

Working Papers in Real Estate & Planning 02/08

The copyright of each Working Paper remains with the author.

If you wish to quote from or cite any Paper please contact the appropriate author.

In some cases a more recent version of the paper may have been published elsewhere.



Spatial Concentration in Institutional Industrial Real Estate Investment in the England and Wales

Peter Byrne* and Stephen Lee**

**A Paper given at the
15th Annual Meeting of The European Real Estate Society (ERES)
Krakow, June 2008**

Abstract

In two recent papers Byrne and Lee (2006, 2007) examined the geographical concentration of institutional office and retail investment in England and Wales at two points in time; 1998 and 2003. The findings indicate that commercial office portfolios are concentrated in a very few urban areas, whereas retail holdings correlate more closely with the urban hierarchy of England and Wales and consequently are essentially ubiquitous. Research into the industrial sector is very much less developed, and this paper therefore makes a significant contribution to understanding the structure of industrial property investment in the UK. It shows that industrial investment concentration is between that of retail and office and is focussed on LAs with high levels of manual workers in areas with smaller industrial units. It also shows that during the period studied the structure of the sector changed, with greater emphasis on the distributional element, for which location is a principal consideration.

Keywords: *Industrial, Institutional Investment, Spatial Concentration*

*** Centre for Real Estate Research, Department of Real Estate & Planning,
University of Reading Business School, Reading, RG6 6AW, UK
Phone: +44 118 378 6340, E-mail: P.J.Byrne@reading.ac.uk**

****Real Estate Investment and Finance Group, Faculty of Finance,
Cass Business School, City University, 106 Bunhill Row, London, EC2Y 8TZ, UK
Phone: +44 20 7040 5257, E-mail: Stephen.Lee.1@city.ac.uk**

Spatial Concentration in Institutional Industrial Real Estate Investment in the England and Wales

1. Introduction

In two recent papers Byrne and Lee (2006, 2007) examined changes in the geographical concentration of institutional office and retail investment in England and Wales by looking at the two years 1998 and 2003. The findings show firstly that there were quite substantial structural changes between the two years and secondly that commercial office portfolios are concentrated in very few urban areas, whereas retail holdings correlated more closely with the urban hierarchy of England and Wales. Office investment tends to be significantly related to the local authorities' employment characteristics, especially service sector employment, whereas retail investment is focussed on urban areas with populations that have more to spend, with only rateable value common to both investment strategies, i.e. institutions prefer local authorities with larger properties. This largely confirmed previous studies in the US and UK.

This paper carries on these previous studies by examining the third major institutional real estate investment sector – Industrial – at the same two dates; 1998 and 2003. It uses the same two real estate data sources; floor space and rateable value statistics at the Unitary Authority and District level (ODPM, 2005); and the institutional real estate investment data from the Investment Property Databank (IPD) *"UK Local Markets 2004"* (IPD, 2004a). Using these two data sets this paper is able to report complete coverage for both taxation data and the IPD universe of industrial investment for all LAs in England and Wales at both dates. It should be noted that the IPD data represents approximately 40% of institutional direct investment in UK real estate and the picture that is shown is a reflection of this.

The remainder of the paper is organised as follows. The principal datasets used are discussed in the next section. Section 3 presents an analysis of the spatial concentration. Section 4 examines some of the economic characteristics of the local markets making a comparison with the other principal real estate investment sectors. Section 5 concludes the paper.

2. Data

In order to examine the spatial concentration of institutional Industrial investment in the England and Wales two datasets are used at two dates; 1998 and 2003. The analysis is confined to England and Wales because of data considerations relating to the availability of comparable data for the rest of the UK.

The first dataset relates to floor space and rateable value statistics for the so called 'bulk classes' of commercial property at Unitary Authority and District (local authority area, LA) level (ODPM, 2005)¹. Rateable values are the basis for the national commercial real estate tax in England and Wales - the 'Business Rate'. This tax is based on an assessment of 'rateable value' (RV), which in turn is derived from a hypothetical rental valuation of a unit of real estate known as an 'hereditament'. At the time of valuation the RV is often close to the open market rental value. The valuation assessment is carried out at regular intervals of five years. The latest relates to values in 2003, and came into legal force in 2005, but were unavailable in a form suitable for this study. The data used in this paper are from the previous re-

assessment carried out in 1998, which actually came into force for the determination of the Business Rate in 2000. Although the rental valuation is carried out as at the base year, the aggregate statistics are updated annually and change as new hereditaments enter the database, and some drop out. The data are broken down by sector; the data used here are for the industrial sector only. There are several significant features of these data. First, they are, with some qualifications, a strong proxy for rental value, at least at points in time, and from the rental value the overall capital value may be estimated. Secondly, the RV of any hereditament in England and Wales is a rare public real estate statistic, which can be obtained online or from the relevant local authority. Finally, and perhaps in the context of this paper most important, the data are defined spatially, providing complete coverage for LAs in England and Wales. The hereditament as a spatial unit is difficult to define, but it is essentially a legal entity consisting of one taxable occupancy. This means that in some cases a building with several tenants may have multiple hereditaments. Given this complication, these data are used here mainly to set a context for comparing the scale of institutional activity in particular LAs, since they do present good measures of the totality of relevant industrial space in a LA, even if an element of multiple counting may be present.

In 2003 there were 466,371 industrial hereditaments in England and Wales with a total floor space of 381.3m square metres; a total RV of £10.31bn and an estimated capital value of around £130bn (Key and Law, 2005). Within these bulk classes are Factories, ranging from small workshops to very large manufacturing units and Warehouses, comprising both small storage units and depots, and very large distribution warehouses.

The more specific institutional real estate investment data for this study come from the IPD analysis “*UK Local Markets 2004*” (IPD, 2004, with modifications). This provides a detailed view of the performance of institutional real estate investment, by sector, in a number of localities across the UK.

Results are published annually for all LAs with four or more properties in institutional ownership. Thus in 2003, for all industrial in England and Wales, there were data for 94 LAs, from a total of 376 (25%). For the purposes of this study, IPD made data available showing (but with much less detail) other LAs where the number of properties held was greater than zero, but less than the four required normally for disclosure. In 2003 there were 97 of these, making a total of 191 (50.8%) with *some* institutional ownership. In the IPD universe in 2003 there were 2,654 industrial properties in England and Wales with a total floor space of about 24.99m square metres and an estimated capital value of approximately £16.21bn. Thus, although the institutional ownership was less than 0.6% of the total number of taxable units, that ownership was worth about 12.5% of the estimated capital value of the sector.

The comparator year is 1998, chosen because this is the year to which the rateable value data relates directly. There are considerable differences between the *Local Markets* in the two years. In 1998 there were 2,384 industrial units with a total floor space of about 16.7m square metres and an estimated capital value of approximately £10.07bn. Hence, the number of industrial properties in the IPD database rose by 11.33% between 1998 and 2003, but the overall amount of space increased by 49.7%, and the capital value rose by 61.1%. In marked contrast, the numbers of retail and offices in the IPD database fell, by 40% and 23% respectively, between 1998 and 2003: the overall amount of space increased by only 14.5% and 7.5%, with capital value rising by 33.6% and 12.4%.

As the various figures for these two years suggest, this was a period when significant

'adjustments' were taking place in the shape (and scale) of institutional real estate investment. The changes in the industrial sector across the study period can be seen at an aggregate level in Table 1 which uses the categorisations employed by IPD to segment the industrial property sector. Thus the data in this table are subdivided geographically using the IPD 'super-regional' groupings, which divide the UK into rather few areas, dependent upon the sector being considered. The segments used are also the IPD standard set.

**Table 1: IPD Universe: Industrial
Net Investment as % of Capital Value by Sector/Segment: 1998 - 2003**

	1998	1999	2000	2001	2002	2003
Standard Industrials	6.91	5.24	9.27	4.93	7.10	1.73
London	10.39	4.73	13.08	4.47	3.58	4.18
Southern England	6.24	1.67	5.93	3.41	6.00	-2.29
Rest of UK	5.73	11.16	11.36	7.40	10.90	4.94
Distribution Warehouses	13.39	5.12	9.54	5.78	4.99	-6.52
Total	8.24	5.21	9.32	5.09	6.71	0.30

Source: IPD (2004b)

By reviewing these groupings, it is possible to see something of the pattern of main structural changes that were taking place in institutional industrial investment between the two dates. While the relative investment throughout the period was usually positive, it will be noticed that Southern industrial suffered negative investment in 2003, which was related principally to regional variations in returns. Unusually, 2003 also saw a reduction in exposure to the newer industrial – distribution warehouse – category. 2003 was a year of overall net disinvestment from the direct market, but IPD noted a broad correlation of investment with relative performance, and given the stronger returns to industrial noted below, this is what is observed in Table 1 (IPD, 2004b). Over the period, London and Southern Industrials were consistently amongst the best performing segments, with returns greater than 12% in every year. All Industrial was the best performing major sector over the period, averaging 12.2% total return in the study period. It also had the lowest risk, with a ten year standard deviation to 2003 of just 5%. In the long term, portfolio weight (by capital value) in industrial had varied between 10 to 15%. Over the period there was a steady increase in this portfolio weighting, reaching a new peak in 2003 of 15.7%.

While Table 1 uses aggregated data, the rest of this study uses data compiled at the LA level.

3. The Pattern of Institutional Industrial Investment in England and Wales

In order to discover whether institutional investors concentrated their industrial real estate holdings in a relatively small number of (urban) areas (which is clearly the case in the office sector) the number of industrial properties in the IPD database in each of 376 LAs in England and Wales in 1998 and 2003 was established. The results are presented in Figures 1, 2 and 3 and Tables 2 and 3.

Figures 1 and 2 show the spatial distribution of industrial numbers across England and Wales in 1998 and 2003 respectively and both Figures show a limited amount of spatial spread, in the sense that the majority of LAs have only a small number of properties and only a very few have relatively large numbers. The nature of the spread is discussed in more detail below. Figure 3 shows the difference between Figures 1 and 2, revealing those areas where institutions changed the numbers of investments held between the two years. This map should be viewed alongside Table 2.

Table 2: Industrial Concentration in England and Wales: 1998 and 2003

Num. of Offices	England		Wales		E&W	
	1998	2003	1998	2003	1998	2003
0	109	92	9	2	118	94
1-3	79	88	9	9	88	97
4-9	86	83	3	8	89	91
10-19	55	62		3	55	65
20-39	15	18	1		16	18
40-59	8	8			8	8
60-79	2	3			2	3
80-99						
100-199						
200-399						
>400						
Total	353	353	22	22	376	376

Note: For comparability Table 2 uses the same categorisations as in Byrne and Lee (2006, 2007)

Table 2 shows a number of features of interest. Of the 376 LAs in England and Wales, the IPD data show that, in 1998, 118 (31%) had no institutional industrial investment, while 206 (55%) had three or fewer industrial holdings and 295 (78%) had less than 10 industrial holdings. In Wales, there were 9 LAs with no industrial investment but only 3 (14%) with 10 or more. In England 109 (31%) LAs had no holdings, and there were 274 (77%) with less than 10 properties, and only 2 (1%) with more than 60.

Table 2 also shows that in the intervening period institutional industrial investment became somewhat less concentrated. By 2003, 94 (25%) of the LAs in England and Wales had no institutional industrial investment, a result reflected across both countries. England had 92 (31%) authorities with no institutional industrial investment. The comparable figures for Wales show that there were 2 LAs (9%) with no institutional investment by 2003. The number of English LAs with 3 or fewer industrial holdings increased by 2003 (88 compared with 79 in 1998), while the number with 4-9 properties showed a slight decline (86 to 83). In contrast, Wales saw an increase in the 4-9 category from three 1998 to eight by 2003. Thus, in the five years from 1998 to 2003 institutional investors noticeably altered their industrial holdings in the LAs of England and Wales.

The comparable figures for institutional *office* investment present a completely different picture. Of the 376 LAs in England and Wales 45% had no institutional office investment in 1998, and 68% had three or less office holdings and 89% had less than 20 offices. By 2003, 56% of the LAs in England and Wales had no institutional office investment. The number of LAs with three or fewer office holdings

fell by 2003, while the number with 4-9 properties had increased. In contrast, the IPD data show that in 1998 only 8% had no institutional retail investment, while 17.5% had three or fewer retail holdings and 47% had less than 10 retail holdings. In Wales, there were no LAs without retail investment but 32% had three or less, while two LAs had more than 40 properties. The findings indicate that commercial office portfolios are concentrated in very few urban areas, whereas the retail holdings were more evenly spread across England and Wales.

The changes in industrial allocation between 1998 and 2003 in Table 3 show that 143 (38%) LAs show an increase, with 38 (10%) seeing a new allocation. At the same time, there was a reduction of holdings in 106 (28%) of LAs, with 14 seeing a reduction to zero. The spatial extent of this is seen in Figure 3.

Table 3: Changes in Industrial Allocation: 1998 to 2003

Changes: 1998 to 2003	England	Wales	E & W
Unchanged:	121	6	127
of which no holding on either date	78	2	80
Reduced holding:	104	2	106
of which holding reduced to zero	14	0	14
Increased holding:	129	14	143
of which new allocation	31	7	38

Table 4 shows the concentration of institutional industrial investment in the top 30 LAs in 1998 and 2003; as measured by the number of properties (No.), capital value (CV) and floor space (FS).

Table 4: Concentration in Top 30 Local Authorities: 1998 and 2003

	1998			2003		
	No.	CV	FS	No.	CV	FS
Top 5	11%	13%	13%	12%	16%	14%
Top 10	20%	24%	23%	21%	26%	24%
Top 15	28%	33%	31%	27%	34%	31%
Top 20	34%	39%	37%	32%	40%	37%
Top 25	38%	45%	42%	36%	45%	42%
Top 30	42%	49%	47%	40%	50%	46%

Table 4, like Table 2 and Figure 1, shows that in 1998 institutional industrial investment was quite evenly spread across LAs of England and Wales, with the top five markets by number accounting for only 11% of the institutional retail investment, as measured by number of properties but 13% by floor space capital value. The top 10 markets accounted for about 20% by the number of properties, but about a quarter by floor space and value, while the top 30 LAs accounted for over 40% of the investment, by number, and nearly half by floor space floor space and value. The figures for 2003 show very little change from those for 1998, if spatial spread is measured by the number of properties or floor space. This again supports the observation from Table 2 that institutional Industrial investment is not greatly dissimilar in both periods. This suggests that institutions invest in only a few industrial buildings in each LA and that these tend to be higher value and quality investments. This is reinforced by the fact that the average size of industrial holdings increased by 34 % between the two dates.

The previous work referred to earlier showed that institutional *office* investment was considerably more concentrated. In 1998 the top five markets accounted for just over 40% of sector investment, as measured by number of properties or floor space, but 58% by value, while the top 30 LAs accounted for three-quarters of the investment, by number and floor space, and 84% by value. In contrast, *retail* investment was quite evenly spread across LAs of England and Wales, with the top five markets accounting for only 11% and 12% of the institutional investment, as measured by number of properties or floor space, but 17% by value. The top 30 LAs accounted for about one-third of the investment, by number and floor space, and just under half by value.

Tables 2 to 4 show that investors focus on a limited number of LAs when investing in industrial buildings and that this has become slightly more concentrated over time, but they do not show the extent to which their investment is an over- or under-representation of industrial investment in a particular local authority relative to some measure of spatial spread across England and Wales. In order to do this, Location Quotients (LQs) are calculated using the following (generalised) formula (see, Isard, *et al.*, 1960):

$$LQ = \frac{\text{Spatial Measure of Interest}}{\text{Alternative Measure of Spatial Spread}}$$

An LQ of 1.0 would imply that the number of industrial holdings in the local authority was proportional to the alternative measure of spatial dispersion; thus an LQ greater than 1.0 suggests over-representation and an LQ less than 1.0 suggests relative under-representation in a given local authority.

A number of different LQs are calculated for each of the 375² LAs in England and Wales for which data were available: the number of industrial properties; the market value; floor-space. The first three approaches use data in the numerator and denominator that are as close as possible to each other in each case. So for example, when the number of institutional industrial property holdings from IPD is used in the numerator the number of hereditaments is the denominator. The second LQ uses the IPD market values of the industrial properties in the numerator and rateable value (as a proxy for capital value) in the denominator. The third LQ uses institutional (IPD estimated) floor-space and Local Authority floor-space. These three sets of LQ estimates therefore provide a more detailed view of the results presented in Tables 2 to 4. The results of each LQ calculation for the 1998 and 2003 data are given in Table 5.

Table 5 presents summary statistics for the LQ calculations in 1998 and 2003. As shown in Table 2, there are a number of LAs that have no institutional industrial investment. Therefore Table 5 presents two sets of statistics for each variable. The first set is based on all observations including markets which have zero investment (Panel A). A second set of complementary statistics (Panel B) are presented for the subset of LAs which have non-zero institutional industrial real estate investment.

Panel A of Table 5 shows that although all the LQ measures are in excess of one they are insignificantly different from one, at the usual level of significance. This indicates that institutional investors were effectively fully diversified in 1998 and 2003. Nonetheless, all the LQs show significant positive skewness. This points to large LQ values in some LAs, and this suggests that a small number of LAs were the preferred locations for institutional investment.

Table 5: Industrial LQs in England and Wales: 1998 and 2003

Panel A: Including zeros	Average	SD	Skew	T-stat.	Count
1998					
No. of properties	1.17	1.81	2.69	1.78	375
Capital value	1.18	3.07	9.01	1.16	375
Floor space	1.08	1.85	3.38	0.83	375
2003					
No. of properties	1.13	1.68	2.75	1.48	375
Capital value	1.20	3.13	8.23	1.25	375
Floor space	1.07	2.07	6.33	0.69	375
Panel B: Excluding zeros	Average	SD	Skew	T-stat.	Count
1998					
No. of properties	1.70	1.97	2.33	5.68	258
Capital value	1.72	3.57	7.88	3.24	258
Floor space	1.57	2.05	2.95	4.45	258
2003					
No. of properties	1.50	1.78	2.49	4.71	282
Capital value	1.60	3.52	7.38	2.85	282
Floor space	1.43	2.28	5.88	3.15	282

Note: Floor space data is not available from IPD for all LAs

The results presented in Panel B of Table 5, which exclude those LAs with no institutional allocation, have higher average LQs compared with Panel A, and suggest that institutional real estate portfolios over-diversified. In addition, the positive skewness statistics indicate that even within the LAs which are favoured by institutions there are some that are more preferred to others. Institutions are fussy about the type of industrial units that they acquire in each LA. The Spearman rank correlation between the various LQ statistics is high (in excess of 0.8) and suggests that, with a few exceptions, the different data sets provide similar measures of institutional industrial concentration across the UK.

To make these LQ calculations comparable with those in the previous studies by Byrne and Lee (2006, 2007) and previous studies in the US, the LQs are recalculated using employment and population as the denominator. The employment data for this analysis are taken from the UK Office of National Statistics (ONS) *Nomis Labour Market Profile* database data used are Annual Business Inquiry Employee Analysis

numbers of employee (available) jobs in each employment category. They do not therefore relate directly to the employed population living in an LA, but are a measure of net employment for each of these kinds of activity in each LA (see Table 8). The population figures come from the ONS's *Neighbourhood Statistics: Topics* database. [<http://neighbourhood.statistics.gov.uk/dissemination/>]. The results are presented in Tables 6 and 7.

Table 6 gives the summary statistics for the LQ calculations in 1998 and 2003, using employment in the denominator. The equivalent figures for population are presented in Table 7. For reasons already discussed, both tables present two sets of statistics for each variable, one based on all observations including markets which have zero investment (Panel A) and a second set for the subset of LAs that have non-zero institutional investment (Panel B).

Table 6: Industrial LQs in England and Wales: 1998 and 2003: Employment

Panel A: Including zeros	Average	SD	Skew	T-stat.	Count
1998					
No. of properties	0.88	1.17	2.86	-2.04	375
Capital value	0.86	1.36	2.44	-1.99	375
Floor space	0.86	1.26	2.22	-2.21	375
2003					
No. of properties	0.87	0.96	1.58	-2.72	375
Capital value	0.83	1.25	2.46	-2.67	375
Floor space	0.84	1.15	2.26	-2.66	375
Panel B: Excluding zeros	Average	SD	Skew	T-stat.	Count
1998					
No. of properties	1.27	1.22	2.86	3.63	258
Capital value	1.25	1.49	2.01	2.69	258
Floor space	1.24	1.35	1.85	2.91	258
2003					
No. of properties	1.15	0.95	1.51	2.66	282
Capital value	1.10	1.34	2.15	1.26	282
Floor space	1.12	1.20	2.03	1.67	282

Using employment as the divisor shows that in 1998 and 2003, Panel A of Table 6 shows a different picture to that in Table 5. Institutional industrial investment is significantly under-diversified and UK investors focus on a small number of preferred markets. In contrast, when zeros are excluded (Panel B) the results indicate over-diversification. Nonetheless, the skewness statistics still suggest that institutions concentrate on some preferred LAs. In addition, the average employment LQs in Table 6 are generally smaller than their equivalent values in Table 5. This implies that institutional industrial investment is spread less evenly across England and Wales in terms of employment than the industrial hereditament data suggest.

Panels A and B of Table 7 show that using population as the divisor again presents a different picture to that in Table 5 and is more like that in Table 6, i.e. in 1998 and 2003 all LQs are insignificantly different from one when zeros are included, but significantly different from one when zeros are excluded. The positive skewness statistics still imply that institutions focus on some preferred LAs. Thus, institutional industrial investment is widely spread across England and Wales in terms of population.

Table 7: Industrial LQs in England and Wales: 1998 and 2003: Population

Panel A: Including zeros	Average	SD	Skew	T-stat.	Count
1998					
No. of properties	0.94	1.35	2.65	-0.91	375
Capital value	0.93	1.60	2.74	-0.80	375
Floor space	0.95	1.66	4.07	-0.61	375
2003					
No. of properties	0.91	1.15	2.13	-1.55	375
Capital value	0.88	1.45	2.69	-1.54	375
Floor space	0.90	1.36	2.80	-1.49	375
Panel B: Excluding zeros	Average	SD	Skew	T-stat.	Count
1998					
No. of properties	1.36	1.44	2.40	4.03	258
Capital value	1.36	1.78	2.26	3.24	258
Floor space	1.38	1.85	3.65	3.29	258
2003					
No. of properties	1.21	1.19	1.98	2.93	282
Capital value	1.18	1.57	2.34	1.89	282
Floor space	1.19	1.45	2.52	2.20	282

The Spearman rank correlation between the LQ statistics based on employment and population data in Tables 6 and 7 and those based the number of hereditaments, rateable value, and floor-space shown in Table 5 is again high (in excess of 0.8) and suggests that the employment data LQs can be used as an appropriate measure of industrial concentration.

In contrast to the industrial LQs, all the LQ measures for UK institutional *office* investment are significantly less than one, which indicates that institutional investors were not fully diversified in either 1998 or 2003 (Byrne and Lee, 2006). The LQs for institutional *retail* investment in contrast are all insignificantly different from one, which implies that institutional retail investment is evenly spread across England and Wales in terms of population.

Figure 4 complements the earlier Figures and provides at least a partial explanation of the patterns of holdings seen in those maps. In Figure 4, the darker the shading, the higher the capital value/employment LQ.

The top three institutional industrial markets are Harborough (7.2); Dartford (6.9) and Spelthorne (6.8). The institutional investment, by value, in these areas is more than six times that implied by the LA's employment. They therefore represent the first tier of institutional industrial investment. Harborough District for example, in the East Midlands, is seen an attractive location generally for large scale distribution uses, because of its location astride the M1 motorway and close to the 'Golden Triangle'

formed by the M1, M6 and M69 motorways in the centre of England. Indeed, Harborough is the location of Europe's largest dedicated logistics site; Magna Park at Lutterworth, which serves a national/regional distribution market. Similarly, over the study period, Dartford in Kent, within the Thames Gateway regeneration area, and at a strategic point on the M25 London orbital motorway, saw numerous developers acquiring strategic development sites, with some building significant speculative schemes. Spelthorne is the local authority immediately to the south of London Heathrow, with the M25 and the eastern end of the M3 within its area, and in 2004 had 11 'industrial areas' within its boundary. These common strong locational factors clearly play a crucial part in determining rental levels and associated investment decisions at the stock selection level.

These first three are followed by Daventry (5.9), Hounslow (5.3), Milton Keynes (5.1) Harlow (4.9), Ealing (4.8), Hillingdon (4.7), Reading (4.6), Epping Forest (4.2), and Cherwell (4.1) which represent the next level of interest to institutions. There are then 41 LAs with LQs above 2 but below 4 and a further 44 LAs with LQs above 1. That is 98 (26%) of the LAs in England and Wales have LQs above 1. This points towards institutional industrial investment being concentrated in a small number of preferred areas across the LAs in England and Wales, as suggested in Table 5.

There are 67 LAs with LQs below 1 but greater than 0.5. Under this there are 103 LAs with LQs below 0.5. These are locales in which, for whatever reason, the institutions have a presence but one that cannot be justified by the area's employment level. This leaves 108 LAs with no institutional industrial holdings.

4. Institutional Market Characteristics

Byrne and Lee (2006) showed that the preferred markets for institutional real estate *Office* investment have distinctive economic features – urban areas with high business services employment and a concentration on the largest cities. By comparison, they noted that *Retail* investment correlates more closely with the urban hierarchy of England and Wales when measured against employment, and is focussed on urban areas with high populations and large population densities which have larger numbers of potentially investable retail units (Byrne and Lee, 2007).

There are few studies of industrial real estate demand (Rabianski and Black, 1997). Reasons for this may be difficulties related to the sector's essentially non-cyclical nature, the preponderance of owner occupied structures, the diversity of sub-property types (e.g. manufacturing, warehouse and R&D) and the variety of occupiers within these sub-property types. In comparison, the relationships between demand and employment and demographics for office and retail property are basically intuitive (obvious) and statistically significant. Nonetheless, the research that is available emphasises the locational factors and the physical characteristics of the property (Ambrose, 1990; Fehribach *et al.*, 1993; and Lockwood *et al.*, 1996).

Table 8 shows that institutional investment in industrial properties is focussed in LAs with higher percentages of total employment in Distribution, Manufacturing, Public Administration, and even quite high levels of Finance and Business activity. This matches the employment profile of the retail sector moderately well, and implies a link between the two. In terms of type of employment, the LAs which attract institutional investment have above average proportions of manual workers (Low Supervisory/Technical, Semi-Routine and Routine) and a low level of long-term unemployed. Institutional industrial investment is also concentrated in LAs with small populations and low population densities with smaller average floor space, lower rateable value and fewer industrial hereditaments.

**Table 8: The Characteristics of Institutional Industrial Investment Markets:
2003 Employment LQs**

Characteristic / LQ	Zero	<0.5	0.5-0.99	1-2.99	3-5	>5
Average Rateable Value (£ 000)	2414	1900	2767	2471	2328	1520
Average No. of Hereditaments	75643	58035	65611	58133	53946	36390
Average Floor Space (000m ²)	624	527	673	583	521	306
Average Total Employment						
% in Manufacturing	10.10	13.16	12.63	12.95	13.52	14.81
% in Construction	4.40	4.10	4.25	4.31	4.54	4.85
% in Tourism	6.64	6.64	6.89	7.37	8.08	9.55
% in Distribution, Hotels & Restaurants	28.64	24.86	23.86	23.05	24.12	24.91
% in Transport & Communications	8.99	8.65	5.44	5.48	5.02	4.55
% in Finance, IT, Other Business Activities	19.55	18.97	19.59	17.47	14.55	12.24
% in Public Admin, Education & Health	17.07	19.38	22.58	24.30	25.57	24.43
% in Other	4.60	4.24	4.76	5.08	4.61	4.66
Average Type of Employment						
% Large Employer High Managerial	4.38	4.03	3.95	3.51	3.45	3.11
% High Professional	6.24	5.41	5.45	5.23	4.92	4.23
% Low Managerial/Professional	21.13	19.46	19.72	18.96	18.54	17.85
% Intermediate	10.55	10.32	10.12	9.54	8.94	8.50
% Small Employer or Own Business	6.34	6.90	7.02	6.89	7.45	8.94
% Low Supervisory/Technical	6.94	7.36	7.08	7.20	7.29	7.83
% Semi-Routine	10.65	11.63	11.34	11.69	11.78	12.23
% Routine	8.32	9.25	8.55	9.19	9.22	9.50
% Not Worked	3.16	2.10	2.43	2.38	2.34	1.81
% Long-term Unemployed	0.92	0.73	0.83	0.91	0.98	0.88
% Students	6.93	6.32	6.69	7.10	6.43	5.30
% Not Class	14.46	16.49	16.81	17.41	18.66	19.81
Average Population	124016	148563	176439	165116	141740	87667
Population Density	13	21	16	20	14	5

In order to test whether institutions' industrial investment strategy was driven by a different set of economic and population characteristics than those for retail and office investment, stepwise regression was used on independent variables from Table 8, with 2003 Employment LQs as the dependent variable,. The results are presented in Table 9.

Table 9 shows that industrial investment is significantly influenced by very few variables. These variables show the correct sign and significance at the usual levels. The results in Table 9 are generally supportive of the observations that institutional industrial investment is concentrated in LAs with above average manual workers and low unemployment. Additionally, institutions seem to prefer LAs with smaller industrial units, i.e. warehousing rather than manufacturing units. However, the

results for industrial properties are not on the same variables as those for office and retail investment. Office investment tends to be significantly related to the local authorities' service sector employment (Finance, IT, Other Business Activities and in Transport & Communications) and with areas with larger units both by floor space and value. Thus, institutional office investment is concentrated in the largest LAs. In contrast, retail investment is more related to the types of employees who live in the LAs and noticeably avoids areas with Small business employment, and especially areas with large amounts of Manufacturing and Tourism employment, investing in areas with above average floor space, i.e. institutional retail investment has focussed on urban areas with populations that have more to spend with 'big' retail units. Only rateable value is common to all investment strategies, i.e. institutions prefer local authorities with larger office and retail properties but smaller industrial units. The industrial model, as an explanation of the institutions' investment strategies, lies between the office and retail models with an adjusted R-square of 35% compared with 22% and 64% for the retail and office models respectively.

The most interesting observation is the extent to which industrial investment is related to by office investment and *vice versa*. LAs with the highest institutional office investment seem also to attract institutional industrial investment, whereas retail investment is more evenly spread across England and Wales. One reason for this is that the large population characteristics that are preferred office investment locations are also places that require a 'modern industrial' support infrastructure as well. There would therefore be expectations of an institutional interest in such places where demand for small/medium sized units would be strong and rents would tend to be higher and less subject to fluctuation.

Table 9: Regression Results

Property	Office		Retail		Industrial	
Variable	Coeff.	T-stat.	Coeff.	T-stat.	Coeff.	T-stat.
Constant	-1.044		0.635		-2.16	
OLQ					0.271	4.24
INDLQ	0.142	3.9				
Average Rateable Value (£ 000)	0.00	2.77			-0.00001	2.02
Average No. of Hereditaments	-0.00032	3.84				
Average Floor Space (000m²)	0.00134	3.27	0.0003	2.52		
LA Employment Characteristics						
% in Manufacturing			-0.04	4.18		
% in Tourism			-0.101	3.79	-0.111	4.32
% in Distribution, Hotels & Restaurants			0.108	6.46	0.13	6.84
% in Transport & Communications	0.023	1.72			0.079	4.73
% in Finance, IT, Other Business Activities	0.0557	7.54				
% in Other	0.057	1.87			0.07	1.70
LA Population						
% Intermediate					0.069	1.79
% Small Employer or Own Business			-0.075	2.67	-0.05	1.56
% Not Worked					0.173	2.79
% Long-term Unemployed					-0.51	2.45
% Students	0.039	2.39				
% Not Class			-0.041	2.35		
Population	-0.00	2.2			0.00	1.52
Adjusted RSQ	64.36		22.46		34.79	

5. Conclusions

This paper has considered the extent of real estate investment concentration in institutional Industrial portfolios in the UK at two points in time; 1998 and 2003, and presented some comparisons with equivalent measures in the Office and Retail sectors. The findings indicate that the measures of industrial investment concentration are between those of the retail and office sectors and investment seems directed principally towards LAs with higher levels of manual workers and smaller industrial units. In contrast, retail investment correlates more closely with the urban hierarchy of England and Wales, and is focused on urban areas with high populations and large population densities which inevitably have larger numbers of retail units in which to invest. Office investment is concentrated in very few LAs, mostly showing above average service sector employment.

In many ways the Industrial sector can be viewed as the Cinderella of the property investment markets. Apparently unglamorous, historically it has actually provided consistently good total returns with low risk, and was the only sector to expand in terms of numbers of institutionally invested units over the study period. While Industrial real estate assets generally do not attract as much capital growth as other sectors, especially in boom periods, rents continued to grow in the period under study. Taken together with the relative resilience in the sector's performance seen over successive cycles, it is not surprising that significant institutional enthusiasm was in evidence over this period.

Acknowledgements

Parts of this work are based on data provided through EDINA UKBORDERS with the support of the ESRC and JISC and uses boundary material which is copyright of the Crown.

The authors would like to thank IPD, and Steven Devaney in particular, for providing the 'full' data sets on all three sectors for the two years studied. The usual disclaimers apply.

Figure 1: England and Wales
IPD Universe: Number of Industrial Holdings 1998
By Local Authority

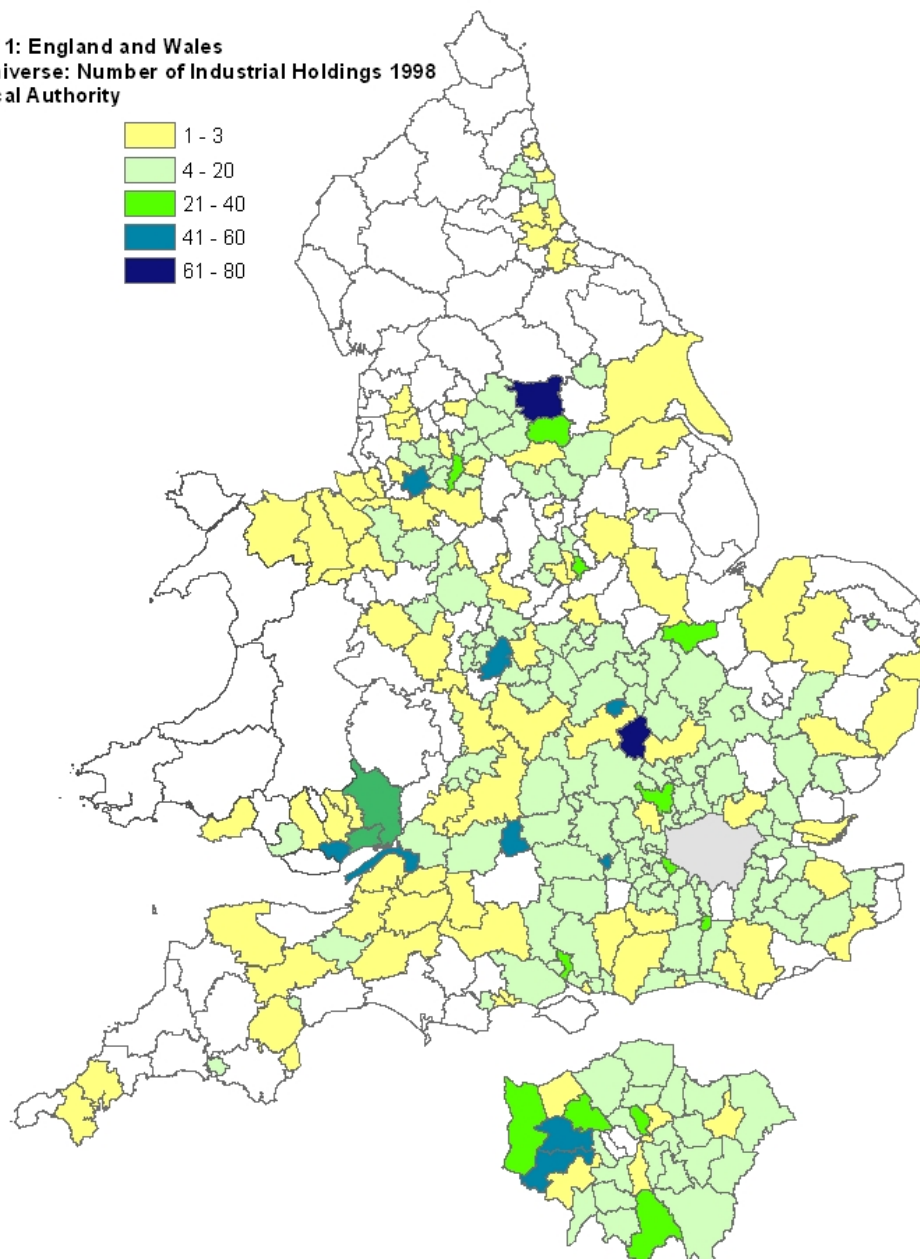


Figure 2: England and Wales
IPD Universe: Number of Industrial Holdings 2003
By Local Authority

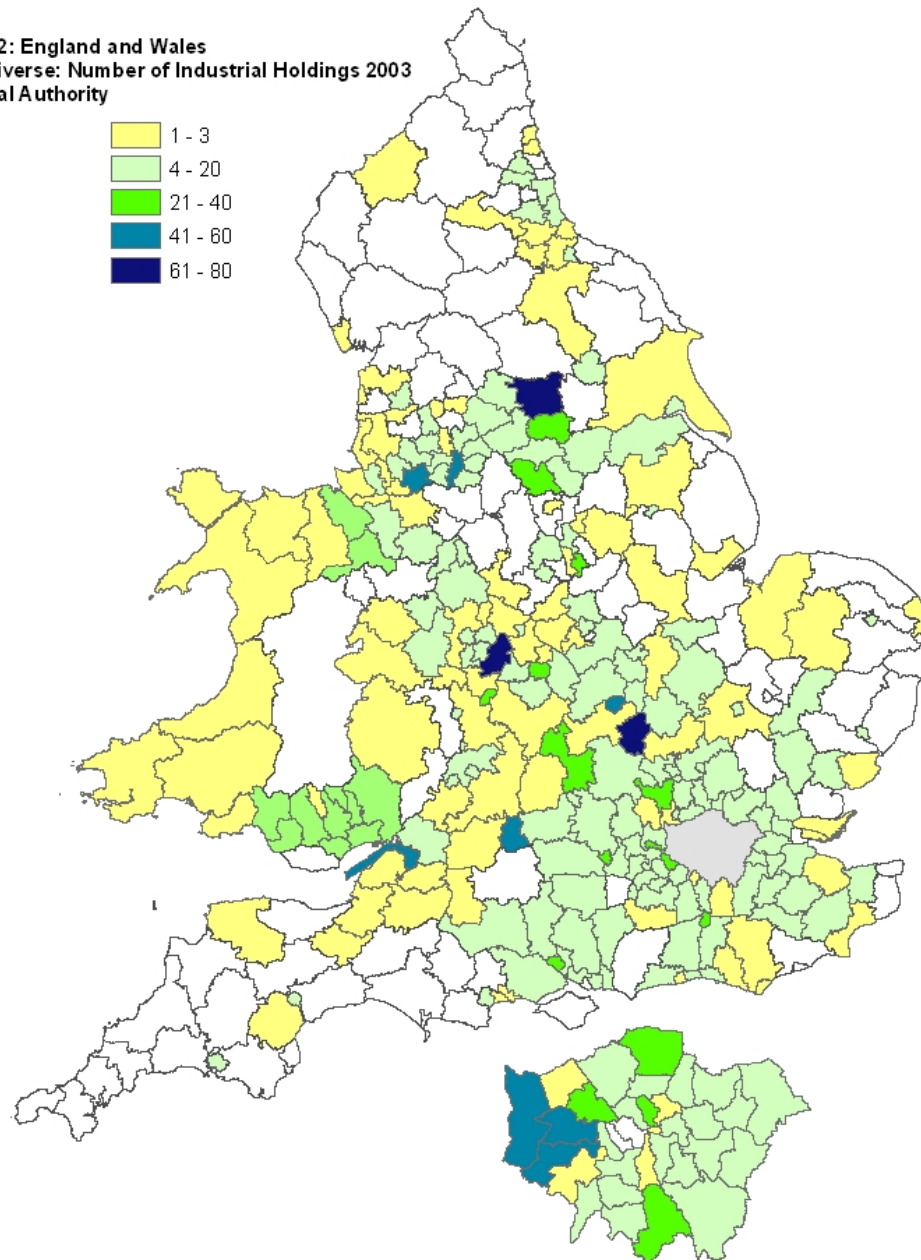
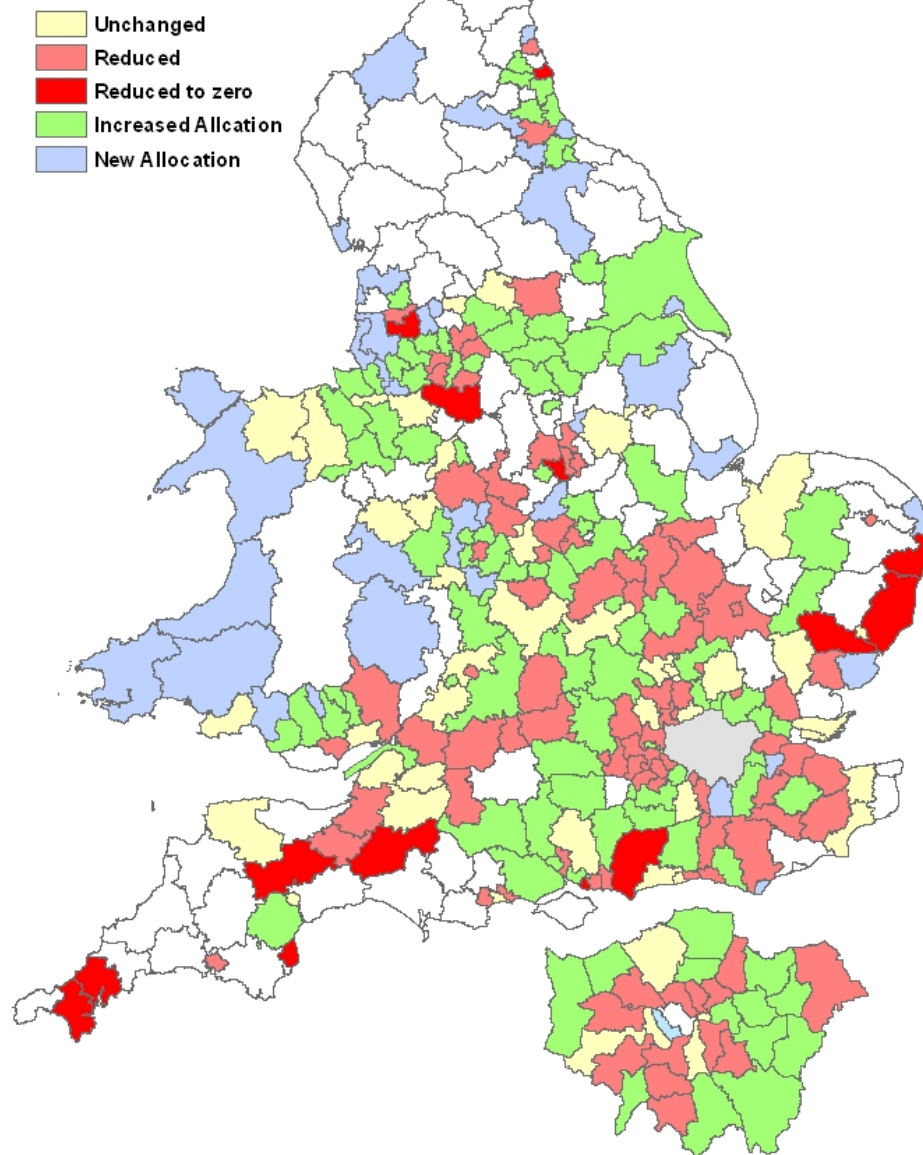
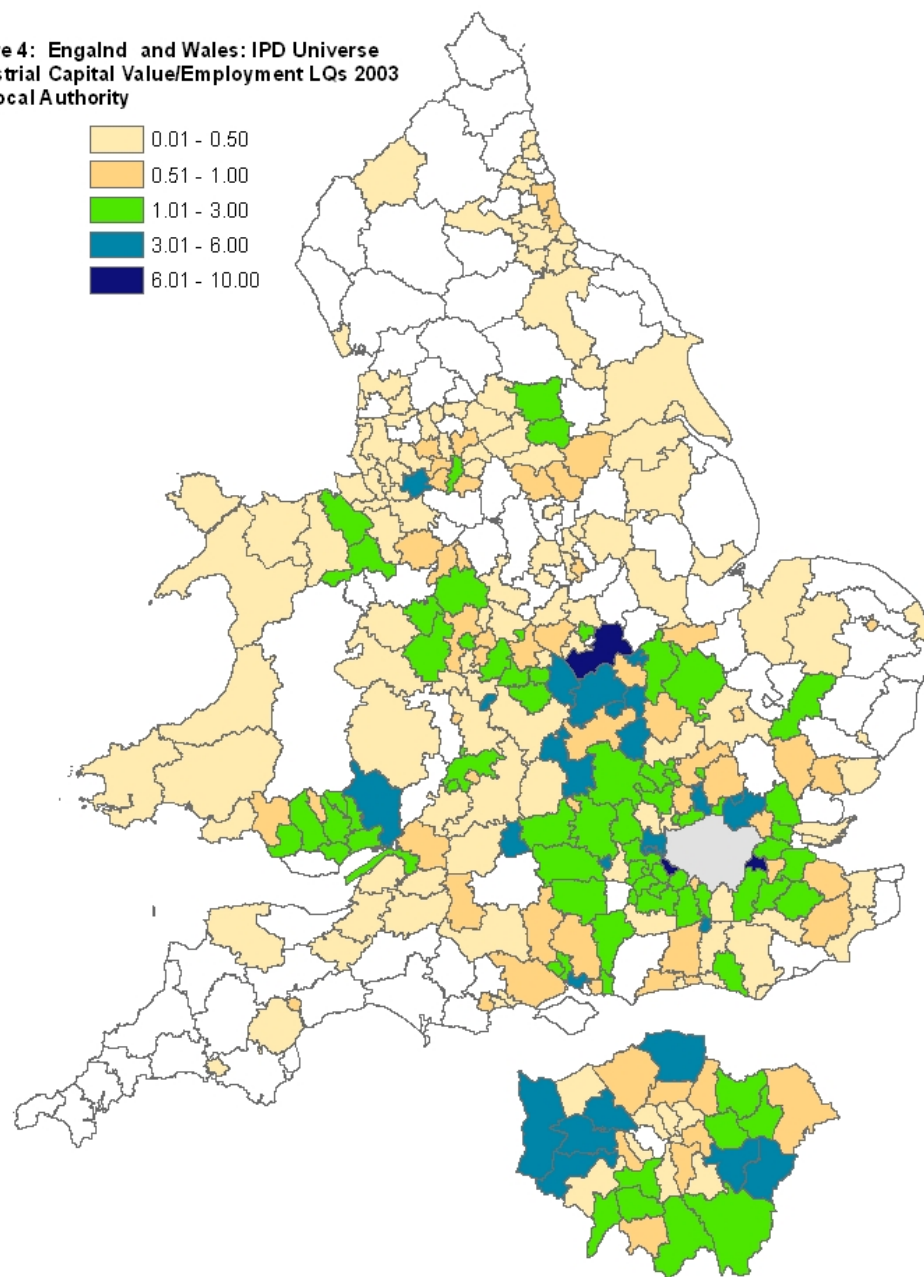


Figure 3: England and Wales- IPD Universe
Change in Industrial Holdings 1998-2003
By Local Authority



**Figure 4: England and Wales: IPD Universe
Industrial Capital Value/Employment LQs 2003
By Local Authority**



References

Ambrose, B.W. (1990) An Analysis of the Factors Affecting Light Industrial Property Valuation, *Journal of Real Estate Research*, **5**, 3, 355-69

Byrne, P. and Lee, S.L. (2006) *Geographical Concentration in the Institutional Market for Office Property in England and Wales*. Working Papers in Real Estate & Planning 07/06, Department of Real Estate & Planning, University of Reading, Reading.

Byrne, P. and Lee, S.L. (2007) *Spatial Concentration in Institutional Investment in the UK: Some comparisons between the Retail and Office Sectors*. Working Papers in Real Estate & Planning 01/07, Department of Real Estate & Planning, University of Reading, Reading.

Fehribach, F., Rutherford, R. and Eakin, M. (1993) An Analysis of the Determinants of Industrial Property, *Journal of Real Estate Research*, **8**, 1, 1-12.

IPD (2004a) *UK Local Markets 2004*, London, Investment Property Databank.

IPD (2004b) *UK Property Investors Digest 2004*, London, Investment Property Databank.

Isard, W., Bramhall D.F., Carrothers, G.A.P., Cumberland, J.H., Moses, L.N., Price, D.O. and Schooler, E.W. (1960) *Methods of Regional Analysis: An Introduction to Regional Science*, New York, Wiley.

Key, T., and Law, V. (2005) *The Size and Structure of the UK Property Market*. Investment Property Forum, London, IPF.

Lockwood, L. and Rutherford, R. (1996) Determinants of Industrial Property Value, *Real Estate Economics*, **24**, 2, 257-72.

Office of the Deputy Prime Minister (2005) *Commercial and Industrial Floorspace and Rateable Value Statistics 1998-2004*, London, ODPM.

Rabianski, J.S. and Black, R.T. (1997) Why Analysts Often Make Wrong Estimates About the Demand For Industrial Space, *Real Estate Review*, **27**, 1, 68-72.

Footnotes

¹ These data were compiled by the UK Government through the Office of the Deputy Prime Minister; (ODPM) now called the Department for Communities and Local Government, on its own behalf and also on behalf of the Valuation Office Agency (VOA) in England and Wales (ODPM, 2005). The data are now available through the UK Office of National Statistics (ONS) Neighbourhood Statistics (NeSS) website

[<http://www.neighbourhood.statistics.gov.uk/dissemination/>].

The data are found via the NeSS homepage under 'Topics', in 'Physical Environment' - 'Key Regeneration Related Statistics', at various levels of aggregation.

² The Isles of Scilly are not included in the analysis.