

Surveys and forecasting industrial property demand

Erik Louw*

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* OTB Research Institute for the Built Environment. Delft University of Technology. P.O. Box 5030, 2600 GA Delft. Email: e.louw@tudelft.nl.

1. Introduction

In spatial planning and commercial property markets demand forecasts are an important tool to make policy and investment decisions. However, in real estate research there is only limited attention for forecasts although in many textbooks there is a chapter about forecasts. In some cases modelling and forecasting is combined (see for instance: Brooks & Tsolacos, 2010). However, modelling and forecasting are often different techniques and may involve different attributes. What is of interest to make a forecast may not be of interest to model or vice versa.

From the scattered property research literature about forecast (for an overview see Louw, 2010), it seems that there are two types of forecasts. Those based on surveys and those based on econometric models. Surveys are often used to give short-term forecast for the short term (3-5 years), while model based forecasts are used to long term forecasts (10 year). The assumption behind this is that long-term forecast should include structural changes in demand, which are difficult to include in surveys. Often surveys are used to forecast the development of the current business cycle.

Although both models and survey information are used to make planning and investment decisions, often there is hardly any research on the accuracy of these forecasts. This is particularly true for the long-term forecasts. Regarding the short-term forecasts there has been some research on the accuracy of the so-called consensus-forecasts. These are surveys among experts, which give their personal forecast for a particular subject (for instance about rent-levels, performance indicators, etc.). In general, the experts agree with each other about the main trends in the predicted development. Their forecasts are accurate although there is a tendency to lag behind the real development (McAllister et al., 2008).

In the Netherlands surveys among business are used to obtain information about their location and property preferences. Some of these surveys are used to demonstrate demand for various types of commercial property for which spatial plans have to be prepared. Often these demand forecasts are disputed during the political decision processes. However, it is unknown how accurate these forecasts are. To my knowledge there is no research on the accuracy of forecasts based on business surveys. In this paper I will take the first steps to do so by using a survey that was executed among the same group of firms at regular intervals. With these data it is possible to compare revealed and stated preferences at the firm level and at the survey level.

The paper is organized as follows. In the next section I will describe the dataset. In the third section, the relocations will be analysed. The fourth section is about the differences between stated and revealed preferences of the firms, which had plans to relocate and actually did move. In the fourth section the attention goes to the stated and revealed preferences on the survey level. In the last section a summary is given and some conclusions are drawn.

2. The data

For our analysis, I use survey data from the former Chamber of Commerce Rivierenland. In 1997-1998, 2000, 2004 and 2007 this chamber held four almost identical surveys among all

companies in their region.¹ Rivierenland is situated in the middle of the Netherlands (see figure 1) and has the size of a Dutch NUTS 3 region. The river Rhine flows in the middle of the region. It is a rural area with four small towns: Tiel, Gorinchem, Culemborg and Leerdam.

Figure 1 Location of region Rivierenland in the Netherlands



The survey is called ‘Bedrijven onder Dak’ (BOD) which means “Firms under Cover”. This survey aims to analyze the demand for employment land and commercial property in the region. The four surveys used an almost identical questionnaire, in which firms were asked to answer questions about:

- Their current land and floor space use, and location.
- Their contentment with their property and location.
- Their plans for renovation, relocation or firm closure.
- If firms had plans for relocation their location and space preferences were asked.

¹ In 2008 this Chamber merged with the Chamber of Commerce Utrecht and is now called Chamber of Commerce Midden-Nederland (Kamer van Koophandel Midden-Nederland).

For the analysis I will use the data about plans to relocate and the preferences for new site as indicators for demand, because in planning it is assumed these plans and preferences are a good proxy for demand. However, this does not consider the in situ demand, which consists of expansion of the site and expansions of the buildings on site.

The response rates of the surveys were high, between 64% in 1997-1998 and 50% in 2000 (see table 1). This allowed us to make a dataset in which stated and revealed preferences of the same firms are included. This longitudinal dataset makes it possible to compare relocation plans of firms a moment t , with their actual behaviour at $t+1$ (see table 2). In this way a comparison between stated and revealed preferences of firms that relocated within the region is possible.

Table 1 Survey response survey Bedrijven onder Dak

	Number of returned questionnaires	Response rate
1997-1998	6,949	64%
2000	7,796	58%
2004	7,075	50%
2007	7,952	51%

Table 2 Longitudinal dataset for analysis of relocated firms

	Number of firms in dataset	Number of firms that relocated	Share of firms that relocated
1997-1998 and 2000	3,644	347	9,5%
2000 and 2004	3,011	324	10,8%
2004 and 2007	3,236	367	11,3%
Total	9,891	1,034	10,5%

The analysis has two stages. First it was investigated whether firms that stated that they wanted to relocate, actually did so. Second their stated and revealed preferences were compared at the firm and the survey level..

3. Relocations²

By comparing the addresses of the firms in these three datasets (table 2) we identified which firms had relocated. Relocation is moving to another building. So firms that moved within a building were not identified as moving firms in the analysis, but firms that moved within a street were. When we combine revealed and stated preferences for relocations there are four combinations (see table 3): expected moves (1), expected stays (4), unexpected stays (2) and unexpected or windfall moves (3). In a cross-sectional survey approach or just by measuring

² Part of this section is based on Goetgeluk et al., 2009.

relocations, these four combinations are never traced. In a cross-sectional survey approach the intension to move is seen as the forecast, while the actual relocations are the actual demand.

Table 3 Framework to analyse stated and revealed preferences

	Moved between moments t and t+1	Stayed between moment t and t+1	
Intension to move at moment t	Expected (1)	Unexpected (2)	Forecast
Intension to stay at moment t	Unexpected (Windfall) (3)	Expected (4)	
	Actual demand		

It was decided not to use the 1997-1998 survey data for the relocation analysis because it was less suitable for the analysis. Firstly it was not carried out at the same moment for all firms, but in the course of 2 years. This means that on the firm level there are differences in timespan to the next survey in 2000. Also the timespan between the 1997/1998 survey and the 2000 survey is significantly shorter than the timespans between the 2000 and 2004, and 2004 and 2007 surveys. These differences influence the probability of a relocation, because when the time increases the probability that a firm will relocate increases. Secondly, in the 1997-1998 survey some questions we want to use in our analysis are different to the 2000 survey. To investigate the divergence between stated and revealed preferences of firms that actually relocated, two datasets containing two successive surveys were made (2000 and 2004; 2004 and 2007).

Based on table 3, table 4 shows the aggregate results expressed in various figures for all sectors. First of all we show the absolute figures. Next we show column-shares. These reveal the share of windfall movers in the total sum of moves. Next we show the row shares. They reveal to what extent intended moves have been successful. Finally we show the total shares to give an impression what the actual shares of each 'event-class' are.

The conclusions are very unrevealing compared to the commonly used table 2. Of course the total rate of moves in both periods is equal to table 2. In both periods we see that the number of moves 11%. Given a 4-year period this is an average of less than 3% per year. This seems less than the Dutch average of 4%. However, we may relax this difference since the data are a subset of the whole population of firms in Rivierenland (table 2).

Table 4 Moving or not moving: 4 events for 2000-2004 and 2004-2007

Absolute figures			
	Moved 2000-2004	Stayed 2000-2004	Total
Intension to move 2000	54	160	214
Intention to stay 2000	270	2491	2761
Total	324	2651	2975
	Moved 2004-2007	Stayed 2004-2007	Total
Intension to move 2004	66	155	221
Intention to stay 2004	301	2689	2990
Total	367	2844	3211
Column shares (%/100)			
	Moved 2000-2004	Stayed 2000-2004	Total
Intension to move 2000	0.17	0.06	0.07
Intention to stay 2000	0.83	0.94	0.93
Total	1.00	1.00	1.00
	Moved 2004-2007	Stayed 2004-2007	Total
Intension to move 2004	0.18	0.05	0.07
Intention to stay 2004	0.82	0.95	0.93
Total	1.00	1.00	1.00
Row shares (%/100)			
	Moved 2000-2004	Stayed 2000-2004	Total
Intension to move 2000	0.25	0.75	1.00
Intention to stay 2000	0.10	0.90	1.00
Total	0.11	0.89	1.00
	Moved 2004-2007	Stayed 2004-2007	Total
Intension to move 2004	0.30	0.70	1.00
Intention to stay 2004	0.10	0.90	1.00
Total	0.11	0.89	1.00
Total shares (%/100)			
	Moved 2000-2004	Stayed 2000-2004	Total
Intension to move 2000	0.02	0.05	0.07
Intention to stay 2000	0.09	0.84	0.93
Total	0.11	0.89	1.00
	Moved 2004-2007	Stayed 2004-2007	Total
Intension to move 2004	0.02	0.05	0.07
Intention to stay 2004	0.09	0.84	0.93
Total	0.11	0.89	1.00

Source: Goetgeluk et al., 2009.

The column-shares show that in both periods of every 100 moves more than 80% are windfall moves. This indicates that a substantial part of the companies make plans to relocate and move within a period of 3-4 years. The row shares reveal the same problem. Of every 100 intentions to move only 25 to 30% actual is successful. So the majority of the firms that stated that they had plans to relocate actually did not move. This phenomenon is well known from longitudinal housing research. Goetgeluk (1997) and De Groot et al.(2008) show that

successful intended moves are approximately 35 à 55% of all moves in 1 or 2 years depending on the selection of respondents based on active searching. From the intended house moves between 35 and 55% actually did move. These figures indicate that differences between stated and revealed relocations seem to be larger among firms than among households.

Table 4 also shows that the time between surveys may of interest to evaluate their value for a forecast. For both combinations of surveys (2000-2004 and 2004 and 2007), the forecast based on the number of expected relocations is substantially lower than the number of firms that actually moved (actual demand). This may indicate that a timespan of 3-4 years between surveys is too long to forecast accurately the amount of relocations.³ Possibly this can also explain some of the differences between firms and households.

We can conclude that forecasting relocations based on intentions seems dangerous and that the range of the forecast is important. We can only relax if the choices made by successful movers do not differ from the windfall movers and their start situation is equal. And if this is not the case, we need to analyse to what extent substitution exists. To do this we have to analyse the various attributes of the preferences.

4. Stated and revealed attributes at the firm level⁴

In the survey only firms with relocation plans were asked to give there locational and accommodation preferences, which means that we only can compare stated and revealed preferences for the expected moves group (group 1 in table 3).

Most of the firms within the expected movers group had plans to relocate within 2 years. This indicates that decision about relocations are taken and carried out within a period of approximately 2 years. This time span is roughly the same as in housing research. Housing researchers call households who have plans to relocate beyond this time span ‘dreamers’ because they often have unrealistic preferences.

Because the number of firms within the expected moves group in the 2000-2004 and 2004-2007 dataset is too small (120) for a robust analysis, we had to include also firms form the 1997-2000 survey. This makes 275 cases suitable for analysis. However, as the analysis in the following sections will show, the number of companies that could be analysed is much lower. This is mainly due to non-response to several questions. This small number of cases limits our analysis, particularly in making a distinction between companies from various sectors or sizes.

In the remaining of this section I compare the stated and revealed preferences concerning the type of property use, the location and the land and floor space.

³ It can be assumed that while the timespan between surveys increases the amount of windfall moves will increase..

⁴ Part of this section is based on Louw, 2008.

Ownership or rent

At first we look at whether firms want to own their property or whether they want to rent property. About three-quarter of the firms wanted to own their property of which half wanted a parcel of land and build new property on it. Only a quarter had a preference for rental accommodation. In the next survey only 44% of the firm did own their property, while 56% rented their property (see table 5).

Table 5 Stated and revealed preference on ownership or rental of property arranged according to their revealed preference as percentage of all firms (N=124)* and percentage of realized stated preference (N=124)*

		Revealed preference			Realized stated preference
		Ownership	Rent	Total	
Stated preference	Ownership	43%	33%	76%	57%
	Rent	1%	23%	24%	97%
Total		44%	56%	100%	66%

* Some firms were indifferent whether they want to own or rent. For these firms it was decided that their revealed preference was also their stated preference in the table. Firms without a stated preference are excluded from the analysis.

Source: Louw, 2008.

For 66% of the firms their stated and revealed preferences are the same. Table 4 clearly shows that the stated preference for ownership is more difficult to achieve than the preference for rent: 57% of the firms that wanted to own their working accommodation achieved this, while almost all firms that wanted to rent achieved this preference. From the survey data there is no clear explanation for this. Although there is a question about the difficulties firms encounter during the realization of the relocation plans, for both stated preferences ownership and rent, 80% of the firm encountered difficulties during realization⁵. However, one can argue that it is more difficult to realize ownership by developing property by firms themselves, then to buy or rent existing property, due to the time consuming nature of the whole process⁶.

Location type

Firms were asked which type of location they preferred: a city / village centre, a residential neighbourhood, an industrial estate or the rural area. 54% of the firms wanted to settle on an industrial estate. 17% wanted to settle in city or village centre. The same amount of firms preferred the rural area and only 11% preferred a residential neighbourhood as their future location (table 6).

⁵ In the survey questions were asked about problems firms with relocation plans encountered during their search for a new working accommodating. For the firms who answered these questions we can assume that they were actively seeking a new accommodation.

⁶ The dataset does not allow to check whether the stated preference to built property by firms themselves was realized.

Table 6 Stated and revealed preference on preferred location type as percentage of all firms (N=184) and percentage of realized stated preference*

		Revealed preference					Total	Realized stated preference
		Centre	Residential neighborhood	Industrial estate	Rural area			
Stated preference	Centre	10%	4%	1%	2%	17%	61%	
	Residential neighbourhood	2%	7%	1%	1%	11%	62%	
	Industrial estate	5%	5%	40%	5%	54%	73%	
	Rural area	1%	3%	5%	9%	17%	53%	
Total		18%	19%	47%	17%	100%	66%	

* Firms without a stated preference were excluded from the analysis.

Source: Louw, 2008.

For 66% of the firm their stated and revealed preferences are the same. Although, this is the same percentage as with the ownership / rental preference, the difference in realized stated preferences between the four location types is less (see last column in table 5). The table shows that a stated preference for an industrial estate was realized most frequently, while it seems more difficult to realize a preference for settling in the rural area. This result corresponds with the Dutch planning policies which try to protect the rural area from sprawl and to concentrate new development to or near existing built up areas.

However, that does not mean that realizing a preference for an industrial estate is easy. 84% of the firms with a preference for an industrial estate encountered difficulties in their efforts to achieve this preference. This is only slightly lower than firms that had a preference for a city / village centre (85%) or the rural area (89%). Firms which had a preference for a residential neighbourhood encountered relatively few problems (59%). This can be explained by the fact that many firms in residential neighbourhoods are established in dwellings without specific working spaces. These are mostly firms within the service sector.

Industrial land

Not all firms that relocated were in pursuit for industrial land. Only firms that wanted to build their own property did so. That is 53% of the firms in our dataset. The dataset does not allow the check whether this is realized or not. It is only possible to check whether the property at the new location is owned or rented. Therefore it was not possible to restrict our analysis to the group of companies that build their own property. Instead a comparison between stated and revealed preference was carried out between those companies that were looking for building land in the first survey and the amount of land that these firms were using in the next survey, irrespective if the property is owned or rented.

Because the demand for land and the amount of land that they were using in the next survey are interval variables it is difficult to determine whether firms realized their stated preference or not. Also it is highly likely that firms use a kind of margin in their demand. When a firm states that it needs for instance 5,000 m² and it acquires only 4,900 m², will this be sufficient for this firm? When does it become insufficient; by 4,500 m² or less? And, what about the

situation when a firm acquires more land than it required? Is this convenient because there is more space to expand in the future, or is it inconvenient because the total costs for this land are probably higher? This problem of defining whether the stated preference is realized is further complicated by the observation that most firms probably round off their land use⁷. This concerns both stated and revealed preferences. For these reasons I calculated the revealed preference as percentage of the stated preference, which I call the stated – revealed preference ratio.

For 77 firms it was possible to compare their stated and revealed preference regarding their land demand and land use. Only three of these firms exactly realized their stated preference. 48 firms had a stated preference was higher than their revealed preference, which means that they had less land in use during the second survey than they stated to need in the first survey. In other words, they have a stated – revealed preference ratio below 100%. For 26 firms the reverse was the case. In total the firms had a stated demand for industrial land of 177,800 m². In the second survey they used in total 163,700 m² of land. That means that in total the stated preference was not realized: there is a deficit of 14,100 m² or 8%. The accumulated stated – revealed preference ratio therefore is 92%.

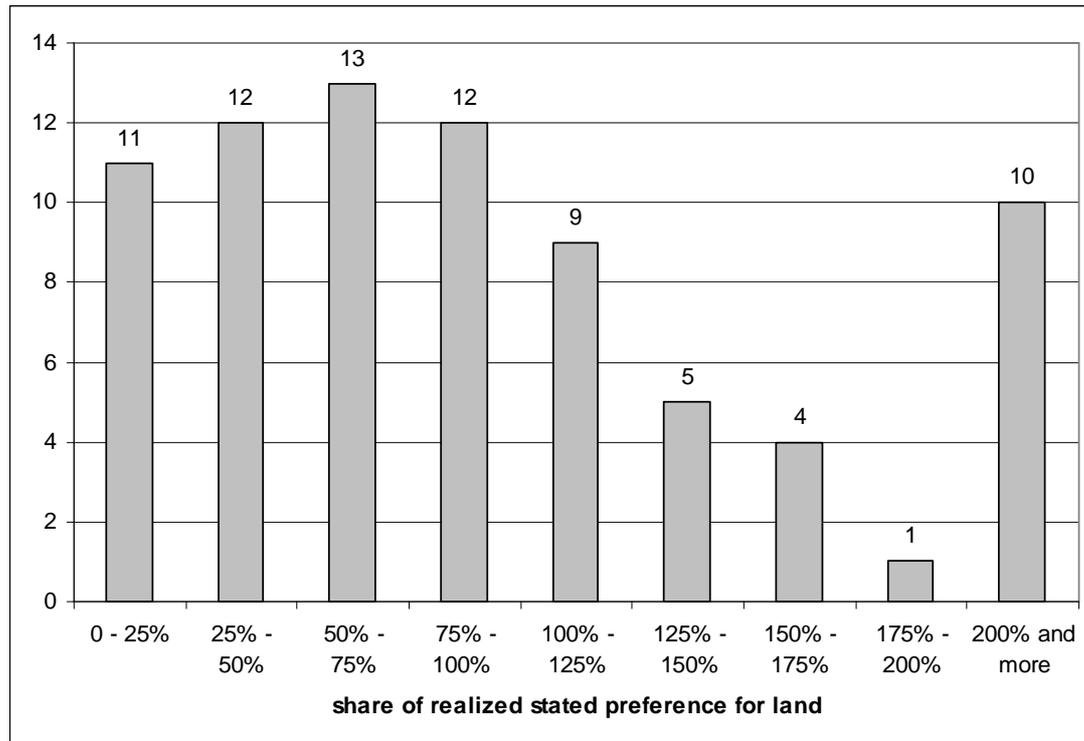
Looking at the level of the individual firm there are huge differences between stated and revealed preference. Figure 2 shows that 23 firms (30% of the firms) have a stated – revealed preference ration of less than 50%, which means that they realized 50% of less land than their stated demand. On the other hand 10 firms realized more than double the amount of land in use compared to their stated preference 3-4 year earlier. Only 27% of the firms realized between 75% and 125% of their stated preference. It was expected that the histogram in figure 2 should have a bell shape with 100% in the middle. However, a clear bell shape did not occur and there is some asymmetry. It seems therefore that the stated preference hardly corresponds with the revealed preference a couple of years later at the level of the individual firm. In theory, there are several potential explanations for this:

- Firms have unrealistic high stated preferences which explain that most firms use less land than their stated demand.
- The supply of land (dimensions of the plots) does not match demand. This seems particular true for the smaller plots.⁸
- The rounding up of stated and revealed preferences for land has a systematic bias.
- Stated preferences changed after the first survey. There can be two reasons for this: (1) due to the internal development of firms for instance growth or decline in the number of employees and (2) to adaptation of the stated preference to supply. These changes in stated preferences were observed by Louw (1996) during his research among relocating office firms.

⁷ Most amounts of land (in m²) ends with one or two zeros.

⁸ Although the numbers are small, it seems that firms that had a stated preference for small plots (less than 500m²) more frequently had a stated – revealed preference ratio above 100%.

Figure 2 Number of firms by share of realized stated preference for land (N=77)



Source: Louw, 2008.

However, compared to the differences between stated and revealed preferences at the firm level, the accumulated difference of 8% is relatively small. This indicates that survey as ‘Bedrijven onder Dak’ are a useful tool in forecasting the demand for industrial land for the near future under the condition that the accumulated stated land demand of firms that wanted to relocate but did not, is not significantly different from the revealed land use of firms that did not want to relocate but actually did.

Floor space

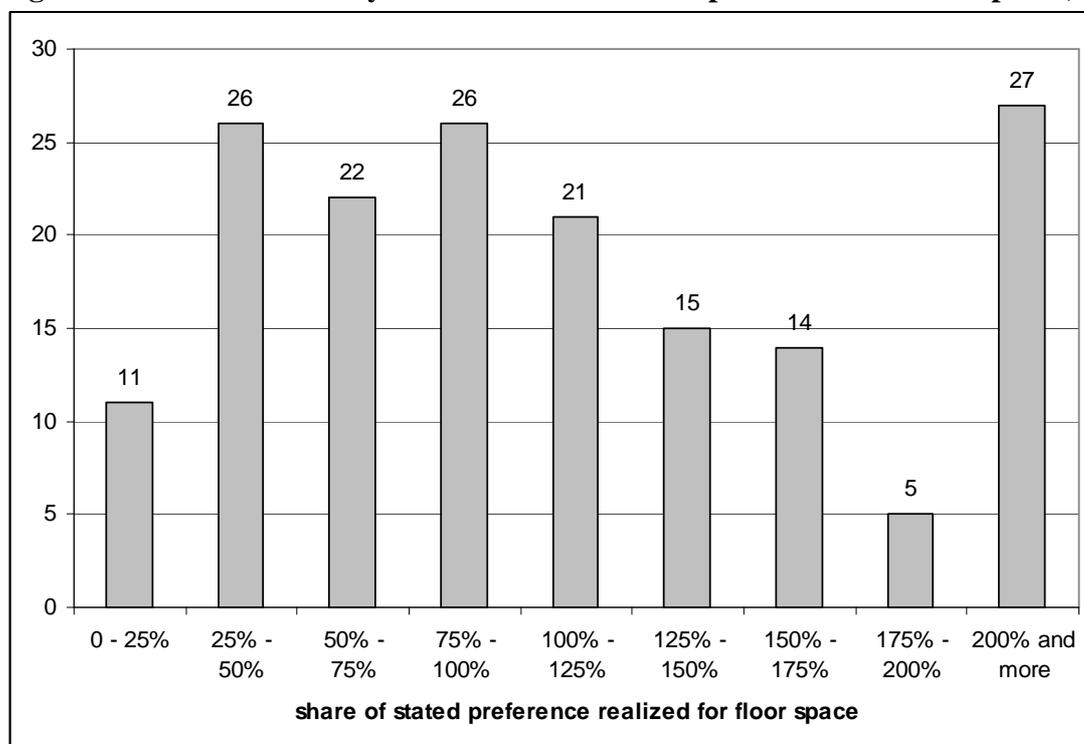
The dataset contains stated and revealed preferences for floor space of 167 firms. This floor space maybe owned or rented. The same difficulties in assessing the amount of land in the survey which were detected in the previous section, apply to the amount of floor space. However the data suggest that amount of floor space are rounded up less than amounts of land. It seems therefore that floor space data are more accurate than land data.

In total 8 of the 167 firms realized exactly their stated preference. 85 firms realized less floor space than their stated demand and 74 firms realized more floor space than their stated demand. In total the firms stated that they demanded 156,100 m² of floor space. In the second survey they used in total 120,500 m² of floor space. That means that in total the stated preference was not realized: there is a deficit of 36,600 m² or a stated – revealed preference ratio of 77%. This accumulated deficit of 23% is much larger than in the case of industrial land. However, 27,800 m² of this deficit is due to one logistics firm. Excluding this firm

makes the deficit much smaller: 7,800 m² or a ratio of 93%. This ratio is almost the same as the ration for land, which is 8%.

At the level of the individual firm there are huge differences between stated and revealed preference (figure 3). Only 28% of the firms realized between 75% and 125% of their stated preference. 11 firms (7%) of the firms realized less than 25% of their stated demand for floor space, while 27 firms (16%) realized more than double of their stated demand for floor space. So, we can conclude the same as with land that at the level of the firm that the stated preference hardly corresponds with the revealed preference a couple of years later. The same four potential explanations as with land apply.

Figure 3 Number of firms by share of realized stated preference for floor space (N=167)



Source: Louw, 2008.

5. Forecast and actual demand at the survey level

In the last section I only looked at the stated and revealed preferences of the expected moves group. However according to table 3 this is only a part of the forecast (based on preferences) and the actual demand (based on all relocations). So the question is: Does the forecast of the survey equals the actual demand? In table 7 I present the forecasts and the actual for land and floor space demand based on the survey data. The difference between forecast and demand is again measure in the stated – revealed preference ratio.

Table 7 Forecast and demand for land and floor space in surveys 2000-2004 and 2004-2007 in m².

2000-2004 land

	Forecast	Demand	Ratio
No intension/moved		166,767	26%
Intension to move/not moved	632,650		
Intension to move/moved	117,828	167,577	142%
Total	750,478	334,344	45%

2000-2004 floor space

	Forecast	Demand	Ratio
No intension/moved		43,310	9%
Intension to move/not moved	465,943		
Intension to move/moved	109,019	81,423	75%
Total	574,962	124,733	22%

2004-2007 land

	Forecast	Demand	Ratio
No intension/moved		290,501	104%
Intension to move/not moved	278,235		
Intension to move/moved	48,390	121,108	250%
Total	326,625	411,609	126%

2004-2007 floor space

	Forecast	Demand	Ratio
No intension/moved		168,058	114%
Intension to move/not moved	147,141		
Intension to move/moved	42,284	49,486	117%
Total	189,425	217,544	115%

Table 7 shows mixed results. At first, there is a difference between the 2000-2004 surveys and the 2004-2007 surveys. The 2004-2007 data show in all cases a ratio higher than 100% which means that demand in 2007 was higher than the forecast in 2004. The 2000-2004 data show in almost all cases the opposite. This is strange because one should expect a higher ratio when the period between surveys is larger. A possible explanation is that the Dutch economy was in recession at the beginning of this century and that firms delayed or postponed their relocation. A detailed analysis of the firms that intended to move but did not show that in particular some larger firms with a large stated preference for land and/of floor space belong to this group.

A second conclusion from table 7 is that in the expected moves group (intension to move / moved) in three out of four cases the demand is larger than the forecast. There is no clear explanation for this phenomena, other than the non-response for the 'forecast question'.⁹

⁹ The data in table 7 includes these non-responses because I aim at analyzing the survey results in total and not the firm behavior as in section 4. In section four the non-responses were taken out of the analysis.

A third conclusion from table 7 is that the forecasts for land aren't better or worse than the forecast for floor space.

The results from table 7 significantly differ from the conclusion from the analysis in section 4. The ratio's in section 4 are generally closer to 100% than the ratio's in table 7. A possible explanation is that the four groups in table 3 differ in their starting position and their final choices. For this analysis, I have made sheets in which these groups can be compared. The sheets are shown in the appendix.

The top of the sheet shows the starting point (2000, 2004) for land and floor space for each sector. Only those firms are included that wanted to move and whose preferences were valid. So the sheets show the starting points (2000 or 2004) for all groups. The differences between the sectors are largely based on their share in the dataset. However, some preferences are less likely to be mentioned than others controlled for a sector. We may assume for instance land that is less interesting for services than for industry.

Below the graphic on top the main point of interest is depicted. It contains four rows and three columns. The rows define the four groups we identify in table 3: expected moves (search-moved), un-expected stays (search-stayed), un-expected moves or windfall movers (no search-moved) and expected stays (no search-stayed). The columns express start and end state. The first one shows the situation in 2000 or 2004. The third column shows the situation in 2004 or 2007. The central column shows the preferences in the years 2000 and 2004. The combination logically excludes some columns for specific rows. Firms that have not stated to move lack the central column. However, they differ with respect to the end-state: windfall-movers have moved! The graphics reveal on the rows substitution of preferences, in the column it shows to what extent the four groups of firms differ.

Land

At the starting situation (2000 or 2004) the four groups do not differ that much. This means that we must concentrate on choices of the expected moves (search-moved group) and the windfall movers (no search-moved group). In general, firms that intended to move want larger plots than they have. However, stated and revealed preferences do not match. Substitution is solving this mismatch. The shares of all three plot-sizes increase at the same rate. This contrasts with the windfall movers group, where there a relative great resemblance between the starting position and the end situation.

We draw two conclusions. Forecasting total demand for accommodation based on the expected moves group is not advisable based on one hand on the rate of substitution and the different choices windfall movers make. Second, we notice a general preference for more space, but the majority of firms not even consider this preference as important.

Floor space

We discern that all four groups differ in the starting year of each period with respect to the floor space. The expected moves group (search-moved) significantly is found in segment '70-250 square meters,' while the unexpected stay group (search-stayed) has a significantly large share of 250 square meters and more. Both have a very small share in accommodation at /

near home. If we compare them with the windfall movers then again they differ. So, intended movers are the larger firms in the data set.

The intended movers indeed want more space. In both cases, the preference structure is simple in its ranking: 250 square meters or more, 70-250 square meters and finally till 70 square meters. The 'function' is for the largest firms simple: double my floor space! Do they succeed? Yes. If they move on the aggregate they gain floor space. The segment 250 square meters or more has a higher likelihood than 70-250 square meters. Surprisingly in both periods, accommodation at/near home is a choice as well. Another important observation – a surprising observation – is that in 2004-2007 the share 70 square meters or less has increased. Finally, we have to conclude again that windfall movers differ from the other group.

We draw two conclusions. Forecasting total demand for accommodation based on the group expected moves is not advisable based on one hand on the rate of substitution and the different choices windfall movers make. Second, we notice a general preference for more space, especially for the larger firms.

6. Summary and conclusions

The aim of this paper is to increase the knowledge about industrial land and floor space forecasting. From the rare research on this subject it is known that the knowledge about factors that influence demand and techniques that model demand is not available in abundance. However, different kinds of models are used extensively in practice. This paper focuses the difference between of stated and revealed preferences. In planning practices stated preferences are often used to forecast land and floor space demand on a short term basis (approximately 3 to 5 years).

The surveys, on which the datasets that were used in this paper, were conducted with this aim in particular. Because the surveys were held regularly and the response rates are high, individual firms can be followed through time. So it was possible to put together a panel dataset of firms with stated and revealed preferences. The analysis of this dataset shows that in general stated and revealed preferences for property ownership or rent and location type did match very well. However, preferences for rent are realized more often than preferences for ownership.

Whether stated preference matched with revealed preferences for land and floor space was more difficult to determine. At the level of the individual firm, there are huge variations in the stated – revealed preference ratios. Some firms only realized only 20% of their stated demand, while others realized double the amount of land or floor space (200%) they initially wanted or more. However, the accumulated stated preference for both land and floor space was only slightly above the accumulated revealed preference. This indicates that stated preferences seem to be useful and reliable to predict demand in the near future.

However, this conclusion is valid for the group of firms that had the intention to move and actually did relocate. This leaves two other groups out of consideration:

- The unexpected stay group. This group of firms had plans to relocate, but did not realize this plan.
- The unexpected or windfall relocations group. This group did not had plans to relocate but actually did move.

If the survey forecast should be accurate the initial situation, preferences and the choices of these two groups should be almost equal to the expected moves group. This means that:

- The initial situation of the expected movers group, the unexpected stay group and the windfall moves group are more or less the same (the groups are not homogeneous).
- The stated preferences of the expected moves group and the unexpected stay group are more or less the same.
- The stated preferences of the expected moves group and the windfall movers are more or less the same.

Unfortunately these conditions are not met. The windfall movers differ substantially from the unexpected stay group, while at the same time these two groups also differ substantially from the expected movers group. Also the group of windfall movers is much larger than the search-moved group.

Another, complicating factor is that the preferences seem not stable over time, but show considerable changes. Although, this can be due to a composition effect we should be careful because preferences seem not stationary.¹⁰ Also important for the accuracy of a forecast are:

- The time period to which the forecast applies.
- The state of the economy (during a recession firms postpone relocations).

Although it seems that forecasts based on surveys are inadequate, this conclusion is only partially true because with the expected moves group the aggregated stated and revealed preferences of land and floor space are almost equal. This means that future research has to concentrate on two issues:

- We have to shift more to the micro-level and longitudinal approaches to understand search and substitution behaviour. Efforts in modelling the demography of firms show that this may be far more complex than the housing market modelling. Still, analytical models applied in housing studies may suit well. It might well be that existing macro models might be improved with micro-analysis.
- We have to look deeper in the decision process of moving, postponing or abandoning relocations.

¹⁰ See also: Louw, 1996.

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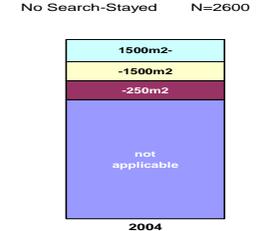
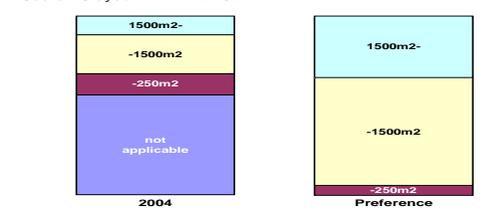
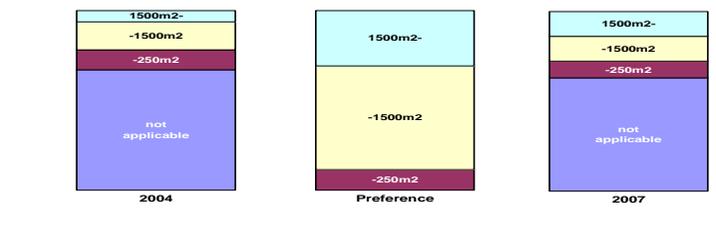
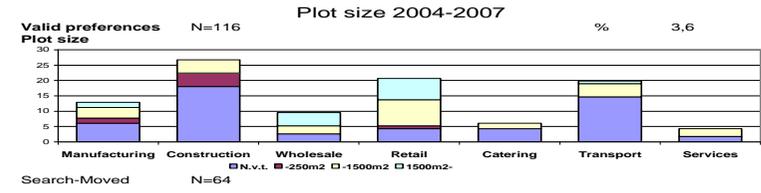
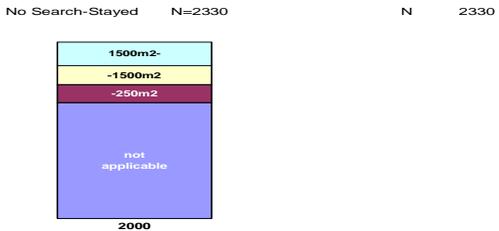
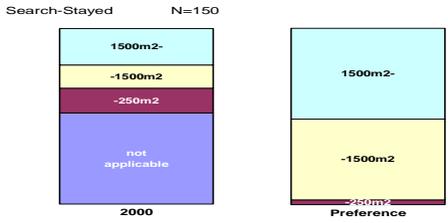
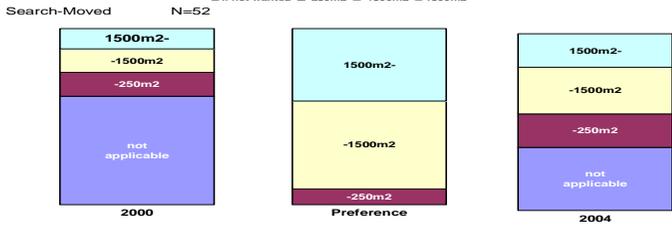
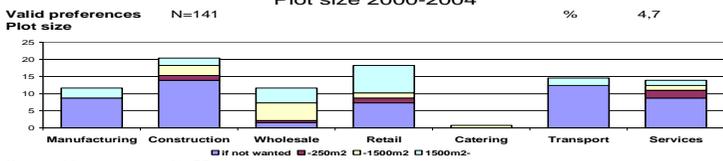
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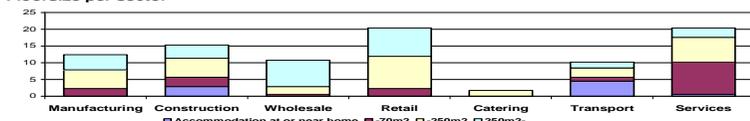
Fact sheet 4



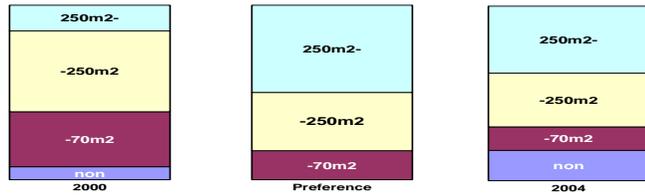
Fact sheet 3

**Valid preferences
Floorsize per sector**

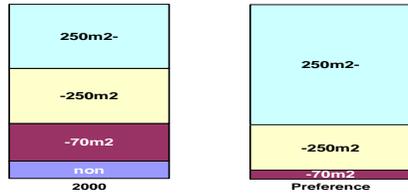
Floorsize 2000-2004
N 181 % 6,0



Search-Moved N=54



Search-Stayed N=152



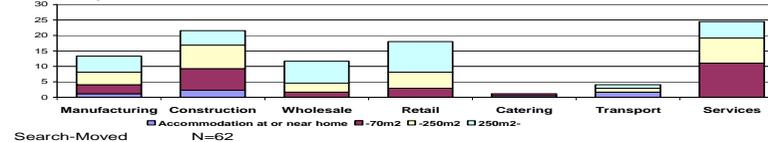
No Search-Moved N=249



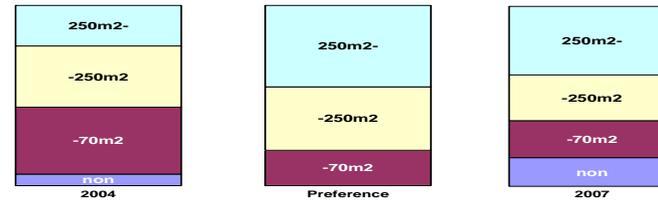
No Search-Stayed N=2218



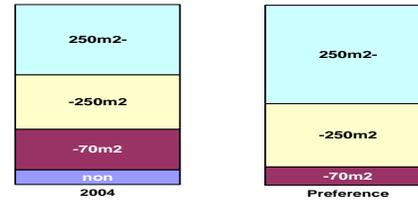
**Valid preferences
Floorsize per sector**
N 180 % 5,6



Search-Moved N=62



Search-Stayed N=146



No Search-Moved N=285



No Search-Stayed N=2507

