Investment Property Forum

INVESTMENT PROPERTY FORUM Educational Trust

Liquidity in Commercial Property Markets

Research Findings

April 2004

Liquidity in Commercial Property Markets

Research Findings

Working Paper One:
Defining Liquidity in Property

Working Paper Two:
Deconstructing the Transaction Process: An Analysis of Fund Transaction Data

Working Paper Three:
Defining Liquidity in Property

Working Paper Four:
Liquidity Risk and Real Estate: A Quantitative Approach to Assessing Risk

Working Paper Five:
Liquidity – Findings and Recommendations

April 2004

The IPF Educational Trust and IPF Joint Research Programme

This report was funded and commissioned under the auspices of the IPF Educational Trust and IPF Joint Research Programme.

The three-year 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 the other financial markets, wider business community and government on a range of complementary issues.

The programme is funded by a cross-section of 16 businesses, representing key market participants. The IPF Educational Trust and the IPF gratefully acknowledge the contributing organisations:

Capital & Regional, Donaldsons, Grosvenor, GVA Grimley, Investment Property Databank, KPMG, LaSalle Investment Management, Land Securities, Lovells, Morley Fund Management, Nabarro Nathanson, Prudential Property Investment Managers, Quintain Estates & Development, Scottish Widows Investment Partnership, SJ Berwin and Strutt & Parker.

The Liquidity in Commercial Property Markets Research Team

This research was undertaken by a joint research team from three Universities.

Shaun Bond#, Neil Crosby*, Soosung Hwang+, Tony Key+, Colin Lizieri*, George Matysiak*, Patrick McAllister* and Charles Ward*

* The University of Reading Business School
+ Cass Business School, City University
# Department of Land Economy, University of Cambridge

alongside Mark Callender from Investment Property Databank.

The IPF Project Steering Group

The IPF appointed a project steering group to guide and assist the research team. The IPF gratefully acknowledges the contribution from:

Stephen Palmer (Seven Dials Consulting), Richard Barkham (Grosvenor), Paul McNamara (Prudential Property Investment Managers), Stuart Morley (GVA Grimley), Francis Salway (Land Securities) and Charles Follows (IPF).

Preface

This report comprise of five working papers.

Working Papers 1,2,3 and 4 are detailed studies of particular aspects of liquidity in the commercial property markets. Working Paper 5 draws together the whole project in a summary of the research findings with recommendations for future research. The principal authors of each paper are identified. The research team was lead by Professor Colin Lizieri of The University of Reading Business School.

The IPF congratulates the Research Team on an excellent project that lays the foundation for an ongoing research programme into liquidity in commercial property markets.

The lack of liquidity of the property markets has long been stated as a significant disadvantage of holding a directly invested property portfolio. It is cited as a contributory factor to the 20 year decline in the average property weighting of institutional investment portfolios. This report confirms that property liquidity is a multi-dimensional concept, and that the measures of liquidity from the other asset classes do not always simply transfer to the commercial property markets.

The IPF will commission further research into this important area. This report is the start of a structured research programme to give a deeper understanding of property liquidity and the implications for property as an asset class.

The IPF invite comments on the findings and the recommendations for future research.
Please address comments or suggestions to:
Charles Follows
Research Director
IPF, 3 Cadogan Gate
London SWIX 0AS.
Email: cfollows@ipf.org.uk
Tel: 020 7695 1649

Table of Contents

Working Paper One: Defining Liquidity in Property

Working Paper Two: Deconstructing the Transaction Process: An Analysis of Fund Transaction Data

Table of Contents

Working Paper Three: Defining Liquidity in Property

Table of Contents

Working Paper Four: Liquidity Risk and Real Estate: A Quantitative Approach to Assessing Risk

Working Paper Five: Liquidity – Findings and Recommendations

Defining Liquidity in Property

Principal Authors:

Colin Lizieri, Shaun Bond

The Liquidity in Commercial Property Markets Research Team:

Shaun Bond#, Neil Crosby*, Soosung Hwang+,Tony Key+, Colin Lizieri*, George Matysiak*, Patrick McAllister* and Charles Ward*

* The University of Reading Business School
+ Cass Business School, City University
# Department of Land Economy, University of Cambridge

1. Introduction

This paper forms part of the study of liquidity in commercial property markets sponsored by the Investment Property Forum. Its intention is to consider definitional issues regarding liquidity. This is an important task since liquidity is a multi-dimensional concept. It encompasses time to sale, probability of sale and, critically, the costs associated with transacting. To achieve analytic rigour in the project, it is necessary to untangle the different strands of the concept, to provide clear definitions of those strands and to consider the implications for property investment decisions and performance measurement. Any further research needs to be based on firm working definitions.

Disentangling the different dimensions of liquidity is also important in that most market participants have an 'intuitive' understanding of what liquidity is. However, implicit and possibly vague definitions may lead to misunderstandings. This is particularly important when considering real estate in the context of mixed asset portfolios and the wider capital markets. An equity analyst may have a different conception of liquidity to a bond dealer and both may have very different base definitions to that of a real estate professional. As we will suggest, this in part reflects the nature and structure of those markets and the investment characteristics of the assets themselves. In turn, this has implications for the understanding of measures of relative liquidity between different property investment vehicles.

We start by considering 'common sense' definition of liquidity in property markets, drawing on practitioner articles and standard texts. We then turn to formal definitions of liquidity employed in analysis of financial markets. Next, these ideas from financial economics are placed in the context of the real estate market. Can they be applied directly? Finally, we attempt to synthesis of the different strands, which points to different research avenues.

2. Property and Liquidity: The View From Inside

In this section we consider definitions of liquidity used in the UK property profession and in property education. If asked to list the distinctive characteristics of commercial real estate, most practitioners would include liquidity alongside the other familiar features – large lot size, uniqueness (heterogeneity) the importance of location, and so on. Much of the case for a UK REIT rests on the claimed need for a liquid property investment vehicle that, avoids the double taxation of listed property companies. However, it is rare to see a formal definition of what is meant by liquidity in this context, beyond a general sense of the ability to trade assets with minimum delay.

Two papers presented at the 1998 IPD Investment Strategies Conference present clear, but contrasting, views of the issue. Key *et al*. (1998) suggest that, for the property asset manager, liquidity is:

- **Being able to buy/sell when I want;**
- **Being able to buy/sell what I want;**
- **Being able to sell at the price that I want.**

From this perspective, then, liquidity is more than the quantum of trading activity. Given thinly traded markets and cyclical variations in market conditions, an asset manager may be unable to rebalance her/his portfolio, may be unable to acquire the type of property required, or, due to lack of potential buyers, may be unable to obtain a "fair" price for an owned asset. The analysis that follows focuses on trading volumes and trading rates which are shown to vary across time and across property types. The assumption here is that differential trading rates provide an indicator of differential liquidity – if there are relatively more sales of, say, standard shops than retail warehouses, this may suggest that it would be easier to sell/buy when required and that the greater density of transactions mean that prices will be more likely to attain some form of competitive equilibrium as information flow will be higher.

McNamara (1998) offers a somewhat different perspective. His starting position is that liquidity is *'the ability of an investor to trade assets into a cash form or vice versa. It is used more loosely to describe the speed and/or volume of transacting in a given market'*. Like Key *et al*. (op cit.) he notes that this will be inextricably linked with prices.

However, he notes that *'most of the work done on liquidity has related to finding ways of reducing the time taken to transact properties'*, citing the IPF (1996) study on Readiness for Sale. The delay in selling (buying) gives rise to opportunity costs either by being forced to hold inferior other assets while entry to the property market is impeded or by being forced to hold property assets while exit is impeded.

This focus differs from that of Key *et al*. McNamara then examines the length of time taken to find a buyer (seller) for different property types and locations, the time taken to achieve financial settlement and the potential losses that result from the seller being forced to hold property rather than equity assets or cash (or the buyer being forced to hold equities/cash rather than property). He also introduces the concept of the influence of transaction activity on price, pointing out that major purchases or sales of shares in small capitalisation property companies will change the price of those firms' equities. As we will show later, this is an important component of one strand of research on liquidity in financial economics.

2. Property and Liquidity: The View From Inside

Examining property market text books, a similar set of definitions emerge which, while noting pricing issues, focus on ease of sale. Baum & Crosby (1995) define liquidity as *'the ease and certainty with which an asset can be converted to cash at, or close to, its market value'*. However, their definitions and explanations are all in terms of time to sale and the barriers faced by potential purchasers. In an American text, Fisher and Martin (1991) employ a near identical definition but again focus on time to sale *'many months, possibly years may be required to find a buyer.'*

Two more recent texts add in additional elements. Ball *et al*. (1998) note that *'difficulties in trading property add a timing risk to uncertainties surrounding the cash-flow and cause problems in implementing an active portfolio management strategy. The length of time taken to transact is an associated disadvantage'*. Furthermore, they note that *'there is an additional risk that a large volume of sales or purchases might significantly affect market price'*. Hoesli & MacGregor (2000) state that *'buying and selling is costly and time-consuming. In comparison to other investments, property is sold less frequently'*. This forms the basis of their definition of liquidity.

They then examine the consequences: *'low liquidity creates two problems: first, it takes longer to realise an asset's market value and, secondly, there is a risk that the market price will change between the decision to sell and a sale being implemented. Thus the actual return may differ from the expected'*.

In summary, the general concept of liquidity seems to be *'the relative ease with which an asset may be sold'* (Freeman's, 2001). This generally gets translated either into an analysis of the length of time taken to sell an individual property or measure of the volume or rate of transactions in a market. Empirical research has concentrated on identifying the market states when sales are more or less rapid (more frequent) and on examining variations in sales rates and time to sale between different types of properties. Pricing issues (failure to achieve "market" price, uncertainty as to achievable market price, valuations and past transactions influencing price) are typically seen as a *consequence* of liquidity rather than as part of the concept itself. We turn now to definitions of liquidity found in the financial markets: do these match the "intuitive" or "implicit" definitions employed in real estate markets?

2. Property Market Definitions – Summary:

- **Property market literature does identify different dimensions of liquidity. These include:**
  - **The frequency of trading (assumed to be low in property markets);**
  - **The cost of trading (transaction costs, with a focus on sales costs);**
  - **Time on the market – the time from decision to completion;**
  - **Market movements while the property is "on the market";**
  - **Uncertainty as to final achieved sale price;**
  - **The impact on prices of attempted sales or purchases.**
- **The focus of most definitions and empirical work has been measures of trading activity and time on the market;**
- **There are few examples of research attempting to measure the impact of transacting on prices;**
- **There are few studies that attempt to quantify the impact of timing and price uncertainty on the *ex ante* risk of real estate.**

3. Liquidity in the Financial Markets

We now turn to formal analytic work on liquidity in securities markets. In bond market analysis, liquidity preference theory explains the "normal" upward curve of the yield curve in terms of an interest premium to persuade investors to lock their investment into longer maturity bonds rather than more readily realisable assets. This idea, attributed originally to Hicks, can be related to yield and interest rate decomposition models, where the risk free rate compensates both for anticipated inflation and time preference or impatience. While this does provide a link to a liquidity definition based on the ease of turning an asset into cash, attention in this section will focus on analytic models of liquidity that have been principally developed to examine equity market pricing and market function.

The underlying concept of liquidity, as expressed by Keynes, is that an asset is more liquid if it is *'more certainly realisable at short notice without loss'* (cited in Hooker & Kohn, 1994). Such a definition incorporates the idea of speed of sale. However, it entails more than a simple measure of turnover or trading volume, since the definition requires consideration of the impact of trading on the achieved sale price. Hence, measures of turnover or sales rate are, at best, a partial measure of liquidity since they do not directly address the cost or timeliness of trading. Further, it may be difficult to make meaningful comparisons across different types of securities or asset classes.

In financial economics, interest in liquidity has arisen primarily in the fields of market microstructure and asset pricing. Hamon & Jacquillat (1999) argue that these two fields treat liquidity in different ways, with market microstructure focusing on price formation and the impact of trading on price, while the asset pricing literature has focussed upon the impact of liquidity and trading costs on portfolio decisions and returns. The two are clearly related.

From the market microstructure literature, O'Hara (1997) defines liquidity as *'the ability to trade essentially costlessly … liquid markets are generally viewed as those which accommodate trading with the least effect on price'*. One standard microstructure measure – Kyle's l – measures liquidity as the order flow needed to move security prices one unit.

Kyle (1985) had suggested that, in measuring liquidity, three characteristics of the transaction process need to be considered: the cost of liquidating a position over a short period of time *(tightness)*, the ability to sell or buy a large number of shares with little price impact *(depth)* and the extent to which prices recover from random shocks with no structural information (*resiliency)*. Research on liquidity has focused largely on the first two of those characteristics.

For Grossman & Miller (1998), illiquidity is the *'cost of immediacy'* – that is, the costs that market makers or investors face by trading now rather than waiting for a better price. It is thus most concerned with the impact of trading on prices. To persuade market makers to provide liquidity in the face of both inventory costs and return uncertainty, they must obtain some return - hence the microstructure literature also focuses on bid-ask spreads. The wider the bid-ask spread, the greater the costs of trading and the greater the impediments to trading. High bid-ask spreads are, in effect, a proxy for transaction costs – as set out in the classic work of Demsetz (1968), which set the stage for formal market microstructure research. Other research has examined the relationship between trading volumes and bid-ask spreads.

3. Liquidity in the Financial Markets

Bid-ask spreads also feature as a cost in the asset return literature but, here, the focus is more on market depth and the impact on portfolio decisions. Faced with high transaction costs, investors will tend to hold assets longer. Pioneering work in this area was conducted by Demsetz (1968), Amihud & Mendelson (1986) and Atkins & Dyl (1997). Amihud & Mendelson (1986) show that assets with higher bid-ask spreads are held longer in portfolios, while investors with short time horizons overweight their portfolios with 'liquid' stock. Hess (1991) argues that non-professional investors (e.g. households) face higher retail transaction costs and, hence, trade less frequently. This leads to the holding of sub-optimal portfolios and exposure to large amounts of diversifiable risk. Atkins & Dyl (1997) demonstrate a positive link between holding period and transaction costs or spreads but a negative relationship to price and return volatility. They imply that price uncertainty may increase trading rates.

In terms of asset pricing, such findings raise a number of issues. These include the extent to which illiquidity is priced in the market and, related, whether it is necessary to develop liquidity adjusted capital asset pricing models. As we will see, similar questions have been raised with respect to property markets. Recent research on the pricing of liquidity risk in security returns includes Hamon & Jacquillat (1999), Amihud (2002), Pastor & Stambaugh (2003), Acharya & Pederson (2003) and Porter (2003). These studies examine both whether asset prices respond to changes in individual stock liquidity and whether changes in aggregate market liquidity are priced in security returns.

Acharya & Pedersen (2003), for example, formally derive a version of the capital asset pricing model which allows for liquidity changes in the individual stocks as well as changes in overall market liquidity. They conclude that investor reactions, and hence prices, depend on the state of the market and the liquidity of the individual stock – such that illiquidity is not always priced. Specifically, they argue:

- **Investors require a risk premium for an illiquid stock when the whole market is illiquid;**
- **Investors will pay a premium for a stock that provides a higher return when the market is illiquid;**
- **Investors will pay a premium for a security that is liquid when market return is low.**

Hamon & Jacquillat (1999) provide evidence that French stocks that are more liquid (defined as having a high free float) offer lower expected returns to less liquid stocks. The differential liquidity premium observed is high when the overall market liquidity premium is high (this is, when the market anticipates a general state of illiquidity) but non-significant when the market is more liquid.

To operationalise such models, it is necessary to construct a proxy for market liquidity. Such measures are reviewed in Porter (2003). Early studies relied on simple measures of turnover, market size or spread. More recent work has attempted to develop more sensitive measures based on the relationship between trading and price movement (e.g. Pastor & Stambaugh, 2003, Amihud, 2002), or by examining smoothed weighted bid-ask spread measures (e.g. Amihud & Mendelson, 1986).

3. Liquidity in the Financial Markets

Research by Hasbrouck (2003) suggests that the measure proposed by Amihud (2002) most closely proxied for effective costs and price impacts in daily stock prices. Amihud's measure is constructed as:

$$\gamma_{i,t}^{AMI} = -\frac{1}{D_n}\sum_{d=1}^{D_n}\frac{|r_{i,d,t}|}{v_{i,d,t}}$$

where:

$r_{i,d,t}$	is the return on stock i on day d of month t
$v_{i,d,t}$	is the dollar volume of trading on stock i on day d of month t
D_n	is the number of trading days in month t

By construction, low negative values of the liquidity measure signify periods of low liquidity. To provide a market wide measure of liquidity, individual stock measures are averaged then weighted by the change in market capitalisation.

Liquidity in Financial Markets – Summary

- **In financial markets, liquidity is more closely defined in terms of costs:**
  - **The certainty of the realisation price;**
  - **The impact of trading on prices;**
  - **The cost of transacting buys and sells.**
- **Market microstructure perspectives focus on pricing impacts:**
  - **Tightness: the cost of liquidating a portfolio quickly;**
  - **Depth: the ability to sell without affecting prices;**
  - **Resilience: the ability of prices to recover from shocks;**
  - **Immediacy: costs associated with selling now, not waiting.**
- **Asset return studies examine impact of costs on:**
  - **The decision whether or not to trade;**
  - **The structure and efficiency of the portfolio with illiquidity.**
- **In public markets, traders and market makers ensure prices adjust**
- **Asset liquidity is not static – it varies with market conditions**
- **As a result, volume of trading and bid-ask spreads proxy for liquidity**
- **Key question: Is liquidity priced? Is there a liquidity premium:**
  - **For individual stocks that are systematically less liquid?**
  - **In aggregate when the whole market is relatively less liquid?**
- **Liquidity premia are linked to market capitalisation (depth) and free float.**

4. Liquidity Research in Real Estate Markets

This section has, as its focus, recent work on liquidity in commercial real estate. Until recently there has been little academic research conducted on liquidity in private, direct commercial property markets. In North America, some studies have addressed the issue of holding period (or expected tenure), mostly focusing on assets held by institutional investors (e.g. Hendershott & Ling, 1984; Webb & McIntosh, 1986; Gau & Wang, 1994; Farragher & Kleiman, 1996). A number of these studies suggest that tax rules (in particular depreciation allowances) are an important influence on both expected and actual holding periods.

Fisher & Young (2000) examine holding periods of properties sold from the NCREIF database between 1980 and 1998. They test for differences in sales rates conditional on property characteristics and market states. They find marked differences in holding period by tenure with retail properties having the longest mean tenure, apartments the least. Their results suggest that medium holding period are falling over time. There is a tentative suggestion that sales rates increase when market returns are above average. Fisher & Young also show that return volatility between individual properties reduces as holding period lengthens (and as an averaging process dampens exceptional, extreme, rises and falls in value).

Collett *et al*. (2003) conduct a similar holding period analysis for UK real estate, albeit with a statistically more sophisticated analytic method that accounts for the characteristics of properties that have not sold. As with the Fisher & Young study, they find marked variations between sectors and a tendency for holding period to decline over time from eleven to twelve years in the early 1980s to seven to eight years in the late 1990s. Small office and standard shops have the lowest holding period (highest probability of sale) while larger, more expensive or heterogeneous properties (large office, shopping centres and industrial property) sell less frequently and, consequently, are held longer in institutional portfolios.

Studies on holding periods and sales rates reflect both the characteristics of real estate as an asset and the structure of the market. In public markets, with price transparency, high volumes of deals and short implied holding periods, volume of transactions and turnover rate data are appropriate as measures.

Furthermore, in many markets, bid-ask spreads are directly observable, although care needs to be taken to compare like-with-like (for example, the matched bargain, order driven SETS system that handles around half the trading in FTSE 100 companies greatly reduced the bid-offer spread by comparison to conventional market-maker trading in London).

In the direct (owned) real estate market, conditions are very different. As a private market, with no central market place, information is costly, rarely public resulting in limited price transparency. Agents, as market makers, play an important role in matching buyers and sellers, but do not hold stock and, hence there are no published bid-offer prices. The asset itself, characterised by large lot sizes, fixed location and unique physical and tenant features is heterogeneous – making pricing more complex. There is information asymmetry (the seller knows more than potential buyers about the cash-flow prospects of the asset; for buyers, the cost of acquiring such information is considerable). Finally, high transactions costs contribute to longer holding periods and, hence, a thinly traded market, contributing to lack of price transparency.

As a result, it is difficult to apply standard securities market proxies for liquidity to commercial real estate. Indeed, some measures may even be inappropriate. In effect, prices are not set in a fully competitive market. Price is set by negotiation between buyer and seller, which depends on the relative bargaining power/strength of each party. Thus there may be many possible price equilibria, any one resulting from the outcome of the particular bargaining process.

4. Liquidity Research in Real Estate Markets

Some recent papers have concentrated on the behaviour of actors in the property market, exploring the implications for implied liquidity and the assessment of investment risk. Fisher *et al*. (2003a) discuss the impact of thinly-traded markets on performance measurement in real estate markets. They suggest that the problem of lack of price evidence will be exacerbated if the properties that do sell are, in some sense, atypical. Furthermore, performance measures may be misleading if liquidity varies over time and market conditions. They argue for the creation of a "constant liquidity" performance index to provide comparability with other asset markets.

Their working definition is that 'liquidity in a private asset market (is) the rate of asset transaction volume, the inverse of the expected time on the market for a representative asset sale.' This time/rate is pro-cyclical and variable. In a public markets, prices fall (rise) to clear buyers and sellers and, thus, the price change captures all information. In private markets, both price change *and* average time on the market are needed to understand market conditions.

The basis of their liquidity model is that buyers and sellers have reserve prices for a 'typical' property asset. Individual buyers (sellers) have differing views: hence potential bid (offer) prices are distributed around an average value. However, the average reservation price for potential buyers will always lie below that of potential sellers. Their explanation for this is not completely clear. However, buyers face greater transaction costs, search costs and information costs than sellers; these costs must be discounted from the price. Critically, buyers also face greater uncertainty than sellers, due to information asymmetry (that is, a seller knows more about the building, its tenants and its cash-flow potential than buyers can). Their key point is that trading only occurs in the overlap between the distributions, where the upper tail of the buyers' distribution and the lower tail of the sellers' distribution coincide.

Figure 1: **Buyers, Sellers, Average Reserve Prices and Trading Area**

Adapted from Fisher *et al*. (2003a)

Now, if one accepts this model, trading will be most active when the two distributions are close together and thin when the distributions are far apart. The gap will differ between asset classes - *a priori*, a transparent, public market with low transaction costs and homogenous asset characteristics will generate active trading.

It may also differ between types of investment within an asset class. For example, certain types of property, such as standard shops, will be easier to value than others and will be less subject to individual specific features that contribute to information asymmetry. Finally the gap between distributions may vary temporally – there will be periods of greater (lesser) overlap, corresponding to greater (lesser) liquidity in markets.

4. Liquidity Research in Real Estate Markets

This point is not as obvious as it might seem. What might cause the two averages to diverge? Transaction costs will only vary with legislative or regulatory change. Uncertainty in the market place, perversely, could widen the distributions causing greater overlap. Fisher *et al*. comment that this generates 'a pattern that seems implausible' although it is consistent with Atkins & Dyl's (1997) empirical results for US securities, where liquidity was found to be positively related to volatility[1]. Fisher *et al.*'s principal explanation is that buyers are more sensitive to market price changes than sellers; thus, in falling markets their average reserve price falls further and faster than that of sellers. This would be consistent with a behavioural explanation whereby sellers are constrained against selling below a prior valuation (thus artificially inflating the reserve price in a falling market). This is explored further in Working Paper Two. Another possible explanation would be that information asymmetry increases (decreases) in certain market conditions, leading to a widening of the gap between buyers and sellers and, hence, depressing sales.

The same authors examine the issue of frequency of transactions empirically using the NCREIF database (Fisher *et al*., 2003b), arguing that transaction frequency is 'a key indictor of current conditions in the real estate market.' However, they continue that 'it is important to distinguish between the concepts of transaction frequency and market liquidity. Transaction frequency refers to the *number* of transactions that occur in a particular period of time. Market liquidity refers to the ease, or speed, at which properties transact or are expected to transact.' They further distinguish between overall market liquidity (the number of sales per time period) and asset liquidity (how long it takes for an individual property to sell).

The two are linked, as in the Fisher *et al*. (2003a) model, by the numbers of buyers and sellers, and their convergent or divergent assessments of the value of a typical property. Empirically, they show that the sales rate increases when property returns are relatively high (and/or when macro-economic conditions are good); that ownership structure is important (for example joint ventures are less likely to be sold, which has implications for private equity vehicles) and that "winners" (buildings that have delivered above average returns) are more likely to be sold than "losers". As with other research, larger buildings transact less frequently, perhaps as a function of the entry barriers caused by large lot size.

The papers reviewed thus far focus on transaction frequency and probability of sale. They do not directly address the "risk of loss" issue embedded in standard economic definitions of liquidity and in the market microstructure literature, although Fisher *et al*. (2003a) do examine corrections to property performance indices. A recent attempt to examine this directly is found in Lin & Vandell (2001). Their analysis addresses the property risk puzzle – why are measures of property volatility (even after removing the assumed effect of valuation smoothing[2]) so low in relation to returns?

Vandell & Lin distinguish between *ex post* risk (the volatility of returns or prices observed after sales) and *ex ante* risk (the risk or uncertainty facing a property owner prior to sale). They argue that *ex ante* risk must be higher since the seller does not know whether or when the sale will be achieved nor at what price. Important variables in such an analysis would be the probability of sale of a particular type of property, the average time to sale and the variability of sale times. McNamara's (1998) study in part addresses these inputs, albeit from survey data. This research points to a link between liquidity studies and work on search models (e.g. Lippmann & McCall, 1986; Yavas, 1992). Search models examine buyers' behaviour and seek to understand how the seller will try to obtain the best possible outcome by selecting the optimal bid. Orr *et al*. (2003) also point to the importance of search behaviour in their analysis of the impact of time on market on achieved commercial property rents.

[1] Collett *et al* (2003) also find evidence of a positive relationship between risk and sales rate for UK investment property sales.

[2] The process by which valuers adjust prior valuations rather than incorporating all new information, which results in a moving averaging of values, dampening price movements.

4. Liquidity Research in Real Estate Markets

There have been a number of studies of liquidity in the securitised property markets. These mostly focus on US REIT markets and apply standard finance models. Examples include Benveniste *et al*. (2000), Bhasin *et al*. (1997), Clayton & MacKinnon (2000) Danielsen & Harrison (2000), Downs & Guner (1999) and Nelling *et al*. (1995). Many papers examine the increase in REIT market liquidity and market depth following the mid-1990s increases in capitalisation. More recent papers have examined the processing of information and the issue of 'adverse selection.'

Where securities are characterised by high levels of private information, then informed traders can make excess profits at the expense of market makers. This results in market makers widening bid-ask spreads as compensation for expected losses which, in turn, implies reduced liquidity. Both Clayton & MacKinnon and Danielsen & Harrison explore adverse selection in REIT markets. The former point to a reduction in the adverse selection component of spreads with greater transparency and market depth; the latter suggest that there are differences in spreads and liquidity dependent on the nature of the assets held by the REITs. They argued that REITs holding property directly are easier to value than those holding debt instruments. These papers again emphasise the importance of information processing and the balance between public and private information in determining liquidity.

In summary, liquidity research in directly owned property markets is complicated by the private nature of the market, the high costs of trading and information, the heterogenous nature of the assets and the presence of information asymmetry, private information. In public securities markets, density of trading means that transactions volumes, spreads and price movements capture the vast majority of information on liquidity both of markets and assets.

In private real estate markets, by contrast, more attention must be paid to the transactions process; the way that buyers and sellers reach (or fail to reach) agreement on prices, the role of agents, the uncertainty surrounding both the date and the value of the achieved sale. Thus measures of transaction activity and turnover rates, while providing invaluable information, can offer only a partial picture of property market liquidity. In the final section of this paper, we examine the implications for a research programme on liquidity in commercial real estate.

Liquidity Research in Real Estate Markets – Summary

- **The direct market for real estate assets is a private market characterised by uneven distribution of information, individual asset characteristics, entry barriers and a major role played by agents and valuers;**
- **It is difficult, but not impossible, to apply standard security market proxies for liquidity due to these market characteristics;**
- **In real estate, adjustments to market conditions come *both* from price changes *and* from changes in the time taken to market, buy or sell an asset;**
- **Liquidity research in property thus needs to focus on the *process* of buying and selling assets;**
- **The time taken to market and sell an asset adds uncertainty to the return. Valuation uncertainties create further risk. These *ex ante* risk factors are not reflected in standard performance measures;**
- **Studies of average holding periods show that real estate's transaction costs drive holding periods that are far longer than for other asset markets;**
- **Holding periods vary by market conditions and by type of property, with standard shops selling more frequently;**
- **Securitised real estate assets (e.g. REITs) have liquidity characteristics that are more like all equities than like direct real estate;**
- **Nonetheless, private information and depth of market influence liquidity and returns in the securitised real estate sector.**

5. Liquidity in Property: Implications for Research

As shown above, liquidity is more than simply sales rate or the length of time taken to buy or sell an asset. Liquidity additionally incorporates the ability to turn an asset into cash (or cash into an asset) without "loss" – that is to be able to transact at the "fair price" or intrinsic worth at the time the decision is taken. Hence, the dimensions of liquidity include:

- **The rate of turnover/transactions and the time taken to transact;**
- **The costs associated with transacting (both formal costs – buy or sell fees – and information costs);**
- **The impact of the decision to transact on the price of the asset and the prices of similar assets.**
- **Uncertainty as to achieved price or return at the time of the decision to transact.**

The relative importance of these dimensions will vary according to the institutional structure of the asset market, the investment characteristics of the investment asset and the processes surrounding the marketing of buyers and sellers and price formation. Much of the formal research on liquidity has been carried out in equity markets. In such public markets, the high degree of transparency of information, the large number of buyers and sellers and the availability of other assets as substitutes for the target asset means that price adjustments occur readily. As a result, transactions rates are a valid and useful measure of market liquidity, particularly in conjunction with the bid-ask spread as a measure of uncertainty and implicit cost of transacting. Such measures could be applied readily to property securities; shares in property companies or REITs.

However, simple measures of turnover, while useful, are not sufficient to characterise liquidity in private real estate markets, characterised by thin trading, lack of transparency and information asymmetry, absence of a central market place and high transaction and information costs. In such markets, adjustment processes are not confined to price formation. A potential seller of real estate faces uncertainty as to the correct "price" for the asset, uncertainty as to potential buyers and uncertainty as to the likely sale date. These extra dimensions of uncertainty may not be fully reflected in ex-post measures of property market performance.

The impact of liquidity then, will vary across asset markets, making direct comparison difficult. Liquidity will (or may) vary over time, conditioned by the state of the market (and those found in parallel markets) and will (may) vary *within* an asset market across different types of investment vehicles and types of asset. A wider research programme into liquidity should try to capture these variations.

It is important to emphasise this complex multidimensionality. There can be no one definition of liquidity that applies to all assets and in all circumstances, nor any one single measure or proxy measure of liquidity. There are different ways, angles of articulating and resolving the liquidity issue. What is needed is not a portmanteau definition but a common understanding of the complexity of the concept.

A further key question is the extent to which the relative liquidity of different assets is priced. Is there an illiquidity premium? If so, does it vary across time or, systematically across different types of asset across and within asset classes? It should be stressed that an illiquidity premium would be expected to compensate investors for additional systematic (non-diversifiable) uncertainty as a result of greater relative illiquidity and *not* simply additional time taken to trade.

In much of the discussion in this Working Paper – and in much of the analysis in the other *Working Papers of the Liquidity in Commercial Property Markets* project – the emphasis is on liquidity in selling real estate – the time, costs and difficulties of disposing of an owned asset. We should emphasise that liquidity is equally an issue in the acquisition of real estate. There are complex issues surrounding the search and evaluation process (touched upon above) that are linked to the structure of the market and the distribution of private information. Relative liquidity on the "buy" and "sell" sides will vary according to market conditions, the balance of supply and demand and the flow of capital in and out of segments of the market. However, the relationship is by no means symmetrical. We return to this issue in the concluding report on the research, Working Paper 5.

5. Liquidity in Property: Implications for Research

As a first attempt at defining the wider research programme needed, it is possible to identify some key tasks:

- **Characterise the transaction and price formation processes in different real estate markets and for different real estate vehicles to identify key elements of liquidity and liquidity risks;**
- **Collect basic data on turnover, transactions volume, sales rate, time to sale and probability of sale for different vehicles and for different property types within vehicles;**
- **Analyse factors associated with variations in sales rates cross-sectionally and over time;**
- **Attempt to model price, return and risk impacts of variable liquidity across asset types and over time;**
- **Attempt to assess the relative riskiness of different vehicles and types of property and the extent to which that risk is, or should be rewarded through additional expected return.**

These are major tasks. The research project funded by the Investment Property Forum represents a preliminary attempt to make progress in these areas and to provide a foundation for subsequent work.

Liquidity in Property: Research Implications – Summary

- **Liquidity is *more* than simply sales rate or turnover: it is necessary to consider cost and price dimensions;**
- **There can be no one definition of liquidity: what is needed is a common understanding of the different dimensions of liquidity;**
- **Nonetheless, *transactions rates*, turnover and time to sale data are valuable in developing an understanding of liquidity in property;**
- **In direct property markets, adjustments to conditions come predominantly through changes in transaction rates and time to sale; in bonds & equities markets, adjustments are primarily through the price mechanism;**
- **It is important to explore the sales *process*:**
  - **How are properties brought to market?**
  - **What is the probability of a sale taking place?**
  - **How long does the sales process take?**
  - **Under what conditions do sales fail?**
- **It is important to examine *variations* in turnover rates, sale probabilities and time to sale by vehicle type, by property characteristics and by market conditions;**
- **A full understanding of liquidity needs to investigate the interaction of prices, returns, risk and transaction information;**
- **The implications of temporal and cross-sectional variations in liquidity for portfolio investment decisions needs to be considered.**

Bibliography

Amihud, Y. & Mendelson, H. (1986) Asset Pricing & Bid-Ask Spread
Journal of Financial Economics 17, 223-249

Amihud, Y. (2002) Illiquidity and Stock Returns: Cross Section and Time Series Effects
Journal of Financial Market 5, 31-56

Atkins, A. & Dyle, E. (1997) Transactions Costs and Holding Periods for Common Stocks
Journal of Finance 52, 309-325

Ball, M., Lizieri, C. & MacGregor, B. (1998) The Economics of Commercial Property Markets
London, Routledge

Baum, A. & Crosby, N. (1995) Property Investment Appraisal
London, Routledge

Benveniste, L., Capozza, D. & Seguin, P. (2000) The Value of Liquidity
Real Estate Economics 29, 633-660

Bhasin, V., Cole, R. & Kiely, J. (1997) Changes in REIT Liquidity 1990-1994
Real Estate Economics 25, 6150630

Bhide, A. (1993) The Hidden Costs of Stock Market Liquidity
Journal of Financial Economics 34, 31-51

Brennan, M. & Subrahmanyam, A. (1996)
Market Microstructure and Asset Pricing: On the Compensation for Illiquidity in Stock Returned
Journal of Financial Economics 41, 441-464

Clayton, J. & MacKinnon, G. (2000)
Measuring and Explaining Changes in REIT Liquidity: Moving Beyond the Bid-Ask Spread
Real Estate Economics 28, 89-115

Collett, D., Lizieri, C. & Ward, C. (2003) Timing and the holding Period of Institutional Real Estate
Real Estate Economics 31, 205-222

Constantinides, G. (1986) Capital Market Equilibrium with Transawction Costs
Journal of Political Economy 94, 842-862

Danielsen, B. & Harrison, D. (2000) The Impact of Potential Private Information on REIT Liquidity
Journal of Real Estate Research 19, 49-71

Demsetz, H. (1968) The Cost of Transacting Quarterly
Journal of Economics 82, 33-53

Downs, D. & Guner, Z. (1999) Is the Information Deficiency in Real Estate Evident in Public Market Trading?
Real Estate Economics 27, 517-541

Fisher, J. & Young, M. (2000) Institutional Property Tenure: Evidence from the NCREIF Database
Journal of Real Estate Portfolio Management 6, 327-338

Fisher, J., Gatzlaff, D., Geltner, D. & Haurin, D. (2003b)
An Analysis of the Determinants of Transaction Frequency of Institutional Commercial Real Estate Investment Property
Paper presented to the Skye Real Estate Conference, 2003.

Fisher, J., Gatzlaff, D., Geltner, D. & Haurin, D. (2003a)
Controlling for the Impact of Variable Liquidity in Commercial Real Estate Price Indices
Real Estate Economics 31, 269-303

Freeman's (2001) Guide to Property Finance London
Freeman Publishing

Bibliography

Gau, G. & Wang, K. (1994) The Tax-Induced Holding Periods of Real Estate Investors
Journal of Real Estate Finance & Economics 8, 71-86

Grossman, S. & Miller, M. (1988) Liquidity and Market Structure
Journal of Finance, 43, 617-633

Hamon, J. & Jacquillat, B. (1999) Is there Value-Added Information in Liquidity and Risk Premiums?
European Financial Management 5, 369-393

Hasbrouck, J. (2003) Trading Costs and Return for US Equities: The Evidence from Daily Data, mimeo,
Department of Finance, Stern School of Business, New York University.

Hendershott, P. & Ling, D., (1984) Prospective Changes in Tax Law and the Value of Depreciable Real Estate
AREUEA Journal 12, 297-317

Hess, A. (1991) The Effect of Transaction Costs on Households' Financial Asset Demand
Journal of Money, Credit & Banking 23, 383-409

Hoesli, M. & MacGregor, B. (2002) Property Investment
Harlow: Longman

IPF (1996) "Readiness for Sale" The Code of Practice for Streamlining Commercial Property Transaction
London: Investment Property Forum

Key, T., Durkin, S. & McBurney, D. (1998) Liquidity, Trading and Performance
Paper presented to 7th IPD Investment Strategies Conference, Brighton

Kyle, A. (1985) Continuous Auctions and Insider Trading
Econometrica 53, 1355-1382

Lin, Z. & Vandell, K. (2001) Illiquidity and Real Estate Risk
Mimeo, School of Business, University of Wisconsin – Madison

Lippmann, S. & McCall, J. (1986) An Operational Measure of Liquidity
American Economic Review 76, 43-55

McNamara, P. (1998) Exploring Liquidity, recent survey findings
Paper presented to 7th IPD Investment Strategies conference, Brighton

Nelling, E., Mahoney, J., Hildebrand, T. & Goldstein, M. (1995) REITs, Small Stocks and Bid-Ask Spreads
Real Estate Economics 23, 45-63

O'Hara, M. (1997) Market Microstructure Theory
Oxford: Blackwell

Orr, A., Dunse, N. & Martin, D. (2003) Time on the Market and Commercial Property Prices Journal of Property
Investment and Finance, 21, 473-494

Pastor, L. & Stambough, R. (2003) Liquidity Risk and Expected Stock Returns
Journal of Political Economy 111, 642-685

Porter, R. (2003) Measuring Market Liquidity, mimeo
Warrington College of Business, University of Florida, Gainesville Fl.

Subrahmanyam, A. (1991) Risk Aversion, Market Liquidity and Price Efficiency
Review of Financial Studies 3, 417-441

Yavas, A. (1992) A Simple Search and Bargaining Model of Real Estate Markets
AREUEA Journal 20, 533-548

Deconstructing the Transaction Process:

An Analysis of Fund Transaction Data

Principal Authors:

Neil Crosby, Patrick McAllister

The Liquidity in Commercial Property Markets Research Team:

Shaun Bond#, Neil Crosby*, Soosung Hwang+,Tony Key+, Colin Lizieri*, George Matysiak*, Patrick McAllister* and Charles Ward*

* The University of Reading Business School
+ Cass Business School, City University
# Department of Land Economy, University of Cambridge

1. Introduction

It is clear from the previous working paper that the process by which assets are selected for sale and the time they take to transact are important questions for this research. The ability to enter and exit property markets at specific times is constrained by the time transactions take, any difficulties in identifying and bringing specific properties to the market and uncertain prices, including changes to prices over the transaction period. Time to transact has important implications for risk and return. Delay in realisation of capital value will reduce total return. Uncertainty about timing of receipt of capital value adds to the volatility of *expected* returns[1] with long delays being associated with increased uncertainty. Issues include differences in transaction times between property as an asset and competing asset classes and between different types of property, differentiated by, for example, type, size, number of tenancies, etc. Other questions include the factors that determine transaction time and whether any changes in those factors can be observed through time.

The overall aim of this working paper is to carry out a preliminary examination of the property transaction process to begin to answer some of these questions for the UK commercial property market. In order to achieve this, three case studies were undertaken during October and November 2003. They provide benchmark information on practice in terms of both process and time to transact. Before setting out the details and results of the case studies, a review of literature related to these two aspects is set out below and related to the interviews carried out in the fieldwork. This review complements that found in Working Paper One.

[1] That is, the a priori risk of the asset – se Working Paper One.

2. Review: Property Transactions: The Process and the Time to Sale

2.1 The Transaction Process

A number of studies have examined whether there are systematic differences between sold and unsold properties. These studies have raised interesting questions concerning temporal and cross-sectional variations in saleability. For example, are certain ***assets*** more saleable than others at their market value; does saleability vary between ***time periods***; does ***location*** or ***type*** make assets more saleable and does uncertainty concerning price at the decision to sell stage create a reluctance to sell[2]? Although there has been limited research on the determinants of sale of individual properties in the UK, there are strong *a priori* expectations drawn from this previous research and (albeit often anecdotal) market observation.

The first study related to this topic was carried out by Guilkey, *et al* (1989). They investigated whether there were systematic differences between sold and unsold properties. Using relatively small sample in the US, they test four hypotheses concerning the impact of information asymmetries, liability matching, economies of scale associated with large lot sizes and geographical remoteness. Supporting agency and information asymmetry effects, they found that managers tended to sell assets that did not maximise manager compensation and properties located in markets with strong current demand but rapid recent increases in new supply that were not continuing. They also found that lease maturity, holding period, tenant quality, capitalisation rate, income per square foot, age and a range of economic drivers had significant explanatory power.

In related work, Collett *et al* (2003) focused on the holding periods of commercial property assets in the UK. Using the IPD transaction data, they examined hypotheses concerning the effect of size, returns and market conditions in acquisition and sale period. They found that good market performance was associated with higher sale rates. Further, they identify a lot size effect with small lot sizes having a higher propensity to sell than large lots.

In recent research, Fisher *et al* (2003) examine the determinants of transaction frequency and the underlying factors that affect the probability of property sales occurring from period to period. They draw an important distinction between *liquidity* and transaction *frequency*. This is an interesting issue since properties may not transact because they are difficult to sell or because the owner does not wish to sell. A decision not to sell may be associated either with negative or with positive asset attributes. For instance, the low transaction frequency identified by Collett *et al* (2003) for retail warehouses is almost certainly due to positive attributes rather than negative factors and does not suggest that they are less liquid for owners. Conversely, studies which find that small lots sizes are sold more commonly than larger lots sizes do not indicate differential liquidity. Rather they may imply differences in *motivation* to *sell* rather than *ability to sell*.

A priori, Fisher *et al* (2003) hypothesise that a range of owner specific (gearing, fund type, historic performance, previous valuation) and property specific (holding period, voids, size and age) variables together with market factors (cost and flow of funds, employment, capital growth, and equity returns) affects sales activity. In line with Collett *et al* (2003), they point to a strong positive correlation between capital growth and turnover. Overall, whilst bearing in mind that sale probability and liquidity are separate, they find that their *a priori* expectations are confirmed and that the factors identified provide significant explanatory power of sale probability.

[2] That additional uncertainty is, as in the financial definitions in Working Paper One, a liquidity cost. It is not the additional time taken to transact, but the uncertainty as to final achieved return that is critical.

2. Review: Property Transactions: The Process and the Time to Sale

This research suggests that there are both systematic or market and specific factors that affect the probability that an asset is selected for sale. This was reinforced in discussions with our transactions data providers. As part of obtaining the data, personnel within the three case study organisations responsible for disposal decisions and disposal implementation were interviewed. Further details of the case studies are provided below. It was clear from the interviews that there were a number of 'routes' to sale. To carry this metaphor further, whilst there could be hold-ups on the journey, they tended to be temporary and solvable.

In 1995, the Investment Property Forum reported on the results of a working party investigating the streamlining of the property transaction process. The objective was to make property "more liquid" by the identification of areas of the transaction process that could be improved, thereby quickening the sale process (IPF, 1995). This work did not identify any specific time frames for selling property but did identify the process. It included some element of preparation by the seller and also identified the period of marketing and negotiation; including the agreement of heads of terms, negotiation of the documentation and the undertaking of surveys and environmental investigations.

The working party concluded that the system in England and Wales was capable of being flexible and a great deal could be done to decrease the time taken to transact and to reduce difficulties in the system. They also concluded that advance preparation of materials necessary to affect a sale and, in appropriate circumstances, the use of alternative methods of due diligence and disposal could speed up transactions significantly.

Following this report, a supporting document was produced by the Investment Property Forum setting out a Code of Practice to implement a streamlining of the transaction process (IPF, 1996). It set out the information that a prospective seller should have available to show prospective purchasers including management information (service charge accounts, rent arrears, etc), documents and plans, replies to normal pre-contract enquiries, and an "informal" inspection and survey[3]. It also suggests that an environmental audit should be undertaken prior to offering for sale to identify possible problems which may abort a sale.

After heads of terms are agreed, IPF (1996) accepts that there will be a normal "ritual dance" around these terms by legal advisors. It suggests that timetables for negotiation and contract exchange are agreed at the same time as heads of terms to limit the open-ended nature of these negotiations.

Liquidity, the Sale Process and Previous Research – Summary

- **The length of the transaction period is important because it affects realised returns and the volatility of expected returns.**
- **Previous research suggests that some assets have a greater chance of being selected for sale than others.**
- **Assets can remain unsold due to either positive or negative attributes.**
- **Previous work on the sale process focussed on the preparation of documentation in streamlining the sale process.**

[3] The IPF suggestion of an informal survey and inspection being made available to the prospective purchaser raises issues of liability and whether such a thing as an "informal" survey is possible.

2. Review: Property Transactions: The Process and the Time to Sale

2.2 The Selection Process

The first stage of a decision to dispose is a resolution to sell property assets. For fund managers, this may be generated at a strategic asset allocation level. This would then be followed by a tactical analysis of the sectors and regions from which to sell property assets. At the individual asset level, assets would be ranked according to their estimated future performance. Performance analysis may be both backward and forward-looking. The assessment would focus on issues such as bad debts, voids, the outcome of rent reviews and achieved growth. The forward-looking analysis would essentially involve an assessment of worth. Finally, assets would be selected that could be sold in the time period to generate the funds required. This leads to an important finding. Where funds need to generate cash in a specific time period, only properties which can be reasonably expected to find a buyer in that specific time period could be selected. This stage of the process is less applicable to property companies who of course can often only sell property assets.

There were a number of other motivations for sale

- **Certain organisations may focus on specific regions, sectors or lot sizes. Non-conforming assets were more likely to be sold.**
- **In some cases attractive unsolicited offers are received. Where acceptable, this tends to speed up the disposal process dramatically since the marketing and negotiation phases are bypassed.**
- **For open-ended funds such as unit trusts, there may be an urgent requirement to liquidate assets to match unit redemptions. This increased pressure to sell could force managers to consider selling any asset.**

Property-specific factors which can *delay* disposal can be categorised into problems that are either solvable or temporary but intractable. Solvable problems are issues which can be addressed over a period of time but would render a property non-saleable, or unattractive to a significant proportion of potential purchasers if marketed prior to problem resolution. The consequence is that price achieved may be significantly below the perception of market value with the problem resolved. Such issues include title problems, outstanding rent reviews, disputes with tenants, tenant insolvency, non-compliance with fire regulations *inter alia*. Theoretically, all inherent obstructions to sale can be resolved in advance of any decision to sell.

However, this is not necessarily the case with temporary intractable factors. Although these are often predictable and will disappear over time, crucially they tend to be outside the control of the owner. Imminent rent reviews and potential lease terminations are the main problems. The additional risk associated with unknown future income due to imminent rent reviews or potential lease expiries can reduce the pool of potential buyers and hence the price obtained. Whilst, these issues can be anticipated, they are not easy to resolve in advance.

In addition, there are a number of other ways in which the implementation of the decision to sell may be delayed. The decision-making process may identify ways in which value can be added to an asset at relatively low cost e.g. by redecoration or refurbishment. Where third parties are involved e.g. in a head lease, or limited partnership, there may be delays associated with permissions to assign or pre-emption rights. Associated delays can occur during the selling process, as well as affecting the decision to sell due to largely unpredictable events. For instance, tenants can become insolvent, seek to assign or be in breach of the lease covenants.

2. Review: Property Transactions: The Process and the Time to Sale

It was also interesting to note that, contrary to expectation, very few of the interviewees claimed experience of abortive transactions. This could be because of the filtering process by which there is a tendency to ***only*** bring forward for sale assets which can be sold. Further, transactions tend to acquire a momentum so that when a problem occurs with a sale, the agents, vendors and other interested buyers have both financial and psychological reasons to proceed. The empirical work discussed below only focussed on transactions completed and did not investigate abortive sales. However, the researchers' *impression* was that transactions commonly became abortive but were often 'resurrected' quite quickly.

The Selection Process – Summary

Discussions suggested that properties were brought to the market for a variety of motivations

- **For funds, strategic and tactical asset allocation generated demand for sales from which properties that *could* be sold were selected.**
- **Motivations for other organisations such as property companies and property unit trusts (and for the funds themselves) could include,**
  - **Decision to dispose of certain categories of asset,**
  - **Opportunistic sales following unsolicited offers**
  - **Pressure to generate funds quickly (property unit trusts in particular)**
- **Factors reducing saleability can be classified as either realistically solvable (title problems, tenant disputes) or temporary intractable problems (imminent reviews or lease renewals)**
- **Unpredictable events can occur during the sale process which result in delay.**

2. Review: Property Transactions: The Process and the Time to Sale

2.3 Time to transact

There appears to be little work in the UK which identifies how long transactions take. McNamara (1998) identified the three periods as the time from initial decision to dispose to the point at which draft heads of terms were agreed (marketing period), to exchange of contracts (due diligence) and final transfer of monies (settlement). He carried out a survey of around 30 property professionals and asked them for estmates of the average time taken to transact typical property types measured across the three basic events identified above. The property types and the time taken in weeks for the three events are set out in Table 1.

Table 1: **Time taken in weeks to transact**

	Marketing Period		Due Diligence	Settlement	Total
	Mean	Stan Dev			
Cathedral City retail unit	8.2	3.4	5	1	**14.2**
Large town retail unit	7.9	2.8	4	1	**12.9**
Small town retail unit	7.4	3.7	6	1	**14.4**
Major city shopping centre	17.4	12.0	12	1	**30.4**
Large town shopping centre	15.7	12.0	12	1	**28.7**
Small town shopping centre	12.0	8.9	12	1	**25.0**
Retail warehouse	7.0	4.0	4	1	**12.0**
Retail warehouse park	11.2	6.1	6	1	**18.2**
City office	13.9	8.3	8	1	**22.9**
West End office	15.9	12.7	8	1	**24.9**
Provincial city centre office	11.4	6.9	6	1	**18.4**
Business park	12.3	9.7	6	1	**19.3**
Standard industrial shed	7.7	3.5	6	1	**14.7**
Distribution warehouse	8.8	6.2	6	1	**15.8**

Source : McNamara (1998)

Generally, free-standing retail units took the least time to transact, with retail warehouses at 12 weeks and standard shop units in large towns at 13 weeks. Small town and Cathedral City standard units took around 14/15 weeks. Standard industrial units and distribution warehouses also took around 15 weeks but offices outside London took around 19 weeks. City and West End offices were 23 to 25 weeks. Shopping centres took the longest with small town centres at 25 weeks and large centres at 30 weeks. Due diligence ranged from 4 weeks for the retail warehouses and some standard shop units to 12 weeks for shopping centres. Marketing periods ranged from 7/8 weeks for the shop and retail warehouse units to over 15 weeks for shopping centres. Offices were around 15 weeks in London and 12 weeks outside London.

However, this evidence is drawn from surveys of agents and "typical" periods and the standard deviations suggest that there are some significant differences of opinion between respondents. The case studies reported here will provide some real data on actual transactions and how long they took to complete.

3. The Case Studies

The case studies were based on the data from three different funds; one large financial institution running a variety of general, long term and pension funds, one pension fund and asset management company and one large property company. Between them, they administer or manage a wide variety of different portfolios, including some monthly valued funds, and a mixture of property only and mixed asset portfolios.

The research included two strands. First, as indicated above, an interview was carried out with a number of representatives of each fund to discuss the processes involved in the different organisations leading to decisions to sell. The actual sale process was then followed through in each interview.

The second aspect of the research entailed the detailed investigation of actual transactions. In order to address the issue of different market states, transactions in the calendar years 2000 and 2002 were collected. This normally entailed sales which were completed in the calendar year but occasionally the data related to completion dates which went into 2001. In order to gain all three states of rising, falling and stable markets, it was originally decided to attempt to get 1995 in addition (as this was the last time all three property sector capital growth indices fell). However, the files of properties so far back proved difficult to access, especially in the tight time frame of this preliminary study, and data for 1995 (with occasionally completions into 1996) was only available from one fund. Whilst providing information about the assets sold, two of the organisations allowed access to the actual sale files in order to extract relevant dates. This involved visits to their offices in order to read the files. The other organisation provided pre-analysed data.

Data were obtained from over 187 properties across the three main commercial property sectors. A proportion of the assets were sold by auction (approximately 10%). The majority of the assets were sold by private treaty, often through a 'best bids' process. In a number of cases, owners had been approached regarding individual buildings or portfolios and made acceptable offers so that the "decision to sell" was made *after* the offer was received.

It should further be noted that one of the organisations had a policy of disposing of small, non-core assets in this period and a substantial proportion of the sales involved this type of property – most commonly 'High Street' shops in market towns. For 182 properties, the basic property sector was identified within 5 segments; Office, Industrial, Standard Shop, Retail Warehouse and Shopping Centre. Some of these segments are very small; for example, only 5 shopping centres and 12 retail warehouses. As the data is only from three companies, it cannot be assumed to represent any sort of sample of the institutional and quoted property company sector; the results are indicative only.

Discussion with the interviewees took place around a "model" transaction. Before analysing the data on transaction times the transaction process, as identified by the interviewees, is set out below.

4. The Model Transaction

McNamara (1998) breaks the sales process down into three parts; marketing, due diligence and settlement. The available case study data does record the time taken from the decision to market the property to completion which marries well with the McNamara survey. However, a typical transaction as identified by the case study interviewees includes a *pre-marketing* process. Therefore, transaction time commencing with the marketing of the particular asset underestimates the total time for the sale process.

The interviewees from the three funds described a typical transaction as involving a number of the key stages. These are illustrated diagrammatically in Appendix One. It should be note that this flow chart largely draws upon the experience of institutional fund managers. As noted above, property companies would tend to start the process at a later stage.

The pre-marketing period where decisions to transact are made could be split into three stages encompassing four decisions. The first is the general portfolio decision to sell property as an asset - this strategic process is similar for all the competing assets. This triggers the sale process. The first stage runs from this decision and the decision as to which sector or sub-sector the particular asset to be sold will come. The second stage is the decision to sell a particular asset within that sector. Finally, having decided to sell the property, the process of getting the property ready to market takes time.

There is an interesting issue here about the question of readiness for sale or pre-preparation for sale. An investor may have a policy of maintaining (achieving a position where) all assets are ready for sale. Assets may be prepared for sale without a decision to sell being made. All else being equal, this will reduce the sale period but it has a cost and there is a trade-off issue. However, pre-preparation cannot deal with the temporary obstacles to sale such as imminent rent reviews or lease terminations.

This third stage, between decision to sell and marketing, usually involves an instruction to agents to prepare an assessment of value and marketability. Often, but not always, solicitors are simultaneously instructed to identify any potential legal obstacles to sale. This can take one to two weeks. It is possible that agents and solicitors may identify market factors (agents) or asset specific factors (solicitors) that might need to be addressed before marketing.

Following receipt of marketing report from agents, formal marketing occurs[4] involving production and distribution of a brochure, advertising etc. Best bids are then invited from interested purchasers. Typically, this can take three to four weeks according to the case study interviewees.

The bids received are assessed and Heads of Terms agreed with the selected bidder. At this point, solicitors are instructed to proceed towards exchange of contract and go through the due diligence process. Due diligence can take another three to four weeks. However, it was at this stage that transactions are most likely to be delayed, sometimes dramatically, due to four main factors listed below.

- **Previously unknown or ignored inherent problems;**
- **Changes in the asset e.g. tenant default;**
- **Change in market conditions;**
- **Changes in the circumstances of the purchaser, for example:**
  - **Difficulty of funding. Increasing use of debt was said to sometimes result in an additional due diligence process which could cause delay;**
  - **Re-assessment of offer price.**

[4] In practice, agents may well have already marketed the asset with some of the contacts.

4. The Model Transaction

The due diligence process can identify new information that affects the price that may not have been included in the periodic valuation. The routine nature of such valuations and the limited investigation often carried out may mean that the valuations have not incorporated all price sensitive information. This can produce problems during due diligence when re-negotiation is attempted.

Exchange of contracts takes place at the end of this period. This is the point at which at which the sale becomes certain. For properties sold at auction, price agreement and exchange of contract occur 'when the hammers falls'.

Legal completion is the final act in the process. This is the date on which ownership rights are transferred to the purchaser and cash is transferred to the vendor. Anecdotal evidence suggests that simultaneous exchange of contract and completion has become more common. However, the norm is for a gap of two to four weeks between exchange of contracts and completion.

In order to examine the validity of this typical transaction, transaction data was collected and analysed to validate the approximate timings of the typical transaction outlined above and in MacNamara (1998). The transactions were scrutinised for the following base data.

- **The date of decision to sell. In practice, this proved extremely difficult to identify. Sale files often commenced with an instruction to agents. Rarely could we find any evidence of the precise date when the organisation had decided to sell an asset.**
- **The date of commencement of marketing. As noted above, in the 'idealised' transaction, the formal marketing would occur two to three weeks after instruction of the agent to prepare an assessment of value and marketability.**
- **The date of final price agreement. This was usually easily identified since Heads of Terms could be found on the file. It is specifically termed *final* price agreement since, in a number of transactions, price agreement could occur only for the transaction to break down.**
- **Exchange of contracts.**
- **Completion.**

The Transaction Process – Summary

- **Seven stages in the sale process were identified:**
  - **Strategic decision to sell particular sector or category of property, receipt of unsolicited offer or requirement for cash.**
  - **Decision to sell individual asset**
  - **Pre-marketing period – preparation for sale**
  - **Marketing**
  - **Due diligence**
  - **Exchange**
  - **Completion**
- **Delays can be caused during marketing and due diligence stages by 'events' (e.g. tenant failure) and 'discoveries' (e.g. defects) that affect the asset, the buyer (e.g. funding problems) or the market (e.g. Russian debt crisis).**

We turn now to analysis of the transactions data obtained.

5. The Case Study Results

The interviews with the representatives of the three investors suggested that there are distinct periods in which the decision making process moves from the decision to sell property as an asset class, to the decision to sell from a particular sectors and finally to the identification of individual assets for disposal. These periods are extremely difficult to identify chronologically and are rarely formally recorded. First sale records usually commence after that process has been completed and the agent is about to be instructed. In the 154 instances where the date of 1st record and the date agent appointed are both known, 100 occur at the same time. We should also note that the database will almost certainly exclude some properties that were withdrawn from sale and never brought back to the market[5]. As a result, the data presented here will tend to understate the total length of the sales process.

The overall transaction time as set out in Table 2 is therefore the time from the first record of the proposed sale, the date the sale file was started, which often coincide with the date the agent was instructed. The average transaction time for the 184 transactions where this information was recorded is 298 days, over 9 months. However, this average is skewed by a small number of very long transactions: the median transaction time is 190 days, or just over 6 months.

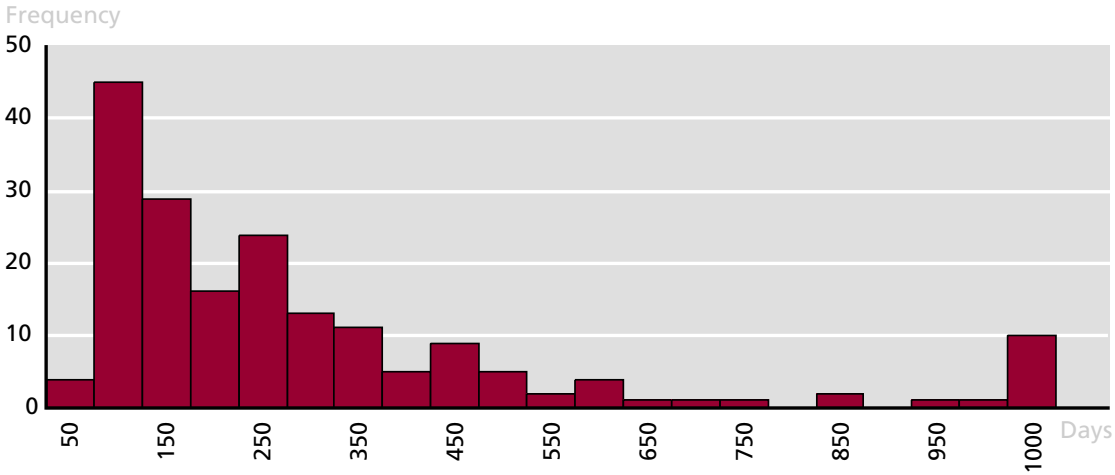
The longest period is for negotiation. The average time is 178 days but again this is heavily skewed and the median is 88 days, nearly 3 months. The due diligence process identified by McNamara (1998) between sale agreed and contract averages 83 days and, although less heavily skewed, the median is lower at 62 days or 2 months. The contract to completion period averages 19 days or nearly 3 weeks.

Table 2: **Overall Transaction Times**

	Overall Transaction Time	Exchange to Completion	Price to Exchange	First Record to Price
Average	298	19	83	178
Median	190	19	62	88
Standard Deviation	381	19	82	325
Skewness	4.07	1.43	2.25	5.39
Number	184	185	178	179

Figures 1 to 4 set out the distributions of the periods identified above. Figure 1 illustrates that very few transactions take less than 50 days. The largest tranche of transactions (around 25%) take between 50 and 100 days, with another 15% taking between 100 and 150 days. Well over 60% take no more than 250 days or 8 months.

Figure 1: **Total Transaction Time**



[5] Technically, the data is "right censored".

5. The Case Study Results

Figure 2 illustrates that over 20% of transactions take between 10 and 50 days to market while another 15% take less than 10 days. A further 15% take between 50 and 100 days. Marketing in around 60% of cases takes three months or less. However, that still leaves around 30% of cases taking between 100 and 300 days; over 3 months to nearly 10 months to market.

Figure 2: **First Record to Price Agreement**

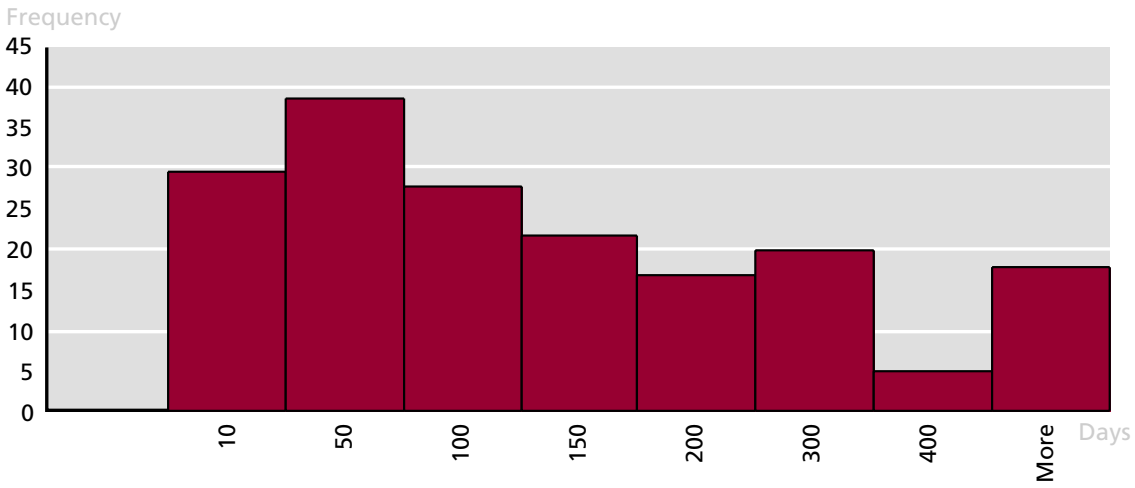
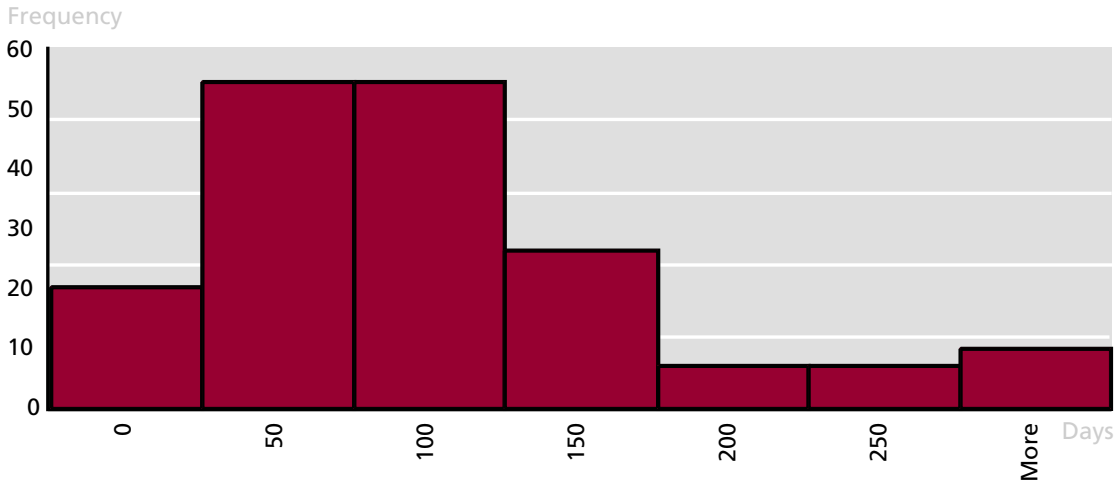


Figure 3 illustrates that in just less than 10% of the transactions monitored price agreement and exchange appear to be simultaneous, due to some properties being sold at auction (and also, we suspect, a few recording errors). The majority of transactions had a time from agreement to contract of less than 100 days (nearly 60%) and a further 15 % took no more than 150 days or just over 5 months. The due diligence periods are therefore both shorter (the median being nearly a month less) and less variable than the marketing period.

Figure 3: **Price Agreement to Contract Exchange**

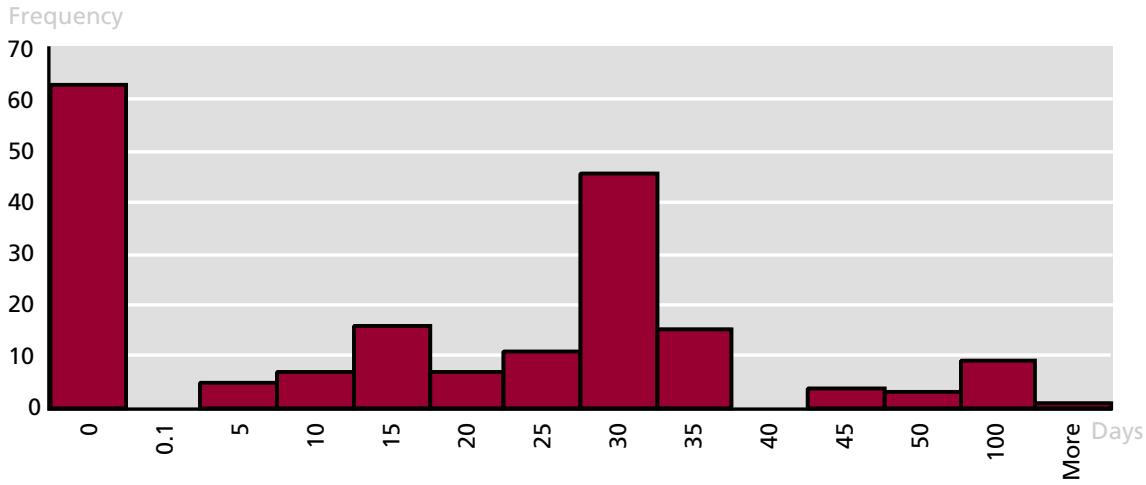


[6] Normalised to zero: large positive numbers indicate positive, upside, skewness.

5. The Case Study Results

Figure 4 illustrates that over 30% of transaction have simultaneous exchange and completion but the largest group (around 25%) take between 26 and 30 days, or four weeks. Another 25% approximately take less than four weeks leaving relatively few transactions taking more than a month to complete.

Figure 4: **Contract Exchange to Completion**



Tables 3 to 5 set out the breakdown of the above figures for the three time periods of completions in 1995/96, 2000/01 and 2002. The mean times suggest that transaction times have increased rather than decreased despite the Forum's attempts to streamline the process (Investment Property Forum, 1995; 1996). In 1995, the average transaction time was 165 days: this rises to 272 days in 2000 and 339 days in 2002. However, 1995 is a very small sample and the 2000 and 2002 results are influenced by skewness. The median times for 2000 are higher at 235 days than for 2002 at only 144 days, under 5 months, suggesting that the "typical" time to sale is shorter.

One major difference between 2002 and the earlier transactions is that the completion period has dropped from around four weeks in 1995 to three weeks in 2000 and to two weeks in 2002. Both medians and averages tell a similar story. The marketing period has a more variable trend. The small number of transactions in 1995 suggest a short period of around one and a half to two and a half months increasing significantly in 2000 to around five months. In 2002 the median falls back to less than two months, similar to 1995 but the average increases significantly on the back of a few very long transactions. Price to exchange, the due diligence period remains virtually identical in 2000 and 2002 suggesting no improvements in this part of the transaction.

Table 3: **1995/96 Transaction Times**

	Overall Transaction Time	Exchange to Completion	Price to Exchange	First Record to Price
Average	165	24	53	75
Median	76	28	0	44
Standard Deviation	141	14	110	65
Skewness	1.13	-0.15	1.92	2.25
Number	16	17	15	15

5. The Case Study Results

Table 4: **2000/01 Transaction Times**

	Overall Transaction Time	Exchange to Completion	Price to Exchange	First Record to Price
Average	272	21	86	166
Median	235	22	62	151
Standard Deviation	143	19	83	122
Skewness	0.87	1.01	3.39	1.11
Number	70	69	69	70

Table 5: **2002 Transaction Times**

	Overall Transaction Time	Exchange to Completion	Price to Exchange	First Record to Price
Average	339	16	85	203
Median	144	14	66	51
Standard Deviation	500	20	77	434
Skewness	3.17	1.90	1.64	4.20
Number	98	99	94	94

The sale price and all details of the different parts of the transaction were available for around half (93 of the 187) transactions. These transactions were analysed to test whether the higher value transactions took longer and whether the time taken for specific parts of the transaction process changed with higher value properties.

Table 6 sets out the correlation matrix of price and transaction times. It appears that the value of the property has very little effect on how long it takes to sell. The relationship between price and total transaction time is not significantly different from zero with a correlation coefficient of 0.06. The highest positive relationship between price and transaction time is for the marketing period but this correlation coefficient is only 0.18[7]. Of equal interest is the fact that the various components of the process are not correlated: a long marketing period is not followed by a long due diligence or completion period. This suggests that a long transaction is not a simple function of value: is may be a function of a long marketing period or a long due diligence period, but not rarely both together.

Table 6: **Correlation Matrix of Price and the Different Parts of the Transaction Process**

	Time exchange to completion	Time sale agreed to exchange	First record to agreement	First record to completion	Price
Time exchange to completion	1.000				
Time sale agreed to exchange	-0.104	1.0000			
First record to agreement	0.087	-0.022	1.000		
First record to completion	0.106	0.477	0.707	1.000	
Price	-0.035	-0.065	0.179	0.060	1.000

[7] Weakly significant at the 10% level.

5. The Case Study Results

Analysis of the 182 transactions where the property segment was known was undertaken, but given the time constraints and the small number of observations in many of the segments, only total transaction time was identified. It does not show the trends picked up in the survey of professionals by McNamara (1998); shopping centres and standard shops have the same median similar to the shopping centre times identified by McNamara but double the time identified by him for standard shops. In this sample retail warehouses have the highest mean and the highest median, again over double the time identified by McNamara (the very small sample size here should be noted). The office and industrial median times seem closer to those of McNamara's survey.

Table 7: **Transaction Total Time by Property Segment**

	Industrial	Office	Retail Warehouse	Shopping Centre	Standard Retail	Total
Mean	215	197	292	232	219	**219**
Median	133	119	231	202	203	**172**
Standard deviation	248	184	271	102	147	**176**
Skewness	3.16	2.66	1.5	2.02	0.88	**2.1**
Number of transactions	20	35	12	5	110	**182**
Maximum	1140	921	920	411	693	**1140**
Minimum	52	25	36	156	31	**25**

None of the segments have average transaction times that are statistically different from the overall average or from that of other segments, due in large measure to the high variability in time to transact. In order to progress any disaggregation analysis, the sample size needs to increase and the number of funds and range of ownership also needs to increase.

6. Conclusions

This preliminary analysis of the transactions data indicates that a typical transaction has six separate stages. The available data identifies the timing of last three of these stages for 187 transactions in 1995/96, 2000/01 and 2002. The six stages are bounded by seven separate decisions: The portfolio decision to sell property starts the process; the stages which follow are:

Stage 1 - Property portfolio decision to sell particular sector or sub-sector
Stage 2 - Decision to sell particular asset
Stage 3 - Pre-marketing period
Stage 4 - Marketing period
Stage 5 - Due diligence period
Stage 6 - Exchange to Completion

The interviews give some insight into the sale decision. They suggest that many assets are sold for portfolio reasons (such as a decision to sell smaller properties or a particular sub-sector). However, the specific stock selection decision often relates to a notion of *readiness for sale*. They implied that a relatively small number of property specific problems might inhibit a sale. Properties are sold because they can be: those which, for example, have imminent rent reviews and lease expiries are not considered saleable at an acceptable price. A large number of prospective problems with specific properties, which might inhibit sales, are identified in Stages 2 and 3 of the decision making process - therefore the number of aborted sales in the database appears low.

If sales were a sample of all properties in portfolios, it would be expected that they would include more properties with attributes which inhibit sale and, therefore, potential time to sale would extend well beyond those observed average transaction times for the actual sales. Consequently, the study also suggests that transaction frequency or probability of sale provides only a partial indicator of asset liquidity. Sale probability depends upon whether the seller is *motivated* to sell and whether the seller is able to sell. Proxy liquidity measures based on time to an actual sale are driven by the latter, which may be misleading.

The preliminary analysis of the 187 transactions for transaction time over the last three stages of the process suggests that very few generalisations can be made concerning the causes of longer and shorter transactions times. The only apparent trend is the continuing reduction in the time from exchange to completion, which now appears to average just over two weeks. However, of the three stages, this is the least variable and the least lengthy so it does not significantly reduce the overall transaction time. However, it supports the view that the routine elements of due diligence have become quicker with the widespread use of email. Over the whole data the average transaction time is 298 days, over 9 months. However, this average is skewed by a small number of very long transactions and the median transaction time is 190 days, or just over 6 months. Around 25% of transactions take between 50 and 100 days and 60% get completed within 8 months. These figures need to be placed in the context of the time to transact in securities markets (even for small capitalisation stocks and those with low free floats).

Given the length of time between exchange and completion is around two to three weeks, the vast majority of time to sale is in the marketing and due diligence periods. Marketing (median 88 days) is slightly longer than due diligence (median 62 days). No clear downward trend through time in either of these two periods is observable from the data, despite the efforts of the Investment Property Forum in promoting the streamlining of property transactions (although we should stress that the sample for the 1995/6 period was limited). Perhaps more surprisingly, there appears to be no reason or relationship between the length of these two periods. A long marketing period does not lead necessarily to a shorter or longer due diligence period. This may be because for some complex properties they both take longer to complete while, in others, some of the due diligence may be undertaken before the final price is agreed. If a prior offer had been received and later withdrawn, this

6. Conclusions

would possibly increase the marketing period to final agreed price, but reduce the time to exchange. Reasons for purchasers withdrawing can be very specific; such as a tenant defaulting or changes to market conditions in the due diligence period.

Value of property has no apparent effect on length of transaction. Property sector disaggregation does not validate (or refute) the estimates of McNamara's (1998) respondents regarding different transaction times for the different property types and locations, but the largest sample, standard retails does appear to take far longer than those estimates. However, the sample also appears to include a number of small, secondary units being cleared out of portfolios.

The study has not addressed the issue of portfolio effects which can introduce additional problems. For instance, property assets may be sold in 'bundles'. Does this affect the transaction time. Does the length of due diligence for the most difficult asset increase the due diligence period. Or are buyers less concerned about a problem with a single asset when buying a portfolio? At the macro-level, assuming sufficient portfolio size investors will be able to diversify transaction period risk? However, efficient diversification will depend on a sufficient number of assets.

Overall, the case study interviews provide some insights into the transaction process and the transactions data gives some indications of the timings of the last three stages of the transaction process; marketing, due diligence and completion. The key outstanding issue is the factors that cause extended transaction times. Are these simply 'liquidity shocks' that can occur randomly and are essentially unpredictable? Are certain categories of asset more prone to such liquidity shocks? How do market conditions affect the length of transaction? The data could be examined further for sector differences but without a larger number of transactions the ability to drill down and disaggregate remains poor. Extending the data collection to more funds and companies could give extended insight in to selection bias and the drivers for transactions and deeper analysis of the source files could reveal and categorise the property specific issues which cause transactions to vary so much in time taken to completion.

Bibliography

Collett, D., Lizieri, C. and Ward, C. (2003) Timing and Holding Periods of Institutional Real Estate
Real Estate Economics, 31,2, 205-222

Fisher, J. Gatzlaff, D. Geltner, D. and Haurin, D. (2003)
An analysis of the determinants of transaction frequency of institutional commercial real estate investment property
Paper delivered at Skye real estate conference, August 2003.

Guilkey, D. Miles, M. and Cole, R. (1989)
The Motivation for Institutional Real Estate Sales and Implications for Asset Class Returns
AREUEA Journal, 17, 1, 70-82

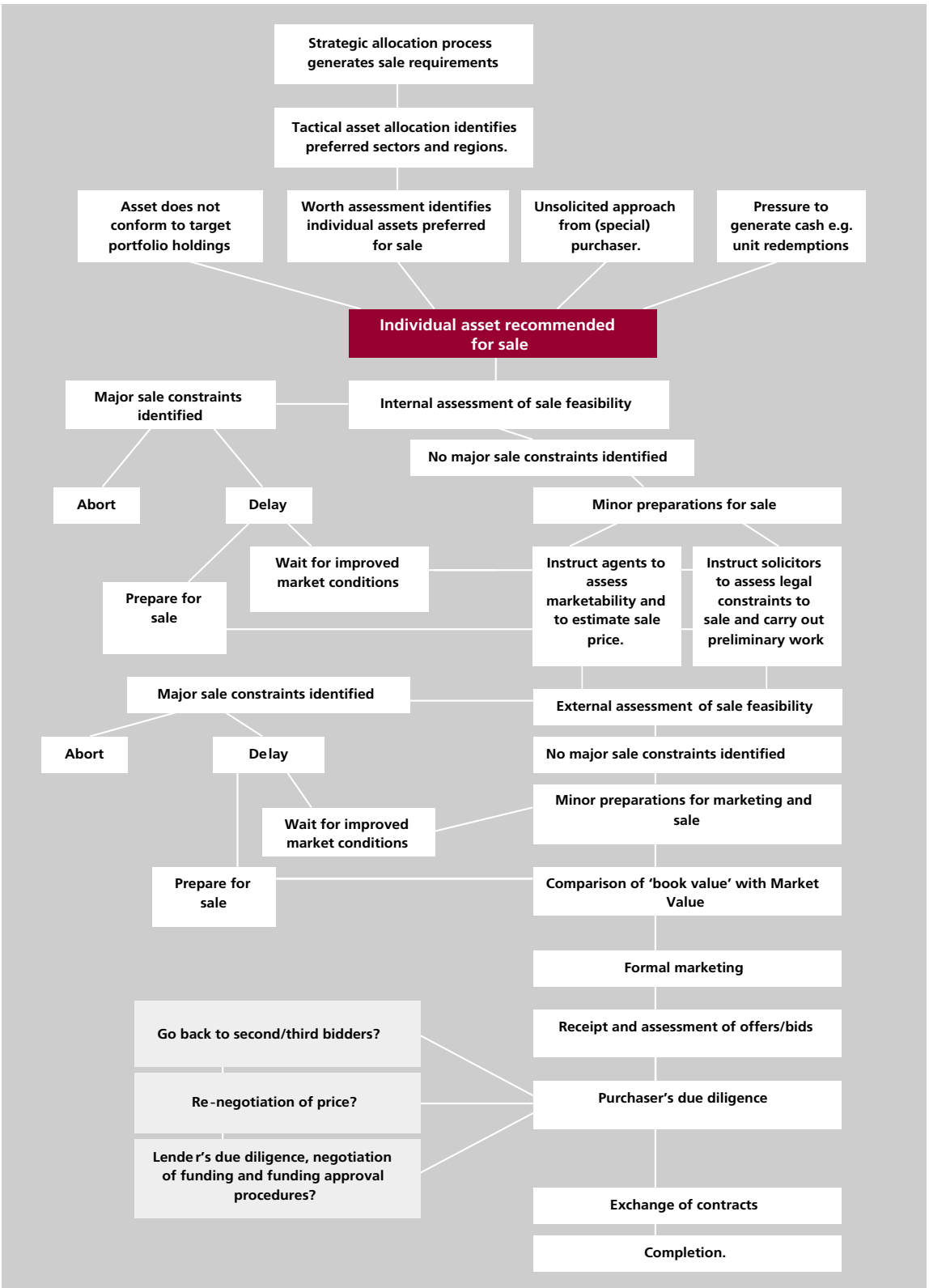
IPF (1995) Report of the Working Party on Streamlining Commercial Property Transactions
London: Investment Property Forum

IPF (1996) "Readiness for Sale" The Code of Practice for Streamlining Commercial Property Transaction
London: Investment Property Forum

McNamara, P. (1998)
Exploring liquidity: Recent Survey Findings. Paper to the 7th Investment Property Databank Conference
Brighton, November

6. Conclusions

Process Diagram



The Analysis of Transactions Evidence

Principal Authors: Tony Key

The Liquidity in Commercial Property Markets Research Team:

Shaun Bond#, Neil Crosby*, Soosung Hwang+,Tony Key+, Colin Lizieri*, George Matysiak*, Patrick McAllister* and Charles Ward*

* The University of Reading Business School + Cass Business School, City University # Department of Land Economy, University of Cambridge

1. Liquidity and Transactions Activity

This paper forms part of the outputs of a research project on liquidity in UK commercial property markets being undertaken for the Investment Property Forum (IPF). It provides an extensive analysis of transactions evidence, used as an indicator of (proxy for) liquidity over time, across market and across types of real estate investment vehicle. Other elements of the study deal with the development of more wide-ranging indicators of liquidity, and the development of theoretical and empirical models of liquidity pricing.

The importance of 'liquidity' to investment in real estate needs little re-emphasis here. Lack of liquidity ranks high on lists of the disadvantages of real estate cited by investors in the UK and other countries. A desire to overcome that disadvantage has been a primary factor in the industry's long-standing efforts to introduce REIT-type vehicles and derivatives.

Liquidity in real estate investment is, however, more discussed than measured. In the UK and overseas, there have been surprisingly few attempts to compare liquidity in real estate with other asset classes, to track variations in the liquidity of real estate investment markets over time, or across different property markets Working Paper One provides an extensive review of previous work.

Transactions activity in a market is at best a partial measure of liquidity – which at its simplest might be defined as "the ability to perform a transaction without a cost" (Engle & Lange 1997). Ideally, we would wish to quantify the costs of a lack of liquidity using indicators – such as bid-offer spreads, time on market, ratio of realised to abortive sales, impacts of trading on market prices – which are direct measures of those costs.

In practice, there are no existing sources of these indicators for direct investment in commercial real estate. How far they might be derived from new analysis of original transactions records held by investors is the subject of the case study element of the IPF Liquidity Study (Working Paper 2). How they may be linked to transactions activity will be considered in the theoretical and modelling part of the Study.

Until more direct measures become available, transactions activity remains the only quantitative proxy for liquidity. Even if new measures can be derived, transactions activity is likely to remain the only indicator of market liquidity over long periods of time, and for large fractions of the total market. The investigation of transactions evidence will:

- **Document the available data on transactions in the UK market, establishing their coverage, limitations and appropriate applications;**
- **Describe movements in transactions activity over time, compare transactions activity across direct and indirect investment vehicles and, within the direct market, compare transactions activity for across investors, markets and building types;**
- **Explain why transactions activity has varied over time through formal modelling which links transactions to conditions in the real estate market, the pricing and performance of real estate relative to other assets;**
- **Compare transactions activity in the UK with that in other major real estate markets;**
- **Develop a set of data sources, analysis methods and primary indicators through which transactions activity can be more readily monitored in future.**

1. Liquidity and Transactions Activity

The remainder of the paper comprises six sections:

- **Section 2 sets out definitions of what we are attempting to measure, and summarises the characteristics of the available sources of evidence.**
- **Section 3 deals with variation in overall transactions activity over time, first describing trends and swings in activity through the last twenty years, then developing econometric models which explain those movements.**
- **Section 4 provides breakdowns which compare transactions activity in the UK direct property market across types of property and types of investor.**
- **Section 5 compares transactions activity across different types of investment vehicle in the UK.**
- **Section 6 uses the limited evidence available to compare transactions activity across major international markets.**
- **Section 7 is a summary of findings, with recommendations for further research and the maintenance of a transactions monitoring system.**

2. Definitions and Sources

Transactions activity is a familiar headline indicator of market conditions and liquidity in most investment markets. For stock markets, trading volumes are a primary measure on which liquid markets in the largest stocks are distinguished from thinly traded markets in small cap stocks, and market activity is tracked from day to day. Currently, in the residential market, transactions volumes are being closely watched as an indicator of overheating and a turning point in the price trend.

In commercial real estate, discussion of what buildings are being bought and sold, what buyers and sellers are in the market, forms a substantial part of the day to day commentary provided by intermediaries and analysts. Indeed, due to its dependence on comparables, the industry devotes a large part of its research effort to tracking and analysing investment transactions. Given the abundance of data collected, it is perhaps surprising that it is very rarely used to derive continuous series of indicators such as trading volume. By comparison with financial markets, and to an extent residential markets, trading volume is a missing indicator for commercial real estate.

Qualitative judgements about transactions activity are, nonetheless, made all the time. Deals are said to have 'dried up' in the deep downturns of the 1970s or early 1990s, and contributed to the collapse in values; difficulties in valuation are attributed to a lack of comparable evidence; Central London offices are said to benefit from high levels of trading; the UK is considered to be a more liquid market that those in continental Europe. But it is rare to find these assertions backed by reliable figures.

The absence of simple indicators of trading volume is due to the usual difficulties of data assembly in commercial real estate markets which lack a central trading floor, plus the fragmentation of the extensive data collected across a number of intermediaries and information providers with varying interests and emphases. This section aims to establish a workable measure of transactions activity for commercial real estate, and how far the available sources of information go toward providing such a measure.

2.1 Transactions activity: definitions

For financial markets, simple trading volume is the number or value of shares traded in a given period. For a single stock over short periods, and for the market as a whole, so long as there is little change in mix between trading of high value and low value shares, trading volume is a good indicator of a first basic proxy for liquidity: market size.

Over time, trading volumes will be affected by changes in the total number and value of stocks in the market, so trading volumes need to be converted into transactions rates – volumes by number or value divided by total shares at issuance or total market capitalisation – to give a reliable measures of changes in transactions activity. Since every trade is a purchase for one investor and a sale for another, the turnover rate – or rate at which portfolios are being 'churned' - is double the transactions rate.

These are the first level simple indicators we would wish to reproduce for real estate – simple trading volume, transactions rates by number of deals, transactions rates by value of deals, and overall turnover rate. At the risk of confusing the issue, there is merit in having more than one measure of transactions activity. In some circumstances, simple trading volume may be the most appropriate measure. For an investor with a small exposure to the market, whose trades are small relative to total activity, simple trading volume will be a good enough indicator of the probability of being able to sell. Larger investors with larger positions will be more concerned the probability of being able to adjust portfolio weightings indicated by transactions rates. Given the heterogeneity of real estate assets, the transactions rate by number of buildings may be very different from transactions rate by value of buildings. Using transactions as an indicator of liquidity, the percentage traded by number of deals is a proxy for the probability of sale of an individual investment. The percentage traded by value is a proxy

2. Definitions and Sources

for the probability of being able to vary exposure within a portfolio. For benchmarking purposes, an investor interested in links between trading activity and long-term portfolio returns might best look to the turnover rate.

The next section assesses how close it is possible to get to these measures from the available evidence. For a complete set, we need:

- **A full record of all investment transactions.**
- **A consistent estimate of the total investible market in which those transactions are taking place.**

These allow the calculation of transactions rate: total number of transactions / total number of commercial buildings OR total value of transactions / total capital value of commercial buildings, in each case as a percentage of the investible real estate market under investigation

2.2 What is the commercial real estate investment market?

Deciding what 'the investible market' is presents a first fundamental problem. Unlike the clearly defined investible universes of stock and bonds, the size of the real estate investment market is both hard to define, and constantly shifting. It could be argued that the true investible universe embraces all buildings meeting the current acquisition criteria of 'investors' – perhaps specified by types of use, lot size – irrespective of who currently owns those buildings. But it is far from clear how the boundary between investible and non-investible stock should be defined, and there is not enough information on the characteristics of the total stock to measure where it might lie.

The only viable alternative is to measure what is invested rather than investible – i.e. the stock actually held by 'investors'. From various official statistics and industry sources, it is possible to piece together estimates of the total value of commercial real estate, and the value of the holdings of specific categories of investor. In quality, these estimates run from robust (e.g. holdings of institutions directly compiled by the Office for National Statistics) to highly speculative (e.g. holdings of inward investors and small private landlords, which rest on a series of assumptions).

Following the 'what is invested' approach, Callender & Key (1996) estimated the total value of UK commercial real estate owned by 'large scale professional investors' – recognising that this measurable set of owners excludes a long tail of small private landlords who are large in number but account for a relatively small fraction (perhaps 10%) of the total market by value. These estimates are updated each year by IPD. This report follows that definition of the investment market. At end-2002, the IPD estimates put the total value of UK commercial real estate (mainly but not exclusively made up of retail, office and industrial buildings) at £446 billion, of which £247 billion (55%) was held by investors and £199 billion (45%) by owner occupiers (Table 1).

These results offer the best available, if far from ideal, guide to the size of the investment market. That size is highly variable from year to year. In 2002 alone, the IPD figures suggest that the investment market's share of total stock rose by close to 3%, much of that through sale and leasebacks and outsourcing by occupiers. As we show below, the size of the market is becoming more difficult to calculate, due to a large shift in ownership from the more measurable categories of owner like UK institutions, listed companies to more diffuse and less well-documented overseas and private investors.

2. Definitions and Sources

Table 1: **The UK Commercial Property Stock & Investment Market**

	Capital Value £bn	% of Total Stock
Owner Occupied	198.7	44.6
Investment Market	247.1	55.4
Quoted Property Companies	57.3	12.8
Insurance Funds	56.9	12.8
Overseas Investors	34.0	7.6
Pension Funds	32.0	7.2
Private Property Companies & PFI	30.0	6.7
Pooled Funds	17.9	4.0
Traditional Institutions	11.0	2.5
Limited Partnerships (net)	8.0	1.8
Total Stock	**445.8**	**100.0**

IPD from ONS, UBS Warburg, DTZ Debenham Tie Lung

2.3 Transactions in direct property: data sources

The Land Registry is the most complete source on the real estate stock and changes in ownership. It forms the basis for transactions statistics published by the Inland Revenue. Their *Survey of Property Transactions in England and Wales* (from hereon 'the IR Survey') shows, each quarter, a complete count of all registered transactions over £500,000 with sampled estimates for those below £500,000. The series is available historically on a consistent basis back to the first quarter of 1986.

The IR Survey is, in principle, comprehensive (apart from the exclusion of Scotland), but in many senses *too* comprehensive for our purposes. The only split by property type is between residential and non-residential buildings. Though commercial real estate will make up the bulk of the non-residential category, it will also include many pubs, farms, public buildings outside the normal investment markets. The IR non-residential figures also cover transactions in land and leasehold interests of more than seven years in addition to transfers of freeholds. Though some long-leasehold transactions may represent investment deals, the majority will be occupational leases outside the investment market. The IR figures, finally, cover all types of owner, with no way of identifying transactions involving 'investors' from those undertaken by occupiers or small landlords.

A final, more minor qualification is that some deals in the investment market are structured as transfers of beneficial interest without a transfer of the titles held by the Land Registry – primarily as a means of avoiding or reducing liability for Stamp Duty, and therefore increasingly used in recent years when Duty rates have been raised. It is therefore possible that the IR figures will underestimate total transactions volumes through the last few years.

Without more detailed analysis than is currently published, the IR figures provide no more than a broad frame of reference for results more focused on the investment market. In this report, they are used as a cross-check for other sources, and to provide some indications of the volume of transactions outside the investment market.

2. Definitions and Sources

The second largest source of transactions evidence is from Property Data, a private information provider. Property Data compile a register of commercial transactions either reported directly by the agents who have acted on the deals, or from press reports confirmed by Property Data's follow-ups and cross-checks. In recent years, the bulk of the information is being provided through the first of these channels, which will clearly yield more accurate information. Overall results are published in a quarterly *Property Investors Bulletin*. A complete record of individual transactions is available on subscription. Property Data have kindly made available for use in this study the complete listing of 5,700 individual transactions from 2000 to 2002 (referred to as PData from here on). The only exclusion from the listing is auctions deals which, as noted below, can be tracked through alternative sources.

The PData records show price and an estimated yield for each transaction, with classifications by property type, location (region, town, street), purchaser type and vendor type. Judged by the volume of transactions recorded, and high coverage of the largest investment agents feeding deal information directly into the system, PData is achieving a high coverage of the investment market, and more than adequate reliability. For our purposes it has the major drawback of a history running back only to Quarter One of 2000, too short for analysis of variation in transactions activity over time.

Investment Property Databank (IPD) is a further rich source of transactions evidence. All transactions of the investors covered by the system can be tracked by month of deal as far back as December 1980. Transactions can be analysed by any of the large set of building characteristics recorded by IPD – including location, size and age of building, valuations before or after the transaction, category of owner, rent and yield pricing. IPD also provides a full record of the capital values of the portfolios through which buildings are being traded, and hence a basis on which transactions volumes can be converted into transactions rates.

Though it is highly detailed and reliable, the IPD record still falls short of the ideal. Its most important failing is lack of complete information on the counterparties to the transactions of funds covered by IPD. This means that IPD can provide result on total purchases and sales, but cannot put a precise figure on what fraction were trades between portfolios covered by IPD – and hence double-counted as both purchase and sale. The total of purchases and sales together represents a useful measure of turnover for the portfolios covered by the system, but an inflated estimate of transactions for the market.

A second significant limitation is that IPD has a large but far from complete coverage of the total investment market. The £100bn of assets embraced by IPD (in the December valued records used in this analysis) gives a very high coverage of institutional investors and the vehicles in which they invest (such as PUTs and some Limited Partnerships), and a smaller, but still good, sample of listed property companies and traditional investors. Inward investors, however, are lightly represented, and private investors are barely covered at all. Overall, IPD's December-valued records are capturing only 40% of the total assets that make up the UK investment market.

2. Definitions and Sources

There is an alternative source of transactions data for institutional investors alone. The Office for National Statistics (ONS), from returns supplied by insurance funds, pension funds and property unit trusts, records acquisitions and disposals of 'UK Land Property and Ground Rents' each quarter. The series run back to the mid-1980s. As with IPD, the transactions volumes can be converted into a transactions rate for institutional investors, using the estimates of total real estate assets also collected by the ONS. As with IPD results, however, the separate recording of purchases and sales with an unknown element of double counting makes this an over-estimate of total market transactions rates. Unlike IPD, only aggregate figures are collected by the ONS. This source, therefore, is useful mainly as a cross-check on overall turnover rates shown by IPD.

One final source of transactions evidence is the Jones Lang LaSalle / IPD Auctions Record Analysis Service (ARAS). Collated from the results of auction houses, ARAS gives a quarterly time series of properties offered and sold at auction running back to 1985. Transactions are classified by location, broad property type, and estimated yields. Auctions form a small part of the overall investment market, with deals recorded in 2002 amounting to under 4% of the total shown by PData, and 3% of the IR total. Properties traded at auction, though broadening in range in recent years, are most secondary buildings in small lot sizes, the typical case being a secondary shop unit. Their primary value lies in giving an indicator of the rapid growth in debt-financed private investors, who are the main buyers at auction.

2.4 Other sources – indirect and overseas real estate markets

Though trading in direct property investments is the primary focus of analysis in this report, we have also compiled evidence on transactions activity in the primary indirect investment vehicles. For UK vehicles, we have obtained evidence on:

- **Share trading volumes in listed property companies from Stock Exchange**
- **Primary (i.e. direct with Trusts) and secondary (i.e. off-market back to back deals) transactions in PUTs from the Association of Property Unit Trusts.**

For overseas markets:

- **As in the UK, we have limited evidence on transactions rates in listed real estate vehicles in the USA and Australia from Stock Exchange sources.**
- **Plus evidence on transactions in direct real estate from IPD Databanks outside the UK, which are compiled by methods consistent with the UK data described above.**

Definitions & Sources – Summary

- **Transactions activity is an imperfect proxy for underlying market liquidity, but the only available measure through which real estate markets can be tracked historically, or compared with other assets.**
- **Official statistics and industry sources offer a range of useful indicators of commercial real estate transactions volumes, though all fall short of an ideal measure through problems of coverage or definition.**

3. Transactions in direct investments: trends & modelling

This section tracks aggregate indicators of transactions activity since the 1980s. It first compares the scale of transactions across the various measures available, and the long-run trend in transactions activity. We then move on to examine fluctuations in transactions with the market cycle, and explanations of those trends and fluctuations.

3.1 What is the transactions rate?

Table 2 compares the volumes of transactions recorded in each main source of data. The sources clearly differ in coverage and, as suggested by the differences in average transactions size, in composition of individual deals.

On the IR figures, total transactions volume in 2002 was £36 billion, in 145,000 deals. Since, as noted in the last section, these figures include occupational leases and properties outside the investment market, the very low average transactions size of £240,000 is not surprising. None of the other sources concentrated on the investment market accounts for more than 2% of the total number of transactions shown by IR. But, outside the auctions, investment deals are in much larger lot sizes. (PData show a much higher lot size than IPD, because they record portfolio transactions as a single deal, while IPD will register each building within the portfolio as a separate transaction.) Deals in the investment market therefore account for at least 80% of the value of transactions in commercial property, if we take PData coverage as large but not comprehensive.

For each source, Table 3 converts transactions values into estimates of transactions rates in 2002. For the IR survey, the denominator (column 4) for this rate is taken from ONS estimates of the total market value of non-residential property (excluding public sector buildings). For the PData, the denominator is IPD's estimate of the total value of investment properties described in Section 3. For IPD and ONS, the denominators are the total capital value of the assets directly recorded by those two sources.

Table 2: **Transactions in 2002**

				As % of Inland Revenue Total	
	No of Transactions	Value of Transactions £m	Average Transactions Size £m	No of Transactions	Value of Transactions
IR Survey Transactions 1	145,403	35,502	0.24	100.0	100.0
PData Transactions 2	2,319	28,567	12.32	1.6	80.5
IPD Purchases	1,173	10,001	8.53	0.8	28.2
IPD Sales	1,744	11,297	6.48	1.2	31.8
ONS Institutional Purchases	..	7,334	..	..	20.7
ONS Institutional Sales	..	7,630	..	..	21.5
ARAS Auctions Transactions	2,774	1,031	0.37	1.9	2.9

Notes:
1. Inland Revenue figures for England & Wales factored up by 9% to estimate GB total including Scotland.
2 . Excluding transactions through auctions.
Source: Inland Revenue, IPD, Jones Lang LaSalle, ONS

3. Transactions in direct investments: trends & modelling

Table 3: **Transactions volumes and transactions rates 2002**

	Value of Transactions £bn	Universe Base	Universe Value £bn end-2002	Transaction Rate %
IR Survey Transactions	36	Est total non-residential stock	647	5
PData + ARAS Transactions	30	Est total investment market	247	12
IPD Purchases	10	IPD Capital Value	103	10
IPD Sales	11	IPD Capital Value	103	11
IPD Total "Transactions"	21	IPD Capital Value	103	21
ONS Institutional Purchases	7	ONS Capital Value	67	11
ONS Institutional Sales	8	ONS Capital Value	67	11
ONS Total "Transactions"	15	ONS Capital Value	67	23

Source: as Table 2

For non-residential property overall, the estimates produce a transactions rate of 5%. The stock base on which that rate is calculated includes public-sector buildings such as schools and hospitals, plus industrial complexes such as refineries and car plants. These elements of the total stock are likely to be traded very rarely. Excluding them from the bottom line of the calculation would raise the non-residential transactions rate to 7% - 8%.

All sources for that part of the total stock falling within the investment market suggest a higher transactions rate – 12% on PData, more on the IPD and ONS results. On these figures, a transactions volume of only £6 billion for the stock outside the investment market would suggest a transactions rate for owner-occupied commercial property as low as 2% - 3% per year. This would be under half the 7% transactions rate for residential property calculated from the same data sources.

For the commercial investment market, the transactions rates indicated by our three primary sources – PData, IPD and ONS are all subject to some reservations. Since PData is likely to be less than comprehensive, making the 12% transactions rate a lower estimate of the true rate.

IPD and ONS show very similar results, as would be expected from the large overlaps in their populations: 90% of the IPD December databank is made up of the institutional investors tracked by ONS. But the transactions rates indicated by summing the purchase and sales rates in those two sources are inflated by double-counting of the properties inter-traded within their populations. This makes the 20% plus transactions rates suggested by those sources as an upper estimate of the true rate. Both these sources, moreover, cover less than half the total investment market, and may not be representative of transactions rates in the remainder of the market.

A breakdown of the PData listing by buyers and sellers casts light on the total make-up of the market, and helps assess the extent to which the IPD and ONS rates may be inflated by double-counting (Table 4). In 2002, the PData analysis shows 27% (by value) of institutional sales were to other institutions, and 26% of institutional purchases were from other institutions. For the wholly institutional sample represented by ONS, and the very largely institutional sample represented by IPD, these levels of inter-trading would suggest the total transactions volume in 2002 was overstated by around 13%.

Correcting for this factor would yield 'true' transactions rate of 19%-20% for both the IPD and ONS populations. This is still well above the 12% lower estimate from the PData results, and suggests either a higher rate of transactions in institutional portfolios than for other categories of investor, or a lower coverage of the PData listing than we have assumed.

3. Transactions in direct investments: trends & modelling

Table 4: **Property Data: transactions flows by investor type 2000-2002**

A: Transactions Matrix £m

	Sellers						
Buyers	**Occupier**	**Overseas**	**Private**	**UK Institution**	**UK Prop Com**	**Other/NK**	**Total**
Occupier	201	189	29	323	402	66	1,209
Overseas	2,064	2,556	423	4,056	6,078	450	15,626
Private	485	528	573	1,304	2,761	261	5,912
UK Institutn.	1,675	2,595	278	5,650	8,673	767	19,639
UK Prop Co	3,970	3,564	595	5,408	14,332	1,317	29,186
Other / NK	66	74	24	359	354	91	969
Total	**8,463**	**9,506**	**1,922**	**17,101**	**32,600**	**2,951**	**72,543**

B: net trading flow between categories £m (+flows of money, - flows of property)

	Flows from						
Flows to	**Occupier**	**Overseas**	**Private**	**UK Institution**	**UK Prop Com**	**Other/NK**	**Total**
Occupier	0	-1,875	-456	-1,352	-3,568	-1	-7,253
Overseas	1,875	0	-106	1,461	2,514	376	6,120
Private	456	106	0	1,026	2,165	236	3,990
UK Institutn.	1,352	-1,461	-1,026	0	3,265	408	2,538
UK Prop Co	3,568	-2,514	-2,165	-3,265	0	964	-3,413
Other / NK	1	-376	-236	-408	-964	0	-1,983
Total	**7,253**	**-6,120**	**-3,990**	**-2,538**	**3,413**	**1,983**	**0**

Source: Property Data

On other features of the investment market, the PData information show how permeable the boundary between the occupier and investment markets has been in the last three years. Owner-occupiers have been net sellers of properties worth £7.3bn to investors – around half of that total in sales to property companies, a quarter to overseas investors, and a fifth to UK institutions.

Investors wholly outside the ONS figures, and largely outside the IPD figures, make up a large fraction of total market activity. Overseas and private investors, for example, have accounted for nearly one-third of total purchases. Of their purchases, one-third have been from vendors outside the core market represented by institutions and property companies.

The net trading flows section of the table, further, highlights the importance of a range of counter-parties to the flow of funds into the real estate investment market. While UK institutions and property companies have engaged in £34bn of transactions, their combined net investment has been -£875 million, while there has been a massive net inflow of £9 bn in new money from overseas and private investors.

3. Transactions in direct investments: trends & modelling

To summarise, on the available evidence, we can say that:

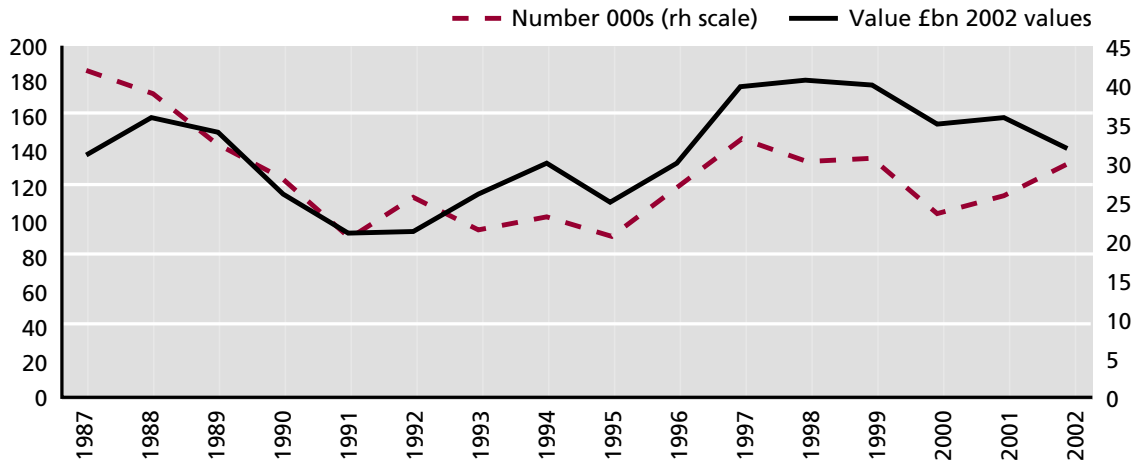
- **On an invested base of around £250 billion of commercial real estate assets in the UK, there were at least £30 billion of transactions in 2002. This figure is probably a slight understatement, to the extent that PData are not achieving 100% coverage of all transactions.**
- **Using that figure, a lower estimate of the transactions rate in commercial real estate for 2002 is 12% - which is almost double the transactions rate in residential property, and four to six times the transactions rate in commercial property outside the investment market.**
- **For the core investors represented in the IPD and ONS results – UK domestic institutions, property companies and traditional owners – the transactions rate appears to be significantly higher at 19% to 20%. This may represent a higher rate of trading among those investors than the overseas and private investors who make up the remainder of the market, or an uncorrected element of double-counting of deals.**

It is possible that future refinement could improve on the accuracy and agreement between these estimates. More consistency in classification cross-referencing between the two most detailed sources – PData and IPD – could cast light on the degree to which they overlap, and the relative rates of transactions for different investor types. Within the IPD data, screening for properties bought and sold between investors covered by the system would yield a stronger figure for the true rate of transactions.

3.2 What is the long-run trend in transactions activity?

Figures 1 to 6 chart the indicators used in the last section available over the last fifteen years. Over time, the IR and ARAS absolute value figures will have been affected by changes in capital value as well as changes in transactions. To adjust for movements in market values, both series are shown at constant 2002 values using the IPD all-property capital value index as deflator. The ONS and IPD series on transactions rates are calculated on a base of total capital values each year, so no adjustment is necessary.

Figure 1: **Inland Revenue Transactions**



3. Transactions in direct investments: trends & modelling

Figure 2: **ARAS Transactions**

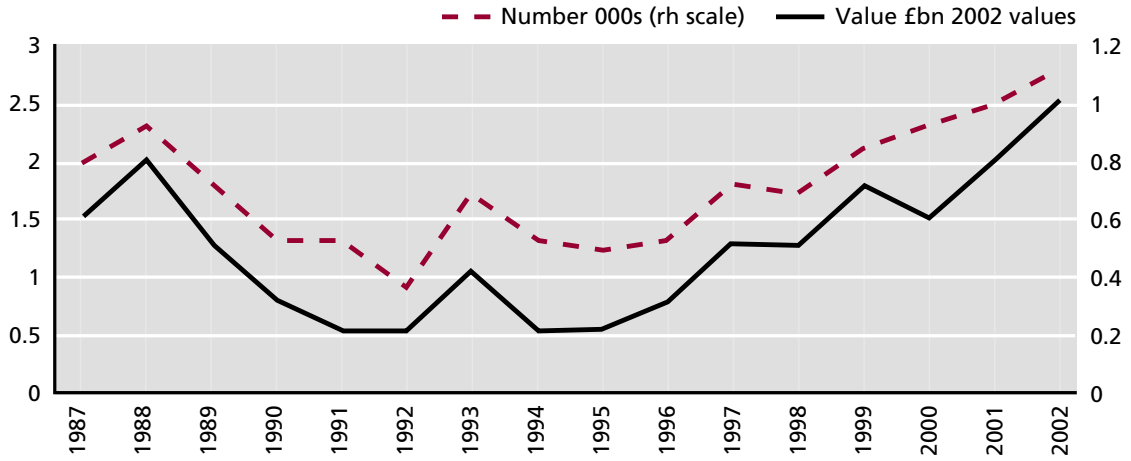


Figure 3: **IPD Transactions rates – by number of purchases / sales**

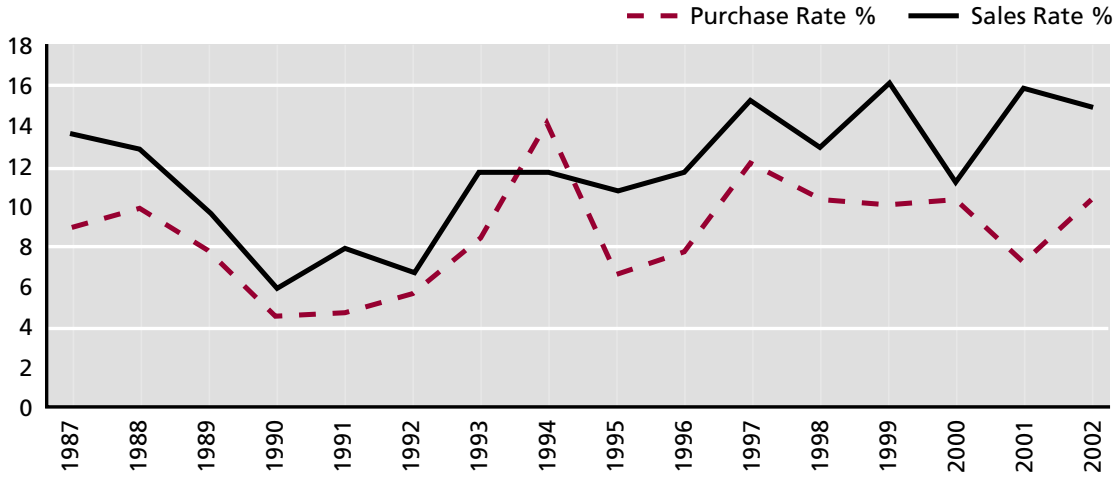
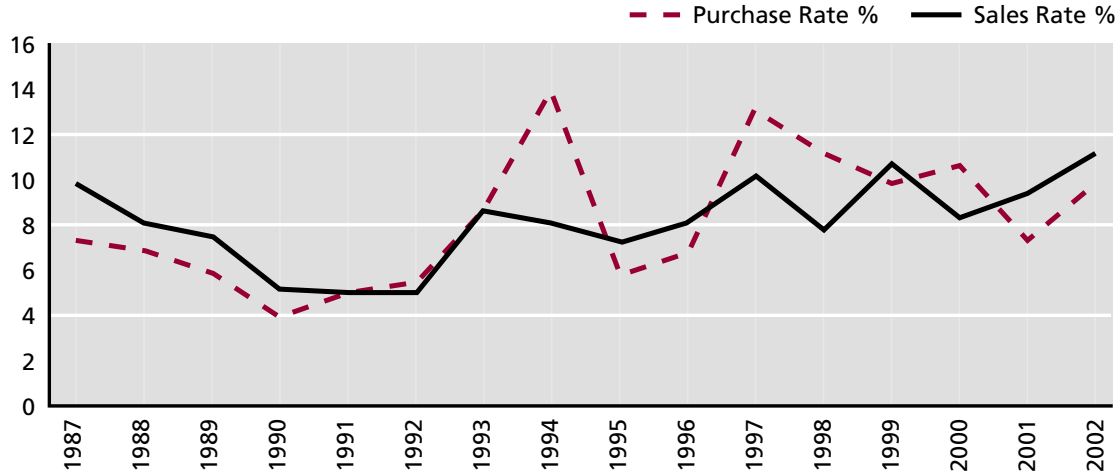


Figure 4: **IPD Transactions Rates – by value of purchases / sales**



3. Transactions in direct investments: trends & modelling

Figure 5: **ONS Transactions rates – by value of purchases / sales**

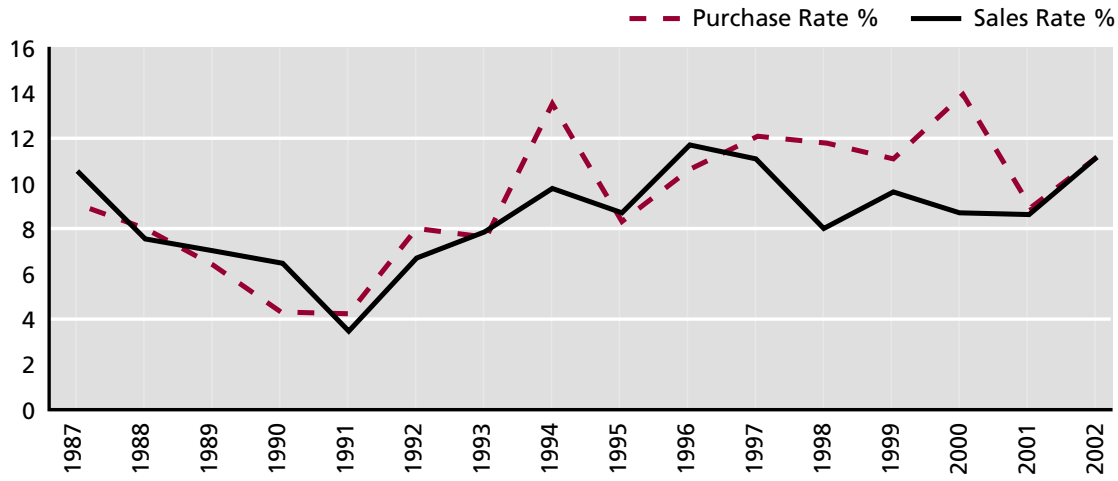
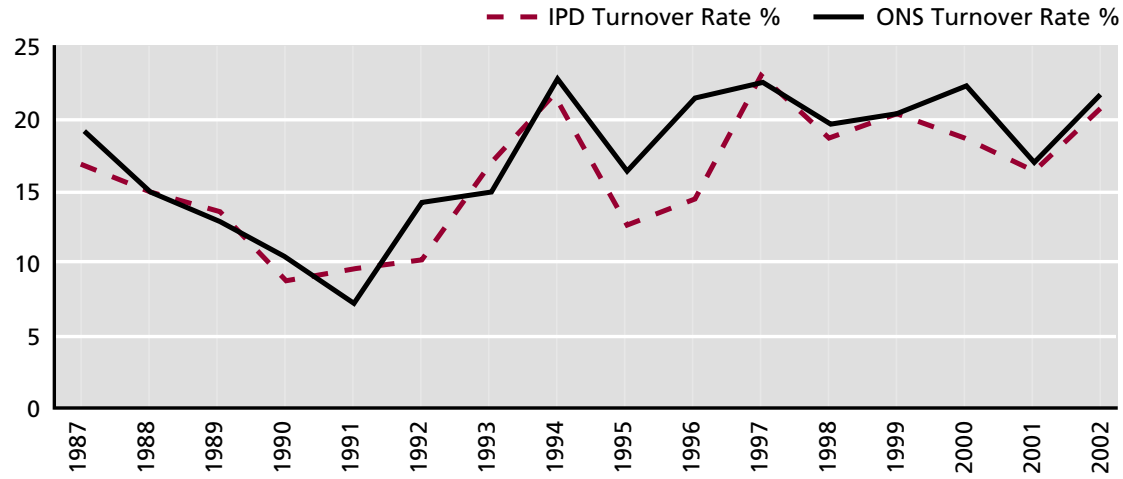


Figure 6: **IPD & ONS turnover rates – by value of purchases / sales combined**



There are clearly patterns common to all measures. They all show a strong influence of the major cycle of the late 1980s / early 1990s, with a sharp fall in transactions through the downswing of that cycle. On most of the main measures of transactions by value – IR, IPD and ONS - trading activity fell by 40% to 50% from the late 1980s market peak to the early 1990s trough. Only the ONS sales rate shows a larger fall, of 70% from a 1987 peak to a 1991 trough. Since 1993, swings in transactions rates have been less abrupt, but show influences from the market peaks of 1994/94 and 1997/98.

All measures apart from the IR transactions by number of deals also suggest there has been an upward trend over time. The cyclical peak at the start point of the series may be masking the strength of that upward trend. To partly correct for that, underlying growth rates have been calculated from best-fit lines through the observations shown in the charts, and are shown in Table 5.

3. Transactions in direct investments: trends & modelling

Table 5: **Underlying trend growth in transactions activity - 1987-2002**

	Trend Growth % pa
Inland Revenue – value	1.91
Inland Revenue – number	-1.56
ARAS Auctions Value	4.77
ARAS Auctions Number	2.93
IPD Purchases – value %	4.34
IPD Sales – value %	2.63
ONS – Purchases Value %	4.62
ONS – Sales Value %	2.38
IPD Purchases – number %	2.27
IPD Sales – number %	3.35
IPD Turnover %	3.47
ONS Turnover %	3.51

On the Inland Revenue figures, the trend changes in transactions activity look surprisingly low. By number, transactions have never risen above the high peak of the 1980s, and appears to have oscillated about a flat level through the last ten years. Against a rising trend in transactions by value, this may of course be consistent with a rising concentration of the total stock in larger, higher value units.

The upward trend in transactions by value also seems a little on the low side, probably no greater than the underlying growth in total stock of commercial real estate through the period (assuming this is fairly close to the trend growth rate in GDP). It is possible that the rise in capital values for stock outside the investment market has been lower than that achieved in the IPD, which has been used to adjust transactions flow to an estimated constant capital value. An error under 1% per year arising from this factor would be enough to bring the IR trend rise in transactions values into line with the range shown by other indicators.

All other indicators suggest trend growth in transactions rates between 2% and 4.5% per year. ARAS transactions values have risen toward the top end of this range, which may be attributed to a rising share of total market transactions flowing through auctions in recent years. On both the IPD and ONS measures, purchasing rates have risen more than sales rates. This is likely to have been the result of an increased attractiveness of real estate to institutional investors since the trough of the early 1990s, and their decline in the use of direct development as a means of property acquisition.

On balance, therefore, a 'mean' rate of growth in transactions rates may have been in the 3% to 3.5% per year range, shown by the composite measures of IPD and ONS turnover (note this means that the rate of transactions has risen at 3% per year, not by 3 percentage points per year). As explained above, if the coverage of IPD and the share of the total stock in institutional ownership have both risen, that rise in turnover may have a slight upward bias, since inter-trading within the IPD and ONS populations will also have tended to rise.

- **Our tentative conclusion is that the underlying level of transactions rates in commercial property has been rising at around 3% per year through the last fifteen years.**
- **This gentle rate of increase would have been enough to lift underlying rates of purchases and sales on the IPD and ONS figures from around 6% - 7% each in the mid-1980s to their current levels of 9% to 11% each.**
- **In terms of turnover, the underlying rate has risen from 12% - 13% in the mid-1980s to the current level of 19% - 20%.**

3. Transactions in direct investments: trends & modelling

3.3 Transactions activity through the cycle

In all investment markets, we expect transactions activity to be linked to the state of the market. A rising market attracts new money, and lifts asset values above backward-looking 'reservation prices' which existing holders of assets may set as their minimum offer prices. A falling market has the opposite effects.

Figure 7: **Transactions indicators and IPD total return**

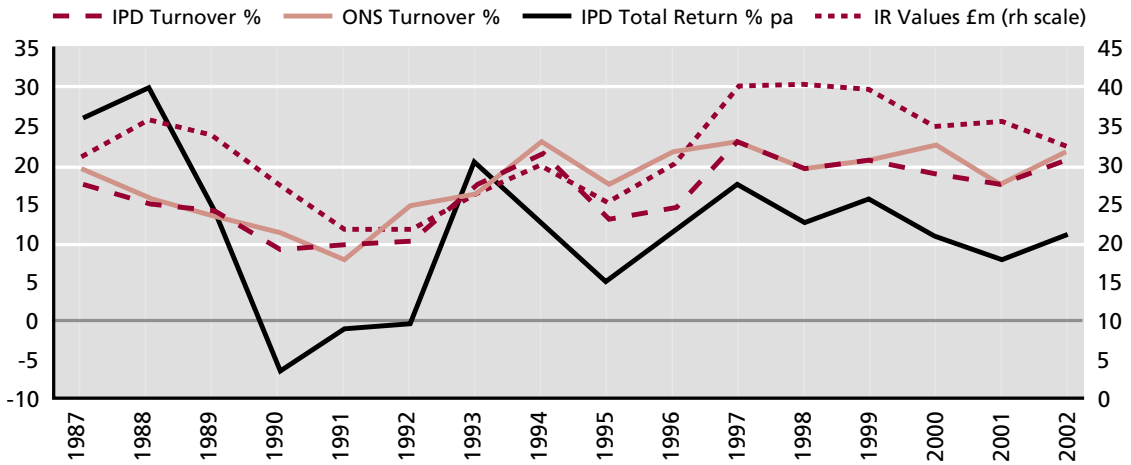
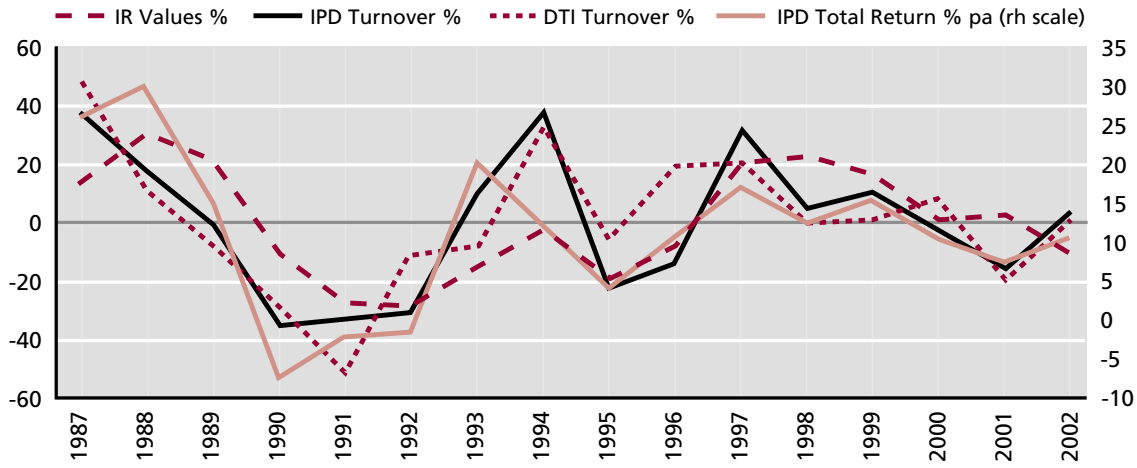


Figure 8: **Deviation from trend in transactions indicators vs IPD total return**



As Figure 7 indicates, the primary measures of transactions activity discussed in the last section have all shown a strong year-on-year relationship with the state of the market as measured by IPD total returns. The year-on-year correlations between our individual transactions measures and IPD total returns run between 0.36 and 0.65. The beta between annual total return and the turnover rates shown by IPD and ONS is 0.2 to 0.3 – i.e. a 0.2 to 0.3 percentage point change in turnover rate for every 1 percentage point change in the rate of total return.

3. Transactions in direct investments: trends & modelling

The strength of the statistical relationship is hugely increased if IPD returns are set against the difference from the underlying fitted trend in each transactions indicator (as illustrated in Figure 8). These differences from trend correlate with IPD market returns at between 0.60 and 0.85.

A close link with returns means that transactions activity is also linked with many other variables which track the cycle. A wide range of models and variables can therefore be fitted to 'explain' the pattern of variation in transactions activity. It might be argued that an explanation of transactions activity in terms of direct measures of the state of the cycle is essentially circular. Both transactions activity and the capital values which drive total returns are reflections of the more fundamental factors which drive the allocation of investment to real estate and movements in capital values.

In developing models to explain variation in transactions activity, we have therefore attempted to use variables and structures which represent fundamental investment decisions arising from relative asset pricing and costs of finance. We have aimed not to rely on simple correlation phenomena between transactions activity and other cyclically-related variables – which would include many general economic indicators such as GDP – even though structures of that type can generate a high level of explanation.

Finance theory suggests that transactions rates will be strongly influenced by transactions costs (Arthur Andersen, Currie & Scott 1998). Raised costs would be expected to reduce the number of transactions and, thus, cut trading activity, mainly due to lengthening of the holding periods required to "pay back" the round trip dealing costs[1]. We have therefore specifically tested for any impacts on transactions of the stepped increases in Stamp Duty on purchases toward the end of the period under review (Table 6).

Table 6: **Changes in rates of duty 1987 - 2000**

	% rate of Stamp Duty by Value of Purchase £000			
	under £60k	£60-£250k	£250-£500k	over £500k
before 8th July 1997	1.0	1.0	1.0	1.0
8th July 1997	0.0	1.0	1.5	2.0
23rd March 1998	0.0	1.0	2.0	3.0
15th March 1999	0.0	1.0	2.5	3.5
27th March 2000	0.0	1.0	3.0	4.0

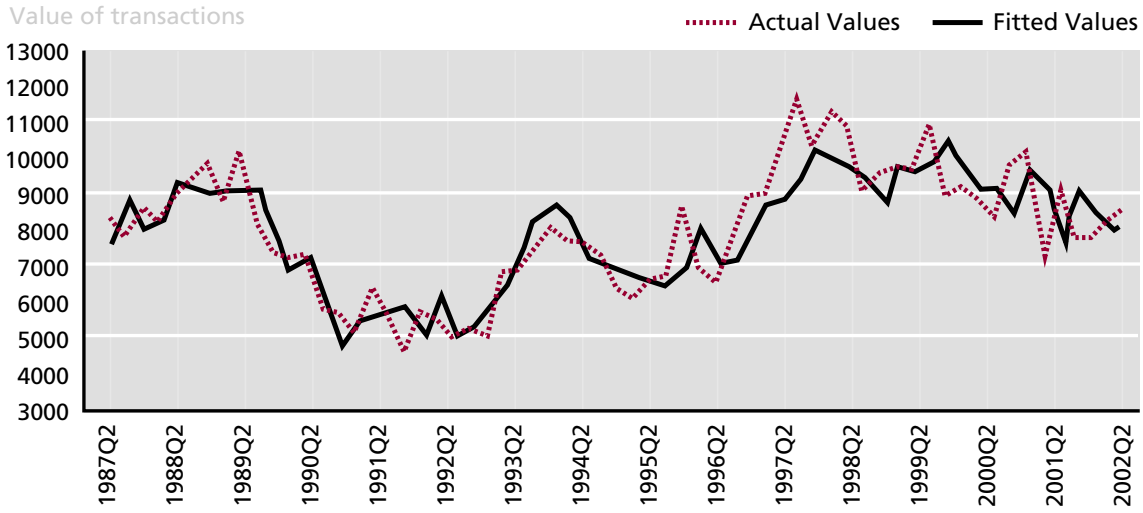
Source: Inland Revenue

To increase the number of observations available, and give more scope for identifying short-term lead-lag relationships, all models have been developed from quarterly series in the transactions indicators and explanatory variables, running from Q1 1987 to Q4 2002. Figures 9 to 12 summarise selected results for models of selected transactions indicators.

[1] see Collett *et al.*(2003).

3. Transactions in direct investments: trends & modelling

Figure 9: **Regression model of Inland Revenue transactions value £m constant prices**



Explanatory variables	Coefficient	Standard Error	T-Ratio	[Prob]
Constant	5456.05	953.49	5.72	0.00
Real Equity Yield (FTSE All Share)	-555.64	142.98	-3.89	0.00
Real IPD Total Return	209.10	48.46	4.31	0.00
IR Transaction Value (-1)	0.45	0.10	4.71	0.00
High Stamp Duty Dummy	234.40	299.30	0.78	0.44
With Duty Dummy	R-bar^2	0.75	DW-stat	2.25
Without Duty Dummy	R-bar^2	0.75	DW-stat	2.31

The plot of Inland Revenue transactions suggests a high sensitivity to the state of the property market, and that overall trading has run at a high but gently falling level through the last five years. The two explanatory variables used – real equities yields and real IPD total returns – suggest property transactions have reacted to the balance of advantage between the two asset classes. Low real yields on equities capture the pull of equity investments in rising equity markets. High real returns on real estate capture the opposing attractions of strong performance from property.

Overall, the equation performs well in tracking swings in transactions over the last fifteen years. Given the volatility in the quarterly figures, the R-squared indicator of 0.75 is a reasonable level of explanation.

The 'High Stamp Duty Dummy' is a test for impacts of raised levels of Duty from March 1998 onward. More elaborate versions of the equation (not reported here) have used different dummy variables for each Duty regime applying through the estimation period. If raised Stamp Duties had had a measurable effect on overall transactions, the dummy variable would show a negative coefficient, and a significant T-Ratio.

3. Transactions in direct investments: trends & modelling

The signs of the estimated coefficients on the dummy are, however, the *opposite* of the predictions of financial theory. The positive coefficients indicate that increased rates of Duty have been associated with marginally *higher* levels of transactions than would have otherwise been expected.

This apparently perverse result (also found in the estimations for other measures of transactions activity) may, in part, be explained by the surge in formation of new investment vehicles through the period in which higher rates of duty have applied. Rises in Duty themselves, and the anticipation of further rises once the process was in train, constituted a stimulus to the creation of structures in which Duty could be wholly or partially avoided, through the separation of beneficial and legal titles, or co-ownership vehicles.

Though these avoidance measures have taken a number of forms, and many other factors have driven the desire for new forms of investment vehicle, Limited Partnerships (LPs) are one of the most common and best documented structures. Estimates from IPD and Oxford Property Consulting show that by the end of 2003, £18 billion in assets had been built up in these LPs, mostly by acquisitions from existing investors at rates of between £2 billion and £4 billion each year through the late 1990s and early 2000s. At those rates, the formation of these vehicles will have lifted transactions volumes through that period by at least 5%, and in some years by more than 10%, above what is might otherwise have been.

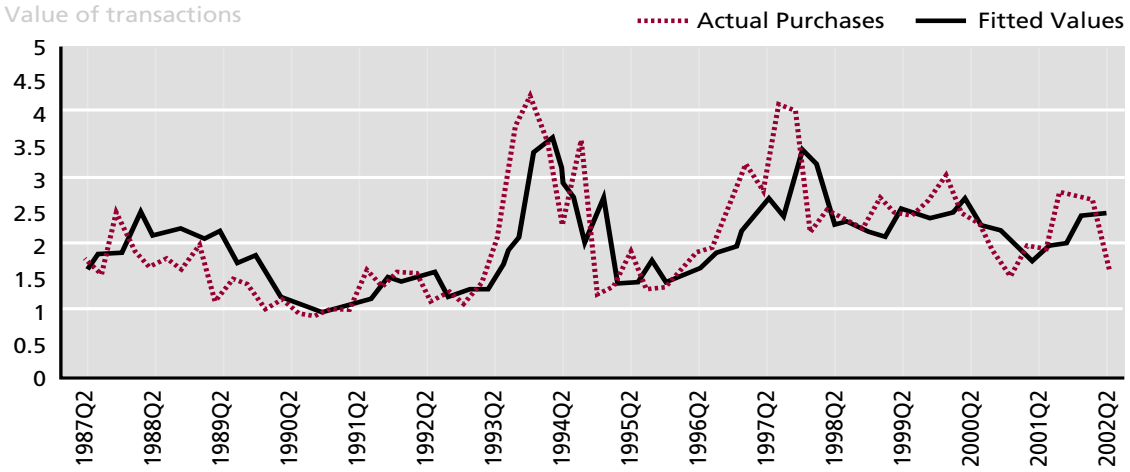
A positive association between rising Duty and transactions volumes could therefore be interpreted as a pure coincidence, in that increased Duties happened to coincide with a desire in the industry for new types of investment vehicle. Or it could be interpreted as a transitional effect of increased Duty – the transfer of assets into vehicles where Duty could be more readily avoided.

In either case, the eventual impact of higher rates of Duty may be a reduction in transactions activity, as predicted by financial theory, once the switch of assets into new vehicles has moved into a new balance. Since most Limited Partnerships are closed-end structures in which trading requires the consent of all partners, it could also be the case that the change in structure of the industry will change trading behavior. A reduction in propensity to trade during the life of the partnerships would be coupled with surges in trading at the end of the life of the vehicles.

Figure 10 shows purchasing rates among the large-scale investors represented in the IPD. They have been highly sensitive to shifts in the IPD rate of return on direct property investment – which in particular accounts for the spike in buying in 1993-1994, and the tail-off through the three years to end-2002. That decline may, moreover, be strongly linked to the steep fall in equity markets since Q1 2000, which raised the weight in property portfolios above the targets set by investment managers and (perversely) cut the flow of investment into property through a period of very strong relative (if fading absolute) returns. In this case, too, adding a test for the impact of higher rates of Stamp Duty since 1998 suggests they have had no significant effect on purchasing activity.

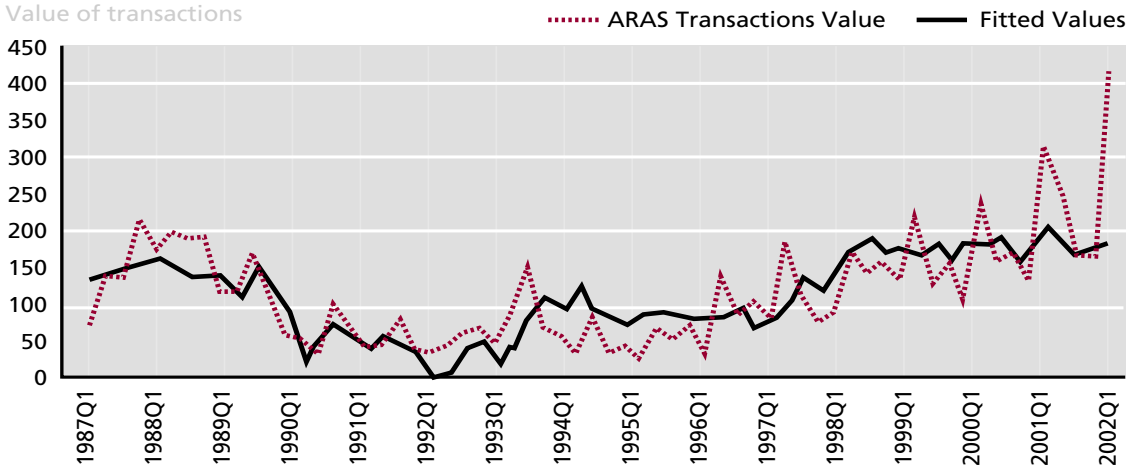
3. Transactions in direct investments: trends & modelling

Figure 10: **Regression model of IPD purchase values as % IPD stock**



Explanatory variables	Coefficient	Standard Error	T-Ratio	[Prob]
Constant	0.67	0.20	3.34	0.00
IPD Purchase rates (-1)	0.53	0.12	4.56	0.00
IPD Total Return (-1)	0.09	0.04	2.24	0.02
High Stamp Duty Dummy	0.14	0.19	0.72	0.47
With Duty Dummy	R-bar²	0.52	DW-stat	1.81
Without Duty Dummy	R-bar²	0.52	DW-stat	1.86

Figure 11: **Regression model of ARAS transactions values £m constant prices**



Regressor	Coefficient	Standard Error	T-Ratio	[Prob]
Constant	596.88	94.95	6.29	0.00
Interest Rate (3 month)	-10.40	3.57	-2.92	0.01
IPD Initial Yield	-53.41	9.69	-5.51	0.00
Retail Price Inflation	-21.01	10.71	-1.96	0.05
High Duty Dummy	25.63	20.21	1.27	0.21
With Duty Dummies	R-bar²	0.49	DW-stat	1.58
Without Duty Dummy	R-bar²	0.49	DW-stat	1.52

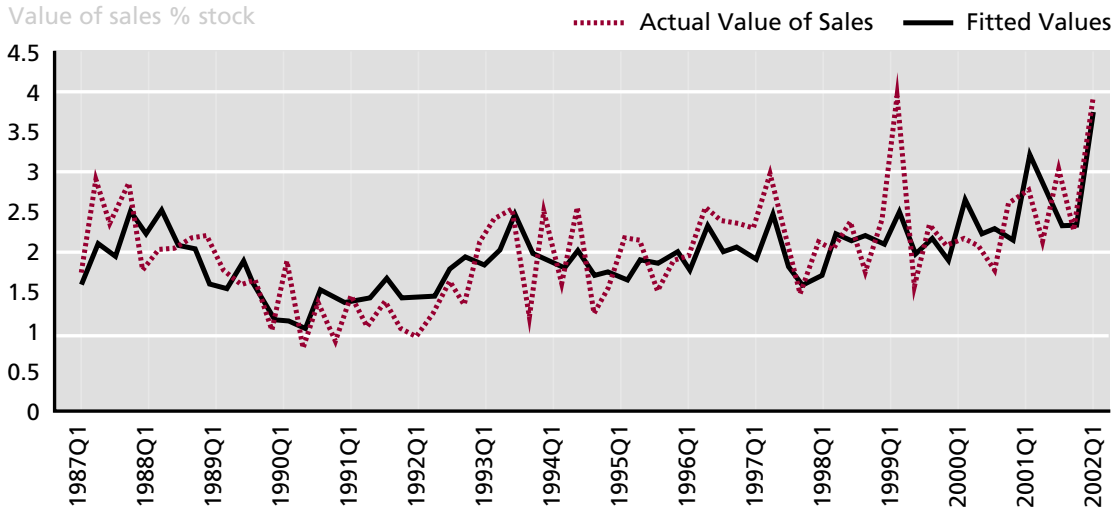
3. Transactions in direct investments: trends & modelling

Trading in the small 'secondary' market captured by the ARAS results (Figure 11) is also sensitive to the property cycle, but has trended upward through last five years, in contrast to the static or falling levels of trading apparent in other indicators.

ARAS transactions volumes are best accounted for by property yields and borrowing rates - factors which reflect the investment decisions of debt-backed investors. The upward trend in their appetite for property, therefore, has been based on the long period of attractive initial yields relative to borrowing rates through the last five years.

The incorporation of Duty effects shows no significant impact on volumes of ARAS transactions (i.e.the T statistic is not significant).

Figure 12: **Regression model of IPD sales values as % IPD stock**



Regressor	Coefficient	Standard Error	T-Ratio	[Prob]
Constant	2.06	0.22	9.60	0.00
ARAS Transactions Values	0.01	0.00	5.93	0.00
Interest Rate (3 month)	-0.08	0.02	-3.77	0.00
High Duty Dummy	-0.24	0.16	-1.45	0.15
With Duty Dummies	R-bar^2	0.52	DW-stat	2.16
Without Duty Dummies	R-bar^2	0.50	DW-stat	2.34

The selling rate among IPD investors (Figure 12) is rather flatter than the other transactions indicators, with little underlying upward or downward trend since 1993, and a lot of short-term volatility. The fairly stable level reflects the role of sales in the asset management strategies of major investors. Selling has been a primary means of handling obsolescence, and also part of a long process of concentrating portfolios into smaller numbers of higher-value buildings. So investors have sold fairly steadily, and managed their overall exposure to property by varying the purchasing rate – which, as noted above, has been much more variable through the last ten years.

3. Transactions in direct investments: trends & modelling

Though most of the period observed, therefore, the IPD rate of sales has been less strongly influenced by short-run market movements than the other transactions indicators. Our initial model of sales patterns suggests a closer link to the volume of ARAS transactions than any market indicator. Although ARAS transactions account for only a very small fraction of the sales out of IPD, they may be acting as a proxy for the overall appetite for property among non-institutional investors. Again, bringing indicators of changes in Duty into the model shows no significant impact.

There is more work to be done on the modelling aspect of this work. From the results so far:

- **It is clear that fluctuations in transactions rates are very closely linked to swings in the property cycle. This means that a wide rage of performance and pricing variables – returns, capital values, yields – may 'explain' short-term variation in transactions rates.**
- **Different measures of transactions rates do, however, have slightly different drivers which reflect the varying motivations of investors (as between, for example, institutions and private investors) and the different drivers of purchasing as against sales decisions.**
- **It appears that changes in Stamp Duty rates since the late 1990s have not so far had a visible influence on transactions activity, but highly likely that long-term effects have so far been masked by a surge in the formation of new investment vehicles.**

Transactions in Direct Investments – Summary

- **Alternative sources of evidence provide a broadly consistent estimate of investment transactions in UK commercial real estate running at £25-30 billion per year through 2001 and 2002.**
- **Conversion to an accurate transactions rate (ie total deals divided by investible stock) is hampered by inconsistencies in coverage, ranging between 12% and 18%. Our best current estimate is that the transactions rate in recent years has been 14% - 15%.**
- **Transactions volumes show an underlying upward trend since the mid-1980s, suggesting that transactions and turnover rates have increased by a factor of 1.5 since the mid-1980s.**
- **Transactions activity has also been highly variable with major swings in market returns, falling by 50% to 60% in value through the downswing of the early 1990s and also varying around trend rates with the milder fluctuations in returns of the last ten years.**
- **Breaking down overall transactions into the buying and selling activity of different actors in the market shows differences in trends and cyclical patterns, which initial tests suggests can be modelled as responses to varying investment motivations and market signals.**

4. Transactions in Direct Property – Segments, Types, Investors

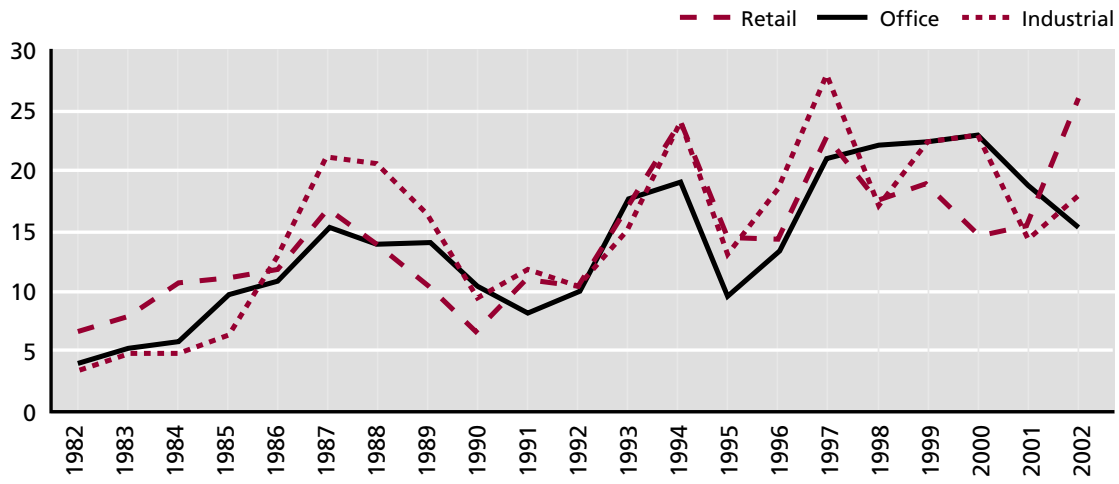
Only the IPD records meet the conditions required for further breakdowns of transactions rates – a detailed classification of transactions, plus a consistent sample base of population capital values. This section uses that evidence to assess the variation in transactions rates within the real estate market.

4.1 Sectors & segments

As discussed in Section 2, IPD's transactions rates need to be interpreted with some care, and with increasing care the more detailed the level of disaggregation. Though a large sample, the IPD December-valued records used here covers less than half the total investment market. Transactions rates suggested by IPD overstate the true rates due to the extent of inter-trading between IPD funds. Since IPD's coverage of the market has increased over time, it is likely that the overstatement of the true transactions rate has also increased.

For individual parts of the market, shifts in the share of the total market held by IPD funds will have been larger than at the all-property level. When seeking to increase exposure to (say) retail, fund managers will have raise the purchasing rate and cut the selling rate for the sector. Swings in both measures reflect the contemporary weighting strategies of funds and are likely to change with those strategies. It is, therefore, incorrect to see IPD's transactions rates as an intrinsic 'liquidity' characteristic of the markets in which the funds operate. It is, rather, a variable characteristic compounded of the desire of funds to change exposure or manage their holdings in specific markets, plus their ability to implement those strategies by finding willing counter-parties to their desired strategies.

Figure 13: **IPD Total transactions rates by sector – as % capital value**



4. Transactions in Direct Property – Segments, Types, Investors

Figure 14: **IPD Purchase / sale rates by sector – as % capital value (sales shown as negative)**

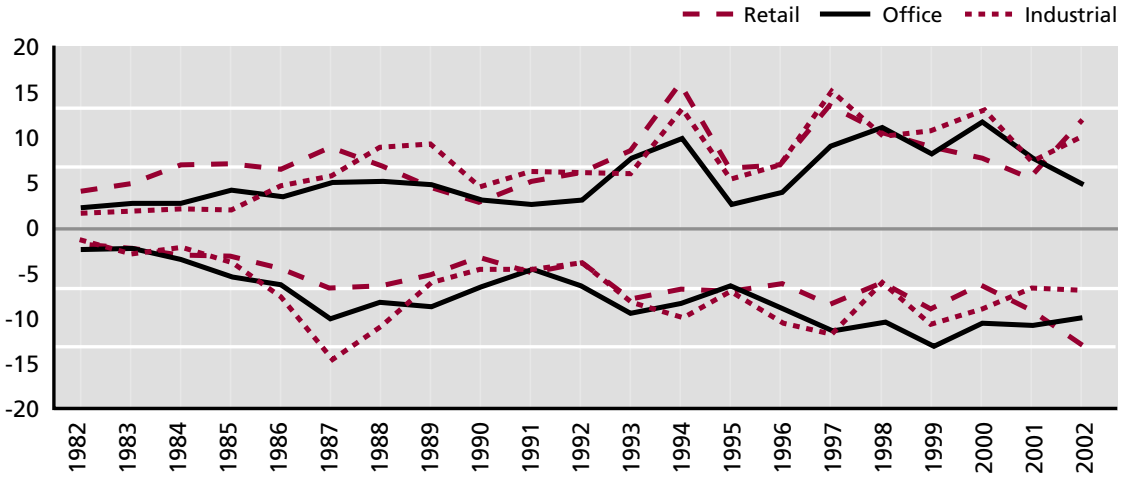


Figure 13 illustrates the point. Relative total transactions rates (i.e.the sum or purchase and sale rates) have varied across sectors almost continuously – though all have shared in the common upward trend, and broad cyclical shape. Sector performance and, hence, the attractiveness of sectors to investors, appears to have been a dominant influence on variation in transactions rates. Strong retail returns in the early 1980s, for example, resulted in a high rate of purchasing (Figure 14) and relatively high transactions rate. At the end of the 1980s, a burst of relatively high returns from industrials was accompanied by an increased purchasing rate and rapid rise in the transactions rates. Poor office returns in the early 1990s cut the rate of purchasing and the transactions rate.

Since there are no historic figures on which transactions in the investment markets not covered by IPD can be measured, it is impossible to say how far these swings in transactions volumes represent true swings in the overall market transactions rate, or only changes in the extent to which IPD funds chose to participate in the market.

Table 7 provides indicators of transactions rates for the main segments of the UK market, showing annual average rates over the last three years. Figures 15 & 16 summarise the variations in transactions indicators across property types and broad regions of the country, ranking markets in descending order of total turnover rate.

By property type, the results show markets may achieve high overall transactions rates through either high rates of purchase (as in the case of retail warehouses) or high rates of sales (as for supermarkets and department stores), or rates on both indicators fairly close to the average (as for standard offices).

Rankings in terms of transactions by number (rather than value) of transactions do not always show the same relative positions. Transactions rates on this measure are more tightly bunched, but standard shops, due to a very high rate of disposal of small investments, show above average rates.

The comparison (within the largest property sub-types) of transactions rates by location also generate some counter-intuitive results. For the three largest markets (by property count) – shops, standard offices and standard industrials – London has significantly lower transactions rates than other regions of the country. On these measures, London, and in particular London offices, are not the relatively liquid markets they are generally thought to be. At the bottom end of the range, given the large lot sizes and relatively small number of potential investors, it is not surprising to see shopping centres as showing transactions rates a quantum below all other markets. Standard shops, however, which by virtue of large numbers, small lot sizes and high uniformity of product are generally taken as highly tradable rank second to bottom in terms of transactions rates, with a low acquisition rate and average sales rate (in terms of transactions by value).

4. Transactions in Direct Property – Segments, Types, Investors

Table 7: **IPD Transactions rates by market segment – annual average 2000-2002**

	% by No of Purchases	% by No of Sales	% by Value of Purchases	% by Value of Sales	% Transacts Number	% Transacts by Value
Standard Shops	6.2	18.8	6.8	9.8	25.0	16.6
Central London	5.5	9.8	5.7	6.7	15.3	12.4
Rest of London	5.2	17.2	6.3	9.0	22.4	15.3
Southern England	6.3	20.9	7.3	11.9	27.2	19.2
Rest of UK	6.6	19.5	7.4	10.7	26.1	18.1
Shopping Centre	9.0	12.2	5.0	6.7	21.2	11.6
London	10.6	7.9	5.8	3.7	18.4	9.5
Southern England	9.9	12.6	3.8	5.4	22.5	9.2
Rest of UK	8.0	12.8	5.6	8.7	20.8	14.4
Retail Warehouse	14.2	11.4	17.5	11.9	25.7	29.4
London	18.2	9.4	21.5	9.5	27.6	31.0
Southern England	13.6	12.0	14.1	10.3	25.6	24.4
Rest of UK	13.8	11.5	18.6	13.7	25.3	32.3
Dept / Variety Stores	2.1	31.5	2.0	19.3	33.6	21.3
Supermarkets	3.6	20.6	6.6	19.6	24.2	26.2
Other Retail	3.6	18.5	3.5	16.3	22.1	19.8
Standard Offices	8.4	13.6	9.1	10.9	22.0	20.0
Central London	6.3	10.8	8.0	11.0	17.1	19.0
Rest of London	11.9	10.5	11.5	8.3	22.5	19.8
Southern England	8.8	14.7	9.4	10.5	23.5	19.9
Rest of UK	10.6	19.4	11.5	13.4	30.0	24.9
Office Parks	12.2	7.4	9.2	6.4	19.6	15.6
Standard Industrials	14.1	9.4	10.9	7.6	23.5	18.5
London	10.2	6.8	9.0	5.9	17.1	14.9
Southern England	11.1	8.9	9.3	8.6	20.0	17.9
Rest of UK	18.7	10.7	14.2	7.5	29.4	21.7
Industrial Parks	13.3	8.3	9.9	6.1	21.6	16.0
Distribution W/houses	11.5	9.2	12.7	8.5	20.6	21.3
Other Property	7.2	9.8	5.7	8.6	17.0	14.3
Retail	7.5	17.7	8.9	9.7	25.2	18.6
Office	8.8	13.0	9.1	10.3	21.7	19.4
Industrial	13.7	9.2	11.0	7.6	22.9	18.6
All Property	**9.0**	**14.0**	**9.2**	**9.6**	**23.0**	**18.7**

4. Transactions in Direct Property – Segments, Types, Investors

Figure 15: **IPD Transactions rates by property type 2000-2002 – % capital value**

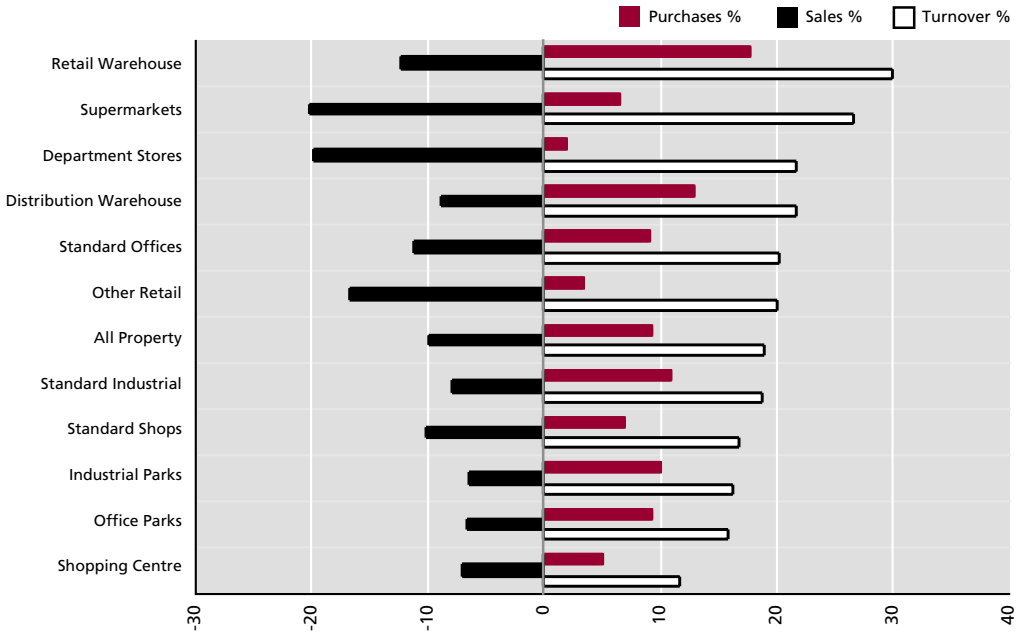
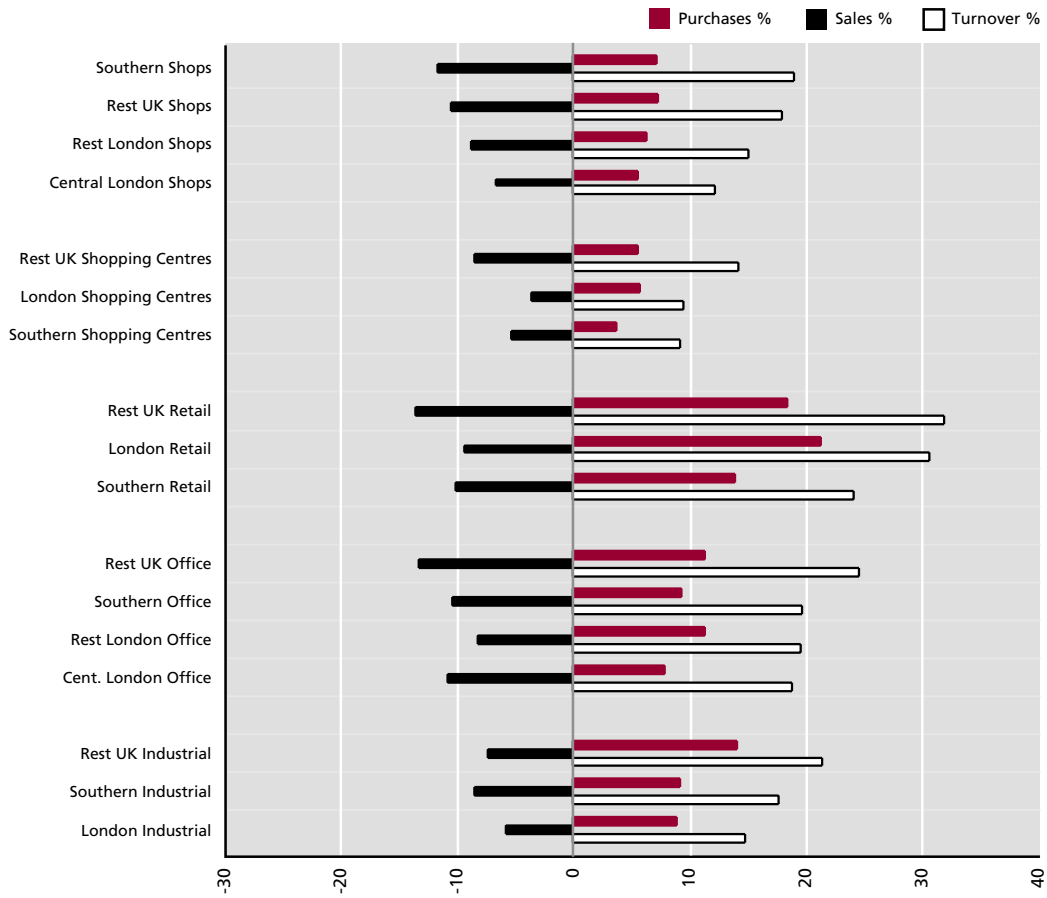


Figure 16: **IPD Transactions rates by broad region 2000-2002 – % capital value**



4. Transactions in Direct Property – Segments, Types, Investors

As Table 8 shows, the conventional wisdom on liquidity is most likely to be based on simple market size rather than transactions rates. Ranked by total value of transactions, Central London offices are by a large margin the largest trading market in the UK, followed by the retail warehouse and shopping segments defined by broad regions of the country.

Table 8: **IPD Ranking by Size of Transactions Market 2000-2002 – annual averages**

	No of Purchases	No of Sales	Purchase Price £m	Sales Price £m
Central London Offices	83	141	1,405	1,946
Rest of UK Retail Warehouses	74	62	1,292	950
Rest of UK Shopping Centres	13	21	464	717
Southern England Offices	86	141	555	625
Southern England Retail Warehouses	50	45	630	461
Rest of UK Shops	108	317	395	573
Rest of UK Offices	65	119	441	519
Office Parks	45	27	427	298
Southern England Industrials	93	75	364	335
Rest of UK Industrials	153	89	426	229
Southern England Shopping Centres	11	14	268	383
Southern England Shops	79	267	243	397
London Retail Warehouses	22	11	380	171
Rest of London Offices	35	31	317	234
Distribution Warehouses	36	29	317	211
Other Property	64	86	182	268
Central London Shops	20	35	192	226
Industrial Parks	46	29	231	142
London Industrials	33	22	179	121
Department / Variety Stores	5	80	27	264
London Shopping Centres	4	3	162	102
Rest of London Shops	19	65	72	105
Supermarkets	4	18	35	94
Other Retail	10	47	23	103

It is also true that, though transactions rates in Central London offices have generally run below those in other office markets, they have been less variable from peak to trough – in other words there has been less of a relative drop from high levels of liquidity in a rising market to low levels of liquidity in a falling market.

4. Transactions in Direct Property – Segments, Types, Investors

4.2 Town level market size & transactions activity

IPD results offer the most extensive available picture of the total investment market and trading activity at the local market level. For smaller market areas than those considered above, the reservations surrounding the use of IPD as an overall market indicator become stronger. The extent to which IPD covers the whole of the investment market, how well it represents the whole of the market, and the extent of inter-trading between investors covered by the system, will all vary from town to town, and introduce unquantifiable biases into the comparisons.

Measured simply by an indicator of market size – IPD total properties and capital value in each town – the UK investment stock comprises around 3,200 'high street' shop units, stores and supermarkets, 1,300 shopping centres and retail warehouses, 3,300 office buildings and 2,800 industrial properties. The analysis of the retail market in this section will be limited to the 'high street' category, since shopping centres and retail warehouses are commonly seen as a national market, and the large lot sizes in those categories distort comparisons across small market areas.

The investment stock is quite highly concentrated geographically. The 50 largest towns (defined by Local Authority Districts) within each sector account for between 50% and 80% of the total number of properties, and between 60% and 90% of total capital value. For both high street retails and offices, a fifth of total capital value is accounted for by Westminster alone; for offices, Westminster and the City together account for 40% of national capital value.

There are, therefore, quite small numbers of local markets with large property counts or capital values (Table 10). Only around 60 towns contain more than 10 retail or industrial properties, and only 30 more than 10 office properties. Across the country as a whole, IPD represents around 40% of the total investment market, so as a rule of thumb the figures show in the table might be grossed up by a factor of 2.5. to give a crude estimate of local market sizes.

It is commonly assumed that larger markets are more 'liquid' in the sense that the transactions rate of the property stock will be higher. This is not the case. Analysis shows that transactions rates (either by percentage of properties or capital value transacted) are, if anything, lower in larger markets, though the relationship is not statistically significant in any of the three sectors. Though individual towns of similar sizes can show wide differences in transactions rate (see below), overall the concentration of transactions is similar to the concentration of the total stock.

Table 9: **Concentration of investment stock by Local Authority District end-2002**

	No of Districts with number / value of Properties in Size Bands		
	High Street Retail	Office	Industrial
Number of properties:			
Over 100	1	2	0
51 to 100	4	11	5
26 to 50	21	13	14
10 to 25	61	32	65
1 to 10	205	129	203
Total capital value			
Over £1,000 m	1	4	0
500 to 1000 m	1	9	2
100 to 500 m	30	35	40
20 to 100 m	75	58	108
0 to 20 m	185	81	137
Total	**292**	**187**	**287**

Source: IPD

4. Transactions in Direct Property – Segments, Types, Investors

Table 10: **Concentration of transactions by District, average 2000-2002**

	No of Districts with number / value of Properties in Size Bands		
	High Street Retail	Office	Industrial
Number of properties transacted			
Over 20	2	5	0
11 to 20	4	9	6
6 to 10	46	17	19
1 to 5	212	112	200
Total capital value transacted			
over £100 m	1	12	1
£50 to £100 m	3	10	7
£10 to £50 m	55	50	63
0 to £10 m	204	71	154
Total	**264**	**143**	**225**

Source: IPD

Over the last three years, there were only 52 towns averaging more than five high-street retail transactions, and less than 35 towns with more than five office or industrial transactions. In each sector, there were only 60-70 towns with capital value transacted averaging over £10 million per year (taking the ratio between total Property Data transactions and total IPD transactions, above a rough grossing-up factor to apply to the size band figures would be 1.4).

To give a flavour of the results on transactions rates for specific towns, combined with indicators for market size and transactions volumes already discussed, Tables 11 to 13 list the largest towns in each sector (ranked by 2002 capital value) with a range of transactions activity indicators. The general comments below are based on analysis of the full sample of towns in each sector, over both the three year periods shown in the tables and ten years.

There are large differences in transactions rates across towns. In the retail sector, among the top 40 listed rates run from less than 5% transactions by capital value to over 25%. For offices, the range runs from 10% to 30% per year, and for industrials from 6% to 50%.

Perhaps contrary to the conventional wisdom, there is no significant relationship between simple market size and the rate at which the investment stock is traded. This is true across all three market sectors, and has been tested on results for the last three years and ten years. There is a slight but statistically very weak tendency for the larger market areas to show lower transactions rates measured by both number of properties and capital value transacted.

Nor is there any identifiable association between regional location or town type and rate of transactions. Neighbouring or similar locations – such as the major provincial retail cities, or M25 office satellites – can show widely varying transactions rates.

The one identifiable factor which does go some way toward explaining differences in transactions rates is the net flow of money into or out of local markets. Across retail towns, weightings appear to be adjusted primarily by varying the rate of purchasing. There is a very strong correlation between the purchasing rate and the net rate of investment over the last ten years, and no correlation between the sales rate and net investment. Overall, therefore, the transactions rate correlates at 0.89 with the rate of net investment.

4. Transactions in Direct Property – Segments, Types, Investors

Table 11: **High Street Retail - market size & transactions indicators**

Town (LAD)	Market Size End-2002		Transactions Indicators Average 2000-2002			
	No of Properties	Capital Value	Properties Transacted No	Capital Value Transacted	% Turnover by Properties	% Turnover by Cap Value
Westminster	241	2,608	41	265	15.9	10.2
Kensington and Chelsea	70	660	7	55	9.7	8.6
Glasgow	72	465	21	77	26.7	15.9
Edinburgh	78	450	18	45	21.7	9.5
Manchester	48	413	5	14	10.6	3.8
Birmingham	26	365	6	18	20.7	5.3
Leeds	48	299	9	43	18.1	14.3
Chester	46	244	8	34	16.3	14.4
Sheffield	40	212	10	28	23.0	13.7
Nottingham	39	208	4	17	10.8	8.2
Cardiff	24	201	2	16	7.1	8.5
Kingston upon Thames	49	201	9	21	16.6	11.4
Newcastle upon Tyne	25	190	3	19	10.7	10.3
Liverpool	37	189	8	24	19.5	12.9
Guildford	47	186	7	23	14.7	12.8
Reading	43	164	9	38	20.6	24.5
York	55	156	11	33	17.3	18.8
Norwich	44	153	6	12	11.9	7.3
Bristol	30	145	8	23	25.5	16.3
Cambridge	30	137	6	25	20.2	19.2
Leicester City	24	128	6	16	20.9	14.2
Exeter	24	122	6	20	22.9	15.5
City of London	15	116	6	29	32.7	26.6
Bournemouth	23	115	7	8	24.7	7.2
Oxford	23	115	3	27	13.7	20.7
Richmond upon Thames	28	107	5	11	15.4	10.3
Cheltenham	28	106	7	19	22.4	17.6
Bath & North East Somerset	32	103	5	22	13.0	19.6
Plymouth	30	102	8	14	23.2	13.3
Derby City	18	101	3	40	18.2	40.1
Thamesdown (Swindon)	14	101	4	15	21.6	16.1
Bromley	24	101	6	13	20.5	12.1
Belfast	12	91	4	14	26.1	14.0
Southampton	29	90	5	8	14.4	8.4
Brighton and Hove	25	86	10	16	32.2	18.0
Windsor and Maidenhead	27	85	13	21	34.9	21.2
Basildon	6	84	1	9	11.1	12.0
Ipswich	25	79	8	12	29.1	14.8
Merton	7	78	1	1	12.5	1.1
Portsmouth	27	76	4	7	14.8	9.2

Source: IPD

4. Transactions in Direct Property – Segments, Types, Investors

Table 12: **Offices - market size & transactions indicators**

Town (LAD)	Market Size End-2002		Transactions Indicators Average 2000-2002			
	No of Properties	Capital Value	Properties Transacted No	Capital Value Transacted	% Turnover by Properties	% Turnover by Cap Value
Westminster	594	7,141	108	1,236	16.9	16.5
City of London	423	6,662	74	1,583	16.7	22.4
Reading	66	1,162	11	123	16.6	10.7
Islington	54	1,081	10	277	21.2	23.7
Edinburgh	92	884	29	97	27.6	10.7
Manchester	76	851	25	202	32.6	25.7
Hillingdon	51	830	8	93	15.8	10.5
Camden	51	813	13	140	21.5	17.6
Birmingham	66	728	18	196	28.2	31.2
Hounslow	40	612	9	97	23.5	15.6
Glasgow	56	534	23	144	36.2	27.9
Bracknell Forest	50	530	10	95	19.2	16.7
Windsor and Maidenhead	51	526	17	165	28.4	28.2
Leeds	63	463	18	102	25.6	22.6
Tower Hamlets	19	452	6	108	28.6	22.2
Hammersmith and Fulham	25	444	5	45	17.9	10.3
Watford	33	425	7	52	19.4	12.6
Bristol	67	422	17	64	23.5	17.1
Southwark	40	345	6	73	15.0	23.2
Slough	47	314	11	116	22.8	27.9
Solihull	30	301	11	87	33.0	29.0
Milton Keynes	42	291	6	42	14.2	14.4
Cambridge	38	289	9	42	24.8	16.1
Runnymede	26	280	5	61	19.3	19.7
Kensington and Chelsea	15	259	3	17	17.0	6.5
Welwyn Hatfield	17	255	3	29	19.2	16.9
Reigate and Banstead	32	248	4	26	12.9	10.7
Elmbridge	23	248	6	40	26.9	18.9
Crawley	31	239	5	40	15.6	17.3
Woking	27	233	5	40	17.5	17.0
Surrey Heath	16	230	2	8	10.2	3.5
Spelthorne	24	226	5	40	17.5	16.1
Dacorum	18	225	4	18	24.5	8.0
Wycombe	25	219	6	70	23.2	30.5
Oxford	28	174	6	40	23.0	28.9
Guildford	18	160	4	24	19.4	13.8
Hart	23	157	4	20	16.4	12.0
Mole Valley	18	155	2	14	8.9	9.2
South Gloucestershire	20	146	3	21	15.2	14.3
Croydon	16	142	7	37	36.8	24.1

Source: IPD

4. Transactions in Direct Property – Segments, Types, Investors

Table 13: **Industrial - market size & transactions indicators**

Town (LAD)	Market Size End-2002		Transactions Indicators Average 2000-2002			
	No of Properties	Capital Value	Properties Transacted No	Capital Value Transacted	% Turnover by Properties	% Turnover by Cap Value
Hillingdon	40	511	8	121	19.8	24.5
Birmingham	52	509	7	49	15.2	11.1
Milton Keynes	75	443	12	68	16.8	16.9
Hounslow	36	349	5	41	14.8	12.2
Brent	33	321	7	41	17.2	12.2
Northampton	41	316	8	58	19.7	21.2
Leeds	69	309	14	60	21.0	22.3
Reading	33	307	5	29	15.2	9.4
Bristol	52	299	10	64	20.9	24.9
Ealing	32	295	4	17	10.8	5.5
Manchester	50	276	14	72	28.1	28.3
Warrington	53	240	9	28	16.6	11.5
Thamesdown (Swindon)	38	228	6	54	15.3	23.8
Dartford	19	227	3	42	17.4	22.2
Crawley	32	196	7	34	21.0	16.5
Harborough	13	187	2	25	18.4	15.3
Spelthorne	19	180	1	11	5.1	6.0
Greenwich	16	168	5	31	35.0	23.5
Enfield	16	162	3	28	22.7	20.7
Slough	20	157	4	14	25.0	9.3
Rochdale	42	156	2	24	5.6	15.1
Croydon	26	156	4	19	14.5	12.7
Oxford	19	154	3	22	19.6	16.7
Dacorum	27	148	6	46	22.4	31.7
Wycombe	12	139	1	2	7.7	1.5
Wakefield	24	137	9	58	38.4	45.2
Harlow	16	133	5	42	33.3	34.2
Bexley	17	132	4	29	30.8	27.9
Solihull	9	132	2	18	18.5	14.1
West Lothian	20	123	6	30	29.8	25.4
Cherwell	20	120	3	17	18.9	17.1
Southampton	16	120	4	23	24.4	21.0
Daventry	9	120	1	5	8.3	4.4
Edinburgh	23	119	7	26	25.3	21.2
Coventry	24	118	6	41	26.5	48.4
Welwyn Hatfield	13	116	1	2	7.5	1.9
Basingstoke and Deane	21	116	2	8	11.5	6.9
Epping Forest	5	112	1	6	30.0	8.7
Glasgow	32	106	15	29	45.9	28.7
Wandsworth	13	105	1	3	7.7	2.6

Source: IPD

4. Transactions in Direct Property – Segments, Types, Investors

For the office and industrial sectors, town weightings seem to be adjusted by a combination of higher or lower purchasing rates coupled with opposite shifts in the rate of sales. In these sectors, therefore, the correlation between overall transactions rates and net investment rates is still positive but weaker, at 0.21 for offices and 0.28 for industrials.

4.3 Transactions rates and lot sizes

Within each of the major markets, it might be expected that transactions rates would be higher for small lot sizes, and lowest for the largest lot sizes. There are likely to be more buyers, and, perhaps, also less complexity in due diligence, for small buildings than for large, especially in segments like shopping centres and London offices where lot sizes at the top end of the size range will limits the number of potential investors.

Table 14 splits transactions rates within each of the main market segments into four size bands. The size bands have been selected to divide the total IPD stock within each segment into bands containing roughly equal numbers of properties.

It is clear that variation in the transactions rates across lot sizes are very heavily influenced by the recent asset allocation preferences of the major investors covered by IPD. For the smallest bands of standard shops, for example, there have been very high rates of sales and low rates of acquisition, as fund managers have targeted both a reduction in numbers and portfolio weights in that segment.

For most segments, the results show the expected decline in transactions rate with rising lot size, mainly due to higher rates of sales for smaller / lower value buildings. This variation in sales rates may be associated with investors' use of trading as to manage obsolescence, and to reduce portfolio management costs. On the first count, older buildings are being sold off as obsolescence reduces values, and new buildings bought in at higher values. On the second count, portfolios have over many years been systematically concentrated into smaller numbers of higher-value buildings.

There are, however, some notable exceptions where transactions rates do not fall with rising lot size. For both retail warehouses and offices in Central London and Rest of London, transactions rates are no lower for the larger lot sizes. This may perhaps reflect the popularity of these markets in recent years for a wide range investor types.

4. Transactions in Direct Property – Segments, Types, Investors

Table 14: **IPD Transactions Rates by Lot Size Bands – 2000-2002**

	Number of Transactions		Value of Transactions		Total "Transactions" Rate	
	Purchases %	Sales %	Purchases %	Sales %	Number %	Value %
Standard Shops – Central London						
Smallest	5.8	10.5	4.6	5.7	16.3	10.3
Medium-Small	3.3	12.8	1.9	7.6	16.1	9.5
Medium-Large	5.0	9.3	3.1	5.5	14.3	8.7
Largest	7.0	7.0	3.6	3.2	14.0	6.7
All Lot Sizes	5.3	9.9	3.4	4.0	15.2	7.4
Standard Shops - Rest of London						
Smallest	2.3	39.5	2.9	31.6	41.9	34.5
Medium-Small	5.5	20.8	3.4	12.7	26.3	16.1
Medium-Large	6.8	11.0	4.6	6.7	17.9	11.3
Largest	5.5	7.8	3.5	3.2	13.3	6.8
All Lot Sizes	5.2	18.2	3.7	5.4	23.4	9.1
Standard Shops - South East						
Smallest	6.6	48.5	4.4	29.4	55.1	33.8
Medium-Small	5.6	22.6	3.6	13.8	28.1	17.4
Medium-Large	5.9	11.0	3.7	6.7	16.9	10.3
Largest	7.5	8.0	4.9	4.7	15.5	9.6
All Lot Sizes	6.4	21.8	4.4	7.2	28.2	11.7
Standard Shops - Rest of UK						
Smallest	4.8	34.4	3.1	21.9	39.1	25.0
Medium-Small	6.2	22.0	3.9	13.6	28.2	17.5
Medium-Large	7.9	15.9	5.0	9.4	23.7	14.4
Largest	8.4	8.2	4.6	4.4	16.6	9.0
All Lot Sizes	6.8	20.1	4.5	6.6	26.9	11.1
Shopping Centres						
Smallest	12.7	11.5	12.9	7.7	24.2	20.6
Medium-Small	8.6	15.9	9.2	9.5	24.5	18.7
Medium-Large	7.4	14.0	7.9	7.6	21.4	15.5
Largest	6.7	8.4	3.8	2.4	15.1	6.2
All Lot Sizes	8.9	12.4	5.2	4.0	21.3	9.2
Retail Warehouses						
Smallest	6.8	11.9	7.3	7.6	18.8	15.0
Medium-Small	9.1	9.7	8.4	5.6	18.8	14.0
Medium-Large	16.3	11.9	16.4	7.4	28.1	23.9
Largest	18.0	12.0	19.2	6.8	30.0	26.0
All Lot Sizes	12.8	11.4	17.1	6.8	24.1	24.0
Standard Offices – Central London						
Smallest	2.3	10.8	2.9	7.1	13.1	9.9
Medium-Small	5.7	11.0	5.3	6.7	16.7	12.0
Medium-Large	7.5	12.7	7.0	7.6	20.2	14.6
Largest	8.6	10.0	8.3	6.3	18.5	14.6
All Lot Sizes	5.9	11.1	7.8	6.6	17.0	14.3

4. Transactions in Direct Property – Segments, Types, Investors

	Number of Transactions		Value of Transactions		Total "Transactions" Rate	
	Purchases %	Sales %	Purchases %	Sales %	Number %	Value %
Standard Offices - Rest of London						
Smallest	6.7	13.9	6.4	8.5	20.6	14.9
Medium-Small	10.1	11.8	9.5	6.5	21.9	16.0
Medium-Large	14.7	11.1	13.2	6.9	25.8	20.0
Largest	9.0	6.6	7.9	4.0	15.6	11.9
All Lot Sizes	10.1	10.4	8.9	4.7	20.5	13.6
Standard Offices - South East						
Smallest	5.7	27.8	6.2	16.4	33.5	22.6
Medium-Small	6.5	14.4	6.1	8.7	20.9	14.9
Medium-Large	9.0	8.6	7.8	4.9	17.5	12.7
Largest	10.3	8.8	8.5	5.4	19.1	13.9
All Lot Sizes	7.8	15.1	7.9	6.3	22.9	14.2
Standard Offices - Rest of UK						
Smallest	10.2	35.2	10.6	20.1	45.4	30.8
Medium-Small	8.6	16.8	8.3	9.9	25.4	18.2
Medium-Large	10.3	14.8	9.7	9.1	25.1	18.8
Largest	12.3	11.5	11.3	6.0	23.8	17.3
All Lot Sizes	10.3	20.3	10.5	7.8	30.6	18.3
Industrial – London						
Smallest	7.8	5.0	10.1	4.5	12.8	14.6
Medium-Small	10.4	7.6	8.6	4.7	18.0	13.2
Medium-Large	10.7	9.7	9.7	5.9	20.3	15.6
Largest	8.2	5.4	8.1	3.0	13.7	11.1
All Lot Sizes	9.2	6.8	8.4	3.6	16.1	12.0
Industrial - Southern England						
Smallest	11.4	11.8	10.1	7.0	23.1	17.1
Medium-Small	10.5	8.0	9.6	4.8	18.5	14.3
Medium-Large	10.2	7.3	9.4	4.2	17.5	13.6
Largest	8.8	7.7	8.5	4.1	16.5	12.7
All Lot Sizes	10.1	8.5	8.9	4.3	18.6	13.2
Industrial - Rest of UK						
Smallest	21.1	15.7	19.5	8.1	36.8	27.5
Medium-Small	16.0	9.5	16.2	5.7	25.5	21.9
Medium-Large	11.0	6.8	10.0	4.0	17.8	13.9
Largest	13.0	7.4	11.3	4.1	20.4	15.4
All Lot Sizes	15.9	10.5	12.3	4.6	26.4	16.9

4. Transactions in Direct Property – Segments, Types, Investors

4.4 Transactions rates by investor type

The ability to trade is of greater importance to some types of investor than others. Unitised funds will have to trade to match inflows and outflows in their units. Trader-developers among property companies have to trade to recycle funds through their development programmes. At the other end of the spectrum, it might be expected that investors who can control the allocations of money to their portfolios, and hold for long term returns, will trade more lightly.

Table 15: **IPD Transactions Rates by Investor Type**

	Number of Transactions		Value of Transactions		Total "Transactions" Rate	
	Purchases %	Sales %	Purchases %	Sales %	Number %	Value %
Average Rates From 1982 to 2002						
Insurance Funds	3.8	10.0	4.9	5.4	13.9	10.2
Segregated Pension Funds	6.8	9.5	6.6	6.5	16.3	13.2
Pooled Funds	12.1	11.2	12.4	9.8	23.3	22.2
Property Company	7.0	13.7	7.7	6.2	20.7	13.9
Traditional / Charity	3.5	6.2	3.8	6.3	9.8	10.1
Total	**6.6**	**9.9**	**6.8**	**6.3**	**16.5**	**13.1**
Average Rates From 2000 to 2002						
Insurance Funds	5.3	16.5	5.9	9.9	21.7	15.8
Segregated Pension Funds	6.1	12.9	6.9	7.6	18.9	14.5
Pooled Funds	14.0	14.0	18.4	9.3	28.0	27.7
Property Company	11.8	31.4	6.4	14.3	43.1	20.8
Traditional / Charity	1.1	3.6	2.7	3.2	4.6	5.9
Total	**8.4**	**14.4**	**9.0**	**9.4**	**22.8**	**18.3**

The IPD December-valued databank used in the analysis is dominated by institutional investors in three categories – insurance, pensions and pooled funds – who made up 90% of the total value of assets covered at the end of 2002. Other types of investor are, therefore, fairly lightly represented in the available data and may not be typical of property companies and traditional institutions.

Transactions rates across the investor types, however, fall in line with the expected relativities (Table 15). Over both the whole period and over the last three years, pooled funds have been more actively traded than insurance and segregated pension funds – though the gap has narrowed since the early 1990s has those latter groups of investors have adopted a more active management style.

Property companies also show relatively high transactions rates – in recent years mainly through a high rate of sales, some into special purpose vehicles for securitisation or into private equity vehicles as part of strategies to reduce equity market exposure.

4. Transactions in Direct Property – Segments, Types, Investors

4.5 Transactions rates by portfolio size

Given the variation in transactions rates by lot size and investor type, we would expect to find higher rates of trading among smaller portfolios which are more likely to fall in the pooled fund category, and to hold smaller buildings.

Table 16: **IPD Transactions Rates by Portfolio Size (quintiles each year)**

	Number of Transactions		Value of Transactions		Total "Transactions"	
	Purchases %	Sales %	Purchases %	Sales %	Number %	Value %
Average Rates From 1981 to 2002						
Smallest	15.3	9.9	17.1	11.0	25.2	28.0
Small-Medium	10.5	8.0	11.8	8.2	18.5	20.0
Medium	9.7	8.6	11.1	6.4	18.3	17.5
Medium-Large	6.9	8.1	8.0	6.4	15.0	14.5
Largest	4.1	8.7	4.8	5.2	12.8	9.9
Total	**6.0**	**8.6**	**6.0**	**5.6**	**14.7**	**11.6**
Average Rates From 2000 to 2002						
Smallest	7.5	15.8	11.4	13.1	23.2	24.5
Small-Medium	10.2	13.3	12.4	9.0	23.5	21.4
Medium	9.9	14.3	14.6	7.8	24.1	22.3
Medium-Large	11.3	11.0	12.0	8.0	22.3	20.0
Largest	5.9	14.3	6.8	8.3	20.2	15.1
Total	**8.3**	**13.5**	**8.7**	**8.3**	**21.8**	**17.0**

Table 16 is based on transactions rates calculated each year for portfolios divided equally in number across five size bands. Over time, each size band covers a varying population of portfolios, and the results may contain some bias from the fact that small portfolios are more likely to grow that larger portfolios.

Over the full 22 year period, the results show a consistent fall in transactions rate with increasing portfolio size. As found with the division by investor type, however, the variation in transactions rates has narrowed. On results for the last three years, larger portfolios have become much more actively traded, so there is little difference between the largest and smallest in transactions rates by number of properties, and less difference in transactions rates by value.

4. Transactions in Direct Property – Segments, Types, Investors

Variations in Transactions Rates – Summary

- **The data show large variations in transactions activity across markets, lot sizes, investors and portfolio sizes. Interpreting the results is faced with the difficulty that, because we can view only that fraction of the market represented by IPD, transactions rates at any point in time are closely connected to the investment strategies being pursued by a particular set of investors.**
- **Across market segments, in recent years annual transactions rates as a percentage of capital run from 12% (shopping centres) to 29% (retail warehouses).**
- **Some markets generally seen as highly liquid – such as standard shops and Central London offices – do not rank highly in terms of transactions rates, but do generate large volumes of deals simply by virtue of market size.**
- **The expected link between smaller lot size and higher transactions rates appears in some but not all markets. Outside London, for example, transactions rates have been markedly higher for small shops and offices (largely due to high rates of sales). Other market markets such as Central London offices and retail warehouses show little variation in transactions rates with lot size.**
- **Across types of investor, as would be expected pooled funds and property companies have shown higher transactions rates than direct institutional portfolios, and smaller portfolios show higher transactions rates than large portfolios. These differences have however narrowed significantly in recent years.**

5. Transactions Rates for UK Investment Vehicles

Low liquidity in direct real estate markets and the higher liquidity assumed to be available in pooled or securitised vehicles is a dominant factor in the desire to create REIT-type structures in the UK. This section examines available statistics for UK investment vehicles. Table 17 compares transactions rates for the direct market (using the IPD turnover measure, with the reservation that this is an overstatement) with those for indirect investments via PUTs and property shares.

For PUTs, the overall figures show trading in units both through redemptions with fund managers and matched deals in the 'secondary' market intermediated by banks, as a percentage of the total value of issued units. Through the last six years, trading in this secondary market has been a more important source of liquidity than direct dealings with fund managers (Figure 18).

Across the investment types, there is a very wide range in transactions rates. Though PUTs offer potentially greater liquidity than direct investment, that potential seems to have been little used. This may reflect high bid-offer spreads applied to redemptions of units by managers, or the difficulty in arranging back to back deals through the secondary market. It may also reflect the nature of investors in PUTs – mostly small pension funds seeking a low exposure to real estate, through pooled vehicles. These investors are perhaps less likely to vary their target weights than larger investors with more active interests in real estate. Investments in pooled funds, moreover, mean that they can access the diversification potential, shifts in investment strategy and management of obsolescence within those funds provided by the fund managers without trading in units.

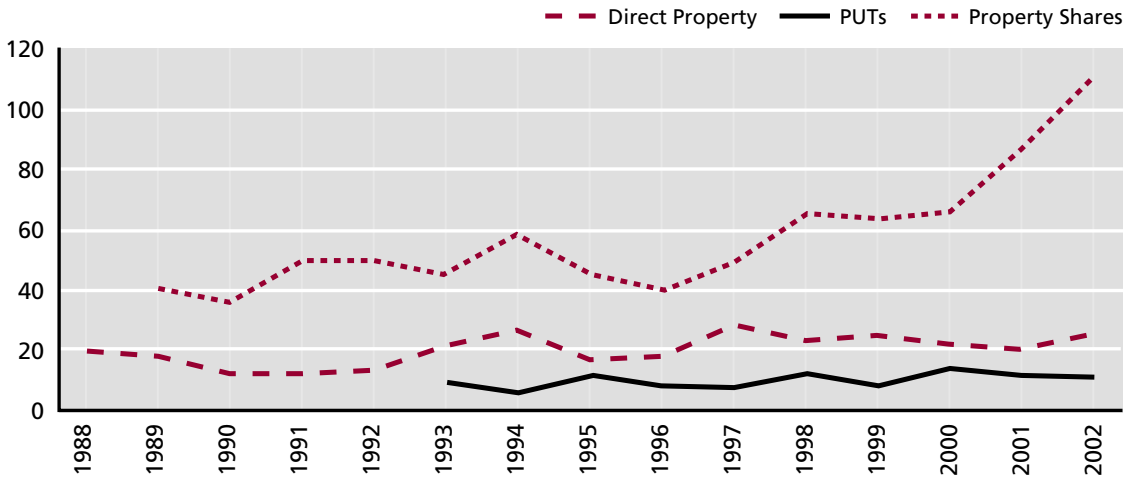
Table 17: **Transactions rates by investment route - % pa**

	Direct Property (IPD Turnover)	PUTs (APUT Transactions %)	Property Shares (FTSE Transactions %)
1988	16.8	..	
1989	14.7	..	38.0
1990	9.4	..	33.7
1991	9.8	..	47.6
1992	10.6	..	47.2
1993	17.5	6.8	42.3
1994	23.2	2.9	56.4
1995	13.4	8.5	42.7
1996	15.4	5.7	37.9
1997	24.7	5.0	47.0
1998	20.8	9.8	63.5
1999	21.9	6.2	62.3
2000	20.1	10.8	64.6
2001	17.0	8.7	84.8
2002	21.6	8.0	109.5
Average 93-02	19.6	7.2	61.1
Average 00-02	19.6	9.1	86.3

Sources: IPD, APUT, FTSE

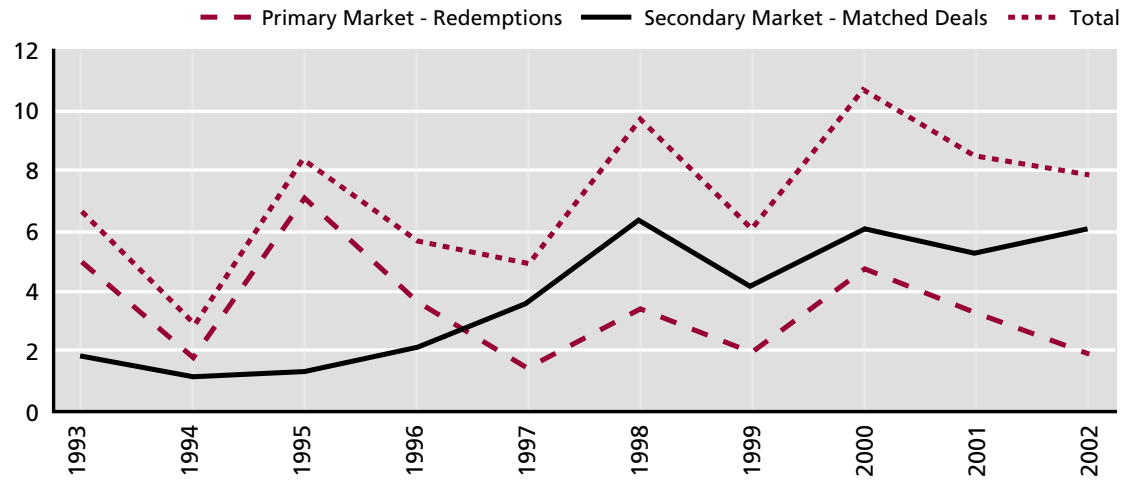
5. Transactions Rates for UK Investment Vehicles

Figure 17: **Transactions rates by investment route - % pa**



Sources: as Table 12

Figure 18: **PUT transactions as % of issued Units - % pa**



Trading activity in property shares has been, unsurprisingly, higher than for the other investment routes, and has increased dramatically since 1998.

Variation in transactions rates within across types of vehicle show surprisingly little correspondence. Year by year variation in direct transactions and transactions in property shares are moderately correlated (at 0.48) – though it is notable that transactions in shares shown hardly any of the variation with the cycle so strongly evident in the direct market through the late 1980s boom and early 1990s slump. Transactions rates in PUTs are weakly correlated with those for property shares (0.34) and negatively correlated with direct transactions (-0.35).

5. Transactions Rates for UK Investment Vehicles

Transactions Rates for UK Investment Vehicles – Summary

- **Reliable information on transactions activity is available for direct investors, property unit trusts and listed property companies. For newer forms of vehicle – notably Limited Partnerships – there is as yet little evidence on trading activity.**
- **As would be expected, listed property companies show a high rate of share transactions compared direct and unitised investments. Their transactions rates have risen markedly since the late 1990s.**
- **Transactions rates in property unit trusts appear well below those in direct property, and have not shown an upward trend. This may reflect a base of mostly small investors less inclined to very their exposure to real estate, and the fact that trading to re-balance portfolios and offset obsolescence is undertaken within the unit funds rather than directly by their investors.**

6. International comparisons

If illiquidity is held to be one of the main drawbacks of direct real estate investment, high liquidity in the UK direct market is held to be one of its major attractions against other countries. Readily available evidence to back this up is thin, though we are searching for further data sources. This section gives a brief comparison of transactions rates in direct and securitised real estate markets for a small set of countries. Differences in institutional market structures and definitional differences mean that interpretations of these cautions must be cautious and provisional.

6.1 Direct real estate investment

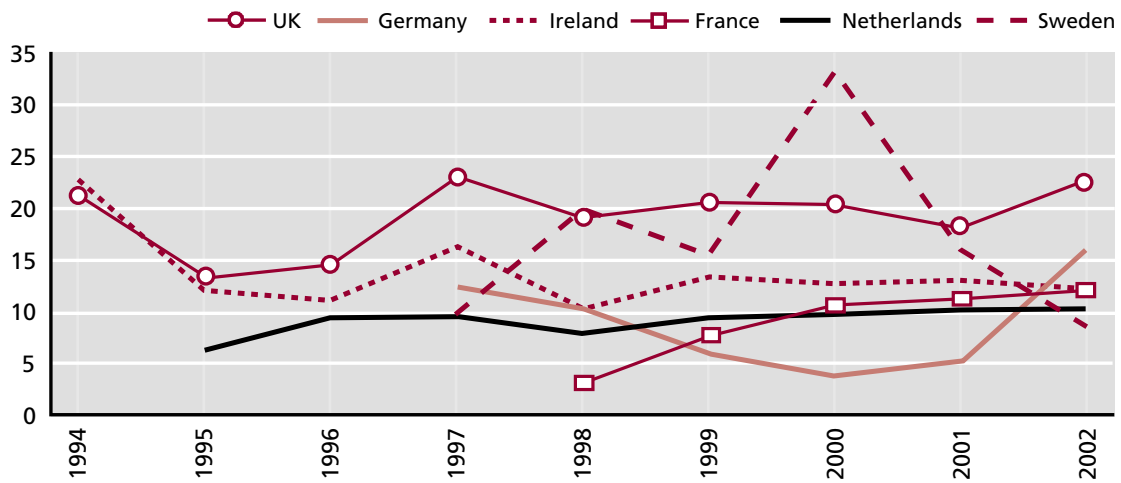
For the direct markets, the most consistent publicly available source is IPD's records which, for 2002, covered ten European markets (Table 18 & Figure 19). For all countries, the transactions rates shown are subject to the same reservations as the IPD figures for the UK. They represent only a fraction of the total investment market, and may therefore be heavily biased if the investors covered by IPD are rapidly changing their share of that total market.

Cross-national comparisons may also be distorted by differences in IPD's coverage of national markets, and the mix of investor types represented in their samples. Total transactions rates will be overstated to the extent that there is inter-trading between the investors covered by IPD and, as in the UK, the level of that inter-trading is unknown.

Table 18: **IPD Transactions rates by value - European markets, 2002**

	Purchases %	Sales %	Turnover %
UK	10.8	11.9	22.7
Spain	12.3	6.7	19.0
Germany	9.2	6.4	15.6
Ireland	2.6	9.1	11.7
France	5.7	5.9	11.6
Netherlands	3.7	5.6	9.3
Norway	4.3	5.0	9.3
Portugal	7.1	1.8	8.9
Sweden	1.8	6.3	8.1
Denmark	4.1	3.7	7.8

Figure 19: **IPD Turnover rates % of value – European markets**



6. International comparisons

Despite the qualifications, the major point of the comparison is clear. Against other countries, the UK appears to have a significantly higher rate of transactions in 2002, and has consistently had a higher rate of transactions than other countries for which a time series of results is available.

6.2 Indirect real estate investment

For the indirect markets, reliable evidence analysed to date is restricted to the US, Australia and UK (Table 19 and Figure 20). For all three markets, transactions rates in indirect real estate markets have trended upwards through the last ten years – especially strongly in the last two years. For the US REITS and Australian LPTs, this is in part a product of the rapid growth in size and maturity of those markets since the early 1990s.

It is perhaps surprising that the transactions rate in UK listed company shares has not only been consistently higher than in REITS and LPTs, but has moved further ahead of those maturing vehicles in the last few years. This is an issue for further investigation, but may reflect the higher participation of small private investors in the REIT and LPT markets who are holding fixed numbers of shares rather than seeking to actively manage their exposure. Equity market research (see Working Paper 1) suggests that retail investors face higher transaction costs and, hence, tend to have longer holding periods that professional investors.

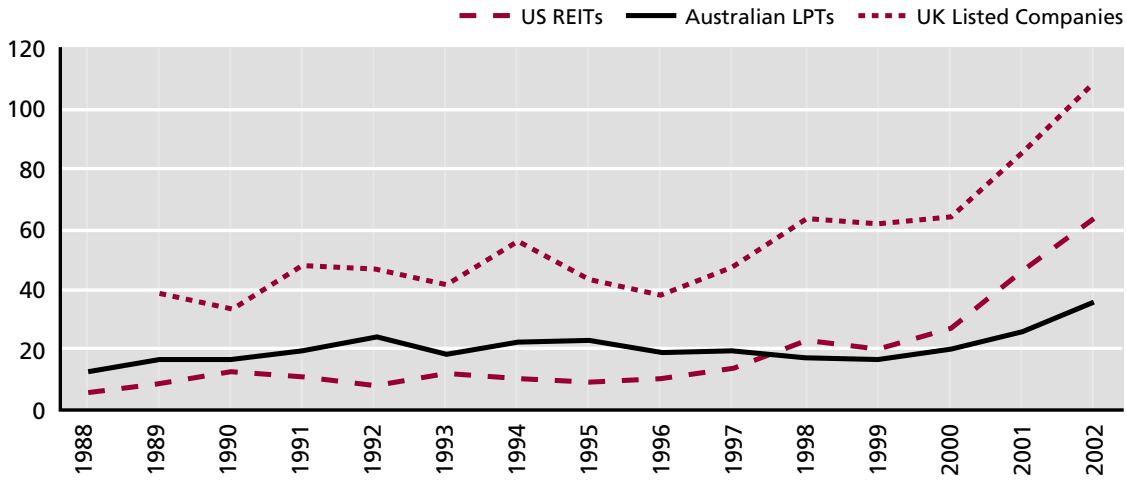
Table 19: **Transactions as % market capitalisation**

	US REITs	Australian LPTs	UK Listed Companies
1988	4.7	10.8	..
1989	6.3	14.8	38.0
1990	11.7	15.0	33.7
1991	9.6	18.3	47.6
1992	6.5	22.9	47.2
1993	10.0	16.6	42.3
1994	8.8	20.8	56.4
1995	7.0	21.5	42.7
1996	8.9	17.6	37.9
1997	12.4	18.2	47.0
1998	20.8	17.7	63.5
1999	18.6	17.6	62.3
2000	25.0	19.5	64.6
2001	44.7	25.5	84.8
2002	61.5	34.7	109.5

Sources: UBS, Datastream

6. International comparisons

Figure 20: **Transactions Rates as % Market Capitalisation**



Sources: as Table 14

International Comparisons – Summary

- **For direct investments, IPD evidence suggests that UK real estate markets have shown a higher rate of transactions that other European markets.**
- **For indirect investments, US REITs and Australian LPTs register lower rates of share turnover than UK listed property companies, though there is a well established upward trend in transactions rates for the latter two.**
- **The relatively low rates of transactions for REITs and LPTs may reflect a large proportion of small private investors more likely to take buy and hold positions, and the relatively limited amount of take-over activity in those markets by comparison with the UK.**

7. Summary & Recommendations

This section reviews the main findings of the report under two headings, incorporating suggestions on monitoring and further research:

- **The availability and adequacy of information to track transactions activity.**
- **The conclusions which can be drawn from that information on variation in transactions over time, across types of property, types of investor and types of vehicle.**

7.1 The evidence on transactions

As noted throughout the report, there are several separate sources of data on transactions activity in UK commercial real estate, all subject to reservations and qualifications. Problems of definition and measurement mean that, with current information, we can do no better than bracket best estimates of transactions rates and variation in those rates over time. Because the different indicators present broadly the same picture of investment market activity, we can be reasonably confident that the range estimates of transactions rates, and rising trend in transactions rates, identified in Section 3, are correct.

Nonetheless, there is much room for improvement in the quality of information. Property Data's transactions databank is a recent innovation, which will gain in value as the length of time series and depth of coverage increase. Further refinements in the classification of deals – such as the country of origin of buyers and sellers, more detail on the types of buyer and seller to pick out important categories such as Limited Partnerships and collective private vehicles – would add a lot to the value of the analysis. The IPF should encourage developments of the Property Data system along these lines.

If, from this source, we may be approaching a good coverage of transactions activity, the lack of equally robust and detailed figures on the size and structure of the total investment market will still limit our ability to track transactions activity over time, and compare transactions rates across markets.

Though various research sources produce estimates of the size of the market, the lack of a widely disseminated consensus figure remains a conspicuous gap in market information – particularly when, as now, it is clear that the size and make up of the investment market is shifting rapidly. We therefore recommend that the IPF should seek to establish, and update, well-founded and more detailed figures on investment market size and structure.

IPD's record provides by far the most useful evidence on trends in transactions over time. Interpreting that record is, however, seriously compromised by biases in the figures arising from inter-trading between IPD's clients, and changes in IPD coverage over time. We recommend that IPD should be encouraged to improve information on buyers and sellers in its transactions record, and to determine the degree of double-counting in its historic records.

7. Summary & Recommendations

7.2 Transactions and liquidity

The overall headline findings of the report present a favourable picture of the UK commercial real estate market. It has high rates of transactions activity by international standards, and by comparison with other elements of the UK property stock. Rising rates of transactions over time suggest steady gains in liquidity, though still subject to the danger of falling liquidity in depressed markets.

On points of detail, the analysis often supports the conventional wisdom. Transactions rates are generally higher for smaller lot sizes, for smaller portfolios, for pooled funds and property companies. But, as ever, there are exceptions and qualifications to the rules. Gaps in transactions rates across most of those dimensions appear to be narrowing, with less distinction in trading activity between categories and sizes of investor. In some markets – Central London offices, retail warehouses – large lot sizes, at least in recent years, have been as 'tradable' as small ones. How markets are ranked by 'liquidity' also depends which measure of transactions is employed. Central London offices, for example, are highly liquid only when measured by total volume of deals. On transactions rates, the market is not highly 'liquid'.

This report has concentrated on documentation rather than analysis. By establishing the basic facts, we hope to encourage further research into transactions phenomena. There appear to be two main areas for such research.

For the moment, the IPD record is the only details source from which transactions rates can be reliably compared across markets. Within that source more needs to be done to untangle notions of intrinsic total market 'liquidity' from the partial coverage of IPD's clients, and the impact on buying and selling rates of their investment strategies. This might be achieved through more classification of buyers and sellers within the IPD data as suggested above, coupled with cross-referencing with Property Data's broader market picture.

Finally, the transactions rate evidence marshalled in this report should be used as an input to the analysis of relationships between transactions, market pricing and market behaviour. There is a long list of questions in this area. Examples are: whether heavily and lightly traded markets are more or less volatile, or carry different liquidity premia; whether variations in transactions activity have more impacts on prices in some markets than others; and how far transactions rates can be linked to direct measures of liquidity like time on market and bid-ask spreads. Some of these points will be considered in other strands of the current IPF project, others identified in a research agenda to be set out at on completion of that study.

References

Arthur Andersen, Currie D and Scott A (1998) The Impact on the UK Economy of Increasing Stamp Duty on Commercial Property, *London: Report to the British Property Federation*

Callender M and Key T (1996) The Size of the UK Commercial Property Market
paper to The RICS Cutting Edge Conference

Collett, D., Lizieri, C. and Ward, C. (2003) Timing and Holding Periods of Institutional Real Estate
Real Estate Economics, 31,2, 205-222

Engle R F & Lange J (1997) Measuring, Forecasting and Explaining Time Varying Liquidity in the Stock Market
mimeo

Liquidity Risk and Real Estate:

A Quantitive Approach to Assessing Risk

Principal Authors:

Shaun Bond, Soosung Hwang

The Liquidity in Commercial Property Markets Research Team:

Shaun Bond#, Neil Crosby*, Soosung Hwang+,Tony Key+, Colin Lizieri*, George Matysiak*, Patrick McAllister* and Charles Ward*

* The University of Reading Business School
+ Cass Business School, City University
# Department of Land Economy, University of Cambridge

1. Introduction

In this paper, the role of liquidity in understanding property risk is examined. In particular it is shown how current quantitative measures of risk in property markets underestimate the actual risk faced by an investor. Combining the information from Working Paper 2 and measures of risk and return from the IPD index, it is calculated that the *ex ante* level of risk exposure for a real estate investor is around one and a half times that obtained from historical statistics. This additional risk arises from the uncertainty related to the marketing period when selling a property. These findings have important implications for mixed-asset portfolio allocation decisions.

In many areas of securities markets the time it takes to trade an asset is trivial and, consequently, the risks associated with uncertain trading periods are not usually considered. However, as has been argued extensively in the working papers from the IPF research project, the marketing period for large investment grade properties is highly variable and generally extends to several months or potentially years. This exposes the investor to an extended period of uncertainty.

The uncertainty of marketing period is due, *inter alia*, to the heterogeneous nature of real estate assets and their geographical specificity. Hence, the transaction process in real estate is characterised by high search costs and infrequent trading. In theoretical terms, the real estate transaction process is often represented by use of the "search models" used in labour economics. Because buyers have specific requirements, bids often arrive at irregular intervals and this makes it almost impossible for investors to sell a building at a predetermined time at what may be considered fair market value.

This problem is well known by real estate portfolio managers. Many of these managers will have their portfolio holdings regularly appraised by surveyors. However, because such a valuation is received, it does not necessarily mean that an investment manager could trade instantly at or near to that level of valuation assessed. Indeed, the RICS Valuation Guidelines recognise the importance of forming a valuation on the assumption of an appropriate marketing period.

The problem of marketing period uncertainty is further compounded in the development of real estate performance benchmarks. Indices such as that provided by the Investment Property Databank (IPD) are based on the regular valuation of investment grade property portfolios. However, it is almost impossible for a fund manager to trade property every month in a way that could replicate the index[1]. This is in contrast to index tracking funds often used in other asset markets.

The aim of this paper is to demonstrate how historic risk-return figures from a performance index, such as that provided by IPD, can seriously underestimate the risk of holding property because they do not take into account the uncertainty of the time that it takes to market a property. While it is well known that there are many problems in using a valuation-based index to measure the performance of the property market[2], little discussion has taken place on the size of the bias associated with marketing period uncertainty. This is in contrast to the extensive academic debate on "valuation smoothing" and cross-sectional aggregation in such indices.

[1] There are a number of difficulties in replicating such an index, such as compositional differences, in addition to the uncertainly of marketing period that make it impossible to match this index.

[2] See for instance Geltner, MacGregor and Schwann (2003) or Bond and Hwang (2003) for a summary.

1. Introduction

It is also hoped that such an analysis goes some way to explaining why the real estate portfolio-allocation puzzle exists. That is, when the historical data on the performance of commercial property markets is analysed, the risk-return profile of real estate (even adjusting for the problem of smoothing) is often seen to be far more appealing than bonds or equities. Yet is it known that institutional investors' holdings of property are well below what may be obtained from a mean-variance analysis based on historical data.

For example, in the United Kingdom data from Russell/Mellon CAPS shows the average allocation to real estate over the last 15 years was 2.5%. Academic studies of mixed-asset portfolios, by contract, often suggest optimal allocation ranges for real estate of between 10-20%.

The following section develops a theoretical model to explain the extent to which the ex-post data on property markets (such as that published from IPD), underestimates that *ex ante* risk exposure taken by property investors when they enter the market. The model is then applied to "correct" the bias inherent in the IPD to show how the risk faced by real estate investors is significantly larger than that obtained by the historical (*ex post*) analysis of past returns. However, as the holding period of an investment increases, the extent of the bias falls. While the model is complex statistically, it is consistent with our understanding of how the market works: section three provides an interpretation of the model.

2. The Analytic Model

When the risk-return relationship for an asset is analysed using historical data, the time points when assets are bought and sold is usually taken for granted. That is the data is recorded on an '*ex post*' or after the fact basis. However, in reality, an investor who tries to sell an illiquid asset does not know when it will actually be sold. That is, '*ex ante*' the uncertainty of selling time can be an additional risk to the investor. In this section, we investigate the effects of illiquidity by calculating risk and return of these two cases based on the study of Lin (2003).

The following analysis of the effects of illiquidity on the real estate pricing is based on Lin (2003). For simplicity it is assumed that returns on a property per unit of time follow a normal distribution with mean μ and variance σ^2, i.e., $r \sim N(\mu, \sigma^2)$. Suppose that a property is purchased at time 0, let t be the time that the property is held in the portfolio[3] (which is assumed to be fixed) and S be the time period from marketing to sale (marketing period). Once the selling time is known, that is $t+S$, the *ex post* expected return and variance are given by the expressions:

1

$$E^P(r_{t+S}) = E(r_{t+S} \mid t+S) = \mu(t+S)$$

$$Var^P(r_{t+S}) = Var(r_{t+S} \mid t+S) = (t+S)\sigma^2$$

where represents returns at time $t+S$ after holding the property for t periods and marketing it for S periods. The terms $E^P(r_{t+S})$ and $Var^P(r_{t+S})$, represent the *ex post* expectation of property returns and the *ex post* variance respectively. Most pricing models in finance assume that markets are liquid and investors buy and sell assets for the market price. In such a case, the use of historical data to investigate the relationship between risk and return may be valid, since the *ex post* expected return and variance are the same as *ex ante* ones (as will be explained below).

However, when the marketing time S is not known *ex ante*, the above analysis is inappropriate. In this case, using *ex post* variance does not represent the risk the investors actually face and this will bias the pricing of the asset. That is the uncertainty of selling point becomes an additional risk source. The time when the asset is sold is not known *ex ante*, and this implies that S is a stochastic variable. Lin (2003) shows that, in this case, the *ex ante* risk and return faced by the investor is measured as:

2

$$E^A(r_{t+S}) = \mu(t+\mu_s)$$

$$Var^A(r_{t+S}) = \frac{1}{t+S}\left[\frac{\mu^2}{\sigma^2}\sigma_s^2 + (t+\mu_s)\right] Var^P(r_{t+S})$$

where $\mu_s = E[s]$ (the expected time on the market) and σ_s^2 is the variance of S. Note that a mathematical proof of these results in contained in Appendix A.1.

[3] The holding period represents the term for which the investment is held. Perhaps the best way to understand this is to consider an investment partnership (such as a limited partnership) that is established for a finite period of time (e.g. five years) with the sole purpose of holding participating in an investment project and then being liquidated.

2. The Analytic Model

For illiquid markets where sales occur infrequently, it can be assumed that sales follow the Poisson distribution. With this assumption, the probability density function of S (waiting time until sale) is distributed as a negative exponential distribution with parameter λ,[4]

3 $$f(s) = \frac{1}{\lambda} exp\left(-\frac{S}{\lambda}\right)$$

where the mean and variance of S are λ and λ^2 respectively. In other words, both the expected marketing period and its standard deviation are λ (i.e. $E(s)=\lambda$) and $\sigma_s^2=\lambda^2$.

By substituting $\mu_s=\lambda$ and $\sigma_s^2=\lambda^2$ into equation (2), we simplify the expressions of the *ex ante* expected return and variance as:

4 $$E^A(r_{t,s}) = \mu(t+\lambda)$$
$$Var^A(r_{t,s}) = \frac{1}{t+s}\left[\frac{\mu^2}{\sigma^2}\lambda^2 + (t+\lambda)\right] Var^P(r_{t,s})$$

In order to compare the variance of the two measures it is necessary to assume that *ex ante* expected marketing period and *ex post* marketing period are equal, that is $\mu_s=\lambda=S$.[5] In this case it can be shown that

5 $$Var^A(r_{t,s}) = \left[\frac{\mu^2}{\sigma^2}\frac{\lambda^2}{(t+\lambda)}+1\right] Var^P(r_{t,s})$$

which implies that the *ex ante* variance is greater than the *ex post* variance, i.e $Var^A(r_{t,s}) > Var^P(r_{t,s})$.[6]

The Model – Summary

- **It is important to distinguish between *ex ante* and *ex post* expectations of risk and return;**
- **Selling time is often unknown and exposes investor to additional risks;**
- **Formal statistical models show that the *ex ante* risk for a real estate investment, when the time to sale is not know with certainty, is larger than the risk calculated based solely on historical data.**

[4] The usual expression of the negative exponential distribution function is $f(s)=\lambda^* exp(-\lambda^* s)$, where λ^* is the probability of selling per unit time. However, since we are more interested in the waiting time until sale (λ) rather than the probability of selling (λ^*), we use the distribution function as in equation (3).

[5] If not, the two expected returns in (1) and (2) are not the same.

[6] If we are interested in the difference between *ex ante* and *ex post* variances during the marketing period only, substitute t=0 in equation (5), which is the same as the model Lin (2003) proposed. The expression in (5) considers the effects of the marketing period relative to the holding period on the *ex post* and ex ante variances.

3. Interpretation of the Theoretical Model

While the section above may seem overly theoretical, it allows a number of implications regarding the nature of illiquidity risk for real estate investors to be developed:

- **For a real estate investor the risk of the *ex ante* real estate returns is higher than that given by measuring the historical volatility of previous returns data.**
- **For assets that are highly liquid (i.e. as s, the expected marketing time, approaches 0), the effects of illiquidity are trivial.**
- **When a property is held for a long time and the marketing time is small relative to the holding period (i.e. s is small relative to t), the difference between the risk associated with *ex ante* total returns and *ex post* total returns diminishes.**

From these key points, it is possible to develop an assessment of the impact of liquidity on the relative risk of different asset classes and on the relative risk of different types of investment vehicle and sectors or segments within an asset class. It also suggests that investors with longer investment time horizons will be less affected by illiquidity – not because they do not trade frequently but because the additional risk caused by uncertainty of the timing of sale is, in effect, amortised over the longer holding period. The next section will make a preliminary attempt to quantify the impact of uncertainty as to time to sale on the *ex ante* risk of UK direct property.

3.1 Implications for Real Estate Portfolios

The theoretical model explored in Section 2 focuses primarily on the *ex ante* and *ex post* liquidity risk of an individual property. An interesting question about liquidity arises when the concept is extended to a portfolio of properties. Appendix A.2 provides a formal attempt to understand how the risk changes as more properties are added to a portfolio. The key finding from the theoretical results reported appear to suggest that the difference between the *ex ante* and *ex post* distributions disappears as the number of properties in the portfolio increases. However more research is required into this aspect of illiquidity risk.

4. An Empirical Application

In order to demonstrate the magnitude of the illiquidity effect, the information collected in Working Paper 2 is used in conjunction with historical returns from the IPD index to identify the bias. Three different marketing periods are identified from the case study data: the time period to price agreement (PA), exchange of contracts (EC), and completion (CL). Because the monthly IPD index is used to show the impact of illiquidity on the risk-return relationship, the marketing variables are transformed from number of days into number of months so that the unit period is consistent with the IPD index.

To begin the application the characteristics of the marketing period data are examined in more detail. Panel A of Table 4.1 shows some basic statistics for the three marketing periods which suggest that the marketing period is far from what would be expected if the distribution of marketing time was normal or followed the uniform distribution. First of all, average values of PA, EC, and CL are 5.96, 8.73, and 9.37 months respectively. This suggests that on average it takes 6 months for price agreement, and requires an additional 2.8 months for exchange of contracts and a further half-month for completion. However, the marketing periods are highly non-normal and positively skewed. This non-normality suggests that the average values and standard deviations are not appropriate summary statistics for this analysis.

4.1 The Distribution of Marketing Time Period

To utilise the model, we need to find a suitable way to characterise the distribution of the marketing time periods. A number of different assumptions about the distribution of times to sale were investigated. The functions investigated included the normal, chi-square, gamma and Weibull distributions. It was found that the negative exponential density function explains the data better than the others. This empirical choice is consistent with our theoretical explanation of marketing periods in the previous section. The estimates of the parameters of the negative exponential density function for the three marketing period variables are reported in Panel B of Table 4.1. Using these estimates, it is easy to find the expected marketing periods for the variables since represents the expected marketing period.

Thus the expected marketing periods for the three marketing period variables are the same as those in Panel A of the table (equals λ plus the smallest marketing period). The standard deviations of the three marketing periods are 5.9, 8, and 8.5 months for the PA, EC, and CL, respectively. These estimates are smaller than those reported in Panel A as the impact of the extreme, skewed, values is dampened. Using these parameter estimates in conjunction with the theoretical work presented above allows the effects of illiquidity on the risk and return relationship for property in the UK to be examined in more detail.

Table 4.1: **Some Basic Statistics for the Three Marketing Time Periods**

A: Basic Statistics

	Mean	Median	Standard Deviation	Skewness	Kurtosis	Jacque-Barra Statistic
Time Period to Price Agreement (PA)	5.9640	3.0333	10.9008	5.3134	39.5759	10699.0800
Time Period to Exchange of Contracts (EC)	8.7341	6.1000	11.6337	4.4933	30.5779	6204.5790
Time Period to Price Completion (CL)	9.3738	6.3000	11.5837	4.5145	31.0134	6388.7730

4. An Empirical Application

B: Estimates of Parameters for Negative Exponential Density Function for the Three Marketing Times

	Smallest Marketing Period	λ
Time Period to Price Agreement (PA)	0.0333 (0.0335)	5.9307 (0.0336)
Time Period to Exchange of Contracts (EC)	0.7000 (0.0454)	8.0341 (0.0455)
Time Period to Price Completion (CL)	0.8333 (0.0483)	8.5405 (0.0484)

Note: 177 cases

4.2 The Effects of Illiquidity on Real Estate Risk

Equation (5) above linked the variance of *ex ante* returns to the variance of *ex post* returns. The term in front of the variance of *ex post* returns may be interpreted as an illiquidity factor, that is, it adjusts the *ex post* variance to fully reflect the true illiquidity risk faced by the investor. Using this equation, the size of the illiquidity factor can be explored for a range of holding periods and marketing periods. These results are reported in Table 4.2 overleaf.

The table shows the extent to which the variance (risk) of the IPD monthly index needs to be adjusted to adequately capture the illiquidity risk associated with a real estate investment. Along the top of the table the period over which the real estate investment will be held (t) is tabulated. At the beginning of each row the marketing period is listed.

For example, for an investor with a holding period of seven years (consistent with the more recent institutional sales rates reported in Working Paper 3 and other parallel research) and for a property with a average marketing time of between six to eight months (consistent with table 4.1), the total risk faced by the investor is around 1.5 times that given by the benchmark IPD index.

Other combinations of holding period and marketing period can be explored. For instance, if an investor purchases a property intending to only hold it for two years and faces an expected marketing period of eight months, the true volatility of the investment is almost three times that shown by the IPD benchmark. If the property were a little unusual and a longer marketing period were expected (say 18 months), the true risk of that investment is over ***eight*** times that represented by the benchmark. Conversely for a long-term institutional investor with a ten-year holding period investing in a prime quality asset (with a shorter marketing period, say, 3 months), the illiquidity factor may be as low as 3 percent.

An Empirical Application – Summary

- **Formal statistical model are applied to UK data to estimate difference between *ex ante* and *ex post* risk for real estate investments;**
- **Historical *ex post* data are taken from IPD index returns and data from Working Paper 2 are used to model time to sale;**
- **Time to sale data is highly skewed and well modelled by a negative exponential distribution;**
- **Assuming an investor holds a property for seven years and that the time to completion is 8 months, the actual risk (volatility) faced by a property investor is around 1.7 times higher than suggested by examining historical returns on the IPD index;**
- **Investors with shorter expected holding periods and/or who acquire assets with longer than average times to sale are exposed to much higher levels of *ex ante* risk.**

4. An Empirical Application

Table 4.2: **Values of the Illiquidity Factor for the IPD Index Returns**

Marketing Time Period (Months)	Holding Period 0	12	24	36	48	60	72	84	96	108	120	240	360
0	-	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
1	1.960	1.074	1.038	1.026	1.020	1.016	1.013	1.011	1.010	1.009	1.008	1.004	1.003
2	2.921	1.274	1.148	1.101	1.077	1.062	1.052	1.045	1.039	1.035	1.031	1.016	1.011
3	3.881	1.576	1.320	1.222	1.169	1.137	1.115	1.099	1.087	1.078	1.070	1.036	1.024
4	4.842	1.960	1.549	1.384	1.296	1.240	1.202	1.175	1.154	1.137	1.124	1.063	1.042
5	5.802	2.412	1.828	1.586	1.453	1.369	1.312	1.270	1.238	1.212	1.192	1.098	1.066
6	**6.762**	**2.921**	**2.152**	**1.823**	**1.640**	**1.524**	**1.443**	**1.384**	**1.339**	**1.303**	**1.274**	**1.141**	**1.094**
7	**7.723**	**3.477**	**2.518**	**2.094**	**1.856**	**1.702**	**1.596**	**1.517**	**1.457**	**1.409**	**1.371**	**1.191**	**1.128**
8	**8.683**	**4.073**	**2.921**	**2.397**	**2.098**	**1.904**	**1.768**	**1.668**	**1.591**	**1.530**	**1.480**	**1.248**	**1.167**
9	**9.644**	**4.704**	**3.357**	**2.729**	**2.365**	**2.127**	**1.960**	**1.836**	**1.741**	**1.665**	**1.603**	**1.312**	**1.211**
10	10.604	5.365	3.825	3.088	2.656	2.372	2.171	2.022	1.906	1.814	1.739	1.384	1.260
11	11.564	6.053	4.320	3.473	2.970	2.637	2.400	2.223	2.086	1.977	1.887	1.463	1.313
12	12.525	6.762	4.842	3.881	3.305	2.921	2.646	2.441	2.281	2.152	2.048	1.549	1.372
18	18.287	11.372	8.409	6.762	5.715	4.989	4.457	4.051	3.730	3.470	3.255	2.206	1.823
24	24.050	16.366	12.525	10.220	8.683	7.586	6.762	6.122	5.610	5.191	4.842	3.095	2.441
36	35.574	26.931	21.745	18.287	15.818	13.965	12.525	11.372	10.429	9.644	8.979	5.510	4.143
48	47.099	37.879	31.733	27.342	24.050	21.489	19.440	17.763	16.366	15.184	14.171	8.683	6.423
60	58.624	49.020	42.160	37.015	33.013	29.812	27.193	25.010	23.163	21.580	20.208	12.525	9.232
120	116.248	105.771	97.040	89.652	83.320	77.832	73.030	68.793	65.027	61.657	58.624	39.416	29.812

The table shows by how much the variance of the *ex ante* returns distribution is greater than that given by an *ex post* or historical measure of variance (risk). An alternative way of saying this is that the table represents a set of multiplication factors which show by how much the total risk of an investment needs to be adjusted to allow for possible risks associated with illiquidity (marketing time). For example, for an investor intending to keep a property for ten years (holding period) and for an expected marketing time of six months, the risk faced by the investor is around 1.3 times higher than that given by historical returns data.

5. Further Research & Conclusions

5.1 Extensions to the Research

The analysis in this chapter has provided an indication of the extent to which the reported risk of the UK benchmark property index may under-represent that faced by an investor. A number of extensions to the research could be explored. For instance, the volatility of the IPD index is generally believed to be downward biased because of the valuation-smoothing problem. In preliminary results derived by the authors, there does appear to be an important *reduction* in the illiquidity factor when the valuation smoothing problem is allowed for. However, further research is necessary to consider the most appropriate way to combine information on desmoothing with the illiquidity adjustments discussed in this chapter.

Another issue that requires further research is the nature of the distribution of time to market a property. If the data collected on marketing times is in fact censored (that is poor properties are never taken to market), the expected value of the time on market may be higher than that recorded in Table 4.1. If this is the case, a higher illiquidity factor may be needed to accurately capture the illiquidity risk faced by an investor.

One assumption of the model, that real estate returns are normally distributed, has been questioned in other research (see for instance Lizieri and Ward 2001 or Bond and Patel 2003). The main findings of this chapter are likely to hold for a broader range of symmetric return distributions, as the variance is still an applicable measure of risk in this instance. If the returns on real estate where skewed, then this would have broader implications for the use of mean-variance analysis in general (as variance may no longer be a suitable measure of the total risk of a portfolio). In this instance the behaviour of the higher moments of the *ex ante* and *ex post* distributions should be taken into consideration. To date the no consideration has been given to the behaviour of the higher moments of the distribution. This remains an area for future research.

A final point that would benefit from additional research is to consider a more complex model that allows the holding period to take the value of a random variable. At present the model sets the holding period as given (as in a limited partnership with a defined holding period). However a more realistic situation may be one where an investor has a certain expectation about holding the property but there could be variation around this time depending on different factors.

5.2 Conclusion

The nature of liquidity risk is a multifaceted problem. This chapter has provided one attempt to quantify the degree of risk faced by a UK property investor when the marketing period of a property is uncertain. It builds on theoretical models developed in the academic literature and combines it with information collected elsewhere for this study. While the models presented are more technical than those used in other parts of this report it highlights how academic research can benefit practitioners by helping to quantify the magnitude of the risks associated with their investment decisions.

5. Further Research & Conclusions

A key finding of this chapter is that the historical risk and return relationship of the benchmark IPD property index will significantly under-estimate the magnitude of the actual risk to which a UK property investor is exposed. This is because the index does not take into consideration the uncertainty of the marketing period associated with a property investment. For an investor with a seven year holding period and a property with an average marketing time of around six to eight months, the actual risk faced by an investor is almost one and a half times that indicated by the benchmark IPD index. For an investor with a shorter horizon and for properties with a higher expected marketing time, the actual risk faced with be an order of magnitude well in excess of double the benchmark index (and as high as 100 times greater in rare cases).

However for many institutional investors with large portfolios, long holding periods and high quality assets the additional risk exposure due to illiquidity will not be a significant problem.

Further Research and Conclusion – Summary

- **Further research is required to build on the current understanding of links between theoretical models and industry applications;**
- **The benchmark IPD index underestimates risk of investing in property for a fund or individual entering the market;**
- **Investors holding property for shorter time periods or holding real estate with "difficult" sales characteristics are more exposed to liquidity risk.**
- **Liquidity risk is likely to reduce as more properties are added to a portfolio;**
- **Liquidity risk is of less concern for long term institutional investors.**

5. Further Research & Conclusions

Appendix A

A.1 Derivation of results in Section 3

When the selling point is not known, the returns (r_{t+s}) and selling point (s), can be treated as two stochastic variables. Therefore, for the *ex ante* expected return, first calculate the *ex post* expected return conditional on the selling point, and then take expectations over s. The procedure takes the expectation of the *ex post* expected return in equation (1);

A1

$$\begin{aligned} E^A(r_{t+s}) &= E(E(r_{t+s}|s)) \\ &= E(E^P(r_{t+s})) \\ &= E(\mu(t+s)) \\ &= \mu(t+\mu_s) \end{aligned}$$

since t (holding period) is known *ex ante*, and $E(s)=\mu_s$.

On the other hand, using the Law of Iterated Expectations, the relationship between *ex ante* and *ex post* variance can be represented as

$$\begin{aligned} Var^A(r_{t+s}) &= E[Var(r_{t+s} \mid t+s)]+Var[E(r_{t+s} \mid s)] \\ &= E[Var^P(r_{t+s})]+Var[E^P(r_{t+s})] \end{aligned}$$

Therefore using equations (1) and (A1), we have

A2

$$\begin{aligned} Var^A(r_{t+s}) &= E[(t+s)\sigma^2]+Var(\mu(t+s)) \\ &= (t+\mu_s)\sigma^2+\mu^2\sigma_s^2 \end{aligned}$$

The *ex ante* variance in equation (2) can be obtained by re-arranging (A2) with the *ex post* variance in equation (1);

$$Var^A(r_{t+s}) = \left[\frac{t+\mu_s}{t+s}+\frac{\mu^2\sigma_s^2}{(t+s)\sigma^2}\right](t+s)\sigma^2$$

$$= \frac{1}{t+s}\left[(t+\mu_s)+\frac{\mu^2}{\sigma^2}\sigma_s^2\right]Var^P(r_{t+s})$$

A.2 Portfolio Implications

Suppose that the waiting time to sell for asset i, s_i, is identically independently (iid) negatively exponentially distributed with mean λ_i and variance λ_i^2. That is, s_i is not related with s_j for $i \neq j$. Then the waiting time to sell of a portfolio that consists of N illiquid assets, s_p,

is $s_p = \sum_{i=1}^{N} w_i s_i$

where w_i is the investment weight on asset i. The expected waiting time of the portfolio

is $E(s_p) = \lambda_p = \sum_{i=1}^{N} w_i \lambda_i$

and the variance of the portfolio's waiting time

is $Var(s_p) = \sum_{i=1}^{N} w_i^2 \lambda_i^2$ since $Cov(s_i, s_j) = 0$

To investigate if the portfolio's *ex ante* variance is affected by the number of illiquid assets in the portfolio, let us assume an equally weighted portfolio, i.e., $w_i = 1/N$.

Then we have $\lambda_p = \frac{1}{N} \sum_{i=1}^{N} \lambda_i$ and $Var(s_p) = \frac{1}{N^2} \sum_{i=1}^{N} \lambda_i^2$

Thus *ex post* expected return and variance for the portfolio return $r_{p,t+s_p}$ will become

$$E^P(r_{p,t+s_p}) = E^P(r_{p,t+s_p} \mid t+s_p) = \mu_p (t+s_p)$$

$$Var^P(r_{p,t+s_p}) = Var(r_{t+s_p} \mid t+s_p) = (t+s_p)\sigma_p^2$$

where μ_p and σ_p^2 are expected return and variance of the portfolio per unit of time. Using the same method as in Appendix A.1, *ex ante* expected return and variance for the portfolio return will become

$$E^A(r_{p,t+s_p}) = E(\mu_p(t+s_p)) = \mu_p(t+\lambda_p)$$

$$Var^A(r_{p,t+s_p}) = \frac{1}{t+s_p}\left[(t+\lambda_p) + \frac{\mu_p^2}{\sigma_p^2}\frac{1}{N^2}\sum_{i=1}^{N}\lambda_i^2\right] Var^P(r_{p,t+s_p})$$

The first equation shows that the *ex ante* expected portfolio return is not a function of the number of assets in the portfolio. On the other hand, the *ex ante* variance of the portfolio return decreases as N increases. The multiplier will be approximated one

since $\lim_{N\to\infty} \frac{1}{N^2}\sum_{i=1}^{N}\lambda_i^2 = 0$ and $\lim_{N\to\infty} \frac{1}{t+s_p}\left[(t+\lambda_p) + \frac{\mu_p^2}{\sigma_p^2}\frac{1}{N^2}\sum_{i=1}^{N}\lambda_i^2\right] \approx 1$ as $s_p \approx \lambda_p$.

5. Further Research & Conclusions

Bibliography

Bond, S.A. and Hwang, S. (2003) 'A Measure of Fundamental Volatility in the Commercial Property Market' *forthcoming Real Estate Economics.*

Bond, S.A. and Patel, K. (2003)
The Conditional Distribution of Real Estate Returns: Are Higher Moments Time Varying?
Journal of Real Estate Finance and Economics, 26, 2, pp 319-339.

Geltner, D., MacGregor, B.D. and Schwann, G. (2003)
Appraisal Smoothing and Price Discovery in Real Estate Markets'
Urban Studies, pp 1047-1064.

Lin, Z (2003) Essays on Illiquidity and Pricing Bias in the Real Estate Market
unpublished PhD dissertation, University of Wisconsin-Madison.

Lizieri, C. and Ward, C (2001) The distribution of Commercial Real Estate Returns in Knight, J. and Satchell, S.E. Return Distributions in Finance
Butterworth-Heinemann, Oxford.

Liquidity in Commercial Property Markets

Principal Authors:

Colin Lizieri, George Matysiak

The Liquidity in Commercial Property Markets Research Team:

Shaun Bond#, Neil Crosby*, Soosung Hwang+,Tony Key+, Colin Lizieri*, George Matysiak*, Patrick McAllister* and Charles Ward*

* The University of Reading Business School
+ Cass Business School, City University
# Department of Land Economy, University of Cambridge

1. Introduction

In this, the final working paper of the Investment Property Forum's Liquidity in Commercial Property Markets, the findings of the research project are reviewed and assessed. We use the findings to assess the relative risk of different types of real estate investment – by type of vehicle and by type of property asset – across a number of "liquidity dimensions." Since that assessment can only be preliminary, we conclude by identifying areas of further research or market practice, which have the potential for enhancing the market's understanding of the nature of property liquidity.

The liquidity project consisted of four broad elements: a review of research on liquidity in capital markets and its applicability to commercial real estate; an analysis of the process by which assets are sold and of time on the market; collation and re-analysis of available data on commercial property transaction data; and a preliminary attempt to assess the implications of liquidity on the *ex ante* risk of real estate. This paper follows these four stages in outlining the main findings of the project.

Section three attempts to apply the findings to a range of property investment vehicles and segments of the direct property market. We construct a "liquidity matrix" which compares and assesses the relative liquidity of the investment assets across a number of dimensions of liquidity, reflecting market structures, market depth, time to trade, costs and pricing processes. We stress this multi-dimensionality: there can be no one definitive liquidity measure. We should stress that the property assets are assessed relative to each other and not in relation to other asset classes.

Finally, in section four we set out a possible future research programme that would contribute to an enhanced understanding of the nature and impact of liquidity in commercial real estate. We use the term "research" in the widest sense, to incorporate both formal analytic studies of liquidity (for example pricing and time on market impacts at individual asset and portfolio level) and changes in market practice that might deliver invaluable data to inform decision-making (regular provision of analysis of transactions data, for example).

2. Liquidity Research: A Summary of Findings

2.1 Defining Liquidity

In examining the literature in liquidity research in a wide range of capital markets, two key points emerge forcibly. First, liquidity is much more than the time taken to execute a trade – the "standard" meaning of liquidity in much of the real estate literature. Embedded in the definition of liquidity is a sense of the cost of trading – direct costs (transaction costs, bid-ask spreads) and indirect costs (price impacts due to the act of trading, risk due to uncertainty of the timing of sale and the realised price). Allied to this is the fact that *liquidity is a multi-dimensional concept*.

Among the many intertwined dimensions of liquidity one can identify: frequency of trading; the cost of trading; time on the market; market volatility in the trading period; price uncertainty; holding period; uncertainty as to achieved sale price; and the price impacts of buying and selling. The importance of these dimensions vary across asset classes and investment types; the importance may vary also by market condition. This means that it is not a simple task to translate liquidity measures from one asset class or market place to another. None the less, by examining liquidity research in other markets, important insights may be gained.

In equity and bond markets, the focus of liquidity research has been on cost implications: the direct costs of trading, the impact of trading on prices and the certainty of realisation price. In the market microstructure literature, where much of the most sophisticated liquidity models may be found, four aspects of liquidity help define markets:

- **tightness - the cost of liquidating a portfolio quickly;**
- **depth - the ability to sell without affecting prices;**
- **resilience - the ability of prices to recover from shocks;**
- **immediacy - the costs of selling now rather than waiting.**

Similarly, in the asset return literature, the focus has been on costs. Trading costs have an impact on the decision whether or not to trade. High costs deter trading and lengthen holding periods. This can result in portfolios that become increasingly inefficient through lack of rebalancing. While the literature has contrasted informed professional investors with smaller, private retail investors (who face higher transaction and information costs), an analogy could be drawn with asset classes with very different transaction costs.

It is important to note that the vast bulk of research on liquidity has occurred in publicly – trading markets (notably equity markets). In such markets, market depth and presence of market makers ensure that adjustments to supply and demand fundamentals occur through the price mechanism. This means that volume of transactions and bid-ask spreads are valid measures. In private markets, volume and spread may be incomplete measures as adjustments occur through time to trade, absence of trading and increases in uncertainty in distressed market circumstances, than through simple price adjustments.

2. Liquidity Research: A Summary of Findings

A final, critical, issue found in the financial markets literature is the extent to which illiquidity is priced – is there a return premium for illiquidity? There is no consensus on this issue. It appears that stocks that are *systematically* less liquid than others may be rewarded and there may be a return premium in aggregate when market conditions make for illiquidity. The former is consistent with the observation that small capitalisation stocks (and specifically those with a low free float) generate higher than expected returns: the latter consistent with the point made above of price adjustments in response to difficult markets.

Real estate, as a private market, is characterised by an uneven distribution of information, assets with highly individual characteristics, entry barriers (particularly for smaller investors) and, arguably, a major role for agents in determining prices and transactions. As a result it is difficult to apply standard proxies for liquidity from securities markets. This, together with the difficulties of obtaining data may explain the paucity of studies of property market liquidity.

There have been a few studies that have examined time on the market and holding period (the latter being associated with sales rates and transaction costs). Those studies, in relation to direct investment in real estate, demonstrate that elements of liquidity vary across different types of property (by sector, by location, by size of property) and by market condition. Studies examining the probability of sale come to similar conclusions: at least with respect to frequency of transaction, some types of property are more liquid than others. Research into public traded indirect real estate vehicles – REITs and property companies – suggest that they do have equity-like liquidity characteristics. However, real estate related factors – asymmetric information, management factors, asset value uncertainty and depth of market (market capitalisation) do seem to play a role in relative liquidity.

In summary, liquidity is much more complex than a simple sales or turnover rate: costs, pricing and risk components need to be considered. Different elements or proxies of liquidity will be more important than others for each asset class, the importance determined by market structures and asset characteristics. Although they are partial proxies, transaction rates do provide valuable information in understanding relative liquidity between investments within an asset class. However, it is important to consider the risk-return implications of differential liquidity as proxied by sales rates.

Defining Liquidity - Summary:

- **Liquidity is a multi-dimensional concept;**
- **Dimensions include trading frequency, time to trade, cost of trading, price impacts of trading and risk in the trading process;**
- **Trading volume and transaction rates are only partial proxies for liquidity;**
- **The importance of different dimensions varies by type of asset and market structure;**
- **In public markets, adjustments occur largely through the price mechanism;**
- **In private markets, adjustment processes also occur through trading rates and time to execute trades;**
- **Securities markets evidence suggest that there is a return premium for systematic illiquidity.**

2. Liquidity Research: A Summary of Findings

2.2 The Sales Process and Time on the Market

The ability to exit and enter a market at specific times is constrained by the length of time a transaction takes. Uncertainly about timing adds to the volatility of expected returns; delay in realisation may reduce capital returns; lengthy and uncertain transaction times influence the risk-return characteristics of real estate compared to other assets. The second major strand of the liquidity project thus focused on the sales process and the time taken to sell an asset (we note here that a parallel exercise on the buy side, while difficult, would be an invaluable exercise).

To investigate these elements, the research team conducted intensive interviews with staff at three representative investors – a listed property company, a pension fund and a life insurer. The interviews focused on the stages through which properties move towards sale and the factors that affect the speed of that movement. Then, records of around 200 sales were collected and analysed from the three funds to provide benchmark information on the distribution of time taken to market, agree terms and settle/complete deals.

The first stage of the disposal process is the decision to sell. For many fund managers, this may result from the strategic asset allocation level or from a tactical asset allocation decision to sell out of a particular sector or region. From this point, suitable properties for sale may be identified based on performance analysis. Where a fund requires cash, at a specific time, it is important to note that *only properties where a sale is highly probable will be selected;* this inevitably affects transactions and time on the market statistics. Other sales motivations may come from portfolio rebalancing decisions, a requirement to liquidate assets (e.g. unit trust redemptions) or, on occasions, unsolicited offers.

A number of factors may cause delays in the sales process. Temporary, solvable problems include title problems, tenant disputes, outstanding rent reviews: issues that, if unresolved, would lead to a price well below market value perceptions. Other factors may be intractable but temporary – rent reviews and lease terminations would be examples. Such issues can be anticipated: however demand for the property is likely to be constrained until they are resolved. During the course of a sale, unexpected events may lead to delay or loss of purchaser – tenant insolvency or default for example. Such events may not be predictable.

Those interviewed suggested that there were few abortive sales. This suggests either that the sales selection filtering process removes properties where there is a high risk of failure, or that, once in the process a momentum builds up with all interested parties working to resolve problems – or some combination of the two. McNamara's (1998) research on time to sale split the disposal process into three parts: marketing, due diligence and settlement. The case study research suggests that the pre-marketing phase is an important stage in the process. Ignoring it underestimates the total disposal time. Keeping properties in a state of readiness may reduce the time taken in this phase (at a cost) but cannot deal with temporary sale obstacles. It appeared that, in many instances, agents were asked to advise on the marketability of properties considered for sale and to provide a preliminary valuation. If this phase or preliminary legal checks identify problems, a property may not be brought to market.

2. Liquidity Research: A Summary of Findings

Once formal marketing commences, disposal broadly follows the three stage process identified by McNamara. Delays are most likely to occur in the due diligence phase between heads of terms and exchange. Problems include changes in status of purchaser or of tenant, discovery of inherent problems, changes in market conditions and problems in raising funds. This last was seen as a critical factor leading to delays and difficulties – use of bank finance (and debt in general) were seen as a major cause of lengthy negotiations and problem sales.

One important issue raised in the analysis of the sales process is the role of valuation. It has been argued that the regular, periodic valuations for performance measurement and asset value purposes do not fully account for the price-sensitive issues that emerge at the due diligence stage. In part, this might result from the time limited and routine nature of such valuations. However, it may be that the prior valuation acts as a reserve price for many sellers, restricting the number of properties coming to market and hampering the sales process. There was no clear consensus about the impact of the prior valuation but certainly suggestions that it acted as an inertia force.

From the sales records obtained from the three funds, the mean time from start of formal marketing/notice of intention to sell to completion was 298 days – nearly ten months. However, this crude average is misleading, since the distribution is heavily skewed by a small number of sales which took a considerable time, presumably as a result of complications in the negotiation process of the problems with the asset. As a result, the median time to sale, at 190 days or six months, is probably a fairer reflection of the typical sale for these funds. Time to sale is very varied, however. Some sales are agreed and settled in weeks. Of the three major stages, the longest is the period from initiation to price agreement (median 88 days); due diligence takes, on average, 62 days while the period from exchange to completion had a median time of 19 days.

Although the sample size was small, the sales were disaggregated by property type. While there were variations in the median transaction time – with office properties reaching completion in 119 days compared to over 200 days for shopping centres and retail units – the differences are not statistically significant. Surprisingly, retail warehouses have the longest median and mean time to sell. However, there are just twelve such sales making comparisons unreliable. Overall, the times to transact are somewhat longer than the estimates obtain by McNamara. It should be noted that McNamara's figures are agents' estimates so his respondents may have excluded "problem" sales.

The real estate sales process, then, is complex and lengthy. There is some evidence that a filtering of properties takes place that means that buildings which would be particularly difficult to sell or where the "market price" is below the prior valuation or assessment of worth do not come to market. This has implications for studies of valuation accuracy and for the understanding of market liquidity. Of those properties that do come to market, unexpected "shocks" can cause major delays, causing the distribution of times on the market to be both widely dispersed and positively skewed. The evidence suggests that the streamlining of the transactions process has led to reductions in the final settlement time from exchange to completion. However, the marketing period and, in particular, the due diligence period remain lengthy. In part, this may be due to the increasing use of debt by purchasers and the potential delays the introduction of a third party to the sales process can bring.

2. Liquidity Research: A Summary of Findings

It should be emphasised that the case study research has focused upon the sales process. The research project did not have resources to examine the "buy side" of the equation, the time it takes the purchaser to enter the market. This is not the simple mirror image of the sale process as there are search times and costs to be considered. Further, the difference between time to sale and time to purchase will vary depending on market conditions (supply and demand) although they will not be perfectly negatively correlated[1]. More work is needed in this area.

The Sales Process: Summary

- **Uncertainty of the timing of sale adds to the volatility of returns;**
- **Potential asset sales are pre-vetted and unsuitable properties may never come to market;**
- **By implication, time on market and probability of sale figures may overstate liquidity;**
- **Regular, routine valuations may neglect factors that delay sales or reduce the final price;**
- **From the case studies, median time from initiation to sale was around six months (190 days), but with major variations in time on the market;**
- **Most time was spent in the marketing stage (88 days), followed by due diligence (62 days), completion averaging just 19 days;**
- **It was argued that a purchase funded with debt was more likely to be delayed than a pure equity purchase.**

2.3 Transactions Activity: Empirical Evidence

The third strand of the research project examined and analysed available data on transactions activity, sales and purchase rates for UK direct, private market real estate sales and, where possible, for non-UK private markets and a range of indirect property vehicles both public and private. Transactions rates, as discussed, can only be a partial proxy for liquidity, since they do not address issues of costs and pricing impacts.

Nonetheless, they can provide valuable information on *relative* liquidity between types of property or geographical markets and on changes to liquidity resulting from market conditions or changes to the institutional environment.

There is no single ideal UK database for analysing commercial property transactions. The research utilised a number of data sources to build a picture of activity levels in the UK: the Inland Revenue / Land Registry transactions records, Property Data's commercial transactions database, sales and purchase analysis commissioned from Investment Property Databank, the JLL/IPD Auctions Record Analysis Service (ARAS) and ONS records on institutional acquisitions and disposals. Each cover a different population or segment of the market. Data are available for property company share turnover and for PUT sales; public listed vehicle turnover figures for non-UK markets and transaction rates from IPD's non-UK databases were also examined.

[1] To some extent, if demand exceeds supply (more buyers than sellers) then each buyer will have to "wait" longer to buy a property while sellers will find it easy to dispose of properties in a short period of time; the opposite will be true in bear markets. This points towards a negative correlation between variations in time to buy and time to sell. By contrast to a public, securitised market where the imbalance between supply and demand is resolved through price adjustment, in private markets adjustment may occur in transaction levels and time to transact.

2. Liquidity Research: A Summary of Findings

Given resources and data coverage, the only year where full UK direct market data could be analysed was 2002. The Inland Revenue figures suggest that around 5% of the non-residential property stock turned over. Much of that stock is not investment property or is held by smaller investors. Transaction rates in the professional investment market are much higher: depending on the dataset and calculation method, ranging from 10% to 19%[2]. Institutional turnover looks to be around 12-15%. Such rates imply a median holding period of 5-6 years, somewhat shorter than that estimated by Collett et al. for the late 1990s. Activity levels may have been higher in 2002 due to portfolio sales and transfers in advance of changes to the Stamp Duty regime. The figures suggest that, by value, owner-occupied and smaller private held real estate has a sales rate as low as 2-3% by value, compared to around 7% in the residential owner-occupied market.

Examining the time series of activity rates, the research showed that transactions rates fell in the early 1990s (suggesting a link to the property cycle) but have been growing at around 2-4% per annum since that time. The different databases show slightly different trends and turning points. Some 75% of the variation in transaction rates from the IPD dataset can be explained by a model with, as independent predictor variables, equity market yields (a negative relation with transaction rates); property returns (a positive relationship) and lagged transaction rates.

The inclusion of the latter suggests that the market is "sticky" with momentum effects. Inclusion of a dummy for changes in Stamp Duty regimes had no significant effect: it is not possible to discern a negative impact on sales rates. The absence of an effect may result from the portfolio sales noted above as a reaction to the Stamp Duty Land Tax announcement.

Disaggregating the data, it is clear that transactions activity varies considerably across many dimensions of the property market: across time, across geographical markets, across sectors and segments, by lot size, by property vehicle and by investor type. By market segment, results for 2000-2002 do not always confirm conventional wisdom on liquidity. In particular, the London markets for standard offices, shops and standard industrials all have transaction rates that are lower than those found in other regions. Central London offices – often cited as a particularly liquid market – have low sales and purchase rates. Of course, such markets *are* larger than other markets and there are more transactions by volume than elsewhere – but these transactions represent a lower proportion of the overall market than for other segments. Other results are closer to standard expectations: smaller, more standard, units (standard industrials, standard shops, retail warehouses[3]) have higher transaction rates than large and unique assets, notably shopping centres.

Transactions and trading rates are also influenced by geography: there are considerable differences in sales and purchase rates across towns. However, there is no clear discernable pattern by type of town or location; neighbouring or similar centres can have quite different rates. There appears to be some association with net flow of money but that, in turn, would need explanation. In general, there is a negative correlation between lot size and activity rate although this does not seem to hold in the retail warehouse market nor to Central London offices.

[2] The differences reflect differing composition of properties and investors and the extent to which there is "leakage" – that is, where sales by one investor are not matched with an acquisition elsewhere.

[3] We noted above that the case studies suggested that retail warehouses had long times to sale. The transaction evidence casts further doubt on the reliability of that figure.

2. Liquidity Research: A Summary of Findings

Over the 1998-2002 period, properties owned by pooled funds were much more likely to transact than those held by insurance funds, pension funds or property companies. Pooled funds had transaction rates of around 22% compared to 14% for property companies, 13% for segregated pension funds and 10% for insurance funds and charities. Between 2000 and 2002 property company sales rates increased sharply (perhaps as a result of sales to special purpose vehicles or private equity vehicles) and the gap between pooled funds and the institutional investors narrowed somewhat. There is evidence that property companies are selling smaller units and concentrating their holdings. Transactions rates by properties were 21% 1998-2002, compared to 14% relative to value. Other investor types show similar, if less pronounced trends.

Turnover rates for authorised property trusts show a much lower rate of trading than in the direct market (as measured by IPD). This may be as much motivational (a buy and hold strategy amongst smaller funds investing through this medium) as an indication of difficulties and constraints to trading. As might be expected, transaction rates for public listed UK property companies are far greater than those found in the private market – averaging over 61% of market capitalisation per annum from 1993-2002, with the rate increasing over time. This is a reminder of how low trading rates are in the direct property market by comparison to activity in publicly traded markets.

International comparisons are hampered by quality of data in other markets. Using the IPD databases for other European countries, it seems that UK transaction rates are higher than those found in other countries. Where time series are available (broadly 1997-2002) there has only been one year when the UK was not ranked first in terms of turnover (in 2000, Swedish transactions spike upwards sharply before falling back to a much lower level). In 2002, the UK turnover rate was double that found in France, in the Netherlands and in a number of other countries. This position seems to hold in public markets, with UK property companies having higher transactions rates than US REITs and Australian Listed Property Trusts. This is interesting in the context of the potential for a UK REIT. It should be remembered that REIT/LPT structures, aimed at private investors who hold assets longer and tend to have higher transaction costs compared to professional, institutional investors, might be expected to show lower activity levels than property company shares – largely a professional vehicle.

Transactions activity is only a partial measure of liquidity. However, the analyses found in Working Paper 3 reveal interesting findings that confirm some but refute other beliefs about liquidity in commercial real estate markets. Trading activity rates are generally higher for small lot size property, for properties held by pooled funds, property companies and in smaller portfolios. Complex, heterogeneous, assets with fewer potential buyers – such as shopping centres – have lower transactions rates than more standard units. However, the gaps appear to be narrowing over time. In some sectors – notably Central London Offices – apparent liquidity seems to relate to the overall size of the market and is not reflected in above average transaction rates. Generally, the UK commercial market appears to have higher trading rates than other countries, although comparisons are difficult to make. Finally, the much higher turnover rates found for public property vehicles emphasise that the direct property market is relatively illiquid compared to public-traded securities markets, and is characterised by thin transaction rates.

2. Liquidity Research: A Summary of Findings

Transactions Activity: Summary

- **Transactions rates are a partial proxy for liquidity but offer valuable information on relative liquidity between asset times and over time;**
- **There is no one ideal source of transactions data for commercial property;**
- **Transactions volumes and rates vary greatly by sector of the market from 2-3% for owner occupiers to 12-15% for active institutional funds;**
- **Transactions rates are vastly higher in public traded markets;**
- **In private markets, transactions rates have trended upwards since the lows of the early 1990s;**
- **Transactions rates can be explained largely by equity and property returns and are "sticky";**
- **There is no clear evidence of declining transactions rates with increases in Stamp Duty, perhaps due to new vehicle creation;**
- **Transactions rates vary greatly by market segment, and do not always conform to market preconceptions;**
- **The UK markets appear to have higher levels of transaction activity than equivalent European and global markets, both for private and public forms of real estate.**

2.4 Time on the Market and the Risk of Real Estate

The fourth working paper represents a preliminary attempt to analyse the impacts of illiquidity in a quantitative manner. The data collected on time on the market as set out in working paper 2 are used in an analytic frame that allows a re-estimation of expected risk from the perspective of an investor about to acquire a property asset. It is hard to do justice to the arguments of the paper in a short summary. Here we simply outline the underlying premise and the preliminary results.

In most securities markets, the time it takes to trade an asset is brief. As a result, uncertainty as to time on the market does not have a significant impact on risk. However, as the transactions case studies showed, in real estate time on the market is both lengthy and highly variable. Real estate performance measures such as IPD are based on the valuations of multiple portfolios. It would be near impossible for individual fund managers to trade in such a way that their portfolios would track the index. The conventional measure of risk – the volatility of returns, measured by the standard deviation – does not account for the uncertain marketing and due diligence period and, as a result, understates the risk that an investor faces when acquiring an asset: the *ex ante* risk.

If the *ex ante* risk is much greater than the *ex post* risk conventionally reported, then the property allocation puzzle – the low actual real estate weightings of institutional investors when compared to theoretical mean-variance allocations – may be in part explained. It may be possible to "correct" the reported ex *ex post* measure to take into account the additional risk faced at market entry. The results presented in working paper 4 and in this summary are only preliminary and provisional, but provide an insight into the potential of such an approach.

2. Liquidity Research: A Summary of Findings

The model estimated is complex but in concept is straightforward. For a known holding period (including the average time to market and sell the asset), it is possible to estimate a distribution of possible returns (based on known returns for the relevant asset type). The variance of this distribution is the *ex post* risk of the asset. However, if we consider that the marketing and sale period is uncertain, then an additional risk exists *ex ante*. The significance of this additional risk depends on the length of the marketing time and on the holding period. For highly liquid assets (where the marketing time approaches zero), the additional risk may be trivial; for assets where the holding period is long relative to the marketing period, the *ex post* and *ex ante* risk differences diminish. For commercial real estate, the marketing and sale period is lengthy and large relative to a holding period that has been shortening as funds manage their portfolios more actively.

The theoretical model was used in conjunction with estimated times to sale taken from the case study funds reported in Working Paper 2 and the *ex post* risk and return figures taken from the IPD monthly index. A note of caution is necessary here in that the sample transactions from the case studies are relatively few in number and the distribution of sales times is highly skewed and non-normal in nature. The model has been adjusted to account for the observed distribution but further work and a larger sample of sales records would be required to give the results greater robustness.

For an investor with an expected holding period of seven years and expected marketing and sales time of six months – plausible numbers from past research and the findings of this IPF research project - the "illiquidity factor" is 1.38 – that is, the *ex ante* risk is 38% higher than the reported *ex post* risk. For a shorter holding period and a longer average time to sale – say five years and eight months – the illiquidity factor rises to 1.94: that is *ex ante* risk is nearly double the *ex post* risk. However, for long holding periods and shorter selling periods, the additional risk can be minor.

This additional risk at the point of entry results from the nature of real estate as an asset: its heterogeneity and the thin transaction market that results in potentially long gaps before buyers and sellers are matched. While the effects of this difference between *ex ante* and *ex post* risk can be reduced by longer holding periods, it should be noted that longer holding periods are, themselves, a symptom of illiquidity, arising out of, *inter alia*, high transaction costs and asymmetric information. Further, as the case study research showed, some properties are never brought to market as they are considered barely saleable. If the implied sales periods of these were considered the risks on entering the direct market could be very large indeed.

Risk and Time on the Market: Summary

- **Uncertain time on the market increases the risk of an investor entering the property market;**
- **This *ex ante* risk is greater than that reported by, for example, IPD statistics;**
- **It is possible to "correct" performance based risk measures;**
- **Additional *ex ante* risk depends on the expected holding period, the typical time on the market and the volatility of returns;**
- **For an investor with a seven year holding period and a property with a time to sale averaging six months, *ex ante* risk increases by about 40%;**
- **For an investor with a five year holding period and a property with a time to sale averaging eight months, *ex ante* risk increases by about 90%.**

3. Relative Risk in Commercial Real Estate Markets

In this section, we summarise the liquidity characteristics for a number of alternative types of property investment categories, based on the findings of the research together with a consensus overview assessment provided by the project research team. Here we are interested in the ways an investor may gain an investment exposure to real estate assets and the attendant liquidity features. The characteristics of the alternative categories open to investment were ranked on a simple scale in the *low-medium-high* range. The rankings reported below are on a *relative* property basis, that is, the categories are judged from a property perspective and not relative to other investments nor in absolute terms.

The main property investment categories were identified as follow:

Investment Categories

Shopping Centres	**Standard Shops**	**Retail Warehouses**
Central London Offices	**Other Offices**	**Industrials**
Listed Property Companies	**Limited Partnerships**	**Property Unit Trusts**
Authorised Property Unit Trusts	**Unitised Funds/Property Bonds**	**PICS/PIFS**

There are other ways a play on property may be made including: warrants/certificates, European certificates, options and spread betting. Also, there are several interesting recent developments that are likely to improve the range of available property products. A very recent innovation is real estate exchange traded funds (ETFs) by AXA Investment Managers. Although it is still to be decided what funds will be available, these tracker funds will be based on the EPRA European indices. Experience of such vehicles, albeit largely based on aggregate equity indices in both the US and Europe, suggests that they are highly liquid and transparent vehicles and actively traded.

Looming on the horizon are REITS. Consultation is still to take place on these tax-transparent vehicles and there is currently no defined model. However, if all goes well a structure is likely to be in place in 2005. REITS have been successful in several countries and constitute a substantial and actively traded market in the US. It is thought that some existing property companies may switch over to a REIT structure[4]. The development of REITs is also likely to encourage a wider range of underlying investments such as infrastructure and specialist funds such as hotels and residential.

The criteria used to assess property liquidity for the above categories are:

Criteria for ranking liquidity

Central Exchange, Secondary Trading	**Market Size and Market Capitalisation**
Transactions Volumes	**Length of Time to Transact**
Price Certainty	**Spread i.e. Price vs. Valuation**
Transaction Costs	**Administrative and Ongoing Costs**

[4] We noted above that both US REITs and Australian Listed Property Trusts have apparent lower transactions rates than UK property companies but attributed this to the different nature of the investors holding securities.

3. Relative Risk in Commercial Real Estate Markets

Working Paper Three, *The Analysis of Transactions Evidence,* used transactions activity, in the broadest sense, as an indicator of liquidity, tracking liquidity across different property markets. The property matrix shown here ranks, *on a relative basis,* a wider set of criteria which may be used to capture liquidity across property categories and vehicles. Although many of the listed liquidity criteria may be difficult to measure formally, an assessment of their relative impact may be made (see section 5 in Working Paper 2).

The important distinction between the various categories is that the direct property market, as represented by categories such as shopping centres and Central London offices, is characterised by private market transactions, large lot size/capital value and entry barriers, whereas the public traded market is not. However, the available types of public vehicles typically have a small exposure, fund size and extent of holdings, relative to the total investable commercial property market. This means that it may not be possible to obtain the desired property exposure through such vehicles.

The following table summarises the relative rankings for the various criteria:

Category	Central Exchange or Trading	Availability, Market Size, Market Cap	Transactions Volume	Time to Transact	Price Certainty	Spread: Price vs Valuation	Transaction Costs	Administrative & on-going costs
Shopping Centres	Low	Low	Low	Low	Low/Medium	Medium/High	High	High
Standard Shops	Medium	Medium	Medium	Medium	Medium	Medium/High	High	Medium/High
Retail Warehouses	Medium	Medium	Low/Medium	Medium	Medium	Medium/High	High	High
Central London Offices	Low	Medium	Low/Medium	Low/Medium	Medium	Low/Medium	High	High
Other Offices	Medium	Medium	Low/Medium	Low/Medium	Medium	Low/Medium	High	High
Industrials	Medium	Medium	Medium	Low/Medium	Medium	Medium/High	High	High
Listed Property Companies	High	High	High	High	Medium/High	Medium/High	Low	Low
Limited Partnerships	Medium	Low/Medium	Low	Low	Low	High	Medium	Low/Medium
Property Unit Trusts	High	Low/Medium	Medium	Low/Medium	Low/Medium	High	Low	Low/Medium
Authorised Property Unit Trusts	Low	Low	Medium	Medium	Low/Medium	High	Low	Low/Medium
Unitised Funds/ Property Bonds	Low	Low	Low/Medium	Medium	Low	Medium	Low	Low/Medium
PICS/PIFS	Medium	Low/Medium	Low/Medium	Medium	Medium/High	Medium/High	Low	Low/Medium

3. Relative Risk in Commercial Real Estate Markets

It should be stressed that the above assessments are highly stylised and assume 'normal' market conditions for each category. When markets are active and trading activity is higher than normal a number of the criteria will display more favourable aspects. For example, availability, length of time to transact and valuation/price differences will all improve. Conversely, in the case of falling markets, liquidity positions will worsen. The impacts of the property cycle will not be equal for all vehicles and types of property, so it is quite plausible that relative positions will change. For example, the liquidity of small capitalisation listed property companies, particularly those with a low free float may worsen sharply when sentiment turns against the property sector in the equity market. This will not necessarily coincide with a weak transactions environment in the direct, private real estate market, resulting in a change in relative liquidity.

Relative Risk: Summary

- **In assessing liquidity, the different dimensions of the concept must be recognised;**
- **It is possible to assess the relative risk of assets or segments across the different liquidity dimensions;**
- **The importance of different dimensions varies across types of vehicles and across types of property in the private market;**
- **Risk relativities will vary across time and across stages of the property cycle;**
- **Issues of liquidity – and illiquidity – may be most important in depressed markets: a normal balanced market should not be assumed.**

4. Conclusions and Recommendations

Overall, the Investment Property Forum research project into liquidity in commercial property markets has demonstrated that the concept of liquidity is multi-dimensional and complex. There is no single definition or proxy measure that can fully capture the essence of liquidity in real estate markets. Many of the measures used in securities markets are predicated on a public market place where adjustments to variations in supply and demand are price driven and where time on the market is brief. In such markets, it is relatively straightforward to assess liquidity through transactions rates, spreads and transactions price movements in response to trading. This is much more problematic in thinly traded private markets where adjustments come as much through changes in sales and purchase rates and increases in time on the market as from price adjustments – not least from the inertia of a valuation-driven system.

Empirical work in the project demonstrated that time on the market is lengthy and, critically, that it is highly variable. This imposes additional uncertainty on the property investor. Analytically, preliminary results suggest that this uncertainty as to the final sale price and sale data can greatly increase the *ex ante* risk of property, particularly for investors intending to hold property for a comparatively short time (e.g. finite life property vehicles) or to hold property with complex characteristics and a restricted market for potential future purchasers (e.g. a major shopping centre). Analysis of transactions activity revealed considerable variations by type of investment vehicle, by type of ownership structure, by type of property and by stage in the market cycle. Not all commonly held perceptions about liquidity were confirmed: notably, transaction rates for Central London offices were low relative to other property segments despite the overall size of the sub-market.

The IPF research project was preliminary in nature. It was intended to review existing work, conduct some initial analysis and act as a springboard for a future programme of work. In order to improve our understanding of liquidity, there are a number of practical tasks that would provide invaluable information. These include:

- *Regular Transactions Reporting:* regular, disaggregated analyses of transactions activity from data providers such as IPD or Property Data would have benefits both in terms of a research resource and as an aid to practical decision making for investors and their advisors;
- *Improved Data on Size of Market:* it is difficult to measure liquidity in the absence of robust measures of the size of the commercial real estate market; in terms of buildings, floorspace and, critically, value. An industry-wide effort to develop and maintain good quality statistics on size of market has major benefits in portfolio decision-making as well as facilitating better analysis of sales and purchase rates, turnover and other inputs for the analysis of liquidity;
- *Improved Availability of Data on Activity Levels in Indirect Vehicles:* this is a problematic area given that many investors in private vehicles demand confidentiality, but any complete assessment of liquidity needs information on transactions activity for the fullest range of investment vehicles possible (and a benchmark against which to gauge that activity);
- *Collection of Data for Time on the Market:* for a complete assessment of liquidity and risk, the property industry needs reliable information on the time taken to market and sell different types of property in different market conditions. Realistically, only funds and owners themselves can generate this information. In turn, this requires:
- *An independent data handler and strong confidentiality constraints to ensure the safe processing of market sensitive information;*
- *A general level of agreement on the stages of the marketing and sales process to ensure common standards of data collection.*

4. Conclusions and Recommendations

The Investment Property Forum research project was relatively small scale and has a short reporting horizon. Much more work is needed in order to begin to develop a grasp of the implications of liquidity in *commercial* real estate markets. The research team have identified a number of possible future research directions that would improve our understanding of real estate liquidity. The topics identified below are interlinked and, inevitably, overlap. No doubt readers can identify many other projects in the same vein.

- *Model and Explain Variations in Transaction Rates:* the analysis of transaction activity reported in Working Paper 2 can be extended in a number of directions. It would be very valuable to extend the explanatory modelling work. What determines variations in transaction activity levels? What explains differences between property segments and property vehicles? Can we investigate and model transactions activity and liquidity proxies over different stages of the property cycle? It would also be valuable to carry out more work on transactions and turnover in relation to portfolios, in relation to private and public investment vehicles, in real-estate backed debt securities and in international markets;

- *Analysis of the Probability of Sale:* What characteristics of real estate influence sales rates (and, hence, holding periods)? Analysis of sold properties from the Investment Property Databank could help to untangle the different factors that drive sales rates (and, indeed, purchase rates) and the extent to which these change over time.
  This would shed light on *ex post* holding periods, on *ex ante* risk and on the processes that underpin differential liquidity.

  Parallel work in the US has analysed the NCREIF database, but the UK work could be deeper with more transactions to analyse and with proper account taken of unsold properties;

- *More analytic work on the process by which properties are sold.*

  - *What drives the sales decision? Are there properties that never sell?*
  - *What are the impacts of valuation on determining a sale price? Do valuations reflect lack of readiness for sale correctly?*
  - *What are the costs of maintaining property ready for sale and what are the costs of delay by not so doing?*

  Such research requires intensive case study research both cross-sectional (that is for a range of types of fund) and longitudinally (in that the performance of properties and the valuation process need investigation);

- *Research into Holding Period, Risk and Return Expectations:* most of our evidence on holding periods, risk and return is *ex post* or derived by implication from historic data. We have very little systematic knowledge about required returns, expected or target holding periods and only limited information on risk perception. As a result, survey work on the expectations of different types of investors would be a valuable complement to the existing body of work on market performance and would help in the understanding of investor behaviour in the face of illiquidity.

4. Conclusions and Recommendations

- *Research the Buy Side:* much of the detailed analysis and discussion in the IPF project has focussed on property sales. This needs to be rebalanced with a consideration of the process by which properties are purchased: the initial decision basis and criteria, the search process, the price negotiation process. It is clear that the purchase process is not the mirror image of the sale process other than at completion and, although there are points of similarity, there are also areas of divergence which will be conditional on market circumstances. Although there is information (and much market knowledge) of these practices, a systematic study with a focus on the time taken and the probability of success at various stages of acquisition would be highly valuable in enhancing our understanding of liquidity in commercial real estate.

- *What are the Implications of Illiquidity?* The research project did not fully address the cost/return implications of illiquidity. Areas for research might include the cost of being in the wrong asset class or market or segment due to delays in the sale or purchase process (an issue raised in McNamara's earlier study); the costs of rebalancing the portfolio or of having an inefficient portfolio as a result of the inability, at reasonable cost, to rebalance the portfolio; the pricing impacts of buy or sell decisions, particularly at the portfolio rather than the asset level. Such research, as well as greatly enhancing our understanding of property market liquidity, is of relevance to the discussions surrounding the development of property derivatives markets;

- *Illiquidity, Risk and Risk Premia:* much more analysis is needed of the implications of liquidity and illiquidity on required returns and on *ex ante* and *ex post* risk. In particular, the issue of whether or not systematic variations in liquidity are priced – that is, is there a liquidity return premium? – must be addressed.

Some of these research avenues are relatively self-contained and could be carried out in a relatively short time period. Others require data that are not available yet or that are unreliable. This implies either primary data gathering or a commitment from the industry to facilitate data collection, as suggested above. Finally, some of these research themes require detailed study over a more lengthy period of time: for example, analysis of the costs and benefits of keeping properties ready for sale or analysis of the buy side require intensive case based research and cannot be carried out effectively in a few months.

In many ways, this last group of projects may be better suited to research council funding, a funded research officer (with a contract extending over two or more years and a remit to support research on liquidity) or even CASE-type industrial supported doctoral research, perhaps with the IPF or its members providing material support and pledging to make data and information available to the research team. It would be inappropriate to force such important research projects to conform to tight deadlines more appropriate to market consultancy, to constrain research methods to fit such deadlines, or to only bring forward projects that have short term payoffs while neglecting potentially more valuable long term research.

Acknowledgments

The research team would like to thank the *Investment Property Forum's* project steering group: Stephen Palmer (chair), Richard Barkham, Charles Follows, Paul McNamara, Stuart Morley and Francis Salway, for their helpful suggestions, advice and corrections over the course of the project. The working papers from the projects represent the views of the team members and should not be taken as the views of the IPF or of members of the Steering Group.

Investment Property Forum
3 Cadogan Gate
London SW1X 0AS

Telephone 020 7334 3799
Fax 020 7334 3872
Email ipfoffice@ipf.org.uk
Web www.ipf.org.uk