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SPATIAL CONSUMER BEHAVIOUR IN SMALL AND MEDIUM-SIZED TOWNS

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Abstract

Small and medium-sized towns are often recognized as important components of the rural economy. In this article, we focus on the current function of small and medium-sized towns in providing retail services to local households in five European countries. Furthermore, we analyse the spatial shopping behaviour of these households. It appears that towns are still important places for shopping: more than half of the purchases of households living in town or the direct hinterland are bought in town.

1. Introduction

Retailing is a key-element of service provision in rural areas. Changes in retailing trends and consumer behaviour have led to difficulties in establishing adequate retail provision in these areas. The decline and closure of local and village stores, and the perceived high levels of 'outshopping' from rural to urban locations are all symptoms of the problem (FINDLAY and SPARKS, 2008). The functional relationship between a town and its hinterland can be indicated by a specific flow of products and services from the central place to its hinterland, or by a reverse flow of demand from the hinterland to the central place (KLEMMER, 1978). However, in smaller communities, the competitive nature of the rural market has significantly changed. Better travel conditions along with attractive regional shopping centres entice consumers to travel beyond their local markets. Although the high level of car-ownership in rural areas makes it easier for rural residents to 'use' local town facilities, it also allows them to travel even further, to larger cities (MILLER and KEAN, 1997; POWE and SHAW, 2004). However, not everyone is able to travel further away for their daily necessities. There is a group of consumers, such as households with young children, disabled persons or elderly who are not so mobile. In particular for those persons, local facilities are of utmost importance (POWE et al., 2009). Traditionally, towns act as a concentration point of

facilities, both for households living in town and for the households living in (often) more remote locations in the hinterland (COURTNEY et al., 2007). However, it is not really clear to what extent this is still the case, and for which activities and services this holds in particular.

Especially in the UK, small and medium-sized (market) towns are seen as important components of the economic structure of the country, having the capacity to act as a focal point of trade and services for a hinterland (COUNTRYSIDE AGENCY, 2000; COURTNEY and ERRINGTON, 2000). Despite the lack of research into the role of (market) towns in alleviating problems in the provision of rural services, they are increasingly being targeted by rural development policies as centres for service provision and growth, in particular in the UK (POWE and SHAW, 2004). Although it is likely that medium-sized towns do play an important role in servicing their hinterlands, it is unclear what form this takes and upon which (spatial) factors the role depends. Another important research question is whether small and medium-sized towns are equally important in different EU-countries.

The aim of this article is to explore the current function of European small and medium-sized towns (with a population between 5,000 and 20,000) in providing retail services to local households and to analyse the spatial shopping behaviour of these households. Therefore, in the first part of this article, we will focus on the importance of small and medium-sized towns for rural households in five European countries as a location to shop (For a list of the selected towns see Appendix I). Furthermore, with the help of a set of correlations, we explore the determinants of local orientation in shopping behaviour. We then turn our attention to households in a selection of six Dutch towns and describe their spatial shopping behaviour in more detail. A multinomial logit model is used to explain the choice of households to shop in town, or in the direct hinterland, or in larger cities further away. We relate rural spatial-economic conditions, such as the accessibility and supply of shops, to the local households' socio-economic characteristics, such as place of work, age, and income. An additional interesting variable, which is not often included in

this kind of research, is the length of residence of the households, to see how 'local attachment' affects local shopping. This helps us to understand which factors are important for the households' choice to use the town, or the hinterland, or a place outside the region for their shopping.

2. Consumer Behaviour in Rural Areas

An important decision for a consumer to make is the choice of where to shop. This decision often involves a dual choice of shopping area (in the neighbourhood or out-of-town) as well as the specific store to be shopped (NEVIN and HOUSTON, 1980). Important methods used to estimate the behaviour of consumers, or the to predict retail trade areas are the Central Places theory of CHRISTALLER (1933), as well as the gravitational models, such as the one proposed by HUFF (1964). The value of Central Place theory lies in its ability to consider simultaneously the behaviour of consumers and retail firms in a spatial market (CRAIG et al., 1984). According to Christaller (1933), the spatial behaviour of consumers are conditioned by (1) the size and importance of the central place; (2) the price-willingness of the consumer; (3) the subjective economic distance and (4) the type, quantity and price of the good. Despite these 4 four factors, often the focus has been put on the idea that, apparently, consumers patronize the nearest place which offers the required good. This premise has been labelled as 'the nearest centre postulate' (CLARK and RUSHTON, 1970, see also HUBBARD, 1978). Empirical tests showed that in undeveloped areas, with often less mobile consumers, the postulate applied surprisingly well. However, in the developed world it appeared that the hypothesis provided an inadequate description of consumer behaviour (HUBBARD, 1978).

Although Christaller himself was aware of the limitations of the Central Place theory due to the stationary state, there are more shortcomings. First of all, the theory is limited to services, not including functions such as the manufacturing industry that create employment and population

growth. Secondly, it does not take into account historical patterns and it assumes little governance influence on the location choice of businesses (PACIONE, 2009). Furthermore, as mentioned before, the assumption that consumers look to the nearest place for their necessities does not hold (anymore). Research showed that consumers are likely to bypass the closest alternative if the extra (travel) effort is compensated by better shopping opportunities (CRAIG et al., 1984). In addition, telecommunications allowed for online-shopping, which further eroded the frictional effect of distance on consumer behaviour (PACIONE, 2009).

When analyzing the consumer behaviour of households, three important groups of factors should be considered. These are: 1) the consumer with all its characteristics, 2) the characteristics of the shop or retail centre including its location, and 3) the reason for shopping, or kind of product purchased. Before addressing these three dimensions we note that in the literature about spatial behaviour of consumers, often a distinction is made between inshopping (e.g. in town) and outshopping (e.g. out of town). According to MILLER and KEAN (1997), it is not necessarily true that factors affecting inshopping are the same as those affecting outshopping, thus clarifying dissimilarities between some studies.

Socio-economic characteristics of consumers are fundamental in that they affect, for example, the degree of consumer spatial mobility (HUBBARD, 1978). When looking at consumer related factors, in most outshopping studies, a higher level of income seems to be related to a higher share of purchases outside town (HERMAN and BEIK, 1968; THOMPSON, 1971; PAPADOPOULOS, 1980). Apparently, households with a higher income are more readily able to bear the costs in shopping around (HUFF, 1959). Nevertheless, when focusing on inshopping, there seems to be no significant income effect (PINKERTON et al. 1995; MILLER and KEAN 1997).

Another important consumer-related factor is age. It is often stated that older persons are less mobile and therefore are more likely to shop close to their place of residence (see PINKERTON et

al., 1995, POWE and SHAW, 2004; PAPADOPOULUS, 1980). They are also supposed to be more attached to the local area. However, attachment can also be measured by length of residence (see BROWN 1993) or satisfaction with the community.

Another relevant consumer related factor is the family situation, such as whether a family has young children. HERMAN and BEIK (1968) and MILLER and KEAN (1997) found that households with young children tend to do less outshopping (or more inshopping).

A final important variable is the place of work of the consumer. As PAPADOPOULOS (1980:57) described, sometimes consumers would not consider travelling a longer distance for their shopping; but once a consumer reaches a larger trade centre, for whatever other reason (such as work), shopping appears to become a significant secondary activity. Another interesting study is that of FINDLAY et al. (2008), who studied the links between migration status, commuting patterns en outshopping. Their conclusions are that incomers, as they define people that moved less than 16 years ago to the local area, tend to do more outshopping, but that it is commuting that is the primary determinant of outshopping.

Besides these consumer-related factors, supply factors, related to the shop or retail-centre, affect the shopping behaviour of households. First of all, a destination has to be in reach of a consumer. This means that the distance to a shopping facility is important. Distance can be measured in many different ways such as in a straight line, by road, or in a cognitive way (see CADWALLADER, 1975). Nevertheless, for all kinds of distances it holds that the further away a facility, the less likely it is that a consumer will go there. Another important supply factor is the attractiveness of the destination. This attractiveness can be estimated in many different ways as well, such as by the accessibility of the destination, quality of service, or the supply of products. GORTER et al. (2003), for example, use the quality of parking facilities and the atmosphere in shops. Another variable often used is the available floor space. According to SCHENK et al. (2007), both price and assortment characteristics are very closely related to the size of the store.

HUFF (1964), was one of the first to use this proxy. The rationale underlying this assumption is that larger shops or retail centres generally offer a greater selection of merchandise than smaller ones, which reduces the uncertainty regarding the possibility of an unsuccessful shopping trip (HUBBARD, 1978).

The third and last group of factors is related to consumers having different reasons for shopping, for which different kinds of shopping locations are most suitable. In general, shopping visits to city centres are made for reasons of pleasure, whereas the use of peripheral centres for shopping purposes is more frequently explained by narrower economic motives (GORTER et al., 2003).

Different kinds of shopping can also be categorized as run, fun and goal shopping (GORTER et al., 2003; EVERS et al., 2005). Run shopping is supposed to be an efficient activity in which particular, predetermined (everyday) goods are to be bought as quickly as possible (for example, after working hours on the trip from work to home). This kind of shopping activity may take place at the fringe of the city, or in smaller shopping centres close to the place of residence. In contrast, fun shopping is associated with visits to several (comparable) shops for pleasure and socializing. This kind of shopping is more dependent on hedonistic influences, such as style, recreational activities and social pressures (SCHENK et al., 2007). This is most likely to take place in concentrated city centres in which there is a wide variety of shops and goods, as well as many opportunities for leisure. Finally, goal shopping also deals with predetermined purchases but includes shopping for furniture, do-it-yourself products or for plant and garden products. Like run-shopping, this kind of shopping is also supposed to be efficient but not on a daily basis. It may predominantly take place at the fringe of the city.

However, it appears that a large share of the trips which people make involve stops at more than one location (GHALY, 1990). DELLAERT et al. (1998) suggest that this is due in part to increasing time pressure that consumers face.

3. Data-collection

For this study, we used data that was collected as part of a trans-national project, the European Union research project 'Marketowns'[1]. This project focused on the role of small and medium-sized towns as growth poles in regional economic development. For this purpose, it was necessary to measure the flow of goods, services and labour between firms and households in a sample of 30 small and medium-sized rural towns in five EU countries. The participating countries reflect the varied conditions of the existing and enlarged European Union, viz. France, Poland, Portugal, the Netherlands, and England.

In each of the participating countries, six small and medium-sized towns were selected with reference to a set of relevant, predefined criteria: for instance, the condition that no other town with more than 3,000 inhabitants should be located in a hinterland with a radius of approximately 7 km. Furthermore, small towns are defined as towns with a population of 5,000 to 12,500 inhabitants, and medium-sized towns as towns with a population of 12,500 to 20,000 inhabitants. In each country, two towns located in agricultural areas were selected, two in tourism regions and two situated more closely to a (large) city. In this way, different kinds of towns are included.

In order to compare the nature and strength of linkages throughout the wider economy, four different zones were defined around each town. These were designed to facilitate comparisons between the different areas. As a result, the study area from which households were sampled comprised the town and a 7 km radius around it (the direct hinterland). In turn, this boundary also encompassed two of the four pre-defined zones used for our economic analysis (see Table 1).

< Table 1: The defined zones around the town under research >

Primary data were collected using self-completion survey techniques to measure the spatial economic behaviour of households. The household questionnaire focused on spatial patterns of

consumer purchases by distinguishing between different categories of goods and services and expenditure patterns across the pre-defined geographical zones. The households were asked to write down their expenses for different kinds of products during the preceding four weeks and the distribution of the expenses over the different zones. Surveys were carried out between September 2002 and May 2003 (TERLUIN et al., 2003), and in total 6,000 were collected.

4. Shopping in rural areas; the importance of towns for local households

4.1 Supply of Shops

Shopping behaviour is largely influenced by the availability and accessibility of retail businesses. Table 2 shows the average figures for the number of shops in town and hinterland, the number of inhabitants per shop, and the number of employees per shop (which indirectly indicates the average size of the shops).

It appears that, in England, the number of shops in town and especially in the hinterland is relatively low. However, at the same time the number of employees per shop is high, implying that the shops are larger. In Portugal, on the other hand, a great number of shops are located in both town and hinterland. But, the shops are smaller, with on average two employees per shop, and each serves only around 40 inhabitants. In Poland, the number of shops in town is also high. However, in the hinterland there, the number of shops is smaller and the number of inhabitants per shop, much higher than in Portugal.

Interestingly, the average number of inhabitants per employee in the towns is rather similar in the countries under research. The differences seem to appear in the hinterland, with a high number of inhabitants per shop or employee in England, and a low number in Portugal.

< Table 2: Average supply of retail services in town and hinterland in five countries >

4.2 Location of purchases

Figure 1 shows the average distribution of aggregate household purchases over different zones; zone A (town), zone B (hinterland, 7 km zone), zone C (7-16 km zone), and the supraregional zone. In the next section, a disaggregation of purchased products and services will be described. It appears that, in all countries, the towns are the most important places for shopping. Especially the Portuguese and Polish town households do most of their shopping in town and only a relatively small part outside the region. English town households, on the other hand, purchase the smallest part in town, but, this is still, on average, 60 percent. Instead, around a quarter of total expenditures are spent supraregionally.

< Figure 1: Average share of purchases in zone A, B, C and D by town households >

The second figure shows the distribution of purchases of hinterland households. In almost all countries (except in the Netherlands), the hinterland households too buy most goods and services in town. This suggests that the Central Place theory (CHRISTALLER, 1933) is still valid. In France, hinterland households buy only 10 percent of their consumption in the hinterland itself. Instead, these households go to town for their shopping: almost 60 percent of all purchases are bought there (comparable to the share of town households). This is probably because there are only a small number of shops in the French hinterland. In England as well, only 12 percent of the purchases of hinterland households is done in the hinterland. Just like the English town households, the English hinterland households buy a relatively large share outside the region (around 25 percent), as well as 45 percent in town.

< Figure 2: Average share of purchases in zone A, B, C and D by hinterland households >

In the other three countries, around one-third of the purchases are bought in the hinterland. The Netherlands is the only country in which the hinterland households make more purchases in the hinterland itself than in town; furthermore, they buy a relatively large share in the 7-16 km zone.

Here, the purchases are more evenly spread over the four zones. An explanation for this is the relatively high population density in the Dutch rural areas.

Apparently, in England and France, there is little difference between town and hinterland households; for both groups, the town is the most important place to buy goods and services. In France, this can be explained by the small number of households living in the hinterland, which explains the small number of shops. However, in England, the number of households in the hinterland is much higher and very similar to the situation in Poland, while in Poland the shops in the hinterland are much more important. From the data it appears that in England only 6 percent of the households living in the hinterland do not own a car, compared to 22 percent in Poland. This could clarify the different shopping behaviour of these households.

When focusing on different goods and services (see van LEEUWEN, 2008 for more details), it appears that, in all countries, the town is especially the place where both town and hinterland households buy most of their pharmaceutical products as well as their medical care and dentistry. In general, food and groceries, domestic help and childcare, as well as hairdressing and beauty care are products mostly bought in the zone of residence.

4.3 Correlation Analysis of Spatial Distribution of Purchases

In the former section, it became clear that the differences of spatial behaviour of town households and hinterland households are rather distinctive. Therefore, in this section we explore the relationships between the spatial shopping behavior of households in town or hinterland and the characteristics of the area they life in by using Pearson correlation techniques. For the analysis, individual household data are used (6,000 households in and around all 30 towns), and a distinction is made between town households shopping in town (zone A), town households

shopping in the hinterland (zone B), hinterland households shopping in town, and hinterland households shopping in the hinterland. Furthermore, the table distinguishes between low-order (every day products and services such as food, newspapers or pharmaceuticals) and high-order products (e.g. clothes, furniture or the opera) because the behavior related to these two groups of products and services might be different.

< Table 3: Correlations between purchases (low-order and high-order) of town households in town and hinterland and various spatial variables; same for purchases of hinterland households in the two zones in all countries>

Table 3 shows that the location of work does affect the location of shopping. Having a job in town (zone A) is positively related to the share of purchases done in town by both households living in town and living in the hinterland. Having a job in the hinterland (zone B) has the opposite effect. Having a job further away, in zone C seems to mainly affect shopping in town.

The availability of shopping opportunities, measured by the number of shops, seems to make a zone more attractive for shopping: hinterland households shop more in the hinterland and less in town when there are more shops in the hinterland and town households shop more in the hinterland when more shops are located there. However, a larger number of shops in town also appears to have a positive effect on shopping in hinterland shops. The correlation between the size of the population and the share of shopping in town or hinterland shows similar patterns. The size of the town population is related to more expenditures in both town and hinterland. Possibly larger towns have more urbanized hinterlands than smaller towns have. The underlying data does show that the town population is stronger (positively) correlated to the number of shops in the hinterland than the hinterland population is to the number of shops in town.

The presence of a highway exit in the area (either town or hinterland) appears to be related to less expenditures in town by town or hinterland households and by more expenditures in the hinterland. An explanation for this could be that near highway exits, just outside the urban area,

often larger shops are located, which are attractive to both groups of households. Furthermore, we looked at the correlation between local purchases and the distance to a larger city (of 100.000 inhabitants). It appears that the further away the larger city is, the more important the town becomes for shopping, and the less purchases are done in the hinterland. Often the larger the distance to the city is, the less urbanized the local area is, with less shopping opportunities in the hinterland but with a relatively higher importance of the town for shopping.

Finally, when comparing the results for low-order and high-order products it appears that they are relatively similar. In almost all cases the sign is the same, however the size of the coefficient and the significance sometimes differ. Having a job in zone B, for example, significantly affects purchases of low order products by town households (they buy less in town and more in the hinterland), however no significant effect appears on the purchase of high order products.

5. Spatial Shopping Behaviour of Dutch Households

A disadvantage of the specification used above, apart from the bivariate nature, is that shopping orientation in the two zones is analyzed without taking into account the supply of shopping facilities elsewhere. That the supply of shopping alternatives elsewhere is important was already observed in Figure 2 which shows that in countries like England, France and The Netherlands the share of purchases in the 7-16 km zone and in the rest of the world typically is around 30-40 percent. For a better understanding we need more complete data on the supply of shopping facilities. These are only available for the Netherlands, and hence we continue our analysis for shopping in Dutch towns only. The higher level of the spatial detail in the case of the Dutch data also has the advantage that we can analyze the spatial orientation of shopping behaviour as the result of an explicit comparison of four spatial alternatives by means of a multinomial logit model. We focus on the three described kinds of shopping: grocery or run shopping; fun shopping (like shopping for clothes, shoes, and different kind of luxuries, etc.); and goal shopping (shopping for

furniture, gardening products, do-it-yourself products, etc.). Although in a number of studies it is argued that many shopping trips are multi-purpose trips, which means that the purchase of different goods and services is combined (see ARENTZE et al., 1993; OPPEWAL and HOLYOAKE, 2004). POPKOWSKI et al. (2004) showed that in general grocery shopping is not part of multi-purpose shopping, possibly because groceries need refrigeration. Therefore, to our opinion, a broad distinction between grocery-, fun- and goal shopping is justifiable.

5.1 Characteristics of Dutch town and hinterland households

Table 4 shows the socio-economic characteristics which are relevant to the shopping behaviour of the households included in the analysis. Not surprisingly, most of the households own one or more vehicles[2], especially in the hinterland (96 percent). Further, the average age of the head of household is around 50 years (slightly higher in the towns) and the average length of residence in the municipality 36 years, which seems to be fairly high. In addition we see that a larger share of households living in the hinterland are families with children under 17 years of age. Finally, around a quarter of the persons with a job (maximum of two jobs per household) work in zone C, almost half of the hinterland households work in the hinterland[3] and 35 percent of the town households have a job in town.

< Table 4: Socio-economic characteristics of households in the database (6 towns in the Netherlands) >

< Table 5: Average share (%) of purchases bought in the four zones for different kind of product groups (6 towns in the Netherlands) >

Table 5 shows the shopping behaviour of households for different groups of products: grocery shopping; fun shopping (shopping for clothes, shoes, and different kinds of luxuries, etc.); and goal shopping (shopping for furniture, gardening products, do-it-yourself products, etc.). As was also shown in Section 4, households living in the towns buy most of their products locally: half of

the fun purchases are bought in town and as much as 90 percent of all groceries. Households do not often visit the hinterland for shopping, but around 15 percent of fun shopping and goal shopping is done in the 7-16 km zone.

The hinterland households, on the other hand, do visit the town for their purchases: around one-third of all their products is purchased in town. This means that the town has a supra-local function, even for groceries which are products often bought nearby (in the zone of residence). At the same time, 40 percent of hinterland households shopping took place in the hinterland itself, and 19 percent in 7-16 km zone. As expected, especially everyday products are bought in the zone of residence of the households.

5.2 Multinomial logit model of spatial shopping behaviour (MNL)

In order to analyse the impact of a set of relevant variables on the revealed location choice of households measured by the share of total purchases in each zone (as shown in Table 6), we use a multinomial logit model (MNL model). In the present analysis we confine ourselves to a standard multinomial logit model. An alternative would have been to explicitly address the multilevel structure of the data. This can be done for example by dropping the assumption of independence of errors in the logit model and to account for a possible correlation in unobserved features of residents living in the same zone (see e.g. MERCADO and PÁEZ, 2009). The MNL model is based on the assumption that consumers maximize their utility (HENSHER et al., 2005). In a utility function of consumer i (U_i), the preferences of consumers for certain characteristics of the alternatives are represented, including a non-observable (error) term (ε_i). Our model estimates the utility of households for shopping in zones A (town), B (hinterland), C (7-16 km zone) or D (supraregional). The utility function $U_i(j)$ relates to the utility of a resident i living in or near one of the five market towns considered to shop in zone j of the pertaining market town region (j can be A, B, or C). The market towns are located far away from each other so that it is not an issue

that a respondent i living near one of the market towns would shop in another market town. The utility functions for shopping in zone j can be formulated as:

$$U_i(j)= \alpha\ lndist_{ij}+ \beta\ lnfloor_{ij}+ \gamma job_{ij}+ \delta(lndist_{ij}*car_i)+ \theta(age_i*lndist_{ij})+ \iota\ lnyear_i+ \varepsilon_{ij}, \quad [1]$$

where j= A, B or C

The utility of the various shopping destinations (town, hinterland, 7-16 km zone) depends on four types of factors: *the generalized cost of getting there, the variety offered, multipurpose trips and local embeddedness*. We will discuss them in more detail below. The *generalized costs* are assumed to be proportional to distance to the zone[4], where we incorporate interaction effects with age and car ownership to verify whether the generalized costs vary with these factors. The interaction with age takes into account the possibility that orientation of trips may be different between older and younger residents, for example because older residents have more leisure time. The interaction between distance and car ownership has been added in order to take into account that car owners may be less sensitive to distance than non-car owners. The *variety offered* is approximated by the size of the shop area offered in a zone[5]. *Multipurpose trips* are taken into account via the location of the job of household members: workers may combine the commuting trip with shopping trips. The last factor we incorporate is *local embeddedness*. We measure it via the impact of the length of residence in a certain location. This is represented by the inclusion of the 'year' variable that measures the number of years that a member of a household is already living in the town or the hinterland. Social networks tend to increase in strength with the time that people live in a zone. This may express itself in an increasing loyalty to local shops when people stay there longer. Another interpretation of the length of residence effect would be that newcomers in rural areas have a different spatial orientation that reveals itself among others in their shopping behaviour and that will continue to exist. Of course the length of residence effect

will be correlated with age, but since age is already incorporated in the utility function, this problem has been avoided so that what we find is not an age effect per se, but a length of residence effect. Note that since we only interviewed households from town and hinterland we have $year_{iC}=0$.

The utility of the supraregional destination is modelled in a different way. The zone outside the region, the supraregional zone, typically represents the set of larger cities located at longer distances from the towns under consideration that may attract rural shoppers. Since we do not have exact information on the shopping destinations in this category we represent for each individual town the relevant information on distances and size of shopping facilities in the larger cities by a 'supraregional' dummy. Thus we are able to take into account the specificities of each town's broader spatial setting. The pertaining dummy variables are defined as follows: $Oudewater_i$ is equal to 1 when i lives in or near the Oudewater market town, it equals 0 otherwise; κ is the associated coefficient representing the supraregional attractiveness for shoppers from Oudewater. A similar approach is followed for the other market towns.

Further, we include some household features to take into account household specific variations in the orientation with respect to destinations located further away. In addition to the 'have a job there' dummy these features are household income and number of kids. Thus, we arrive at the following specification:

$$U_i(D)= \gamma\ job_{iD}+ \zeta\ income_i + \eta\ (kids_i) + \kappa\ Oudewater_i + \lambda\ Gemert_i + \nu\ Nunspeet_i + \xi\ Schagen_i + o\ Bolsward_i + \varepsilon_{iD.} \quad [2]$$

For the descriptives of the independent and dependent variables see Appendix II.

5.3 Results of the multinomial logit model

Table 6 shows the results from the MNL analyses for zones A, B and C, we did a separate run for grocery, fun and run shopping. As expected, the distance variable appears to have a significant negative impact on the utility: the further away a shop, the lower its utility to visit it and spend money there. This holds particularly for groceries and goal shopping and less for fun-shopping. When households go shopping for fun, the distance is less important.

The floor space variable has a significant positive effect on the utility. The parameter has a higher value for everyday purchases and a lower value for fun or goal shopping.

<Table 6: Estimation results of multinomial logit model explaining choice of shopping in zone A, B or C>

Besides the spatial variables, a set of socio-economic variables has been added. First of all, the place of work is important: when a member of the household has a job in the zone concerned this increases its utility as a shopping destination so that it is more likely he or she will do some shopping there as well. Furthermore, owning a car reduces the distance sensitivity of shopping. However, this variable (dummy for owning one or more cars multiplied by the (ln) distance) is only significant for goal shopping. For this kind of shopping it is plausible that owning a car makes it easier to go further away; goal shops are often located outside city/town centres, and the products bought can be relatively heavy and large, so that public transport or cycling is a less attractive mode. It could be expected that owning a car would also be significant for the distance sensitivity for fun shopping. However, it is often difficult to park in a city or town centre and most of these locations are easy to reach by public transport in the Netherlands.

In line with the literature (e.g. PINKERTON et al., 1995; POWE and SHAW, 2004; PAPADOPOULUS, 1980), it was expected that the age variable would be positive significant as well. Many studies have found that older people tend to buy their products more locally. We checked this by interacting it with a distance component to see whether the elderly have a stronger

distance sensitivity. Unexpectedly, it appears that the effect is small and not significant. This has partly to do with the last variable included in the utility functions of zones A, B, and C: the length of residence in town or hinterland as a measure of local embeddedness. This variable is not often added to these kinds of models. . When the length of residence is added (e.g. POWE and SHAW, 2004; MILLER and KEAN, 1997), the sign is positive for inshopping. In our model too, it is (strongly) positive significant for buying groceries, and to a lesser extent for goal shopping. This means that the longer a household lives in town or hinterland, the more utility it has from shopping there. In the articles cited above, the authors do not include length of residence together with an age variable, so we do not know whether they have really measured a local embeddedness effect[6]. Of course, many older persons do tend to have lived for a long time in zones A and B[7].

There are essentially two possible interpretations of the duration of residence effect: one would be that the duration effect reflects an increasing loyalty to local shops as time goes by. Newcomers have a weaker local orientation than people with a residence duration of say 10 years, but after 10 years their shopping behaviour will not be different from the orientation observed now for the group that arrived 10 years ago. The other interpretation is that there is a constant cohort effect: newcomers now have a weaker orientation than that of newcomers when they entered 10 years ago. The difference between the two interpretations is that in the first case with a population in a steady state the local orientation would not change, whereas in the latter interpretation the local shopping orientation would decline. With the cross section data available here, it is not possible to determine which of the two interpretations is the correct one. For that purpose one would need a combination of cross section and time series data. And of course, it is also possible that a combination of the two interpretations applies. That would imply that there is indeed a decrease in local shopping orientation in the course of time, though not as large as with the constant cohort effect.

<Table 7: Estimation results of multinomial logit model explaining choice of shopping in zone D>

Table 7 shows the variables included in the utility function for shopping at larger distances in what we have coined as the supraregional zone (D). This zone typically represents shopping opportunities in large cities far away from the (rural) town. Since we did not have access to data on the supply of shops at this scale, we decided to represent the utility of this long-distance opportunity by means of destination-specific dummies, the work location dummy, plus some household-specific dummies. Households with a higher income seem to have a higher utility from shopping outside the region, especially related to fun shopping. This is in line with what was expected from the literature. On the other hand, households with children are less likely to travel outside the region for fun shopping. The parameter for goal shopping (by households with children in the supraregional zone) is positive. Possibly these households need more specific products (e.g. to decorate children's rooms). Finally, five town dummies are added. These are not significant for groceries or goal shopping. However, for fun shopping, all five dummies are significant, which is no surprise, given the high values for the supraregional zone in Table 7.

6. Summary and Conclusions

In this article, we focused on the importance of towns in providing retail services to local consumers. In addition, we analysed the factors that affect the spatial shopping behaviour of households in rural areas. We used information about 6,000 households from 5 EU countries, living in town or in the direct hinterland of a town.

First of all, it can be concluded that still today towns are an important place for shopping: between 60 and 80 percent of town households' total purchases and between 40 and 60 percent of hinterland households' total purchases are bought in town. Only in the Netherlands do hinterland households buy more in the hinterland. But here, the hinterland is relatively densely populated.

Secondly, we focused on the behaviour of households buying goods and services in the town or hinterland in relation to the spatial characteristics of the area concerned. A correlation analysis showed the importance of spatial variables for both low-order and high-order goods and services in the 30 European towns. It appeared that spatial variables are significantly affecting spatial shopping behaviour and that the effects on low-order and high-order shopping are rather similar. Nevertheless, the level of significance and the size of the parameter often differ, which indicates the importance of distinguishing between different goods and services.

Then, an in-depth analysis was done for the Dutch households, for which a multinomial logit model was developed taking into account both household and spatial characteristics. The analysis showed that particularly the location factors are very important to the spatial shopping behaviour of these households. General location factors, such as distance and floor space, are important for all kinds of shopping, but mostly for grocery shopping. The town-specific dummies, related to shopping outside the region, are only relevant for fun shopping. This reflects the relatively low attraction of rural areas for fun-shopping, implying that rural residents have to travel long distances for this purpose.

In addition, we can conclude that car ownership makes consumer less sensitive to distance, and since the ownership of more than one car is increasing in rural areas in the Netherlands, the effect will be even stronger. Aging does not have a significant effect, but the location of jobs does. Increasing commuting distances will stimulate further outshopping, as will income growth

The findings of this analysis are in particular relevant for local policy makers. The strong link between place of work and place of shopping implies that creating new jobs in town can have an additional advantage of more retail customers if the supply of shops is sufficient. Often, it is assumed that a successful retail sector and local vitality are closely related. Although there is no (empirical) proof for this (see POWE et al., 2009), it is sure that local retail services are especially

important to less mobile residents. Furthermore, the effect of length of residence implies that in towns with little population dynamics inshopping will continue to take place, whereas a strong population dynamics due to population growth will lead to much outshopping among newcomers. However, for the local retail sector this may nevertheless be favourable, since population growth would strengthen the economic basis for the retail activities.

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< Appendix I: Names of the 30 selected Towns >

< Appendix II: Descriptive statistics of the (in)dependent variables >

[1] The information contained in this paper is drawn from the MARKETOWNS project funded by the European Commission under the Fifth Framework Programme for Research and Technology Development, Contract QLRT -2000-01923. The project involves the collaboration of the University of Reading (UK), the University of Plymouth (UK), the Joint Research Unit INRA-

ENESAD (France), Agricultural Economics Research Institute LEI (The Netherlands), the Polish Academy of Sciences (Poland) and the University of Trás-os-Montes and Alto Douro (Portugal).

[2] These vehicles are mostly cars.

[3] This share is fairly high because of a relatively large group of farmers in the database, who most of the time work close to their residence.

[4] Distance to the nearest place with a shop of considerable size in the zone concerned. For grocery shopping a shop of considerable size was set at a floor space of 60 m², and for fun and goal shopping it was 160 m².

[5] That is, floor space of shops in the nearest place with a shop of considerable size in the zone concerned.

[6] Brown (1993) looked at rural community satisfaction and attachment in mass consumer society, and found that community satisfaction is primarily affected by length of residence. In this analysis he also included age, which was not significant. In many studies, community satisfaction is seen as an important variable for inshopping (e.g. Pinkerton et al., 1995). However, Brown did not find a significant relationship with inshopping.

[7] However, the bivariate-correlation is only 0.47.

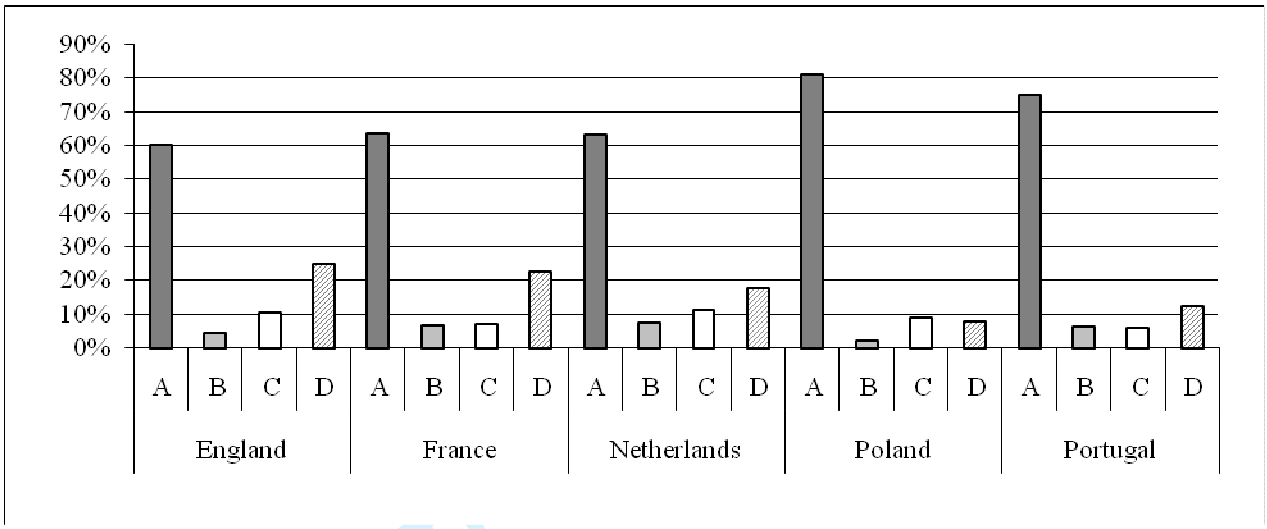

Figure 1: Average share of purchases in zone A, B, C and D by town households

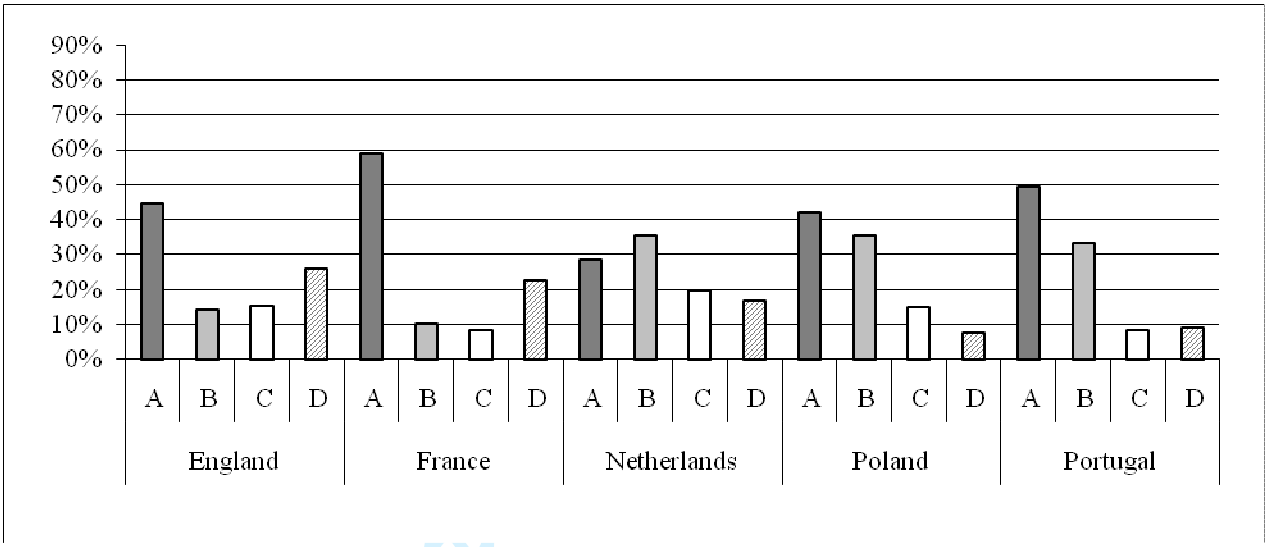

Figure 2: Average share of purchases in zone A, B, C and D by hinterland households

Table 1: The defined zones around the town under research

	Zone	Definition	Remark
A	Town	Within the town	Area of residence of households from sample
B	Hinterland	Up to 7 km from the town	
C	7-16 km zone	7-16 km from the town	
D	Supraregional	Outside the region	

Table 2: Average supply of retail services in town and hinterland in five countries

	Number of shops[a]		Number of inhabitants per shop		Number of employees per shop		Number of inhabitants per employee	
	Town	Hinterland	Town	Hinterland	Town	Hinterland	Town	Hinterland
England	92	19	115	652	7.2	12.5	16	55
France	112	41	116	317	-	-	-	-
Netherlands	113	188	118	167	5.0	3.8	24	48
Poland	317	94	38	81	2.4	2.1	17	41
Portugal	397	636	44	36	2.3	1.7	21	23

[a] Average of six towns included per country.

Table 3: Correlations between purchases (low-order and high-order goods) of town households in town and hinterland and various spatial variables; same for purchases of hinterland households in the two zones in all countries.

	Town households				Hinterland households			
	Shopping location: Town		Shopping location: Hinterland		Shopping location: Town		Shopping location: Hinterland	
	Low order	High order	Low order	High order	Low order	High order	Low order	High order
Job in A	,258**	,481**	-,063**	-,053**	,170**	,181**	-,110**	-,118**
Job in B	-,067**	-.003	,059**	.034	-,072**	,188**	,174**	,173**
Job in C	-,144**	-,165**	.016	,052*	-,080**	-,150**	-.007	.031
PopA (ln)	,093**	,196**	,234**	,158**	,152**	,246**	,192**	,127**
PopB (ln)	-,410**	-,270**	,592**	,418**	-,367**	-,278**	,546**	,348**
Shops A (ln)	,316**	,769**	,312**	,298**	,330**	,745**	,222**	,225**
Shops B (ln)	-,252**	,178**	,679**	,612**	-,252**	,079**	,611**	,534**
Highway exit in zone A or B	-,304**	-,410**	,161**	,140**	-,369**	-,410**	,196**	,181**
Distance city 100.000 (ln)	,420**	,431**	-,207**	-,226**	,479**	,453**	-,288**	-,317**

** significant at the 0.01 level (2-tailed); *significant at the 0.05 level (2-tailed)

Table 4: Socio-economic characteristics of households in the database (6 towns in the Netherlands)

Characteristic	Residential zone	
	Town	Hinterland
Owning one or more vehicles	88%	96%
Average age head of household (years)	53	48
Average length of residence (years)	35	37
Average income[a]	5.2	5.0
Households with children (< 17 years of age)	25%	35%
Job in town[b]	35%	15%
Job in hinterland[b]	11%	46%
Job in 7-16 km zone[b]	26%	23%

[a] We used 10% income groups (1-10).

[b] As a share from all persons with a job.

Table 5: Average share (%) of purchases bought in the four zones for different kind of product groups (6 towns in the Netherlands)

Residential zone	Kind of purchases	Location of shop			
		Town	Hinterland	7-16km zone	Supra regional
Town	Grocery	90	6	3	1
	Fun	49	8	15	38
	Goal	72	8	12	8
	Average	74	7	8	11
Hinterland	Grocery	38	46	15	1
	Fun	27	27	24	22
	Goal	33	41	20	6
	Average	33	40	19	8

Table 6: Estimation results of multinomial logit model explaining choice of shopping in A, B or C

Explanatory variables	Groceries (R^2adj.0.60)		Fun (R^2adj.0.13)		Goal (R^2adj.0.30)	
	coeff.	t-value	coeff.	t-value	coeff.	t-value
lnDIST	-1.34	-5.561	-0.65	-3.302	-1.15	-4.034
lnFLOOR	0.59	11.474	0.37	7.919	0.28	5.334
JOB	0.50	4.418	0.18	2.224	0.40	4.256
CAR*lndist	0.08	0.460	0.08	0.570	0.47	2.130
AGE*lndist	0.002	0.508	-0.007	-0.293	-0.001	-0.389
lnYEAR	0.26	5.842	0.02	0.518	0.07	1.721

Table 7: Estimation results of multinomial logit model explaining choice of shopping in zone D[1]

Explanatory variables	Groceries (R^2adj.0.60)		Fun (R^2adj.0.13)		Goal (R^2adj.0.30)	
	coeff.	t-value	coeff.	t-value	coeff.	t-value
JOB	0.50	4.418	0.18	2.224	0.40	4.256
INCOME	0.08	0.715	0.14	4.522	0.10	2.105
KIDS	-0.13	-0.187	-0.44	-2.414	0.33	1.849
Oudewater	0.24	0.240	1.73	3.294	-0.43	-0.650
Gemert	0.51	0.489	1.87	3.491	-0.34	-0.483
Nunspeet	0.09	0.080	2.03	3.652	-0.38	-0.539
Schagen	-0.31	-0.269	0.82	1.483	-0.51	-0.730
Bolsward	-0.21	-0.200	1.83	3.487	-0.12	-0.185

Note 1. Because of data difficulties we had to exclude Dalfsen from this analysis.

8. Appendix I: Names of the 30 selected towns

Country	Towns
England	Leominster Swanage Towcester Tiverton Burnham-on-Sea Saffron Walden
France	Brioude Prades Magny-en-Vexin Mayenne Douarnenez Ballancourt-sur-Essonne
The Netherlands	Dalfsen Bolsward Oudewater Schagen Nunspeet Gemert
Poland	Glogówek Duzniki Ożarów Jędrzejów Ultsroń Lask
Portugal	Mirandela Tavira Lixa Vila Real Silves Esposende

9. Appendix II: Descriptive statistics of the (in)dependent variables

lnDist	Distance to nearest shop of considerable size	Ln (km)
LnFloor	Total size of shop(s)	Ln ($m^{2)}$
Job	Having a job in the zone concerned	dummy
Car*lndist	Dummy for owning one or more cars multiplied by the (ln) distance	# cars (ln(dist))
Age*lndist	Age of head of household (related to (ln) distance	
lnYear	The length of residence in zone A and B (for purchases in zone C we used '0')	Ln(year)
Income	Household income	10 classes
Kids	Having children or not	dummy
towndummy	Dummy for the specific town (5 towns were included)	dummy

Independent variables	**Minimum**	**Maximum**	**Mean**
Household characteristics			
Job A	0	1	0,23
Job B	0	1	0,29
Job C	0	1	0,25
Job D	0	1	0,20
Car	0	1	0,93
Age	20	75	50
Year AB	0	75	17,5
Kids	0	1	0,30
Shopping characteristics			
Distance A grocery	1	13	4,1
Distance B grocery	1	8,5	4,0
Distance C grocery	3	22	11,6
Floor A grocery	1797	8000	4865
Floor B grocery	60	3954	1177
Floor C grocery	1498	18000	9634
Distance A fun	1	13	4,0
Distance B fun	1	21	7,4
Distance C fun	3	22	11,7
Floor A fun	3335	14682	7691
Floor B fun	466	12118	48773
Floor C fun	825	2842	24509
Distance A goal	1	13	4,0
Distance B goal	1	19	6,2
Distance C goal	3	22	11,7
Floor A goal	4297	30119	12928
Floor B goal	652	16899	6492
Floor C goal	604	22687	13954

Dependent variables*	**Minimum**	**Maximum**	**Mean**

Grocery shopping A	0	1	0.65
Grocery shopping B	0	1	0.25
Grocery shopping C	0	1	0.09
Grocery shopping D	0	1	0.01
Fun shopping A	0	1	0.38
Fun shopping B	0	1	0.17
Fun shopping C	0	1	0.20
Fun shopping D	0	1	0.25
Goal shopping A	0	1	0.54
Goal shopping B	0	1	0.24
Goal shopping C	0	1	0.16
Goal shopping D	0	1	0.07

*The share of a specific kind of shopping in zone A, B, C and D