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Depreciation of Office Investment Property in Europe

Research Report

March 2010

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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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DEPRECIATION OF OFFICE INVESTMENT PROPERTY IN EUROPE

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1. INTRODUCTION

In 2005, a research team from the University of Reading and Investment Property Databank funded by the IPF/IPF Education Trust produced a set of depreciation rates for the UK property investment market including rental depreciation rates and the extent of capital expenditure necessary to keep rental depreciation to the reported figures (IPF, 2005). The research was based on definitions and measurement processes developed by Law (2004), and Crosby and Devaney (2006) subsequently extended this work to estimate the impact of depreciation on total returns.

In the previous IPF study, the results were disaggregated across 10 different sectors of the UK property investment market including four retail sectors, four office sectors and two industrial sectors based on IPD PAS segments. Both 10 year and 19 year depreciation rates were calculated for the periods 1984 to 2003 and 1993 to 2003 respectively.

The IPF project created a framework for other depreciation studies and also created expertise in the handling of the relevant data. The aim of this research is to extend the model to a number of European office markets where IPD have generated data across a number of years.

Understanding the nature of depreciation of property values is important for investors and advisors and they need to have some indication of the impact it 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 any financial or asset based issues which make it in any way different to the competing assets.

The basic return model for property includes depreciation. Total return is a function of income yield plus cash flow growth and models that ignore the impact of depreciation on cash flow growth may overstate the potential returns. Although analysis of past depreciation rates will not provide direct evidence of future rates, knowledge of the impact of depreciation in the past must inform the asset allocation decision.

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. Pricing models can be used for both acquisition/sale decisions and asset management decision-making and both require some element of the life cycle of the site and buildings to be assessed (either explicitly in the cash flow or implicitly in the exit yield). Increased knowledge of these items reduces the uncertainty surrounding cash flow estimates at both portfolio and individual level, contributing to managing that risk.

Apart from asset allocation, management decision making and appraisal issues, depreciation rates are increasingly required for bank lending decisions. Market valuations are sometimes subject to special assumptions and one of those is to value the building assuming it is at the end of the loan, ie 10 years older for a 10 year loan. Even if this appraisal is based on current value levels, the impact of the passage of time on rents and yields needs modelling. Depreciation rates inform these adjustments and are therefore increasingly being used to adjust market values for lenders' requirements.

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), which are then compared with Central London. They focused on the potential influence of different leasing regimes as one reason why depreciation in these markets might differ and other institutional

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factors will also prevent a simple transfer of UK rates or findings into other countries. Given this limited research into depreciation in Europe and our increased knowledge of how depreciation impacts on UK markets, it is timely to replicate the UK study across mainland European office markets.

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 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 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 benchmark location for each asset in the sample, data issues will be important to achieving the project aim and objectives.

The structure of this report is as follows. Chapter 2 sets out the methodology used for the study, while chapter 3 summarises the characteristics of the office markets in the selected cities together with the economic conditions over the period studied. This was in recognition that both market characteristics and the stage of the cycle could potentially be factors driving differences in the results across markets. Meanwhile, chapter 4 discusses the nature of the samples used in the investigation before chapter 5 presents the results. However, the depreciation rates are difficult to explain in terms of the expected drivers of differences between markets and this leads section 5 to debate valuation issues surrounding the production of rental data in Europe. Finally, chapter 6 draws out the main findings and conclusions reached by the research.

2. METHODOLOGY

The purpose of this chapter is to set out the approach and specific methods used in the analysis of depreciation. These are based on those used in a previous IPF project, *Depreciation in Commercial Property Markets* (IPF, 2005), which, in turn, was based on the work of Law (2004). That project 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 that debate here, but to highlight the elements of the framework that are necessary to understanding how the results here were produced.

However, applying the methods to new markets that have different characteristics from the UK has led to aspects of the approach being re-examined, as chapters 5 and 6 will discuss. This re-examination has focussed, in particular, on the importance of understanding the nature and limitations of valuations in the analysis of property markets. In particular, the longitudinal methodology adopted in this research relies on rental valuations of both individual assets and locations. If there are inconsistencies in how the valuations for each are produced, then this is likely to have a major impact on the results.

The chapter presents the methodology over the course of four sections. First, the concept of depreciation is defined as it is from this definition that the measurement principles are derived. Second, the formula used to measure depreciation rates is set out. Section 2.3 then outlines the nature of the benchmark for measuring depreciation in more detail. Finally, the fourth section explains the analysis of expenditure, setting out why this was also studied and how its measurement was undertaken.

2.1 Definition of depreciation

At the outset, it is important to make clear that this project is interested in depreciation as an economic concept, not an accounting one, though study of the former can inform treatment by the latter. Within an economic framework, depreciation is examined as a relative rather than absolute phenomenon; in other words, the project analyses how property values change in relation to a benchmark and not simply as against an initial purchase price or cost of construction. This is significant in the context of property investment, since decisions about the sale or redevelopment of properties are made in relation to the potential returns and values of other assets, and not in isolation.

This starting point arises out of work by Hotelling (1925), Hulton and Wykof (1976; 1981a; 1981b; 1996) and Jorgenson (1996), amongst others, on the depreciation of different types of asset. Drawing upon these studies, 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" (p.242, 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. The definition is a value-related rather than stock-related concept and it thus requires data on the rental or capital values of properties in order for depreciation to be estimated. In addition, it requires a benchmark against which these values can be compared. This is specified as the value of an equivalent new asset, with contemporary specification.

The last part of this definition is particularly significant. Depreciation may be caused by a number of factors, which include both physical deterioration and obsolescence, whereby an older building becomes less suitable for its purpose owing, for example, to changes in technology or working practices.[1] Therefore, as far as possible, the benchmark needs to represent the same type of asset, and also reflect innovations in the development of that asset

[1] More detailed taxonomies of the causes of depreciation are set out in Baum (1991) and in Hoesli and MacGregor (2000).

type; otherwise, the impact of obsolescence will not be captured. The precise nature of the benchmark is considered further in section 2.3.

A final point to note is that the definition above refers to both rental and capital values. In this project, the focus is specifically on depreciation in rental values. While the measurement of decline in capital values over time is interesting, it is complicated by several factors, as the previous IPF project noted. These include difficulties in separating out influences on building value from site value and redevelopment potential, and complications arising from changes in leasing and tenant covenant, which lie outside the traditional understanding of depreciation, but which can significantly affect capital valuations.[2]

Hence, to build understanding of differences between European office markets, the analysis has been restricted to rental values and expenditure in the first instance, although future analysis could further examine capital values.

2.2 Measurement of depreciation

It was noted by Law (2004) and IPF (2005) that there had been several previous studies that measured depreciation rates for UK commercial property, all of which included the office sector. These studies commenced with Salway (1986) and subsequent work was published by Baum (1991, 1997), JLW (1987), Barras and Clark (1996), and CEM (1999).

Despite apparent consistency in results, commented on by a number of authors (Hoesli and MacGregor, 2000; Turner, 2001), Law (2004) found that the studies included a wide variety of methods for measuring depreciation. When she applied these different methods to the same dataset, major differences in results were found. Hence, her work demonstrated that the rates found in previous studies were as much due to the methodology adopted as to differences in data samples or time periods. Therefore, she set out to determine a consistent, best practice framework for the measurement of depreciation.

Her main conclusions regarding the measurement framework and formula to be used can be summarised as follows:

1. A longitudinal rather than cross-sectional measurement of depreciation should be performed.
2. The formula should measure depreciation as a relative rate of decline (1 - d), derived from the difference between benchmark growth (1 + b) and growth in value by the asset (1 + a).
3. For a sample of properties, depreciation should be calculated from the aggregate change in values and, hence, be a value-weighted figure, consistent with wider performance measurement practice.

Consistent with these conclusions, Law (2004) then recommended the following formula, and both this report and the previous IPF report have adopted this calculation for rental depreciation rates:

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

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

Of the three points raised above, it is assumed that point 3 is relatively uncontentious, while, for point 2, readers are referred to the discussion in IPF (2005). In the case of point 1, though, a cross-sectional approach would have enabled a wider range of countries to be examined and for more buildings within each country to be considered. Thus, it is important to justify why longitudinal measurement is used.

[2] Deterioration in tenant quality for older buildings is the subject of related literature on 'filtering'. For instance, see Archer and Smith (1992) for an application to office markets.

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In a longitudinal design, time-series data on the values of properties are assembled and the depreciation of those properties over a specific period is analysed. With a cross-sectional design, data on values at a point in time are gathered and depreciation is measured from the relative values of different age buildings in that sample. Those studies that have solely studied this differential implicitly assume that depreciation is only related to age. However, to overcome this, a hedonic model, which can factor in other relevant influences such as design and location, could be used.[3]

The second drawback with a cross-sectional design is that relativities are likely to reflect the stage of the property market cycle at that point in time, and differentials in value between old and new buildings vary with the cycle as well as with the passage of time. This study examines the evidence of this changing differential in Chapter 5. The implication is that any measurements of depreciation from a cross-section will be hostage to market conditions at that point and so repeated cross-sections are necessary to check the consistency of results. On the other hand, a longitudinal design enables the effects of both market state and of age to be studied alongside the measurement of an overall rate.

Third, the longitudinal approach has advantages in that the shape of depreciation over the life of individual properties or cohorts can be analysed. Furthermore, other dynamic relationships, such as that between depreciation and expenditure can be tested. The 10-year periods used in this project preclude detailed analysis of shape, but do allow the links between depreciation and expenditure on properties to be explored. With cross-sections, because the data for each period represents a new, unlinked set of observations, it is difficult to study these aspects properly.

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, not only because some properties are demolished, but also because available datasets may be affected by trading or other issues that lead to missing observations. It is also the case that the characteristics of those properties that remain may be different from those that did not survive, leading to survivorship bias in the results. Hence, given the use of a longitudinal design in this study, the impact of survivor bias is tested for in chapter 4.

Meanwhile, it is recognised that studies to date, including IPF (2005), have not fully explored integrating the two different approaches (though some have used both longitudinal and cross-sectional techniques to produce separate sets of results). In this study, a simple examination of individual years within the longitudinal time frame has yielded several important insights, although these are as much to do with data quality as with depreciation and performance. Nonetheless, it suggests that future studies could benefit from adopting a panel data approach. This would allow the interactions between age, time and market state to be studied in greater detail.

2.3 Benchmarks for depreciation

Depreciation has been identified as a relative concept and, thus, needs to be measured relative to a benchmark. However, there are many possible benchmarks that could be used and, again, different studies have used different types of benchmark in the past. Law (2004) examined the use of different benchmarks with the objective of creating a framework for their choice within depreciation studies. Using the definition of depreciation stated above, she identified a model benchmark, which has the following key features:

1. Specification as new to an appropriate modern design. This is preferred to matching the specification of the existing property as it ensures that obsolescence is captured by the measurement.

[3] For example, see Dunse and Jones (2005), who also note the common use of hedonic models to study depreciation in housing markets.

2. In the absence of site specific data, the benchmark should have sufficient coverage and disaggregation that the location of a building can be matched to the benchmark in as much detail as possible.
3. The benchmark itself should not contain depreciation.

Available benchmarks can be categorised as either internal or external and, within the latter group, as portfolio ('market') or barometer ('prime'). An internal benchmark is derived from the measurement sample itself and, in a longitudinal setting, will almost certainly depreciate over the measurement period along with the other assets in that sample. Therefore, the main choice to make is between the two types of external benchmark.

Portfolio-based benchmarks are constructed using held samples of properties, but these are regularly refreshed to allow the entry of new assets. Such benchmarks do not usually monitor the performance of new assets alone and the age of the constituent assets will fluctuate over time with trading and development. Furthermore, they include depreciation because the held samples age over the period that rent change is calculated, regardless of the shortness of that period. Thus, in an annual rental value index, the rental value of a set of properties would be measured at the beginning and end of the year. Changes in portfolio make-up are then only incorporated at the end of the period and are measured from that point forward.[4]

Alternatively, barometer-type benchmarks published by major real estate service providers are usually measured on either a hypothetical or a 'top-rent' basis. The latter are directly constructed with reference to market transactions, but these may not necessarily reflect new properties in a period, while the location and nature of the subject buildings will change from period to period. On the other hand, hypothetical series, while drawing on knowledge of market transactions, are valuation-based. These should not include depreciation as, in theory, they reflect the hypothetical value of a new property in each period.

Hypothetical benchmarks, therefore, tend to approximate the model benchmark most closely and, for this reason, a set of such benchmarks was used in IPF (2005), these being the rent and yield points from the CBRE *Rent and Yield Monitor.* Provided that their specifications are regularly updated, they should allow calculations of depreciation rates to reflect obsolescence, in line with criteria 1. However, they are usually constructed with reference to the prime pitch of the chosen location. The use of a prime index when the sample is comprised of properties in non-prime areas may, therefore, misstate depreciation, as there may be differences in rental growth between prime and non-prime areas through different market conditions, introducing an element of location into the depreciation measurement.

The points above were used to guide the selection of benchmark series for the office markets analysed in this research, although the extent to which the model benchmark could be proxied varied across the locations. The sources and characteristics of the benchmarks used are discussed in chapter 4.

2.4 Measurement of expenditure

The other main area of measurement in this study is of the amount of expenditure on office buildings other than that on major refurbishment or redevelopment of the asset. A redevelopment has the effect of eliminating most or all depreciation as, at the end of the major works, the property reverts back or near to the level of the benchmark and then depreciation starts all over again (although, in reality, changes in planning that allow different uses or plot ratios mean that a different asset is often created). Within the development cycle, owners have the option of spending greater or lesser amounts on the property at regular or irregular intervals in order to arrest the relative

[4] These aging effects were demonstrated with reference to the IPD UK Annual Index in the second chapter of IPF (2005).

decline in rental value. Therefore, rental depreciation rates need to be assessed in conjunction with irrecoverable expenditure in order to assess the true impact of depreciation on the cash flow through time.

In the previous IPF study, capital expenditure over the period studied was summed for each sample of properties and then divided by the sum of their capital values over that period, producing an annualised average expenditure rate for each property type. The same approach was taken in this study, but with one important variation. Here, both capital expenditure and irrecoverable maintenance expenditure by landlords has been examined. Whereas it was assumed in IPF (2005) that the latter would be of little importance in the UK property market owing to the FRI nature of many commercial leases, this cannot be assumed in the case of European markets where there is a different sharing of obligations between landlords and tenants.

Thus, this project has calculated capital expenditure rates for individual buildings and the entire sample in each market, which are comparable with those in IPF (2005), maintenance expenditure rates and total expenditure rates that reflect the amounts spent under both of these headings. Given that there may be some ambiguity in how certain items of expenditure should be classified, the total expenditure rate is perhaps the most reliable measure of these three. The formulas for each are as follows:

$$\text{Capital expenditure rate} = \sum CE_{t0\text{-}tn} / \sum CV_{t0\text{-}tn\text{-}1}$$
$$\text{Maintenance expenditure rate} = \sum ME_{t0\text{-}tn} / \sum CV_{t0\text{-}tn\text{-}1}$$
$$\text{Total expenditure rate} = (\sum CE_{t0\text{-}tn} + \sum ME_{t0\text{-}tn}) / \sum CV_{t0\text{-}tn\text{-}1}$$

Note that the denominator in each case is the sum of capital values to the penultimate year rather than the final year. Hence, expenditure is being scaled in proportion to the capital invested at the outset of those periods in which it was incurred (and, computationally, there will be 10 valuations in each case to match the 10 expenditure amounts).

The treatment of expenditure is the subject of debate within property performance measurement (for instance, see Young, et al., 1995; Young, 1996). Normally, it is assessed in two different ways dependent upon whether the expenditure is seen as annual maintenance carried out by the landlord or one-off capital works to improve the property. Annual maintenance is perceived to reduce the annual income and is therefore taken off the gross income yield to get to a net income yield. Capital expenditure is perceived to enhance the value of the asset and so impacts on the capital growth element of the total return. As total return is a function of income yield plus capital gain it should not matter which element of total return capital expenditure is set against. However, it can have a huge impact on the two individual elements.[5] In performance terms, treating the capital expenditure as a reduction of income will generate high capital growth which is not as a result of market conditions and so could be misleading in a market context. But it does give a better indication of the actual cash flow of a set of buildings. Therefore, we have also measured the average annual proportion of rental value caused by all irrecoverable expenditure on the building, however classified by IPD. This gives a very generalised picture of the impact of building expenditure on rental income.

[5] Consider an income of £100, repairs of £2, capital expenditure of £75 and a capital value at the beginning of the period of £2,000 and £2200 at the end. The income return is either £23/£2000 = 1.15% or 98/2000 = 4.9%. The capital growth is either (2200-2000-75)/2000 = 6.25% or (2200-2000)/2000 = 10%. But the total return is 11.15% in both cases.

3. STUDY LOCATIONS

Thus far, the report has made a case for why depreciation should be studied and why its study should be extended to the property markets of different countries. In the preceding chapter, the report has also presented a framework for depreciation measurement. However, there has been no discussion as yet of the particular office markets to be studied, other than to identify that they are Amsterdam, Dublin, Frankfurt, Paris and Stockholm, in addition to the UK office markets of the City and West End of London. Hence, this chapter seeks to address this omission by outlining the characteristics of the office markets concerned.

Three aspects are especially stressed. The first part of the chapter includes a brief introduction to the individual locations and their office stock. The second section outlines the nature of commercial leases in the selected cities/countries because previous studies have suggested links between leasing, management policy and depreciation rates (see Baum and Turner, 2004; Baum and Devaney, 2008). Finally, the third section presents evidence on economic and property market conditions over the period of analysis. This sets the framework for any subsequent analysis of the potential impacts of different market states on the results.

Before moving to consider these aspects in more detail, it is necessary to explain why these cities were selected for analysis in this report. The main reason relates to the availability of data. Consistent with the longitudinal approach described in section 2.2, it was intended to define an overall time frame that was as long as possible and, ideally, which would span a property market cycle. However, a restriction to the feasible time frame was presented by the fact that the systematic collection of property market indicators and performance data is a relatively recent phenomenon in many European countries.

These two points led to a trade-off having to be made between the length of the period and number of locations that could be included in this research. This trade off was guided, in particular, by the availability of IPD data for different European countries, as IPD is the main independent source of performance data on individual buildings, including aspects vital to this research such as rental values and expenditure records. The research team used a period of 10 years as being the minimum over which it was felt depreciation could be meaningfully traced.[6] The implications this had for the choice of countries can be seen by reference to Table 3.1, which reports the start year for different IPD country indices.

[6] In the event, depreciation for Paris could only be measured over 8 years owing to a lack of market rental value data in the IPD France databank.

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Table 3.1: 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)

3.1 Sub-markets and the office stock

A short description of the office markets in each of Dublin and the four mainland European cities will now be given, beginning with Amsterdam. The purpose of each description is to highlight any differences between the main office sub-markets within each city, and what the broad issues relating to depreciation in those locations might be as a result.

Amsterdam

Amsterdam has a long history as the main commercial and financial centre in the Netherlands. In recent decades, in common with many western European cities, it has undergone industrial restructuring, declining as a port and manufacturing centre, but increasing in importance as a service centre (Terhorst and van de Ven, 2003). Currently, Amsterdam has little manufacturing industry (2% of employment and 3% of firms classed as Industry) and major activities include Commercial Services (27% of firms and 24% of employment) and Finance and Insurance (13% of firms and 9% of employment). Health Care and Welfare Services (12% of employment), Retail Trade (10%) and Wholesale Trade (9%) are also important (Gemeente Amstelveen, 2008)

This change in economic orientation has shaped the development of the property stock in the city. In particular, there has been a structural shift towards office based uses and the demand for office accommodation has risen as a result. While the traditional location for office activities was the city centre, this area was unable to support expansion owing to constraints posed by its historic environment, which the city authorities have sought to preserve (Terhorst and van de Ven, 2003). Hence, several new office districts have emerged in suburban areas of Amsterdam from the 1980s onwards.

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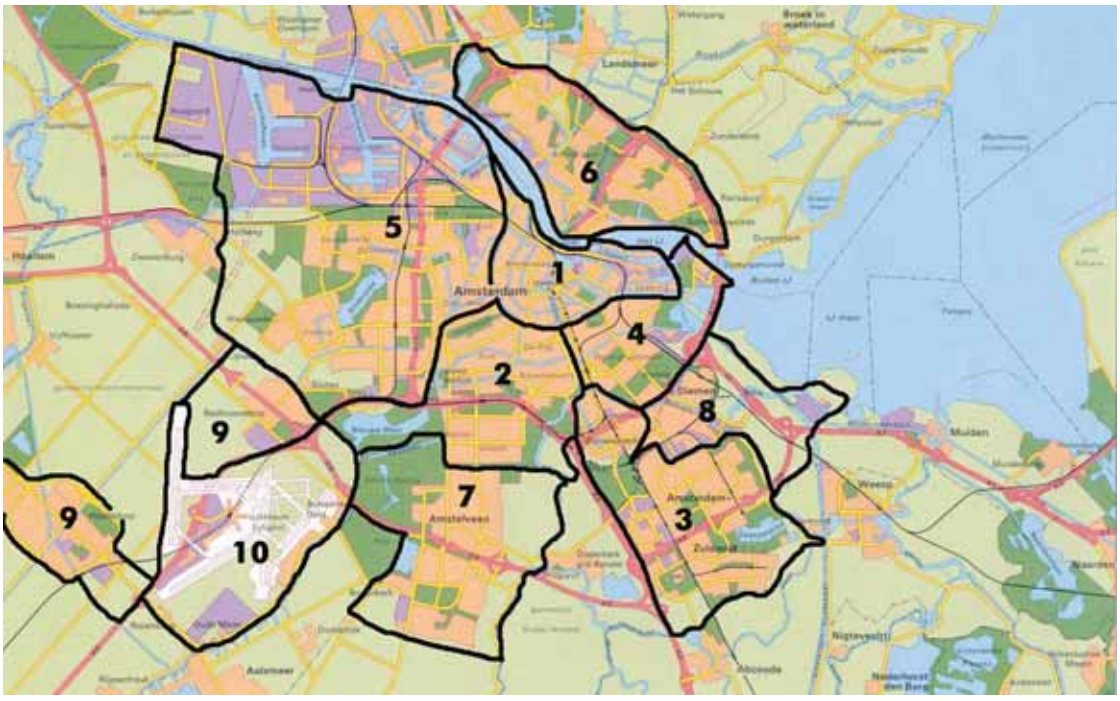
The most important office districts in Amsterdam are now the Zuidas (South Axis) and the areas surrounding Schiphol, the country's main airport. Both of these areas offer modern office accommodation and are highly accessible. These features explain why Amsterdam South and Schiphol command the highest rents in the Amsterdam urban area. There has also been some office development in the west and the south east of the city, but these areas are more peripheral and less attractive to international occupiers.

Figure 3.1. Map of Amsterdam's main office sub-markets



Source: CB Richard Ellis

Key:

1. Amsterdam Centre
2. Amsterdam South
3. Amsterdam South East
4. Amsterdam East
5. Amsterdam West
6. Amsterdam North
7. Amstelveen
8. Diemen
9. Hoofddorp
10. Schiphol

3. STUDY LOCATIONS

The total office stock in the Greater Amsterdam region has increased from around 5.5 million sq m in 1996 to just under 8 million sq m in 2007, an increase of over 40%. However, this is not evenly distributed around the different sub-markets and a more detailed review of each of them follows.

AMSTERDAM CENTRE: As indicated above, office development on land in Amsterdam's city centre is more or less frozen. Historic buildings are often too small for large offices and shops, and the fragmented ownership structure makes it difficult to combine two or more buildings (Terhorst and van de Ven, 2003, p. 91). However, there is one part of the central area that is being developed on land that used to belong to the old port. The entire developed area is known as IJ-as (IJ-axis) and comprises Sloterdijk, the Southern IJ shore, the Eastern port area and IJburg. The IJ-axis development started in 1991 and from 1998 until 2008, two main projects have added 175,000 sq m of office space. The total stock in this part of the Centre is around 1.2 million sq m (CBRE, 2008a)

AMSTERDAM SOUTH: This area is home of the Zuidas (South Axis), which is situated either side of the circular road A10. It began with scattered developments during the eighties and formally developed in the mid nineties. Today, the area is still the subject of constant planning interventions (Majoor, 2008, p. 67). As indicated above, this is the area which has the greatest amount of new development. The most recent plan proposes 1.1 million sq m of new office space over the next 30 years, while existing stock in this area currently totals just under 1.2 million sq m.

AMSTERDAM SOUTHEAST: This includes the Bijlmermeer and the neighbourhoods of Gaasperdam, Bullewijk, Venserpolder and Driemond. It has developed rapidly as a sub-market in the past 10 years and total office stock now stands at just under 1.2 million sq m (CBRE, 2008a).

AMSTERDAM WEST: The main area of Amsterdam west is Sloterdijk, which is located 3km northwest of the city centre. When Amsterdam was divided into boroughs, Sloterdijk became part of the new borough of Bos en Lommer. The business districts fell under the jurisdiction of Westpoort. A considerable amount of new office space has been added during the past ten years (CBRE, 2008b) and total stock now stands at 1.6 million sq m (CBRE, 2008).

DIEMEN: Diemen is located to the east of Amsterdam within the capital's metropolitan area. The town is split into three: Diemen Noord, which contains many of the town's older buildings, Diemen Centrum, separated from Nord by the motorway, and the largest of the three which is called Diemen Zuid. Located south of a canal, it is often grouped together with the Bijlmer (see Amsterdam Ziud-oost). Total office stock stands at around 300,000 sq m having increased from 250,000 sq m in 1996.

AMSTELVEEN: The last decade has seen significant new office development, particularly for trading, banking, insurance companies and airlines such as KLM. Amstelveen centre has been the subject of extensive restructuring. The western part was completed in 2004 and the park area to the east is near completion. (Gemeente Amstelveen, 2004). Total stock now stands at over 600,000 sq m having risen from 500,000 sq m in 1996.

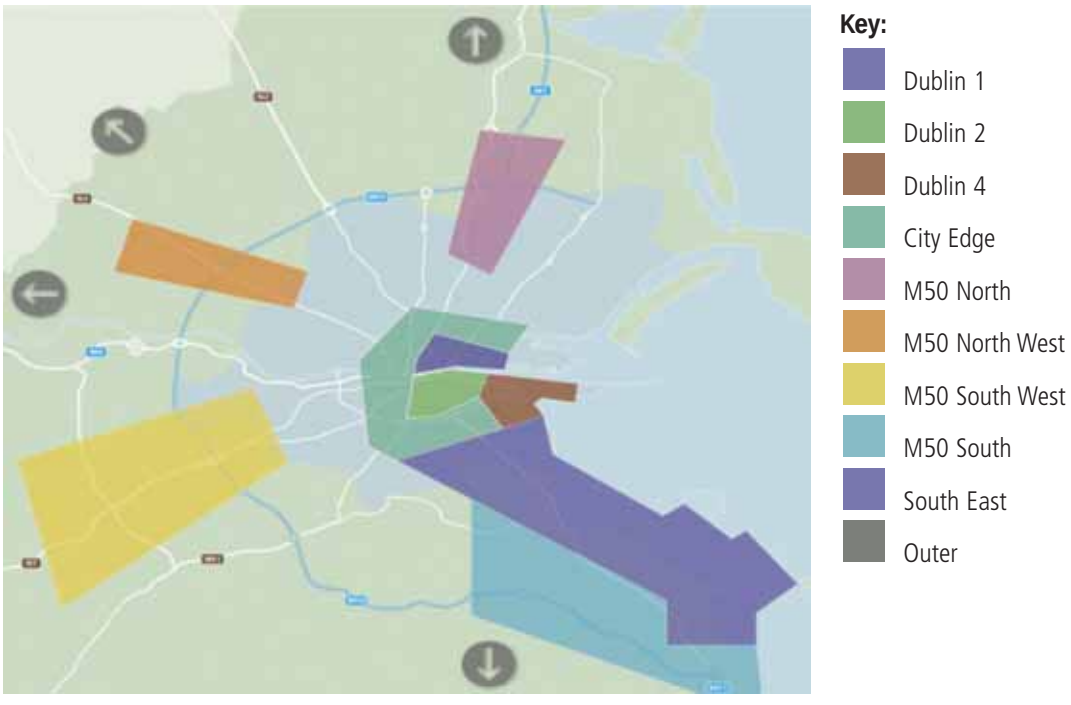
HOOFDDORP: Hoofddorp is improving, particularly due to further development of the Beukenhorst-Zuid area. Beukenhorst is home to more than 330 companies. Currently this business park is the largest in the area with a current stock of 425,000 sq m of office space.

SCHIPHOL: Amsterdam Airport Area (AAA) is a leading international business location, comprising a number of major business parks. The total stock of office space has doubled from around 300,000 sq m in 1996 to around 600,000 in 2007 and there are plans to expand this still further in the future. For example, the Schiphol Elzenhof office location will be developed along the A4 motorway. Elzenhof will comprise approximately 200,000 sq m of business floor space.

With respect to this project, there is a distinction to be made between the faster developing areas of Amsterdam South and Schiphol and the rest of Amsterdam, especially the historic centre. The greater land supply coupled with policies to promote these two districts as international business locations (Meyer and van den Burg, 2005) suggests that offices in these areas may experience rapid depreciation and/or require more expenditure in order to keep them competitive. Conversely, while the city centre as an area may have declined relative to other sub-markets, existing offices may not depreciate against a city centre benchmark owing to the severe limitations to further supply. Whether or not these suggestions are borne out will be seen in chapter 5.

Dublin

Figure 3.2: Map of Dublin's main office sub-markets



Source: Jones Lang LaSalle, Dublin

During the eighteenth century, the expansion of Dublin was rapid compared to the rest of Europe and its industrial functions became significant. However, in the nineteenth century, the city suffered political and economic decline and this continued in the 20th century. By the 1980's it was clear that Dublin needed drastic solutions to a major housing problem. At the same time, government planners were marginalised as developers criticised the system, claiming it was slow and inefficient (McGuirk, 2000).

3. STUDY LOCATIONS

A series of central government interventions into the regulation of property development was launched by the Urban Renewal Act and the Finance Act of 1986 (McGuirk, 2000, p. 655) and tax incentives to promote new development in Designated Areas were introduced. A spatial planning authority was created to mastermind regeneration of Customs House Docks as an international finance service centre (the IFSC). Designated Areas and the duration of incentives were extended with a second round of Designated Areas introduced from 1994 to 1997.

As a result of the above, McCartney (2008) indicates that of the 3 million plus sq m of modern office space (post 1960) as at June 2008, two-thirds has been constructed since 1990. Annual completions have been cyclical and, during the study period, new space rose from under 70,000 sq m in 1996 to well over 300,000 in 2001 before falling again to a low of around 60,000 sq m in 2004. New space then rose again to over 250,000 sq m in 2007.

Although the bulk of the City's stock is situated in the Centre (Dublin 1, IFSC, Dublin 2 and Dublin 4), there has been significant expansion in the suburbs to the north, west and south. Dublin 2/4 has 40% of the stock and Dublin 1 has 12%, as does the suburban area fringing the city centre (JLL, 2008b). The older (Georgian) stock is mainly situated in Dublin 2 to the south of the river Liffey, with some in Dublin 1 immediately north of the river.

For the purposes of delineating the sub markets of the Dublin office market, the City has been examined by reference to four major areas although data is only available for three of the areas. These sub-markets are:

DUBLIN 1/3/7: This area includes most of the inner city located to the north of the river Liffey. The most important regeneration project in the area has been the Historic Area Rejuvenation Project (HARP) set up in 1995. HARP comprised a site of 109 hectares and stretches from O'Connell Street westwards to the National Museum at Collins Barracks. The area offers tax incentives to property owners to develop their properties. The scheme involved several redevelopment areas: the Smithfield Civic Space (1991 east side and 2001 west side), the O'Connell Street Integrated Area Plan, the North East Inner City Integrated Area Plan (1998) and the Dorset Street and Canal Area Plan (2002).

IFSC: The International Finance Service Centre lies within Dublin 1. The Urban Renewal Act 1986 delineated the boundaries of this area, which included the land between Amien Street to the west, Common Street to the East, Sherriff Street Lower to the north and Custom House Quays to the south. The Urban Renewal Acts of 1987 and 1994 expanded the site to include the land to the east until Spencer Dock and an extension to the centre of the Liffey. Since 1987 the IFSC has become the largest anchor project in the city. The IFSC, incorporating the IFSC 2 extension, is currently nearing completion and includes an area of 39 acres with almost 200,000 sq m of office space.

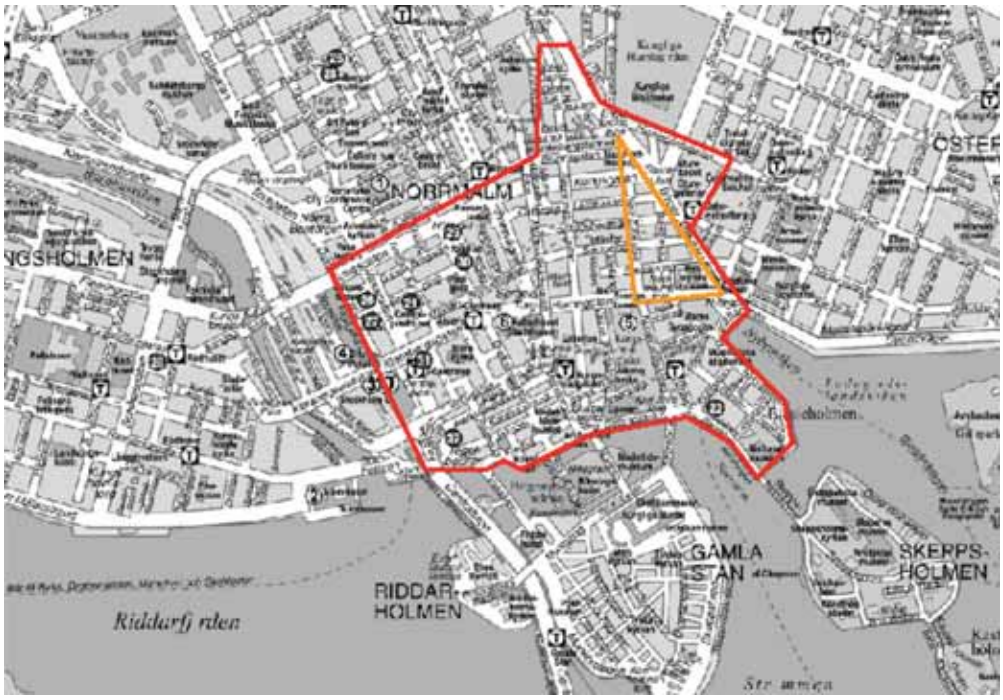
DUBLIN 2/4: This comprises most of the city centre south of the river Liffey and includes important commercial properties in the areas around Merrion Square, Grafton Street and Temple Bar. Temple Bar is the most important project of the area. However, in 2008, while 230,000 sq m of new office space was completed in Dublin, only around 20,000 sq m was in Dublin 2 and even less than that was situated in Dublin 4 (JLL, 2008b). In 2005, 46% of the total stock was situated in Dublin 2/4, but by 2008 it had dropped to 41% (Hamilton Osborne King, 2006; JLL, 2008b)). Despite this, nearly half of the total stock in Dublin 2/4 has been developed since 1996 but much of the older stock is in Dublin 2 as well as Dublin 1.

SOUTH, NORTH AND WEST SUBURBS: This area includes the rest of the Dublin office market outside of the other three sub markets. It includes a variety of areas such as the City Edge, which encircles the city centre to the north, west and south, the areas around the M50 which circle around the outer City, and the areas to the southeast, including Dun Laoghaire. The suburbs now comprise 47% of the total stock (JLL, 2008b) and much of this has been developed since 1996.

All of the areas under study in Dublin have at least one new development and this development has been active throughout the analysis period. This provides appropriate benchmarks in all areas where sample properties are located and also means that Dublin is an example of a relatively young office market.

Stockholm

Figure 3.3: Map of Stockholm's main office sub-markets



Source: CB Richard Ellis

Key:

Stockholm CBD

Golden Triangle

The oldest settlement in Stockholm dates back to the thirteenth century but it was not until the seventeenth century that it started to expand significantly. The next period of major change was experienced during the nineteenth century, after an increase in the city's population from 2.4 to 3.5 million during the first four decades of the century. At this time, Stockholm was mainly a trading port and development concentrated on the construction and equipment of quays and improving the harbours (Hall, 1997).

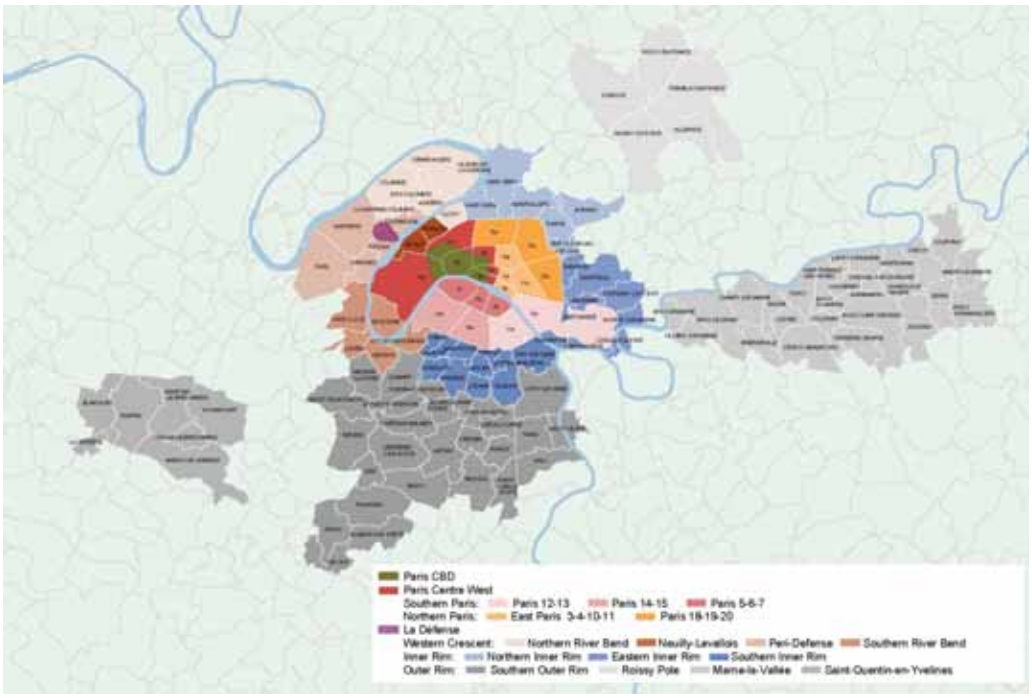
3. STUDY LOCATIONS

During the early part of the twentieth century, Sweden went through a period of more technical planning. Albert Lilienberg's 1928 master plan for Stockholm's inner city included strict planning regulations which aimed to target the housing problem that the city was facing (Hall, 1991). This led to plans for radical renewal of the City Centre. Work finally began in 1951 and more than 400 properties were demolished and replaced by about 100 new buildings. At the same time, many streets were widened and underground and traffic tunnels were constructed. However, by the end of the 1960s, due to issues concerned with the organisation of the renewal by the local authorities, large sections of the centre had been demolished without securing prospective builders (Hall, 1991). During the 1970s, new plans with a more conservative approach began to appear for the CBD. As a result, much recent development here has been the upgrading of existing office stock rather than new construction. Currently, the main office locations in Stockholm are the CBD, Stadshagen, Norrtull, Kista, Globen, Nacka Strand, Alvik, Hammarbyhamnen and Marievik (Rabenka and Luchko2007).

The Greater Stockholm area had about 11.6 million sq m of office space in 2007 with about 1.8 million sq m located in the CBD. Traditionally the prime office market has been within the Golden Triangle, the area around the Birger Jarfsgatan. Over the analysis period, the prime location within the CBD has gradually moved westwards towards the central station (CBRE, 2009) because of the pattern of new development and the increasing numbers of workers commuting by train. For the purposes of this project, the available data for the sample is predominantly located in the traditional CBD and the benchmark is located in the Golden Triangle. The depreciation analysis is dominated by older buildings in the CBD, but it does appear that the CBD has expanded which could mean that buildings located at the fringe of the CBD in 1997 have become better located relative to the benchmark by 2007. Overall, Stockholm is an example of an office market dominated by older existing stock with the average age of the IPD sample being well over 50 years (see Table 4.6).

Paris

Figure 3.4: Map of Paris's main office sub-markets



Source: CB Richard Ellis

Modern Paris begins with the intervention of Napoleon III and Haussmann in the nineteenth century with the development of the core into an area of open streets, light and air by providing the city with green spaces and boulevards (Jordan, 2005). In 1860, the enlarged city was divided into 20 arrondissements, each comprising four wards.

In the second half of the 20th century, plans that restricted the development of Paris in the 1950s and 1960s were replaced in the 1970s by a plan to develop the City's transport and housing to compete with other major world cities (Evenson, 1979). Subsequent to this, the office market in Paris expanded out of the traditional CBD to the West with developments in the Western Crescent and La Défense. By 2007, Knight Frank (2007) estimated that the total office stock of the Ile-de-France was nearly 50 million sq m.

The Paris office market can be segmented in a number of ways as illustrated in Figure 3.4 and both the sample and benchmark data has been provided using a number of different aggregations. However the five main areas are as follows.

CBD and CENTRE WEST: Paris Centre West is a combination of the CBD and the Centre West and covers most of the 8th arrondissement and part of the 1st, 2nd, 9th, 16th and 17th arondissements. It contains the "Golden Triangle" which lies in the 8th arrondissement, bounded by the Arc de Triomphe, Place de la Concorde and Avenue d'Léna. There has been substantial renovation here during the late 1980s (Nappi-Choulet et. al. 2007).

3. STUDY LOCATIONS

During the 1980s, development was located in both the traditional central business district of Paris and its adjoining western suburbs (Nappi-Choulet, 2006) but there is no evidence to suggest that development to the west, including the creation of La Défense, weakened the CBD. Rather it has been suggested that company headquarters and employment-intensive producer services have preferred La Défense while financial and business services continued to seek space in the CBD (Shearmur and Alvergne, 2002). Total stock in the area was around 7.5 million sq m at the beginning of the analysis period, rising to around 8.5 million by 2007 (CBRE, 2008c). The area is therefore dominated by older properties.

REST OF THE PARIS CENTRAL AREA: This relates to parts of both southern and northern Paris. In the south, it includes the area to the south of the river in arondissments 5, 6, 7, 13, 14 and 15 and the area around the Gare de Lyon railway station in the 12th arondissment. The office stock in this district was around 4.75 million sq m in 2007. Northern Paris includes the area in arondissments 3, 4, 10, 11, 18, 19 and 20 and comprises nearly 3 million sq m of space in 2007 (Knight Frank, 2007).

WESTERN CRESCENT: This area covers the towns on the western border of Paris Centre; from Issy-les-Moulineaux to Levaillois-Perret. Office developments in this area accounted for 70% of all Paris region planning permissions granted in the late 1980s (Nappi-Choulet et. al. 2007). In 1996, total stock was estimated at under 5 million sq m. By 2000 this had risen to 5.7 million sq m and by 2007 it had accelerated to nearly 7 million sq m (CBRE, 2008c)

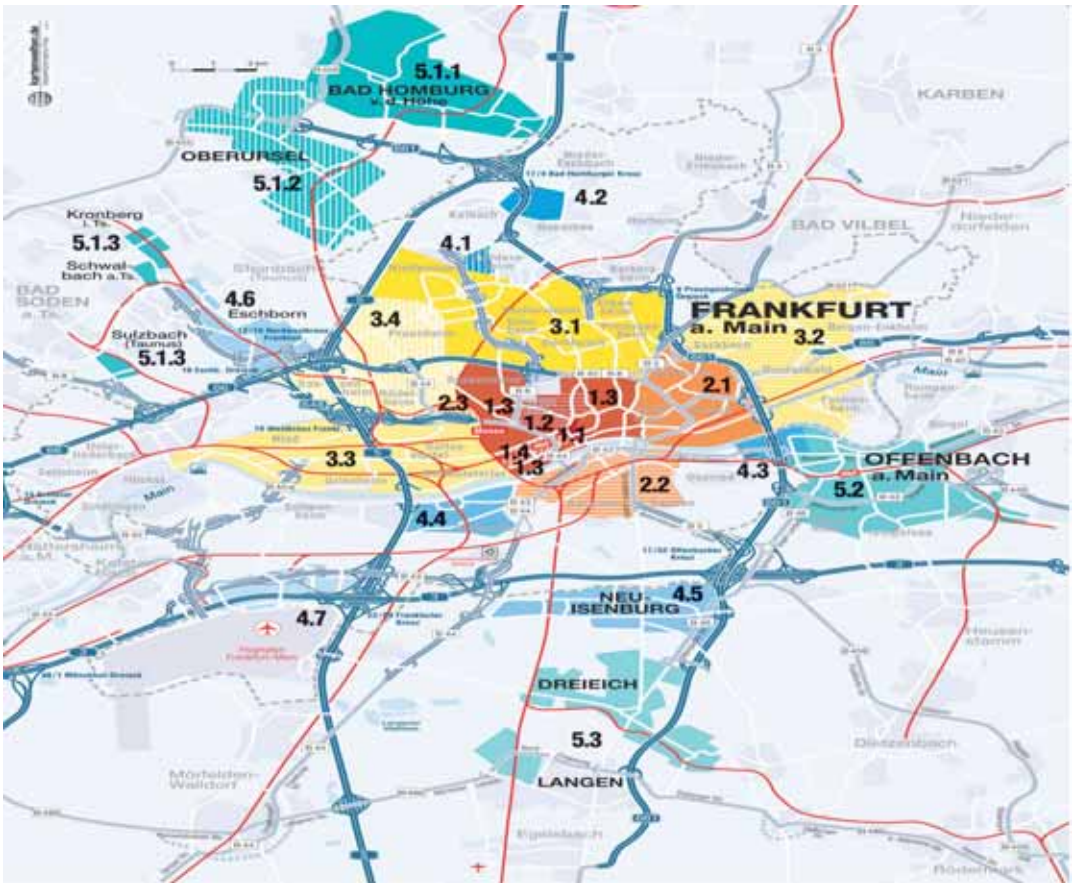
LA DÉFENSE: The area within the Western Crescent was developed during the 1960s under government patronage on land belonging to the three towns of Puteaux, Courbevoie and Nanterre. The most intense periods of development took place between 1985 and 1992, and since 2000. It now offers around 3 million sq m of office space (Nappi-Choulet et. al. 2007; CBRE, 2008c, Knight Frank, 2007) a rise from 2.4 million sq m in 2000 (CBRE, 2008c). The Western Crescent and La Défense have a much younger stock than in the Centre.

REST OF THE ILE-DE FRANCE: The central office area of Paris, La Défense and the Western Crescent make up a total of around 26 million sq m of space in 2007 (Knight Frank, 2008). The rest of the Paris office market is located to the north, east and south of the central district in the Petite Couronne and comprises less than 5 million sq m of space. A further 18 million sq m is situated in the outer ring of the Grande Couronne. The sample only includes 14 properties in this submarket; six in the Petite Couronne and eight in the outer region.

The centre of Paris is similar to London West End and Stockholm in that the property stock and the IPD samples used in the study are older properties, while the sub-markets to the west of Paris Centre are younger, as is the average age of the samples (see Table 4.6).

Frankfurt

Figure 3.5: Map of Frankfurt's main office sub-markets



Source : BNP Paribas

Key:

1 City	**2** Cityrand	**3** Stadtrand	**4** Nebenlagen	**5** Peripherie
1.1 Bankenviertel	**2.1** Ostend	**3.1** Frankfurt-Nord	**4.1** Heddernheim/ Mertonviertel	**5.1** Vordertaunus
1.2 Westend	**2.2** Frankfurt-Süd/ Sachsenhausen	**3.2** Frankfurt-Ost	**4.2** Nieder-Eschbach	**5.1.1** Bad Homburg
1.3 Innenstadt	**2.3** City-West	**3.3** Frankfurt-West/ Gallusviertel	**4.3** Kaiserlei	**5.1.2** Oberursel
1.4 Hauptbahnhof		**3.4** Rödelheim/ Hausen/ Sossenheim	**4.4** Niederrad	**5.1.3** Schwalbach/ Kronberg/Sulzbach
			4.5 Neu-Isenburg	**5.2** Offenbach
			4.6 Eschborn	**5.3** Dreieich/Langen

The City of Frankfurt is located in Hesse, one of Germany's 16 States. The economic development of Hesse has been dynamic, and the region that includes Frankfurt and the surrounding Rhine-Main is "an economic region of trade and service companies" (Garcia-Zamour, 2001).

3. STUDY LOCATIONS

Urban policy in Frankfurt underwent substantial changes in the 1980s. The main objectives of the new strategies have been the creation of a new skyline suitable for a world financial centre, the suburban development of related economic activities and the growth of the airport. To achieve these goals, various semi-public corporations and public departments were set up including the Economic Development Corporation in 1987 and bodies responsible for managing the airport and exhibition and conference centres. These bodies were given significant autonomy (Newman and Thornley, 1996).

Lizieri, et al, (2000) noted that much of the available stock at that time was in old space requiring renovation and that large buildings were in short supply. In February of the previous year, Frankfurt had unveiled a 10 year programme (Frankfurt 2000 or High Rise Framework Plan) to increase office space by 2.4 million sq m, including a plan to develop 20 new skyscrapers. The bulk of the development was to be in two areas adjacent to the trade fair and the station. The skyscraper plan reflected the German labour and health safety laws relating to natural light. This made low building heights and large floorplates difficult to develop (Lizieri, et. al., 2000).

Between 1996 and 2000, the total office stock had increased from 8.5 million to 9.5 million sq m and by 2007 it had increased to nearly 12 million sq m (CBRE, 2007). However, letting activity remained fairly constant over the period leading to a tenfold increase in availability between 2000 and 2005, to over 2 million sq m (Colliers, 2005). By 2007, it had dropped to around 1.3 million sq m, a vacancy rate of just over 10%.

The Frankfurt office market can be segmented to a relatively large number of sub markets as illustrated in Figure 3.5. CBRE (2007) identify 20, dr lübke (2007) 18 and Colliers (2005) 11. However, the IPD sample is only 17 properties and, although segmentation was attempted in two ways (by distinguishing the City from the rest, and also by four segments; Frankfurt CBD, Frankfurt Westend / Nordend, Frankfurt Niederrad / Sachsenhausen and the rest of Frankfurt Municipality), the analysis has ultimately been undertaken without any disaggregation below city level and the analysis is of a young stock similar in average age to Dublin and Amsterdam.

3.2 The structure of commercial leases

Lease characteristics vary across European markets in terms of lease term, break options and rent reviews, among other features. Given the use of market rents for both the benchmark and the sample to determine the depreciation rate it is necessary to investigate if lease differences across Europe or changes to leases within a centre during the analysis period could have affected the results.

A review of the general literature available on lease structures in the countries under study reveals that there has been little change between 1994 and 2006 in France (Lofstedt and Baum, 1993; Austin, 1994; Worzala and Bernasek, 199; Crosby and Murdoch, 1998; Baum and Turner, 2004; Drivers Jonas, 2005; and DLA Piper/FIABCI 2006), Germany and the Netherlands from 1993 to 2006 (Lofstedt and Baum, 1993; Worzala and Bernasek, 1996; Crosby and Murdoch, 1998; Baum and Turner, 2004; and DLA Piper/FIABCI, 2006) and no changes in Sweden from the period starting in 1998 until 2006 (Crosby and Murdoch, 1998; Gunnelin and Söderberg, 2003; Baum and Turner, 2004; and DLA Piper/FIABCI 2006).

However, there have been significant changes in the UK, fully set out in DETR (2000) and ODPM (2005)–see also BPF/IPD, 2009; Lofstedt and Baum, 1993; Worzala and Bernasek, 1996; Crosby and Murdoch, 1998; Baum and Turner, 2004;–and in Ireland from 1996 to 2006 (Worzala and Bernasek, 1996; Crosby and Murdoch, 1998 and DLA Piper/FIABCI, 2006).

3. STUDY LOCATIONS

The DLA Piper/FIABCI (2006) study suggests that the major change in the period to leases in Ireland is the lease length which is now 15 years, 35 years leases were not uncommon at the beginning of the period of study. UK leases have also changed significantly in this respect and DLA Piper/FIABCI (2006) suggest a typical lease length is 10–15 years. Due to UK Government interest in lease issues over the last 15 years, extensive analysis has been undertaken of UK lease data. Weighted by value, the DLA Piper/FIABCI (2006) generalisation of 10 to 15 years has some validity with the modal lease length for offices being 10 years and 15 years for retail (ODPM, 2005). However, although standard lease lengths for good quality UK commercial property at the beginning of the 1990s were 25 years, the reduction had already began well before the start of the study period and by 1997 average lease lengths for offices were around 15 years weighted and eight years unweighted (DETR, 2000; ODPM, 2005). By 2006, they had reduced to around 10 years and 6.5 years respectively (BPF/IPD, 2007). The major changes had therefore taken place prior to the start of the analysis period for this study.

If lease length impacts on rental value, the changes in lease length in Ireland and the UK would have an effect on both the rental values for the benchmark and the sample rental values. However, the investigation of the impact of lease length on UK rental value contained in ODPM (2005) was inconclusive as was the similar study carried out by Bond and McAllister (2008). A table comparing the main provisions of leases in the selected countries is set out in appendix 1.

Lease structures raise two major issues for the analysis of depreciation rates. First, the length of lease can have a bearing on the amount and timing of expenditure on the property. Baum and Turner (2004) suggest that lease length affects the landlord's ability to actively manage property and to maximise NPV by optimising the timing of reinvestment of income in improving the property. The previous IPF study found that property types with high capital expenditure often had low rental depreciation and it is important to report both the rate of expenditure and the rate of rental depreciation to fully appreciate the impact of depreciation.

Second, leasing incentives may distort the level of rental value reported in both the benchmark and the sample properties. RICS (2005) describes a number of different approaches to encouraging a tenant to take a letting at a relatively high contract rent and they include rent free periods above the normal fitting out period, stepped rents, capital payments and take back of existing premises. Various methods based on either conventional capitalisation rates or more explicit cash flow can be applied to determine the market rental value in the absence of any of these incentives (effective rent) and these are set out in a number of texts (see, for example, ODPM, 2005; RICS, 2005; Brown and Matysiak, 2000). There is a possibility that different assumptions are made concerning the rental value estimates between benchmarks and sample properties.

In the only examination of the interpretation of rental values being delivered to IPD, Crosby and Murdoch (2001) found that a variety of different assumptions were being made for the UK data - some values produced effective rental values, some provable effective rental values at rent review and some headline rents at new letting mainly based on the next rental change. Therefore the rental value may change for an individual property within the sample year to year if the next rent revision opportunity changes from say a rent review to a lease expiry. The benchmark valuations within the country would be on a consistent basis.

Lease incentives are not solely a UK phenomenon. In France, for instance, during the summer of 1994, it was not uncommon for landlords of office premises to grant a rent free period which could be as long as one year. (Austin, 1994, p. 34). Other methods also apply in French leases such as the agreement between parties of a "stepped" rent where the rent increases over time.

Other issues which might impact on the rental value data include tenants' right to break options which can vary the notional length of the lease. In the case of the UK, a long lease could be broken down into a notional series of shorter leases. As a result, in the period for 1997 to 2003 in the UK, the effect of break clauses appears to have shortened the effective lease term of offices by one to two years ((Turner et al, 2005, p.17; ODPM, 2005, p.83; BPF/IPD, 2009). However, Strutt and Parker/IPD (2006) suggest that a minority of breaks in office leases were exercised in the period 1998 to 2006 although the propensity to break increased significantly in the weak lettings market post-2000, especially in larger office units. Therefore, due to the lack of propensity to exercise break options, the actual impact of breaks on the length of office occupation is considerably less than one to two years.

In France, breaks also have an impact on the length of term. Drivers Jonas, using IPD data of 14,000 commercial leases for 1993, found that, despite the nine year lease pattern, the average length of occupation in office premises in France as at December 2003 was eight years (Drivers Jonas, 2005). In a second report using similar IPD data, the length of office occupation had reduced to 6.5 years by 2005 (Drivers Jonas, 2007). In 2003, less than a quarter of office tenants had been in their premises for nine years or more. The vast majority of new leases in 2003 had a break with around three-quarters having a three year break option. In 2003, around 25–30% of office tenants exercised their three year breaks. They are more commonly exercised in Paris than in the regional towns and breaking after three years is particularly significant in Paris CBD, while six-year break options are more commonly exercised in Paris Western Business Districts. By 2005, the number of fixed nine year leases had declined further and the number of 3 year breaks increased. Overall, a higher proportion of office tenants exercised breaks in 2005 than in 2003, regardless of timing at three, six or nine years, especially the number of tenants leaving after nine years.

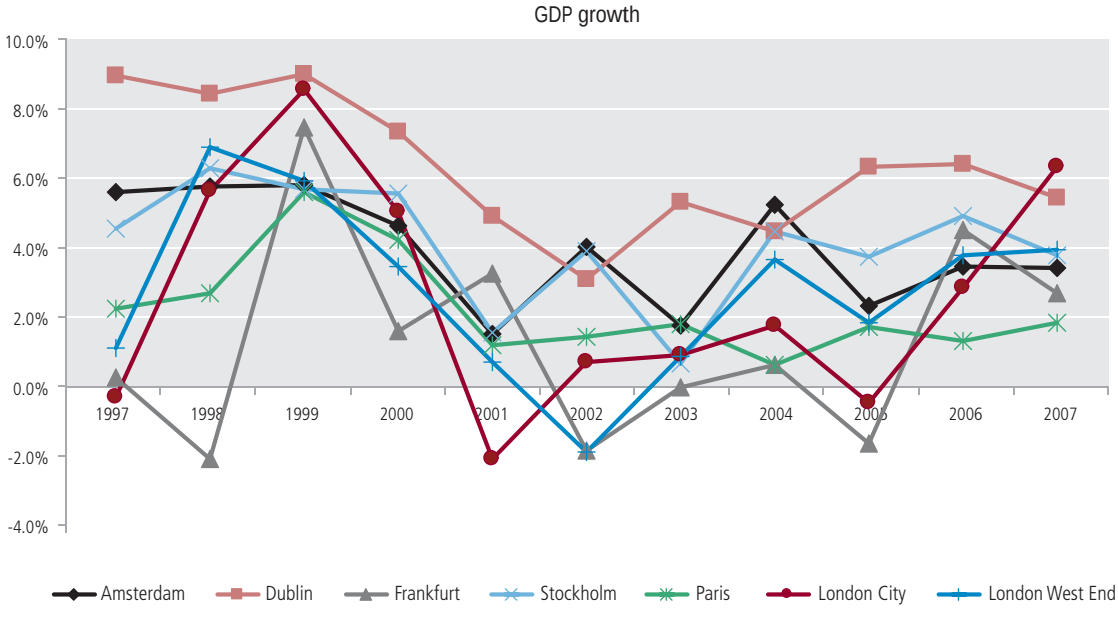
Despite the existence of variable lease lengths and break options and variable lengths of occupation, the impact of lease length is not yet proven to have a significant impact on rental value. There is no reason to suppose that their presence has distorted the results and no adjustments are made to the data for lease length including or excluding breaks. The only major concern is that there continues to be different interpretations of value in the sample valuations and these change through time and may not match the assumptions made for the benchmarks.

3.3 Economic state and property market indicators 1997 to 2007

The 10 years between the end of 1997 and the end of 2007 appear to approximately cover a minor yet full cycle in the economies of the countries in the study. To demonstrate this, city level data on economic growth, employment and office market performance has been assembled and is presented below, together with figures for interest rates in each country over the period.

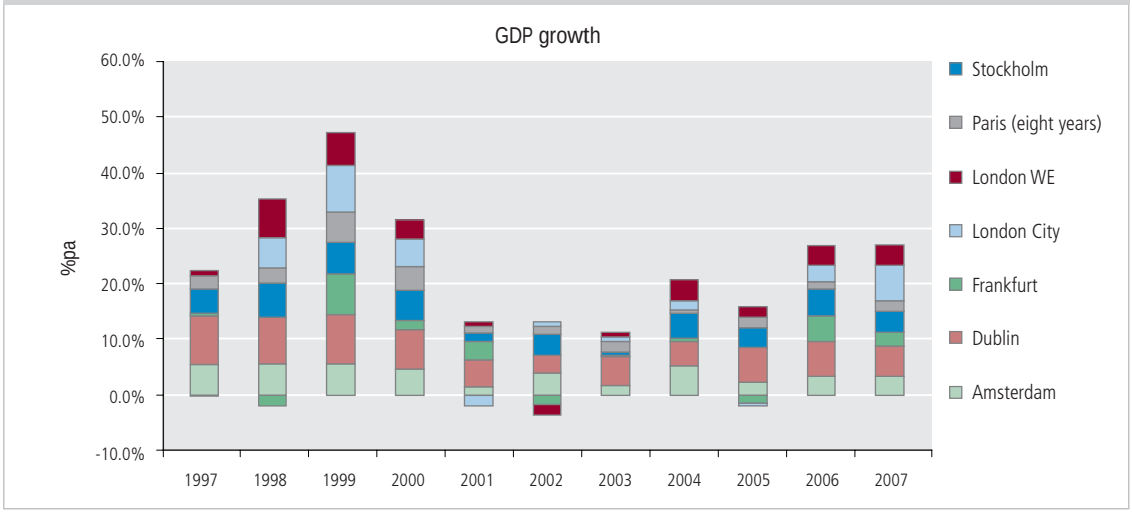
Figure 3.6 indicates individual GDP growth rates and indicates that, in five locations, GDP growth peaked in 1999 while Stockholm and London West End peaked slightly earlier in 1998. GDP growth fell in virtually all locations in 2000 and 2001, with the recovery spread over 2002–2004. Apart from Dublin and Paris, the other five locations saw a fall in the rate of growth in GDP in 2005 before increasing again towards the end of the period. Figure 3.7 illustrates the sum of the GDP in each of the seven locations and indicates that overall GDP growth increased from 1997 to 1999 before growth rates fell until 2001. Between 2001 and 2003 growth rates remained low until rising again in 2004, falling off in 2005 but then on an upwards trajectory through 2006 which kept going in 2007.

Figure 3.6 : GDP change (% p.a.) for seven European locations



Source: Experian

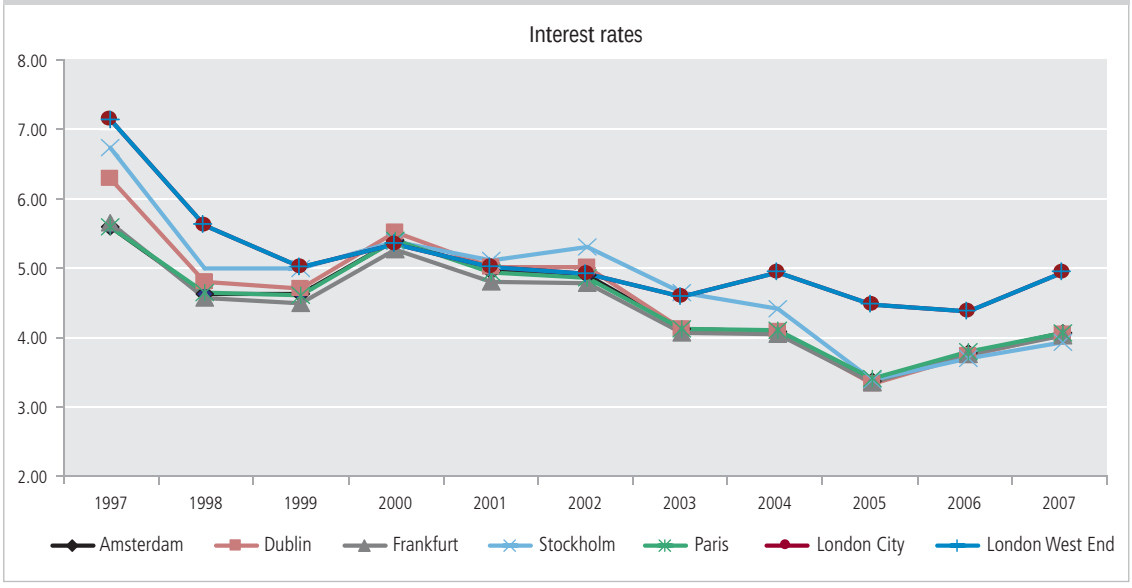
Figure 3.7 : Sum of GDP change (% p.a.) for seven European locations



Source: Experian

The movement in interest rates in the seven locations (six countries) are very similar, not least because four of the countries concerned moved to a common interest rate on adoption of the Euro and formation of the Eurozone on 1 January, 1999. Over the period, the UK generally had the highest interest rates while that in the Eurozone was lowest. By 2007, the prevailing interest rate in all countries was lower than that at the beginning of the period.

Figure 3.8 : Interest rates (% p.a.) in seven European locations

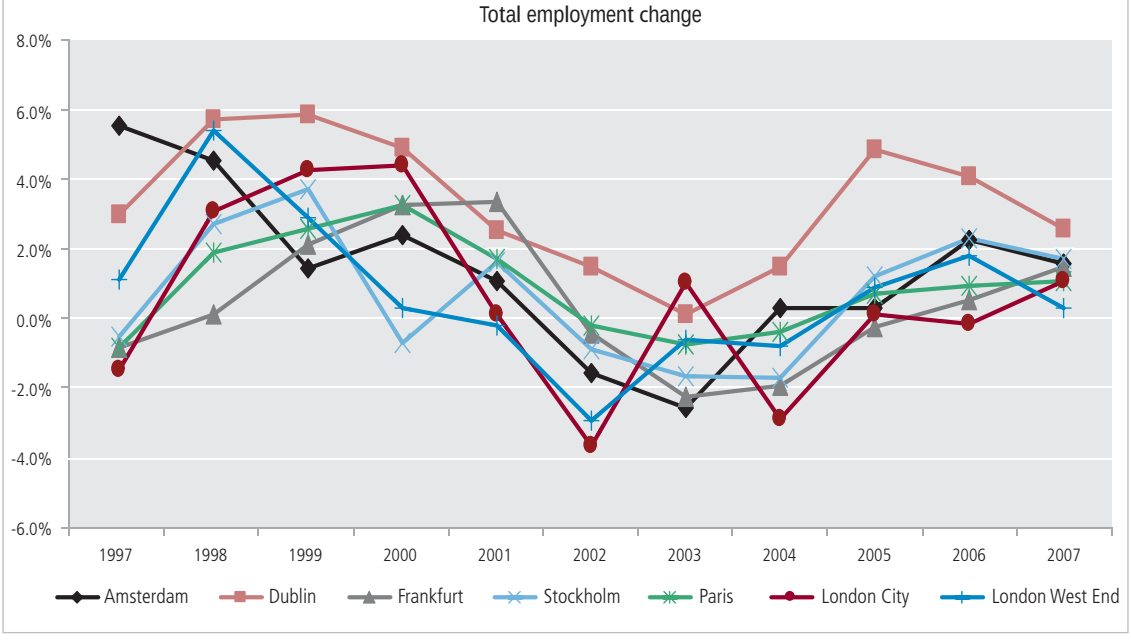


Source: Experian

Change in total employment across all seven locations also indicate a high period of growth in the period 1996 to 1999 before the rise in employment fell away to 2002. Overall, across all of the seven locations, between 2002 and 2004 employment fell before rising again in 2005 and 2006. Figure 3.9 indicates the individual employment growth rates. Amsterdam's highest employment growth was in 1997 while in London West End it was 1998. In Dublin and Stockholm employment growth peaked in 1999 while in London City and Paris it was 2000. Frankfurt peaked in 2001. By 2002 employment was either growing less or falling in all seven locations and sustained recovery did not take place in any of them until 2004 onwards. Dublin's employment growth fell in 2005 and 2006 but from a much higher level than the other six in 2004.

Dublin averaged the highest GDP and employment growth over the whole period.

Figure 3.9 : Employment change (% p.a.) for seven European locations

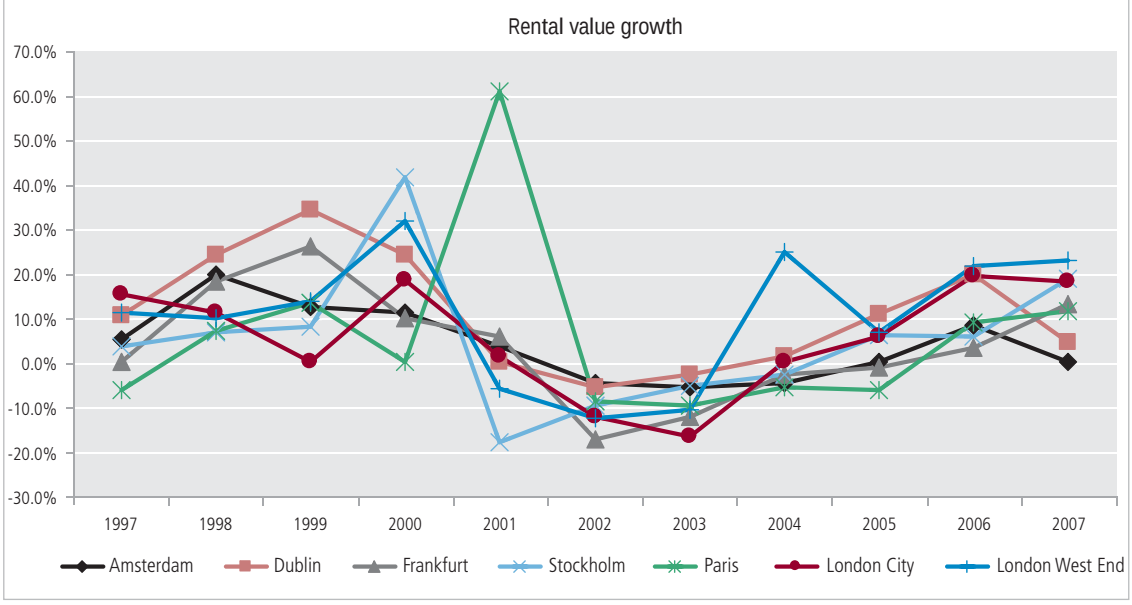


Source: Experian

The property market data follows the trends in the economic data. Generally, over the seven locations, office rental value growth rose from the beginning of the period until it peaked in 2000. In 2002 and 2003 rental values fell in all seven locations.

Figure 3.10 sets out the individual rental value change rates and illustrates that, in 2004, only London West End exhibited any growth but in 2005, five locations were growing and by 2006 rental value growth was positive in all locations. Paris exhibits the most volatility although some data issues are raised by the rental value spike of 2001.

Figure 3.10 : Office rental value change (% p.a.) for seven European locations

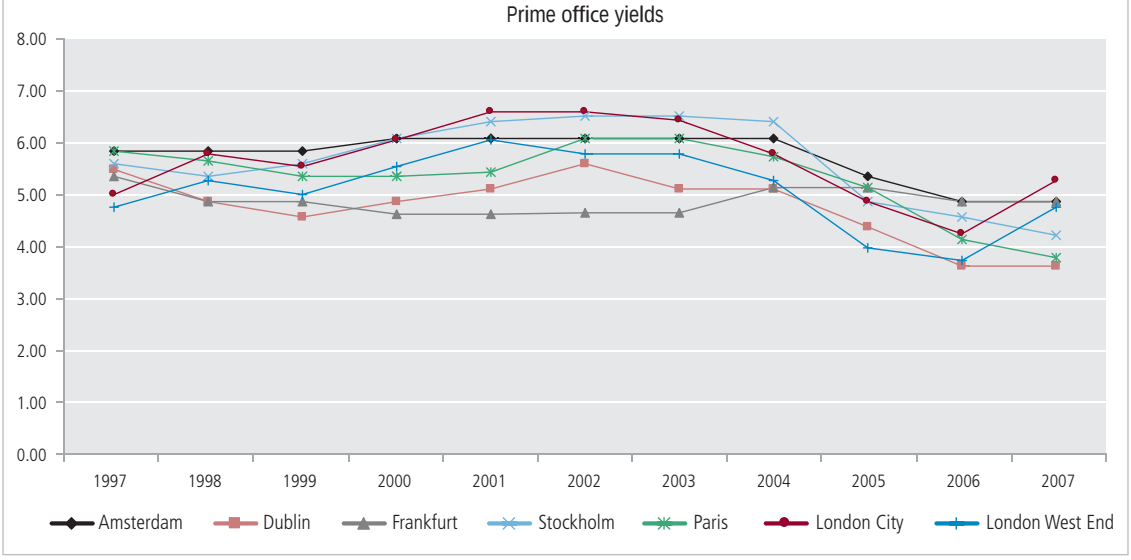


Source: CBRE

Prime office yields in the seven locations exhibited a similar but opposite response with yields falling overall in the period between 1997 and 1999 before beginning to rise in 2000 until 2002. From 2003 onwards they started to fall again. These changes are in line with changes to the rates of rental value growth, with the changes in yield trends generally occurring about a year in front of the reversal in rental value growth trends.

Figure 3.11 illustrates that prime yields ranged from around 5% in London at the start of the period to 6% in Amsterdam and Paris. They started to rise in Stockholm in 1999 and in 2000 every location experienced increases in prime yields which continued until 2001 in some locations and 2002 in others. They began to fall again in 2003 in Dublin and 2004 in the other locations except Frankfurt which continued to either increase or stay the same until 2005 before falling in 2006. In 2006 prime yields had fallen to around 4% in Dublin and London West End and no higher than 5% in any of the other locations.

Figure 3.11 : Prime office yields (%) for seven European locations

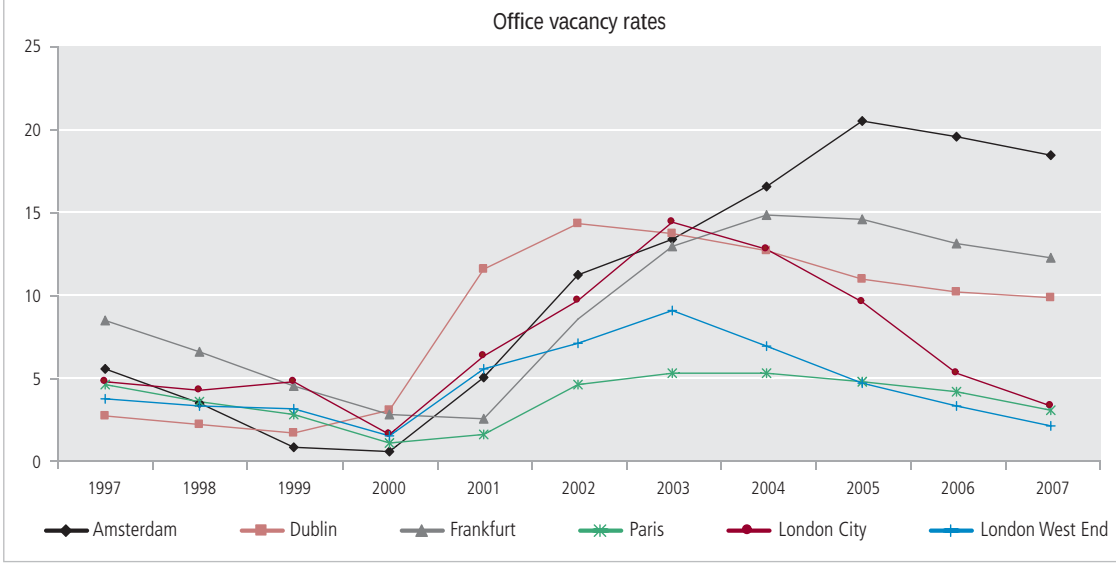


Source: CBRE

Vacancy rates follow a similar pattern to yields but continue to fall until 2000 from 1996. Generally across the locations, they rose sharply in the period 2001 to 2003 before stabilising in 2004 and falling in the years 2005 and 2006. These figures exclude Stockholm.

Figure 3.12 illustrates that the vacancy rate in Dublin rose a year earlier than in the other locations in 1999 and more steeply than the others but it also started to fall earlier in 2003. Vacancy rates in London started to fall in 2004 with Paris and Frankfurt following a year after that. However the vacancy rate in Amsterdam continued to rise until 2005 to over 20% before starting to fall in 2006 and 2007. The highest vacancy rates in Amsterdam, Frankfurt and Dublin since 1999/2000 are in the locations which have seen the greatest increases in total stock over the study period.

Figure 3.12 : Office vacancy rates (%) for six European locations



Source: CBRE

The analysis of state of the economies and property markets in the seven locations suggests that three different stages in the cycle can be identified–an improving market in the period 1997 to around 2000, a weakening market in the period 2000 to 2003 and an improving market from 2003 to 2006. For the individual locations the timings can be seen to be slightly different. The results of the data analysis need to be assessed in light of these changing market circumstances. However, the 10 years from the end of 2006 does appear to cover periods of both relative strength and weakness in the economies and occupational markets of the cities in question.

3.4 Summary

This chapter has identified the physical and economic characteristics of the different study locations used in this project. Despite similarities in that all of them are a major, if not the major, office location in their particular country, they have different characteristics, which will be reflected in the characteristics of the sample of properties. Similarities include some of the major market indicators for the economic demand-side and for property market growth, which have some symmetry across Europe, but differences include the physical structure of the locations and institutional factors governing leasing. Some have major office locations in historic centres such as parts of Stockholm, Paris and London West End, while others have been subject to higher levels of new development. These characteristics will lead to some major differences in the nature of the sample properties used in the research and therefore the next chapter undertakes a detailed review of the characteristics of the properties used in this research which may influence interpretation of the results.

4. RESEARCH DATASETS

The chapter above has outlined the main features of the office markets analysed in this study. This chapter now discusses the datasets that have been assembled for the measurement of depreciation and expenditure rates. Section 4.1 begins by describing how the datasets were prepared. The following four sections then consider the main characteristics of those datasets prior to the calculation of results; studying, in particular, their size, relationship to benchmarks, physical characteristics and rental performance. This enables an assessment to be made of whether the datasets in each case are representative of their markets. The last section then notes issues that may arise through the use of rental valuations in this study as the source of data on market rent levels.

4.1 Data preparation

In line with the methodology set, two distinct sources of data were required. These were, first, figures for the rental values and cash flows over time of individual office properties and, second, data on the rental values of new offices in the same locations in that period.

For individual properties, the same source of data was used as in the previous IPF depreciation study (IPF, 2005), namely, the records of Investment Property Databank. In each country, IPD collect asset level data as part of their performance measurement and benchmarking services. Thus, the records generally represent assets held by major investing institutions such as insurance companies, pension funds, listed property companies and professionally managed unitised vehicles. However, although they are institutionally owned, this does not mean that all the properties monitored by IPD are prime properties and, indeed, within the samples, both prime and non-prime assets are included.

From these records, properties in each location that could provide the required data over the analysis period were identified. Specifically, this meant assets 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. 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 presented later in chapter 5.

With regard to expenditure, of interest were amounts of irrecoverable expenditure by owners on the structures themselves. 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.

The following exclusions from these initial samples were then made. First, properties were removed if they were subject to major refurbishment or redevelopment by their owners within the time frame. Such cases are identified by IPD as assets that receive capital expenditure in excess of 20% of capital value in a single year. Then, properties were removed if an appropriate benchmark for new property rental values could not be found for their location. However, neither of these exclusions made a material difference to sample sizes except in the case of Stockholm, a point that is considered further below. The resulting sample sizes for each market are displayed in Table 4.1.

4. RESEARCH DATASETS

Table 4.1: 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%[1]

Note 1 : 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 table shows a range of sample sizes, with large samples of properties for the London and Paris office markets, and a very small sample in the case of Frankfurt. In part, the differences are related to the size of those markets, but they are also related to the coverage by IPD of each market and the amount of trading and redevelopment that took place there, which affects the percentage of IPD assets that could meet the study criteria–shown in the right hand column of the table.

Trading has a particularly important effect. Where assets are sold, they may cease to be monitored by IPD altogether or they may enter the portfolio of another IPD fund, at which point a new, unlinked record is created. Thus, the samples above reflect assets held within a single ownership during the study period. This may raise questions about the typicality of such properties and whether survivor bias will have an influence on their performance, a theme explored in some detail in the last IPF study (see IPF, 2005, p. 50–2). To address these concerns, the characteristics and performance of the samples in each location are explored in sections 4.4 and 4.5.

For the rental values of new offices in each market, data was sought from real estate service firms active in those markets. In line with the methodology, the focus was on obtaining datasets with disaggregated rent points rather than just a single new or prime rent series for each city. With a high degree of disaggregation, the rental values of individual offices can be measured against those of a new building appropriate to their location. However, where there is less disaggregation, then measurement of depreciation will not only capture building related factors, but also the performance of an asset's location relative to that of its benchmark.

In the case of the UK, the previous IPF project concluded that the closest dataset to the model benchmark was that of the CBRE Rent and Yield Monitor. This comprises valuation based estimates of rental value and yield for a large number of locations, which are then aggregated to form a set of published indices. The estimates are based on a hypothetical new building built to modern specification on a prime site in each location (see CB Hillier Parker, 2000, for more details). The data for individual rent points is not normally available, but was kindly provided for the London markets by CBRE for this project.

CBRE then also made available datasets for the other cities being studied in this research, some of which adopt a similar basis to that used in the UK. However, in two cases, the level of disaggregation was not sufficient in respect of the entire period being measured, so alternative sources of rent data were sought.[7] For one of the cases, BNP Paribas Real Estate kindly provided their rental dataset. However, in the other case, no other disaggregated dataset of sufficient length could be found. The total number of rent points that were available for each city across the analysis period is shown in Table 4.2.

Table 4.2: 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. Not all of these locations were represented in the IPD samples and this accounts for the difference between the number of rent points available and the number that were used, shown in the final column of the table above. Once matched, individual benchmarks for each property were created by multiplying the rent point values (recorded in local currency per square foot / metre) by the floorspace of the buildings concerned. This ensures that subsequent aggregate estimates of depreciation will correctly reflect the relative values of different buildings. With this step complete, the data was ready for measurement of rental depreciation and expenditure rates.

A final issue relates to the treatment of currency. Although analysis was conducted in local currencies to avoid distortion of results by exchange rate movements, it is the case that the unit of currency changed in four of the locations during the period being studied. This was owing to the adoption of the Euro by their countries on 1 January, 1999. In these cases, earlier data had been converted to Euros by the data providers using the appropriate prevailing exchange rate at that point. These rates were consistent across the data providers (ie IPD and the benchmark provider for each location) and with published official conversion rates.

[7] It should be noted, however, that contemporary coverage of each market was good.

4.2 Size and spatial distribution of samples

Before presenting results, it is important to consider the nature of the samples and whether they are representative of their markets. An initial assessment of the relative size of each sample, as one measure of representativeness, is given by Table 4.3. This presents the number and value of offices in each sample against the comparable figures for the whole IPD database on each city. The figures are as at the start of the analysis period, which is end–1997 for all cities except Paris, where analysis begins as at end–1999.

Table 4.3: Size of samples relative to size of IPD database for each city

Panel A: Number of offices at start of analysis period			
	Sample	**All IPD**	**% of all IPD**
Amsterdam	38	106	36%
Dublin	35	96	36%
Frankfurt	17	77	22%
London: City[1]	81	503	16%
London: West End	135	710	19%
Paris[1]	169	944	18%
Stockholm[2]	36	222	16%

Panel B: Capital value of offices at start of analysis period			
	(€m)	**(€m)**	**% of all IPD**
Amsterdam	269	1,224	22%
Dublin	289	750	38%
Frankfurt	933	3,948	24%
London: City[1]	2,274	12,763	18%
London: West End	1,361	8,279	16%
Paris[1]	2,794	12,994	22%
Stockholm[2]	714	4,620	15%

Note 1: These tables include one property each in London City and Paris removed from the final analysis

Note 2: 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

Looking at the table, it can be seen first of all that the largest samples are in London and Paris, while sample sizes in the other cities range from 38 assets in the case of Amsterdam down to 17 assets in the case of Frankfurt. However, in relative terms, the samples in London and Paris are no larger than those of their counterparts and simply reflect the larger office markets of those urban areas. The proportions are reasonably consistent for each city whether numbers or capital values are used to make comparisons. The main exception to this is Amsterdam, where the relative sample is high if measured using number of assets, but similar to the others in terms of value. Dublin stands out as having the highest relative sample size, with over a third of the IPD database for that city being studied in this analysis.

It is recognised that a comparison against all IPD data is only a partial one; IPD itself will only monitor a sample of the total office stock in any location. However, figures for the total stock may not always be available, especially if a similar spatial area to that of the sample is sought. Nonetheless, indicative proportions for some cities are possible and these are presented in Table 4.4. The measures of the total stock in each case have been provided by Property Market Analysis and represent the size of the office stock as at the start of the analysis period (end–1997, except in the case of Paris, which is end–1999).

Table 4.4: Floorspace of samples as at start of analysis period (000's m²)

	Sample	All IPD	of all IPD	PMA total	% of PMA
Amsterdam	220	837	26%	4,366	5%
Dublin	123	296	41%	1,392	9%
Frankfurt	212	933	23%	9,965	2%
London: City[1]	619	2,753	22%	5,216	12%
London:WestEnd[3]	229	1,407	16%	6,224	4%
Paris[1,4]	819	4,038	20%	15,025	5%
Stockholm[2]	218	1,682	13%		

Note 1: These tables include one property each in London City and Paris removed from the final analysis

Note 2: 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. Comparable figures for total stock of this area were not available.

Note 3: Total stock refers to West End and Midtown, whereas IPD sample is located in West End alone.

Note 4: Total stock excludes Rest of Petite Couronne and Rest of Ile de France, but there is also limited sample representation in these districts.

These percentages should be treated with caution, since the project is predominantly concerned with institutional grade property, of which IPD may capture a higher proportion. Thus, total stock may overestimate the stock that is of interest and may include stock of quite different characteristics. On the other hand, the comparison to all IPD ensures a consistency of definition in terms of area and asset quality. It therefore enables representativeness of the institutional property market in each location to be assessed, although IPD's coverage of this is not necessarily complete.

The spatial spread of the different samples is fairly good in most cases. Confidentiality restrictions attached to the IPD data preclude mapping of the locations of the sample buildings, but counts can be made of the number of assets in different areas of each city.

For example, in the case of Amsterdam, these reveal that the bulk of the sample is located in the south of the city, but so are many of the major office areas. Yet, nine of the 38 assets are located in the historic city centre district meaning that this area is also represented. Similar patterns can be seen in the case of Dublin and Paris. Assets from across these cities form part of the samples, but the highest counts are from the principal office districts. For Dublin, 29 of the 35 assets are from the district Dublin 2/4 while, for Paris, 74 offices are in the main CBD and a further 37 in the West CBD (La Défense). Frankfurt is somewhat more spread, reflecting the diffuse pattern of office development there in recent decades while the London markets were pre-defined according to where the main concentrations of office buildings are located.

This leaves Stockholm for which sample assembly was most complicated. Although the IPD database includes office buildings from across the Stockholm urban area, a range of either new or prime rent points that spanned the period of interest could not be found.[8] Hence, the sample here consists of 33 offices located in the CBD and 3 on the periphery of the CBD, all of which are compared against one CBD rent point as benchmark. Tables 4.3 and 4.4 partly reflect this by showing the sample as a percentage of just CBD and Central Area offices, but it is likely that relative as well as absolute sample size has been compromised by this restriction.

4.3 Relative quality of the samples

Sample size and spread are important, but they are only partial measures of representativeness. Another aspect to be considered is the quality of the assets in the sample versus those in the market, particularly given that it is held samples which are being analysed. In this section, comparison is made against the new/prime benchmarks in each city. The purpose of this is to gauge how close to new or prime rental values the sample assets are prior to the measurement of depreciation. It is not expected that the samples should be of equal value; rather, it is likely that they will contain a mix of new and old, prime and secondary buildings, and so be of lower value (and by implication, quality). Nonetheless, the extent to which the samples approach new or prime values is of interest.

The comparison utilises the total rental value for each sample at the beginning of the analysis period and the total of the benchmark rental values for each building, which, as noted earlier, were constructed by multiplying each matched rent point with the floorspace of its comparator building[9]. These figures were then both divided through by the total floorspace of the samples to give weighted averages of the rental value per square metre on a benchmark and an asset basis. By taking this approach, it means that the comparison is like for like, whereas using published prime rent figures would not reflect the mix of locations and asset sizes in question. For the same reason, it is not meaningful to add a market average figure computed from all IPD properties.

The rental values per square metre that result from this process are shown in Table 4.5. Meanwhile, the relativities in each city are highlighted by the chart that forms Figure 4.1.

Table 4.5: Rental value per sq m of sample and benchmarks as at start of analysis period

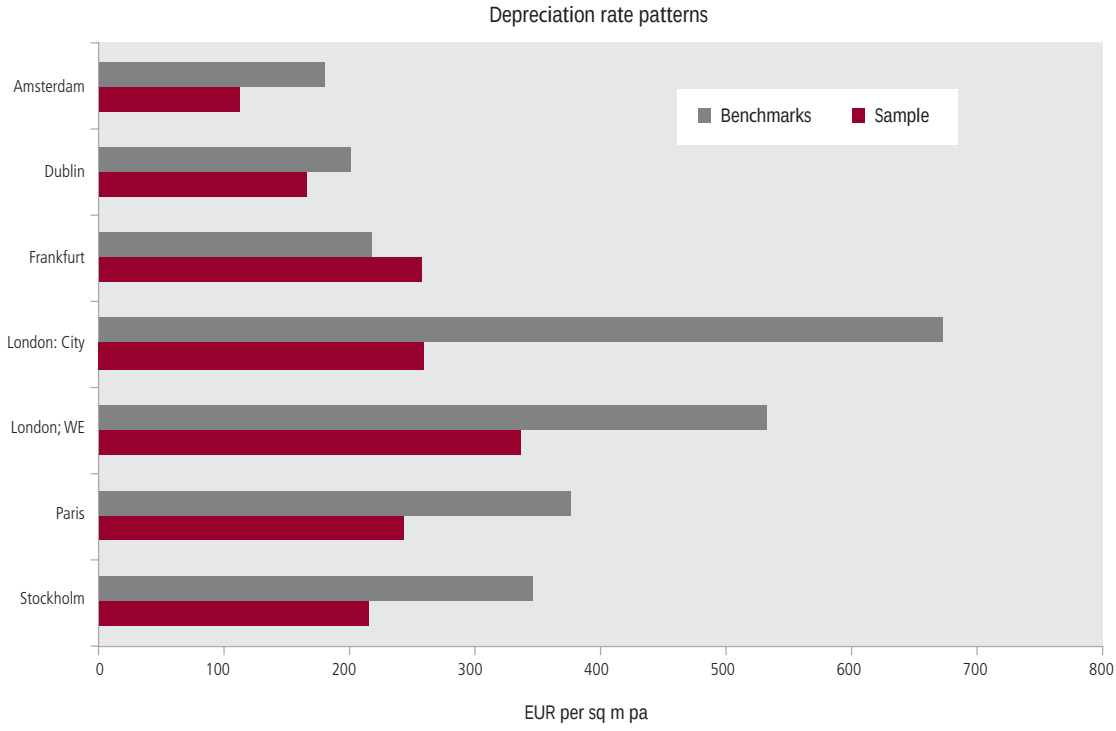
	Benchmarks (€ sq m)	Sample properties (€ sq m)	Ratio of sample to benchmark
Amsterdam	180	112	0.62
Dublin	201	167	0.83
Frankfurt	217	257	1.18
London: City[1]	674	261	0.39
London: West End	533	336	0.63
Paris[1]	378	243	0.64
Stockholm	346	214	0.62

Note 1: These tables include one property each in London City and Paris removed from the final analysis

[8] It should be stressed that the key issue here was time period and that the contemporary coverage of rent points by different real estate service firms is good.

[9] In terms of the measurement formula in chapter 2, it is using $\sum R^{s}_{t1}$ and $\sum R^{b}_{t1}$

Figure 4.1 : Rental value per sq m of sample and benchmarks as at start of analysis period



Before interpreting the table and figure, two caveats must be highlighted, both of which flow from the cross-sectional nature of this comparison. First, the gap between sample and benchmark in each city will be influenced by the point in the cycle at which the comparison is being made. This is a topic that is explored in more detail during discussion of the results in chapter 5. Second, though not of central interest at this stage, values between cities will be influenced by the exchange rates at a particular point in time. Thus, the measurement of depreciation and expenditure rates are conducted in local currencies in this report to prevent any distortion by currency movements.

What the table and figure each highlight is that two markets stand out in particular, the City of London and Frankfurt. In the case of the former, the gap between benchmark and sample rental values is much higher than in other locations and may indicate that the sample has unusual characteristics, which will be explored further in the next section. In the case of Frankfurt, the results are more puzzling. It was not expected that any market should record higher actual rental values for its buildings than those indicated by the benchmarks, since this implies that the sample is of better than prime or new quality. Thus, in addition to raising questions about the nature of the sample itself, this finding suggests there may be valuation issues at work, another theme that is explored further in chapter 5 of this report.

4.4 Characteristics of the sample buildings

The quality and nature of the samples can also be explored in relation to other assets in each market. This is the focus of this and the next section. The question to be explored is whether or not the assets can be considered typical and, if not, what the implications for the results might be. In particular, as the sample assets have been held over the period rather than traded, it could be that they possess particular characteristics or performance patterns that have led to their retention.

This section reviews three specific characteristics, comparing the sample on each with figures derived from all offices monitored by IPD in each city. Again, comparisons are made as at the start of the analysis period. The first of these comparisons relates to building age. For the majority of properties in their databanks, IPD record the later of either year of construction or year of last major refurbishment. Age is then calculated by subtracting this figure from the year in which analysis begins. The median age in the case of the samples and of all IPD are presented below in Table 4.6.

Table 4.6: Age of samples relative to all IPD at start of analysis period

	Sample (years)	All IPD (years)
Amsterdam	12	12
Dublin	11	16
Frankfurt	11	13
London: City[1]	22	20
London: West End	67	67
Paris: CBD[1]	99	69
Paris: West CBD	11	12
Paris: All	27	21
Stockholm[2]	68	68

Note 1: These tables include one property each in London City and Paris removed from the final analysis

Note 2: 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 table reveals remarkably few differences between the samples and the wider populations of IPD assets, at least for this attribute. The largest difference is in Paris CBD, which has been split out from the aggregate Paris figures for further comment, but otherwise, the differences are fairly minor. The age figures also confirm the descriptions of the cities that were given in chapter 3. Thus, it can be seen that Stockholm CBD, Paris CBD and the West End of London are all areas dominated by older, historical buildings. Meanwhile, the younger ages found for Amsterdam, Frankfurt and the West CBD of Paris are unsurprising given their more recent development[10].

Table 4.7 tracks two other characteristics; floorspace and capital value. Both can be viewed as measures of size, though floorspace is the purer measure, since capital values may also reflect differences in locations and leasing between the two groups.

[10] Note that a median age of 11 years in this table would imply a date of construction of 1986 in the case of Frankfurt and 1988 for buildings in Paris.

Table 4.7: Characteristics of samples relative to all IPD for each city

Panel A: Median floorspace at start of analysis period		
	Sample (sq m)	**All IPD (sq m)**
Amsterdam	2,948	4,512
Dublin	2,611	2,551
Frankfurt	9,720	7,462
London: City[1]	2,917	3,122
London: West End	743	1,059
Paris[1]	3,381	3,040
Stockholm[2]	3,947	5,223

Panel B: Median capital value at start of analysis period		
	Sample (€m)	**All IPD (€m)**
Amsterdam	4.3	6.1
Dublin	6.6	6.5
Frankfurt	23.9	24.7
London: City[1]	6.8	9.0
London: West End	3.7	4.4
Paris[1]	9.6	7.2
Stockholm[2]	12.2	12.5

Note 1: These tables include one property each in London City and Paris removed from the final analysis

Note 2: 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

This table does bring out some variations, although there are few clear messages. In the cases of Amsterdam and the West End of London, the sample appears to contain smaller assets in terms of both size and value. For Paris, the sample contains larger offices, but the difference in floorspace is not great. Figures for the other cities are then more mixed and only in Dublin is the sample similar to all IPD on both measures. Looking across the cities, the large size and value of the Frankfurt units relative to those in other office markets is noticeable.

Differences in characteristics from other assets need not, in themselves, prevent results from the samples being generalised to other buildings. Difficulties in this respect only arise if those differences are likely to drive differential rental performance (and, thus, depreciation) or lead to different expenditure requirements. This is most likely in the case of age, the characteristic where the samples match the wider IPD groups most closely. However, size or value may also matter if trends emerge, for instance, towards smaller or larger floor plates. It is not thought that this has been a significant factor over the period concerned.

4.5 An examination of survivor bias

The next aspect to consider is whether the sample offices have been kept by their owners not on the grounds of obvious physical differences, but for their stronger performance, which may itself spring from less measurable aspects of asset quality. This possibility of survivor bias was both debated and tested in the previous IPF report on depreciation in the UK property market (IPF, 2005). In particular, it highlighted the following scenarios that might lead to held samples being unrepresentative:

1. They do not include assets that have been demolished during the period. Such assets are likely to have suffered high levels of depreciation, thus triggering proposals for redevelopment. The old asset is thus 'retired' and replaced by a new property, which may or may not be of the same type.

2. They do not include assets that have been traded, with trading potentially motivated by the need for redevelopment or refurbishment, or by poor performance more generally. This is the case regardless of whether they are sold to another investor that IPD monitor.

The previous IPF report then found survivor bias present in samples being monitored over both 10 and 19 year periods, though the performance bias was more marked over the longer horizon. The implication noted there was that measured depreciation rates were likely to be underestimated as a result.

The testing procedure used in IPF (2005) was again adopted here, with the focus specifically on rental performance. The rental growth of the samples in each city was compared with that of a control group, the latter consisting of all assets in IPD with a construction date before the start of the analysis period, regardless of whether they were then bought or sold part way through the period of interest. Thus, for each market except Paris, the control group included all offices built prior to 1998, while, in Paris, it contained all those built before 2000.

Rental growth for each year of the analysis period was first calculated at a sub-market level using the IPD segmentation for each city. City level figures were then constructed as follows. In the case of the samples, this was simply measured as the rental growth of the entire set of properties. However, so that comparisons between the samples and control groups were not distorted by differences in the spatial spread of each, control group figures were weighted into city level rental growth series by reference to the total rental value of the samples in each sub-market each year. This procedure was adopted for all markets except the two London office markets, where it was deemed unnecessary.

The results of the comparisons are shown in Table 4.8 and Figure 4.2, below.

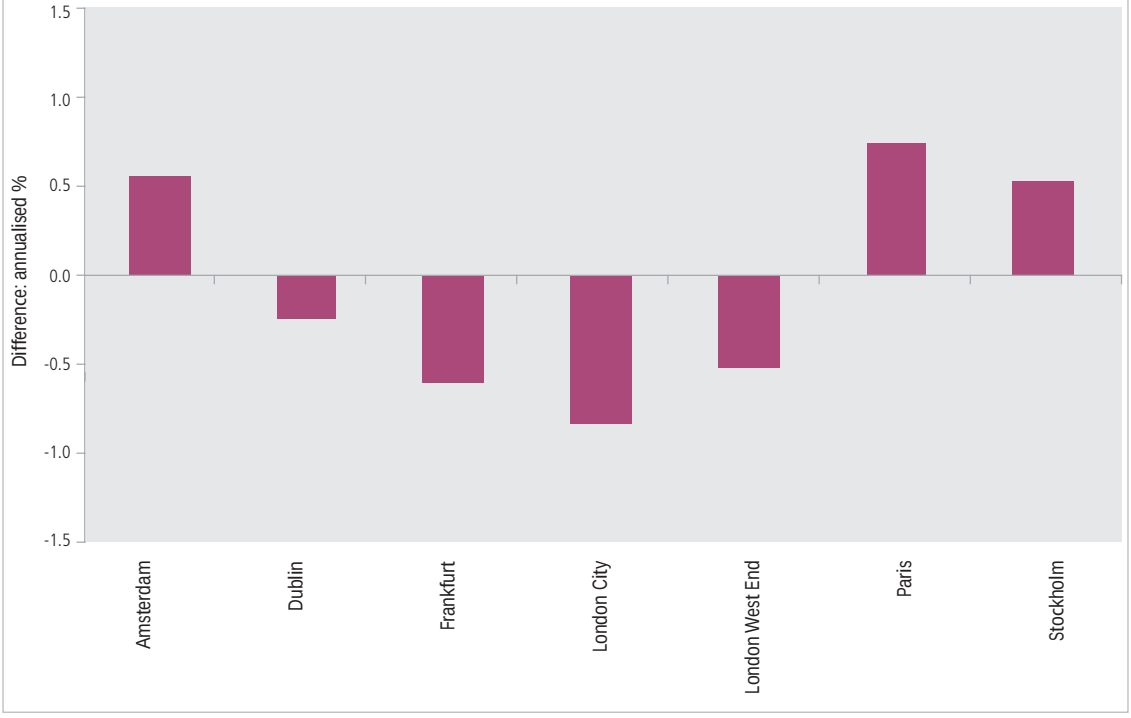
Table 4.8: Rental growth of samples and control groups over the analysis period

	Annualised rental growth (%)		
	Sample	Control	Difference
Amsterdam	3.6	2.9	0.7
Dublin	7.7	8.1	-0.3
Frankfurt	-2.1	-1.4	-0.7
London: City[1]	1.9	2.9	-1.0
London: West End	6.6	7.2	-0.6
Paris[1]	5.6	4.7	0.9
Stockholm[2]	5.9	5.2	0.6

Note 1: These tables include one property each in London City and Paris removed from the final analysis

Note 2: 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

Figure 4.2 : Difference in rental growth between sample and control group for each city



The results show that survivor bias is not consistently present in the samples assembled for this study. There is evidence of some bias in the case of Amsterdam, Paris and Stockholm, but there is evidence of underperformance by the samples versus their control groups in the other locations. Particularly striking is the poorer rental growth of held properties in both Frankfurt and the City of London over the analysis period. There does not appear to be any link between these findings and the general growth of the markets; negative 'bias' is found in the strongest (Dublin) and the weakest (Frankfurt) performing locations.

4.6 The use of rental values

The final issue to discuss is the use of rental valuations rather than actual rent determinations. As in many studies of the property market, rental and capital valuations are used as a surrogate for actual transactions due to the scarcity of transactions within most markets. In the previous study, this issue was not raised as both benchmark and sample property valuations were carried out in a similar manner using consistent methods, with the firm providing the benchmarks also undertaking the most valuations within the UK IPD database. In addition, valuation processes and methods in the UK market have been subjected to numerous examinations, so criticisms of the process are transparent and issues such as lagging and smoothing well understood (see, for example, Baum and Crosby, 2007; Geltner, et al, 2003).

Given that the benchmark valuations used here were sourced from two originally UK - based firms and the sample valuations were carried out by a range of local, national and international firms across different countries, consistency of valuations is an additional issue to be considered in this study. For instance, there have been some anecdotal adverse comments about valuations in Germany, reviewed in Crosby (2007), which, although unproven, need attention and such possible discrepancies need to be isolated in order to interpret the results.

These issues may include, inter alia:

- Different interpretations of basic valuation definitions and methods between countries and by different valuers within countries–for example, sustainable rental value valuations in Germany.
- Different approaches to the treatment of incentives within the sample property valuations–given the consistent source of information, this should be a lesser problem with the benchmarks.
- Different approaches to the valuation of new properties before the evidence of rental values within the building begins to circulate.
- Different evidence base in different market states and between countries–this may reflect both transparency and the level of market activity, with the latter a function of institutional structures such as leasing, restricting the number of true market transactions.
- Different interpretations of the benchmark rental values–are they the new property in the location built to the most modern specification or are they in some cases the best rent in that location? In an area that has only older property, using best rent would have a significant impact and rental depreciation measures may represent relative location change between sample property and benchmark only.

For these reasons, the behaviour of benchmark rental value assessments against the sample rental value assessments will be examined in detail in the next chapter.

5. RATES OF RENTAL DEPRECIATION AND EXPENDITURE

In this chapter, depreciation and expenditure rates are presented for the seven office markets being studied. At first, the results are presented for the whole period and the whole city in each case. Subsequently, though, rates are disaggregated by location and by building age bands in order to explore what might be driving the overall results. The rates are then computed on a year by year basis at the city level to examine the impact of market state. However, this latter analysis is perhaps as interesting for the issues it raises about rental valuations in each location and so the chapter ends by considering the valuation issues that the empirical work brings to light.

5.1 Rental depreciation

Overall, rental depreciation rates are very mixed for the cities, with some samples actually showing appreciation against benchmarks over the time scale of the study. Table 5.1 shows the depreciation rates together with the rental growth recorded by the samples and the 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, and they 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 have appreciation rates, unlike Paris and Stockholm who have high rental growth rates in the sample and show appreciation.

Table 5.1: 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%

Note 1: 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.

Note 2: Negative results indicate where appreciation of the sample has taken place relative to the benchmark.

This lack of a clear pattern is disappointing and suggests that a range of complex factors may be at work to produce these results. In addition to market and institutional factors, these are likely to include issues with the construction and interpretation of rental value data across the different markets, a theme that has been raised in previous research (Kennedy et al, 2007) and which is returned to later in this chapter. However, another possibility may be that this aggregated analysis is too simplistic and that the samples need to be more fully examined in terms of expenditure, spatial location and building age, each of which, in theory, should have significant implications for the depreciation experienced by investors.

5.2 Expenditure rates

Table 5.2 and Figure 5.1 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. Hence, comment is hereon restricted to differences in the total expenditure rate between locations. Nonetheless, it may be seen that computing a total expenditure rate reveals a higher degree of annual expenditure to combat depreciation than a rate based on capital expenditure alone.

Table 5.2: Annualised rental depreciation and rental growth rates

	Rental depreciation	Capital expenditure rate[1]	Maintenance expenditure rate[1]	Total expenditure rate[2]
Amsterdam	0.4%	0.8%	-0.4%	0.4%
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%

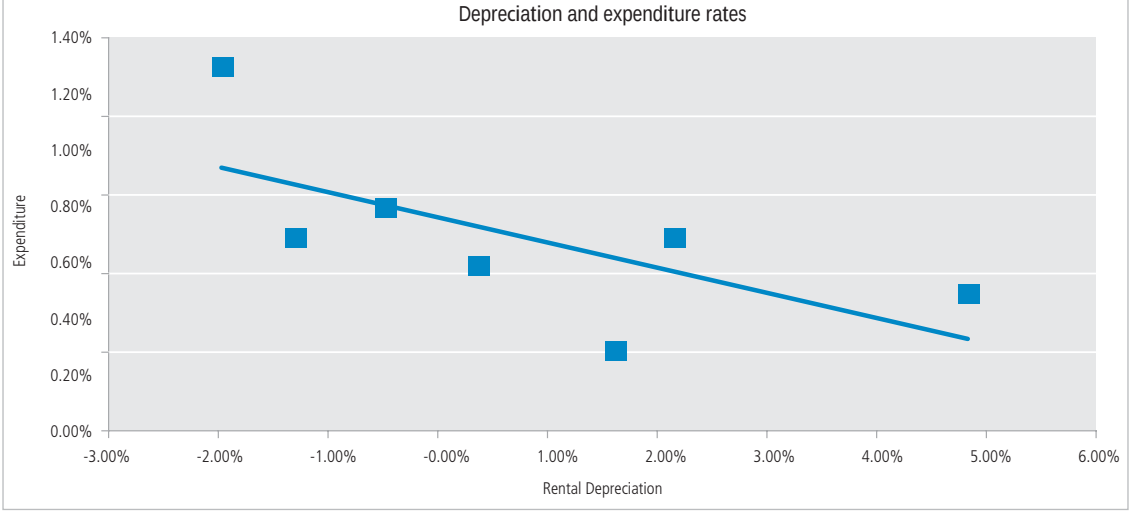
Note 1: Calculated as a percentage of capital values (see chapter 2)

Note 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.

Table 5.2 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 5.1 illustrates a trend line through the results, but this can only be seen as suggestive, since, at the market level, there are only seven observations and the trend is strongly influenced by one or two data points.

5. RATES OF RENTAL DEPRECIATION AND EXPENDITURE

Figure 5.1 : Relationship between depreciation and expenditure Rates



*Negative figures on the y-axis indicate appreciation

In order to further investigate the relationship between rental depreciation and expenditure, correlations were calculated between individual depreciation and expenditure rates for properties within each sample. These results are presented in Table 5.3.

Table 5.3: Correspondence between individual depreciation and total expenditure rates

	Correlation coefficients
Amsterdam	**-0.01**
Dublin	**-0.80**
Frankfurt	**0.44**
London: City	**-0.03**
London: West End	**-0.22**
Paris	**-0.27**
Stockholm	**-0.44**

Frankfurt disturbs the general picture of depreciation being reduced by capital and maintenance expenditure on the properties while in Amsterdam and London City there appears to be no relationship between them. The average correlation between depreciation rates and expenditure is -0.19; if Frankfurt is excluded it rises to -0.30.

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 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.

5.3 Sub-market analysis

The tables so far have presented results at city level. However, it is possible that, within the cities, results at a lower level of aggregation make more sense than the overall depreciation rates presented above. Therefore, for each city, segmentation was attempted using sub-market definitions based on the city descriptions in chapter 3. Table 5.4 presents the results of this exercise for Amsterdam, Dublin and Paris. In the case of Stockholm, 33 of the 36 buildings were in the CBD area and so a sub-market split was not meaningful. Meanwhile, for Frankfurt, as the total sample was only 17 assets and the spread was quite broad across the different sub-markets, results were not meaningful because the samples within each area were too small. The London markets are shown for the sake of comparison.

Table 5.4: Depreciation and expenditure rates by sub-market within each city

	Number of properties	Rental growth of the sample	Rate of rental depreciation	Total expenditure rate
Amsterdam				
Centre	5	5.5%	-0.4%	0.9%
South	21	5.1%	-1.4%	1.0%
Other	12	2.6%	0.1%	0.7%
Dublin				
Dublin 2/4	29	7.7%	1.7%	0.3%
Rest of Dublin	6	7.6%	1.3%	0.4%
London				
City	80	1.9%	0.4%	0.7%
West End	135	6.6%	2.2%	0.7%
Paris				
Centre West	90	6.0%	-1.0%	0.6%
Western Crescent	44	4.4%	-0.6%	0.7%
Rest of Isle de France	34	5.7%	-2.2%	1.5%

Note: Negative results indicate where appreciation of the sample has taken place relative to the benchmarks

There is no pattern to the results of this analysis. The parts of Paris outside of the Centre West and the Western Crescent have appreciated most and have also had significant levels of capital expenditure. In Amsterdam, the newer South has attracted more appreciation than the older Centre. However, the rental value of the sample is much lower than the benchmark in Amsterdam South, more so than in the centre, suggesting that the sample properties in the South may be relatively poor compared to the benchmark. Age, quality of the locations or quality of the buildings may therefore all be factors influencing these results.

5.4 Age cohort analysis

Table 5.5 sets out analysis of the depreciation and expenditure rates by reference to the age cohort of the buildings at the beginning of the study period. Cohorts were defined by taking the construction dates of properties in each sample, where known, and using these to split the sample up into age bands[11].

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 the end of 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.

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.

[11] IPD record the later of either the date of construction or the date of last major refurbishment.

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Table 5.5: 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 years2	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				
20–50years	7	6.40%	-2.40%	1.30%
50+ years	29	5.60%	-1.60%	1.20%

Note 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

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

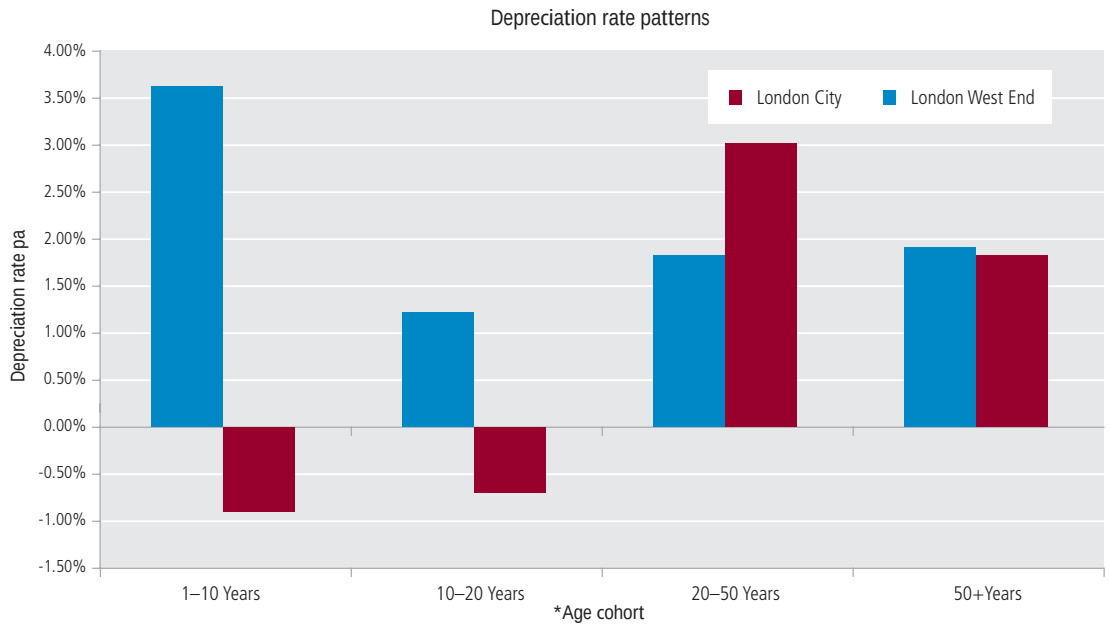
Figures 5.2 and 5.3 illustrate the differences in depreciation rates for the different age cohorts in the different locations. This analysis suggests that depreciation is lower for older properties; in other words, age makes little difference after a certain number of years. But this does not appear 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 years old properties).

Figure 5.2 : Depreciation rate patterns for different age cohorts in the office markets of Amsterdam, Dublin and Paris

*Negative figures on the y-axis indicate appreciation

5. RATES OF RENTAL DEPRECIATION AND EXPENDITURE

Figure 5.3 : Depreciation rate patterns for different age cohorts in London City and West End



*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.

5.5 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 rates and also depreciation rates. These results, set out in Table 5.6 can be put into the wider market context discussed in previous sections.

Table 5.6: 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%

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Figure 5.4 sets out the annual rental depreciation rates and as expected there is a considerable amount of 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 5.5 sums the depreciation rates in each year to reveal a distinct pattern.

Figure 5.4: Annual rental value depreciation rates 1997–2007

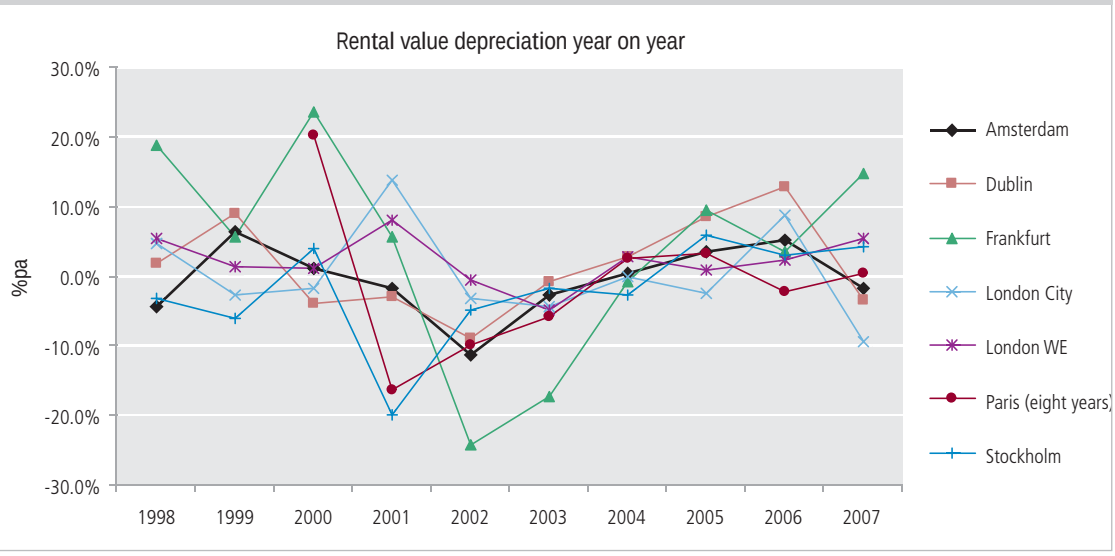
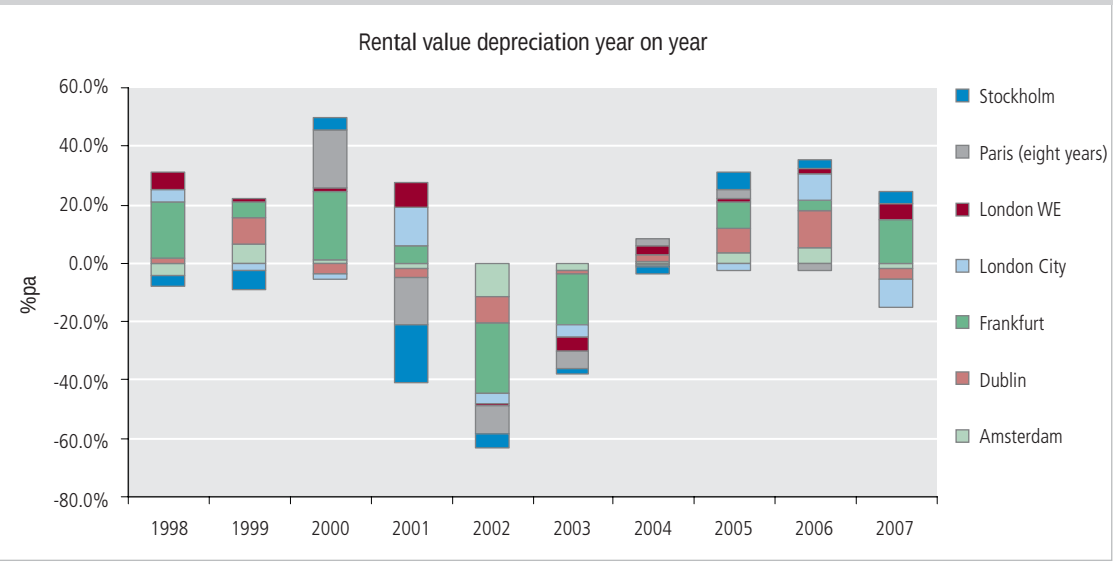


Figure 5.5: Sum of annual rental value depreciation rates 1997–2007



5. RATES OF RENTAL DEPRECIATION AND EXPENDITURE

A number of hypotheses might be proposed for how the values of new and aging properties, 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 new and/or 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 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 new properties will suffer more than existing 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 5.4 and 5.5 marry with market state indicators and suggest that the better the state of markets, the more depreciation is encountered and visa-versa; and that in weak markets, there is less depreciation (more appreciation). Thus, existing properties appear to have lost out to newer properties in the stronger lettings market and experienced 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 based on the data matching the necessary criteria for assessing depreciation rates and the year on year analysis reveals other interesting patterns which may cast doubt on the analysis for certain locations. This has also to be set in the context of the second hypothesis being difficult to sustain.

The individual depreciation results are a product of a comparison of benchmark rental value change compared to rental value change of the sample properties and these two constituent parts of the equation are illustrated below for each of the seven locations in Figures 5.6 to 5.12.

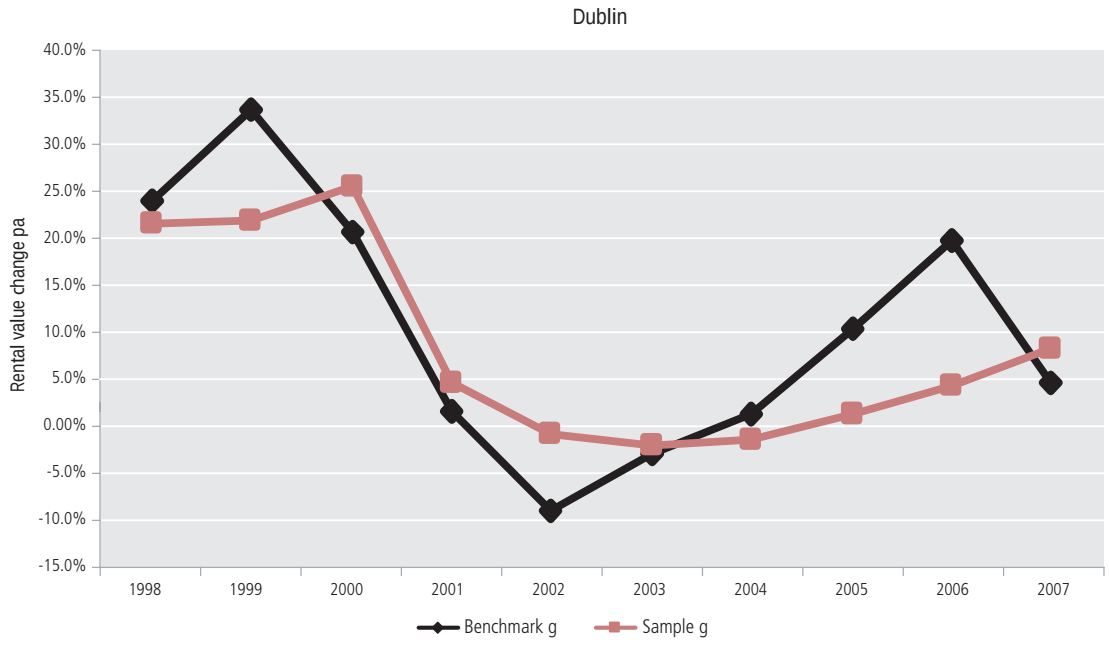
Figure 5.6: Comparison of the annual change in benchmark and sample – London WE

In London West End, benchmark and sample rental values are very closely matched showing similar shapes in terms of falling and rising at the same time periods and similar levels of volatility. The depreciation rate is therefore relatively consistent mainly ranging between +/-5% pa. Depreciation is lower in the weaker lettings market period.

Figure 5.7: Comparison of the annual change in benchmark and sample – London City

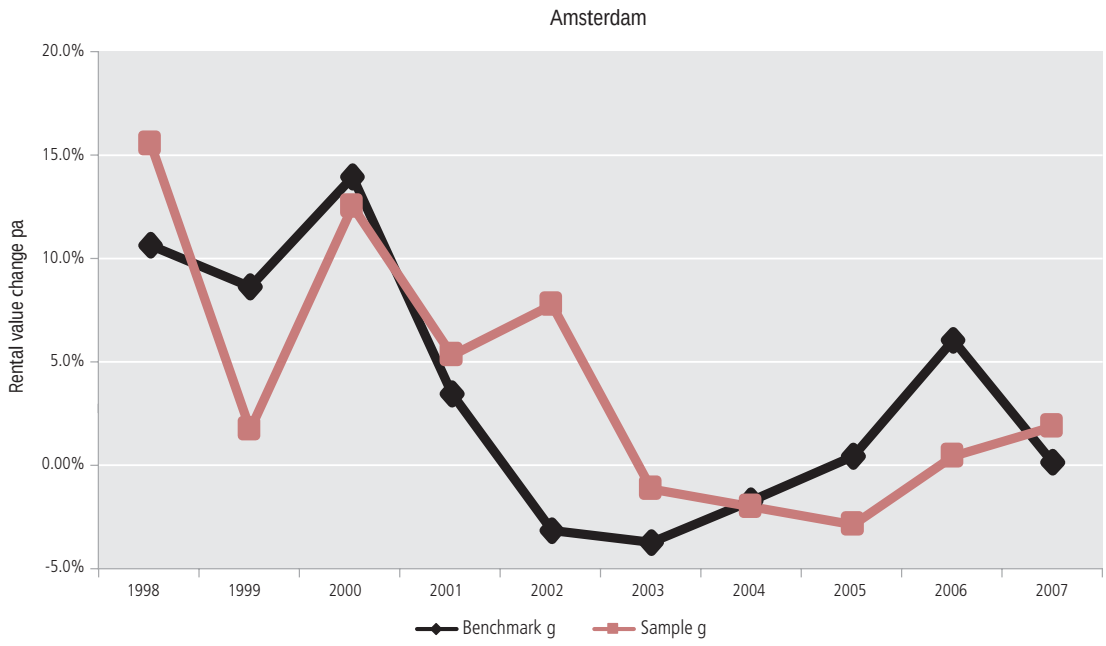
London City also shows some consistency between movements in the rental values of the benchmark and the sample, with similar volatility. The benchmark and sample rental growth rates vary most in the years 2001 and 2006 but all of the other years are relatively close. The benchmark growth rate accelerates in 2006 but moves back sharply in 2007. This may be the identification of the start of a downturn identified in the benchmark but not by the sample, indicating some lagging, or it could be that 2006 was relatively too high. The depreciation pattern is less clear with two depreciation peaks in 2001 and to 2006.

Figure 5.8: Comparison of the annual change in benchmark and sample – Dublin



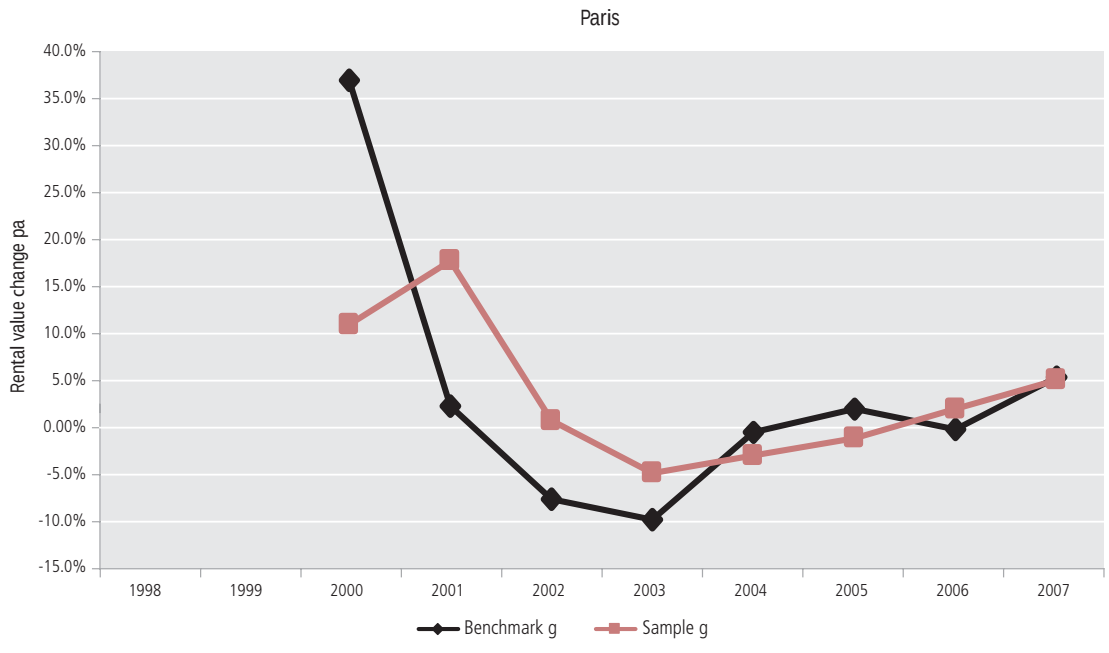
Annual change in the Dublin benchmark and the sample rental values has a consistent pattern with both falling sharply in 2001 and rising more gently in the later years of the period to 2006. However, the changes in the benchmark are more volatile than changes in the sample rental values. In addition,,the sample appears to lag the benchmark with turning points in 2000 and 2003 in the benchmark followed by similar turning points of 2001 and 2004/2005 in the sample. In 2005 and 2006, the benchmark grows significantly more than the sample but the sharp falling off of growth in 2007 is not mirrored in the sample. The sample appears to lag and be smoothed relative to the benchmark. Depreciation rates are low (appreciation) where the lag in the turning point is most marked (2000 and 2007) or where the benchmark growth is falling at a higher rate than the sample (for example, 2002). It is highest when the benchmark growth is accelerating at a greater rate than the sample in 1999 and between 2003 and 2006.

Figure 5.9: Comparison of the annual change in benchmark and sample – Amsterdam



In Amsterdam, the benchmark and sample rental values show some similar characteristics as Dublin. The benchmark changes are more marked than the sample rental value changes and fall faster in the period 2000 to 2003 and rise more sharply in 2004 to 2006. The sample rental value changes lags one of these turning points as the rental growth in the sample doesn't start to accelerate until 2006, two years after the benchmark. However, both growth rates peak in 2000 and fall in 2001. As in Dublin, the benchmark growth rate reduces significantly in 2007 but the sample rental growth rate continues to rise. The pattern of depreciation follows the pattern observed elsewhere with the lowest depreciation (highest appreciation) generally occurring in the period when the growth rates are decelerating (2001 to 2003) and the highest when they are accelerating (2004 to 2006). This ignores some slightly odd observations for the benchmark and sample rental growth rates at the beginning of the period.

Figure 5.10: Comparison of the annual change in benchmark and sample – Paris

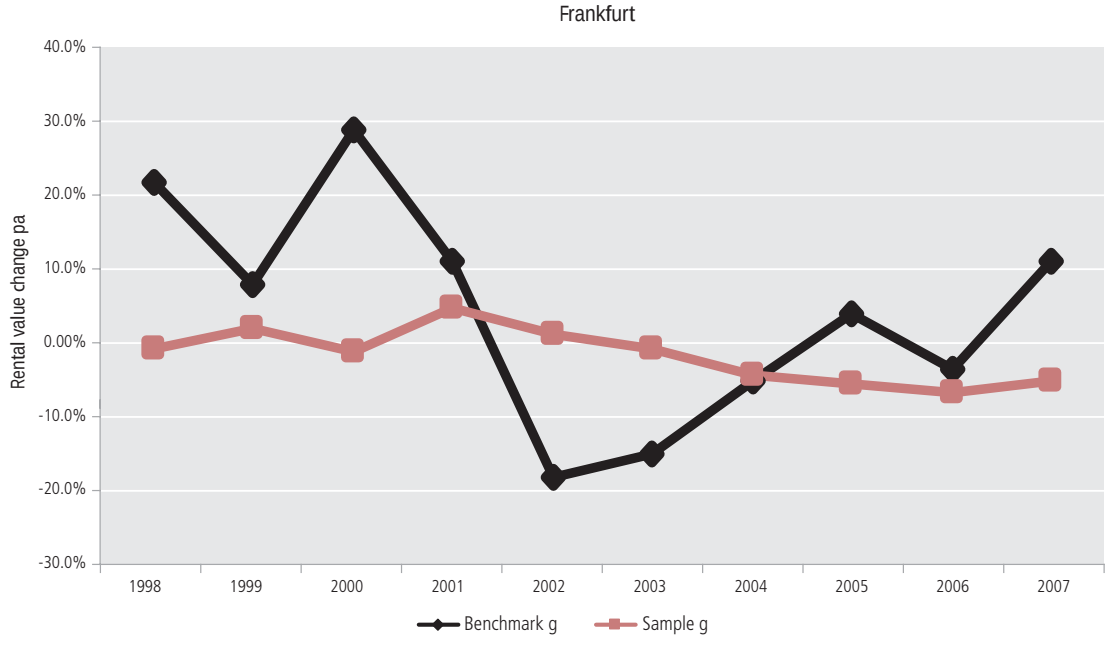


Although the Paris data is for two years less than the other locations, a similar pattern of rental growth rates can be observed. Both benchmark and sample rental value growth is decelerating between 1999 and 2002 before recovering to 2007. There is no hint of the 2007 downturn indicated in the benchmarks for Dublin, Amsterdam and the City of London. The benchmark and the sample behave very similarly in the period 2002 to 2007 but there are much wider variations in 2000 and 2001 caused by a huge spike in the benchmark growth rate in 2000.

Figure 5.11: Comparison of the annual change in benchmark and sample – Stockholm

The benchmark and sample rental value growth rates are very consistent in Stockholm with both the benchmark and the sample growth rates peaking in 2000, falling in 2001 and recovering gently in 2002 onwards. As in London West End and Paris, there is no sign of a downturn in 2007. The benchmark is more volatile than the sample in 2000 and 2001, growing more in 2000 and falling more in 2001, which does appear to cause a bit of lagging in the sample rental value growth in 2002. The greater fall in the benchmark compared to the sample in 2001 produces a large element of appreciation in the sample relative to the benchmark and this is largely responsible for the appreciation rate over the whole period.

Figure 5.12: Comparison of the annual change in benchmark and sample – Frankfurt



Finally, Frankfurt exhibits a completely different pattern to the other locations caused by a significant variation between the benchmark rental value change and the sample rental valuation change. The benchmark indicates a downturn in 2001 and 2002 and a recovery in 2003 onwards. The sample rental values are virtually flat with a slight downward slope from 2001 onwards. The sample records small falls in rental value every year in this period with the benchmark indicating large falls in rental value in 2002 and 2003 and increases in 2005 and 2007. The levels of depreciation are dominated by the mismatch between these two indicators of rental value change with huge appreciation rates when the benchmark is growing less (higher rates of rental decline) than the sample and huge depreciation rates when growth rates are higher than in the sample.

This analysis raises the data issue of the use of valuations in the longitudinal analysis of depreciation rates. The UK results (IPF, 2005) seemed plausible and the comparison of the benchmark and the sample valuations for London illustrated a consistency of shape that suggests that the valuations of the sample and the benchmark are being approached consistently in these markets. Some of the other comparisons show less consistency in the timing and extent of movement in the two series. The valuation issue needs addressing and, if consistency in valuation bases and interpretations of bases is not present, the depreciation rates are based on an erroneous comparison.

5.6 Impact of valuations on the results

The IPD Index Guide (IPD, 2008b) defines both capital value and rental value for use in their performance measurement indices. Capital value is defined as

> *"(open) market capital values as supplied by the portfolio's valuers. In the UK these must be in accordance with the RICS definition of (Open) Market Value, stated net of purchasers' costs. In other markets locally defined standards are reviewed and where appropriate adopted, subject to the overriding requirement that any prescribed method is based upon open market principles" (p.11, Index Guide)*

Market rental value is defined as:

> *"the rent that the valuer estimates could be charged if the unit were let in the open market on the valuation date" (p.11, Index Guide)*

The intention is clear. IPD will only use valuations which adhere to the general concept of value in exchange and that adopt the market value definition in the UK and similar definitions in other countries. There is no mention of International Valuation Standards but their definition has been adopted by the RICS Red Book (with the word "Open" having been removed from both the international definition and therefore from the Red Book).

The market rent definition leaves a few questions unanswered in the detail but is also a value in exchange concept. A number of national valuation standards have defined rental value including the Red Book, which has a definition of market rent again based on a value in exchange concept.

McParland, et al (2002) compare valuation processes in Sweden, The Netherlands, Germany and France. They addressed four main issues of education, professional training, valuation techniques and standards. In addressing standards they considered content but, they did not examine how valuation standards are interpreted. They did suggest that information transparency is a key factor in the adoption of technique and that cash flow methods are generally far more popular in Sweden and The Netherlands than they are in Germany and France. They also suggested that German valuers have a training and education programme more based in the built environment discipline than some of the other countries. This is also suggested by Bruhl (2001). Sweden had the least number of RICS qualified respondents to the McParland et al (2002) survey and German valuers held memberships of the most number of different bodies. The valuation process in the UK is dominated by the Red Book and valuation methods are mainly undertaken using comparison valuations, utilising capitalisation rates as comparators. Valuation processes and methods are well documented (see Baum and Crosby, 2007).

The most interesting finding for this research is the adoption of different standards.[12] Less than 5% of valuers in the survey from The Netherlands, Sweden and Germany used the international standards while the figure was around 15% in France. The use of the RICS Red Book varied enormously around the four countries, from 3% in Sweden to 32% in the Netherlands, 48% in Germany and 63% in France. The local valuation standard was used by 78% in Sweden, 45% in Germany 42% in France and 36% in The Netherlands. The regional (European) standard was used by 32% in France, 10% in Germany and The Netherlands and 6% in Sweden. Sweden is therefore heavily dominated by the local (national) standard and The Netherlands and Germany by both the local standard and RICS, while the French use a combination of international, regional, national and RICS standards. Although not part of the survey, the UK is dominated by the national (RICS) standard.

[12] Note that respondents to the survey described could select more than one option.

5. RATES OF RENTAL DEPRECIATION AND EXPENDITURE

Adair, et al (1996), an edited book with specific chapters on property valuation practice in 12 European countries, has information on valuation bases adopted within those countries. The valuation of investment properties for insurance companies, unit trusts and other investors are based on market valuation concepts. The only possible exception is Germany where Downie et al (1996) suggest that the German definition of market value may include elements of average or 'normalising' price rather than best price estimation. A more up to date review of valuation practice including bases and methodology has recently been carried out by the European Mortgage Federation (EMF, 2007). Even though it was focused on valuations for lending purposes, it suggests that Sweden, Ireland, the UK and France are wholly dependent on market value bases and The Netherlands has market value as its dominant basis, but is considering Mortgage Lending Value (MLV) for lending purposes under pressure from German clients.

Even where market rental value is the accepted definition of value, different valuers may interpret this differently between countries and also within countries. For instance, Crosby and Murdoch (2001) investigated the interpretation of rental value adopted by UK valuers providing data to IPD. They found a number of variations based around effective and headline rental values, and provable and achievable rents. Different data providers were applying different assumptions concerning actual or notional lease terms as well as striping out inducements in some cases and not in others. Other interpretation issues include anecdotal comment that in some countries an average rent is used, not a best rent. Added to this is the possibility, given the greater use of indexation and other non market-based rent revision provisions, mainland European investors may not be as concerned with market rental value estimates as in the UK. These complications add to the possible inconsistencies between benchmark and sample valuations. All IPD (2008b) suggest is that local standards are acceptable for its performance measurement role.

As all of the international and national standards have definitions based on variations on the market value / exchange price / mark to market theme, the guide to the IPD Gmbh German index is interesting (IPD GmbH, 2007). It indicates that the German definition of rental value within IPD is not a value in exchange concept; rather it is a sustainable value concept. Within the guide, the English translation of the title of the rental value section is "Market Rental Value/ERV" from the German "Nachhaltige Marktmiete". In German this is explained as:

> *"Vom Bewertungssachverständigen geschätzte alle bei einer ordnungsgemäßen Bewirtschaftung und zulässiger Nutzung nachhaltig erzielbaren Einnahmen aus dem Grundstück, insbesondere Mieten und Pachten einschließlich Vergütungen; Umlagen, die zur Deckung von Betriebskosten gezahlt werden, sind nicht zu berücksichtigen." (p.23)*

The English translation of this in the IPD German index guide is:

> *"The expected sustainable income from the property as delivered by the valuation expert, but excluding operating costs."*

This has in some quarters been taken to mean that all capital valuations by German valuers are based on sustainable value concepts as well as rental valuations (see discussion in Crosby, 2007 with reference to comments within Kilbinger, 2006), but this is not necessarily the case.[13] If transaction prices are analysed by reference to sustainable rental values (ie the capitalisation rate is moved to identify market value in a changing market), then capital values can mark to market even if rental values within the valuation are marked to long term sustainable value. For the purposes of the rental depreciation study, this issue does not need to be taken further, but the interpretation of bases for German investment property valuations is an outstanding research question.

This discussion suggests that there may be some unanswered questions concerning the basis of valuation adopted for rental value applied to properties included in IPD in different countries–there may be differences in (a) the basis, (b) the interpretation of bases and (c) the importance placed on rental valuations in different countries, in particular, the six countries represented in this depreciation study. These interpretations may not be consistent within countries and the interpretation of rental value for the valuation of the benchmark may not be mirrored in the valuation of the IPD sample.

There is one other issue to be considered. In the current downturn, the smoothing and lagging debate in valuation has been carried on in European practice by reference to the speed at which the capital value component of the IPD indices have fallen. This debate has client influence connotations and there may be conflicts between open-ended funds wanting a speedy marking to market and other clients not quite so keen to see asset values reduced (Crosby, et al., 2009). It is possible that the approach to benchmark valuation may be less inhibited than that for valuations of properties within portfolios and so there may be some mismatch between the benchmark and the sample in specific years, which may in turn impact on the calculation of depreciation rates. The latest IPD Global Index (2009) indicates that capital value falls in 2008 in Ireland and the UK were far higher than in Sweden and France, which in turn were higher than the Netherlands and Germany. Although there are obvious reasons why differential falls in value occur, there is also some discussion concerning the speed at which valuations mark to market (IPF, 2009) and whether the indices of individual countries include some differential smoothing. Anecdotal comment would suggest that Germany is not the only country in this study where rental valuations may be excessively smoothed from market prices. The research question is whether valuation issues interfere with the theoretical basis for the measurement of depreciation. This would only be so if there were differences in bases or differences in interpretation of bases within and between countries.

Germany is the only country where there is evidence that the basis of valuation adopted is different to the rest. As the Frankfurt sample is valued by German valuers in the main and the benchmark by international property consultants, the mismatch is a valuation issue and is the first piece of evidence to confirm the anecdotal comments concerning valuations in Germany. The depreciation rates derived from this method may therefore be heavily compromised by the conflicting valuation approaches.

[13] See, Crosby, et al, (2000) for a detailed discussion of the theoretical and practical issues which concern some parties over the use of Mortgage Lending Value - a sustainable value definition applied to bank lending situations.

However, more seriously, the impact of the use of sustainable rental value rather than market rental value on property performance measures used to compare the volatility of international markets needs to be investigated. This is especially so as the German market is sold to investors as having low volatility. In early 2009, in a major global property market downturn, Germany was identified as a top location for new funds; and one of the major reasons was the perceived lack of volatility (IPE Real Estate, 2009, p21). Calling a rent calculated by sustainable approaches a market rental value is at very least misleading. Total returns may be affected by capital valuations which are smoothed by the use of sustainable rental values rather than market rental values. If it is shown that international investors understand the normal interpretation of market rent and market value but are unaware of the idiosyncrasies of the German valuation system, it is likely that they have been misled as to past performance volatility within that market.

In order to investigate the relationship between benchmark rental values and the sample rental values further, Figures 5.13 and 5.14 set out indices of the year on year average benchmark and sample rental valuations and the ratio between the rental value of the benchmark and the sample. The results raise some interesting questions regarding the nature of the different samples in the different countries.

In Amsterdam, London and Paris the average rental value of the sample is much less than the average rental value of the benchmark suggesting that the samples are older and also could be in more secondary locations than the nearest benchmarks. London City has the largest gap between rental values and a significant portion of the sample is in the age group 20–50 years, ie built in the 1950s, 60s and 70s. The results suggest that it is these buildings that have depreciated the most. Meanwhile, Dublin's average benchmark rental value is only 20% above its sample rental value at the beginning of the period. It has virtually none of the sample in the 20–50 age range.

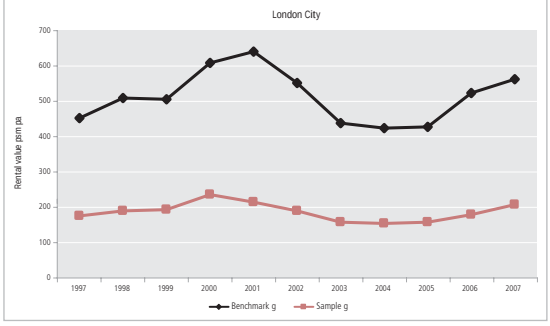
Frankfurt again does not follow the same pattern. The sample rental value starts above the benchmark and although the benchmark overtakes it in 1998 they come together again in 2003 and 2004. As rental values accelerate in 2005 to 2007, the benchmark finishes above the sample. Ten out of the 17 buildings are no more than 20 years old so the sample rental value might be expected to be quite close to the benchmark, but not above it. This is theoretically impossible casting more doubt on the valuation approach for either the benchmark or the sample–one of them at least must be 'wrong'. This analysis should be treated with caution as it is based on a small sample of 17 office properties in one location.

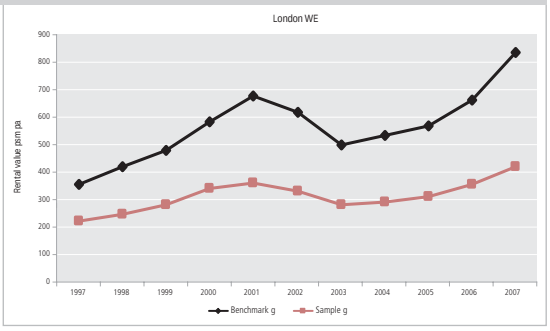
There is evidence of smoothing in the sample valuations compared to the valuations of the benchmark. The benchmark rental values appear to increase during the late 1990's relative boom years at a greater rate than the sample properties but in the relative downturn in the early 2000s they tend not to decrease as much. In the last few years of relative boom up to 2007 the benchmarks appear to accelerate away from the sample again. All the locations have some element of this phenomenon although it is most marked in Amsterdam, Dublin and Frankfurt (Figure 5.14).

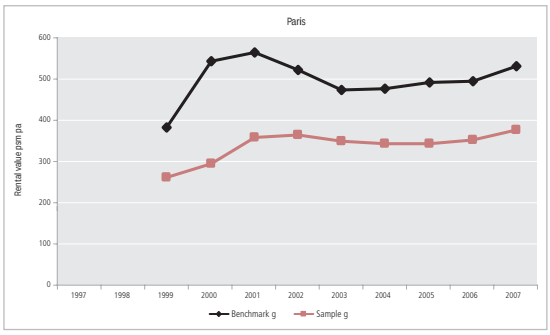
There seem to be two possible explanations of these results.[14] The first is that rental values of the newer stock increase most in a relative upturn and that the price of secondary stock falls relatively against the prime stock. As markets turn, the rental values of the newer prime stock are affected more and the gap between the rental value of prime and secondary falls. The second explanation is that the results are caused by a data issue. Valuations of the benchmark are not undertaken by the same group of valuers or under the same conditions as the sample. Valuations of the sample could be scrutinised by clients and discussed in draft valuation meetings. Valuers may be more cautious about the real valuations than they are concerning the benchmark assessments. Benchmark valuations may also be using a consistent approach such as achievable, headline rents while sample valuations, if the evidence of the UK is anything to go by, may be using a variety of achievable and provable rental levels based on headline or effective rents. Frankfurt has been identified as the primary case for a valuation based explanation– but this issue may be contaminating the data needed for a longitudinal study of depreciation in all locations. At very least, this potential problem needs to be investigated further before any meaning can be placed on the shape of depreciation or appreciation that has emerged from the different locations.

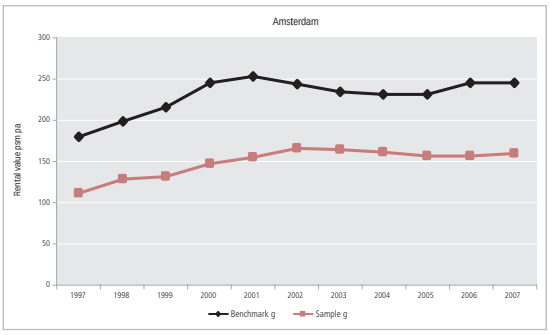
[14] A third explanation is that the problem lies with the valuation of newer properties being easier than older properties and that the real differences are between new and old rather than sample and benchmark. Our analysis of this issue is set out in appendix 2 and indicates a high correlation between valuations of different properties within the sample than between newer properties in the sample and the benchmark.

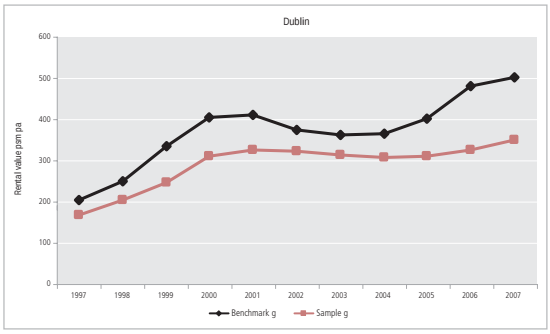
Figure 5.13: Comparison of the indexed average rental value change in benchmark and sample

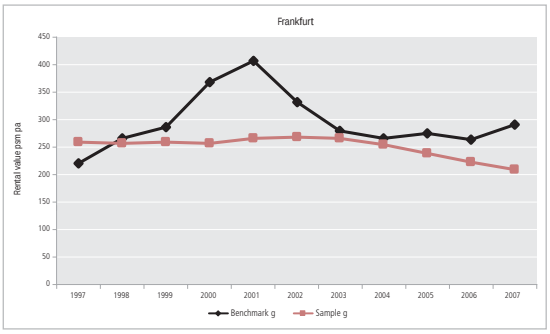












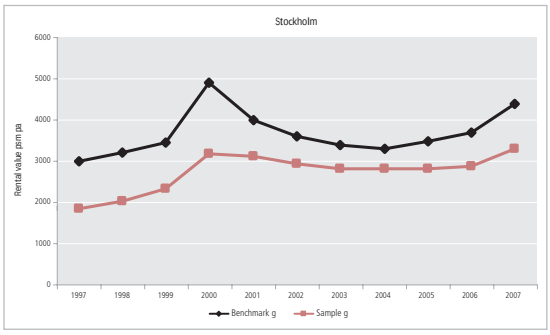
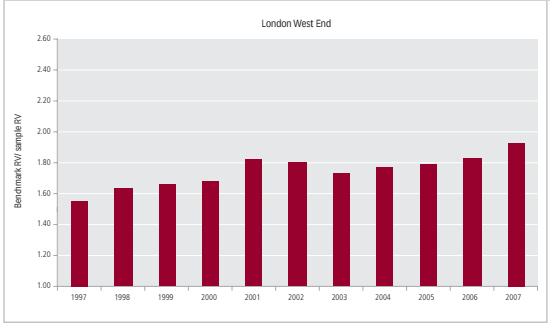
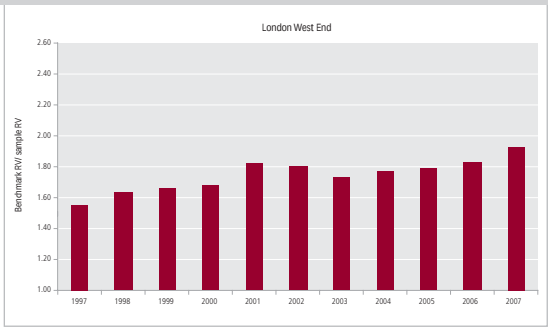
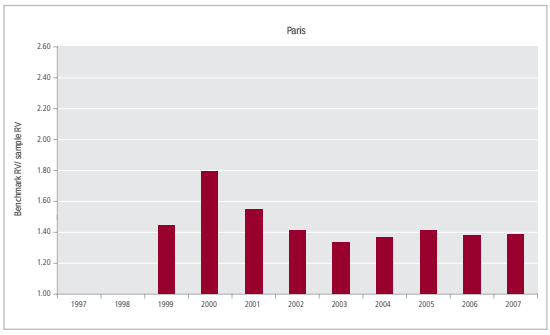
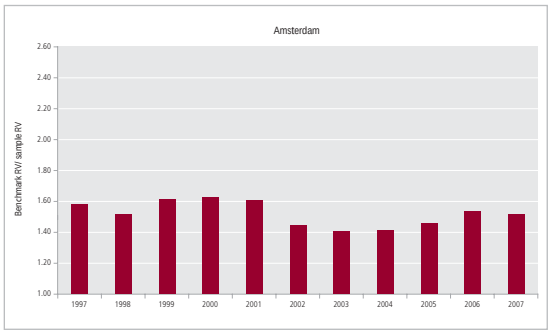


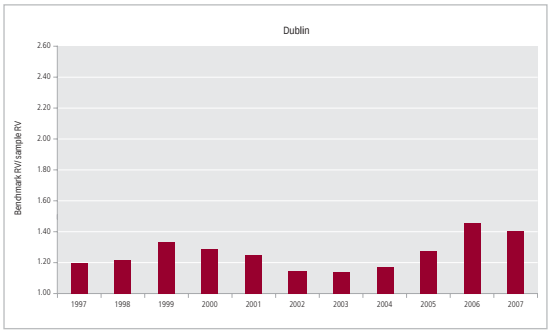
Figure 5.14: Ratio of the average rental value of the benchmark/rental value of the sample

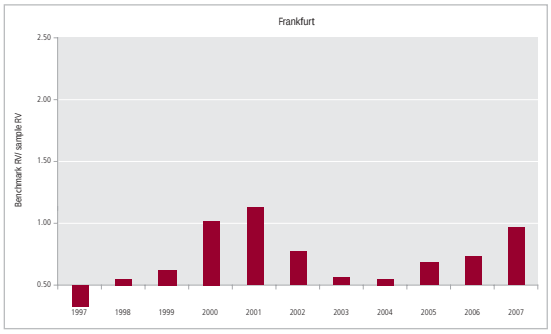


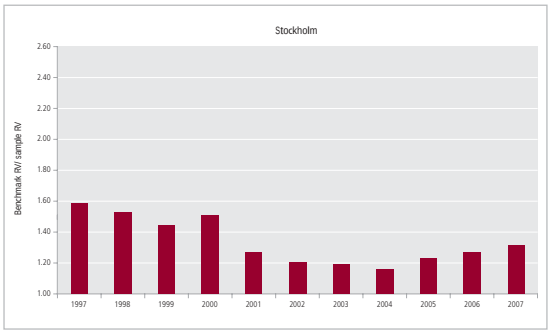












6. CONCLUSIONS

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 and 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.

However, even within the context of the expected variation discussed above, 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 the 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.

As indicated in chapter 3, 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. It is apparent that all 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 do 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 providing 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 some more attention in the future.

On account of the valuation issues that have been outlined in this report, we feel that any conclusions on 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 (see appendix 2) 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.

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.

6. CONCLUSIONS

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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APPENDIX ONE: BASIC LEASE STRUCTURES

United Kingdom					
SOURCE	**RICS study Lofstedt and Baum, 1993**	**The International Property Bulletin 1994 (Worzala and Bernasek, 1996)**	**Crosby and Murdoch, 1998**	**Baum and Turner, 2004**	**DLA Piper/FIABCI, 2006**
Typical term	25 years although there is evidence that can be modified to reflect current adverse market conditions	10 to 25 years	25 year standard lease term up to early 1990s, then reducing significantly to 10–15 years for institutional quality stock.	The standard lease for Grade A office space in London is now a 15 year term	10-15 years
Break option	Agreement between parties, incorporated in the lease	Tenant's option in years five and 10	Only if incorporated in the lease. T breaks became common in recession. L's restricted to redevelopment		
Security of tenure	T has the right to a new lease, provided that he serves specified counter-notices on his landlord and applies for protection of the court	No right to renew	Leases can be contracted out of statutory protection, if not T has right to renew for a term of up to 14 years. No limit to number of renewals		Yes
Indexation and rent review	Every five years to market value and upwards only	Annual indexation. Open market rent review every five years	Five yearly upwards only market reviews	Grade A: five-yearly upward-only rent reviews	Five years upwards only
Service charge	Multi-occupied, lighting, heating, repairs common areas etc.	10 –20 %	Will be used in multi-occupied buildings to cover maintenance and repair of plant and structure, cleaning of common parts etc.		Landlord repairs exterior and structure, tenant pays
Tenant cost	Insurance, business rates	Internal repairs, structural repairs, insurance, local taxes, or rates	FRI lease	FRI lease	Tenant pays for external and insurance and organises and pays for internal
Vat on rent	LL may elect to charge VAT	17.5% LL discretion			

APPENDIX ONE - **BASIC LEASE STRUCTURES**

France							
SOURCE	**RICS study Lofstedt and Baum, 1993**	**Overview of French Commercial Leases Ronald S. Austin, 1994**	**The International Property Bulletin 1994 (Worzala and Bernasek, 1996)**	**RICS Research, Crosby and Murdoch, 1998**	**Baum and Turner, 2004**	**DJ Research. IPD France, March 2005**	**DLA Piper/FIABCI (2006)**
Typical term	Minimum nine also 12 (retail) 18 and 24 also found	Nine years minimum	Nine years	Nine minimum, 18 to 24 years also found	Nine years	Nine years minimum	Nine year minimum, over 12 unusual
Break option	Every three year with six month notice to LL. A law of 30-12-1985 allows parties to reduce frequency of breaks, although this has not yet become common practice	Every three years	Tenant every three years	Tenant every three years. LL but only on grounds of substantial redevelopment	Tenant three to six years	Three yearly T break options are more significant in Paris Central and Western BD than in the rest of the Paris region.	Three and six year break in nine year lease
Security of tenure	T automatically entitle to renew provided he has been in occupation for more than three years	T automatically entitle to renew provided he has been in occupation for more than three years	Tenant has automatic right to renew. LL must renew or pay compensation to tenant	T automatically entitled to new nine year lease unless original term was for 12 years	There are some renewal rights for tenants	T automatically entitled to renew – LL must comply or pay compensation	Yes
Indexation and rent review	Reviews by indexation at intervals agreed, cannot exceed construction cost index.	Annually indexed to the National cost of construction index.	Annual or three year index	As often as parties wish, annually indexed to construction or base rent + turnover percentage	Annual inflation indexation. Review once in every nine years	Rent on renewal is capped (plafonnement) INSEE index	Three years by law or annual by agreement
Service charge	Will cover all costs except work to the structure of the building		15–30 %	Will cover all costs except work to the structure of the building			Insurance
Tenant cost	L typically responsible for structural repairs and T responsible for maintenance	By law LL pays land taxes, Ile de France offices: LL pays annual tax which depends on the area where building is located. Still LL and T negotiate payments of all taxes	Internal repairs, insurance, local taxes	L typically responsible for structural repairs and T responsible for maintenance	Landlords retain the responsibility for all maintenance and structural and external repairs		Landlord structure, tenant interior
Vat on rent			18.6% or 2.5% stamp duty				

APPENDIX ONE - BASIC LEASE STRUCTURES

Ireland			
SOURCE	**The International Property Bulletin 1994 (Worzala and Bernasek, 1996)**	**Crosby and Murdoch, 1998**	**DLA Piper/FIABCI, 2006**
Typical term	Two to 35 years	Two years nine months to 35 ys	15 years
Break option	No		
Security of tenure	After three years of continuous occupation tenant has right to renew at the end of lease	After three years of continuous occupation tenant has right to renew at the end of lease	Yes if lease over five years
Indexation and rent review	Open market rent reviews every five years	Usually every five years to OMRV	Five years upwards only
Service charge	10–20 %	10–20 % of prime rents T responsible for local taxes	
Tenant cost	Internal repairs, insurance, local taxes, structural repairs	T usually liable for all repairs	Tenant pays for all reps and insurance
Vat on rent	No		13.5% on longer term lets

APPENDIX ONE: BASIC LEASE STRUCTURES

Germany					
SOURCE	**RICS study Lofstedt and Baum, 1993**	**The International Property Bulletin 1994 (Worzala and Bernasek, 1996)**	**Crosby and Murdoch, 1998**	**Baum and Turner, 2004**	**DLA Piper/ FIABCI, 2006**
Typical term	Five to 10 year option to renew for further 5 years	Five to 10 years	Five to 10 years	Five to 10 years	Five years with option for further five years
Break option		No			
Security of tenure	Only if included in terms of lease	Tenant has no right to renew beyond contract	Only if included in terms of lease		No
Indexation and rent review	Can be fixed increases at the outset or reviews by indexation or open to market value	Periodic open market	Normally by indexation, less commonly by market review. Fixed increases also used	Annual indexation and a reset to market is possible at the 5th year	Market review rare but indexation not rare
Service Charge	Received monthly in advanced based on an annual budget for the building	10–15 %	Includes all services, ground tax insurance and managing agent's fees		Insurance
Tenant cost	L responsible for structural and major repairs. T internal repairs and decoration	Internal Repairs and local taxes increases	L responsible for structural and major repairs. T internal repairs and decoration	Landlords retain the responsibility for structural and major repairs to services	Landlord external, tenant internal
Vat on rent	Optional	15%			Rent exempt

Netherlands					
SOURCE	**RICS study Lofstedt and Baum, 1993**	**The International Property Bulletin 1994 (Worzala and Bernasek, 1996)**	**Crosby and Murdoch, 1998**	**Baum and Turner, 2004**	**DLA Piper/FIABCI, 2006**
Typical term	Five with T option to renew for further five	Five to 10 years	Five years minimum	Five years	Five to 10 years
Break option	Every five years	Every five years	Not usual		
Security of tenure		T has no option to renew for five years. No security of tenure after option.	No automatic right to renew unless specified in lease, common in five year lease	Tenants option to renew for further five years	Retail leases only renewed automatically
Indexation and rent review	Indexation and review to market levels are found. Common index used is consumer spending Index. Market rent review after five years	Cost of living index. Open review at end of initial term	Indexation and market reviews found. Annual indexation may be supplemented by five yearly market reviews	An annual indexation of rents with rent reviews to market at the end of the 5th year	RPI Indexation
Service charge	Cost of maintenance of common areas	Dfl 25–60 per sq m			LL insures, tenant pays
Tenant cost	LL structural and T maintenance	Internal repairs, part of local taxes, 1/3 of property tax	LL structural and T maintenance		LL structural, t minor and day to day maintenance
Vat on rent	18.50%	18.50%	Will typically cover fuel, maintenance of plant and lifts, staff, security, cleaning of common parts, admin, etc.		19%

APPENDIX ONE: BASIC LEASE STRUCTURES

Sweden				
SOURCE	**Crosby and Murdoch, 1998**	**Term Structures in the Office Rental Market in Stockholm, Gunnelin and Söderberg, 2003**	**Baum and Turner, 2004**	**Piper/FIABCI, 2006**
Typical term	Three to 10 years	Historically always short. three to four years in 2003, still authors say is increasing	Three to five years	Three to 10 years with three to five year renewals by statute but can be longer
Break option				
Security of tenure	T has option to renew	T has option to renew and accept a fair market rent. LL must agree or pay compensation.		
Indexation and rent review	Annual indexation		Rents fully or partially indexed to inflation	At end of term reviews can go up or down
Service charge	about 10% covers water, drainage, heating and electricity			LL insures, cost recovered through lease
Tenant cost	T carry out internal repairs and decoration while LL are responsible for major structural repairs		T carry out internal repairs and decoration while LL are responsible for major structural repairs	Subject to negotiation
Vat on rent				

APPENDIX 2: A COMPARISON OF THE VALUATIONS OF THE BENCHMARK, THE NEWEST PROPERTIES IN THE SAMPLE AND THE WHOLE SAMPLE

This appendix sets out the results of an investigation of the behaviour of the best properties in each IPD sample to see if they match most closely to the benchmark in their location or to the rest of the sample. If the newest properties in the sample behave more like the rest of the sample than the benchmark, the benchmark and the sample are being treated differently. If the newer properties match the shape of change in the benchmark, this suggests that the benchmark is being valued similarly to the properties in the sample.

To investigate this, a cohort of assets within each sample that were between 0 and six years old at the start of the period was identified. Ideally, only brand new assets would have been used, but there were not enough of these to constitute a reasonable sub-sample size in each case. Stockholm could not be further analysed owing to a complete absence of new buildings in the IPD data for the CBD area. Meanwhile, the Paris sample of young office buildings did not meet IPD confidentiality rules. Hence, the analysis in Table A2.1 is presented only for Amsterdam, Dublin, Frankfurt and the two main office sub-markets of London.

The results show a greater correlation between the two parts of the sample than between the newer properties in the sample and the benchmark. For London West End, the differences are negligible, but, elsewhere, the results suggests that there may be a valuation problem in two mainland European markets (Frankfurt and Amsterdam) caused by a mismatch between the sample and benchmark valuations. In London City and in Dublin, there is a small element of difference.

Table A2.1: 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

Figures A2.1 to A2.5 illustrate the results and in both Amsterdam and Dublin it would appear that the sample valuations lag the turning points of the benchmark valuations while in London this is less so–is this evidence of UK valuers being more responsive to market signals and marking to market quicker than other valuation regimes?

APPENDIX 2: A COMPARISON OF THE VALUATIONS OF THE BENCHMARK, THE NEWEST PROPERTIES IN THE SAMPLE AND THE WHOLE SAMPLE

Figure A2.1: Amsterdam – rental growth of sample and matched benchmarks 1997–2007

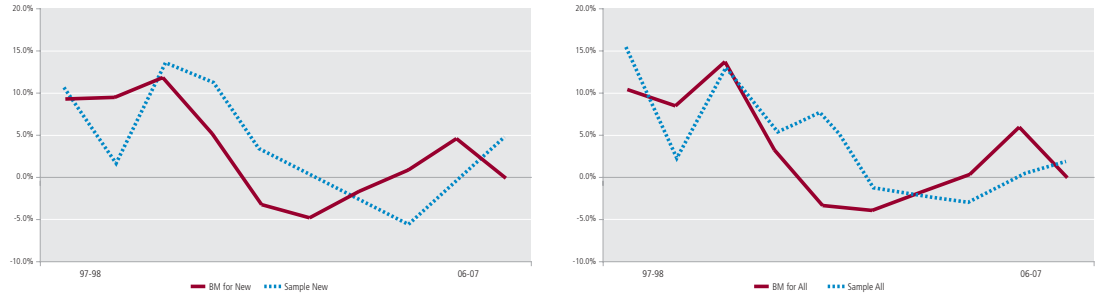


Figure A2.2: Dublin – rental growth of sample and matched benchmarks 1997–2007

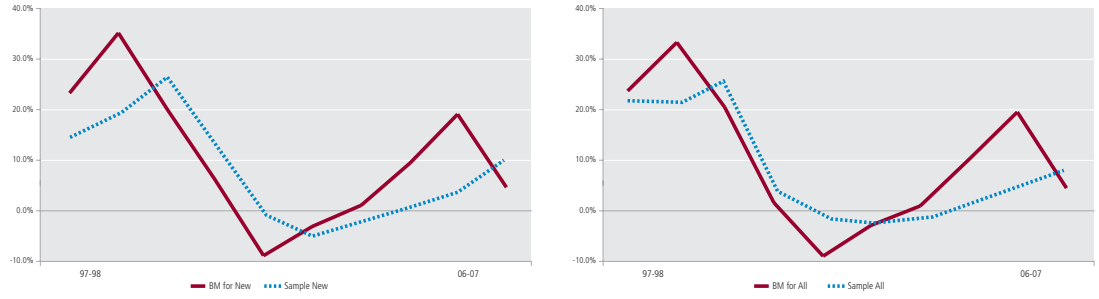
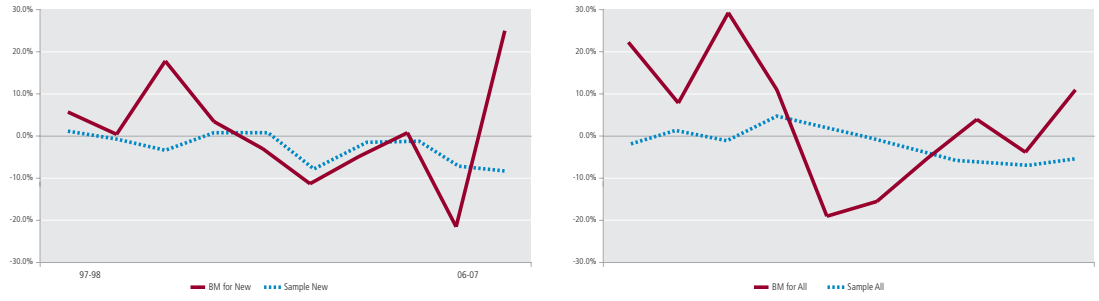


Figure A2.3: Frankfurt–rental growth of sample and matched benchmarks 1997–2007



APPENDIX 2: A COMPARISON OF THE VALUATIONS OF THE BENCHMARK, THE NEWEST PROPERTIES IN THE SAMPLE AND THE WHOLE SAMPLE

Figure A2.4: London City – rental growth of sample and matched benchmarks 1997–2007

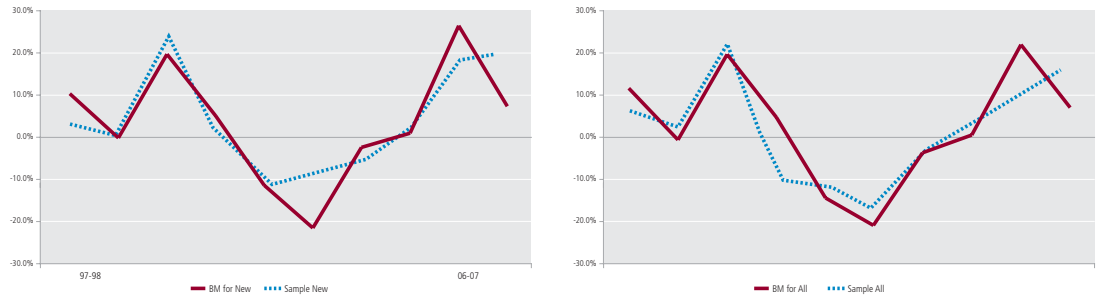
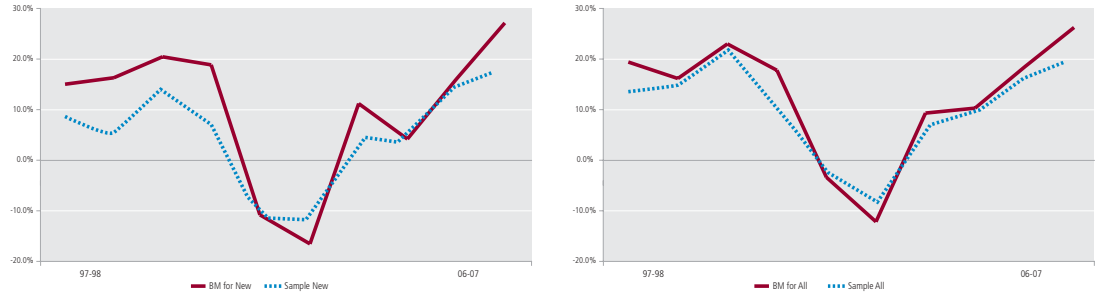
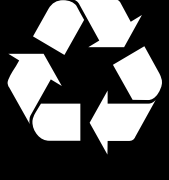


Figure A2.5: London WE – rental growth of sample and matched benchmarks 1997–2007





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