IPF Research Programme 2006-2009

Depreciation of Office Investment Property in Europe




Summary Report

March 2010

This research was commissioned by the IPF Research Programme 2006–2009

Investment Property Forum

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This programme supports the IPF's wider goals of enhancing the knowledge, understanding and efficiency of property as an investment class. The initiative provides the UK property investment market with the ability to deliver substantial, objective and high quality analysis on a structured basis. It will enable the whole industry to engage with other financial markets, the wider business community and government on a range of complementary issues.

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CONTENTS

1. INTRODUCTION: AIMS AND OBJECTIVES

This report summarises the contents of the main report of the research into rental depreciation of office investment properties in six locations across Europe, which has been funded by the Investment Property Forum and IPF Educational Trust. This research follows on from the IPF and IPF ET funded 2005 UK study which produced a set of rental depreciation rates over both a 19 year and a 10 year timescale for the three main commercial property sectors as well as the main IPD UK PAS segments. The extent of capital expenditure necessary to keep rental depreciation to the reported figures was also measured. The research was based on definitions and measurement processes developed by Law (2004), and this study uses the same methodology.

Investors and advisors need to have some indication of the impact depreciation has on expected returns. Property has to compete with other assets in the multi-asset portfolio and the case for property must take account of ll financial impacts on performance. Understanding depreciation is also important for appraisal models which need to take explicit account of both rental depreciation and capital expenditure. Depreciation impacts on both the choice of discount rate and the growth projections. The growth projections for a property value which are adversely affected by depreciation through time is also important to lending decisions.

The above discussion highlights the need for the depreciation of investment property to be studied. However, outside of the UK market, our knowledge of its impact on property performance is extremely limited. Baum and Turner (2004) suggest that depreciation and expenditure rates in other markets will not be similar to those of the UK and provide some evidence for this over a limited time span for four European office markets (Paris, Stockholm, Amsterdam and Frankfurt).

Therefore, the overall aim of the project is to identify the impact of depreciation on returns from office investment property across a range of European markets. The objectives of the study are to measure the rental depreciation rates of various office markets over a specific period and also the extent of capital and maintenance expenditure and its effect on rental depreciation rates. The markets chosen for study are Amsterdam, Dublin, Frankfurt, Paris and Stockholm. As the period differs from the previous UK study, the City and the West End of London are also included in this study to provide a reference frame.

The choice of European markets was solely governed by data availability and does not purport to be a random sample of office locations throughout Europe. Meanwhile, the extension of the depreciation work to mainland Europe provides an opportunity to test the robustness of the longitudinal approach to measuring depreciation in property markets that are less mature in terms of the development of data and transparency (see JLL, 2008a). As the approach requires both a held sample of actual properties through the entire period of study and a reliable location benchmark for each asset in the sample, data issues will be important to achieving the project aim and objectives.

2. METHODOLOGY

As indicated above the research method is based on the work of Law (2004) and is the same as for IPF (2005) The latter study extensively debated how depreciation of property investments should be measured and it proposed a framework that was subsequently put into practice using data on different property types in the UK. It is not intended to repeat those debates here, but to highlight the elements of the framework that are necessary to understanding how the results here were produced.

Drawing upon the work of Hotelling (1925), Hulton and Wykof (1976; 1981a; 1981b; 1996) and Jorgenson (1996), amongst others, on the depreciation of different types of asset, Law (2004) has defined depreciation as follows:

> *"the rate of decline in rental/capital value of an asset (or group of assets) over time relative to the asset (or group of assets) valued as new with contemporary specification" (Law, 2004).*

This definition was adopted in IPF (2005) and is also used here. It is from this definition that the measurement principles and formulae have been derived and both this report and the previous IPF report have adopted this longitudinal calculation for rental depreciation rates:

$$d = 1 - \{[\sum R^{a}_{tn} / \sum R^{a}_{t0}]^{(1/(tn-t0))} / [\sum Rb_{tn} / \sum R^{b}_{t0}]^{(1/(tn-t0))}\}$$

where d = rate of depreciation, R^a = asset rental value and R^b = benchmark rental value, whilst t0 and tn represent the start and end of the measurement period, respectively.

The main report discusses the other options available such as a cross sectional study and concludes that the longitudinal approach is theoretically superior in a number of respects. However, a longitudinal design does raise significant practical issues, as it requires data on individual assets held throughout the period under study. The longer the period being analysed, the smaller the potential sample will become because of demolition, redevelopment, major refurbishment or sale out of the data set. The approach also needs a benchmark. The characteristics of a model benchmark are discussed in the main report and the conclusion in IPF (2005) was that the hypothetical rent points of the CBRE *Rent and Yield Monitor* were the closest to the model benchmark in the UK.

Therefore, the same kind of benchmarks were sought for the other European markets. In the event, CBRE and BNP Paribas Real Estate kindly provided disaggregated rent point data for locations within each of the chosen cities and these rent points were matched with the properties in the datasets used for the project.

In order to examine the impact of expenditure on depreciation, this research has calculated capital expenditure and irrecoverable maintenance expenditure for individual buildings and generated total expenditure rates, measured as an annual percentage of capital value.

The study locations are Amsterdam, Dublin, Frankfurt, Paris and Stockholm, and the UK office markets of the City and West End of London. The choice was dictated by data availability within the main data provider, Investment Property Databank. The trade off between length of the study and declining data sets meant that, to have a 10 year timeframe (considered the minimum period over which depreciation could meaningfully be measured), only these markets had sufficient long term records and sample sizes.

2. METHODOLOGY

Table 2.1: The start date and coverage of IPD European indices

	Index start year	IPD databank capital value at end-2007 (EUR bn)	Estimated coverage of investment market
Austria	2003	8.2	46%
Belgium	2004	6.0	16%
Denmark	1999	13.6	48%
France	1997	108.3	53%
Germany	1995	44.5	16%
Ireland	1983	5.9	78%
Italy	2003	17.0	26%
Netherlands	1994	44.9	52%
Norway	1999	14.2	44%
Portugal	2000	9.2	67%
Spain	2000	16.5	48%
Sweden	1996	24.6	29%
Switzerland	2001	30.3	31%
UK	1980	250.2	61%

Source: IPD (2008a)

The table shows that only six countries had a 10 year or longer data history as at the end of 2007.

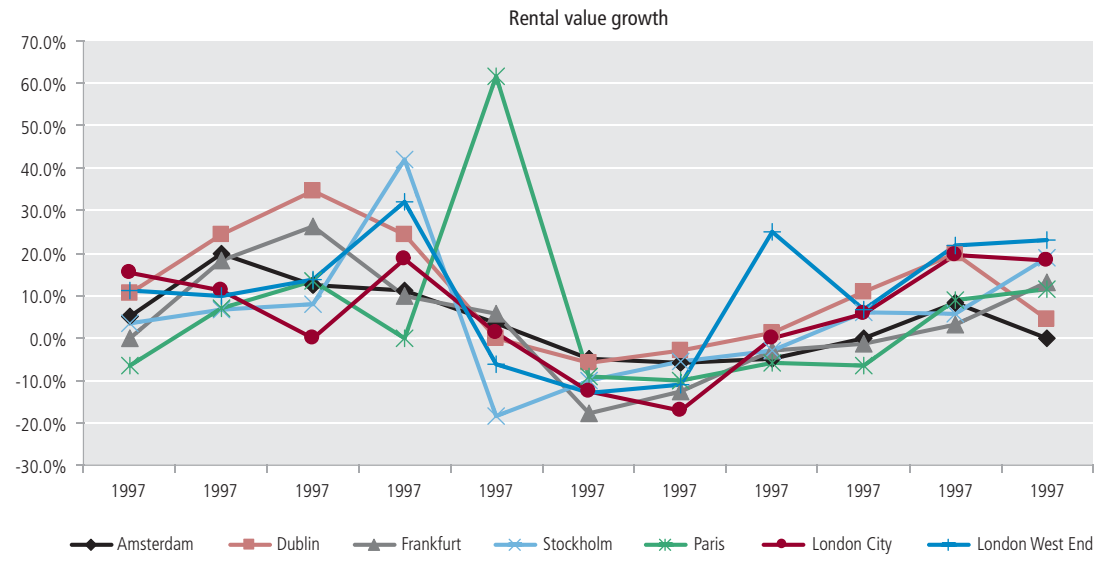
The main report discusses the nature of the European office markets, identifies the submarkets within each office market, discusses the different lease characteristics and identifies the main economic and property market indicators for each city. This enables a number of conclusions to be made concerning the similarities and differences which may impact on the results.

The longer leases of the UK and Dublin may lead to different patterns in the timing of capital expenditure; in particular, if expenditure is less frequent as a result, this could have consequences for the depreciation that these properties experience (Baum and Turner, 2004; Baum and Devaney, 2008). Meanwhile, the high levels of new development relative to existing stock in Frankfurt, Amsterdam and Dublin have impacted vacancy rates and may influence the rates of depreciation in different market states. Yet, the economic indicators suggest that there is some consistency in the timing of changes in the economies and property markets of the different cities, with a higher level of economic growth in the late 1990s and towards the end of the study period, and a weaker period in the early 2000s that caused rental value decline in all locations in 2002 and 2003.

[1] As it happens, depreciation for Paris could only be measured over eight years (1999–2007) owing to a lack of market rental value data in the IPD France databank.

2. METHODOLOGY

Fig 2.1: Office rental value change (% pa) for seven European locations



Source: CBRE

The data used for this research comprises individual properties within the IPD databanks matched as closely as possible to CBRE or BNP Paribas Real Estate benchmarks. It is, therefore, very data intensive. The approach is set out in detail in the main report.

Properties within IPD in each location that had a market rental value recorded at both the start and end of the period, as well as data on building expenditure and capital value over the whole period, and a floorspace figure were included. In most cases, the selected assets also had a complete set of intermediate rental values available, but a notable exception to this was Paris. Here, the sample used to measure the eight year depreciation rate is larger than that used in the year-by-year analysis of rental values.

With regard to expenditure, of interest were amounts of irrecoverable expenditure by owners on the structures. This includes amounts classed as capital expenditure as well as maintenance expenditure that was not recoverable either directly from tenants or by means of a service charge. Capital expenditure was straightforward to isolate in each case. However, in some markets, maintenance costs have not always been collected separately from other, regular costs such as property management fees. Thus, in the case of London and Dublin, the measurement of a maintenance rate is performed using a more aggregated data field, which means that this rate and the total expenditure rate will be slight over-estimates.

A number of other exclusions were made; for example, if assets were subject to major refurbishment or redevelopment or an appropriate benchmark for new property rental values could not be found for their location. The resulting sample sizes for each market are displayed in Table 2.2.

2. METHODOLOGY

Table 2.2: Sample sizes and time horizons for European office markets data

	Time horizon	Number of properties	% of all IPD at start of period
Amsterdam	10 yr	38	36%
Dublin	10 yr	35	36%
Frankfurt	10 yr	17	22%
London: City	10 yr	80	16%
London: West End	10 yr	135	19%
Paris	8 yr	168	18%
Stockholm	10 yr	36	16%[#]

[#] The All IPD figures refer to properties in Stockholm CBD and Central area, and exclude Rest of Greater Stockholm where there is no sample representation

The total number of rent points that were available for each city across the analysis period from either CBRE or BNP Paribas Real Estate is shown in Table 2.3.

Table 2.3: Rent points for European office markets

	Time horizon	No. of rent points spanning period	No. of rent points used
Amsterdam	10 yr	9	6
Dublin	10 yr	6	3
Frankfurt	10 yr	19	10
London: City	10 yr	19	16
London: West End	10 yr	18	15
Paris	8 yr	57	35
Stockholm	10 yr	2	1

The rent points were then matched to the buildings in each sample.

It is important to consider the nature of the held samples and whether they are representative of their markets. The main report extensively examines whether the sample is representative of the wider IPD dataset. Comparisons based on the mean age, capital value and floorspace of the sample relative to all IPD data for each city suggest that the sample is representative and that conclusions from analysis of the sample can be applied more generally. Meanwhile, a separate test of survivor bias in terms of performance (whether the held sample outperforms properties that were traded in and out of the IPD databank) does not show any consistent pattern of this nature.

However, a comparison of the rental value per square metre of the benchmarks compared to that for the sample assets throws up two anomalies. The first is that the rental value psm of the sample (older properties) is higher than that of the benchmark (new properties) in Frankfurt at the beginning of the analysis period in 1997. The second is that the rental value psm of the sample in the City of London is only around 40% of the level of the benchmark. This raises questions of rental value estimates which are also examined in detail in the main report.

For the UK study there was a consistency in the shape and movement in the samples and the benchmark. Given that all the benchmarks were from CBRE and CBRE are the largest contributor of valuations to IPD in the UK, this consistency was not surprising. This situation does not apply in Europe and there is evidence that valuations are undertaken by national valuers using different bases, different interpretations of the bases, different methods and different information.

3. RATES OF RENTAL DEPRECIATION AND EXPENDITURE

3.1 Rental depreciation

Overall, the rental depreciation rates found by this research are very mixed for the cities, with some samples showing appreciation against benchmarks over the time scale of the study. Table 3.1 shows the depreciation rates together with the rental growth recorded by the samples and set of benchmarks in each case. There does not seem to be a consistent relationship between growth rates and depreciation rates. Although the highest rental value growth (for both samples and benchmarks) is in London West End and Dublin, which also have high depreciation rates, Frankfurt has the second lowest rental growth in the benchmark, but the highest depreciation rate. Meanwhile, the City of London, with the lowest benchmark growth does not show appreciation, unlike Paris and Stockholm who have high rental growth rates in the sample and do show appreciation.

Table 3.1: Annualised rental depreciation and rental growth rates

	Number of properties	Rental growth of benchmarks[2]	Rental growth of the sample	Rate of rental depreciation[1]
Amsterdam	38	3.2%	3.6%	-0.4%
Dublin	35	9.5%	7.7%	1.7%
Frankfurt	17	2.9%	-2.1%	4.9%
London: City	80	2.3%	1.9%	0.4%
London: West End	135	9.0%	6.6%	2.2%
Paris	168	4.3%	5.4%	-1.1%
Stockholm	36	3.9%	5.9%	-2.0%

[1] Negative results indicate where appreciation of the sample has taken place relative to the benchmark.

[2] Benchmark growth rates here and throughout the chapter reflect the particular mix of rent points used. This mix is designed to match the locations of the sample assets.

3.2 Expenditure rates

Table 3.2 and Figure 3.1 indicate the relationship between rental depreciation and expenditure rates as measured upon the whole sample for each location. The table shows rates of capital and irrecoverable maintenance expenditure, as well as a total expenditure rate. It is clear that, in some markets, amounts recorded as irrecoverable maintenance expenditure are as significant at the sample level as capital expenditures. Yet this may be a function of the way that classifications are interpreted in different markets.

Table 3.2: Rental depreciation and annual expenditure rates in the seven office markets

	Rental depreciation	Capital expenditure rate[1]	Maintenance expenditure rate[1]	Total expenditure rate[2]
Amsterdam	-0.4%	0.4%	0.4%	0.8%
Dublin	1.7%	0.3%	0.0%	0.3%
Frankfurt	4.9%	0.1%	0.4%	0.6%
London: City	0.4%	0.3%	0.3%	0.7%
London: West End	2.2%	0.3%	0.4%	0.7%
Paris	-1.3%	0.7%	0.0%	0.7%
Stockholm	-2.0%	1.0%	0.3%	1.3%

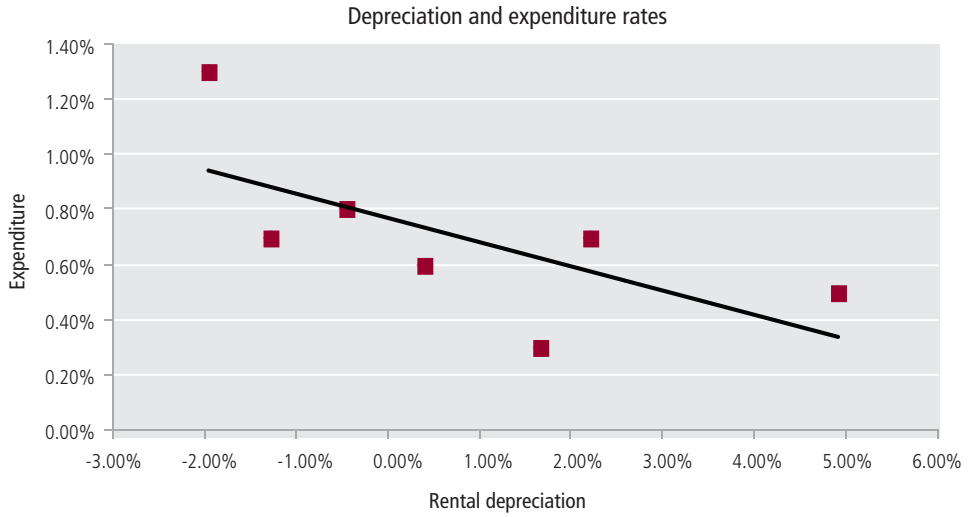
[1] Calculated as a percentage of capital values (see chapter 2)

[2] Total expenditure is calculated from the sum of capital and maintenance expenditure. Rates are also summative but do not appear so in the table owing to rounding.

3. RATES OF RENTAL DEPRECIATION AND EXPENDITURE

Figure 3.1 suggests that the level of depreciation is reduced in those markets where there is an increased level of capital and landlord's maintenance expenditure. The highest total expenditure rate is in Stockholm, which also shows appreciation of the sample against the benchmark. In contrast, Dublin has the lowest level of expenditure but one of the highest levels of depreciation.

Figure 3.1: Relationship between depreciation and expenditure rates



Baum and Turner (2004) suggested that expenditure on property also had some relationship with lease length. Although the research had no access to the lease details of each individual property, the general institutional analysis in chapter 3 of the main report suggests that the longest leases are present in Dublin and London, and Stockholm has the shortest lease length. Dublin has the lowest expenditure rate and Stockholm the highest; but London does not follow this trend.

3.3 Age and sub-market analysis

The next stage of the analysis was to try and find some pattern in the results through segmenting the analysis by sub-markets within the cities and by different age cohorts, subject to data sample sizes. By sub-market no pattern was found, but the results by age are more interesting and are set out in Table 3.3.

Four age bands were chosen for this analysis; 0–10 years old, 10–20 years old, 20–50 years old and over 50 years old as at end 1997. However, the age analysis could not be conducted for Stockholm, as only one of the 36 buildings in the sample was less than 20 years old at the start of the period. This is because the sample is almost entirely located within the CBD, with no representation of newer, outlying office districts. Meanwhile, the Dublin sample has a very different age profile, with no buildings over 50 years old, which leads to the exclusion of one category. Again, Frankfurt is not analysed here on the grounds that the total sample (only 17 buildings) was too small for any meaningful disaggregation.

3. RATES OF RENTAL DEPRECIATION AND EXPENDITURE

Table 3.3: Depreciation and expenditure rates by age cohort

	Number of properties[1]	Rental growth of the sample	Rate of rental depreciation	Total expenditure rate
London West End				
1–10 years	26	5.6%	3.6%	0.6%
10–20 years	6	6.3%	1.2%	1.2%
20–50 years	17	6.9%	1.8%	0.9%
50+ years	75	6.6%	1.9%	0.7%
London City				
1–10 years	24	2.7%	-0.9%	0.9%
10–20 years	12	2.6%	-0.7%	0.3%
20–50 years	25	-0.3%	3.0%	0.6%
50+ years	13	1.6%	1.8%	2.2%
Amsterdam				
1–10 years	17	3.9%	-0.9%	0.7%
10–20 years	6	2.3%	0.9%	0.7%
20–50 years[2]	3			
50+ years	12	6.3%	-2.3%	0.9%
Dublin				
1–10 years	17	7.5%	2.3%	0.1%
10–20 years	11	7.2%	1.5%	0.3%
20-50 years	7	9.3%	0.3%	1.0%
Paris				
1–10 years	41	4.3%	-0.3%	0.6%
10–20 years	32	4.3%	0.0%	0.8%
20–50 years	25	4.9%	-0.6%	1.2%
50+ years	70	7.3%	-2.7%	0.6%
Stockholm				
20–50 years	7	6.4%	-2.4%	1.3%
50+ years	29	5.6%	-1.6%	1.2%

1. Number of properties may not sum to the total sample for certain locations as not all assets have full age information, in which case, they were excluded from this particular analysis

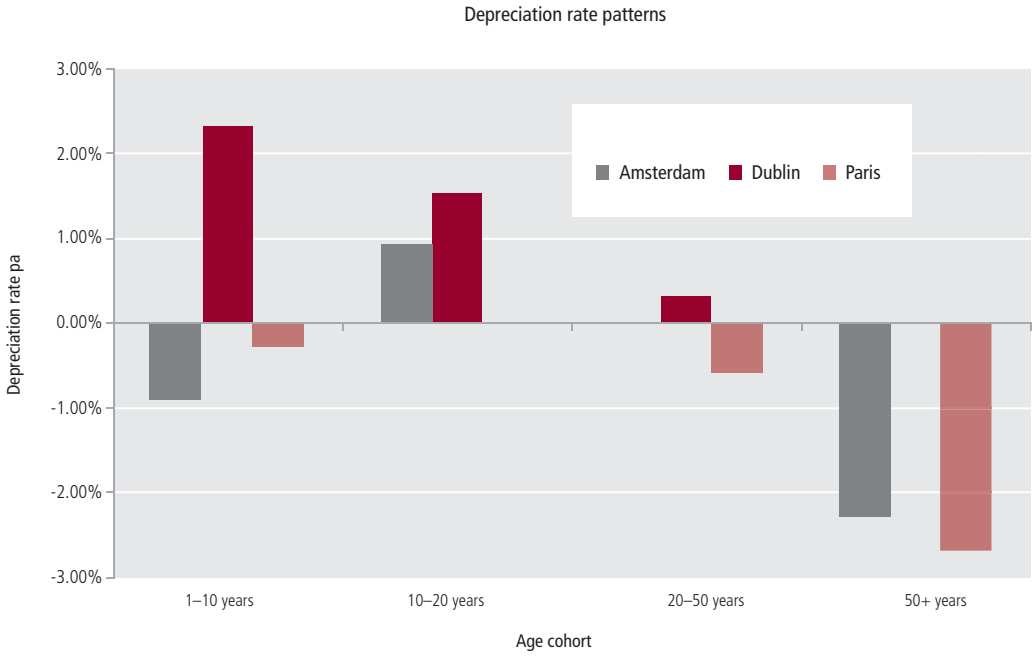
2. Cannot report results under normal IPD confidentiality rules as sample is less than four properties

In Dublin and London West End, the highest rates of depreciation are for the youngest buildings in the 0–10 year old cohort, while for Paris and Amsterdam, the highest rates are experienced by buildings in the 10–20 year group. On the other hand, for Dublin, Paris and Amsterdam, the lowest rates of depreciation (or highest appreciation) occurs in the oldest cohort. These figures may be broadly consistent with theories suggesting that new assets command a premium which fades very quickly as soon as they become 'used' and that older assets reach a phase whereby every added year makes little difference to their utility. However, it is more likely that buildings hold their relative value unless there is a change in either the relative quality of location or relative quality of building compared to new offices to precipitate a fall in relative rental value. The figures for the City of London follow this pattern with the highest rate of rental depreciation in the 20–50 year age range, and appreciation relative to the

new asset benchmark being experienced by the two youngest cohorts.

Figures 3.2 and 3.3 illustrate the differences in depreciation rates for the different age cohorts in the different locations. This analysis suggests that depreciation is lower for older properties; in other words, age makes little difference after a certain number of years. But this does not appear to be so for London where, in both the City and the West End, the over 50 year old cohort does not have the lowest depreciation rate (although, in the West End, the lowest depreciation rate is for a very small sample of 10–20 year old properties).

Figure 3.2: Depreciation rate patterns for different age cohorts in the office markets of Amsterdam, Dublin and Paris



Note: negative figures on the y-axis indicate appreciation

Figure 3.3: Depreciation Rate Patterns for Different Age Cohorts in the Office Markets of London West End and London City

Note: negative figures on the y-axis indicate appreciation

Overall, the correlation between depreciation rates and weighted average age of the samples is -0.25, although it increases to -0.43 if Frankfurt is excluded. The other major outlier is the office market of the West End of London.

A potential issue with the analysis by age cohort is that older CBD areas with little new development still require a benchmark to assess the rental value depreciation. A lack of new development will make the valuation of the hypothetical benchmark more difficult than when the location has a mix of new and older development.

3.4 Year on year analysis

For most of the properties in each sample, not only were the initial and final rental values for the period known, but also all the intervening year end rental values. This enabled the calculation of annual rental growth and depreciation rates. These results, set out in Table 3.4 can be put into the wider market context discussed in previous sections.

Table 3.4: Year on year rental growth and rental depreciation rates

Amsterdam										
	1998	**1999**	**2000**	**2001**	**2002**	**2003**	**2004**	**2005**	**2006**	**2007**
Benchmark g	10.5%	8.5%	13.8%	3.3%	-3.3%	-3.9%	-1.8%	0.3%	5.9%	0.0%
Sample g	15.5%	1.6%	12.4%	5.2%	7.6%	-1.3%	-2.1%	-3.0%	0.4%	1.7%
Depreciation	-4.5%	6.4%	1.2%	-1.8%	-11.3%	-2.7%	0.3%	3.4%	5.2%	-1.7%
Dublin										
	1998	**1999**	**2000**	**2001**	**2002**	**2003**	**2004**	**2005**	**2006**	**2007**
Benchmark g	23.9%	33.7%	20.6%	1.5%	-9.1%	-3.1%	1.0%	10.3%	19.6%	4.4%
Sample g	21.6%	21.7%	25.4%	4.5%	-0.9%	-2.1%	-1.8%	1.0%	4.2%	8.1%
Depreciation	1.9%	8.9%	-4.0%	-2.9%	-9.0%	-0.9%	2.8%	8.4%	12.9%	-3.6
Frankfurt										
	1998	**1999**	**2000**	**2001**	**2002**	**2003**	**2004**	**2005**	**2006**	**2007**
Benchmark g	21.8%	7.6%	28.8%	10.6%	-18.7%	-15.6%	-5.6%	3.7%	-3.9%	10.6%
Sample g	-1.2%	1.4%	-1.4%	4.3%	1.0%	-1.0%	-4.7%	-6.1%	-7.2%	-5.7%
Depreciation	18.9%	5.7%	23.5%	5.7%	-24.3%	-17.2%	-0.9%	9.5%	3.4%	14.7%
London City										
	1998	**1999**	**2000**	**2001**	**2002**	**2003**	**2004**	**2005**	**2006**	**2007**
Benchmark g	7.4%	-0.3%	20.0%	5.2%	-13.8%	-20.4%	-3.7%	0.8%	22.5%	13.8%
Sample g	7.2%	2.6%	22.0%	-8.0%	-11.0%	-16.8%	-3.4%	3.5%	12.0%	17.7%
Depreciation	0.1%	-3.0%	-1.6%	12.6%	-3.2%	-4.5%	-0.3%	-2.7%	8.6%	-3.4%
London WE										
	1998	**1999**	**2000**	**2001**	**2002**	**2003**	**2004**	**2005**	**2006**	**2007**
Benchmark g	17.8%	14.2%	21.9%	15.9%	-8.6%	-18.8%	6.1%	7.0%	16.8%	25.9%
Sample g	11.4%	12.8%	20.7%	6.7%	-8.0%	-14.9%	3.1%	6.3%	14.2%	19.1%
Depreciation	5.5%	1.2%	1.0%	8.0%	-0.7%	-4.9%	2.9%	0.7%	2.3%	5.4%
Paris										
	1998	**1999**	**2000**	**2001**	**2002**	**2003**	**2004**	**2005**	**2006**	**2007**
Benchmark g			41.6%	4.1%	-7.0%	-9.4%	0.1%	3.2%	0.9%	7.0%
Sample g			13.2%	25.1%	2.0%	-4.3%	-1.6%	-0.1%	3.1%	6.5%
Depreciation			20.1%	-20.1%	-9.7%	-5.6%	1.7%	3.2%	-2.2%	0.4%
Stockholm										
	1998	**1999**	**2000**	**2001**	**2002**	**2003**	**2004**	**2005**	**2006**	**2007**
Benchmark g	6.7%	7.8%	42.0%	-18.4%	-10.0%	-5.6%	-2.9%	6.1%	5.7%	18.9%
Sample g	10.1%	14.4%	36.3%	-2.1%	-5.6%	-3.9%	-0.2%	-0.3%	2.5%	14.1%
Depreciation	-3.2%	-6.1%	4.0%	-19.9%	-4.9%	-1.7%	-2.8%	6.0%	3.0%	4.1%

3. RATES OF RENTAL DEPRECIATION AND EXPENDITURE

Figure 3.4 graphs the annual rental depreciation rates and, as expected, there is considerable variation year on year. However, it appears that there are some changes through time with higher depreciation rates (lower appreciation rates) at the beginning and end of the period than in the middle. Figure 3.5 sums the depreciation rates of each market in each year to reveal a distinct pattern.

Figure 3.4: Annual rental value depreciation rates 1997 - 2007

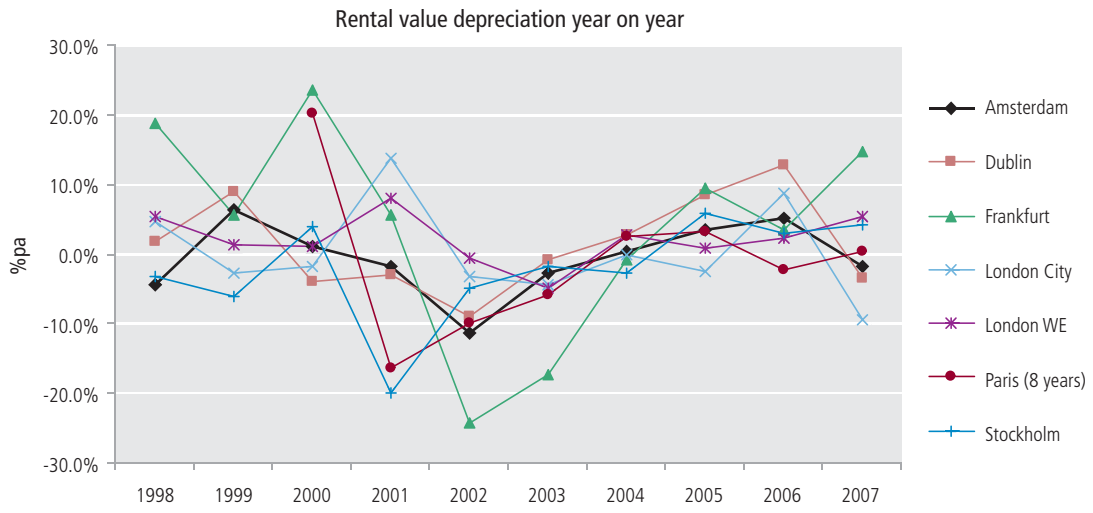
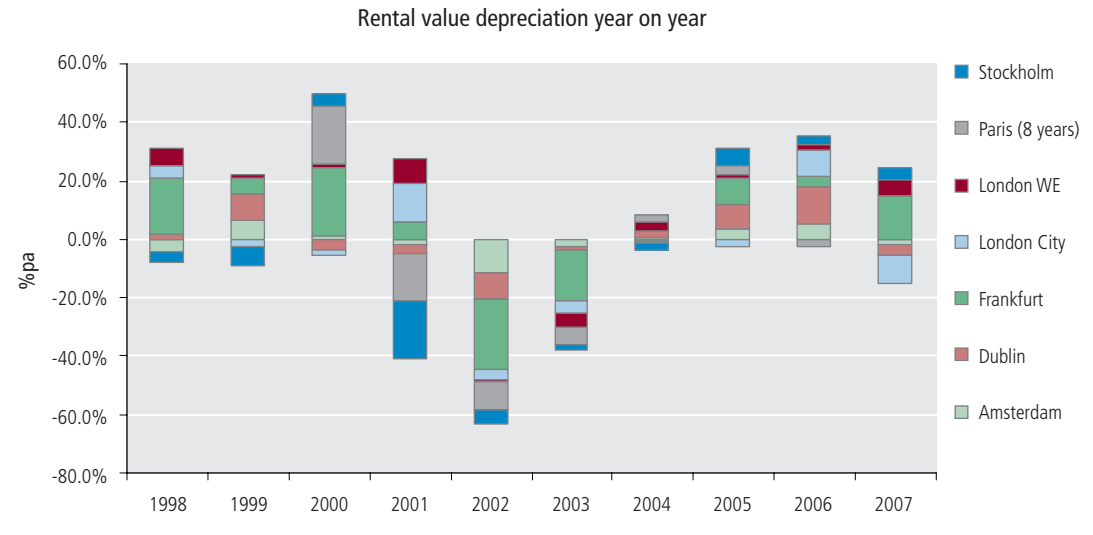


Figure 3.5: Sum of annual rental value depreciation rates 1997–2007



A number of hypotheses might be proposed for how the values of prime and average rents, and thus depreciation rates, might be expected to behave over the course of a market cycle. Focusing on weak markets, in particular, it could be argued that prime properties (proxied by the benchmark) are more likely to let than older, secondary properties (proxied by the sample, which contains a mix of assets) and that newer property rental values will remain healthier than the older, more secondary property. In this scenario, depreciation rates would rise during weaker market conditions.

Alternatively, however, it could be suggested that prime properties will suffer more than average assets in weaker markets. At first sight, this seems a less comfortable line of argument, but could be justified if, during a downturn, occupiers were more inclined to find cheaper space and would not rent new space unless at a big discount to its usual cost. However, these discounts would normally be in the form of incentives and these might not be incorporated into rent reductions if headline rents are used for benchmark and sample valuations.

The patterns shown in Figures 3.4 and 3.5 marry with market state indicators and suggest that the better the state of markets, the more depreciation is encountered and visa-versa; that in weak markets, there is less depreciation (more appreciation). Thus, average properties appear to have lost out to prime properties in the stronger lettings market and experience less rental growth than the benchmark as a result. Conversely, in the weaker lettings market, growth in the existing assets did not fall away as much. It may appear, therefore, that this supports the second hypothesis put forward above.

However, these conclusions are counter-intuitive and there may be another reason for them that needs examination. It is based on the methodology adopted and its use of rental value estimates.

3.5 The use of valuations

Analysis of the benchmark valuations against each sample of IPD properties and against the newest properties within those samples identifies some major issues with valuations in some countries. The more extensive analysis of this issue in the main report concluded that there were major valuation issues of lagging and smoothing that cast doubt on the year on year results and, in the case of Germany, on the whole set of results.

London was the city that had the least valuation inconsistency (after the issue of the low value sample in the City had been eliminated). Therefore, the UK results from the IPF (2005) study were not under suspicion. But both Dublin and Amsterdam have some element of lagging over this period, with sample rental values moving after the benchmark. Movements in sample and benchmark in Paris since 2000 seem to be consistent as are movements between the two data sources in Stockholm. However, Frankfurt starts the study period with the sample rental value above that of the benchmark and then the sample appears to have virtually no movement while the benchmark shows significantly more volatility. Table 3.5 shows that there is no correlation between the benchmark and sample valuation series in the Frankfurt office market.

Table 3.5: Correlations between sample and benchmark year-by-year rental growth

	Sample size of young cohort	Young cohort vs. benchmarks	Whole cohort vs. benchmarks	Young cohort vs. whole cohort
Amsterdam	9	0.62	0.64	0.87
Dublin	7	0.75	0.82	0.95
Frankfurt	6	0.03	0.08	0.54
London: City	13	0.86	0.84	0.93
London: West End	20	0.95	0.97	0.96

4. CONCLUSIONS

There is no reason to expect depreciation to manifest itself at either a constant rate as a building ages or in a consistent pattern through the cycle. The rate of depreciation over any time period in any city is a function of the changing occupier demand for bundles of functional, legal & aesthetic aspects of buildings. These tastes change as technology and working practices change and indeed the make up of occupier demand changes between businesses of different sizes and in different industries. The supply response will further impact upon the pattern of depreciation as new business districts are formed in a City or new supply is constrained. The rate of depreciation is also impacted by the cycle of rising and falling rents; we have no reason to expect the rate of depreciation to be the same when rents are high or rising as when rents are low or falling.

The headline rental depreciation rates derived from this study show very little consistency and so conclusions are difficult to construct. In three of the locations (Stockholm, Paris and Amsterdam), the sample properties have grown more than the benchmark, creating appreciation rather than depreciation rates. This begs a number of questions about how markets behave but also raises technical questions concerning the data used.

The basic analysis of rental depreciation rates ranges from nearly 5% pa depreciation in Frankfurt to appreciation rates of almost 2% pa in Stockholm over a 10 year period to 2007. Higher depreciation rates (lower appreciation rates) appear to be consistent with lower rates of expenditure on properties and these lower rates may relate to local influences such as lease structures, as previously suggested by Baum and Turner (2004). While this may be reinforced by the differences in expenditure between Dublin and Stockholm, neither owners in the City nor the West End of London appears to be spending less than Paris, Amsterdam and Frankfurt. Furthermore, the lack of change in lease structures over the period means that rates of depreciation should not have been distorted by changing lease structures.

The more disaggregated analysis of depreciation rates within each city potentially addresses a number of questions such as the shape of depreciation and the impact of market state. Yet the sub-market analysis reveals few if any insights into how depreciation works within a major location and the age cohort analysis does not appear to produce much evidence of a consistent shape to rental depreciation.

The age cohort results do suggest that depreciation reduces for properties over 50 years old, but even this evidence is not consistent for every location. The picture regarding the shape of depreciation for more modern offices is very confused. There is little evidence for the hypothesis that buildings depreciate less in the early stages of their life, this occurs in Amsterdam and London City only. But in London West End and Dublin, the highest depreciation is in the youngest cohort. Paris has a consistent rate across all cohorts apart from the older properties over 50 years which depreciate less.

The time period of the analysis spans a minor market cycle with a weakening of both economic and property market indicators in the early 2000s. The year-by-year rental value change and depreciation rates were computed to explore the potential influence that this cycle might have. They show that rental value depreciation seems to increase in stronger lettings markets and decrease in weaker lettings markets. Thus, existing properties seem to lose out to newer properties in the stronger lettings market. However, when markets are weaker, existing properties do relatively better than new by not depreciating as much.

These conclusions are tempered by data issues concerning valuations that could explain the variability in the results. Given the analysis of the German valuation system and approach, it is safe to conclude that rental valuations done for the individual assets and those undertaken for the benchmark could be based on a different approach, and trying to discern trends from analysis of this data is fraught with difficulties. Frankfurt's results are not the only ones which are affected by the valuation issues but, despite the fact that the conclusions are based on

analysis of only 17 properties, they appear to be particularly affected by major differences between the shape of the benchmark valuations and the sample valuations. The use of sustainable rental values is proven beyond doubt and means that any analysis of markets using rental value performance data from actual properties valued using the German approach is bound to show differences between Germany and other European markets, making comparison impossible. Over the longer term, average depreciation rates may be more consistent, but, in the case of Frankfurt, the fact that the average sample value is higher than the benchmark value at the start of the period is evidence of a major issue of inconsistency.

It may be too simplistic to suggest that only Frankfurt has a major valuation problem to address. Most of the benchmarks appear to be more volatile than the sample series. The sample properties seem to recover relative to benchmarks when rental growth slows. This may be a valuation process issue with a different mentality of valuers towards benchmark assessments than they have towards actual valuations within a portfolio. Where they are more conservative, it introduces more lagging and smoothing in the sample than in the benchmark. There is also the issue of whether both sample and benchmark valuations are using the same type of rental values; provable or achievable, and effective or headline. We have not investigated whether there are any client influence issues unless a hypothesis could be established that clients put more pressure on valuations when markets are weaker than when they are stronger.

The valuation issue raises some serious questions for the previous study of the UK market. If the methodology has not worked well in Europe, why shouldn't the UK results be contaminated in the same way? However, it does appear that in London the valuation issue is not a major influence on the results. In London West End, the performance of both benchmarks and sample valuations are consistent, while in Stockholm and London City there does appear to be very similar turning points in the sample and benchmark (apart from the last year in London City), so there is less concern here also. Given that the previous UK results were computed over both a 10 and 19 year time frame and the consistency in the performance of the samples and benchmarks used, the UK results in IPF (2005) would appear to be robust. In the UK study, the benchmark valuations were provided by a single supplier and that same supplier is now the largest valuation firm supplying portfolio valuations in the UK. The greater consistency between the benchmark and sample valuations is therefore not surprising.

However, there are greater concerns in Dublin, Paris and Amsterdam where this consistency of supply does not exist and there does appear to be some lagging in the sample valuations compared to the benchmark. We have not investigated the possible impact of lagging on depreciation rate measurement but feel that it deserves more attention in the future.

On account of the valuation issues that have been outlined in this report, we feel that any conclusions about the performance of prime and secondary properties through different market states are not reliable and remain as questions unanswered by this study. However, in the UK market, where the valuation issue appears to be of less concern, the pattern of depreciation through the cycle was the same as that identified elsewhere, with the benchmarks growing at a faster rate than the sample in the higher growth periods but falling by more than the sample when rental growth was less. Yet analysis of the newest properties in the sample against their benchmarks also shows the same pattern so even here the year on year results appear to be a product of valuation differences rather than a prime-secondary property difference.

The highest appreciation rate is in Stockholm. However, there is only one benchmark and although all the properties are in the same central city area as the benchmark, each location would have had to have retained its value relative to the benchmark over the 10 year period. The results suggest that the individual locations have improved relative to the benchmark, ie the office market has expanded spatially and more peripheral locations may have improved relative to the previous prime location. Without more investigation of the development of Stockholm CBD over the analysis period, the appreciation rate should be treated with caution.

4. CONCLUSIONS

In the case of Paris, which also indicated appreciation, there are a number of benchmark rent points. But the benchmarks are compiled by leasing agents who give an idea of the range of rents in an area, and the research used the top of this range on the grounds that this should be closest to the 'new' rent. Therefore, the benchmark data is further from the required definition for this project than in some other markets. Meanwhile, rental values in IPD are done by valuers and, traditionally, agents and valuers have been kept apart in this market; hence, organisation of the valuation profession in France may be another issue, contributing to the difference between benchmark and property measures.

One other data question is raised by the City of London. In both the original UK depreciation study and the latest study, City of London offices appear to have little depreciation and this has always been difficult to fully understand. The City stands out in particular in one of our analyses–the comparison of the average rental value of the sample against the average rental value of the set of matched benchmarks. The sample appears to have a rental value of only 35% to 40% of that of the benchmark, despite the fact that the average age of the sample here is only 22 years old at the start of the analysis period. This gap between the value of the sample and the benchmark may be having an impact on the results but this has not been investigated in this research.

The overall aim of this research was to produce rental depreciation rates for a number of office markets in Europe and to analyse the impact of asset expenditure on these rates. On the surface, the overall aim has been achieved, but the results are so fraught with difficulty we do not feel that they give a good indication of the levels of depreciation in Europe. It is often the case that research raises more questions than it answers; in this case it is true, but it is also true that some of the additional questions have been addressed.

The major issue that arises is with the method of measuring depreciation. To be more precise it is with the application of the method, which requires the relative differences between rental value movements in a held sample and an appropriate new benchmark property to be assessed. This approach appeared to work well in the UK but its application to Europe has not been easy. In attempting to apply the method, differences in the interpretation of valuations may be causing major distortions to the results.

This issue is not confined to depreciation. Inconsistencies in either valuation bases or interpretations of those bases leading to variable application are a performance measurement industry nightmare as the whole property performance measurement regime is valuation based. The use of global indices and information to support global investment analysis and investment is predicated on a consistent basis and so major anomalies between countries are at best misleading and could lead to unsound investment decisions. It is the obvious conclusion of this paper that a major research question for the industry is the reconciliation of global valuation practices and interpretations–it is not enough to have global valuation regulations, they are a starting point not a finishing point.

As far as depreciation is concerned, if the current datasets and valuation regimes in mainland Europe are not robust enough to identify depreciation via a longitudinal method, the alternative is to construct a cross-sectional study. The advantages are that inconsistencies between sample and benchmark valuations do not occur and the data is not confined to properties that have been in the dataset over the long-term. The disadvantages have been discussed in this paper and elsewhere and include the reliance on age as the main factor in determining cohorts and the single time point at which the analysis is performed. However, it would seem that, given the methodological problems identified in this study, cross sectional analysis is the only practical approach in the short-term, despite all of its theoretical limitations.

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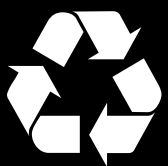

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