*

H_2: *Municipalities with shopping Sundays have larger stores compared to municipalities without shopping Sundays.*

H_3: *Increasing the number of shopping Sundays has a negative impact on the number of retail outlets per 1000 inhabitants.*

H_4: *An increase in the number of shopping Sundays has a positive impact on the increasing size of retail outlets.*

4.1. Materials and Methods

According to Miller et al. (1999) retail structure consists of three essential elements: personal service level, saturation level and size of stores. In this study we focused on the last two elements because of lack of data. We measured the saturation level by the number of retail outlets per 1000 inhabitants in a municipality and size of retail outlets by using the average size of a store in a municipality.

Besides shopping Sundays we expect other market environment elements and socioeconomic variables to have an influence on the retail structure of a municipality. To control for these variations we included other variables in the model, as illustrated in figure 5.
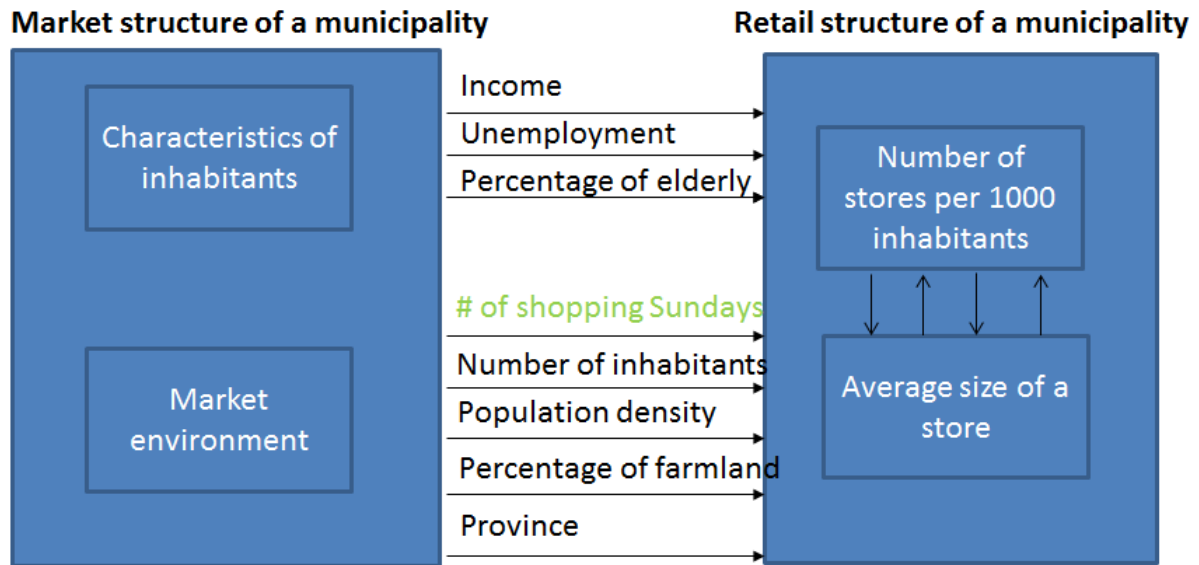
Retail structure of a municipality

Characteristics of inhabitants

Income

Unemployment

Percentage of elderly

Number of stores per 1000 inhabitants

# of shopping Sundays

Number of inhabitants

Market environment

Population density

Average size of a store

Percentage of farmland

Province

Figure 5: The influence of the number of shopping Sundays and other market structure variables in the retail structure of a municipality

4.1.1. Models

In total 4 econometric models were developed: the first to analyse the impact of shopping Sundays on the number of retail outlets per 1000 inhabitants; the second to analyse the impact of shopping Sundays on the average size of a retail outlet; the third model to analyse how changes in the number of shopping Sundays impacts the ratio of number of retail outlets per 1000 inhabitants; the fourth to analyse how changes in the number of shopping Sundays impacts the scale of retail outlets. The 4 models are presented below. Note that, although the models use municipalities as units of observation, and the variables used are at the municipality level, municipality-specific subscripts are not included for simplicity.

Model 1

$$N = \alpha\,PD + \beta\,FAL + \gamma\,POP + \delta\,FEL + \mu\,INC + \zeta\,UR + \eta\,DP_i + \theta\,DSS_i + \varepsilon$$

Where *N* is the Number of retail outlets per 1000 inhabitants; PD is population density; FAL is percentage of agricultural land; POP is population; FEL is proportion of elderly; INC is income, UR is unemployment rate; Dp is a dummy variable for the provinces; DSS is the dummy variable for number of shopping Sundays; α, β, γ, δ, μ, ζ, η and θ are parameters to be estimated while ε is an error term. We included these explanatory variables in the equation because we expect that these variables have an influence on the retail structure of a municipality.

Model 2

$$S = \alpha\,PD + \beta\,FAL + \gamma\,POP + \delta\,FEL + \mu\,INC + \zeta\,UR + \eta\,DP_i + \theta\,DSS_i + \varepsilon$$

Where S is the average size of a retail outlet in square meters and all other variables are the same as described above. For model 1 and model 2, we use data for the years 2004 and 2012.

Model 3

$$\Delta N = \alpha\, PD + \beta\, FAL + \gamma\, POP + \delta\, POP_{gr} + \mu\, FEL + \zeta\, FEL_{gr} + \eta\, INC + \lambda\, INC_{gr} + \varphi\, UR + \varsigma\, UR_{gr} + \omega\, DPi + \theta\, CSSi +$$

Where *ΔN* is the change in number of retail outlets per 1000 inhabitants between 2004 and 2012; PD is population density; FAL is percentage of agricultural land, POP is population, POP_gr is population growth between 2004 and 2012, FEL is proportion of elderly, FEL_{gr} is change in number of elderly between 2004 and 2012, INC is income, INC_{gr} is change in income between 2004 and 2012, UR is unemployment rate; UR_{gr} is unemployment change between 2004 and 2012; DP is a dummy variable for the provinces, CSS is the change in number shopping Sundays, α, β, γ, δ, μ, ζ, η, λ, φ, ς, ω and θ are parameters to be estimated while ε is an error term. The variable population density and share of agricultural land are not included as 'growth' variable because they stayed relatively equal between 2004 and 2012. In the equation above, parameter θ represents the *ceteris paribus,* the impact of a shift of one group, in the grouping of additional shopping Sundays, on the factor of change in number of retail outlets per 1000 inhabitants in a given municipality, between 2004 and 2012. All variables were measured at the municipality level.

The change in the number of shopping Sundays was measured as the difference between the group category of shopping Sundays between 2004 and 2012. For example, a municipality had 0 SS in 2004 and 13-51 SS in 2012, the shift in group category of shopping Sundays is +3.

Model 4

$$\Delta S = \alpha\, URB + \beta\, FAL + \gamma\, POP + \delta\, POP_{gr} + \mu\, FEL + \zeta\, FEL_{gr} + \eta\, INC + \lambda\, INC_{gr} + \varphi\, UR + \varsigma\, UR_{gr} + \omega\, DPi + \theta\, CSSi + \varepsilon$$

Where ΔS is the change in the average size of a retail outlet in square meters and all other variables are described previously.

We used multiple linear regressions in SPSS to estimate the impact of shopping Sundays on the retail structure. Before any conclusions could be drawn about the results from a regression analysis, the validity of several assumptions would have to be tested. Assumptions that would support the regression analysis could be made under the right conditions (Field, 2013). We checked our data for missing data, outliers, linearity, normality, homoscedasticity, multicolinearity and independence of residuals. From the 415 observations at the municipality level [1] there was 1 outlier and 11 municipalities had missing information, and were therefore removed from the analysis.

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[1] Between 2004 and 2012, several municipalities either disappeared, aggregated or were renamed. In total 110 changes in the composition of municipalities took place, whereof 90 municipalities were phased out of their original composition. Both of these dates had to be comparable to measure the impact of changing the number of allowed shopping Sundays on the retail structure. The list of existing municipalities in 2012 was used as a reference year. The 2004 data was transformed to portray a similar composition of municipalities as there were in 2012. As an example of how the transformation took place, in 2007 a new municipality named Maasgouw was formed, a formation consisting of three separate former municipalities Heel, Thorn and Maasbracht. Data from 2004 about the three municipalities had to be added together and introduced as a new sum value for Maasgouw.

4.2. Data collection

4.2.1 Shopping Sundays

To explore the impact of allowing shopping Sundays on the retail structure in the Netherlands we divided the municipalities in 5 groups: municipalities with 0 SS, 1-11 SS, 12 SS, 13-51 SS and 52 SS. For each group a dummy variable was created. In this way we could analyse the influence of allowing a certain amount of shopping Sundays on the ratio between the number of stores per 1000 inhabitants and size of stores.

The municipality of Utrecht provided a list with all 415 municipalities and the corresponding number of shopping Sundays for the year 2012. Data was cross-references by consulting the municipalities websites or to inquire about shopping Sunday information by phone when such information was missing from the website. Also, Prof. Dr. Dijkgraaf[2], the author of an article 'Explaining Sunday shop policies' in the scientific journal 'De Economist', provided a list of municipalities and the number of shopping Sundays for the year 2003. This list originated from the website 'koopzondag.net'. Together, this provided a list of shopping Sundays on municipality level for the year 2003 and 2012. Data was only available for 2 years due to the lack of data for other years.

4.2.2. Retail structure

Data concerning the number of retail outlets and their total floor space within a municipality for the years 2004 and 2012 was provided by Locatus. The year 2004 was the oldest available data in the database. So, by matching the data on the retail structure from 2004 with the shopping Sunday data from 2003, it was assumed that the number of shopping Sundays were the same in 2003 as in 2004.

4.2.3. Market structure variables

We used Statline, the electronic database of Central Bureau of Statistics to search for market structure variables of a municipality. The number of variables obtained at municipality level was limited. We tried to obtain the data as near as possible to the years 2004 and 2012. We collected data on income, unemployment, percentage of elderly, number of inhabitants, population density, the proportion of agricultural land, and in which province the municipalities are located.

The variable income was the average disposable income in Euro's for all the inhabitants in an municipality. This is gross income minus current transfers paid, income insurance fees, health insurance fees and tax on income and wealth. Unemployment rate was calculated by dividing the number of people with an unemployment benefit in a municipality by the total labour force. The percentage of elderly was calculated dividing the number of inhabitants older than 65 within a municipality by the total number of inhabitants. Population density was measured by using the address density per square km of a municipality.

The percentage of agricultural land was calculated by dividing the surface area of agricultural land by total land surface of the municipality.

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[2]I would like to thank Prof. Dr. Dijkgraaf for his provided dataset on shopping Sundays.

4.3. Results

As is shown in table 4.1, have the number of retail outlet declined between 2004 and 2012. In this period the number of stores declined from 107 650 to 102 797, which is a decrease of 4.5% in 8 years. The number of retail outlets per 1000 inhabitants decreased from 6.6 stores to 6.1 stores. On the other hand, the average floor space per retail outlet increased from 230.7 to 270.6 square meters. The amount of area in square meters of retail outlet available per inhabitant, increased from 1.52 to 1.66 square meters per inhabitant, so the total retail density in the Netherlands increased between 2004 and 2012.

Table 4.1. Retail variables in 2004 and 2012

	2004	2012
Number of stores	107 650	102 797
Number of stores per 1000 inhabitants	6.6	6.1
Square meter floor space per store	230.7	270.6
Square meter floor space per inhabitant	1.52	1.66

4.3.1. Number of stores

The results from model 1 indicate a positive relationship between the number of shopping Sundays and number of retail outlets per inhabitant in the municipality, as seen in the estimates presented in table 4.2. In the model using the 2004 data, municipalities with 13-51 SS and 52 SS had significantly more retail outlets per inhabitant compared to the reference group of municipalities with no SS (P<.01). In the model using 2012 data instead, any municipality with at least one SS had significantly more retail outlets per inhabitant compared to municipalities with 0 SS (p<0.1). Therefore, hypothesis 1 is not supported. The results suggest a positive relationship instead of the expected inverse relationship between number of shopping Sundays and number of store per 1000 inhabitants. The impact of SS becomes increasingly large when a municipality allows more shopping Sundays.

In both models there was an inverse and significant relationship between the variable agricultural land and number of retail outlets (P<.01). So an increasing percentage of agricultural land has a decreasing effect on store density. In the model of 2012 there was a relationship between the variable percentage of elderly and number of retail outlets per inhabitant (p<.01). Elderly are less mobile consumers and value short distances more, which could stimulate the intensity of retail outlets. In the model from 2012 we find a statistically significant inverse relationship between the variable income and store density (p<.05). This was a remarkable finding because we expected a positive relationship between income and store density. In both years, the provinces of Zeeland and Friesland had a significant increase in the number of retail outlets per inhabitant, compared to the reference category of Drente. In the model from 2012, Limburg had significantly fewer retail outlets per inhabitant than the reference category Drente. Other variables in the model were not significantly different from 0.

Table 4.2. Results model 1: impact of shopping Sundays on the number of retail outlets per 1000 inhabitants in 2004 and 2012

	2004		2012	
Variable	*Coefficient*	*Se*	*B*	*Se*
SS_{1-11}	.444	.272	.835***	.308
SS_{12}	.354	.302	1.023***	.274
SS_{13-51}	1.006***	.331	1.508***	.392
SS_{52}	1.916***	.540	1.421***	.340
Address density	-.004	.028	-.035	.029
Percentage of farmland	-.031***	.007	-.037***	.006
Inhabitants 2004	-.002	.003	.002	.002
Percentage of elderly	-.031	.037	.207***	.049
Disposable income	-.052	.096	-.231**	.100
Unemployment	.124	.161	-.203	.167
Zuid Holland	-.533	.736	-.544	.720
Zeeland	1.726**	.836	1.334*	.804
Utrecht	-.400	.763	-.077	.771
Overijssel	.781	.700	.720	.687
Noord Holland	-.916	.738	-.902	.726
Noord Brabant	-.283	.646	-.429	.644
Limburg	-.628	.657	-1.104*	.666
Groningen	.180	.693	.134	.681
Gelderland	-.146	.657	-.213	.644
Friesland	1.745**	.676	2.237***	.668
Flevoland	-2.222	1.014	-1.041	1.055
Constant	8.599***	1.741	8.233***	1.825
R Squared	.230		.301	

Note: Dependent variable is number of stores per 1000 inhabitant. *. **. *** represents 10. 5 and 1 % significance levels

4.3.2. Store size

The results of model 2 indicate a positive relationship between the number of shopping Sundays and store size, as seen in the estimates presented in table 4.3. The results of the model estimated using the 2004 data, suggest that retail outlets in municipalities with the variables 1-11 SS, 12 SS and 13-51 SS were significant larger than those in municipalities without shopping Sundays (P<.01). The average store size in a municipality with 1-11 SS was 28 square meters greater than a retail outlet in a municipality with no SS. For municipalities with 12 SS the average sales area of a retail outlet increased by 49 m2 and for municipalities with 13-51 SS the average sales area increased by 37 m2 compared to the reference group. In the model using the 2012 data instead we find that retail outlets in municipalities with 12 SS and 13-51 SS were significantly larger than the reference group (p<.01). Retail outlets in municipalities with 12 SS were on average 49 m2 larger and stores in municipalities with 13-51 SS were 69 m2 larger than municipalities without shopping Sundays. In both years, there were no significant differences in store density between municipalities with 52 SS and no SS. This could be either because municipalities with 52 shopping Sundays were touristic areas that tend to attract and maintain a lot of small shops or simply because after the introduction of

large stores, it triggered a "renaissance' of smaller ones. In the model that used the 2004 data, municipalities with a greater percentage of agricultural land had significantly larger stores (p<.10), this might be because the price of land is lower in less urbanized areas. In the model that used the 2004 data, an increase in income had a decreasing and significant effect on the average floor space of a store (p<.05). In the model estimated with2012 data, the percentage of elderly had an inverse and significant effect on the sales area of a store (P<.01), this can be because the elderly prefer smaller stores. The only province that had significantly more small stores compared to Drenthe was Limburg.

Table 4.3. Result model 2: impact of shopping Sundays on average floor space per retail outlet

	2004		2012	
Variable	Coefficient	Se	B	Se
SS_{1-11}	28.307***	10.922	12.188	15.525
SS_{12}	49.342***	12.132	49.024***	13.784
SS_{13-51}	37.199***	13.257	68.245***	19.768
SS_{52}	1.125	21.645	13.158	17.111
Address density	1.740	1.137	-.390	1.439
Percentage of farmland	.480*	.268	.471	.327
Inhabitants 2004	-.121	.105	-.142	.119
Percentage of elderly	-1.443	1.492	-7.255***	2.450
Disposable income	-8.884**	3.833	-7.598	5.029
Unemployment	-6.787	6.463	6.563	8.425
Zuid Holland	-.544	29.509	-.624	36.302
Zeeland	-27.614	33.519	-6.375	40.511
Utrecht	-27.591	30.608	-39.609	38.832
Overijssel	-3.116	28.093	-12.698	34.635
Noord Holland	-22.752	29.599	-9.341	36.599
Noord Brabant	-5.692	25.911	-16.458	32.462
Limburg	-33.429	26.333	-56.888*	33.544
Groningen	-27.843	27.803	-32.135	34.335
Gelderland	-7.373	26.352	-22.810	32.455
Friesland	-34.621	27.118	-54.693	33.666
Flevoland	40.539	40.684	-29.790	53.143
Constant	338.052***	69.825	476.396***	91.934
R Squared	.134		.159	

Note: Dependent variable of average square meter of floor per store. *. **. *** represent 10. 5 and 1 % significance levels

4.3.3. Variation in number and size of retail outlets

The predictive power of model 3, was weak. The constant in the model was only significant at a the 10% level. There was no evidence found to indicate that a change in the number of allowed shopping Sundays affected a change in the number of retail outlets in a municipality. The other variables in the model did not seem meaningful either. The results of model 4, which predicted the change in average floor space between 2004 and 2012, showed some evidence to support hypothesis 4. An

increase in shopping Sundays from one category to another had a significantly positive effect on the size of retail outlets (p<.10). A step from a category of shopping Sundays to the successive resulted in an average increase of 3.2 m^2 of floor space. Furthermore, there was a significant relationship between growth and the increase in store size (p<.01).

A significant inverse relationship was noticeable between both proportion of elderly and the change in floor space, and between income and change in floor space (p<.05).

Table 4.4. Results from models 3 and 4: impact of a change in number of allowed shopping Sundays on a change on saturation of retail outlets, and average size of retail outlets.

Variable	Change in number of retail outlets per 1000 inhabitants		Change in average floor space	
	Coefficient	Se	B	Se
Change in SS	-.012	.020	3.211*	1.886
Address density	.001	.007	-.734	.688
Percentage of farmland	.001	.002	.042	.160
Inhabitants 2004	-.001	.001	.027	.060
Growth	-.017***	.006	.901*	.530
Percentage of elderly	.005	.009	-1.769**	.899
Growth 65	.010	.019	.263	1.836
Disposable income	.044*	.026	-5.704**	2.457
Change income	.017	.011	-1.104	1.027
Unemployment	-.055	.045	-5.727	4.339
Change unemployment	-.069	.056	4.870	5.321
Zuid Holland	-.155	.186	-15.034	17.831
Zeeland	-.333	.204	-3.330	19.517
Utrecht	-.214	.194	-10.260	18.516
Overijssel	-.072	.177	-8.962	16.921
Noord Holland	-.068	.186	-5.432	17.811
Noord Brabant	-.170	.162	-15.551	15.485
Limburg	-.169	.169	-13.982	16.163
Groningen	-.335*	.174	12.137	16.690
Gelderland	-.010	.165	-17.303	15.803
Friesland	-.005	.173	-4.983	16.528
Flevoland	.636**	.260	-35.984	24.825
Constant	-1.044*	.564	184.888***	53.921
R Squared	.120		.101	

Note: Dependent variable average square meter of floor per store. *. **. *** represent 10. 5 and 1 % significance levels

5. Discussion

We investigated the effects of Sunday opening the retail industry. Theoretical and empirical evidence from Thurik (1984) and Nooteboom (1982, 2005) showed that extending opening hours influenced the retail structure. The costs involved when extending opening hours is higher for small stores than for large ones as a result of lower labour productivity because of threshold labour. A more liberal Sunday shop policy leads to longer opening hours, which may lead to economies of scale. This in turn leads to an increase in store sizes and a decline in the number of retail outlets. Wenzel (2011) showed that the impact of deregulation of opening hours on the retail structure depended significantly on the efficiency difference between chain and independent retailers.

The results from the survey of shop owners in Veenendaal indicates that religious, social and economic consideration are of importance for shop owners when making the decision to be open on Sundays. For shop owners, religious beliefs and the absence of staff willing to work on Sunday were significant reasons to remain closed on Sundays. Not surprisingly, taken in to account the considerable number of conservative Protestant inhabitants in Veenendaal. Moreover, Sunday as a free day, staff being too expensive and cannibalisation of sales were important reasons to remain closed on Sunday.

In the results we could not find any conclusive evidence confirming that larger retailers were more in favour of extending opening hours than smaller ones. We expected that large stores would be more in favour of opening on Sundays compared to small stores because small shop owners considered a free Sunday as more important than owners of larger stores (Van Galen et al., 2006). Also, we could not find evidence that chain stores were more likely to be in favour of extending opening hours over independent retailers.

An interesting finding from the survey was that stores in the main street were twice as likely to be open on Sunday, than those located elsewhere, indicating that store location has a significant influence on making the decision to be open on Sundays. This makes sense because there is a greater flow of customer traffic along the main street on Sundays. This supports the finding from Halk and Takger (as cited in Nooteboom, 2005, p11), who found that unfavourable location was the main reason for a retail outlet to remain closed on Sundays. It should be noted that the results from the survey in Veenendaal are context specific and therefore should not be generalized to all shop owners in the Netherlands.

The empirical results from model 1 showed a significant positive relationship between the number of shopping Sundays and number of retail outlets per 1000 inhabitants in a municipality, rejecting our hypothesis that shopping Sundays has an inverse effect on the number of retail outlets per 1000 inhabitants in a municipality. Extension of opening hours would accelerate economy of scale and therefore accelerate an increase in store sizes and a decline in the number of retail outlets overall (Gradus, 1996; Bernandt, 1999; Nooteboom, 2005). An explanation of our finding is that a more liberal policy may tend to attract new retail outlets. Another reason could be that more shopping Sundays, create a competitive advantage over outlets situated in municipalities without shopping Sundays. Retail outlets that open on Sundays have the opportunity to attract consumers from surrounding municipalities that do not allow shopping Sundays. In our results from model 2 we found

some evidence supporting our hypothesis that shopping Sundays have an increasing effect on the average size of retail outlets. We found that stores with a more liberal Sunday shopping policy were generally larger compared to retail outlets in municipalities without shopping Sundays. An exception was that there was no significant difference detected in store size for municipalities with 0 and 52 shopping Sundays. A possible reason for this result could lie in the relatively high numbers of smaller stores in areas with 52 shopping Sundays, mostly touristic areas, which tend to attract and maintain a lot of stores. Or there could have been a mutually beneficial relationship among different types of retailers, rather than an overwhelming advantage for larger stores (Miller et al., 1999).

The predictive power of model 3 was weaker than expected. We could not find any evidence that an increase in the number of shopping Sundays, has a negative impact on the number of retail outlets per 1000 inhabitants. The results from model 4 showed some evidence supporting the hypotheses that an increase in the number of shopping Sundays has a positive effect on store sizes. Unfortunately we could not compare our results to prior research because no comparable research was conducted. In our study we assumed that a more liberal Sunday shopping policy would influence the intensity and scale of retail outlets. However, the retail structure in a municipality could also influence the Sunday shop policy adopted. Furthermore, as other market structure variables not included in the model could have played a role in the frequency and scale of retail outlets, the results may be subject to omitted variable bias. Essential data was missing for proxies on fixed costs such as housing prices or value of land. Another shortcoming of the models was the extent in which the regression model explained the overall variation of the dependent variables. The R square of the models were low, varying from 0.1 to 0.3. In the model there were many insignificant coefficients. More sophisticated statistical analyses of the data, such as an ordered probit model, could have led to more interesting results.

Another limitation within the model was that the data concerning the number of retail outlets and their size were taken from all the branches in the retail sector together. Therefore it was only possible to observe the influence of shopping Sundays on the retail industry as a whole, missing important nuances at the sub-industry levels.

6. Conclusion

In this study we investigated the effects that a more liberal Sunday shop policy can have on the retail industry in the Netherlands. We looked at the social and economic considerations among shopkeepers for being open on Sunday. Furthermore we assessed the impact of the number of shopping Sundays on the average size of stores and store density measures ,at the municipality level. We found some evidence that a more liberal Sunday shop policy can have an increasing effect on store size and on store density.

The results of the survey conducted among shopkeepers showed that religious, social and economic factors were of importance to shop owners in the decision to open their shops on Sundays. We found no evidence in our data that the size or type of shop influenced that decision; favourable location, however, was of importance for being open on Sunday. These results have been used by Platform BinnenstadsManagement to advise the municipality of Veenendaal on their Sunday shop policy. In the results there was no evidence of agreement amongst the shop owners about opening on Sunday

which made giving a clear advice difficult. The main results from the survey were published on the front page of a local newspaper, the Veenendaalsekrant, and contributed to the on-going discussions about allowing shops to open on Sunday. Following the results of the survey the municipality of Veenendaal decided to conduct a broader study about shopping Sundays, which collected additional information on employees, visitors and the citizens of Veenendaal.

Over the years municipalities have adapted a more liberal policy towards Sunday shopping in the Netherlands. The most common argument from shop owners against deregulation of opening hours is cost control. It is thought that by extending opening hours consumers would only redistribute their spending patterns without changing the volume of what they buy. Whereby, the relative costs of extending opening hours would be greater for smaller retail outlets than for larger ones as a result of threshold labour costs. That is why we expected to find a competitive advantage for large retail outlets over smaller ones, in municipalities with a more liberal attitude towards Sunday shop policy.

Our results suggest instead that a more liberal policy can have a positive impact on the number of retail outlets per 1000 inhabitant. We expected a negative impact to the number of retail outlets per 1000 inhabitants because of the advantage it creates for larger stores over smaller ones. An explanation for this positive impact could be that a more liberal Sunday shop policy overall attracts more businesses to an area, or that retail outlets in municipalities with shopping Sundays have a competitive advantage over retail outlets in municipalities without shopping Sundays.

Furthermore our results suggest that a more liberal Sunday shopping policy has a significant positive effect on the average size of retail outlets in a municipality. An exception to this finding, was for the municipalities with 52 shopping Sundays, whose store size did not differ in a statistically significant way from those with 0 shopping Sundays. An explanation for this observation could be that that municipalities with 52 SS were touristic areas that tend to attract and maintain a lot of shops of small size.

In this study we only investigate the impact of Sunday shopping policy on the retail industry in general. Future research might generate more insight in the effect of a more liberal Sunday shop policy on the extension of the opening hours of individual retail outlets, and its effect on the branch specific retail structure.

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