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# Willingness to Pay for Multifunctional Megaprojects: A Stated Preference Analysis Among Firms in the Amsterdam Zuidas Area

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**ABSTRACT** *Urban (re-)development projects may generate various positive and negative spatial externalities to employers. The assessment of such benefits is fraught with many methodological and empirical problems. This study aims to assess the order of magnitude of expected net benefits for incumbent employers that may accrue from a large-scale development project in the Zuidas area in the South-Western part of Amsterdam, the Netherlands. This development project is planned to transform the area into a large multifunctional urban agglomeration. We employ a specific stated preference method (namely, a willingness-to-pay method) to gauge the project's net socio-economic benefits for the current firms in the area concerned, paying special attention to the benefits associated with multifunctionality.*

## 1. Introduction

Modern cities are spearheads of economic development whose benefits far transcend the boundaries of cities. In an open and global world, cities are not only local “control and command” centres (Sassen, 1991), but they also function as nodes in a global network. Agglomeration advantages in urban areas, associated with the simultaneous presence of different functions, are typically generated within a limited territory, and hence, the concept of “multifunctional land use” has become *en vogue*. Although a commonly accepted definition of multifunctional land use is still lacking, in all definitions of multifunctionality, the notion of returns to diversity of economic activity features prominently

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(see Vreeker *et al.*, 2004, for a discussion of the theoretical foundations and empirical evidence for the relevance of the concept of multifunctional land use). These returns may accrue to workers, employers and residents alike. In this paper, we focus on the valuation of a multifunctionally designed urban area by employers.<sup>1</sup> We seek to obtain more insight into the economic value that they attach to specific locational characteristics of a multifunctionally designed area and, moreover, how this value varies with changes in locational characteristics. We will deploy the ambitious development plans of the Zuidas area in the South-Western part of Amsterdam as a case study.

This case study may be seen as an urban megaproject characterized by complexity, uncertainty and multi-stakeholder involvement (Bruzelius *et al.*, 2002; Flyvbjerg *et al.*, 2003; Gramlich, 1994). The development plans for this area explicitly focus on the importance of multifunctional development of the area combining working, living and recreation, in order to optimally exploit returns to a variety of economic activities. As such, the area is perfectly suited for this study. Such projects not only have enormous economic, financial and land-use implications, but may also substantially affect the rent levels in the area concerned, as well as in neighbouring areas. The ex-ante assessment of changes in urban rent levels is fraught with many practical and methodological problems due to the existence of a variety of spatial-economic externalities of such megaprojects operating simultaneously.

In our study, we will use a stated preference approach, in which we simulate price-related changes in locational characteristics, in order to obtain information about the economic value that employers located in the Amsterdam Zuidas area attach to a multifunctional design of the area. Information on preferences will be gathered by means of a questionnaire that was presented to existing business firms located within as well as outside the Amsterdam Zuidas area. This set-up allows us not only to investigate the valuation of locational characteristics associated with the multifunctionality of the area, but also to compare these with those of firms currently located outside the area.

This paper is organized as follows. Section 2 provides the theoretical and methodological background to this study. Section 3 describes the developments in the Amsterdam Zuidas area and presents the survey questionnaires that were used for the interviews with employers and provides a characterization of the sample of respondents. In Section 4, the influence of various locational characteristics on the company's expected ("stated") long-term profits is presented. Section 5 then deals with the employers' willingness to pay (WTP) for changes in locational characteristics, and in Section 6, a (qualitative) analysis of the public perception of a location (image) will be presented. Section 7 offers some concluding remarks.

## 2. Theoretical and Methodological Background

Multifunctional land use emphasizes the creation of synergy between various functions. The concept has been used mainly as a planning design concept by planners. At the same time, it can of course be viewed as a measurable spatial-economic characteristic of a given area. This section discusses the theoretical underpinnings of the concept, which can be found in the literature on agglomeration externalities, relating it to characteristics such as urban density and diversity. We also briefly describe the existing approaches and results of the seminal empirical contributions that have aimed at identifying the returns to diversity.

The concept of agglomeration externalities goes back at least to Marshall (1890), who was the first to investigate how location and proximity to other economic agents influence productivity. He observed that firms often cluster in the same area and concluded that those firms must benefit from some form of increasing returns to scale. In his work, he provided four sources of agglomeration economies, which are usually referred to as “scale economies at the firm level, local non-traded inputs, local skilled labour pool and information spillovers”. Although the above sources of agglomeration economies explain why firms within the same industry cluster, in reality, we often observe groups of firms in different industries clustered in geographical space.

Hoover (1936, 1948) accounted for the inter-sectoral clustering of firms in his classification of Marshallian externalities by distinguishing between “internal returns to scale, localization economies” and “urbanization economies”. Internal scale economies occur within a firm and may arise for at least two reasons: factor specialization and indivisible inputs. Due to labour specialization, which of course requires a certain scale of the firm, productivity will increase. Indivisibilities are faced when production factors cannot be used in small spatially segregated units without incurring diseconomies of scale due to a sub-optimal size of operation. Although the spatial concentration of a firm’s activities may help fully exploiting internal scale economies, they do not correspond to the description of Marshall’s agglomeration economies, as being external to the firm. Such firm-external economies are usually subdivided into localization and urbanization economies.

Localization economies occur when the production costs of firms in a particular industry decrease when the total output of that industry in the area increases. To benefit from localization economies, a firm must be located close to other firms in the industry. Localization economies thus depend on the scale of the industry and originate from three principal sources (O’Sullivan, 2003): (1) scale economies in the production of intermediate inputs; (2) labour pooling and (3) knowledge spillovers. Urbanization economies originate from the same sources as localization economies and are also external to the firm. However, urbanization economies differ from localization economies, in that they result from the scale and diversity of the entire urban economy and not from the scale of a particular sector itself (Jacobs, 1969). Since the differences between internal scale economies, localization and urbanization economies depend greatly on the definition of the boundaries of the firms and the sectors, it is especially this aspect of Hoover’s classification that is often criticized.

Based on a more applied analysis of the industrial structure of Pittsburgh and New York, Chinitz (1961) developed a variant of the growth pole model. According to Chinitz’s “incubator model”, highly diversified industrial clusters are “incubators” for the development and growth of new firms. Chinitz argues that these clusters offer a variety of business services to small firms, facilitating their growth. This model suggests that the size distribution and diversity of firms within the cluster are important for the growth of the cluster. The growth pole and incubator models highlight the selection of cluster members and diversity as essentials for the development of multifunctional land-use projects.

The upsurge of the New Economic Geography (NEG) in the 1990s (Fujita *et al.*, 1999) boosted the interest in the processes of agglomeration. An important purpose of the NEG is to explain the self-reinforcing character of spatial clustering and the associated returns to scale and scope. In short, this field in economics tries to model the centrifugal and centripetal forces in agglomeration, addressing the welfare effects of product variety and the impact on the productivity of firms. NEG has its roots in urban economics,

(new) growth theory and (new) trade theory. Progress in these fields of economics was spurred by the development of the Dixit and Stiglitz (1977) model of monopolistic competition, which also forms the foundation for NEG (see Brakman & Heijdra, 2004, for progress in all fields building on the seminal Dixit–Stiglitz model of monopolistic competition). There are scale economies in NEG that are internal to the firm, whereas the externalities related to clustering arise endogenously from the location decisions of economic agents. Fixed production costs imply that firms prefer to concentrate production in a single location, whereas transport costs imply that firms prefer to be near large consumer markets (Hanson, 2000). These two forces create demand linkages that contribute to spatial agglomeration. Firms are attracted to densely concentrated regions by the possibility of serving a large local market from a single plant at low transport costs; the more firms that move to the region, taking their employees with them, the more attractive the region becomes. Instead of having consumers' preference for variety as a main agglomeration force, other NEG models have also looked at formulations in which the crucial mechanism involves firms requiring multiple inputs for production (Fujita *et al.*, 1999). To conclude, NEG explicitly investigates the role of product diversity in the clustering process and therefore forms an interesting perspective for the analysis of multifunctional land use.

In the case of urbanization economies, the location decision of a firm is based partly on the proximity to firms from other sectors. As argued before, the agglomeration economies resulting from clustering are reflected in increased input productivity. This results in lower costs for these inputs and a higher profitability for the firm concerned. This increased profitability offers the firm a possibility to bid a higher rent for a location. When accessibility also affects the attractiveness of alternative locations, the firm of course faces a trade-off between transport costs and the benefits resulting from the proximity to other firms.

The empirical literature on agglomeration externalities is of a more recent date and has struggled with the fact that the externalities that contribute to spatial agglomeration, such as knowledge spillovers between workers, learning across firms or cost and demand linkages between local industries, are difficult to observe. Empirical researchers therefore have to rely on indirect measures such as wages, employment, output and growth to investigate them (see Rosenthal & Strange, 2004, for an overview of studies). We will briefly discuss the various approaches without an attempt of being exhaustive.

From the economic literature, it is well known that wages and rents are, controlling for other factors, higher in urban areas than in non-urban areas (e.g. Glaeser & Mare, 2001). For firms to be willing to be in those urban areas, such locations apparently have advantages that outweigh the above-mentioned higher costs. Several researchers have examined these advantages.

A first strategy to analyse whether firms expect to be more productive in areas where other firms in their industry are located is to examine the location decision of new firms (see, for example, Carlton, 1983; Wheeler & Mody, 1992). A second strategy measures the extent of agglomeration economies by studying productivity gains accruing to activities that are located in larger urban areas. The idea is that by the comparison of labour markets associated with cities of different sizes, it might be possible to isolate the contribution of urbanization economies to labour productivity. Seminal contributions are Ciccone and Hall (1996), Henderson (1986) and Sveikauskas (1975). We refer to Melo *et al.* (2009) for a meta-analysis of available evidence. A third strategy to assess

empirically the effects of agglomeration economies on industry location is to examine variation in industry growth or innovation across regions. By examining the growth process, one can control for the time-invariant characteristics of regions that influence firm behaviour (Hanson, 2000). Dumais *et al.* (2002), Glaeser *et al.* (1992) and Henderson *et al.* (1995) are seminal contributions in this field. We refer to De Groot *et al.* (2009) for a meta-analysis of the available evidence, concluding that the insights obtained so far have not yet resulted in a consensus view on the empirical relevance of the various agglomeration externalities, but that the majority of results hints at the importance of returns to diversity.

To conclude, spatial variation in wages and rents contains important information about the benefits of agglomeration that accrue to firms and households. The observed variation in the exogenous characteristics of regions appears to be insufficient to explain the spatial variation in wages and rents (see, for example, studies of Roback, 1982; Rosen, 1974, 1979). One limitation of existing empirical research is that most studies tend to explain the role of one factor in spatial agglomeration, in isolation from other possible effects. In this case, we are not sure whether there are multiple types of externalities that contribute to agglomeration or whether each of these effects simply captures a different aspect of a single unified force behind the location of economic activity. Furthermore, empirical studies focusing on diversity are scarce. Specifically, the results of research focusing on the role of diversity in clustering are of importance for the assessment of multifunctional land-use projects.

### 2.1. Valuation Methods

Arguably, one of the main challenges in determining the economic value, in monetary terms, that individuals or firms attach to changes in specific attributes of a location, including those reflecting the degree of multifunctionality, stems from the fact that relevant market prices usually cannot be observed directly. Different so-called valuation methods have been developed that can be used to identify the “shadow prices” for such goods. An important distinction here is between revealed and stated preference techniques. Revealed preference techniques study actual market behaviour and can therefore be applied when surrogate markets for the unpriced good to be valued exist; that is, when consumers’ or firms’ marginal WTP for changes in the effect can be measured by looking at their behaviour on other related markets. Such other markets may be land markets, housing markets or labour markets when hedonic techniques are used to statistically infer the value of, for example, accessibility of locations through its impact on land rents or the value of safety as an attribute of jobs.

When no useful surrogate markets exist, for example, when the good to be valued is new or the range of attribute values to be considered does not (yet) occur in reality, stated preference techniques can be used. These involve questionnaires or interviews. Contingent valuation studies, for example, try to ask for a WTP directly, possibly by confronting respondents with various bids for a certain good. Conjoint analysis techniques typically confront respondents with two (or more) scenarios between which some characteristics, including a financial attribute, vary between alternatives and ask them to indicate the most preferred option. Great progress has been made in the past decades on the use of such methods and the design of the associated questionnaires; see, for example, Louviere *et al.* (2000).

For the locational characteristics that we are interested in, one could argue that revealed preference methods could be used to infer the values that firms assign to them, for example, by looking at differences in rents over firm locations and relating these to differences in the various locational characteristics of interest. There are, however, good reasons for relying on a stated preference approach for our specific study. A first reason is that the range of attribute values that can currently be observed in reality, for these characteristics that reflect multifunctionality, will not correspond to the foreseen developments in our study area, the Zuidas area in Amsterdam. A second reason is that in reality, many of the characteristics of interest are strongly correlated, so that it will be difficult to infer individual valuations for each of these. This holds, for example, for proximity to urban labour markets, urban density, proximity of customers, presence of service industries, accessibility by rail, presence of airport(s), etc., all of which typically increase with the degree of urbanization of the site and its surroundings. For these reasons, we opted for a stated preference approach.

Our approach differs from conventional stated choice valuation approaches, in that we do not ask firms to choose between different locations, with different characteristics, because considerations of moving costs would then be very likely to seriously distort the results. Instead, we try to infer the WTP by asking firms to indicate the expected impact of changes in specific attributes on long-term profitability and next to offer them choices for accepting or turning down a bid for an improvement in their three most preferred attributes.

### 3. The Amsterdam Zuidas Areas and the WTP Questionnaire

#### 3.1. *The Zuidas Area*

The case study area that is central in this paper is the so-called Zuidas area in Amsterdam. It is an example of a large-scale and far-reaching multifunctional urban land-use project. The Amsterdam Zuidas is a large area, of more than 1 km length and a width of approximately 100 m, on both sides of the orbital motorway (A10). It currently mainly consists of office buildings and is situated in the South-Western part of Amsterdam. Various development plans for the area are currently available.<sup>2</sup>

In the planning process thus far, two extreme alternatives for the development of the Zuidas have been presented: the Dock alternative and the Dike alternative, while as a compromise sometimes also a so-called combination alternative (which is indeed a combination of the first two) is envisaged. The aim of these alternatives is (i) to create an urban environment on a location that is (still) dominated by infrastructure; (ii) to eliminate the barrier effect of the ring road around Amsterdam and (iii) to create an own identity for the area by developing offices, houses and facilities with an accompanying high-quality public space. Of these alternatives, the Dock alternative is the most ambitious. It puts all infrastructure (road and rail) underground over a length of 1.2 km, providing a huge extra amount of available building space. Positioning the different types of infrastructure on top of each other might even further increase this amount, since on-street parking places can then be situated underground, leading to more available space for other land-use functions on top of the “Dock”. This alternative results in a mix of offices, houses and facilities and can be considered as an ambitious example of multifunctional urban architecture. In the Dike alternative, all transit traffic will be guided on an elevated dike infrastructure. The

latter will be situated at the current level on a broadened dike body of 170 m wide. Roads would be situated at the outside lanes of the dike, whereas rail infrastructure would be situated on the central lanes. This alternative has a compact terminal for public transport with short transfer distances, and there is an extra underpass for slow traffic. Railway station “Zuid WTC” acts as the connection between the areas on both sides of the dike. Houses and offices would be constructed alongside the dike. Finally, the combination alternative combines different aspects of the Dock and Dike alternatives. The essence of this alternative is that only certain parts of the infrastructure will be constructed at a subterranean level: road traffic as well as tram and metro will be positioned underground, whereas the rail infrastructure for (high speed) trains will remain at its current level. In this alternative, the dike will become narrower (80 m), allowing for construction of offices on both sides of the dike on top of the underground infrastructure. Due to the high noise level along the (heavy) rail lines, it is in this case legally not possible to construct houses on either side.

In each of these development alternatives, the resulting area is characterized by a relatively strong degree of multifunctionality. It will contain a diversity of land-use functions that will be realized throughout the area. Putting all infrastructure on a subterranean level substantially enhances the degree of multifunctionality. The explicit aim to realize a properly balanced mix of offices and houses in the area is challenging and interesting in terms of its feasibility, given the fact that land prices in the area are among the highest in the Netherlands, which typically leads to a focus on office development rather than on housing.

### 3.2. Structure and Content of Questionnaire

The questionnaires for employers were taken by means of personal interviews.<sup>3</sup> These interviews have the advantage that they offer greater possibilities to obtain relevant information in situations in which complex management considerations are expected to play an important role, such as in location decisions; employers are then enabled to explain their answers in more detail, if desired. A clear disadvantage of using in-depth interviews is that the costs are normally high, leading often to a smaller data set (for a given budget) and limited possibilities for statistical analysis.

In order to be able to compare companies located in the Amsterdam Zuidas area with companies at locations elsewhere, two versions of the questionnaires were developed. The questionnaires are nearly identical, except for omitting specific questions about multifunctionality in the Amsterdam Zuidas area for the latter group. The questionnaire consists of three main parts. In the first part, companies are asked to express to what extent specific characteristics of a location influence their expected gross long-term profits. The characteristics are grouped into the following categories: location and accessibility; labour market; market characteristics and other characteristics. The attention is restricted to those factors that influence the degree of multifunctionality of a site. In the subsequent question, we presented—by means of a mental simulation experiment—distinct changes for many of these characteristics. The interviewee had to indicate to what extent the changes presented were expected to influence the company’s long-term profits. In the second part, a virtual “optimal Amsterdam Zuidas package” (or “optimal location package” for companies not located at the Amsterdam Zuidas) was to be designed, consisting of the three most desired distinct changes in the locational characteristics, as



presented in the previous question. The package chosen should then reflect the most promising improvement of the location for the interviewees' firm in terms of expected long-term profits. The interviewees were asked to express the maximum one-time contribution per employee that the company would be willing to pay to have the location designed and constructed according to their chosen package. They also had to express the maximum one-time contribution per employee for changes in some specific characteristics of the location. Finally, questions were asked about the public perception (image) of a location and the importance companies attach to the presence of companies belonging to the same class of business, clients and suppliers. The final questions asked for some general characteristics of the company at hand.

### 3.3. *Response and Representativeness*

An invitation to participate was sent to 38 companies located at the Amsterdam Zuidas, all members of the Association of Entrepreneurs in Amsterdam in the area. Six of them sent a positive response. Phone calls led to another five positive replies. Since law firms were underrepresented in the list of the Association of Entrepreneurs in Amsterdam and belong to the major branches of industry at the Amsterdam Zuidas, we personally invited another four companies, of which we knew that they were located at the Amsterdam Zuidas. All of them took part in the research. The last two participating companies were invited as a follow-up to earlier research in the area. Hence, altogether, the sample consisted of 17 companies located at the Amsterdam Zuidas.

The selection of contrast companies that are not located at the Amsterdam Zuidas was made by means of a shortlist of companies from the same industry as the companies currently located at the Amsterdam Zuidas (mainly law firms and financial institutions). If they were located in Amsterdam, we approached their Amsterdam office. Otherwise, we contacted the head office. We invited seven companies, of which six took part in the research. The data set thus contains 23 observations: 17 from companies in the Amsterdam Zuidas area and six from companies located elsewhere.<sup>4</sup>

The locational profile of companies outside the Amsterdam Zuidas area is comparable with that of companies located at the Amsterdam Zuidas, in the sense that they are all located in one of the four main cities in the Randstad (the most urbanized part of the Netherlands). Since the questionnaires were answered by means of personal interviews, all questionnaires were filled out nearly completely. Some interviewees could not answer the questions about general characteristics of the company (e.g. costs made for suppliers) because of unfamiliarity with the data. Since no statistical information on the composition of companies at the Amsterdam Zuidas was available, it would be difficult to compare the general characteristics of these companies with the "average" Amsterdam Zuidas company. But, we do believe that the responding firms are rather representative for the population of firms currently located at the Zuidas. Table 1 presents some key characteristics of the distribution of respondents in the data set.

Selection biases might result from several sources. Most importantly, there could be a systematic difference in answers from companies invited compared with companies not invited. We have, however, no reason to assume that this is the case, since we used different sources (e.g. a shortlist of members of the Association of Entrepreneurs in Amsterdam, our list of companies that participated in the questionnaire for employees) to obtain names of companies in the area in order to invite them to participate.

**Table 1.** Characteristics of the sample

Characteristics	Value/number
Companies located at the Amsterdam Zuidas	17
Average number of employees	455
Type of settlement	
Independent company	5
Head office	6
Branch office	3
Other	3
Companies not located at the Amsterdam Zuidas	6
Average number of employees	1971
Type of settlement	
Independent company	1
Head office	4
Branch office	0
Other	1

#### 4. Influence of Locational Characteristics on Expected Long-term Profitability

In order to obtain more insight into the value that employers attach to specific locational characteristics of a multifunctionally designed area, we asked respondents to indicate the influence of locational characteristics on the expected long-term profitability of their company. This is an important starting point in eliciting the WTP of companies for the presence of specific locational characteristics within a multifunctionally designed area. In obtaining information about the assessment of such locations by the companies concerned, it is important to know to which characteristics they attach greatest importance.

A distinction has to be made between the importance that companies attach to current locational characteristics, on the one hand, and to possible improvements in these characteristics, on the other. With an assessment only of the current characteristics, it is not yet possible to say anything about the value firms attach to improvements in characteristics. It may be that companies see no need to improve a characteristic, even though its presence is indicated as being very important in terms of expected long-term profits. A good example is the proximity of Schiphol airport. Many companies at the Amsterdam Zuidas consider this as having a positive influence on the firm's long-term profitability, but do not consider a further decrease in travel time to the airport as having a positive influence, because the airport is already at very short distance (currently less than 10 min by train). We therefore asked employers about the importance they attach both to current locational characteristics and to possible improvements in these characteristics.

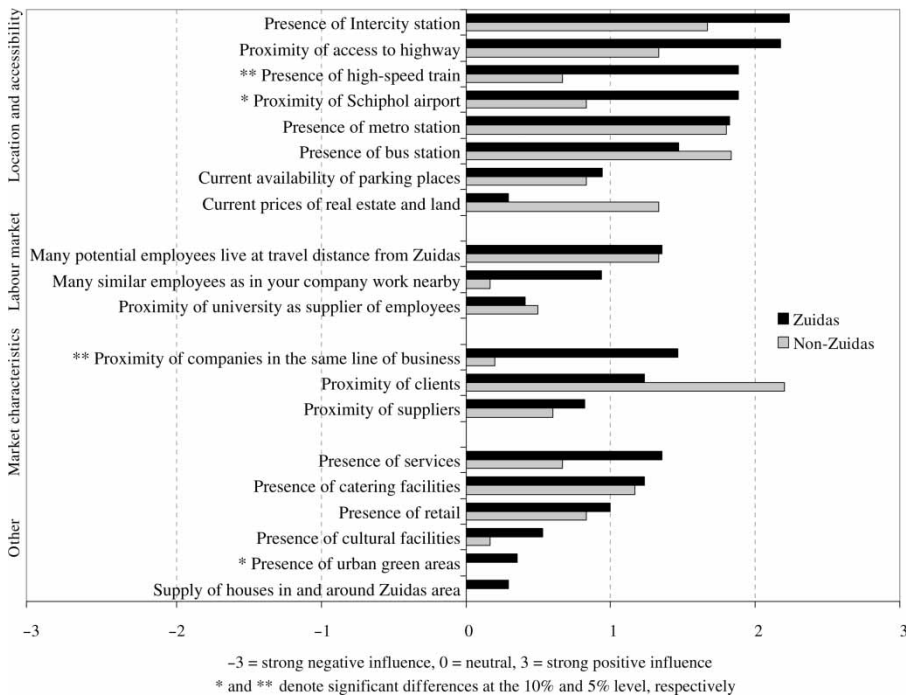
##### 4.1. Current Characteristics of a Location

To obtain information about the importance of different locational characteristics for individual companies, we asked employers to indicate to what extent specific current locational characteristics positively or negatively influence the firm's expected long-term profitability. Four categories of characteristics are considered: location and accessibility; labour market; market characteristics and other characteristics. Many of these characteristics can be found in the traditional literature on location choice (e.g. Bruinsma &

Rietveld, 1995; Funck, 1995; Korteweg & Lie, 1992; Pellenburg, 1985). Figure 1 shows the results per category, in which the ordering within each category reflects the importance as expressed by companies at the Amsterdam Zuidas.

None of the characteristics mentioned is assessed as having a negative influence on the companies' profitability, neither at the Amsterdam Zuidas nor at other locations. Generally, companies at the Amsterdam Zuidas consider the characteristics presented as having more influence on expected long-term profitability than other companies do. This means that either Amsterdam Zuidas companies consider locational characteristics as such to more strongly influence profits or that specific factors that are considered important by companies not located at the Amsterdam Zuidas are missing in the analysis. However, no such indications were given during the interviews.

For the Amsterdam Zuidas, the current level of rent and land prices is the least favourable characteristic, but it is still considered as having a slightly positive influence on expected long-term profitability, despite the fact that prices for office space at the Amsterdam Zuidas are the highest in the Netherlands. Apparently, the value-for-money enjoyed by Amsterdam Zuidas companies for rents is still regarded as sufficient. Although the influence of the presence of different land-use functions in the area varies, companies seem to consider a mixed (i.e. multifunctional) design as having a (mildly) positive influence on long-term profitability. The strongest positive influence on a company's long-term profitability is attached to several accessibility indicators: the presence of an intercity railway station and the proximity of an entrance to a highway. The importance of



**Figure 1.** Influence of locational characteristics on long-run profitability (average score on a 7-point scale, pooled-variance *t*-test)

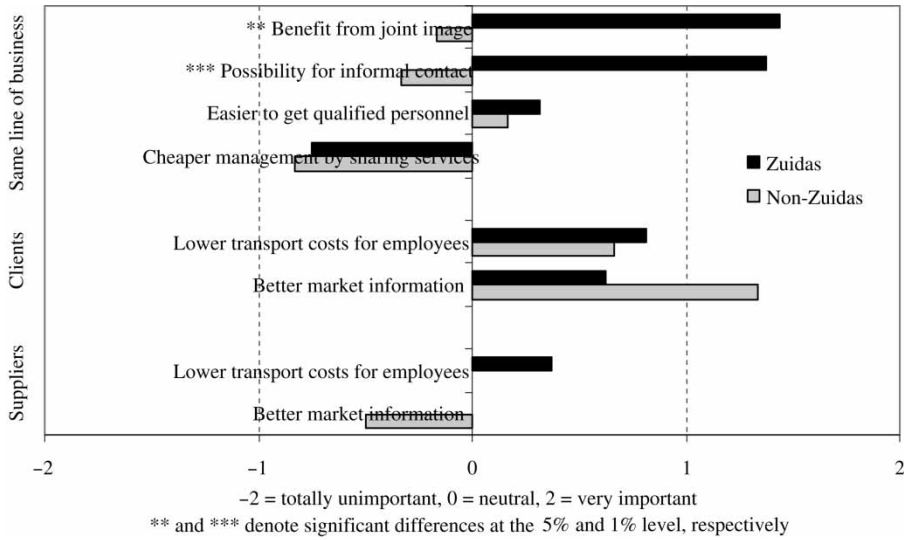
accessibility in firms' valuation of a location confirms an analysis by, among others, Bruinsma and Rietveld (1995) and Van Dijk and Pellenbarg (2000). Accessibility by intercity train and by car is followed closely by the proximity of an (intercontinental) airport, a high-speed-train station, a metro station and a bus station. An interesting difference is found for the expected influence of proximity of access to a highway and of the current availability of parking places. We expected companies to indicate about equal influence of both characteristics, since we suppose a positive relation between the two: both are needed for accessibility by car. It may be that the accessibility in the highway network is a stronger positively discriminating factor for the Zuidas than the availability of parking places, when comparing the site with competing locations.

When we compare these results with the answers of companies not located at the Amsterdam Zuidas, we see several differences. A pooled-variance *t*-test<sup>5</sup> for the difference in two means shows statistically significant differences in answers between companies located at the Amsterdam Zuidas and other companies for the expected influence on long-term profits of presence of a high-speed train, and proximity of companies in the same line of business, as well as of proximity to Schiphol airport and the presence of urban green areas, at the 5% and 10% levels, respectively (two-sided *t*-test) (Figure 1). Amsterdam Zuidas companies expect a statistically significantly stronger influence of these characteristics on expected long-term profitability.

Furthermore, the expectations of the two groups of companies regarding the influence of proximity of other companies are exactly opposite: companies at the Amsterdam Zuidas expect a greater influence of companies in the same lines of business on long-term profits, whereas companies not located at the Amsterdam Zuidas put more weight on the proximity of clients. This suggests that the Amsterdam Zuidas has attracted companies that attach an above-average weight to localization advantages. Proximity of clients is the characteristic to which non-Amsterdam Zuidas companies attach highest importance. Apart from that, their six most important characteristics in terms of profitability are all related to accessibility. The presence of a high-speed-train station and of an (intercontinental) airport received a much lower score than that given by companies located at the Amsterdam Zuidas. This suggests that "self-selection" of companies in locational choice has caused a difference between the two groups: firms that value these characteristics are more likely to be located at the Amsterdam Zuidas.

The considerations behind the importance of localization and urbanization advantages have been investigated as well. The results are summarized in Figure 2. Employers were asked to indicate the importance of specific considerations that led them to choose a location close to: (i) companies in the same line of business (first cluster in Figure 2); (ii) clients (second cluster) and (iii) suppliers (third cluster).

Here, again, we used a pooled-variance *t*-test for the difference in two means between the two groups of firms. The results show statistically significant differences in answers between companies located at the Amsterdam Zuidas and other companies for "clustering as a possibility to have informal contacts with colleagues from other companies" and "clustering to benefit from a joint image". Companies at the Amsterdam Zuidas consider these to be more important reasons for clustering than companies outside the area. Companies outside the Amsterdam Zuidas area do even consider them being unimportant. Kok and Pellenbarg (1987) found that contact patterns in many cases extend beyond the boundaries of an urban agglomeration. If this is the case for the companies that we interviewed outside the Amsterdam Zuidas area, it may (partly)



**Figure 2.** Importance attached to reasons for clustering (average scores on a 5-point scale, pooled-variance *t*-test)

explain why the presence of similar companies at the same location is considered unimportant by them.

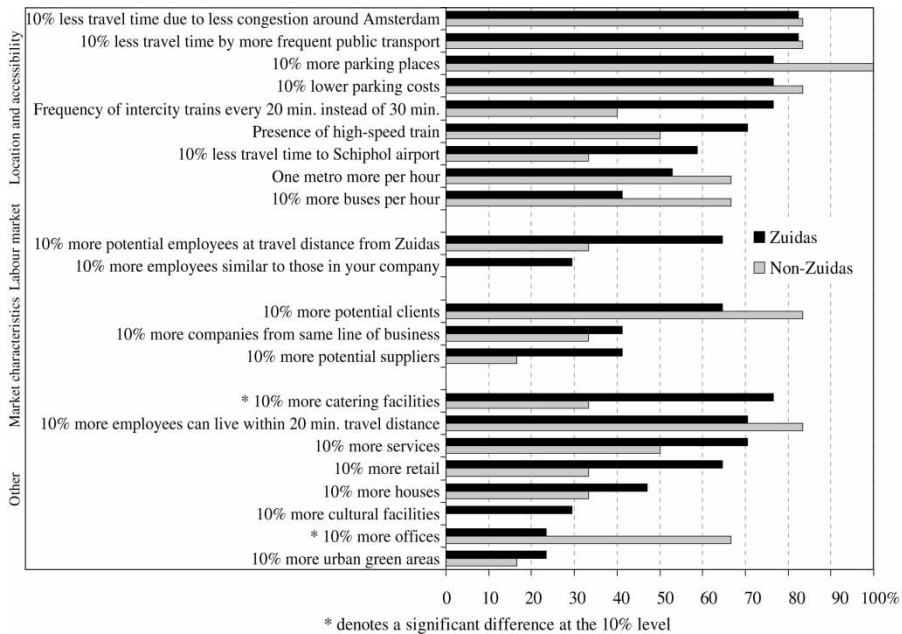
The sharing of a labour pool and of services is not considered being very important motives to cluster by Amsterdam Zuidas firms. The in-depth interviews revealed that employers do not only consider the possibility to share services being an unimportant reason for clustering, but they actually fear for possible negative consequences for their competitive position, because of the possibility that confidential information of the company would leak out to other companies.

Differences in importance attached to reasons for clustering with clients between the two groups are much smaller. Both groups consider the reasons presented to them as important. Reasons for clustering connected with choosing a location close to suppliers are considered less important compared with similar companies and clients, both by companies located at the Amsterdam Zuidas and by companies located elsewhere.

#### 4.2. Changes in Locational Characteristics

There may be a difference between the importance companies attach to current locational characteristics, on the one hand, and to improvements in locational characteristics, on the other hand. So, in addition to the question about the influence of current locational characteristics, we also asked employers to indicate whether specific changes in locational characteristics would be relevant in terms of expected long-term profits or not. In order to make changes across characteristics as much as possible comparable, we let most characteristics vary by 10%.

Most of the changes presented were classified by at least some companies in each group as having an influence on expected long-term profitability. Figure 3 depicts the percentage of firms that answered “yes” to the question concerning whether the presented change of a



**Figure 3.** Share of companies that consider change in location factor as relevant for expected long-term profits (Pearson  $\chi^2$  test)

locational characteristic would have any influence on the companies' expected long-term profits. The results are shown per category, ordered by scores given by Amsterdam Zuidas companies within categories.

Looking at the answers, we see that most of the companies consider changes in accessibility-related locational characteristics as being important in terms of influence on expected long-term profits. Most of the other characteristics are considered to be important in terms of influence on expected long-term profits by a smaller share of companies. The results, furthermore, show a few extreme scores for companies not located at the Amsterdam Zuidas: all of them consider 10% more parking places as having a positive influence on expected long-term profits, whereas none of them considers 10% more employees similar to those in the employers' own company and 10% more cultural facilities as having a positive influence on expected long-term profits.<sup>6</sup>

It is interesting to note that our initial hypothesis that there would be a positive correlation between the importance attached to the presence of 10% more employees similar to those in the respondent's own company and to an increase in the number of companies in the same line of business was not confirmed by companies not located at the Amsterdam Zuidas. This suggests that their expectations concerning the influence of an increase in the number of companies in the same line of business on expected long-term profits may be a result of a positive spin-off of image-related factors, rather than of the presence of similar types of employees.

For many factors, clear differences in frequency of answers given by respondents from each group are found. A Pearson  $\chi^2$  test<sup>7</sup> showed statistically significant differences (at 10%) between the share of companies of each group that considers 10% more offices

and 10% more catering facilities as having a positive influence on expected long-term profits. The high score for Amsterdam Zuidas companies reveals that current catering facilities at the Amsterdam Zuidas are considered inadequate: 75% of the respondents indicated that 10% more catering facilities would have a positive impact on long-term profits.

Like locational characteristics as such, accessibility factors also show high scores, e.g. for less travel time for employees (both by car and by public transport), more parking places and lower parking costs. There are, however, differences to be found between the influence on expected long-term profits that companies attach to locational characteristics (Figure 1) versus changes in locational characteristics (as in Figure 3). Companies at the Amsterdam Zuidas consider the presence of companies in the same line of business as important, but do not consider a further increase in the number of companies in the same line of business as belonging to the most important factors that have a positive influence on expected long-term profits. Instead, they consider an increase in, for example, the number of clients as more important. These differences positively confirm our decision to assess both current locational characteristics and changes in these characteristics. It enables us to relate the indicated relevance of changes in locational characteristics for expected long-term profitability to answers on the question about the importance of current locational characteristics on expected long-term profitability, which provides information about the valuation of employers for locational characteristics that are dependent on the degree of multifunctionality (as will be analysed later in this paper).

In the literature on location factors in the Netherlands, we find similarities as well as differences compared with our analysis. A main difference is that many studies dealing with locational characteristics are related to (re-)location decisions of firms (e.g. Bruinsma *et al.*, 1997; Pellenburg, 1985; Pellenburg *et al.*, 2002), whereas we look at the influence of specific locational characteristics and changes therein on the expected long-term profits of companies. Another difference is that most studies take a broad range of location factors into consideration, whereas we aim to focus on factors that influence the degree of multifunctionality of a site. For this reason, factors such as government subsidies, telecommunication facilities, etc. have been left out of the analysis. Of those factors that correspond with our analysis, we see that, generally, accessibility is considered as one of the most important factors in the location decisions of firms (Bruinsma *et al.*, 1997; NSS, 1991). In both the studies, accessibility via road is considered more important than accessibility by public transport. In a study of Korteweg and Lie (1992) concerning office firms in Amsterdam, Rotterdam, The Hague and Utrecht, 83% to 94% of the firms indicated accessibility by car to be an important location factor, whereas 69% to 82% indicated accessibility by public transport to be an important location factor. In contrast, in our study, accessibility by public transport is considered more important than that by car. For the companies at the Amsterdam Zuidas, this might be because the Amsterdam Zuidas is classified as an A-location, which means that it should be easily accessible by public transport. This may have attracted companies that are more focussed on accessibility by public transport than on accessibility by car. For companies not located at the Amsterdam Zuidas, it is more difficult to find explanatory factors for the importance they attach to accessibility by public transport compared with accessibility by car. Korteweg and Lie (1992) also found that parking facilities are considered as an important location factor by 85% to 95% of the companies. This is confirmed by our finding that more than 77% of the firms expect a positive influence of the availability of parking places on long-term profits.

Also, the prestige of a location is considered very important by companies (Bruinsma *et al.*, 1997). In their data set, 25% of all companies value prestige of a location as the second-most important decision to relocate firms. We asked companies about the importance of a location's image with regard to profitability of the firm and not in relation to other locational characteristics. Companies indicated a score of 1.3 (Amsterdam Zuidas companies) and 1.4 (non-Amsterdam Zuidas companies) for the influence that image has on long-term profitability of the firm (3-point scale: 0, no effect; 3, strong effect). Companies were, furthermore, asked to indicate the extent to which various characteristics of a location are decisive for its image. In Section 5, this will be studied in more detail.

## 5. WTP of Employers for Changes in Locational Characteristics

WTP is a natural economic measure to express stakeholders' assessments of (the use of) a multifunctionally designed site. In order to identify how much companies are willing to pay for specific aspects of a multifunctionally designed site, we will therefore make use of a stated choice experiment in the employers' questionnaire. By means of a two-stage dichotomous choice question, employers had to answer "yes" or "no" to the question concerning whether they want to pay a certain amount of money for a respondent-specific combination of changes in locational characteristics, referred to as the "optimal location package". The second dichotomous choice question was followed by an open-ended contingent-valuation method question.

### 5.1. Determining the "Optimal Location Package"

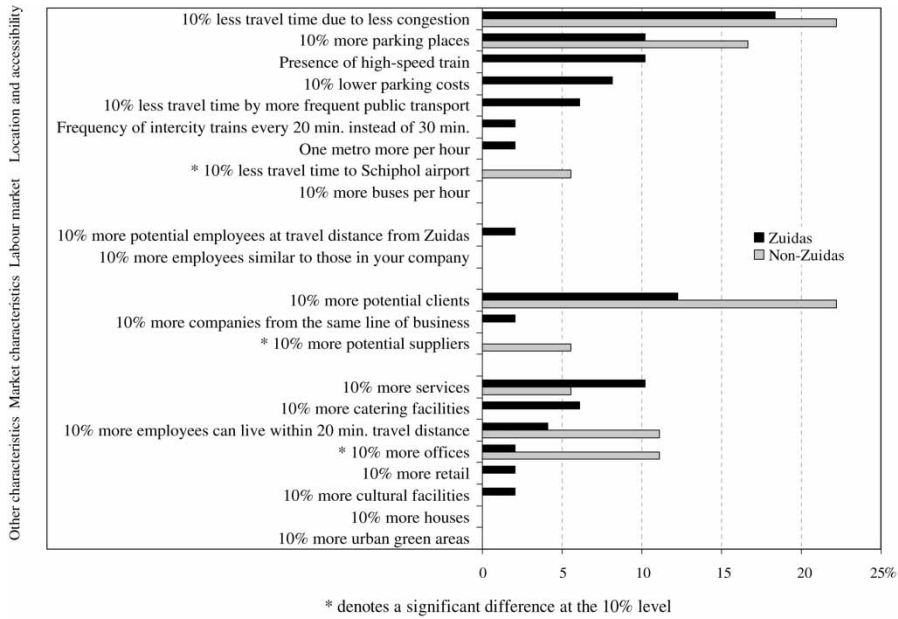
The optimal location package was put together by the respondent from the shortlist of improvements in locational characteristics, as presented in Figure 3. The three changes chosen reflect the most desired improvement of the area for the company, in terms of expected influence on long-term profits. The package can thus differ over respondents. Figure 4 shows how many firms include various characteristics in their package.

The changes in locational characteristics that were most frequently chosen by companies located at the Amsterdam Zuidas are: 10% travel time saving as a result of less congestion on the highway (18.4% of the respondents); a 10% increase in the number of potential clients in the Amsterdam Zuidas area (12.3% of the respondents) and 10% more parking places (10.2% of the respondents; equal to presence of high-speed train and 10% more services). The most frequently chosen factors by companies not located at the Amsterdam Zuidas turn out to be exactly the same, although the shares differ (22.2%, 22.2% and 16.7% of the companies, respectively).

Here again, a Pearson  $\chi^2$  test was carried out for the differences between the shares of companies located within and outside the Amsterdam Zuidas area that indicated a change in a locational characteristic to influence expected long-term profits. The results showed statistically significant differences (at 10%) between the share of companies of each of these groups that choose 10% less travel time to Schiphol airport, a 10% increase in the number of potential suppliers and 10% more offices, as one of the three factors of their optimal location package.

As expected, these results show a good match with those in Figure 3. Companies located at the Amsterdam Zuidas chose three factors out of their top 10 characteristics most





**Figure 4.** Share of companies that include change in locational characteristics in their “optimal location package” of three factors (Pearson  $\chi^2$  test)

frequently indicated as relevant in terms of expected long-term profits, whereas non-Amsterdam Zuidas companies even chose the very same top three characteristics that most of them had indicated as relevant in terms of expected long-term profits. However, contrary to the equal importance attached to accessibility factors for car and public transport as shown in Figure 3, companies choose to include car-related accessibility factors in their optimal location package, rather than public transport-related factors. This would imply that the current accessibility of the locations by car is not satisfactory or that these companies are strongly dependent on accessibility by car, e.g. because employees may need a car to carry out their job properly.

The match with the answers to the question about the influence of current locational characteristics on expected long-term profitability (in Figure 1) is less obvious. This again confirms the expected differences in importance attached to current locational characteristics, on the one hand, and to improvements in locational characteristics, on the other. The in-depth interviews revealed that many companies located at the Amsterdam Zuidas are relatively satisfied with their location already, although it did not become clear what the exact (indirect) influence of their knowledge about the future development of the area is in their answers.

## 5.2. WTP for the “Optimal Location Package”

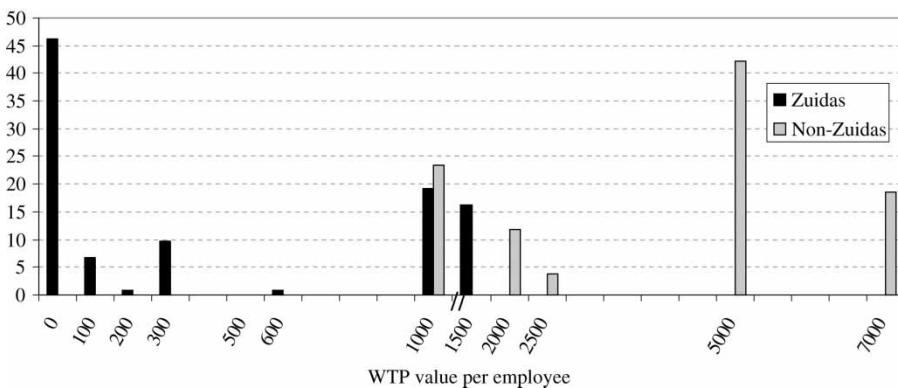
In order to obtain information about the WTP of employers for the benefits they derive from the presence of specific locational characteristics within a multifunctionally designed area, we formulated the following question.

Suppose that the municipality of Amsterdam, in consultation with the companies located in the Amsterdam Zuidas area, decides to jointly develop the “optimal location package” as chosen by you. However, the available funds are not sufficient. In order to cover the costs, the municipality proposes that every company located at the Amsterdam Zuidas contributes to the realization of this “optimal location package”. The one-time contribution consists of an amount of money per employee that is equal for every company. The sum of the contributions is exactly sufficient to cover all costs. The package will not be realized unless every company contributes. In a referendum, you may express whether you would like to see the package being realized—given the proposed contribution. Up to what amount of money (per employee) would you vote for realization of the package?

Would you vote “yes” if the package were to be realized with a one-time contribution by your company of €1000 per employee?

If the respondents accepted the payment in this first question, they were then asked whether they would also pay €5000. If not, they were asked whether they would be willing to pay €200. Finally, they were asked to express an exact maximum amount of money per employee that the company is willing to pay for the realization of its chosen “optimal location package”.

The maximum WTP of employers for a specific combination of changes in locational characteristics of the Amsterdam Zuidas differs strongly over respondents. About 30% of the employers answered “yes” to the question concerning whether they would be willing to pay €1000 per employee for the realization of their chosen optimal location package; the other 70% had a lower WTP. Their lowest maximum WTP is €0 per employee, whereas their highest maximum WTP is €1500 per employee. The maximum WTP for the optimal location package of companies not located at the Amsterdam Zuidas turns out to be much higher. Their lowest maximum WTP is €1000 per employee, whereas their highest maximum WTP is €7500 per employee. This implies that every employer outside the Amsterdam Zuidas area answered “yes” to the question concerning whether they would be willing to pay €1000 per employee for the realization of their chosen optimal location package. Figure 5 shows the distribution of



**Figure 5.** Distribution of maximum WTP value for optimal location package

the maximum WTP value per employee for the development of the optimal location package. The average per-employee maximum WTP of Amsterdam Zuidas companies for the realization of their optimal location package chosen is €449. The average per-employee maximum WTP for the realization of the optimal location package of companies not located at the Amsterdam Zuidas is €4075.<sup>8</sup>

The more explicit choice of companies not located at the Amsterdam Zuidas for locational characteristics to be included in their optimal location package may partly result from the small size of the sample. It could, however, also suggest that they have a clear desire for changes in specific locational characteristics (most likely characteristics that are currently missing or insufficient). This leads to a relatively higher WTP, which may, at least partly, explain the difference in the per-employee maximum WTP for companies located within and outside the Amsterdam Zuidas area. To further investigate the influence of the sample size on the results, more companies should of course be examined.

The relatively low WTP value of companies at the Amsterdam Zuidas shows that they are already quite satisfied with their location. This corresponds with the high rents that they pay at the Amsterdam Zuidas.

Another potential factor influencing the WTP of companies not located at the Amsterdam Zuidas might be the fact that the participating companies are almost all head offices, which are expected to have a higher WTP for (improvements in) specific characteristics of their location (since it is the location of the board, image, corporate identity, etc.). An ordinary least squares (OLS) regression on WTP for the optimal location package, however, does not show statistically significant differences for different types of settlements (Table 2). Leaving out the location variable does not affect this result either.

### 5.3. WTP for Changes in Specific Locational Characteristics

The respondents were subsequently asked to express the maximum amount of money per employee that the company would be willing to pay for the realization of a pre-specified change in a specific locational characteristic (where the same payment conditions hold as in the question about the optimal location package). As a result of our focus on the multifunctional character of a location, we mainly presented changes in locational characteristics that represent multifunctionality to respondents. Since accessibility is an important precondition for the development of a multifunctionally designed area, we also included changes in accessibility of the site. The following changes were presented to the respondents:

**Table 2.** WTP for “optimal location package” (OLS estimates)

Constant	2903.2 <sup>a</sup> (4.3)
Located at Amsterdam Zuidas (base, non-Amsterdam Zuidas)	-2585.6 <sup>a</sup> (-3.9)
Head office (base, other type of company)	395.2 (0.7)
Sample average	1163.9
Number of observations	23
Adjusted $R^2$	0.43

Note: The  $t$ -values are shown in brackets.

<sup>a</sup>Significance at the 1% level (two-sided  $t$ -test) in an OLS regression.

**Table 3.** Per-employee maximum WTP value for the presented changes in locational characteristics (in euros)

	Amsterdam Zuidas companies	Non-Amsterdam Zuidas companies
Development of the location in such a way that 10% more employees similar to those in the company work in the immediate vicinity	€12.2	€0
A travel time saving of 10% for employees as a result of less congestion on the nearby highway	€193.3	€2396.5
A travel time saving of 10% for employees as a result of higher frequencies in public transport	€120.2	€543.1
Realization of the Dock model instead of the Dike model (i.e. development of real estate alongside and above the orbital motorway instead of alongside only)	€9.2	
Development of a mix of 45% housing, 45% offices and 10% facilities in the area, instead of the current design as an office location	€16.7	€138.5

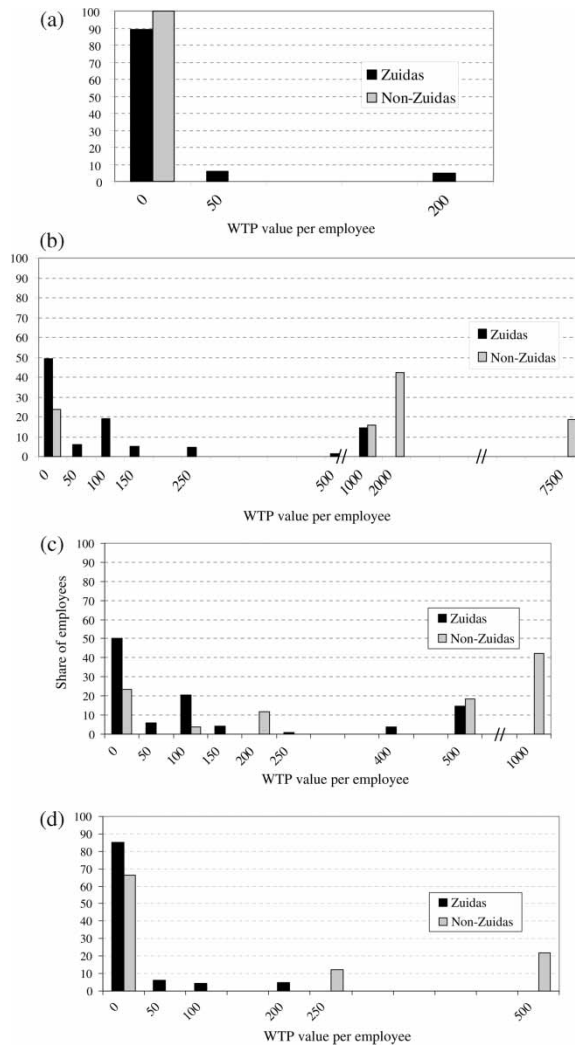
- development of the location in such a way that 10% more employees similar to those in the company work in the immediate vicinity;
- a travel time saving of 10% for employees as a result of less congestion on the nearby highway;
- a travel time saving of 10% for employees as a result of higher frequencies in public transport (i.e. shorter waiting times);
- realization of the (subterranean) Dock model instead of the Dike model (i.e. development of real estate alongside and above the orbital motorway instead of alongside only: see Rodenburg (2005) for details on the various development plans);
- development of a mix of 45% housing, 45% offices and 10% facilities in the area, instead of the current design as an office location.

For companies not located at the Amsterdam Zuidas, the fourth factor (realization of the Dock model instead of the Dike model) was, of course, omitted. shows the WTP values for the presented changes in locational characteristics. Here again, we use the per-employee maximum WTP, in order to correct for the size of the company. Companies located at the Amsterdam Zuidas showed a relatively low per-employee maximum WTP value compared with the values indicated by companies that are not located at the Amsterdam Zuidas. Although there may be considerable differences in the indicated values between the two groups of companies, the size of some of the indicated values suggests that there is no reluctance to pay for improvements as such.

A pooled-variance *t*-test for the difference in per-employee maximum WTP shows that companies located outside the Amsterdam Zuidas area have a statistically significantly higher per-employee maximum WTP for 10% less travel time as a result of less congestion on nearby highway and for 10% less travel time as a result of more frequent public transport compared with companies within the Amsterdam Zuidas area. This, again, suggests that companies at the Amsterdam Zuidas are quite satisfied with, in this case, accessibility of their location and thus have a lower WTP for changes in these characteristics. Discussions during the in-depth interviews confirmed the suggested satisfaction, although

we did not find evidence for any predominant dissatisfaction concerning current accessibility among companies not located at the Amsterdam Zuidas other than this relatively high WTP for improvements.

Figure 6a–d shows for which share of the total number of employees over all companies in the data set a specific maximum WTP value has been indicated for the presented changes (a–d) in locational characteristics. The WTP for development of the Dock instead of the Dike model (i.e. for bringing the infrastructure underground) is not shown in a separate graph, since we only have results from companies located at the



**Figure 6.** Distribution of maximum WTP value for: (a) 10% more similar employees in immediate vicinity; (b) travel time savings of 10% for employees as a result of less congestion on the nearby highway; (c) travel time savings of 10% for employees as a result of higher frequencies in public transport and (d) development of a mix of 45% housing, 45% offices and 10% facilities in the area

Amsterdam Zuidas. There, 14 of 16 companies indicated that they had a WTP of zero. The remaining two companies were willing to pay €100 and €200 per employee, respectively. The average per-employee maximum WTP is only €9.2, which is very low, especially when compared with the construction costs of such a development.

The other results show that most of the companies (Amsterdam Zuidas and non-Amsterdam Zuidas) are not willing to pay for the realization of a mix of 45% housing, 45% offices and 10% facilities at their location. However, indications from answers to the question about the influence of an increase in the number of facilities and houses at the location were different (Figure 3). Many companies at the Amsterdam Zuidas indicated that an increase in the number of facilities and houses was expected to have a positive influence on expected long-term profits. This low WTP for the mix of land-use functions is not promising for the development of multifunctionally designed areas. It could, however, be that the proposed mix of land-use functions (45/45/10) did not match the preferences of the companies and negatively influenced their WTP value. A question concerning this was not asked during the interviews.

## 6. Importance of the Image of a Location

In multifunctional land-use projects, “locational image”, or the public perception of a location, is an important issue. The design of such locations is often prestigious, which is believed to improve the image of the location and to be attractive to companies. Considering the aim of this paper, to assess locational characteristics that are influenced by the degree of multifunctionality, image is an important characteristic to pay attention to.

However, no clear definition of image exists, and its interpretation may vary over individuals. In our context, image means the public perception of places. It can be assessed for several groups of stakeholders. Depending on the group of stakeholders, other aspects of the image will be important, since image is a broad, holistic concept (Meester & Pellenburg, 1989). In our research, we focus on the image of a location from the perspective of firms. This picture is often historically determined and is influenced by factors such as spatial setting, spatial quality, accessibility, historical development and governmental regulation (Pellenburg, 1991; Van den Berg *et al.*, 1990). Bruinsma and Rietveld (1995) consider locational characteristics such as prestige of building, price/rent of building and status of the environs to be decisive for the image of a location.

Since we expect that image may serve as a concept that represents an overall assessment of other locational characteristics related to multifunctional land use as have been presented to respondents, we decided not to ask for a specific WTP value of employers for the prestige that results from a multifunctional design of the area. This does, however, not mean that it would not be interesting to investigate which characteristics they then include in their assessment of image. We therefore included a question about image in our questionnaire in which we asked respondents to mention the things that first come to mind when talking about image of the Amsterdam Zuidas. Of all 40 factors mentioned by the companies, 23% were related to names of other companies located there, 23% were related to accessibility and 13% to architecture of the buildings. Other factors, often-mentioned, are high-quality office buildings, international allure and safety.

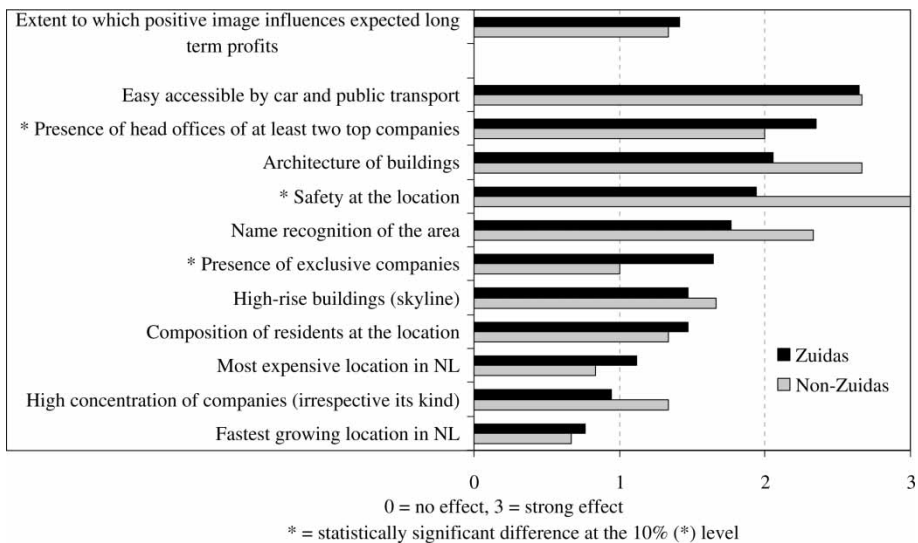
It is striking that companies that are not located at the Amsterdam Zuidas do not mention “names of other companies” at all and “accessibility of a location” only once, in answering the same question. This is probably a matter of self-selection of companies

at the Amsterdam Zuidas, where many well-known companies are located and therefore naturally attract other firms for which this form of image is important. Safety is mentioned as one of the factors that come first to mind by 21% of the companies not located at the Amsterdam Zuidas and architecture of the buildings by 14% (two out of a total of 14 factors mentioned).

We also asked respondents to indicate the extent to which specific characteristics of their location are decisive for its image, including several characteristics that reflect a multifunctional design (Figure 7). Companies located at the Amsterdam Zuidas consider “accessibility” as the most important characteristic, followed by “the presence of head offices of two top-companies” and “architecture of the buildings”. This pattern exactly follows the order of frequencies with which companies spontaneously mentioned factors that are decisive for the image of the Amsterdam Zuidas. So, it is not only that these factors first come to mind when employers think about image, but also that they are considered most important in terms of long-term profits of the company.

The opinions about the influence of “the Amsterdam Zuidas being the most expensive location in The Netherlands” were two-fold. Some companies indicated this to have a negative influence on image, possibly because clients may expect them to charge higher prices for their services. Other companies, however, considered high rents to have a positive influence on image: people may expect rent level to be an indication for the trust- and creditworthiness of a company.

Statistically significant differences between the answers of companies located within and outside the Amsterdam Zuidas area are found for the extent to which companies consider safety to be decisive for the image of a location, as well as for the presence of exclusive companies and the presence of head offices of at least two top companies. Companies located at the Amsterdam Zuidas consider the latter two factors to strongly affect image. This suggests that “self-selection” of companies in locational choice has



**Figure 7.** Extent to which specific characteristics of a location are decisive for its image (average scores on a 4-point scale)

caused a difference between the two groups: firms that value these characteristics are more likely to be located at the Amsterdam Zuidas. The statistically significantly lower extent to which companies located at the Amsterdam Zuidas expect safety to affect image is more difficult to explain. During the interviews, neither of the two groups indicated specific insecurity or excellent safety at locations, which could have been an explanatory factor.

In a study of Korteweg and Lie (1992), 68% to 79% of the companies in the data set consider a prestigious environment as an important location factor. During the interviews, we noticed similar considerations: companies indicated that they highly appreciate it to be located in an office building that overlooks other buildings in the area, for example. In the questions in our analysis, nevertheless, we focus on the influence of a positive image of a location on a company's expected long-term profits. In Figure 7, we see that this influence is considered to be small but existent, both for companies within the Amsterdam Zuidas area and for companies outside the Amsterdam Zuidas area (see top bar). The figure furthermore shows that companies not located at the Amsterdam Zuidas unanimously consider "safety" to be strongly decisive for the image of their location, followed by "architecture" and "accessibility". This corresponds with the answers relating to the request to mention those things that first come to mind when talking about image of a location (safety was mentioned by 21% and architecture by 14% of these companies).

An interesting question is whether the WTP values given by employers are (indirectly) influenced by the assumption that they can recover part of the high rents they pay in a multifunctionally designed area like the Amsterdam Zuidas from employees through lower wages, which in turn are accepted because of the presence of specific facilities in the area. We therefore confronted the respondents with the answers that employees gave in an earlier questionnaire (Rodenburg, 2005) about the importance they attach to the presence of certain shops and infrastructure facilities. We subsequently asked the employers to indicate whether they expected that the presence of facilities to which employees attach major importance would compensate for a lack of other fringe benefits, so that the company could save money by not providing such benefits itself.

About 40% of the participating employers at the Amsterdam Zuidas expected that they could save money on providing other fringe benefits if certain facilities preferred by employees were to be present at the Amsterdam Zuidas versus 65% of the participating employers not located at the Amsterdam Zuidas. This suggests that, for the latter group, most probably, in many cases, there are currently less facilities present at their location than there are at the Amsterdam Zuidas. This means that the addition of facilities as preferred by employees to a location might (positively) influence employers' WTP for changes in these locational characteristics (but this has not been checked directly). The interviews revealed, nevertheless, that employers expect that the presence of facilities may only compensate other fringe benefits: employees will not accept a wage rate that is lower compared with what competitive companies would offer.

## 7. Conclusions

In this paper, we assessed how companies value the presence of, and changes in, specific locational characteristics that add to the degree of multifunctionality. Despite the small sample size, the study provides interesting evidence on the relative importance of multifunctionality derived from a unique development project in which multifunctionality features prominently in the development plans of the area. Location characteristics related



to accessibility of the area were attributed the highest relevance in terms of expected long-term profits by most of the companies located at the Amsterdam Zuidas, and they always included at least one accessibility factor in their individually chosen optimal location package. For companies not located at the Amsterdam Zuidas, accessibility was considered less relevant for their expected long-term profits and was not always included in their optimal location package. It is plausible that this is caused by “self-selection”: the good accessibility of the Amsterdam Zuidas may have attracted companies that attach much value to this characteristic.

Also, labour market characteristics are considered to be more relevant for long-run profits by companies at the Amsterdam Zuidas when compared with other companies. A striking difference between the two groups of companies was found for the market environment: employers at the Amsterdam Zuidas attach great value to the presence nearby of companies in the same line of business, whereas companies not located at the Amsterdam Zuidas prefer the presence of clients close to their location. Despite the greater influence on long-term profits that companies at the Amsterdam Zuidas assign to the presence of companies in the same line of business, they prefer an increase in the number of clients close to their location, just like companies located outside the Amsterdam Zuidas area do. This suggests that companies at the Amsterdam Zuidas are satisfied with the current design of the area in terms of the presence of companies in the same line of business.

Although the three most-frequently chosen locational characteristics for the composition of the optimal location packages are similar for companies within the Amsterdam Zuidas area and for those outside the area, the estimated per-employee maximum WTP differs considerably (€449 versus €4075). This means that either companies not located at the Amsterdam Zuidas currently believe to have poor accessibility (in terms of congestion and number of parking places available) and not enough clients yet in the vicinity of their location compared with companies located at the Amsterdam Zuidas, or that companies located at the Amsterdam Zuidas see little potential for further improvements in these characteristics.

Since many companies indicated that they expect to be able to save on the costs of providing other fringe benefits as a result of a multifunctional design of the area, we can conclude that preferences of employees for a multifunctionally designed location will positively influence the WTP of employers for such a design. The level of wages and fringe benefits will determine the extent to which certain benefits are transferred between employers and employees and have not been considered in our analyses and are left for future research.

Another area for future research would focus on a further empirical operationalization of the concept of multifunctional land use. Although the concept is used intensively, a clear definition is still lacking. In this paper, we have identified the links between the concept of multifunctionality and the literature on agglomeration externalities. This was subsequently translated into an analysis of locational attributes. A further developed operational definition may help to shed further light on the empirical relevance of the concept of multi-functionality. Nevertheless, the locational factors that we distinguished appear to have captured at least what our respondents consider to be the main characteristics of multifunctionality and have the practical advantage of referring to features that are relatively unambiguous to identify—in contrast, for example, to the concept of “image”—and relatively easy to operationalize in the planning and managing of a multifunctional site. This is an advantage that is worth keeping in further development and operationalization

of concepts such as image and multifunctionality, especially when the aim is to express their social benefits in monetary terms. Given the importance of cost–benefit analysis in the planning of sites of this type, further study on these issues seems highly desirable, besides being intellectually very challenging.

## Notes

1. We refer to De Graaff *et al.* (2007) and Rodenburg *et al.* (2008) for complementary empirical analyses on the impact of multifunctional land use on employees and residents.
2. In the remainder of this section, we provide a very concise description of the currently existing development plans for the Zuidas area. The interested reader is referred to Rodenburg (2005) for more details about the Amsterdam Zuidas area and the existing development plans.
3. A full (English) version of the questionnaire is available upon request.
4. Although the number of observations is admittedly limited, the sample seems to cover a rather representative set of firms located at the Amsterdam Zuidas. Combined with the in-depth interviews that were held, this research adds to the scarce evidence that exists on the relevance of multifunctional attributes in the development of sites such as the Amsterdam Zuidas. Evidently, the limitations imposed by the size of the sample have to be kept in mind when interpreting the results of this study.
5. In this *t*-test, we used the pooled variance as long as the population variances of the samples did not differ statistically significantly. In cases in which they did differ, we adopted the conservative approach by using the critical *t*-value with degrees of freedom based on the number of observations in the smallest sample (namely,  $\min(n_1, n_2) - 1$ ).
6. The presence of North–South tram, a Amsterdam Zuidas-specific tramline, has not been presented to these companies, so the absence of this bar in Figure 3 does not imply a zero score.
7. The  $\chi^2$  test assesses the significance of the difference in means between categorical variables. The *p*-value in Figure 3 reflects the probability that a statistical result as extreme as the one observed would occur if the null hypothesis of equal means were true.
8. Averages have been weighted with firm size to correct for the variation in the size of companies. The average maximum WTP for the realization of a company's chosen optimal location package statistically significantly differs (at 5%) between companies located within and outside the Amsterdam Zuidas area.

## References

- Brakman, S. & Heijdra, B. J. (Eds) (2004) *The Monopolistic Competition Revolution in Retrospect* (Cambridge: Cambridge University Press).
- Bruinsma, F. R. & Rietveld, P. (1995) A stated preference approach to measure the relative importance of location factors: A case study for the Eastern part of the Netherlands, *International Journal of Development Planning Literature*, 12(1&2), pp. 125–140.
- Bruinsma, F. R., Rienstra, S. A. & Rietveld, P. (1997) Economic impacts of the construction of a transport corridor: A multi-level and multi-approach case study for the construction of the A1 highway in the Netherlands, *Regional Studies*, 31(4), pp. 391–402.
- Bruzelius, N., Flyvbjerg, B. & Rothengatter, W. (2002) Big decision, big risks, *Transport Policy*, 9(2), pp. 143–154.
- Carlton, D. W. (1983) The location of employment choice of new firms: An econometric model with discrete and continuous endogenous variables, *Review of Economics and Statistics*, 65(3), pp. 440–449.
- Chinitz, B. (1961) Contrast in agglomeration: New York and Pittsburgh, *American Economic Review*, 51(2), pp. 279–289.
- Ciccone, A. & Hall, R. (1996) Productivity and the density of economic activity, *American Economic Review*, 86(1), pp. 54–70.
- De Graaff, T., De Groot, H. L. F., Rodenburg, C. A. & Verhoef, E. T. (2007) The WTP for facilities at the Amsterdam Zuidas, *Environment and Planning A*, 39(9), pp. 2099–2118.
- De Groot, H. L. F., Poot, J. & Smit, M. J. (2009) Agglomeration, innovation and regional development: Theoretical perspectives and meta-analysis, in: R. Capello & P. Nijkamp (Eds) *Handbook of Regional Growth and Development Theories*, pp. 256–281 (Cheltenham: Edward Elgar).

- Dixit, A. K. & Stiglitz, J. E. (1977) Monopolistic competition and optimum product diversity, *American Economic Review*, 67(3), pp. 297–308.
- Dumais, G., Ellison, G. & Glaeser, E. L. (2002) Geographic concentration as a dynamic process, *Review of Economics and Statistics*, 84(2), pp. 193–204.
- Flyvbjerg, B., Bruzelius, N. & Rothengatter, W. (2003) *Mega-Projects and Risk* (Cambridge: Cambridge University Press).
- Fujita, M., Krugman, P. & Venables, A. (1999) *The Spatial Economy* (Cambridge: MIT Press).
- Funck, R. H. (1995) Competition among locations, in: E. Giersch (Ed.) *Urban Agglomeration and Economic Growth*, pp. 227–256 (Berlin: Springer).
- Glaeser, E. L. & Mare, D. C. (2001) Cities and skills, *Journal of Labour Economics*, 19(2), pp. 316–342.
- Glaeser, E. L., Kallal, H., Sheinkman, J. & Shleifer, A. (1992) Growth in cities, *Journal of Political Economy*, 100(6), pp. 1126–1152.
- Gramlich, E. M. (1994) Infrastructure investment: A review essay, *Journal of Economic Literature*, 32(3), pp. 1171–1196.
- Hanson, G. (2000) Firms, workers, and geographic concentration of economic activity, in: G. L. Clark, M. P. Feldman & M. S. Gertler (Eds) *The Oxford Handbook of Economic Geography*, pp. 475–494 (Oxford: Oxford University Press).
- Henderson, J. V. (1986) Efficiency of resource usage and city size, *Journal of Urban Economics*, 19(1), pp. 47–90.
- Henderson, V., Kuncoro, A. & Turner M. (1995) Industrial development in cities, *Journal of Political Economy*, 103(5), pp. 1067–1090.
- Hoover, E. M. (1936) *Location Theory and the Shoe and Leather Industry* (Cambridge: Harvard University Press).
- Hoover, E. M. (1948) *The Location Theory of Economic Activity* (New York: McGraw-Hill).
- Jacobs, J. (1969) *The Economy of Cities* (New York: Vintage).
- Kok, J. A. A. M. & Pellenburg, P. H. (1987) Innovation decision-making in small and medium-sized firms: A behavioural approach concerning firms in the Dutch urban system, in: G. A. van der Knaap & E. Wever (Eds) *New Technology and Regional Development*, pp. 145–164 (London: Croom Helm Ltd).
- Korteweg, P. & Lie, R. (1992) Prime office locations in the Netherlands, *Tijdschrift voor Economische en Sociale Geografie*, 83(4), pp. 250–262.
- Louviere, J. J., Hensher, D. A. & Swait, J. D. (2000) *Stated Choice Methods: Analysis and Applications* (Cambridge: Cambridge University Press).
- Marshall, A. (1890) *Principles of Economics* (London: Macmillan).
- Meester, W. J. & Pellenburg, P. (1989) Het imago van de Nederlandse provincies, *Geografisch Tijdschrift*, 33(2), pp. 88–97.
- Melo, P. C., Graham, D. J. & Noland, R. B. (2009) A meta-analysis of estimates of urban agglomeration economies, *Regional Science and Urban Economics*, 39(3), pp. 332–342.
- NSS (1991) *Eisen aan de Bedrijfsomgeving in de Randstad* (The Hague: NSS Beleidsonderzoek en Beleidsadvies).
- O'Sullivan, A. (2003) *Urban Economics* (Chicago, IL: Irwin).
- Pellenburg, P. H. (1985) *Bedrijfsrelokatie en Ruimtelijke Kognitie; Onderzoekingen naar Bedrijfsverplaatsingsprocessen en de Subjektieve Waardering van Vestigingsplaatsen door Ondernemers in Nederland, Sociaal-Geografische Reeks, No. 33*, Geografisch Instituut (Groningen: University of Groningen).
- Pellenburg, P. H. (1991) *Imago, Identiteit en Economische Ontwikkeling van Regio's* (Groningen: GEO PERS Groningen).
- Pellenburg, P. H., Van Wissen, L. J. G. & Van Dijk, J. (2002) *Firm Relocation: State of the Art and Research Prospects*, SOM Research Report 02D31 (Groningen: University of Groningen).
- Roback, J. (1982) Wages, rents, and the quality of life, *Journal of Political Economy*, 90(6), pp. 1257–1278.
- Rodenburg, C. A. (2005) *Measuring Benefits of Multifunctional Land Use: Stated Preference Studies on the Amsterdam Zuidas* (Amsterdam: Vrije Universiteit).
- Rodenburg, C. A., Nijkamp, P., De Groot, H. L. F. & Verhoef, E. T. (2008) Valuation of multi-functional land use by commercial investors: A case study on the Amsterdam Zuidas mega-project, *Tijdschrift voor Economische en Sociale Geografie*, 99(4), pp. 454–469.
- Rosen, S. (1974) Hedonic prices and implicit markets: Product differentiation in pure competition, *Journal of Political Economy*, 82(1), pp. 34–55.
- Rosen, S. (1979) Wage-based indexes of the urban quality of life, in: P. Mieszkowski & M. Straszheim (Eds) *Current Issues in Urban Economics*, pp. 391–429 (Baltimore, MD: Johns Hopkins University Press).

- Rosenthal, S. S. & Strange, W. C. (2004) Evidence on the nature and sources of agglomeration economies, in: V. Henderson & J. F. Thisse (Eds) *Handbook of Regional and Urban Economics*, Vol. 4, pp. 2119–2171 (Amsterdam: Elsevier).
- Sassen, S. (1991) *The Global City; New York, London, Tokyo* (Princeton, NJ: Princeton University Press).
- Sveikauskas, L. (1975) The productivity of cities, *Quarterly Journal of Economics*, 89(3), pp. 393–413.
- Van den Berg, L., Klaassen, L. H. & Van der Meer, J. (1990) *Strategische City-Marketing, Bedrijfskundige Signalemenen* (Schoonhoven: Academic Service).
- Van Dijk, J. & Pellenbarg, P. (2000) Firm relocation decisions in the Netherlands: An ordered logit approach, *Papers in Regional Science*, 79(2), pp. 191–219.
- Vreeker, R., De Groot, H. L. F. & Verhoef, E. T. (2004) Urban multifunctional land use: Theoretical and empirical insights on economies of scale, scope and diversity, *Built Environment*, 30(4), pp. 289–307.
- Wheeler, D. & Mody, A. (1992) International investment location decisions, *Journal of International Economics*, 33(1–2), pp. 57–76.