

Rodenburg, Caroline A.

Conference Paper

Assessment of multifunctional land use- an empirical analysis of the Amsterdam 'Zuid WTC' area

44th Congress of the European Regional Science Association: "Regions and Fiscal Federalism",
25th - 29th August 2004, Porto, Portugal

Provided in Cooperation with:

European Regional Science Association (ERSA)

Suggested Citation: Rodenburg, Caroline A. (2004) : Assessment of multifunctional land use- an empirical analysis of the Amsterdam 'Zuid WTC' area, 44th Congress of the European Regional Science Association: "Regions and Fiscal Federalism", 25th - 29th August 2004, Porto, Portugal, European Regional Science Association (ERSA), Louvain-la-Neuve

This Version is available at:

<https://hdl.handle.net/10419/117094>

Standard-Nutzungsbedingungen:

Die Dokumente auf EconStor dürfen zu eigenen wissenschaftlichen Zwecken und zum Privatgebrauch gespeichert und kopiert werden.

Sie dürfen die Dokumente nicht für öffentliche oder kommerzielle Zwecke vervielfältigen, öffentlich ausstellen, öffentlich zugänglich machen, vertreiben oder anderweitig nutzen.

Sofern die Verfasser die Dokumente unter Open-Content-Lizenzen (insbesondere CC-Lizenzen) zur Verfügung gestellt haben sollten, gelten abweichend von diesen Nutzungsbedingungen die in der dort genannten Lizenz gewährten Nutzungsrechte.

Terms of use:

Documents in EconStor may be saved and copied for your personal and scholarly purposes.

You are not to copy documents for public or commercial purposes, to exhibit the documents publicly, to make them publicly available on the internet, or to distribute or otherwise use the documents in public.

If the documents have been made available under an Open Content Licence (especially Creative Commons Licences), you may exercise further usage rights as specified in the indicated licence.

Assessment of multifunctional land use

- an empirical analysis of the Amsterdam ‘Zuid WTC’ area

Caroline A. Rodenburg

*Department of Spatial Economics
Vrije Universiteit
De Boelelaan 1105
1081 HV Amsterdam
The Netherlands
Email: crodenburg@feweb.vu.nl*



Abstract

Multifunctional land use projects aim to concentrate and combine several socio-economic functions in one and the same area so as to save scarce space and to exploit synergies. The need for efficient urban land use has generated much interest in this (re)new(ed) form of urban architecture. However, despite its positive aspects, the realisation of multifunctional land use is often not easy. Issues of social (un)desirability of the project, spatial quality, as well as cost considerations, such as the distribution of the financial burden across different stakeholders, can be an important obstacle during the decision-making process. By means of a questionnaire among employees located at the multifunctional ‘Zuid WTC’ area in Amsterdam, we try to obtain more information about the benefits that different stakeholders attach to multifunctional land use projects, enabling us to assess issues such as willingness to pay of employees, preferences for specific infrastructure facilities, and the overall social (un)desirability of a multifunctional land use project. In this paper we present empirical evidence concerning the assessment of multifunctional land use by employees in the ‘Zuid WTC’ area, based on questions about preferences for the design of such an area and the value that employees attribute to it.

1. Introduction

Information on the measurement of exact costs and benefits for different groups of stakeholders in multifunctional land use projects is of crucial importance to provide a better foundation for investment decisions in multifunctional land use projects. Many of these benefits can not be measured directly. In this chapter we present a questionnaire approach to quantify these benefits.

Our focus will be at the multifunctional South-axis project from the viewpoint of individual stakeholders. Such an analysis will enable us to assess the allocation of costs and benefits over the different groups of stakeholders in order to make the project profitable at the individual level. It is therefore important to analyse how users of a multifunctionally designed area assess (the use of) such an area and, moreover, how the assessments vary between users. Strictly speaking, not the benefits of the multifunctionally design of an area will be measured, but the benefits of the use of facilities within a multifunctionally designed area.

This chapter is concerned with benefits as enjoyed by office employees in the Amsterdam South-axis area. They form a substantial share of the users of the South-axis, since, in current development plans, 45% of the area consist of office space. This implies that they form an interesting group to have knowledge of when designing a multifunctional area.

A questionnaire was developed that aims to provide insight into the choices employees make in using facilities in the direct vicinity of their work location, and the value they attach to such choices. With this questionnaire we obtain information on how potential users assess the design of a multifunctional area. The emphasis in the analysis is on the valuation of the presence of certain facilities in the area, and the area's accessibility.

This chapter is organised as follows. A short overview of the questionnaire as well as an overview of general characteristics of the data set will be given in Section 6.2. Section 6.3 presents the willingness to pay of employees for non-shopping facilities at the South-axis, whereas Section 6.4 focuses on the willingness to pay of employees for shopping facilities, by means of analysing their responsiveness towards price changes in the South-axis area. Section 6.5 concludes.

2. The questionnaire

2.1 The survey

The questionnaire was developed as an electronic questionnaire (both in Dutch and in English), which respondents had to fill out on the Internet. An invitation to participate was sent to about 6600 employees via an internal mailing by companies located within the South-axis area. The questionnaire consists of three main parts:

- In the first part, questions were asked about the number of days a week people travel to work, the transport mode they use, and the average travel time between home and work location. This information is important to relate responses to specific characteristics of respondents.
- In the second part people had to express their preferences as well as their expected frequency of use for different types of facilities nearby their work location: shops, catering facilities, transport facilities and other facilities such as a museum, a day-care centre, a post office, etc. The answers to these questions were used to create

scenarios for which respondents were subsequently asked to express their (indirect) willingness to pay.

- In the final part of the questionnaire, respondents were asked to look at the South-axis from a slightly different perspective, namely not as a user of facilities, but as an employee among many others. The respondents had to express how they experience the (possible) proximity, in the direct vicinity of their work location, of several companies from the same industry as they are working in. Dependent on the answer (positive, neutral, or negative), they were asked to indicate the importance of several aspects related to proximity of companies from the same industry.

A full version of the English version of the questionnaire can be found in

Appendix 1 of this chapter. The Dutch version is available upon request.

2.2 Respondents

Table 1 presents some key characteristics of the distribution of respondents in the data set.

Table 1: Characteristics of the data set

Characteristics	Value
Gender:	
Male	59%
Female	41%
Age:	
< 30	26%
31- 40	35%
41-65	39%
Highest educational degree:	
Bachelor/Master	82%
High School	16%
Other	2%
Work:	
3 days a week or less	10%
4 days a week or more	90%
Main transport mode:	
Car	29%
Public transport	38%
Bicycle	30%
Other transport modes	3%
Net personal income:	
Less than € 2000	35%
€ 2000 - € 3000	30%
More than € 3000	27%
Unknown	5%
Family situation:	
Living alone without children	26%
Living alone with children	2%
Living together with partner and without children	38%
Living together with partner and with children	34%
Partner (when living together) works fulltime	51%
Work location within 2 minutes walking of WTC railway station	50%

Since no comparable research has taken place before, it is not possible to compare the general characteristics of the respondents with a standardised data set. This means that we can not give judgement about the representativeness of the data set.

2.3 Representativeness

The database contains 1952 respondents (response rate of 32%). The entire questionnaire was answered by 1492 respondents, of which 1188 filled out the questionnaire completely.

Selection bias might result from several sources. Due to the fact that it was an Internet survey, there could be a selection bias when not every employee has access to the Internet. In business companies this is often the case for those employees who do not necessarily need Internet access to be able to carry out their jobs.

Furthermore, the sample might not be fully representative since not every company in the South-axis area participated in the survey. Most participating companies are

located close to Zuid WTC railway station, which might lead to a distorted picture in terms of, for example, modality used, assessment of accessibility of the South-axis, and preferences for facilities. That is to say, most companies located close to Zuid WTC railway station are financial institutions and lawyer's offices, whereas other kinds of employment (e.g., the public sector) are located somewhat further from Zuid WTC railway station and those employees might, for example, use different modes of transport. On the other hand, since we focus on employees in multifunctionally designed areas, the employees close to WTC railway station work in the most multifunctional part of the area regarding the use of facilities, so they can be seen as a very representative group.

Although the sample may not be fully representative, we see no need to correct for specific characteristics of respondents.

3. WTP of employees for non-shopping facilities at the South-axis

How can we estimate the value people attach to multifunctional land use (i.e., a multifunctionally designed area)? Since it is not a good that is traded on a market we can not derive its value from market processes. One option to answer this question is to use hedonic income analysis in which we compare the income of respondents at the South-axis with the income of respondents in areas that, *ceteris paribus*, do not have the facilities respondents at the South-axis have. The problem, however, is that also at the South-axis the availability of facilities is still relatively low, which means that it is not yet fully representative for a multifunctional area, and, furthermore, the differences between the payment level in the respective areas do not necessarily have to stem from differences in multifunctionality of the area alone.

To overcome this problem we make use of individuals' hypothetical behaviour on hypothetical markets for multifunctional land use characteristics. The most straightforward economic measure to express how employees assess (the use of) a multifunctional site is their willingness to pay (WTP) for the relevant characteristic of multifunctional land use. Willingness to pay surveys allow us to simulate price-related changes in behaviour without actually changing prices. WTP surveys measure potential demand for products or services by asking consumers: "Would you purchase this product / make use of this service if it were offered at this price?".

The questionnaire was developed to identify how much people are willing to pay (extra) for the use of facilities at a multifunctionally designed site. A distinction was made between shopping facilities and non-shopping facilities since we expect that the behavioural response to price changes differs over these types of facilities. The non-shopping facilities consist of the categories 'catering facilities', 'infrastructure facilities' and 'other facilities', of which the latter category contains those facilities that did not fit under the other two headings. In this section, we will focus on the non-shopping facilities. The analysis of WTP for shopping facilities will be discussed in Section 4.

To obtain insight into the WTP for non-shopping facilities, a two-stage dichotomous choice question has been included in the questionnaire in which we ask the respondents two times to answer 'yes' or 'no' to the question whether they want to pay a certain amount of money for a certain respondent-specific combination of facilities. The amounts of money presented to the respondents in the second question differ from the first question and are dependent on the answer on the first question.

The second dichotomous choice question was followed by an open-ended CVM question.

The facilities presented to a respondent were based on the importance they indicated to attach to the presence of different types of facilities near their working location, and included the three facilities to which they attached greatest importance. These facilities could stem from the categories: ‘catering’, ‘transport’ and ‘other’.

The question respondents had to answer was the following:

Suppose that you would have to buy a “South-axis area employee card” in order to be allowed to use the following facilities in the South-axis area: ‘A, B, C’. With this card, the actual use of the facilities in the South-axis area has the same price as facilities that you would use outside the South-axis area. Would you be willing to pay € 25 per month for such a card?*

** In which ‘A, B, C’ represent the facilities to which a respondent attached greatest importance*

If the respondents accepted the payment in the first question, they were asked whether they would also pay € 50. If not, they were asked whether they would be willing to pay € 10. Finally, they were asked to express an exact maximum amount of money they are willing to pay for the use of the bundle of facilities.

The advantage of using the payment vehicle above is that it really measures the extra WTP for the use of facilities at the South-axis, and is not influenced by means of variables such as prices for the use of facilities, etc.

3.1 WTP for non-shopping facilities

The average willingness to pay (WTP) of employees for a specific combination of three facilities (which can stem from all three above-mentioned categories) in the vicinity of their work location is € 6.88 per month.

Figure 1 shows the cumulative frequencies of the different WTP values chosen by respondents. It turns out that the WTP of 84% of the respondents is € 10 or lower. Only about 5% of the respondents is willing to pay € 25 or more per month.

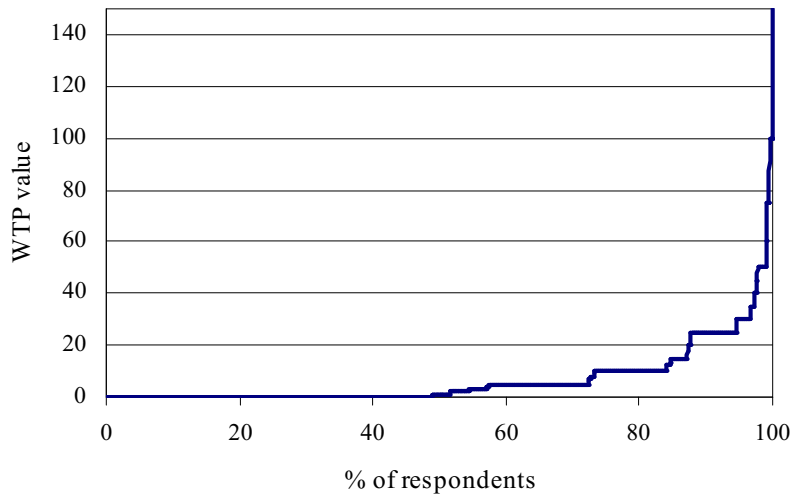


Figure 1: Cumulative frequencies of WTP values for sets of three most-preferred non-shopping facilities

There are good reasons to expect the WTP to depend on the type of facility that is being valued. Figure 3 shows the WTP as well as the confidence intervals for a bundle of three facilities in which the indicated facility is included. The straight line shows the average WTP of all respondents, irrespective the bundle of facilities concerned. A pooled-variance t-test has been conducted to see if the differences between the mean WTP for different bundles of non-shopping facilities are statistically significant. In this t-test, we used the pooled variance since we assumed that the population variances of both samples are equal.

The confidence intervals have been constructed by means of the sample variance¹. They illustrate that the differences in WTP are statistically significant for several bundles of non-shopping facilities (their confidence intervals do not overlap). The average WTP for, for example, a bundle in which a lunchroom is included is € 6.83, irrespective of the other two facilities in the bundle. We see furthermore that employees are willing to pay relatively high amounts for the use of a bundle of three facilities in which: (i) a day-care centre is included (€ 13,1), (ii) sport facilities are included (€ 10,8), or (iii) a museum is included (€ 10,2). These results are not surprising, since those facilities belong to the most expensive facilities one could chose from. The WTP for so-called public non-shopping facilities is generally much lower, since people see it as a right that they can make use of facilities such as urban green, a railway station, etc. and are not willing to pay for its use.

¹ Theoretically, minor differences compared to the t-test results could occur. These differences were, however, so small that they did not influence the conclusions.

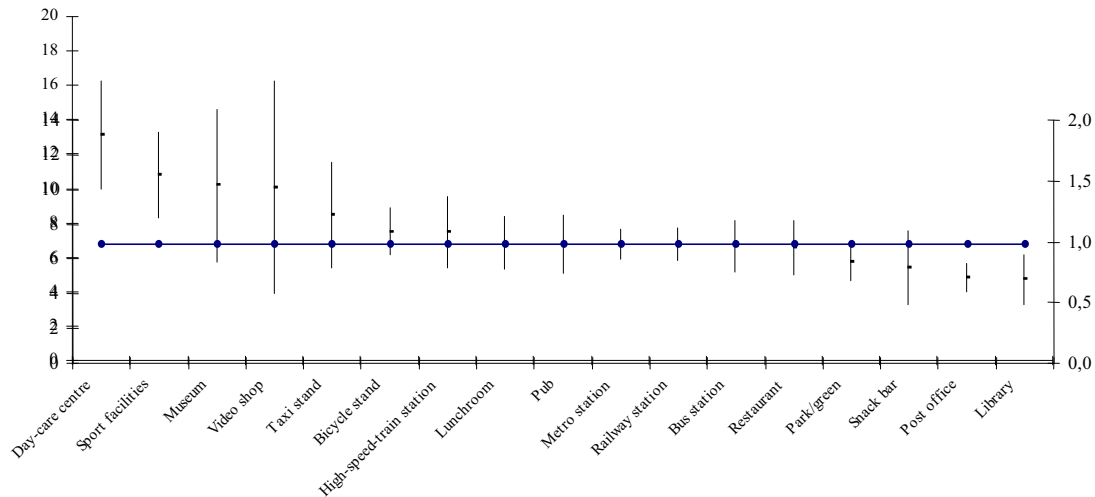


Figure 4: Average WTP values for bundles in which indicated facility is included

The two facilities that are most often ranked first in the bundle are railway station (22%) and metro station (19%). The most frequently chosen bundle is the bundle of railway station, metro station and urban green (5.4%) (in random order). The highest willingness to pay of the top 10 of most frequently chosen bundles, nevertheless, has been found for the bundle of railway station, metro station and café (€ 9.53) (again in random order).

In the ideal situation, we would like to know the WTP for each individual facility. However, we can only approach this value. One way is to assume that the WTP for each facility is one-third of the WTP respondents indicated for the bundle of facilities as shown in Figure 3. In this way, all facilities are treated individually, without making allowance for the presence of two other facilities in the bundle. The resulting values are shown in the second column of Table 2. A more precise way is to perform OLS regression on dummies for the non-shopping facilities. In this way, corrections are implicitly made for the importance attached to the other two facilities in the bundle. These values are shown in the first column of Table 2. We see that the WTP value for each facility differs per column. Generally, the regression results are lower for public facilities such as railway station, urban green, etc. and higher for facilities for which you already have to pay in the current situation, such as a day-care centre and sport facilities. This is according to expectations, although there might be a downward bias in the values of the public facilities due to protest bids.

Table 2: WTP for specific non-shopping facilities: OLS

Type of facility	WTP based on OLS regression	WTP based on '1/3'-assumption
Library	0.146 (0.101)	1.56
Bus station	2.006 (2.316) **	2.22
Pub	2.447 (2.903) ***	2.26
Bicycle stand	3.054 (4.241) ***	2.50
High-speed-train station	3.034 (3.016) ***	2.50

Day-care centre	8.912 (8.136) ***	4.37
Lunchroom	2.457 (2.776) ***	2.28
Museum	5.773 (2.344) **	3.40
Railway station	2.086 (3.437) ***	2.25
Park/green	0.796 (1.197)	1.90
Post office	-0.319 (-0.495)	1.61
Restaurant	2.354 (2.372) **	2.19
Snack bar	0.540 (0.347)	1.79
Sport	6.270 (6.007) ***	3.59
Metro station	2.353 (3.919) ***	2.25
Taxi stand	3.765 (3.238) ***	2.82
Video shop	5.726 (1.787) *	3.35
Sample average	6.88	7.56
N	1544	4632
Adjusted R ²	0.260	

Notes: The t-values are shown between brackets. *, ** and *** denote significance at the 10, 5 and 1% level, respectively, (two-sided *t*-test) in OLS regression with dummies.

Next to the average WTP for the use of a specific bundle of facilities, it is interesting to see if this WTP value varies over respondents. In the next section we will further analyse the data set to see whether there are specific factors that affect the willingness to pay for non-shopping facilities of employees in a multifunctionally designed area.

3.2 Factors influencing the WTP for non-shopping facilities

According to the standard economic models of consumer behaviour, various factors may affect the monetised benefits, as expressed by the WTP, that consumers attach to certain goods. One of those factors is the income of the respondent: the demand for a 'normal' good increases in income, *ceteris paribus*. Age may also be important, apart from its relation with income, as is gender. We are furthermore interested in whether respondents' travel behaviour affects the willingness to pay for the presence of the facilities under consideration near their workplace. We therefore include variables such as number of days people travel to work, travel time, and transport mode. Furthermore, the analysis controls for the facility that is being evaluated and the urbanity of the home region of the respondents. The latter might be decisive for the use of the facilities in the South-axis area: if there are no facilities at home, the need to use the facilities at the South-axis area is higher. There are more factors influencing the WTP, such as fashion and personal taste, but it is not possible to control for these factors, since they are very hard to categorise and are therefore not included in the questionnaire.

To see what the influence of the above-mentioned variables is on respondents' WTP for non-shopping facilities, we have performed multiple regression analysis on the $\log(\text{WTP}+1)$. In order to be able to perform the analysis on the log of the WTP, we had to add 1 to each observation since there are many 0 bids, of which it is impossible to take the log. The results of the analysis are shown in Table 3.

The table reveals that there are hardly any systematic patterns found in the wide variation in WTP over different respondents. In terms of statistical significance, the strongest effects found are correlated with the type of facility, travel time, transport mode, gender and urbanity of the home region. Expectations were that characteristics such as age and income would also significantly influence people's WTP. However, if we look at the economic impact of the variables used, we see that the size of the coefficients, and with that the impact on the WTP value varies much between characteristics of respondents. Apart from the type of facility, for example, people who travel to work for more than three days have a substantially higher willingness to pay. On the contrary, people who travel for more than 20 minutes and those who use other transport means to travel to work (e.g., motor cycle) have much smaller coefficients. Summarising, we can say that the maximum WTP of employees is statistically seen mainly dependent on the type of facility offered, but the size of the WTP varies much over different characteristics of respondents.

Table 3: WTP for bundles of specific non-shopping facilities: OLS

	Log WTP+1	
Constant	1,798	5,137 ***
Age (base = < 31)		
31-40	-0,025	-0,248
41-65	-0,065	-0,607
Travel days (base = 1-3)		
4	0,111	0,809
5	0,179	1,328
Income (base = < € 1500)		
€ 1500-2000	-0,082	-0,681
€ 2000-3000	-0,082	-0,682
> € 3000	0,065	0,464
Unknown	-0,101	-0,550
Travel time (base = 0-10 min)		
10-20 min	-0,093	-0,621
20-30 min	-0,308	-2,014 **
30-45 min	-0,260	-1,583
45-60 min	-0,289	-1,673 *
> 60 min	-0,300	-1,568
Transport mode (base = car)		
Train	-0,100	-0,828
Tram/bus	-0,030	-0,249
Walk/bike	-0,331	-2,751 ***
Other transport means	-0,482	-1,374
Type of facility (base = railway station)		
Library	-0,055	-0,325
Bus station	0,034	0,280
Pub	-0,079	-0,661
Bicycle stand	0,266	2,352 **
High-speed-train station	0,039	0,279
Day-care centre	0,570	4,093 ***
Lunchroom	-0,094	-0,781
Museum	0,637	2,382 **
Park/green	-0,168	-1,645
Post office	-0,272	-2,633 ***

Restaurant	0,035	0,264
Snack bar	-0,009	-0,050
Sport	0,519	3,916 ***
Metro station	-0,086	-0,745
Taxi stand	0,033	0,216
Video shop	0,542	1,536
Gender (base = male)		
Female	0,170	2,109 **
Urbanity (base = < 500 addresses per km ²)		
>=2500	-0,365	-1,929 *
1500-<2500	-0,411	-2,201 **
1000-<1500	-0,373	-1,886 *
500-<1000	-0,490	-2,409 **
Sample average	1.1663	(1544)
N	1367	
Adjusted R ²	0.060	

Notes: The t-values are shown between brackets. *, ** and *** denote significance at the 10, 5 and 1% level, respectively, (two-sided *t*-test) in OLS regression with dummies.

4. WTP of employees for shopping facilities at the South-axis

As mentioned before, the most straightforward economic measure to express in monetary terms how employees assess the use of facilities at a multifunctional site is their willingness to pay. However, there are different types of willingness to pay. In the preceding section we asked for the WTP for the use of non-shopping facilities, whereas in this section we will focus on the WTP for shopping facilities.

Since people are expected to be reluctant towards paying a kind of entrance fee to be allowed to make use of shopping facilities (more than for the use of non-shopping facilities) we decided to make use of variation in price levels for shopping facilities instead of including these facilities in the question about the “South-axis employee card”. We therefore included a question in which employees were asked to indicate the percentage of their total expenses at certain shopping facilities that they would spend at similar shopping facilities in the South-axis area.

The type of shop for which respondents had to fill in their expenses was dependent on the frequency with which they had indicated in earlier survey questions to make use of different types of shops in the South-axis area. In the subsequent open-ended CVM question about respondents’ percentage purchases in shops, four scenarios were offered to the respondents. In the first option we hypothesised an equal price level at the South-axis compared to alternative options (often near home). In the subsequent options, the price level in the South-axis area was presented as being 10%, 25% and 50% higher. For each scenario, respondents had to indicate which percentage of their total expenses on a specific type of shop (e.g. supermarket, dependent on earlier answers) they expect to spend in their current supermarket and which percentage they expect to spend in a supermarket in the South-axis area.

By asking respondents to indicate their expenses in a specific shop at different price levels, we obtain information about the WTP of employees for shopping facilities in the South-axis area. In general, prices in shops in multifunctionally designed sites at strategic locations such as the South-axis are higher than elsewhere. With normal

goods, peoples' expenses decrease with an increase in prices. The extent to which expenses decrease can be seen as a measure for respondents' WTP for the use of shopping facilities in a multifunctionally designed area. This so-called 'responsiveness', is related to what could be called an excess WTP of employees, since it measures the amount they would be willing to pay extra to make use of facilities at the South-axis compared to facilities elsewhere.

We will now have a look at the data set to see what the influence is of price changes on the WTP of employees for shopping facilities by analysing their expenses at different price levels. We will first look at the expenses at equal price levels and then use various elasticity measures to see whether different characteristics influence the responsiveness of people towards changes in prices of goods they would buy in shops at the South-axis.

4.1 (Factors influencing) intended use of shops in the vicinity of respondents' work location

The question about the percentage of total expenses at certain shopping facilities that respondents would spend at similar shopping facilities in the South-axis area has been asked for two different types of facilities. This enables us to double the data set for shopping facilities. This pooled data set shows that the average percentage of the total expenses at different types of shops that employees spend per shop in the South-axis area is 38.5% (2927 respondents) if prices of shops at the South-axis are equal to prices elsewhere. This percentage nevertheless differs per type of shop (see Table 4). For example, the average percentage purchases for dry cleaner's (148 respondents) at the South-axis is the highest with 63.3% of the total expenses respondents spend at dry cleaner's. The expenses in supermarkets (1033 respondents) at the South-axis are the lowest with 29.3% of the total budget respondents generally spend in supermarkets.

Since we would like to know the budget share for different types of shops over all respondents (so including those who did not answer the questions for a specific type of shop, but might be willing to make use of it as well), we made the following assumptions to calculate the range of expenses one could expect per type of shop. For the minimum expenses we assumed that everyone who did not chose a specific type of shop (e.g., bookshop) would spend 0% of his budget in this type of shop at the South-axis. For the maximum expenses we assumed that everyone who did not chose a specific type of shop would spend half of the average budget share of the people who chose this type of shop, in that shop at the South-axis. The maximum share in this case is below the average of the respondents who indicate their highest preferences for a specific type of shop, since it is corrected for the people who did not indicate their highest preferences for this type of shop, but might use it as well. Table 4 shows that the smallest range of budget share is found for supermarkets. This is due to the fact that those goods are often bought in an impulse (snacks, drinks, or something for dinner one forgot to buy the day before etc.) and therefore have a more 'constant' average over different respondents. The ranges for the other types of shops are much broader. This is due to the fact that for those shops respondents make a specific choice to use it or not. For example, respondents who decide to use a dry cleaner's at the South-axis will often consider this as their main dry cleaner's. If people do not feel like using a dry cleaner at the South-axis, this often implies that

they really never use it there. The same counts for a hairdresser: people feel attached to their (current) hairdresser.

Table 4: Average budget share per type of shop for different scenarios

	Supermarket	Drugstore	Dry cleaner's	Bookshop	Flower shop / gift shop	Hairdresser
Average	29.3 (1033)	40.7 (798)	63.3 (148)	43.7 (557)	40.8 (349)	47.2 (42)
Minimum	9.3	10.0	2.8	7.4	4.3	0.6
Maximum	19.3	25.4	33.1	25.6	22.6	23.9

Note: The number of respondents is shown between brackets

The expenses in shops at the South-axis do not only differ per type of shop. They can also differ across respondents with different characteristics. As explained in Section 3.2 we are interested to see if people's WTP for shopping facilities is influenced by age, income, gender, number of days people travel to work, travel time, and transport mode, as well as the (shopping) facility that is being evaluated and the urbanity of respondents' home area. For shopping facilities, we also included respondents' family situation and whether one has a partner with a paid job. We expect these factors to influence the extent to which people make use of shops at the South-axis. For example, a partner without a job will often take care of buying groceries, so there is less need to use a supermarket at the South-axis. We expect similar findings for respondents living alone compared to respondents living together with a partner and/or children.

We have performed censored Tobit analysis for the percentage purchases (the budget share employees would spend in specific shops in the South-axis area) on dummies for the above-mentioned variables. This is the appropriate way for a data set with a large number of zero-observations (see e.g. Maddala, 1983) and implies that we assume that there is an underlying variable equal to $(X_i\beta + u_i)$ which is observed only when it is positive. The analysis is double censored at 0 and 100, since these are the extreme values a budget share can have. The results of the analysis are shown in Table 5.

Table 5: Percentage purchases in shops in the South-axis area at equal prices: TOBIT

	Percentage purchases at equal prices (OLS)	
Constant	61,922	13,411 ***
Age (base = < 31)		
31-40	-6,474	-4,003 ***
41-65	-12,908	-7,517 ***
Travel days (base = 1-3)		
4	8,352	3,911 ***
5	9,334	4,392 ***
Income (base = < € 1500)		
€ 1500-2000	6,050	3,225 ***
€ 2000-3000	5,815	3,124 ***
> € 3000	1,831	0,852
unknown	11,279	3,800 ***
Travel time (base = 0-10 min)		

10-20 min	-5,363	-2,359 **
20-30 min	-8,950	-3,858 ***
30-45 min	-12,045	-4,773 ***
45-60 min	-15,049	-5,666 ***
> 60 min	-15,342	-5,173 ***
Transport mode (base = car)		
Train	-3,501	-1,994 **
Tram/bus	9,446	5,163 ***
Walk/bike	-5,003	-2,790 ***
Other transport means	-0,817	-0,144
Type of shop (base = flower shop / gift shop)		
Supermarket	-15,119	-8,067 ***
Drugstore	-3,176	-1,697 *
Dry cleaner's	19,560	6,857 ***
Bookshop	2,281	1,147
Hairdresser	10,492	2,231 **
Gender (base = male)		
Female	7,634	5,718 ***
Family situation (base = living alone without children)		
Living alone with children	0,627	0,167
Living together without children	-0,900	-0,439
Living together with children	-4,997	-2,327 **
Working partner (base = partner has no paid job)		
Part-time working partner	-2,748	-1,480
Full-time working partner	-1,304	-0,706
Shop 1 or 2		
Shop 2	-1,304	-1,114
Urbanity (base = < 500 addresses per km ²)		
>=2500	-11,596	-4,019 ***
1500-<2500	-11,407	-4,015 ***
1000-<1500	-9,987	-3,318 ***
500-<1000	-12,829	-4,138 ***

Sample average 38.5

N 2542

Adjusted R² 0.206

Log likelihood function

Notes: The t-values are shown between brackets. *, ** and *** denote significance at the 10, 5 and 1% level, respectively, (two-sided t-test) in OLS or TOBIT regression with dummies.

The analysis shows that age, number of days people travel to work, income, travel time to work, mode of transport, type of shop, gender, and urbanity all have a statistically significant explanatory power for the variation in percentage purchases people buy at the South-axis. This is according to expectations. We observe that the younger people are the higher the percentage purchases they buy at the South-axis. This is a tendency that is often seen, and might be due to the fact that they spend money more easily, but also that they are more often part of a double income household. Furthermore we see that the more days people are present in the area, the more they buy which confirms the positive relation that is expected between presence

and expenses; chances that people spend money at shops in the South-axis area increase with the time they spend in the area. Expenses are, however, also dependent on travel time: people do not want to travel for a long time with purchases. The analysis confirms these expectations: the longer people have to travel to get home the less they buy at the South-axis. Employees that travel to work by foot or bike buy relatively little, which also holds for employees that live together with a partner and children under the age of 18. The results furthermore show that women generally buy more than men do, which seems to approve the general prejudice, but can be explained by the fact that they are most often the persons that do the shoppings. Finally, those people who indicated to attach most importance to the presence of a supermarket buy relatively little in supermarkets at the South-axis (in terms of percentages of total expenses at supermarkets), whereas those who indicated to attach most importance to the presence of a dry cleaner's and spend a relatively high percentage of their total expenses on dry cleaner's in the South-axis area. This is not surprising, since, as indicated above, not all supermarket purchases can easily be taken home, so one will always use another supermarket as well. Dry cleaner's, at the other hand, are more often closed after office hours and if one decides to use a specific dry cleaner, it will often be used exclusively.

The relation with income is somewhat more diffuse. Purchases at the South-axis seem to decrease with an increase in income, whereas respondents who answered 'unknown' relatively spend the highest share of their budget at the South-axis. Since we don't know their income level, it is not possible to further explain the regression results for this group.

In Appendix 2 an OLS regression on the budget shares per type of shop is presented. The results clearly differ per type of shop. The major share of significant results is found for supermarket and drugstore, which can partly be explained by the fact that many respondents belong to these groups. If we have a look at the size and the sign of the different coefficients, we see that for supermarkets especially travel time matters. The budget share decreases rapidly with an increase of travel time. The budget share of respondents who answered this question for the presence of a drugstore is strongly influenced (although not all of them are statistically significant) by age, income, travel time, modality, and gender. For dry cleaner's the sample is relatively small which influences the statistical significance of the results. The size and sign of the coefficients nevertheless show that almost every variable strongly influences, either positively or negatively, the budget share people spend at the South-axis. The results for bookshop are somewhat more diffuse. Although the sample size is sufficient, most results are not statistically significant. Concerning size and sign of the coefficients, striking values can be found for age, number of travel days, transport mode and urbanity. For a flower shop, the results show that the budget share people spend at the South-axis varies much with age, income, transport mode and urbanity. No TOBIT regression could be performed for hairdressers due to collinearity as a result of the small number of respondents.

Summarising, we can say that specific characteristics of respondents influence the budget share they spend at different shops in the South-axis area. Age, number of travel days, travel time, income, and family situation, for example, are characteristics of respondents that considerably influence their expenses in shops and are therefore important to reckon with.

4.2 Influence of price changes on the (average) WTP of employees

In the preceding section we have seen the average WTP of employees for the use of shopping facilities in the South-axis area as well as the influence of specific characteristics of respondents on this value. However, these values are only valid for the situation in which the price level in the South-axis area is equal to the price level at alternative locations. By varying price levels in the South-axis area we will gain insight into the value added of shopping facilities in the area, as experienced by employees. The answers show that, if the price level increases, the percentage of total expenses that is spent in different types of shops decreases. Figure 5 shows the budget share people spend in specific types of shops at different price levels.

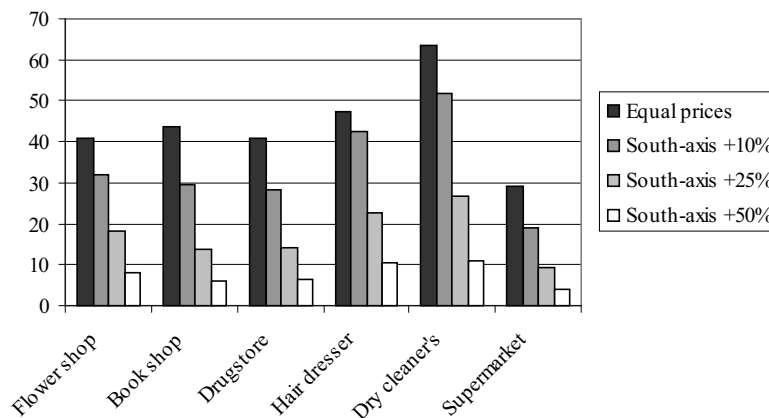


Figure 5: Percentage of total expenses at specific shops that employees spend on different shops in the South-axis area

The influence of a price change on respondent's budget share differs per type of shop as we have seen in Figure 5. For certain types of shops the budget share is more 'responsive' to changes in price than for others. For bookshops, for example, the figure shows that budget shares decrease with a relatively higher amount than for dry cleaner's. We will now develop more exact measures that enable us to calculate how 'responsive' respondents' budget shares are to some change in price.

4.3 Factors influencing the responsiveness towards price changes

With normal goods, peoples' expenses decrease if prices increase. The extent, however, to which expenses decrease, the so-called responsiveness, can be seen as a measure for respondents' WTP for the use of shopping facilities in a multifunctionally designed area. Employees will use shopping facilities near their work location (i.e., at a multifunctional site) differently compared to, for example, shops near home and will therefore have a specific WTP for shopping facilities at a multifunctional site. To see what their WTP is we will make use of elasticity measures, which are suitable indicators for the responsiveness of people towards changes in price, and are thus related to the WTP. There are different types of elasticity measures to be distinguished as will be shown in this section.

The standard theoretical indicator for price elasticity is the responsiveness in terms of quantities (q). In our questionnaire, however, we measure the responsiveness of

people towards changes in price in budget share (quantity (q) * prices (p)). Therefore, our data, in first instance, only enable us to obtain a budget elasticity. The reason that we asked respondents to indicate changes in budget share, and not changes in quantity bought of a specific product, is that it not possible to unambiguously define changes in quantities in a questionnaire. The budget share used enables us to assess the willingness to pay of people for the use of shopping facilities in a multifunctionally designed area, instead of the willingness to pay for specific products.

The budget elasticity shows the relation between budget share and prices. We define this elasticity as the change in budget share ($p \cdot q$) for the South-axis as a result of a percentage change in relative prices (compared to the average budget share over the sample instead of the reference situation). So, an increase in prices of x % leads to a decrease in the budget share of y %, based on the average budget share of the sample. This so-called ‘budget share arc - relative prices - elasticity’ has been calculated for the average of p_0 and p_{25} and is therefore evaluated around the relative price ratio 1.125 (in between ‘equal prices’ (b_0) and ‘prices 25% higher’ (b_{25})). This relation is given by:

$$\varepsilon_{\text{budget share arc}} = \frac{\Delta(pq)}{pq} \bigg/ \frac{\Delta p}{p}$$

where:

$$\Delta p = p_{25} - p_0 \text{ and } \Delta(pq) = (pq)_{25} - (pq)_0$$

$$p_{12.5} = \frac{p_0 + p_{25}}{2} \text{ and } pq_{12.5} = \frac{(pq)_0 + (pq)_{25}}{2}$$

However, this elasticity does yet not enable us to assess the actual quantities bought. For example, with a price increase, people might spend a higher share of their budget and still buy the same amount of (more expensive) products. It is also possible that people spend the same share of their budget, but can now buy only part of the products they used to buy. What we do know is that the effect in quantities bought dominates if ε is high, but we don’t know to what extent. Therefore, we would also like to obtain information about changes in quantity bought as a result of a change in price.

If we assume that second order effects can be neglected we can turn the above-described budget elasticity into a price elasticity. We therefore have to find the relation between \hat{p} , \hat{q} and \hat{pq} , in which \hat{p} means a percentage change in p . Since:

$$\frac{\hat{pq}}{\hat{p}} = \frac{\hat{q}}{\hat{p}} + \frac{\hat{p}}{\hat{p}}$$

which we can rewrite into:

$$\frac{\hat{q}}{\hat{p}} = \frac{\hat{pq}}{\hat{p}} - 1$$

(in which $\frac{\hat{pq}}{\hat{p}}$ is the budget elasticity of respondents' expenses at the South-axis), a

1% increase in South-axis prices leads to a $(\frac{\hat{pq}}{\hat{p}} - 1)\%$ decrease in respondents' demand for commodities. Note that the larger is the budget share, the smaller will be the fall in demand.

The sample average for the price elasticity indicator is -5.96 . This means that if prices increase with 1%, the relative amount of purchases in shops at the South-axis will decrease with almost 6%. This high elasticity value can be explained by the fact that expenses at the South-axis form only a small part of total expenses, so no longer buying a product because of a price increase means a relatively large decrease in expenses.

The distribution of the elasticity values over respondents is dispersed, as shown in Figure 6. Only 0.5% of the respondents has a positive elasticity, which implies that people would spend a higher share of their budget in shops at the South-axis if prices increase. This can be caused by the fact that people do not change their shopping behaviour and still buy the same amount of (more expensive) products.

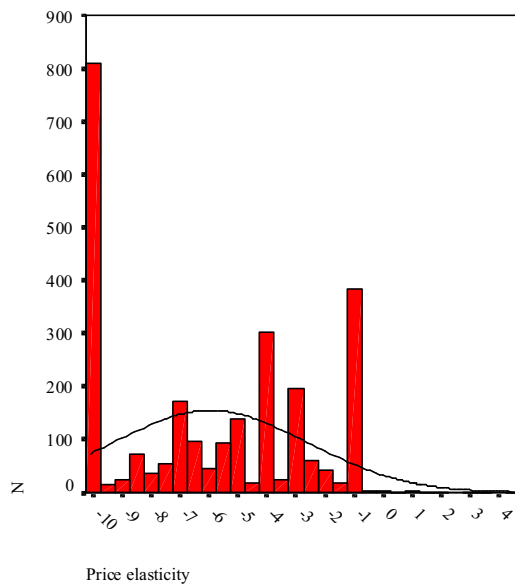


Figure 6: Distribution of price elasticity values for shopping facilities in the South-axis area

To see if the responsiveness towards price changes (elasticity) depends on specific characteristics of respondents, we perform OLS regression on the price elasticity for the same variables as we used for the OLS regression on percentage purchases (see Table 5)^{2,3}. The results show that the responsiveness towards price changes in shops

² We have also checked the data set for the deviation in responsiveness of respondents towards price changes, which shows the change in budget share of individuals compared to the average change in budget share over the sample (responsiveness is defined here as the ratio between the budget share people spend at the South-axis when prices increase with 25% and the reference situation in which prices at the South-axis are equal to prices elsewhere). The results are, in terms of statistical significance, almost similar to the results for the price elasticity. Differences are only found for the level of significance. Also the sign of the coefficients is identical, except for an urbanity level between 1500-20500 addresses per km².

at the South-axis can be explained by age, income, travel time, preferences for the presence of specific types of shops, family situation, and whether the respondent has a partner with a paid job (see Table 6). We see that, for example, the higher income groups are, as expected, less price-sensitive, which means that with an increase in prices the amount of products they will buy at the South-axis will decrease, but with a smaller amount than that of lower income groups (and than the sample average). This might be due to the fact that a price increase at the South-axis is a relatively smaller trespass on their income compared to lower income groups. Another variable that confirms our expectations is whether the respondent has a partner with a paid job. We see that if the partner has a full-time job, if price increase, the expenses decrease relatively lower amount than for respondents who have a partner without a paid job. Concerning the different types of shops we see that if prices increase, people's purchases will decrease as well, but with a relatively higher amount than the sample average, especially for a hairdresser and a bookshop.

Summarising, we can say that, since the results of the OLS regression for price elasticity (see Table 6) reveal that the responsiveness of employees towards price changes in shops is generally quite strong, retailers at the South-axis do not have very much market power, i.e. possibilities to increase their prices. As soon as they increase prices of goods, consumers will, for those goods, decrease their amount of purchases with a relatively larger share.

Although not all results of the analysis are statistically significant, we see no reason to doubt these conclusions, since most of them are confirmed by sensitivity analyses. A sensitivity analysis performed for the responsiveness of employees if prices increase from 0-10% (again neglecting second order effects) shows that, in terms of statistical significance, the pattern of coefficients that show significant results is quite similar to the elasticity results for a price change of 0-25%, although the level of significance may differ (see Appendix 3). Some of the variables show different signs for the coefficients, for example for people who travel to work for 4 days a week, people who indicated their income as unknown, people who use other transport means to travel to work, and the level of urbanity. If we look at differences in the size of the coefficients, we see that, in general, the size of the coefficients for price elasticity in the range 0-10% is much bigger; they sometimes even double the size of the coefficient for price elasticity in the range 0-25%. The most striking difference is found for the explanatory power of the type of shop. Although there are no differences here in the sign of the coefficients, the size of the coefficients is smaller instead of larger (except for bookshop) compared to the values in the range 0-25%, and statistical significance is only found for bookshop, which is exactly the opposite of the results in the range 0-25%. This implies that increases in price are more or less generally accepted over different types of shops (which does not mean that people do not respond!), but if the increase is more than 10%, the type of shop starts to matter. We then see that preferences for specific shops have explanatory power for the changes in budget share as a response to price changes.

³ OLS regression on the budget elasticity shows exactly the same results, except for the constant, which has the value of -4.291. This can be explained by the equations presented in Section 4.3, since the price elasticity is equal to: budget elasticity -1.

Table 6: Price elasticity for shopping facilities in the South-axis area: OLS

	Deviation in responsiveness		Budget elasticity 0-25		Price elasticity 0-25	
Constant	-0,073	-1,120	-5,366	-9,077 ***	-6,366	-10,768 ***
Age (base = < 31)						
31-40	-0,045	-1,994 **	-0,565	-2,763 ***	-0,565	-2,763 ***
41-65	-0,061	-2,469 **	-0,811	-3,652 ***	-0,811	-3,652 ***
Travel days (base = 1-3)						
4	0,006	0,186	0,021	0,077	0,021	0,077
5	-0,006	-0,198	-0,034	-0,124	-0,034	-0,124
Income (base = < € 1500)						
€ 1500-2000	0,038	1,445	0,431	1,814 *	0,431	1,814 *
€ 2000-3000	0,088	3,368 ***	1,008	4,272 ***	1,008	4,272 ***
> € 3000	0,191	6,276 ***	1,889	6,874 ***	1,889	6,874 ***
unknown	0,010	0,248	0,270	0,711	0,270	0,711
Travel time (base = 0-10 min)						
10-20 min	0,060	1,889 *	0,523	1,814 *	0,523	1,814 *
20-30 min	0,041	1,248	0,260	0,879	0,260	0,879
30-45 min	0,066	1,842 *	0,585	1,817 *	0,585	1,817 *
45-60 min	0,090	2,382 **	0,748	2,183 **	0,748	2,183 **
> 60 min	0,079	1,871 *	0,664	1,738 *	0,664	1,738 *
Transport mode (base = car)						
Train	0,059	2,358 **	0,439	1,934 *	0,439	1,934 *
Tram/bus	0,024	0,935	0,297	1,260	0,297	1,260
Walk/bike	0,036	1,421	0,442	1,916 *	0,442	1,916 *
Other transport means	-0,151	-1,892 *	-1,127	-1,563	-1,127	-1,563
Type of shop (base = flower shop / gift shop)						
Supermarket	-0,074	-2,772 ***	-0,712	-2,971 ***	-0,712	-2,971 ***
Drugstore	-0,068	-2,567 **	-0,638	-2,679 ***	-0,638	-2,679 ***
Dry cleaner's	-0,110	-2,614 ***	-1,017	-2,682 ***	-1,017	-2,682 ***

Bookshop	-0,132	-4,704 ***	-1,200	-4,727 ***	-1,200	-4,727 ***
Hairdresser	-0,136	-1,746 *	-1,353	-1,926 *	-1,353	-1,926 *
Gender (base = male)						
Female	-0,024	-1,305	-0,151	-0,896	-0,151	-0,896
Family situation (base = living alone without children)						
Living alone with children	0,021	0,402	0,258	0,540	0,258	0,540
Living together without children	-0,080	-2,700 ***	-0,800	-3,000 ***	-0,800	-3,000 ***
Living together with children	0,017	0,544	0,095	0,342	0,095	0,342
Working partner (base = partner has no paid job)						
Part-time working partner	0,058	2,136 **	0,465	1,907 *	0,465	1,907 *
Full-time working partner	0,100	3,716 ***	0,893	3,689 ***	0,893	3,689 ***
Shop 1 or 2						
Shop 2	-0,024	-1,425	-0,303	-2,003 **	-0,303	-2,003 **
Urbanity (base = < 500 addresses per km ²)						
>=2500	0,033	0,789	0,151	0,406	0,151	0,406
1500-<2500	0,008	0,198	-0,046	-0,126	-0,046	-0,126
1000-<1500	-0,053	-1,236	-0,544	-1,397	-0,544	-1,397
500-<1000	-0,004	-0,097	-0,150	-0,372	-0,150	-0,372
Sample average	0	(2625)	-4.9699	(2625)	-5.9699	(2625)
N	2304		2304		2304	
Adjusted R ²	0.047		0.048		0.048	

Notes: The t-values are shown between brackets. *, ** and *** denote significance at the 10, 5 and 1% level, respectively, (two-sided *t*-test) in OLS regression with dummies.

4.4 Influence of importance attached to shops on price elasticity and budget share

Since we expect the qualitative importance respondents attach to the presence of shopping facilities to be correlated with their budget share (and price elasticity), it is interesting to have a more detailed look at the importance people attach to the presence of specific types of shops. Such an analysis provides information about the correlation between subjective importance and concrete willingness to pay and, with that, about the extent to which economic allocation meets perceived importance.

To see if these expectations are legitimate we will perform OLS regression on price elasticity and budget share (at equal prices) for the same set of characteristics as used before, extended with the importance respondents attach to the presence of specific types of shops (see Table 7).

Table 7: Influence of importance attached to presence of shops on budget share and price elasticity: OLS

	Budget share		Price elasticity	
	β	t	β	t
Constant	74,145	16,848 ***	-6,235	-10,313 ***
Age (base = < 31)				
31-40	-5,702	-3,791 ***	-0,557	-2,726 ***
41-65	-9,927	-6,190 ***	-0,780	-3,503 ***
Travel days (base = 1-3)				
4	7,213	3,629 ***	-0,014	-0,052
5	6,653	3,359 ***	-0,081	-0,298
Income (base = < € 1500)				
€ 1500-2000	3,562	2,036 **	0,407	1,712 *
€ 2000-3000	3,668	2,114 **	0,988	4,180 ***
> € 3000	0,516	0,258	1,896	6,896 ***
unknown	6,314	2,278 **	0,235	0,616
Travel time (base = 0-10 min)				
10-20 min	-5,112	-2,417 **	0,519	1,797 *
20-30 min	-8,249	-3,823 ***	0,248	0,839
30-45 min	-9,972	-4,242 ***	0,590	1,825 *
45-60 min	-12,475	-5,045 ***	0,768	2,241 **
> 60 min	-12,313	-4,457 ***	0,691	1,808 *
Transport mode (base = car)				
Train	-3,664	-2,242 **	0,445	1,960 *
Tram/bus	7,962	4,671 ***	0,297	1,257
Walk/bike	-2,457	-1,464	0,490	2,112 **
Other transport means	0,820	0,156	-1,085	-1,502
Type of shop (base = flower shop / gift shop)				
Supermarket	-16,527	-9,474 ***	-0,745	-3,105 ***
Drugstore	-3,461	-1,989 **	-0,650	-2,733 ***
Dry cleaner's	18,736	7,062 ***	-1,051	-2,769 ***
Bookshop	1,875	1,014	-1,209	-4,765 ***
Hairdresser	12,766	2,916 ***	-1,393	-1,983 **
Importance attached to presence shop (base = very important)				
Very unimportant	-39,236	-14,803 ***	-0,998	-2,089 **
Unimportant	-30,418	-13,689 ***	-0,604	-1,886 *

Neutral	-24,203	-14,168 ***	-0,151	-0,645
Important	-10,492	-7,981 ***	-0,069	-0,391
Gender (base = male)				
Female	3,461	2,743 ***	-0,199	-1,162
Family situation (base = living alone without children)				
Living alone with children	-0,058	-0,017	0,245	0,511
Living together without children	-0,051	-0,027	-0,783	-2,935 ***
Living together with children	-3,682	-1,843 *	0,106	0,383
Working partner (base = partner has no paid job)				
Part-time working partner	-2,740	-1,582	0,461	1,884 *
Full-time working partner	-2,459	-1,430	0,880	3,634 ***
Shop 1 or 2				
Shop 2	0,756	0,691	-0,275	-1,810 *
Urbanity (base = < 500 addresses per km ²)				
>=2500	-10,090	-3,756 ***	0,168	0,449
1500-<2500	-8,707	-3,289 ***	-0,013	-0,035
1000-<1500	-6,522	-2,322 **	-0,497	-1,273
500-<1000	-9,748	-3,376 ***	-0,125	-0,311
Sample average	38.50		-5.6999	
N	2542		2304	
Adjusted R ²	0.314		0.050	

Notes: The t-values are shown between brackets. *, ** and *** denote significance at the 10, 5 and 1% level, respectively, (two-sided *t*-test) in OLS regression with dummies.

The results show that the importance people attach to the presence of shops statistically significantly influences the average budget share they spend at different types of shops at the South-axis⁴. The explanatory power of the other variables is comparable to that of the analysis without the variable for importance attached to shops (see Table 5). The sign of the variables, however, differs for respondents living alone with children, and whether the importance indicated to the presence of shops has been indicated for the most or second most preferred shop. Generally, the value of the coefficients is somewhat lower if the dummy for importance of presence of shops is included in the analysis. The values of the coefficients for the dummies for importance of presence of shops show that the budget share of respondents who attach great importance to the presence of shops is about 30 percent point higher than for those who attach no importance to the presence of shops.

If we look at the results for price elasticity, we see that the differences between the analyses with and without the dummy for importance of the presence of shops are even smaller, in terms of statistical significance (compare Table 6). Also the differences in size of the coefficients are relatively much smaller. The results for the importance of shops clearly show that people are more price elastic if they consider

⁴ This is confirmed by the OLS regression per type of shop (see Appendix 4a), which shows that the budget share per type of shop can, among others, be explained by the importance people attach to the presence of this type of shop: the more importance people attach to the presence of a specific type of shop, the higher their budget share for that specific shop will be.

the presence of shops as unimportant. The difference is about 1 percent point (-7.2 vs. -6.2), which is considerable⁵.

Apart from multiple OLS regression, we also performed simple OLS regression of both budget share and price elasticity on the importance people attach to the presence of shops. The results confirm the findings above; it does have statistically significant influence on the expenditures of respondents and not so much on their responsiveness towards price changes (see Table 8)⁶. The size and sign of the coefficients of both analyses, however, point in the same direction.

Table 8: Influence of importance attached to presence of shops on budget share and price elasticity: OLS

	Budget share		Price elasticity	
	β	t	β	t
Constant	52,911	47,239 ***	-5,885	-42,158 ***
Importance attached to the presence of shops (base = very important)				
Very unimportant	-40,344	-15,812 ***	-0,410	-0,950
Unimportant	-33,279	-15,024 ***	-0,485	-1,634
Neutral	-27,461	-16,128 ***	-0,100	-0,462
Important	-10,953	-8,204 ***	-0,053	-0,318
Sample average	38.50		-5.6999	
N	2926		2624	
Adjusted R ²	0.149		0.000	

Notes: The t-values are shown between brackets. *, ** and *** denote significance at the 10, 5 and 1% level, respectively, (two-sided *t*-test) in OLS regression.

Thus, we can conclude that the qualitative importance of the presence of shops does influence people's expenses at the South-axis: the concrete willingness to pay increases with the importance attached to the presence of shops.

For price elasticity, however, the type of goods people buy seem to be more determinative (as illustrated by the statistically significant results for the dummies for type of shop), than is the importance attached to the presence of shops.

This, again, illustrates that people like to have different shops near their work location, and will make use of them as well, although not at every price.

5. Conclusions

In this chapter we have made an analysis of how users of a multifunctionally designed area (a mix of at least offices and facilities) assess (the use of) such an area and, moreover, how this varies between users. The analysis is based on a questionnaire among employees in the Amsterdam South-axis area, in which people are asked for their WTP for the use of facilities in the area. A distinction has been made between non-shopping and shopping facilities.

⁵ If we perform the same analysis per type of shop (see Appendix 4b) we see that the price elasticity per type of shop does not show statistically significant results for the importance people attach to the presence of this type of shop. The size of the coefficient, however, shows us a similar tendency that the price elasticity decreases if the importance people attach to the presence of a specific type of shop increases, except for drugstore.

⁶ The regressions per type of shop confirm this picture (see Appendix 4a and Appendix 4b)

The average WTP-value of employees for a specific combination of three non-shopping facilities in the vicinity of their work location is € 6.88 per month. One has to keep in mind that this value is dependent on the combination of facilities offered to the respondent, but also differs over specific characteristics of respondents. The explanatory power of these characteristics, however, is limited. Tendencies found are that there is a negative relation between age and WTP (the older people are, the lower their WTP) and a positive relation between the number of travel days and WTP (the more days a week people travel to work, the higher their WTP). The influence of travel time and transport mode is not unambiguous, but the size of these coefficients is larger than that for income and age. The strongest (statistical significant) effects found are for the type of facility, which means that, in designing the South-axis from the viewpoint of individual stakeholders, the maximum WTP of employees will be reached dependent on the type of facility offered, and will hardly vary by characteristics of employees.

Next to the WTP for non-shopping facilities we used a survey question about people's budget share in order to obtain a so-called excess WTP for shopping facilities, since it measures the amount respondents would be willing to pay extra to make use of facilities at the South-axis compared to facilities elsewhere. This analysis shows that age, number of days people travel to work, income, travel time to work, mode of transport, type of shop, gender, family situation, degree of urbanity all show statistically significant results for the budget share people spend at the South-axis. These results enable us to make tentative predictions about the WTP for shopping facilities of different kinds of employees, and with that to make recommendations for the (optimal) design of the South-axis in terms of maximising the WTP of employees. It seems that especially full-time working female under the age of 30 who have a travel time of less than 10 minutes and travel by bus or tram spend relatively much on the South-axis if prices are equal to elsewhere.

However, there are more lessons to learn from this analysis. The responsiveness of employees towards price changes in shops, for example, is generally quite strong. This is partly due to substitution effects: if prices increase, with normal goods, peoples' expenses decrease. Since the type of shops presented to the respondents sell these so-called normal goods, respondents' expenses in those shops will decrease. This implies that the retailers at the South-axis do not have very much market power; when they increase prices, consumers will decrease their expenses for those goods relatively stronger. Only those consumers who attach (great) importance to the presence of a specific type of shop will decrease their expenses with a relatively lower amount. It is therefore important for retailers to distinguish oneself from other shops in order to obtain commitment from customers.

The lowest price elasticity is found for men under the age of 30, who have a full-time working partner, an income of more than € 3000, travel by public transport and live in an area with more than 2500 addresses per km². They form the most interesting target group for retailers who want to increase prices, and with that they represent an interesting target group for the development of multifunctionally designed areas regarding the (re)allocation of costs.

References

- Moors, J.J.A., 1991, **Statistiek in de Economie twee, steekproeftheorie en analyserende statistiek**, Academic Service Economie en Bedrijfskunde, Schoonhoven (p. 135)
- Berenson, M.L., Levine, D.M., and Krehbiel, T.C., 2002, **Basic Business Statistics, Concepts and Applications, eight edition**, Prentice Hall, New Jersey (p. 349)

Appendix 1

Questionnaire.....

Appendix 2

Table 9: Budget share per type of shop: OLS

	Supermarket		Drugstore		Dry cleaner's		Book shop		Flower shop/ gift shop		Hair dresser	
	β	t	β	t	β	t	β	t	β	t		
Constant	56,075	8,470 ***	56,358	6,18708 ***	99,044	3,372 ***	51,025	10,541 ***	66,643	5,410 ***	-29,074	-0,314
Age (base = < 31)												
31-40	-5,289	-2,248 **	-7,410	-2,41861 **	-5,126	-0,572	-4,756	4,215	-7,919	-1,462	9,388	0,367
41-65	-8,476	-3,372 ***	-13,417	-4,06374 ***	-30,271	-2,882 ***	-12,826	4,380 ***	-13,037	-2,383 **	-18,644	-0,619
Travel days (base = 1-3)												
4	6,252	2,026 **	4,260	0,97116	6,941	0,374	12,658	5,002 **	11,815	2,020 **		
5	5,443	1,773 *	5,812	1,30259	4,587	0,251	14,207	4,896 ***	14,476	2,511 **	60,578	1,636
Income (base = < € 1500)												
€ 1500-2000	2,601	0,984	10,911	3,02312 ***	2,313	0,121	0,885	4,661	9,048	1,458	95,295	1,369
€ 2000-3000	3,239	1,202	11,803	3,17991 ***	7,567	0,413	0,677	4,426	8,821	1,548	29,043	0,460
> € 3000	-0,842	-0,270	6,098	1,45675	9,590	0,503	-2,965	5,356	0,018	0,003	41,541	0,602
unknown	11,897	2,701 ***	11,008	1,89636 *	37,998	1,634	3,613	6,658	24,505	2,139 **	88,542	0,963
Travel time (base = 0-10 min)												
10-20 min	-7,985	-2,452 **	-11,771	-2,64131 ***	4,730	0,477	2,060	6,247	-7,576	-1,026	91,446	2,059 *
20-30 min	-15,285	-4,596 ***	-17,099	-3,64381 ***	-4,268	-0,387	7,069	6,248	-6,683	-0,941	59,380	1,106
30-45 min	-17,926	-4,848 ***	-18,760	-3,67815 ***	4,032	0,331	-0,563	6,585	-11,920	-1,571	93,909	1,574
45-60 min	-22,904	-5,870 ***	-19,968	-3,79091 ***	-11,315	-0,817	-2,992	6,939	-11,151	-1,409	59,895	1,105
> 60 min	-22,105	-5,032 ***	-24,765	-4,23969 ***	17,000	1,064	-6,192	7,652	-9,068	-1,018	-11,476	-0,199
Transport mode (base = car)												
Train	-5,222	-1,962 *	-4,397	-1,32116	-29,946	-2,592 **	5,457	4,391	-4,526	-0,857	81,793	2,018 *
Tram/bus	5,530	2,009 **	10,569	3,07762 ***	-3,938	-0,318	13,936	4,579 ***	12,610	2,227 **	25,767	0,732
Walk/bike	-8,308	-3,124 ***	-6,048	-1,71839 *	-0,757	-0,074	1,141	4,590	-8,555	-1,621	13,231	0,342
Other transport means	-14,132	-1,721	4,593	0,42947	-8,549	-0,346	2,484	17,018	6,632	0,406		
Gender (base = male)												

Female	7,539	3,931 ***	13,275	5,12387 ***	12,409	1,490	2,271	3,419	0,669	0,163	55,359	0,978
Family situation (base = living alone without children)												
Living alone with children	4,584	0,911	8,184	1,076			-9,164	10,205	-18,894	-1,713 *	13,096	0,259
Living together without children	-0,541	-0,174	-1,247	-0,30229	1,191	0,096	5,429	4,765	-8,032	-1,301	46,567	0,710
Living together with children	-6,266	-1,895 *	-5,723	-1,38576	-13,629	-1,113	2,951	5,308	-8,021	-1,286	26,893	0,404
Working partner (base = partner has no paid job)												
Part-time working partner	-7,435	-2,519 **	2,741	0,73088	-7,441	-0,694	-3,881	4,263	-2,094	-0,414	-67,732	-1,542
Full-time working partner	-4,225	-1,457	-0,447	-0,1226	-1,563	-0,148	-2,166	4,288	2,601	0,475	-62,288	-1,041
Shop preference (base = most preferred shop)												
Second most preferred shop	-4,146	-2,137 **	1,625	0,70708	-13,641	-2,151 **	-1,953	2,711	7,706	2,267 **	0,912	0,042
Urbanity (base = < 500 addresses per km ²)												
>=2500	-6,256	-1,315	-7,377	-1,26448	-25,064	-1,679 *	-20,082	6,724 ***	-23,546	-3,002 ***	-82,606	-0,908
1500-<2500	-9,174	-1,934 *	-9,615	-1,6573 *	-17,327	-1,186	-16,885	6,476 ***	-18,611	-2,546 **	-76,267	-0,813
1000-<1500	-6,069	-1,208	-5,955	-0,96875	-7,318	-0,506	-13,948	6,873 **	-27,101	-3,515 ***	-83,241	-0,873
500-<1000	-8,677	-1,664 *	-10,402	-1,61359	-11,475	-0,579	-12,989	6,722 *	-27,904	-3,568 ***	-128,448	-1,313
Sample average		29.84		41.08		63.40		43.57		40.83		47.2
N		897		699		130		473		302		36
Adjusted R ²		0.196		0.169		0.156		0.071		0.157		0.067

Notes: *, ** and *** denote significance at the 10, 5 and 1% level, respectively, (two-sided *t*-test) in OLS regression.
The dummies for family situation are left out of the analysis for dry cleaner's, due to collinearity

Appendix 3

Table 10: Price sensitivity analysis for price elasticity for shopping facilities in the South-axis area 0-10%: OLS

	Deviation in responsiveness		Budget elasticity 0-10		Price elasticity 0-10	
Constant	-0,118	-2,008 **	-6,364	-5,695 ***	-7,364	-6,590 ***
Age (base = < 31)						
31-40	-0,015	-0,740	-0,431	-1,119	-0,431	-1,119
41-65	-0,034	-1,553	-0,850	-2,035 **	-0,850	-2,035 **
Travel days (base = 1-3)						
4	-0,008	-0,307	-0,178	-0,349	-0,178	-0,349
5	-0,010	-0,382	-0,117	-0,230	-0,117	-0,230
Income (base = < € 1500)						
€ 1500-2000	0,043	1,818 *	0,772	1,731 *	0,772	1,731 *
€ 2000-3000	0,069	2,955 ***	1,143	2,581 **	1,143	2,581 **
> € 3000	0,147	5,383 ***	2,470	4,777 ***	2,470	4,777 ***
unknown	-0,074	-1,983 **	-1,730	-2,433 **	-1,730	-2,433 **
Travel time (base = 0-10 min)						
10-20 min	0,059	2,047 **	1,076	1,975 **	1,076	1,975 **
20-30 min	0,090	3,068 ***	1,661	2,992 ***	1,661	2,992 ***
30-45 min	0,093	2,915 ***	1,716	2,832 ***	1,716	2,832 ***
45-60 min	0,078	2,301 **	1,407	2,191 **	1,407	2,191 **
> 60 min	0,097	2,578 **	1,582	2,211 **	1,582	2,211 **
Transport mode (base = car)						
Train	0,090	4,020 ***	1,721	4,058 ***	1,721	4,058 ***
Tram/bus	0,025	1,067	0,584	1,321	0,584	1,321
Walk/bike	0,061	2,670 ***	1,164	2,699 ***	1,164	2,699 ***
Other transport means	0,075	1,027	1,795	1,302	1,795	1,302
Type of shop (base = flower shop / gift shop)						
Supermarket	-0,037	-1,558	-0,576	-1,277	-0,576	-1,277
Drugstore	-0,027	-1,150	-0,459	-1,025	-0,459	-1,025

Dry cleaner's	-0,023	-0,574	-0,420	-0,560	-0,420	-0,560
Bookshop	-0,078	-3,090 ***	-1,343	-2,806 ***	-1,343	-2,806 ***
Hairdresser	-0,011	-0,136	-0,067	-0,046	-0,067	-0,046
Gender (base = male)						
Female	-0,034	-2,067 **	-0,615	-1,941 *	-0,615	-1,941 *
Family situation (base = living alone without children)						
Living alone with children	0,062	1,299	1,092	1,209	1,092	1,209
Living together without children	-0,057	-2,152 **	-0,940	-1,860 *	-0,940	-1,860 *
Living together with children	0,001	0,022	0,029	0,055	0,029	0,055
Working partner (base = partner has no paid job)						
Part-time working partner	0,070	2,888 ***	1,160	2,520 **	1,160	2,520 **
Full-time working partner	0,095	3,936 ***	1,684	3,688 ***	1,684	3,688 ***
Shop 1 or 2						
Shop 2	-0,014	-0,905	-0,408	-1,430	-0,408	-1,430
Urbanity (base = < 500 addresses per km ²)						
>=2500	-0,009	-0,233	-0,409	-0,578	-0,409	-0,578
1500-<2500	-0,030	-0,808	-0,816	-1,166	-0,816	-1,166
1000-<1500	-0,051	-1,318	-1,145	-1,545	-1,145	-1,545
500-<1000	0,011	0,282	0,073	0,096	0,073	0,096
Sample average	0	(2590)	-4.6580	(2590)	-5.6580	(2590)
N	2268		2268		2268	
Adjusted R ²	0.046		0.039		0.039	

Notes: The t-values are shown between brackets. *, ** and *** denote significance at the 10, 5 and 1% level, respectively, (two-sided *t*-test) in OLS regression with dummies.

Appendix 4a

Table 11: Influence of importance attached to the presence of shops on budget share per type of shop: OLS (Kapper en stomerij zullen er waarschijnlijk uitvallen in TOBIT)

	Supermar ket		Drugstore		Dry cleaner's		Bookshop		Flower shop / gift shop		Hairdress er	
	β	t	β	t	β	t	β	t	β	t	β	t
Constant	64,373	10,188 ***	64,029	7,167 ***	111,989	4,842 ***	61,292	5,907 ***	85,061	7,094 ***	-13,485	-0,139
Age (base = < 31)												
31-40	-4,771	-2,151 **	-5,971	-2,031 **	-7,236	-1,057	-5,489	-1,394	-6,874	-1,365	20,150	0,697
41-65	-7,085	-2,982 ***	-9,909	-3,108 ***	-18,946	-2,292 **	-13,446	-3,284 ***	-12,865	-2,527 **	-39,192	-1,153
Travel days (base = 1-3)												
4	5,799	1,996 **	4,317	1,029	2,411	0,170	11,828	2,513 **	10,915	1,967 *		
5	3,159	1,092	5,246	1,228	-9,593	-0,681	11,620	2,525 **	12,434	2,294 **	32,698	0,864
Income (base = < € 1500)												
€ 1500-2000	0,865	0,347	7,255	2,081 **	4,514	0,311	0,806	0,185	5,971	1,028	69,741	1,149
€ 2000-3000	2,494	0,984	7,314	2,033 **	14,776	1,051	2,206	0,533	3,689	0,684	49,546	0,934
> € 3000	-0,525	-0,179	2,595	0,644	11,011	0,755	-0,333	-0,066	-4,393	-0,704	42,189	0,718
unknown	7,246	1,741 *	6,794	1,215	30,386	1,716 *	2,950	0,474	13,910	1,283	52,461	0,681
Travel time (base = 0-10 min)												
10-20 min	-5,842	-1,902 *	-10,931	-2,556 **	-2,673	-0,347	1,708	0,293	-11,256	-1,630	67,138	1,504
20-30 min	-12,399	-3,950 ***	-14,722	-3,267 ***	-17,929	-2,084 **	6,695	1,146	-9,172	-1,384	29,455	0,593
30-45 min	-13,382	-3,818 ***	-16,358	-3,335 ***	-6,648	-0,711	1,256	0,204	-11,614	-1,640	50,886	0,885
45-60 min	-17,779	-4,803 ***	-15,917	-3,140 ***	-12,704	-1,186	-2,012	-0,310	-12,100	-1,641	45,942	0,858
> 60 min	-17,821	-4,292 ***	-21,302	-3,800 ***	-7,730	-0,617	-1,660	-0,230	-5,121	-0,614	60,789	0,888
Transport mode (base = car)												
Train	-4,578	-1,830 *	-3,752	-1,175	-24,118	-2,745 ***	2,359	0,571	-7,275	-1,475	24,780	0,530
Tram/bus	5,466	2,113 **	9,711	2,955 ***	-5,383	-0,573	8,536	1,965 *	10,942	2,047 **	-23,276	-0,621
Walk/bike	-4,234	-1,676 *	-3,427	-1,012	-2,465	-0,318	0,946	0,219	-5,790	-1,145	9,833	0,310
Other transport means	-7,196	-0,928	1,998	0,195	-8,833	-0,471	8,312	0,521	8,402	0,552		
Importance attached to the presence of shops (base = very important)												

Very unimportant	-27,249	-4,976 ***	-26,406	-4,746 ***	-76,657	-7,469 ***	-34,633	-5,823 ***	-43,237	-6,157 ***	-78,335	-1,708
Unimportant	-27,332	-7,491 ***	-25,337	-5,555 ***	-60,065	-6,362 ***	-36,528	-6,866 ***	-14,138	-2,202 **	-115,805	-1,953 *
Neutral	-24,120	-9,481 ***	-21,314	-5,999 ***	-27,862	-3,094 ***	-20,197	-4,678 ***	-19,717	-3,684 ***	-24,324	-0,518
Important	-13,432	-7,134 ***	-5,179	-1,882 *	-13,135	-2,281 **	-10,226	-2,956 ***	-5,519	-1,283	-17,800	-0,556
Gender (base = male)												
Female	4,357	2,385 **	6,831	2,624 ***	7,892	1,221	0,160	0,050	-3,514	-0,908	43,216	0,883
Family situation (base = living alone without children)												
Living alone with children	1,827	0,385	4,222	0,580			-2,772	-0,290	-16,080	-1,565	86,812	1,764
Living together without children	-0,804	-0,274	-0,547	-0,138	8,901	0,945	7,860	1,748 *	-8,598	-1,491	97,106	1,454
Living together with children	-5,646	-1,812 *	-6,588	-1,668 *	-5,821	-0,623	6,690	1,336	-8,715	-1,488	82,908	1,245
Working partner (base = partner has no paid job)												
Part-time working partner	-6,178	-2,214 **	1,926	0,535	-2,082	-0,256	-6,255	-1,535	-2,082	-0,440	-71,484	-1,439
Full-time working partner	-3,917	-1,430	-0,300	-0,086	-5,362	-0,669	-4,848	-1,199	-0,409	-0,080	-100,905	-1,717
Shop 1 or 2												
Shop 2	0,743	0,395	3,103	1,404	-10,808	-2,245 **	0,569	0,223	3,200	0,991	-8,387	-0,457
Urbanity (base = < 500 addresses per km ²)												
>=2500	-5,805	-1,291	-5,220	-0,935	-9,259	-0,804	-17,202	-2,725 ***	-22,029	-2,985 ***	-34,621	-0,407
1500-<2500	-7,914	-1,767 *	-6,501	-1,169	-5,525	-0,493	-12,129	-1,988 **	-15,320	-2,216 **	-29,917	-0,361
1000-<1500	-4,774	-1,007	-3,737	-0,634	15,448	1,373	-10,175	-1,561	-18,773	-2,560 **	-32,868	-0,388
500-<1000	-7,622	-1,550	-7,166	-1,159	3,394	0,224	-9,413	-1,487	-21,870	-2,976 ***	-16,120	-0,172
Sample average		29.31		41.72		63.34		43.65		40.81		47.21
N		897		699		130		473		302		36
Adjusted R ²		0.290		0.242		0.517		0.191		0.274		0.427

Notes: *, ** and *** denote significance at the 10, 5 and 1% level, respectively, (two-sided *t*-test) in OLS regression.

Table 12: Importance attached to the presence of shops on budget share per type of shop: OLS

	Supermarket			Drugstore			Dry cleaner's			Bookshop			Flower shop / gift shop			Hairdresser		
	β	t		β	t		β	t		β	t		β	t		β	t	
Constant	44,037	30,228	***	56,921	24,228	***	83,306	19,381	***	59,350	22,070	***	53,905	16,083	***	58,667	5,708	***
Importance attached to the presence of shops (base = very important)																		
Very unimportant	-39,485	-8,413	***	-39,132	-7,696	***	-74,075	-8,876	***	-41,115	-7,701	***	-42,097	-6,789	***	-58,042	-3,874	***
Unimportant	-32,035	-9,018	***	-36,257	-8,502	***	-63,306	-7,364	***	-38,928	-8,064	***	-26,148	-4,745	***	-33,667	-1,638	
Neutral	-28,739	-12,190	***	-29,443	-8,830	***	-36,877	-4,540	***	-25,304	-6,418	***	-22,651	-4,700	***	-27,238	-1,753	*
Important	-14,687	-8,139	***	-12,271	-4,524	***	-9,812	-1,868	*	-11,659	-3,740	***	-7,143	-1,811	*	18,333	1,410	
Sample average		29.31			40.72			63.34			43.65			40.81			47.21	
N		1032			797			147			556			348			41	
Adjusted R ²		0.172			0.150			0.462			0.167			0.161			0.445	

Notes: *, ** and *** denote significance at the 10, 5 and 1% level, respectively, (two-sided *t*-test) in OLS regression.

Appendix 4b

Table 13: Influence of importance attached to the presence of shops on price elasticity per type of shop: OLS

	Supermarket		Drugstore		Dry cleaner's		Bookshop		Flower shop / gift shop		Hairdresser
	β	t	β	t	β	t	β	t	β	t	
Constant	-6,671	-6,971 ***	-5,710	-4,848 ***	-1,631	-0,450	-8,007	-5,822 ***	-6,623	-4,020 ***	Number of observations too low
Age (base = < 31)											
31-40	-0,219	-0,663	-0,596	-1,553	-1,236	-1,170	-0,897	-1,754 *	-0,202	-0,282	
41-65	-0,652	-1,809 *	-1,001	-2,351 **	-0,967	-0,752	-0,861	-1,562	-0,005	-0,007	
Travel days (base = 1-3)											
4	-0,566	-1,302	0,505	0,899	-1,784	-0,633	-0,134	-0,216	0,320	0,414	
5	-0,487	-1,124	0,422	0,736	-3,572	-1,299	-0,085	-0,139	-0,149	-0,198	
Income (base = < € 1500)											
€ 1500-2000	0,442	1,187	0,744	1,637	-1,874	-0,872	-0,191	-0,334	-0,331	-0,413	
€ 2000-3000	1,167	3,086 ***	1,044	2,235 **	-1,222	-0,607	0,933	1,686 *	-0,288	-0,377	
> € 3000	2,326	5,234 ***	2,277	4,304 ***	-0,122	-0,058	1,210	1,795 *	-0,220	-0,253	
unknown	0,687	1,083	-0,421	-0,578	-2,483	-0,933	0,563	0,697	-1,111	-0,699	
Travel time (base = 0-10 min)											
10-20 min	0,614	1,348	0,315	0,562	1,022	0,847	0,259	0,340	0,825	0,877	
20-30 min	-0,065	-0,139	-0,521	-0,878	1,075	0,777	0,424	0,558	2,233	2,469 **	
30-45 min	0,192	0,366	0,460	0,709	-0,307	-0,212	1,141	1,411	1,511	1,539	
45-60 min	-0,131	-0,236	0,451	0,671	1,488	0,845	1,250	1,450	2,701	2,623 ***	
> 60 min	0,065	0,104	0,444	0,594	4,288	2,300 **	0,726	0,767	2,083	1,792 *	
Transport mode (base = car)											
Train	1,387	3,636 ***	-0,023	-0,053	-0,020	-0,013	-0,250	-0,471	0,130	0,184	
Tram/bus	0,306	0,774	0,400	0,909	2,414	1,820 *	-0,504	-0,872	0,479	0,649	
Walk/bike	0,496	1,294	0,348	0,771	1,190	1,051	0,360	0,626	0,744	1,062	
Other transport means	-1,821	-1,516	-2,153	-1,546	0,435	0,171	0,904	0,456	-1,054	-0,509	
Importance attached to the presence of shops (base = very important)											

Very unimportant	-0,605	-0,530	-0,323	-0,360	-1,649	-0,633	-1,487	-1,520	-1,653	-1,450
Unimportant	-1,093	-1,851 *	-0,631	-1,025	-1,793	-1,193	-0,043	-0,060	-0,652	-0,687
Neutral	0,239	0,614	-0,513	-1,112	0,096	0,075	-0,128	-0,228	-0,313	-0,427
Important	0,218	0,780	-0,700	-1,961 *	-0,488	-0,587	0,350	0,792	0,334	0,567
Gender (base = male)										
Female	0,062	0,228	-0,356	-1,057	-0,578	-0,608	0,008	0,019	-0,968	-1,811 *
Family situation (base = living alone without children)										
Living alone with children	0,638	0,904	-0,055	-0,059			-1,006	-0,751	0,505	0,310
Living together without children	-0,651	-1,438	-1,138	-2,133 **	0,024	0,017	-0,626	-1,046	-0,765	-0,959
Living together with children	0,051	0,108	-0,034	-0,064	1,198	0,866	-0,120	-0,183	0,381	0,461
Working partner (base = partner has no paid job)										
Part-time working partner	0,407	0,934	0,800	1,645	-0,633	-0,519	0,392	0,707	0,313	0,470
Full-time working partner	0,649	1,527	1,165	2,465 **	-0,763	-0,654	1,067	1,970 **	0,946	1,323
Shop 1 or 2										
Shop 2	-0,281	-0,974	-0,482	-1,644	-0,581	-0,781	0,308	0,930	-1,576	-3,438 ***
Urbanity (base = < 500 addresses per km ²)										
>=2500	-0,258	-0,372	-0,644	-0,859	-0,057	-0,033	0,690	0,841	1,256	1,242
1500-<2500	-0,298	-0,429	-0,576	-0,771	-1,021	-0,616	0,379	0,477	0,534	0,555
1000-<1500	-0,739	-1,006	-0,780	-0,996	-1,065	-0,625	-0,134	-0,158	-0,272	-0,263
500-<1000	-0,422	-0,552	-0,543	-0,660	-3,074	-1,317	0,342	0,409	0,709	0,699
Sample average	-5.9311		-5.9359		-5.9067		-6.4713		-5.3971	-6.0750
N	829		636		105		427		279	23
Adjusted R ²	0.049		0.064		0.125		-0.013		0.050	1.000
D20eamk zijn er uit gegooid										

Notes: *, ** and *** denote significance at the 10, 5 and 1% level, respectively, (two-sided *t*-test) in OLS regression.

Table 14: Importance attached to the presence of shops on price elasticity per type of shop: OLS

	Supermarket			Drugstore			Dry cleaner's			Bookshop			Flower shop / gift shop			Hairdresser	
	β	t		β	t		β	t		β	t		β	t		β	t
Constant	-6,057	-29,140 ***		-5,635	-19,059 ***		-5,032	-8,068 ***		-6,570	-19,470 ***		-5,252	-12,052 ***		-4,455	-3,126 ***
Importance attached to the presence of shops (base = very important)	0,938	0,987		0,328	0,408		-3,122	-1,509		-0,754	-0,837		-1,798	-1,833 *		-5,545	-1,376
Very unimportant	-0,803	-1,458		-0,467	-0,830		-1,490	-1,097		-0,129	-0,203		-0,488	-0,620		1,655	0,411
Unimportant	0,239	0,687		-0,252	-0,594		-0,716	-0,613		-0,138	-0,276		-0,377	-0,596		-1,978	-0,896
Neutral	0,220	0,855		-0,432	-1,261		-1,129	-1,497		0,275	0,705		0,091	0,178		-2,429	-1,333
Important																	
Sample average		-5.9311			-5.9359			-5.9067			-6.4713			-5.3971			-6.0750
N		943			724			117			494			317			24
Adjusted R ²		0.001			-0.002			-0.001			-0.003			0.003			-0.013

Notes: *, ** and *** denote significance at the 10, 5 and 1% level, respectively, (two-sided *t*-test) in OLS regression.