Aligning asset allocation and real estate investment: some lessons from the last cycle

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Abstract

Asset allocation is concerned with the development of multi-asset portfolio strategies that are likely to meet an investor's objectives based on the interaction of expected returns, risk, correlation and implementation from a range of distinct asset classes or beta sources. Challenges associated with the discipline are often particularly significant in private markets. Specifically, composition differences between the 'index' or 'benchmark' universe and the investible universe mean that there can often be substantial and meaningful deviations between the investment characteristics implied in asset allocation decisions and those delivered by investment teams.

For example, while allocation decisions are often based on relatively low-risk diversified real estate 'equity' exposure, implementation decisions frequently include exposure to higher risk forms of the asset class as well as investments in debt based instruments. These differences can have a meaningful impact on the contribution of the asset class to the overall portfolio and, therefore, lead to a potential misalignment between asset allocation decisions and implementation.

Despite this, the key conclusion from this paper is not that real estate investors should become slaves to a narrowly defined mandate based on IPD / NCREIF or other forms of benchmark replication. The discussion suggests that such an approach would likely lead to the underutilization of real estate in multi-asset portfolio strategies.

Instead, it is that to achieve asset allocation alignment, real estate exposure should be divided into multiple pools representing distinct forms of the asset class. In addition, the paper suggests that associated investment guidelines and processes should be collaborative and reflect the portfolio wide asset allocation objectives of each pool. Further, where appropriate they should specifically target potential for 'additional' beta or, more marginally, 'alpha'.

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1. Introduction

Real estate is a flexible asset class that can perform a broad range of roles within a multi-asset portfolio, including diversification, inflation hedging, income provision and enhanced returns from both market characteristics and active management. However, recent experience suggests that this diversity has led to difficulties for some asset allocators. Specifically, publicly available information on the experience of several funds shows that the asset class failed to meet the expectations embedded in asset allocation calculations.

This paper addresses the issues underpinning this suggested misalignment, offers explanations and provides some feasible solutions. The discussion addresses the issues via answers to the following five questions.

(a) First, what are the implications of asset allocation goals for private markets in general and real estate in particular?

(b) Second, what is 'real estate' and how do performance drivers differ for specific forms of the asset class (e.g., equity vs. debt, stabilized vs. transitional etc.)?

(c) Third, what roles can various forms of the asset class play in a multi-asset portfolio?

(d) Fourth, is it possible to enhance 'beta', systematic or market returns from various forms of real estate via trading and value-add activities (i.e., 'alpha') on a sustained basis? and

(e) Fifth, what options are available to align asset allocation and implementation in real estate?

The remainder of this paper provides suggested answers to these questions and, as a consequence, is organized as follows. Section Two provides an overview of accepted approaches to asset allocation and considers some of the potential challenges associated with the integration of private markets, including real estate, into contemporary models. Section Three offers some thoughts on the definition of real estate as an asset class. Section Four considers the roles real estate can play in a multi-asset portfolio. Section Five examines the options for maximizing alignment between asset allocation and real estate investment strategies. Section Six provides a summary and conclusions.

2. Asset allocation

The following discussion provides the asset allocation background to the paper. The first section reviews the basis of asset allocation and highlights some of the potential implications of commonly accepted approaches for private markets. The second section considers the role of individual asset classes in a multi-asset portfolio. The third section addresses the relative importance of 'beta', systematic or asset class returns and 'alpha', unsystematic or skill based returns in asset allocation decisions. The fourth section covers the limitations associated with benchmarks as beta proxies. The fifth section considers some recent developments in private markets and addresses their implications for the issues reviewed in this paper. The sixth section reviews how contemporary asset allocation literature has addressed some of the common limitations suggested for traditional approaches to asset allocation. The seventh section provides a summary.

2.1. The basis of asset allocation

Asset allocation is an investment strategy that attempts to achieve investor specific goals via a multi-asset portfolio comprised of exposures to distinct sources of 'beta'[1] and, potentially, sources of 'alpha'.[2] Asset classes (e.g., equities, fixed income, private equity, CTAs, real estate etc.) are typically used to represent distinct sources of 'beta'.[3] The literature shows that, in both public and private markets, beta based asset allocation decisions are the key determinant of portfolio level returns[4] as well as the key risk management tool.[5]

The discipline is typically divided into two forms - strategic[6] and tactical[7] - the essence of which can be reduced to two of the main insights of Modern Portfolio Theory (MPT) and the Capital Asset Pricing Model (CAPM).

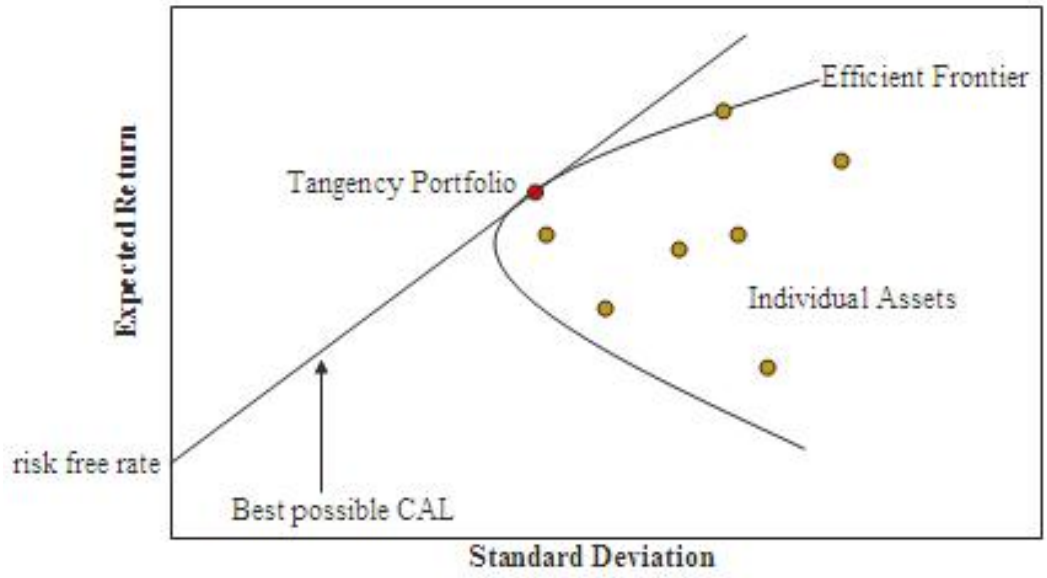
(a) First, that through diversification it is possible to neutralize the impact of asset specific or unsystematic risks on portfolio performance, and therefore reduce risk within a specific asset class portfolio to the level of the overall market or beta for that asset class (i.e., systematic risk).[8]

(b) Second, that by combining asset classes as represented by appropriate benchmarks that have distinct performance characteristics or drivers via Mean-Variance Optimisation (MVO), it is possible to produce an 'efficient

[1] Markowitz (1952, 1959), Sharpe (1992), Eychenne *et al.* (2011), Raymond (2009).
[2] Towers Watson (2012).
[3] Ang *et al.* (2009, 2011a) describes an asset class as a collection of fundamental factors or beta sources (e.g., credit risk, term risk, currency, liquidity, value / growth, small / large, momentum and volatility) and suggests that asset classes should be viewed as vehicles for underlying factor exposures. Further, they highlight that factors underlying various asset classes will overlap.
[4] Ibbotson & Kaplan (2000), MacKinnon (2011), Anson (2002).
[5] Ilmanen (2011), Campbell & Viceira (2002).
[6] Strategic Asset Allocation (SAA) is defined as the development of a long-term 'reference' portfolio that is aligned with long-term investor goals and can be tactically adjusted based on short-term market forecasts.
[7] Tactical Asset Allocation (TAA) is defined as a short-term deviation from the long-term portfolio position that allows the portfolio to benefit from the impact of anomalies and fluctuations in the business cycle while maintaining a clear link with investor goals.
[8] Elton & Gruber (1977) shows that as the number of assets in a portfolio increases the total portfolio variance converges to the average covariance between the assets rather than to the risk characteristics of any single asset. For equities they show that diversification to systematic risk can be achieved with around 30 assets. While there are good arguments to expect *n* to be higher for real estate and other private market assets, the same broad principal has been shown to apply (see for example Brown & Matysiak (2001)).

frontier' (Figure 1) of multi-asset portfolios that minimize risk per unit of return[9] based on expected return, risk / volatility and correlation assumptions.[10]

Figure 1: Efficient frontiers



Source: Elton & Gruber (1977)

Arguably, there are three key implications of traditional asset allocation approaches for private markets – including real estate. They are:

(a) Each asset class performs a specific role in a portfolio that is determined by the relative characteristics of the asset class (i.e., factor exposures)[11] which, in turn, are based on a combination of GDP exposure and the 'institutional' and other characteristics of the asset class,[12] including potential for alpha delivery;[13]

(b) It is commonly assumed that it is possible to replicate asset class returns used in the asset allocation calculations and that – at least for most public market investors and asset classes - unsystematic or 'alpha'[14] based returns are unlikely to offer a persistent source of return; and

[9] With adjustments to the original MPT framework the same approach can be used to optimize for other targets such as liquidity, income, inflation hedging etc. For example, the Harvard Endowment uses the following equation to determine its long-term return requirements: $LT\ Return = Annual\ Outflow + CPI + Growth$. Based on the above, Harvard's goals are: (a) to maintain the real spending power of the endowment; and (b) to provide additional returns to fund increased spending in real terms (see Ang (2010), Viceira (2012)).

[10] For example, Markowitz (1952, 1959), Treynor (1961, 1962), Sharpe (1964), Mossin (1966).

[11] Sharpe (1992), Ang *et al.* (2009, 2011a), Pederson *et al.* (2012).

[12] Such as the type of GDP exposure (i.e., sector, region, country), the means of delivery of the return (e.g., income or capital appreciation) and the institutional framework (e.g., valuation approach, transparency, liquidity, supply and demand framework etc.). See for example, Singer & Terhaar (1997) for a discussion of the economic foundations of capital market returns and Ball (2006) for a review of the institutional structure of real estate markets.

[13] Towers Watson (2012) amongst others has suggested the formal incorporation of alpha in the asset allocation framework. Importantly, this approach implies an approach to alpha that is consistent with a 'Total Portfolio' strategy implied by Modern Portfolio Theory (Raymond, (2009), White (2012)).

[14] By definition alpha is the proportion of the fund return that cannot be explained by beta. As a result it is often characterized as the return from skill (or the lack thereof). Arguably, a better definition could be *"…the part an asset or fund return that cannot be explained by common risk factors…"*. This definition suggests that alpha might be explained by skill, but it may also be explained by poorly defined benchmarks or by excessively liberal investment guidelines. As a

(c) Asset classes are represented by benchmarks, which may offer an imperfect proxy for the full range of returns available from an asset class. As discussed below, this is a particular issue for private markets and reflects a theme of this paper (i.e., potential beta returns might be excluded from the range of benchmarks adopted by a specific investor).

The following discussion considers each of these issues in turn. This is followed by a brief overview of some of the key criticisms of MPT and the solutions suggested by the contemporary literature.

2.2 The role of individual asset classes in a multi-asset portfolio

As suggested above, asset classes are included in a multi-asset portfolio to capture their distinct market level or systematic performance characteristics - as well as for potential alpha delivery - under specific economic and financial conditions. Importantly, the objective is the maximization of portfolio level returns, subject to the agreed mandate of the investor.[15] As a result, asset allocators are concerned with the level of risk-adjusted returns at the asset class level, as well as the underlying characteristics or drivers. As a result, return maximization at the asset class level should be consistent with the delivery of overall portfolio targets.

The level of risk reduction is a function of the number of genuinely distinct asset classes – or combinations of factor exposures - that can be efficiently included in the portfolio. Asset classes are selected based on their availability to the institution[16], their potential contribution to the overall portfolio via expected returns, volatility and correlation with other available asset classes[17] and, potentially, the need to preserve the 'option' for a future allocation to an asset class.[18] The scope for delivering 'alpha' may also play a role in asset class selection (i.e., given appropriate evidence and information on implications for overall portfolio goals, asset allocators may allocate to investment skill).[19]

Axiomatically, this means that it is typically impossible to understand the rationale behind an asset allocation decision (e.g., to alter the weight of a specific asset class in the portfolio) in the absence of a complete understanding of overall portfolio goals. The behavioral and operational challenges suggested by this requirement are arguably particularly acute in private markets.[20] As a result, this issue is a central theme of this paper.[21]

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result, alpha can be subdivided into genuine alpha or skill, and what might be called 'false' alpha or 'disguised' beta (Ilmanen, 2011).

[15] Raymond (2009).

[16] Which is typically a function of organizational size and sophistication.

[17] Assets that are uncorrelated with other investment options, or are likely to provide protection from specific economic conditions, may be preferred to assets that have a higher correlation with other investments, even if their expected return is higher.

[18] It may be logical to preserve an allocation to an asset class to maintain the investment infrastructure. This is particularly important for asset classes where the allocation is likely to be unstable due to marked and regular price swings (e.g., transitional real estate).

[19] Towers Watson (2012).

[20] Grenadier & Wang (2004) suggest that the *"…interplay between the twin forces of hidden information and hidden action leads to markedly different investment outcomes than when only one of the two forces is at work."*

[21] Maslow (1943), De Brouwer (2006, 2009), Shefrin & Statman (2000).

2.3 The relative importance of 'beta' and 'alpha'

Traditionally, the asset allocation literature has focused on benchmark or beta based allocation strategies, with potential returns from genuine alpha typically being viewed as *de minimis*. This approach implies that:

(a) First, it is possible to replicate beta or market returns in all asset classes;

(b) Second, that additional returns from alpha are unlikely to be persistent performance drivers; and

(c) Third, that a passive investment strategy is likely to be optimal and cost effective.[22]

For most public markets the first assumption holds as it is evidentially possible to replicate the market portfolio with limited tracking error[23] – due to the transparency, liquidity and divisibility of most public assets. With regard to the second assumption, the literature suggests that asset allocation decisions (and, therefore, beta) rather than active management or alpha, dominate portfolio returns.[24] The approach is also in line with research suggesting that 'alpha' from active public market investments is often confused with hidden beta (e.g., via leverage, exposure to systematic risk factors excluded from the selected benchmarks etc.)[25] and, therefore, represents an asset allocation rather than an implementation challenge.[26]

However, while a beta-based approach to asset allocation is arguably appropriate – and cost effective - for public markets, its application to private markets, including real estate, has two potential limitations:

(a) First, as private markets are typically opaque, illiquid and indivisible, it is impossible to perfectly replicate the composition of a benchmark index;[27] and

(b) Second, market inefficiencies (e.g., information limitations) have led some commentators to suggest that the scope for adding genuine alpha is greater than for public markets.[28] As a result, limiting asset allocation to beta-based calculations may lead to the exclusion of potentially attractive returns from the overall portfolio.[29].

While the application of a passive beta or benchmark based approach to the more transparent public markets has broad (if reluctant) acceptance, private market investors typically maintain – potentially with some justification - that,

[22] Sharpe (1991, 2002), Campbell & Viceira (2002).
[23] Tracking error is defined as the standard deviation of the returns of the portfolio minus the returns of the benchmark. $TE_P = \sigma(r_p - r_m)$.
[24] Brinson *et al.* (1986), Ibbotson & Kaplan (2000), Bekkers *et al.* (2009), Swensen (2000) , Ang *et al.* (2009, 2011a).
[25] Ang *et al.* (2009, 2011a).
[26] Towers Watson (2012).
[27] Cable (2012), Morrell (1995), Callender *et al.* (2007), Young (2008), Fisher & Goetzmann (2005).
[28] Cable (2012).
[29] i.e., it might be logical to allocate to potential alpha sources an amount in excess of the beta based weight to capitalize on alpha potential.

due to market inefficiencies, investment skill can enhance performance and, therefore, should be reflected in asset allocation assumptions. This issue forms a central theme of this paper.

2.4 Benchmark limitations

The third implication of typical approaches to portfolio construction is a reliance on benchmark, universes, or peer-based indices to represent the characteristics of individual beta sources or asset class returns. Table 1 provides a list of asset classes and associated benchmark indices that are typically available to, and commonly used by, institutions.

Table 1: Asset classes and potential benchmarks

Asset Class	**Potential Benchmarks**
Developed Equities (US, Europe, Japan, Australia and New Zealand and Canada).	Country / region specific large cap equity indices (e.g., S & P 500, MSCI Europe etc.)
Small Cap Equities (US, Europe, Japan and Australia and New Zealand).	Russell 2000 and country specific MSCI indices
Emerging Equities (Subcontinent, Dragon, Rest of Asia, Latin America, Central and Eastern Europe and MENA).	Country specific MSCI indices
Fixed Income (Global Gov't, Global Inflation Linked, IG Gov't related, IG corp., EM local currency, EM foreign currency)	JP Morgan GBI, Barclays Inflation Linked and other appropriate indices
Private Equity	MCSI World plus spread
Real Estate	IPD Global plus spread / adjustments
Infrastructure	Global Equity and Debt mix

Source: Authors' assumptions

These benchmarks provide three types of *ex post* information that are important for asset allocators:

(a) First, mean return and volatility data, describing the performance of the market as a whole and sub-sets thereof, over a range of frequencies and economic conditions;

(b) Second, correlation data, describing the co-movement of returns from individual asset classes over a range of frequencies and economic conditions; and

(c) Third, a basis for comparisons between benchmark and portfolio performance (i.e., performance attribution to identify alpha) and analysis of factor differences between delivered portfolios and benchmarks (e.g., importance of credit exposure etc.).[30]

For equities and fixed income, benchmarks can be assumed to provide a close proxy for the characteristics of the available investment universe. However, it is not possible to make the same claim for private markets such as real estate, private equity and infrastructure. Typically, there are two key issues with private market data provision:

[30] Farrelly & Baum (2008), Baum *et al.* (2011), Ang *et al.* (2009, 2011a).

(a) First, coverage; and

(b) Second, accuracy.

Coverage limitations are a function of the private nature of these asset classes. Unlike public markets, trading and pricing is conducted on a principal-to-principal basis, not via exchanges. As a result, investments are only included in indices where there is an incentive for the investment manager to contribute data. Typically, incentives for inclusion are greater for relatively low risk assets in developed markets than for investors pursuing higher risk strategies in either developed or emerging markets. Consequently, private market indices are likely to be dominated by relatively low risk assets in developed markets.[31]

With regard to accuracy, the lack of exchange-based trading combined with the inherent heterogeneity of private market assets means that, by definition, return data are based on irregular transactions and associated valuations rather than regular and accurate price data. As a result, return data are smoothed, leading to an artificial reduction in volatility and the alteration of correlation estimates.[32]

While de-smoothing techniques can address the second issue,[33] the first is slightly more problematic and can create significant implementation challenges. Specifically, problems can arise due to differences between the 'investible' beta and the benchmark beta. If these differences are combined with a poor governance framework (e.g., investment guidelines that fail to embed the asset level characteristics underpinning the asset allocation decision) they may lead to marked differences between the performance characteristics implied by the adopted benchmark – and therefore assumed in the asset allocation calculations - and those delivered by the invested portfolio.[34] While this may be presented as 'alpha' or skill-based return,[35] in most instances it will be based on exposure to sources of beta return excluded from the benchmark index but included in the universe adopted for the invested portfolio. This is an issue that we will return to in subsequent sections of this paper.

Based on the above, it is clear that while benchmark-based approaches to the incorporation of private markets in asset allocation strategies are probably feasible they are not necessarily optimal. Available benchmarks only represent a proportion of the investible universe in most private markets.[36] As a result, limiting allocations to benchmark-based definitions will, by definition, exclude some potential 'beta' returns from overall portfolios. If this issue is associated with limited – or non-existent – attribution analysis[37] it can lead to unexpected

[31] Peyton (2008), Frodsham & Kennedy (2009), Shilling & Wurtzebach (2010), IPD (2012),
[32] For real estate performance data this characteristic has been identified by a range of authors including: Geltner (1989, 1990, 1991 and 1993), Quan & Quigley (1989), Gyourko & Keim (1992), Brown & Matysiak (1995), Morrell (1995), Chaplin (1997), Chau *et al.* (2001), Fisher & Geltner (2000), Geltner & Goetzmann (2000), Clayton *et al.* (2001), Giliberto (2003) and Key & Marcato (2007). Giliberto (2003) and Bond *et al.* (2007) highlight that smoothing applies to private equity, infrastructure and some categories of hedge funds, in addition to real estate.
[33] Geltner (1989, 1990, 1991 and 1993), Cho *et al* (2001), Key & Marcato (2007), Cheng *et al.* (2011).
[34] Morrell & Kennedy (2011), Ang *et al.* (2009, 2011a).
[35] Forming the basis of skill or 'alpha' based performance fees.
[36] Section 3 provides a discussion of the differences between definitions underlying real estate benchmarks and those associated with the aggregate and investible stocks.
[37] Farrelly & Baum (2008), Baum & Struempell (2006), Baum *et al.* (2011), Ang *et al.* (2009, 2011a).

rather than expected differences between benchmark and portfolio performance and the mischaracterization of beta as alpha. Unfortunately, it is this type of outcome that characterizes many investors' experiences of private market investments during the last cycle.

2.5 Recent changes to private investment markets

Arguably, the challenges associated with the alignment of private market investing and benchmark-based asset allocation have increased over the last decade due, amongst other factors, to three inter-related developments:

(a) First, the adoption by a number of funds of the 'Endowment Model' approach to investing as advocated by Yale CIO David Swensen;[38]

(b) Second, the related growth of the private equity, hedge fund and real estate fund sector; and

(c) Third, the wide availability of low cost / limited covenant debt (at least until 2008).

The popularity of the 'Endowment Model' following the publication of Swensen's influential book "Pioneering Portfolio Management" in 2000, combined with the expansion of the private equity sector following the market correction of the early 1990s,[39] contributed to a marked increase in allocations to private assets and a resultant increase in commitments to, and growth of, a wide range of private equity, real estate and other funds.

High levels of leverage, opaque investment structures, high fees and a focus on absolute rather than relative returns characterized a large proportion of these funds. Arguably, these characteristics combined with the structural change of the industry, enhanced some of the problems identified above (e.g., differences between the target investment universe and that implied in the benchmark, limited guidelines, minimal disclosure / attribution, a focus on absolute rather than benchmark returns etc.) and, therefore, contributed to some of the alignment challenges addressed in this paper.

2.6 Developments in Modern Portfolio Theory

While the insights of MPT / CAPM are central to finance theory and form the cornerstone of best practice in asset allocation, it would be incorrect to suggest that they are uncontroversial or perfect. Issues with the approach are highlighted by an extensive literature and can be broadly grouped into two categories:

(a) First, limitations of the underlying market assumptions which suggest that:

1. Asset class returns are normally distributed and correlations between asset class returns are stable;

[38] Swensen (2000).
[39] e.g., the growth of the real estate private equity industry associated with the US Resolution Trust Corp (RTC).

2. All investors are price takers, utility maximizers, rational, risk averse, have access to the same information at the same time and have unbiased return expectations;

3. There are no transaction costs or taxes and assets are divisible; and

4. Any investor can borrow or lend unlimited sums at the risk free rate.[40]

(b) Second, difficulties associated with translating the theory into a viable portfolio construction algorithm.[41]

However, since the introduction of MPT in 1952 many attempts have been made to improve both the model and the realism of the underlying assumptions. Examples include, post-modern portfolio theory (PMPT),[42] Black-Litterman,[43] arbitrage pricing theory (APT),[44] robust optimization,[45] Beyes-Stein estimators,[46] resampled efficient frontiers,[47] and adjustments to allow for liquidity and other differences between various investment options.[48] These and other approaches attempt to expand MPT to incorporate, *inter alia*:

(a) Multiple dimensions of risk (i.e., a focus on liquidity, income, capital loss in addition to variance);

(b) Non-normal return distributions (e.g., fat tails and skewed correlation profiles)[49];

(c) Asymmetric investor preferences (e.g., policy driven demand for fixed income instruments);

(d) Within-horizon losses; and

(e) Regime-specific assumptions for return and risk.[50]

These developments have, without doubt, improved the theoretical foundations of asset allocation and, therefore, contributed to improved decision making – particularly over the long-term. Nevertheless, given the inherent complexities associated with asset pricing, investor behavior and economic activity, there are fundamental limitations to the potential for improvement.

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[40] Ang *et al.* (2009, 2011a), Fama (1970, 1991, 1998), Ball (2009).
[41] Litterman *et al.* (2003), Brodie *et al.* (2009), Ilmanen (2011), Chopra (1993), Michaud (1989)
[42] Rom & Ferguson (1993, 1994), Sortino & Stachell (2001).
[43] He & Litterman (2012), Walters (2011).
[44] Ross (1976), Roll & Ross (1980), Nai-Fu *et al.* (1986), Burmeister & Wall (1986).
[45] Ceria & Stubbs (2006), Cavadini *et al.* (2002), Ben-Tal & Nemirovski (1999), Lobo *et al.* (1998), Goldfarb & Iyengar (2003).
[46] Jorion (1986, 1991), Grauer & Hakansson (1995)
[47] Michaud (1998).
[48] Ang *et al.* (2009, 2011a), Anglin & Gao (2011), Rehring (2012).
[49] For real estate this issue is addressed by papers including Coleman & Mansour (2005).
[50] Kinlaw (2011).

In other words, given the demanding goals of asset allocation, any search for perfection is likely to be a forlorn and fruitless endeavor. Further, while it is relatively easy to criticize any approach to asset allocation (or any form of forecasting for that matter) it is far harder to develop alternatives that are robust, coherent and able to meet the goals of long-term investors.[51]

Nevertheless, it is probably reasonable to assume that challenges associated with asset allocation are more acute in private markets, including real estate, than in public markets. As suggested in the preceding discussions, there are a number of reasons for this, including greater levels of opacity and illiquidity, limited levels of asset divisibility and issues with benchmark coverage and – arguably – greater scope for sustained alpha. All of these issues will be addressed in subsequent sections of this paper.

2.7 Summary

Asset allocation has been defined as an investment strategy that, at least for public markets, is widely recognized as the key determinant of multi-asset portfolio performance and the key risk management tool. The preceding discussions suggest that while the same conclusion might hold for private markets - including real estate - issues such as difficulties replicating beta and benchmark limitations (e.g., differences between 'benchmark' definitions of private markets and the actual investment universe) might create additional alignment issues.

The discussions also suggested that the growth of the 'Endowment Model' combined with structural changes to the private equity industry during the mid- to late-1990s, might have exacerbated some of the underlying problems (e.g., by promoting the use of funds, differences in leverage between the asset allocation-based targets for private markets and implementation may have increased). It also addressed criticisms of asset allocation techniques and suggested that holding asset allocation methodologies to an excessively demanding standard may be inappropriate given the complex systems they are designed to reflect.

Perhaps most importantly, the discussion suggested that as asset allocation decisions are based on the interaction of expected returns, volatility and correlation estimates for a range of asset classes, it is virtually impossible for individuals responsible for the implementation of specific asset class strategies – including real estate - to be aware of the rationale behind individual asset allocation decisions (e.g., to increase or decrease allocations to their asset class, or to alter other specifications for the portfolio).

As a result, asset allocation implies that investment managers responsible for specific mandates make decisions in the absence of incomplete information on the appropriate objective function. The behavioral and operational challenges associated with this aspect of asset allocation are apparent, even given clear benchmarks and guidelines.

[51] The criticisms of Taleb (2007) and others should be viewed in this context. Further, while methodologies such as Risk Parity (Inker (2011), Chaves *et al.* (2011) and Bhansali (2011)) offer an alternative, they suffer from flaws that are arguably greater than those affecting MPT based techniques.

3. Real estate as an asset class

The following discussion examines popular conceptions of real estate as an asset class with particular regard to two issues:

(a) First, benchmark definition and beta delivery; and

(b) Second, alpha generation.

The first section looks at approaches to definitions of the asset class from both an index and a theoretical perspective. The second section considers drivers of return associated with various forms of real estate. The third section addresses the potential roles of real estate in a multi-asset portfolio. The fourth section considers links between asset allocation and portfolio structure. The fifth section provides a summary and some conclusions.

3.1 What is real estate?

Given that real estate is central to both our working and private lives it is easy to assume that defining the asset class will be a straightforward exercise. It is not.

While the size, diversity, and economic importance of the asset class are key factors supporting its place as an investment, these characteristics also lead to complexity, opacity and, as a result, imperfect benchmark and market data. As suggested in Section 2 for private markets in general, it is this 'fuzziness' that can impair alignment between asset allocation and implementation.[52]

The following discussion compares 'broad' definitions of real estate with those embedded in indices and commonly used in asset allocation.

3.1.1 A broad definition of real estate

Broadly defined, real estate is thought to represent between half and one-third of all capital assets in the world.[53] Assuming global capital assets of $212tn as at the end of 2010,[54] the total value of global real estate is probably somewhere between $60tn and $100tn.

The overall real estate stock is financed by both debt and equity and reflects exposure to a wide range of asset types, ownership structures and risk profiles. According to the 'four-quadrant' view[55] exposure options for real estate as an asset class can be divided into the following four segments:

a) private equity;

b) public equity;

c) private debt; and

[52] Idzorek *et al.* (2006), Callender *et al.* (2008).
[53] Baum & Hartzell (2011).
[54] McKinsey (2011).
[55] Hudson-Wilson & Guenther (1995).

d) public debt.

However, this is an intentionally simplistic approach. Each broad category can be divided into meaningful and substantial sub-categories.

First, each category can be divided by the risk, liquidity and likely return distribution characteristics of the underlying investments. For example, private equity real estate is popularly divided into core, value-add and opportunistic investments[56], with the former representing predominantly 'stabilized' or low-risk assets with high quality in-place cash flows, and the latter representing higher-risk 'transitional' assets with potential for return enhancement from pricing arbitrage, structuring (e.g., leverage) and value-add activities (Figure 2). As discussed below, differences between these forms of real estate private equity can have a profound impact on the role of the asset class in the portfolio.

Figure 2 – The key characteristics of stabilized and transitional real estate

Source: Authors

[56] INREV (2008, 2009, 2011), Baczewski *et al.* (2003), Shilling & Wurtzebach (2010), Frodsham & Kennedy (2009), Frodsham (2010), Fisher & Geltner (2002).

Second, each category can be subdivided by underlying asset type. At the broadest level 'real estate' can be divided into the categories detailed in Table 2.

Table 2: Categories of real estate investment

a.	Large 'traded' income generating real estate investments in developed markets (for example, office, retail, industrial, multi-family residential, hotels and other) commonly owned and managed by large institutions
b.	Small 'traded' income generating real estate investments in developed (for example, office, retail, industrial, residential, hotels and other) commonly owned and managed by private investors, smaller funds, individuals and companies
c.	'Traded' income generating real estate investments in emerging markets
d.	Single-family housing
e.	Land, agriculture and timberland
f.	Infrastructure (for example, power stations, roads and so on)
g.	Publicly owned and occupied real estate (for example, government / NGO offices)

Source: Authors

The first category typically dominates institutional 'real estate' investment portfolios and, therefore, the performance indices generated from institutional holdings (e.g., IPD, NCREIF, NAREIT, EPRA, Giliberto-Levy etc.). By definition, these assets are located in the larger urban conurbations, and are likely to be traded between a relatively small group of national and international investors.

While the second category shares many of the characteristics of the first, the dominance of smaller investment funds, private individuals and local companies has implications for pricing and performance. In addition, due to the inclusion of assets in smaller towns returns might be driven by different occupier demand factors. Importantly, smaller funds and private investors are less likely to provide information to index providers than the larger investors.

Although the third category shares many of the underlying economic characteristics of the first two categories, the lack of quality market data means that emerging market real estate is typically excluded from index data and, therefore, from the information typically used to identify the likely impact of 'real estate' on multi-asset portfolios.

Despite this, it is not uncommon for real estate investors to include emerging markets in their allocations on the basis that stabilized assets in such markets are likely to share some of the key characteristics of similar assets in developed markets and that, over time, index provision is likely to improve. These assumptions are not unreasonable, although they do contribute to differences between benchmark beta and invested beta. For example, given differences between the level of development in emerging markets as well as relatively high levels of GDP growth, it is likely that emerging market real estate will offer 'higher-beta' exposure, enhanced scope for alpha (assuming the requisite market access) as well as distinct economic characteristics that may lead to differing correlation structures to developed market real estate.

While the fourth category is obviously both large and important, high levels of owner occupation and ownership by small local landlords mean that this form of the asset class is typically unavailable to institutional portfolios and, therefore,

performance indices. However, this does not mean that single-family housing is excluded from the broader real estate investment universe. A large number of relatively small local funds are active in this space in the UK, US and elsewhere and there has been a marked increase in interest in this sub-asset following the correction in developed market residential prices between 2008/9.[57]

All three elements of the fifth category are also very large and important; in the US farmland accounts for 41% of the total land surface, while timberland accounts for 22%.[58] By value, US timberland is estimated to represent at least 10% of the value of the aggregate commercial 'investible' real estate market[59] at c. $400-500bn.[60] While estimates vary, US agriculture probably reflects in excess of 30% of the value of the aggregate commercial investible universe (i.e., $1,200bn to $1,500bn).

The sixth category is also large and increasingly important. Changes to government funding requirements mean that infrastructure investment opportunities are increasingly accessible to institutional investors. However, while the assets often include a 'real estate' element, value drivers are commonly based on government policies and natural monopolies (e.g., water infrastructure, roads etc.). As a result, this form of investment is typically viewed as a different beta source to real estate and, therefore, a separate asset class.

The final category refers to government and NGO[61] buildings. While a proportion of the buildings occupied by governments and their associated institutions may be accessible to institutional investors (e.g., via a Private Finance Initiative (PFI) and other such programs), a significant quantity of this element of the overall real estate stock is unlikely to be available to institutional investors. As a result, this form of the asset class is typically excluded from index coverage.

As a result, 'real estate' can be subdivided by the following parameters:

(a) First, position in the capital stack (i.e., equity or debt);

(b) Second, level and type of risk by type of cash flow (e.g., stabilized or transitional); and

(c) Third, type of asset (e.g., a large 'traded' asset in a developed market vs. a small 'traded' asset in an emerging market).

A large 'traded' core equity investment will have very different investment characteristics to a small opportunistic debt exposure. While both investments could justifiably be characterized as real estate, the clear differences in characteristics and, by extension, the portfolio role they can play limits the usefulness of the classification for asset allocation purposes.

[57] See for example Green Street (2012), Chang (2011), Shilling (2011), Bernanke (2012).
[58] Based on US Department of Agriculture data.
[59] Excluding single family residential.
[60] Campbell Group (2011), Eves & Newell (2001).
[61] Non-governmental organisations.

In this context, Idzorek *et al.* (2006) highlight that there is: *"….considerable uncertainty regarding the role of real estate…"* in a multi-asset portfolio. Further, they suggest that different definitions of 'real estate' will lead to different asset allocation conclusions. Clearly, given the diversity of the broad definition a more focused and narrow approach to 'real estate' than suggested above is required.

3.1.2 'Investible' real estate stock

To produce a narrower and more practical definition of the asset class a number of commentators[62] have attempted to estimate the size of the 'investible' real estate market globally. Estimates typically use data on the stock of private fixed assets from transparent markets such as the US, Germany, France and the UK, together with information on urban GDP per capita, levels of urbanisation and investment market liquidity, to produce assessments as to the likely quantity of 'investible' real estate at country, regional and global levels.

The calculations explicitly exclude single-family homes, agriculture, timberland, infrastructure and publicly owned and occupied real estate, but include a broad definition of largely commercial investments by both geography and lot size. While the approaches used by various commentators are largely comparable, the inherent subjectivity of some of the adjustments (e.g., for market liquidity) means that published estimates vary from under $10tn to over $20tn.[63]

As a result, 'investible' – largely commercial and non-agricultural - real estate stock is typically assumed to represent between 15% and 20% of the broad asset class, and between 5% and 12% of the overall stock of capital assets. It is these numbers that are typically used as the basis of investible stock-based allocations to the asset class. By construction, these definitions exclude single-family residential, agriculture, timberland and infrastructure, so the use of this approach implies either separate allocations to these additional forms of the asset class, the exclusion of such investments or a conscious decision to permit 'off-benchmark' investments.

[62] Including US Prudential, DTZ, JLL, LaSalle and ING.
[63] Liang & Gordon (2003), Chen & Mills (2005), Tyrrell (2007), LaSalle (2007), Baum & Hartzell (2012).

3.1.3 Index-based real estate definitions

Index providers such as IPD, NCREIF, Giliberto-Levy, NAREIT, EPRA, INREV, Townsend and the Partners Group provide performance data based on a range of definitions of the asset class that are typically narrower than the 'investible' approach detailed above (Table 3).

Table 3: Indices by type of real estate

Category	Sub-category	Index
Private equity	Unlevered 'stabilised' sector, country, regional and global indices	IPD, NCREIF
	Levered 'stabilised' country, regional and global fund indices	IPD PPFI, NCREIF ODCE and INREV
	Levered 'transitional' global fund indices.	Townsend / NCREIF Opportunity Fund Index, Partners Group Value-add / Opportunistic Index
Listed equity	Levered sector, country, regional and global indices.	EPRA, NAREIT
Unlisted debt indices	Unlevered regional indices.	Giliberto-Levy
Listed debt indices	Unlevered sector, country, regional and global indices.	Barclays Capital

Source: Authors

The definitions typically maintain the exclusions suggested above for the shift from broad 'real estate' to 'investible' real estate, and add further restrictions (e.g., by geography, risk level etc.). As suggested in Section 2, it is these definitions that form the basis of assumptions used to include real estate in asset allocation calculations. By definition these indices offer overlapping data (e.g., assets included in IPD indices may also be included in listed equity indices, fund indices (e.g., INREV) and debt indices).

Crucially, due to their dependence on data from institutional investors, indices tend to focus on a sub-set of the investible global real estate market. Table 4 provides a summary of typical index focus by type of real estate, geography and risk characteristics.

Table 4: Index Coverage by type of real estate, geography and risk

	Indices	Type of Real Estate (Table 2)	Geographic Coverage	Risk characteristics
1. Private Equity				
- unleveraged stabilised	IPD, NCREIF	a, b (part)	Primarily large cities / assets in developed markets	Primarily core / value-add
- leveraged stabilised fund indices	IPD PPFI, NCRIF ODCE and INREV	a, b (part)	Primarily large cities / assets in developed markets	Primarily core / value-add with low leverage
- leveraged transitional fund indices	Townsend / NCREIF Opportunity Fund Index, Partners Group Value-add / Opportunistic Fund Index	a, b, c, d, e, and f (part)	Large and small assets in Developed and Emerging Markets	Primarily opportunistic with high leverage and 'fat-tail' / 100% loss risks
2. Listed Equity				
- leveraged stabilised	EPRA, NAREIT	a, b (part), c (part)	Primarily large cities / assets in developed markets	Primarily core / value-add with low leverage
3. Private Debt				
- unleveraged stabilised	Giliberto-Levy	a, b (part)	Primarily large cities / assets in the US	Primarily core / value-add
4. Public Debt				
- unleveraged stabilised	BarCap	a, b (part)	Primarily large cities / assets in developed markets (primarily the US)	Primarily core / value-add

Source: Authors

While asset allocators frequently use one or more of the indices highlighted above to drive real estate related calculations and assumptions, analysis tends to focus on unleveraged IPD and NCREIF based returns.[64] Typically calculations do not include explicit adjustments for leverage or fees (both of which are excluded from IPD and NCREIF indices). As a result, calculations imply an unlevered equity beta focused on a diversified portfolio of stabilized assets in developed markets (or a subset thereof).

Further, as implied in Section 2, it is not uncommon for exposure to higher risk forms of real estate, listed real estate, leveraged real estate funds and real estate debt to be included in allocations via flexible guidelines.[65] As a result, 'narrow' definitions of the risk and return characteristics of the asset class may be used to justify investments in a broader, and sometimes characteristically distinct, universe of potential investments. The implications of this practice are discussed in more detail below.

[64] Brown & Matysiak (2001), Hoesli & Lizieri (2007).
[65] Morrell & Kennedy (2011), Ang *et al.* (2009, 2011a).

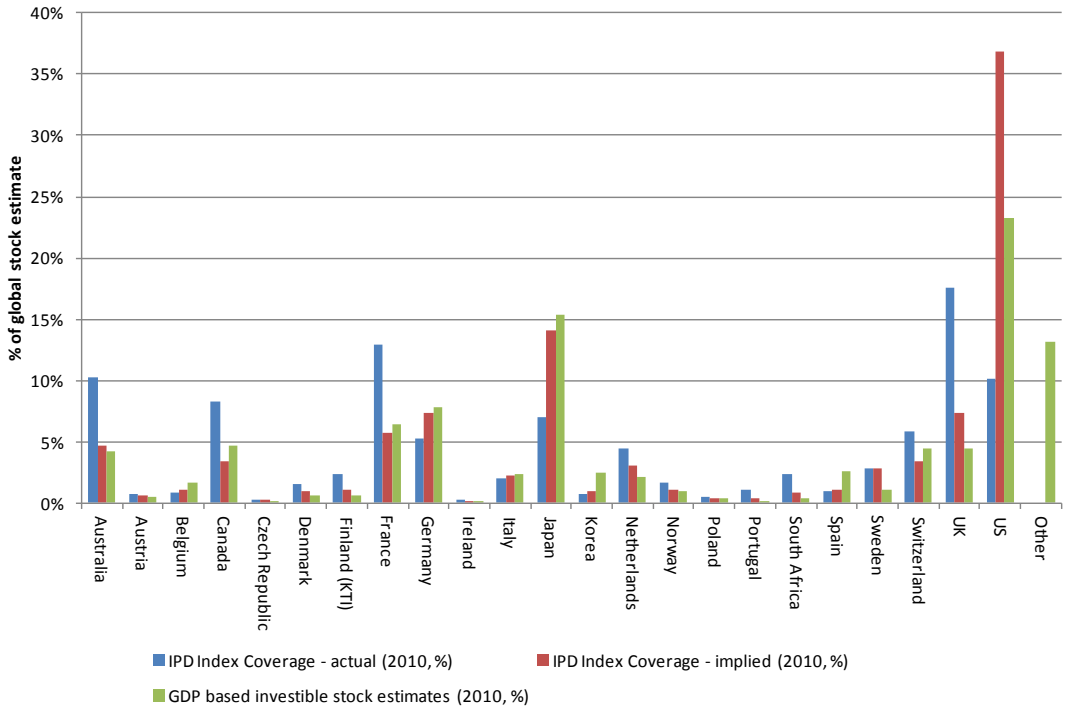
Data from IPD suggest that their global indices are based on assets valued at around $1.3tn, which they suggest represents around 25% of their estimate of the 'total market' of around $5tn. As a result, the impact of focusing on categories a and b (see Tables 2 and 4) is a reduction in the size of the implied universe from c $10tn - $20tn to c. $5tn. This implies that asset allocation decisions are taken on the basis of an implied equity investment universe that is markedly smaller and has differing geographic and risk profiles than the broader universe typically reflected in 'investible' universe calculations (Figures 3 and 4). Table 5 compares the size of the three definitions of real estate discussed above.

Table 5: A comparison of the size and composition of the three definitions of global real estate (overall, investible and index)

	Estimated size (USD)	Components (Table 2)
'Overall' global real estate	c. $100tn	a, b, c, d, e, f, g
'Investible' global real estate	c. $20tn	a, b, c
'Index' global real estate – implied	c. $5tn	a, b
'Index' global real estate - measured	c. $1tn	a, b

Source: Authors

Figure 3: The geographic structure of the IPD Global Index and urban GDP based 'investible' stock estimates (%, 2010)



Source: IPD; Author's calculations

IPD data can also help define the profile of 'real estate' implied in index data from both a 'style' and a hold period perspective. The 'style' of a real estate investment is typically associated with both risk and the form of anticipated returns. As suggested by Figure 2, 'core' or stabilized real estate can be characterized by returns dominated by long-term income derived from a stable and long-duration source.[66] As a result, underlying asset and tenant quality is likely to be high, and the scope for 'value-enhancement' via lease restructuring,

[66] The average hold period of assets contained in the IPD index is in excess of 10 years.

refurbishment etc. will be minimal. In addition, core portfolios typically have a limited exposure to financial gearing and benefit from both geographic and sectoral diversification.

By contrast, opportunistic or transitional real estate is typically characterized by the potential to add value via improvements to both the level and quality of the initial income. These changes can include repositioning, refurbishment and development. In addition, this type of investment might be associated with trading activities and, therefore, relatively short-term hold periods when compared to core assets. Further, such portfolios tend to include substantial financial gearing[67] and high levels of undiversified specific risks.[68] Value-add investments are typically assumed to provide characteristics that combine core / stabilized and opportunistic / transitional elements.

As suggested above and discussed below, investment 'style' can have important implications for the characteristics of the delivered portfolio and, therefore, the asset allocation role of the asset class. Further, hold periods can have an impact on both risk and return drivers (e.g., due to transaction and search costs). Recent research[69] found that the IPD global index is roughly 65% core, 25% value-add and 10% opportunistic, with around 50% of the opportunistic element being development exposure (Figure 4).

Figure 4: IPD Global index composition by style (1999-2008)

Style	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Core	66.4	65.5	65.3	65.4	65.4	65.5	65.4	64.3	63.9	62.9
Value add	21.7	21.8	22.3	22.7	22.7	22.3	22.0	22.3	22.2	22.8
Opportunity	6.9	7.5	7.6	7.6	7.8	7.6	7.5	7.6	7.7	7.8
Development	5.1	5.1	4.8	4.3	4.1	4.6	5.1	5.8	6.1	6.5

Source: Frodsham & Kennedy (2009)

Given the nature of the investors contributing to the IPD universe, it is likely that the opportunistic or transitional exposure identified by this research is associated with development and other higher-risk activities that predominantly core / value-add investors undertake as part of long-term exposure to specific assets. Given that this exposure is unlikely to be associated with high levels of financial gearing, or short-term trading strategies, it is probably inappropriate to consider the identified exposure as an inherently opportunistic or transitional investment. As suggested in Section 2, higher risk investors typically have little incentive to contribute to the IPD databank.

Data on the performance of higher risk forms of real estate investment that capture the impact of arbitrage based trading, refurbishment, redevelopment, restructuring and other higher risk strategies are available from providers including IPD, Townsend / NCREIF and the Partners Group. In addition, credible indices on the performance of listed debt, unlisted debt and listed equity real estate are available (Table 4). Despite this, asset allocation calculations typically

[67] In addition to the operational gearing inherent in their asset level strategies.
[68] Concentrated exposures to individual assets and markets are typically sought by opportunistic / transitional managers.
[69] Frodsham & Kennedy (2009), INREV (2009).

treat exposures outside those implied by IPD/NCREIF index data as either prohibited or 'off-benchmark' exposures rather than distinct allocations or pools with separate benchmarks. As discussed below, there is growing evidence that this approach is inconsistent with a focused asset allocation driven investment strategy that seeks to maximize benefits from the overall asset class.

3.2 What drives 'real estate' performance?

As indicated by the preceding discussions, different forms of real estate investment can have substantially different effects on a portfolio. The following discussion considers the reasons behind differing performance characteristics anticipated from various forms of the asset class.

3.2.1 Leveraged and unleveraged equity real estate

Real estate performance derives from a combination of rental income, costs and changes in capital values. However, returns can be altered by the means by which an investor is entitled to access these underlying returns and by the structures used to change the return profile of the investment, such as leverage.

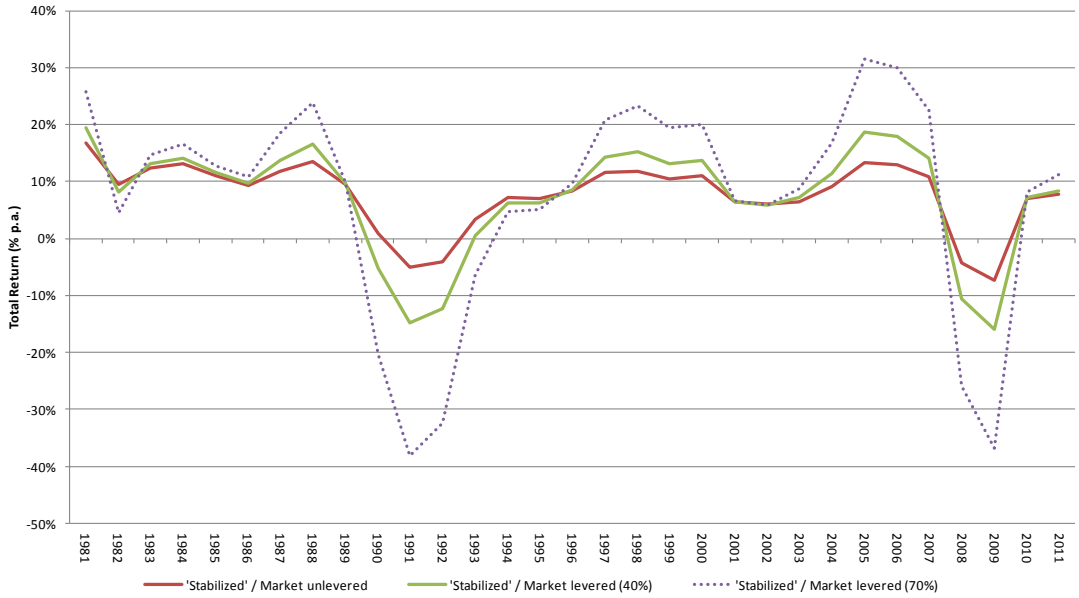
A freehold investment that is fully let and has no debt can be said to provide an investor with 'pure' real estate exposure, albeit one with substantial asset-specific or unsystematic risks. The introduction of leverage will reduce income due to interest and create a repayment liability at some point in the future that may, depending on the level of debt, the rate of interest and changes to capital values over the term of the loan, lead to a default risk which, in extremis, could threaten a 100% equity loss.

As a result, a leveraged investment will – by definition - behave differently to an unleveraged investment with the key changes being the amplification effect of positive and negative returns associated with the introduction of debt combined with the enhanced risk of total capital loss in extreme situations. Figure 5 provides an illustration of the potential impact of leverage on 'stabilised' global real estate returns between 1981 and 2011.

Tyrrell & Bostwick (2005), Key (2010) and van der Spek & Hoorenman (2011) show that there is a non-linear relationship between risk and return under leverage, with risk increasing disproportionately to return at higher levels of debt. Further, Farrelly & Baum (2008) state that *"…while there may be some skill in financial structuring, pure leverage is largely a beta generating activity*."[70] Baum *et al.* (2011) shows that between 2003 and 2009 the amount of leverage used by European core funds increased from 15% to around 30%. Arguably, this reflects changes to private market investment highlighted in Section 2.5 above.

[70] See also Baum (2007), CBRE Investors (2008) and Anson & Hudson-Wilson (2003).

Figure 5: Leveraged and unleveraged global 'stabilised' real estate returns (1981-2011)



Source: IPD; Datastream; Authors' calculations

3.2.2 Real estate debt

The creation of a loan based on real estate produces a 'real estate' asset entitled to fees associated with the origination the loan, regular interest payments and capital repayment at the end of the loan. Typically, the loan will be based on collateral with a value substantially larger than the principal.

The risk of capital loss is associated with the quality of the underlying asset/collateral and the loan to value ratio (LTV). While there are obvious areas of overlap associated with the skills required to invest in real estate equity and debt there are marked – and obvious – differences in performance drivers and, therefore, the asset allocation roles played by the two asset types. Debt investing also requires additional skills to those typically found in real estate investment groups (e.g., management of interest rate risk), suggesting operational differences between debt and equity based real estate investment.

While equity investments provide exposure to unlimited upside and, *in extremis*, unlimited downside, debt investments offer both downside protection and constraints on upside participation. As a result, debt investments are in the nature of fixed interest or bond investments, and this leads asset allocators to prefer a clear distinction between debt- and equity-based investments and to expect very different performance characteristics (Figure 6). Crucially, it means that monies intended for stabilized, core or low risk 'equity' real estate investments that are invested in low risk real estate debt products (e.g., first mortgages), are likely to be a source of misalignment between asset allocation intent and delivered returns.

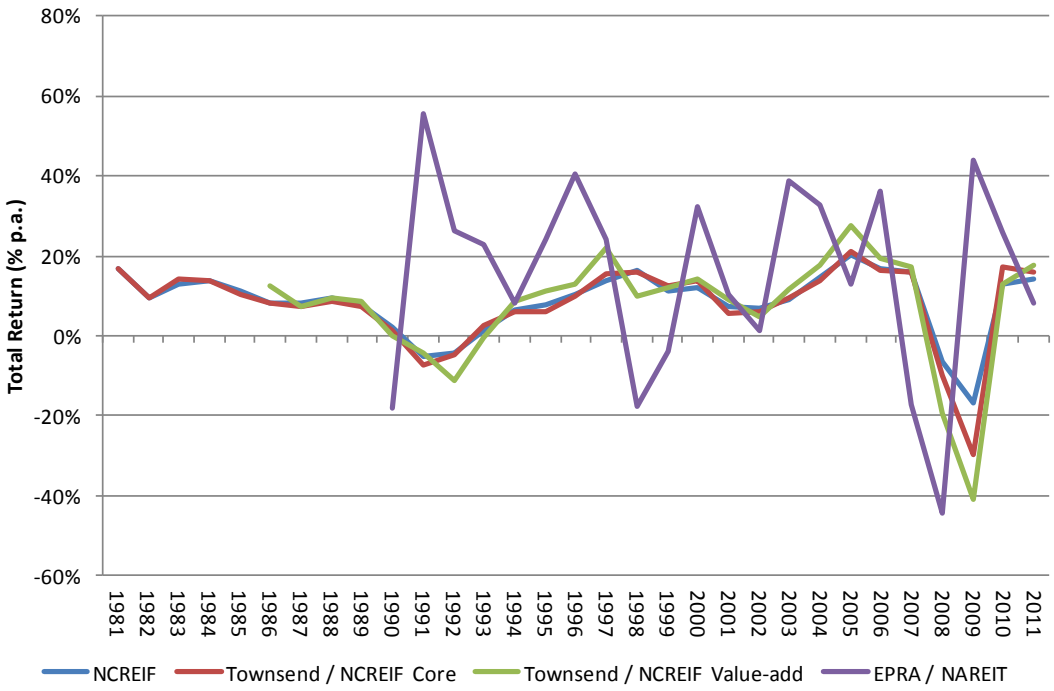
Figure 6: US equity and debt real estate performance

Source: IPD; Giliberto-Levy

3.2.3 Listed and unlisted real estate debt and equity

Both debt and equity real estate assets can be held in either listed or unlisted structures. While this distinction has a limited impact on the underlying cash flows produced by the assets, it influences the composition of the investor base, the amount of information available to investors, valuation approaches and leverage. In addition, differing levels of liquidity associated with each structure can alter return delivery and investors' required returns. To illustrate this point, Figure 7 provides a comparison of US listed, co-mingled unlisted and direct real estate performance over the period 1981-2011.

Figure 7: Listed, co-mingled and direct US real estate performance 1981-2011



Source: Datastream

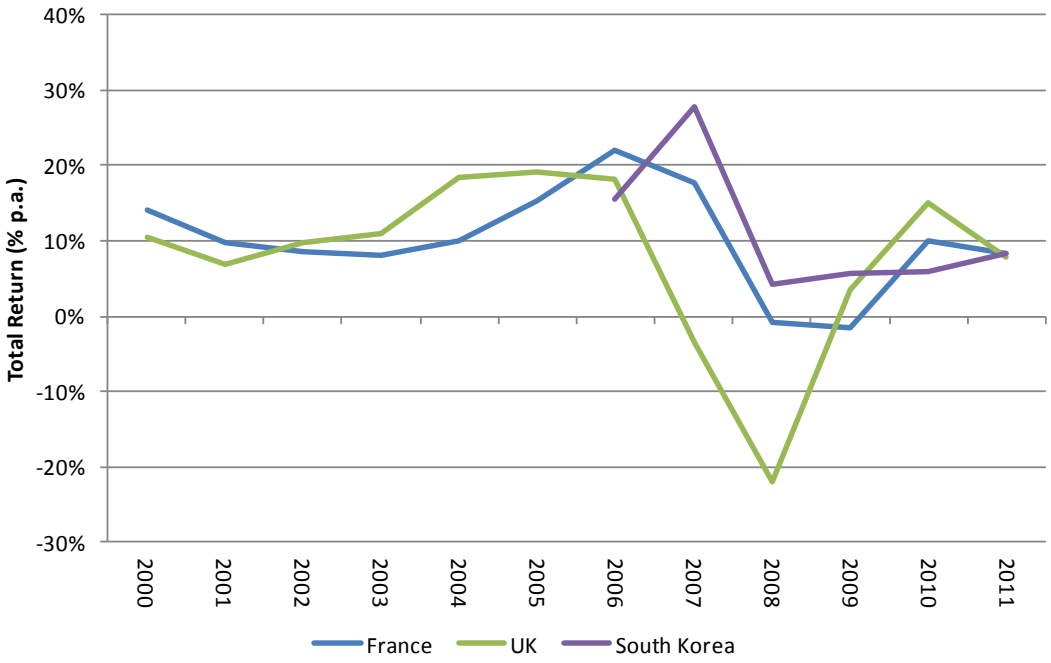
3.2.4 Geographic and sectoral real estate exposure

Real estate performance will also be driven by the geographic composition of the portfolio, as well as exposure to specific real estate sectors (e.g., retail, office etc.). The location of an asset will determine the specific economic factors underlying occupier demand as well as planning and institutional issues (e.g., lease law, taxes, the sophistication of the investor base etc.). Further, the sector of the asset will alter the source of demand growth and determine the precise nature of other performance determinants.

Importantly, indices used to develop allocations to real estate reflect specific national or international portfolio structures and, therefore, embed a particular geographic / sectoral return profile. As a consequence, the delivery of a portfolio with markedly different geographic or sectoral characteristics to those implied in the benchmark risks providing different exposures to the *ex ante* benchmark-based return assumptions embedded in asset allocation calculations.

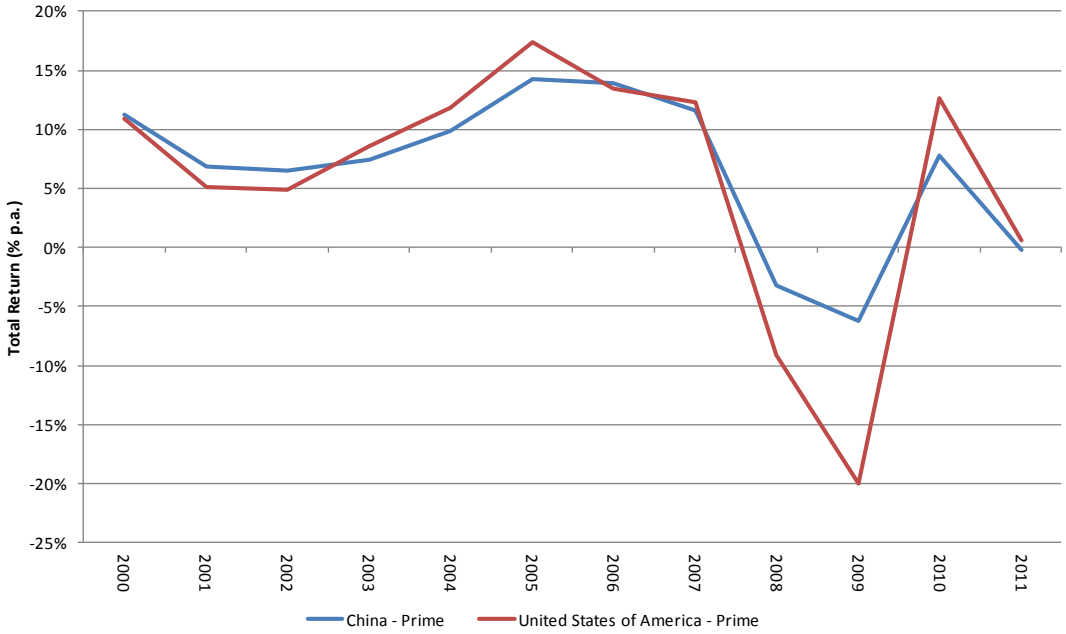
Figures 8-12 provide various illustrations of the impact of geography on performance. Figure 8 compares the estimated returns from French, South Korean and UK real estate between 2000 and 2011. Figure 9 compares estimated prime performance from Chinese and US real estate over the period 2000-2011. Figure 10 compares returns from Australian office and retail investments over 1990-2011. Figure 11 details the historic volatility of the overall Australian real estate market and office, retail, industrial sub-sectors over the same period. Figure 12 details cross-correlation statistics for the same market and sub-markets.

Figure 8: French, South Korean and UK real estate returns 2000-2011



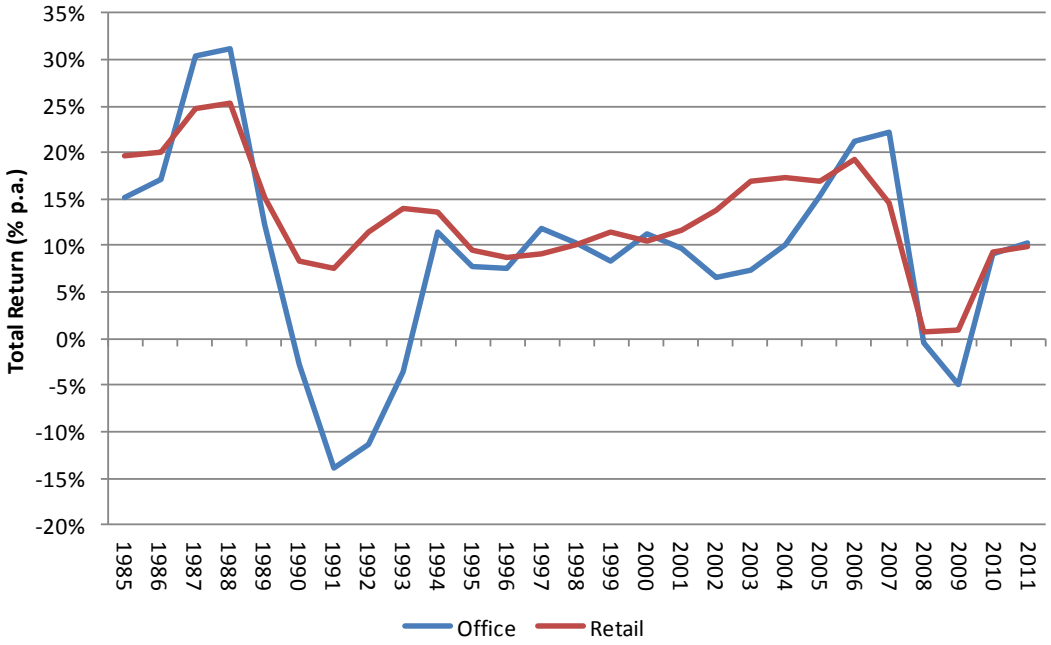
Source: IPD

Figure 9: Chinese and US 'prime' returns unleveraged after fees 2000-2011



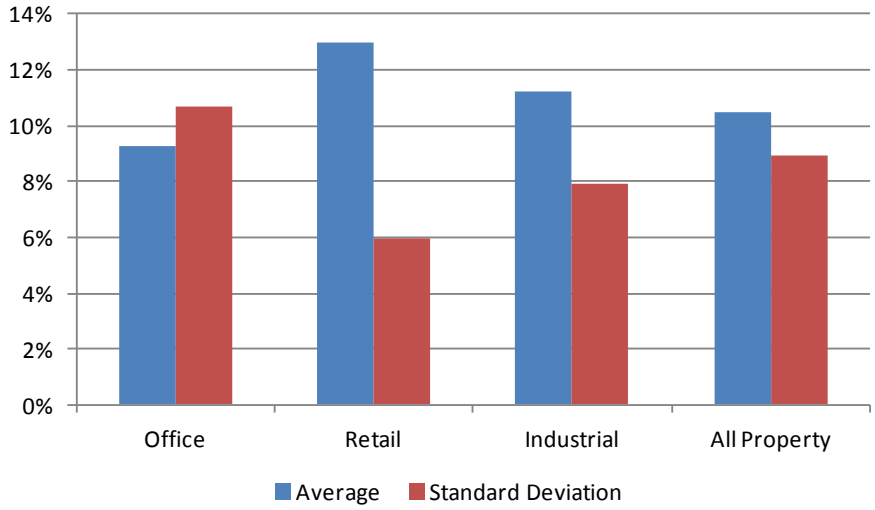
Source: PMA; CBRE EA; JLL REIS; Authors' Calculations

Figure 10: Australian office vs. retail returns 1985-2011



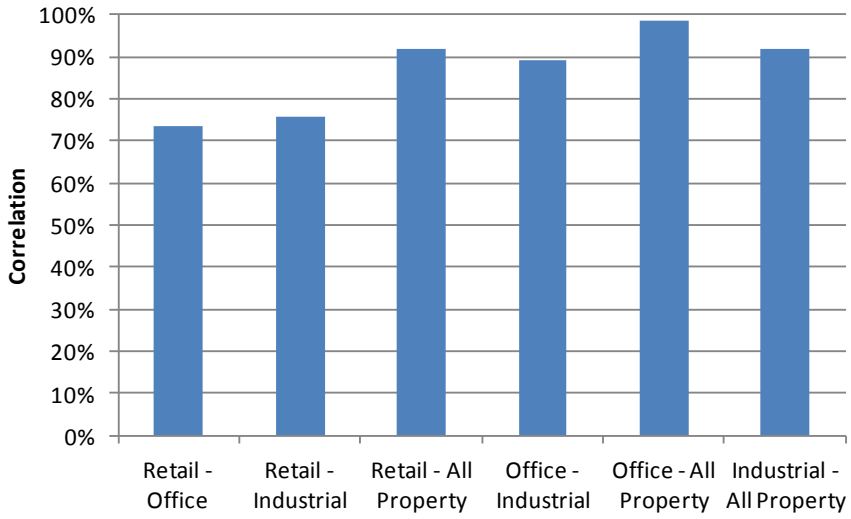
Source: IPD

Figure 11: Average returns and volatility for Australian all property and sector returns 1985-2011



Source: IPD

Figure 12: Correlations of Australian all property and sector returns 1985-2011

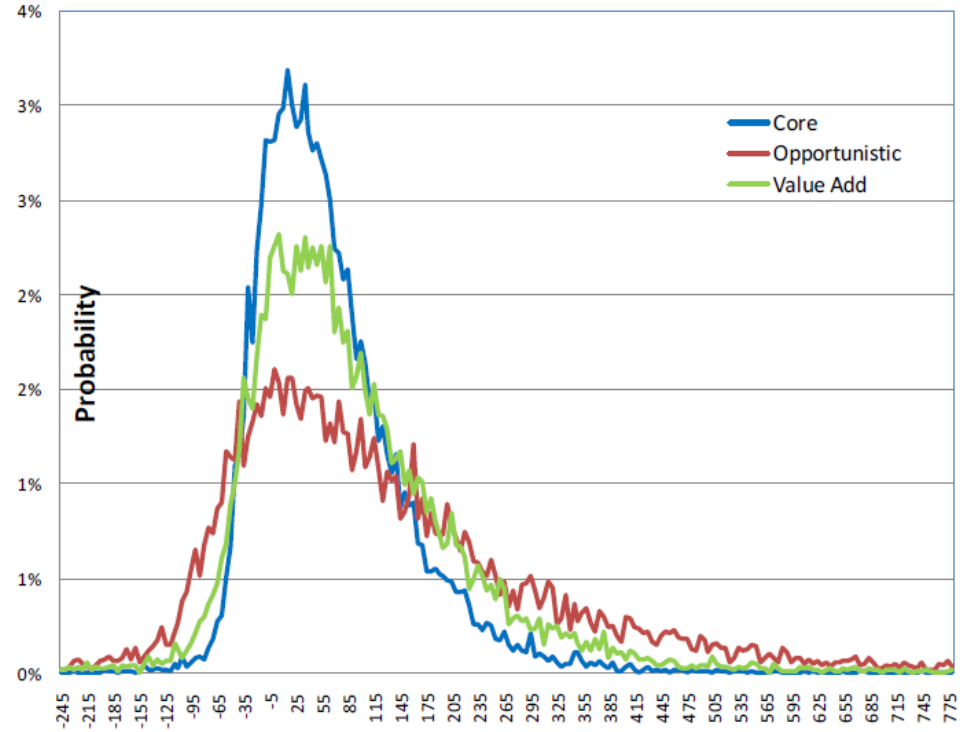


Source: IPD

3.2.5 Differences in performance between real estate 'styles'

As highlighted above, real estate investments are commonly divided into three 'style' buckets, each with risk and return characteristics that are presumed to be distinct. Using data on the performance of real estate funds, recent research[71] attempted to analyse the impact of 'style' on the characteristics of delivered real estate performance (Figure 13).

Figure 13: 12-year cumulative global fund performance by style

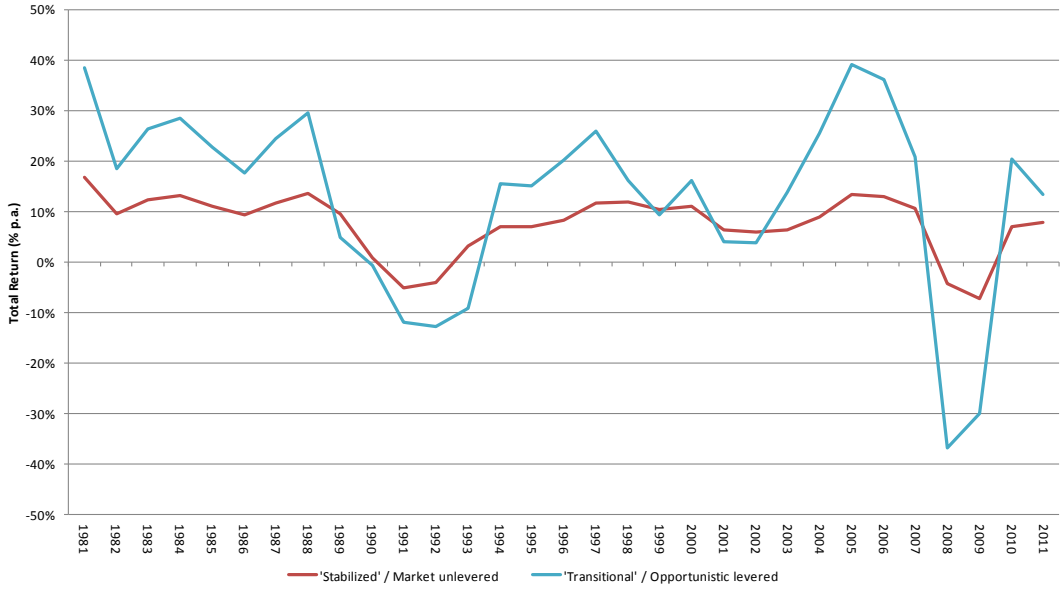


Source: Merabet *et al.* (2010)

As detailed in Figures 13 and 14, higher-risk real estate funds are shown to have higher mean returns, volatility and cross sectional dispersion (fund or asset selection risk).[72] However, the most important finding is that higher risk or opportunistic funds are associated with greater left tail risks and a risk of total capital loss than are core focused 'stabilized' assets.[73]

[71] Merabet *et al.* (2010), Frodsham & Farrelly (2010).
[72] See also Baum *et al.* (2011).
[73] Merabet *et al.* (2010), Idzorek *et al.* (2006).

Figure 14: Stabilized and transitional global real estate performance (1981-2011)



Source: IPD; Townsend / NCREIF; Authors' Calculations

It is this return characteristic, rather than the higher-beta exposure, that is a key differentiator between 'stabilized' and 'transitional' exposure. Other important differences include exposure to a broader definition of real estate (see Table 4) and a different approach to asset management (e.g., a focus on trading and other value-add activities rather than simple long-term exposure to the asset class).

Recent research suggests that while 'stabilized' real estate is 'funded from' (i.e., are an alternative to) low risk equities and fixed income, 'transitional' real estate is funded from private equity and small cap equities.[74] It is the exposure to left tail risk and capital loss more than the higher volatility that drives these differences. This funding difference means that monies allocated to 'stabilized' real estate that are deployed to 'transitional' forms of the asset class will lead to an increase in the overall risk – including a reduction in diversification – for the overall portfolio.

What, then, are the roles of this complex asset class in a multi-asset portfolio? This is the subject of Section 4.

[74] Merabet *et al.* (2010), Idzorek *et al.* (2006)

4. The potential roles of real estate in a multi-asset portfolio

This section builds on the general asset allocation overview provided in Section 2 and attempts to provide some insights into and solutions for, the practical and theoretical issues associated with integrating real estate into an asset allocation framework.

The potential roles of real estate in multi-asset portfolios are the subject of a large and diverse literature that suggests the following:

(a) First, real estate is a substantial part of the market portfolio;

(b) Second, real estate offers attractive returns through both income and capital, that – potentially – can be enhanced via active management or 'alpha';

(c) Third, real estate is an important source of portfolio diversification; and

(d) Fourth, real estate is a hedge against inflation.

These arguments have led a number of commentators[75] to suggest substantial allocations to the asset class – invariably using unlevered low-risk equity index-based analysis. Often these allocations are markedly larger than those employed by most institutions. Interestingly, recent research by Andrew Ang of Columbia Business School [76] suggests that this discrepancy might be explained by differences in liquidity between public and private markets. By including an explicit liquidity adjustment he is able to reconcile theoretical and actual allocations to private markets, including real estate.[77]

CalPERS (2009) suggests that real estate investments *"…shall be managed to accomplish the following: (a) Provide diversification to the overall CalPERS investment portfolio; (b) Generate attractive risk adjusted returns for CalPERS; and (c) Provide a hedge against inflation."*

There are clear arguments supporting both the general tone of the literature, and the objectives proposed by CalPERS and other investment funds. However, as indicated by discussions in previous sections of this paper, there are a number of assumptions and limitations associated with these general conclusions. Each issue is addressed in the following discussion.

4.1 Real estate and the market portfolio

The simplest argument in favor of an allocation to real estate is based on the size of the asset class, and its associated role in the market portfolio. It has been suggested *"…institutional investors' holdings of commercial real estate equity might be expected to roughly equal the sector's share of total equity capitalization*

[75] Sa-aadu et al. (2010), Baum & Hartzell (2011).
[76] Ang *et al.* (2011b).
[77] See also Anglin & Gao (2011) and Rehring (2012).

assuming efficient markets"[78] and that excluding real estate from a portfolio represents an asset allocation 'bet' against the asset class.[79]

However, there is considerable uncertainty as to the definition of real estate as an asset class.[80] As highlighted in Section 3, global stock estimates range from $4tn to $100tn, with estimates of the 'investible' universe ranging from $10tn to $20tn. Further, global indices are based on only 1% of the broadest definition of the overall real estate investment stock, or 5%-10% of the estimated investible universe.

As highlighted above, asset allocation calculations are typically based on the characteristics associated with 'index'-based exposure to real estate. This implies a specific type of exposure to the asset class. Crucially, it suggests a relatively conservative risk appetite (e.g., limiting development exposure), a focus on developed markets, equity rather than debt exposure, long-term hold periods and limitations on asset and market level concentrations.

As a result, while 'real estate' is undoubtedly a substantial part of the market portfolio, the use of a relatively narrow definition of the asset class in indices and, therefore, asset allocation calculations, suggests that the delivery of a portfolio based on a 'broad' definition of the asset class might lead to risk and return implications that differ from those embedded in asset allocation assumptions.

These differences are due to:

(a) First, the potentially distinct performance characteristics of assets contained in the 'broad' definition of real estate (e.g., debt vs. equity, development vs. completed assets, developed vs. emerging markets, listed vs. unlisted etc.); and

(b) Second, the implications of index-based asset allocation assumptions for portfolio construction and hold period (e.g., market / asset / sector concentrations, hold periods and focus on trading etc.).

These observations do not mean that there should be a perfect link between asset allocation assumptions and implementation. Nor do they suggest that forms of real estate excluded from relatively narrow index based definitions should be excluded from asset allocation strategies. Under the correct circumstances it can be appropriate for the delivered portfolio to contain assets excluded from narrow index definitions – either via flexible guidelines or specific allocations to multiple, but distinct, pools.

To a certain extent deviations are inevitable, and should not be a source of concern. For example, investments similar to those included in IPD indices in terms of asset quality and tenant quality, but excluded due to geography, are

[78] Feldman (2003).
[79] Hudson-Wilson *et al.* (2003).
[80] Tyrrell (2007), Hoesli & Lizieri (2007), Idzorek *et al.* (2006).

likely to perform a similar portfolio role to those explicitly included in the benchmark indices.

Further, while investments in listed real estate are likely to provide different valuation, liquidity and volatility characteristics to the overall portfolio than implied by direct exposure, research shows that over the long-term these differences are likely to be *de minimis*.[81] Other deviations from a strict benchmark based approach that may be appropriate assuming the requisite asset allocation adjustments, include the use of leverage and exposure to concentrated asset, market, country or sector bets.

Other deviations may be more problematic from an asset allocation perspective. There are two key examples. First, investments in real estate debt will offer markedly different investment characteristics to those implied in equity-based allocation calculations. As highlighted above, while real estate debt investments share some characteristics of underlying real estate equity exposure, returns are determined in a distinct way that limits upside and, importantly, alters the impact on the overall portfolio when compared to equity (e.g., capped upside).

Second, exposure to higher-risk or 'transitional' forms of real estate has been shown to provide enhanced exposure to 'fat-tail' risk and fund selection risk as well as a higher and more volatile underlying beta. In addition, while index-based exposures imply long-term hold periods and limited exposure to trading risks / costs, higher risk funds often seek to 'lock-in' returns and redeploy capital after delivering value-add opportunities at the investment level. As highlighted above, recent research suggests that these differences can have a marked impact on the level and characteristics of delivered returns, and on the accessibility of the beta.[82]

However, while these deviations might prove more problematic from an asset allocation perspective in terms of both measurement and the risk of not delivering asset allocation goals, this does not mean that they cannot be accepted. This issue is discussed in more detail in Section 5.

In summary, while it is clear that real estate is a substantial part of the market portfolio, this statement is insufficiently precise. Further, it is this imprecision that creates challenges for the asset allocator. More specifically, it is the potential for allocation decisions based on a relatively narrow low risk equity based 'index' approach to be associated with implementation decisions based on investible or broader asset class definitions that can lead to asset allocation risks.

As discussed in Section 5, this problem can be addressed by maintaining the broad definition of the asset class and explicitly accepting the asset allocation risk, or by restricting implementation via a multiple pool approach to asset allocation that models the distinct characteristics and portfolio roles of each form of the asset class. While neither solution is perfect, both have the

[81] For example, Idzorek *et al.* (2006), Yunus *et al.* (2012), Pagliari *et al.* (2005), Booth & Marcato (2004), Geltner & Kluger (1998), Oikarinen et al. (2011), Pavlov & Wachter (2011), Hoesli & Oikarinen (2011) and Giliberto (1990).
[82] Merabet *et al.* (2010), Shilling & Wurtzebach (2010).

advantage of achieving the alignment between asset allocation and implementation decisions that eluded many real estate investors during the last cycle.

4.2 Income and capital returns from real estate

This argument for the asset class can be sub-divided as follows:

(a) First, real estate offers 'attractive' risk adjusted returns;

(b) Second, a substantial proportion of the delivered return is provided through income or yield; and

(c) Third, there are opportunities to enhance risk-adjusted returns via both value-add activities and trading (i.e., 'alpha').

The following discussion considers each issue in turn.

4.2.1 Real estate returns

Over the 25 year period to 2011 global 'index' or stabilized equity real estate delivered total returns before leverage and taxes, but after an allowance for asset management fees of 6.5% p.a., underperforming both equities (8.8% p.a.) and bonds (7.3% p.a.). Over the same period higher risk or transitional equity real estate delivered returns of 8.4% p.a.

On a risk-adjusted basis index or stabilized real estate out-performed equities (return / adj. vol. of 0.65 compared to 0.43) but underperformed bonds (return / vol. of 1.06). These data and their sources are set out in Table 6. Volatility estimates for both stabilized and transitional real estate have been adjusted to reflect the smoothed nature of real estate return series.

Interestingly, transitional real estate under-performed equities, bonds and stabilized real estate or index real estate on a risk-adjusted basis. Importantly, this analysis assumes that volatility is an adequate description of risk. Based on recent research[83] this assumption can be questioned, with 'transitional' risks being understated by a simple volatility measure (e.g., due to the exclusion of 'fat-tail' risks, concentration / fund selection risks etc.).

[83] Merabet et al. (2010), Shilling & Wurtzebach (2010),, Frodsham & Farrelly (2010).

Table 6: Delivered total returns by global asset class (1987-2011)

	Global Equities (MSCI GDP / AC World)	Global Bonds (JP Morgan Broad Bond Index)	'Stabilised' or Index Global Real Estate (unleveraged, after fees, before taxes)	'Transitional' or opportunistic global real estate (leveraged, after fees, before taxes)
Average total return	8.8%	7.3%	6.5%	8.4%
Vol. (unadj.)	20.7%	6.9%	6.1%	18.8%
Vol. (adj.)	20.7%	6.9%	10%	21.5%
Ratio (rtn / adj. vol)	0.43	1.06	0.65	0.39

Source: Datastream; IPD; Townsend / NCREIF; Authors' calculations

Table 7: Delivered total returns by global asset class (1991-2011)

	Global Equities (MSCI GDP / AC World)	Global Bonds (JP Morgan Broad Bond Index)	'Stabilised' or Index Global Real Estate (unleveraged, after fees, before taxes)	'Transitional' or opportunistic global real estate (leveraged, after fees, before taxes)	Listed Global Real Estate (EPRA / NAREIT)
Average total return	8.6%	7.0%	6.0%	7.4%	7.7%
Vol. (unadj.)	21.7%	7.4%	6.2%	19.7%	20.9%
Vol. (adj.)	21.7%	7.4%	10.0%	21.5%	20.9%
Ratio (rtn / adj. vol)	0.40	0.95	0.60	0.34	0.37

Source: Datastream; IPD; Townsend / NCREIF; Authors' calculations

Table 8: Delivered total returns by global asset class (1991-2005)

	Global Equities (MSCI GDP / AC World)	Global Bonds (JP Morgan Broad Bond Index)	'Stabilised' or Index Global Real Estate (unleveraged, after fees, before taxes)	'Transitional' or opportunistic global real estate (leveraged, after fees, before taxes)	Listed Global Real Estate (EPRA / NAREIT)
Average total return	11.1%	7.0%	6.7%	10.5%	12.4%
Vol. (unadj.)	17.9%	8.6%	5.4%	14.6%	13.7%
Vol. (adj.)	17.9%	8.6%	10.0%	21.5%	13.7%
Ratio (rtn / adj. vol)	0.62	0.81	0.67	0.49	0.90

Source: Datastream; IPD; Townsend / NCREIF; Authors' calculations

Tables 7 and 8 provide similar data for 1991-2011 and 1991-2005 and include the performance of global listed real estate in the comparison. Over the period 1991-2011, while stabilized real estate performed in line with expectations relative to equities and under-performed bonds, it out-performed equities, transitional real estate and listed real estate on a risk-adjusted basis. During this period, listed real estate performed in line with transitional real estate.

For the period 1991-2005 (i.e., excluding the recent market correction) stabilized real estate delivered risk-adjusted returns in excess of global equities,

although absolute returns were substantially lower, and out-performed transitional real estate but under-performed listed real estate. Interestingly, during this period listed real estate out-performed stabilized real estate, transitional real estate and equities and bonds on both an absolute return and a risk-adjusted basis.

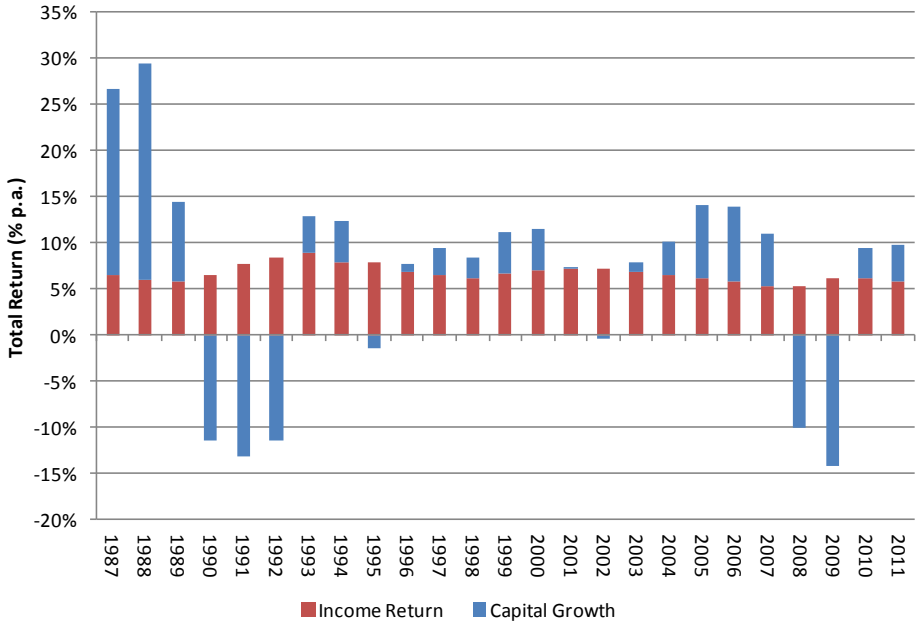
Based on the above it is possible to conclude that stabilized or index real estate has historically delivered 'beta' or index returns that are appropriate, but not exceptional, when compared to returns of other global asset classes and allowing for differing levels of volatility. The data on 'transitional' or higher-risk index performance presents more of a challenge and suggests that, on a post-fee basis, for the time periods presented and assuming that the data provided by Townsend / NCREIF offers a representative sample of this part of the real estate investment market, returns have been unimpressive.

This conclusion is in line with Shilling & Wurtzebach (2010) who find that *"…while value-add and opportunistic private equity returns have higher returns than core investments, their superior returns are driven by beleaguered market conditions as well as the use of cheap debt."* Similarly, Baum *et al.* (2011, 2012) found that any outperformance by opportunistic funds before fees was more than offset by fees. Further, they suggest that while opportunity funds delivered higher returns than lower risk funds in the 2003-2009 period, this has been at the expense of higher-risk and due to higher leverage rather than genuine alpha. In their 2012 study, opportunity funds were found to have under-performed over the 2001-2011 period under examination.

4.2.2 Income yield

Ruff (2007) highlights that a key attraction of real estate is the *"…well balanced…"* nature of performance with *"…approximately two thirds of the return…"* being delivered via income yield. Based on this characteristic Hudson-Wilson *et al.* (2005) suggests *"…when income is valued as a way to meet current liabilities, real estate becomes a very attractive addition to a portfolio."* (Figure 15).

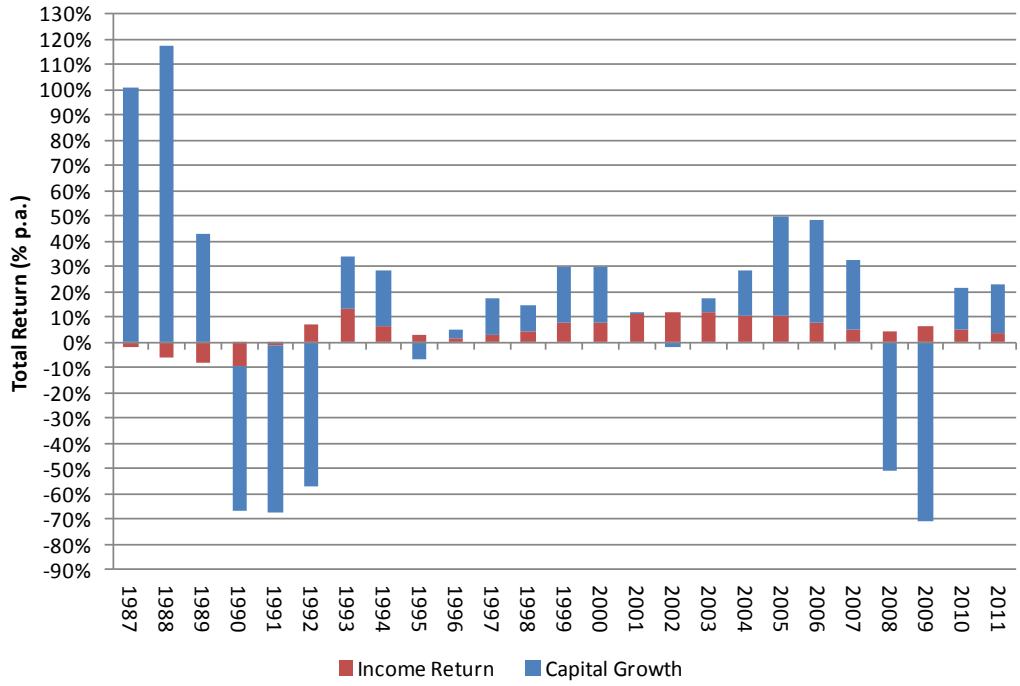
Figure 15: IPD Global Income and Total Returns – unleveraged (1987-2011)



Source: IPD

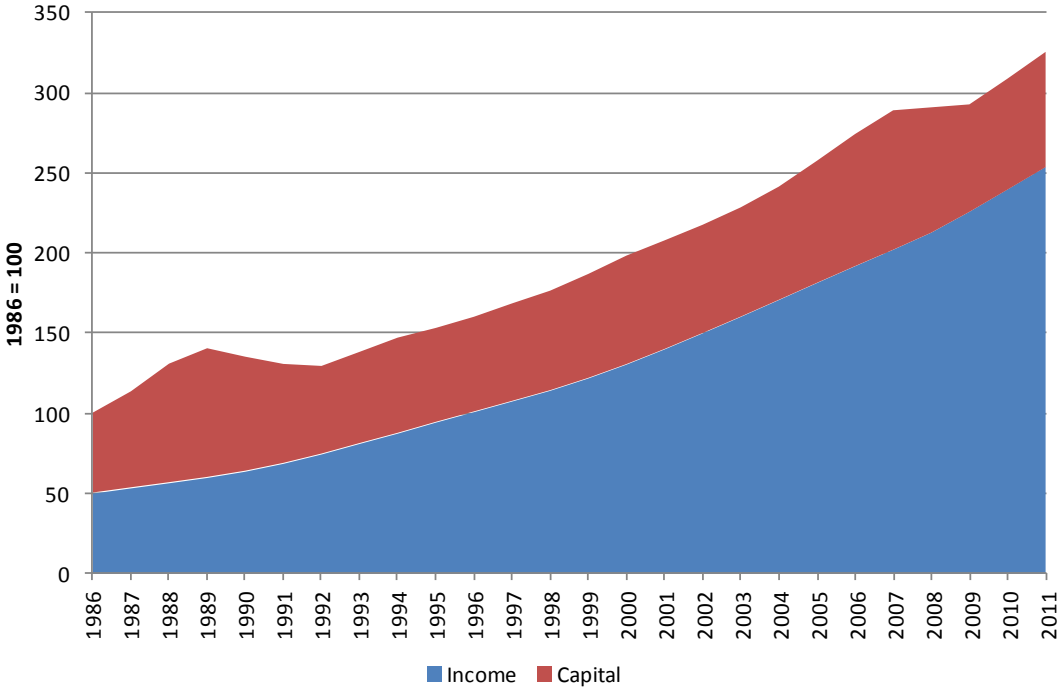
However, while this observation is undoubtedly correct for unleveraged 'index' real estate, the use of debt combined with exposure to assets purchased for their value-add potential may shift the balance from income to capital and, therefore, undermine real estate's role as an income source (Figures 16, 17 and 18).

Figure 16: IPD global income and total returns – 80% leveraged (1987-2011)



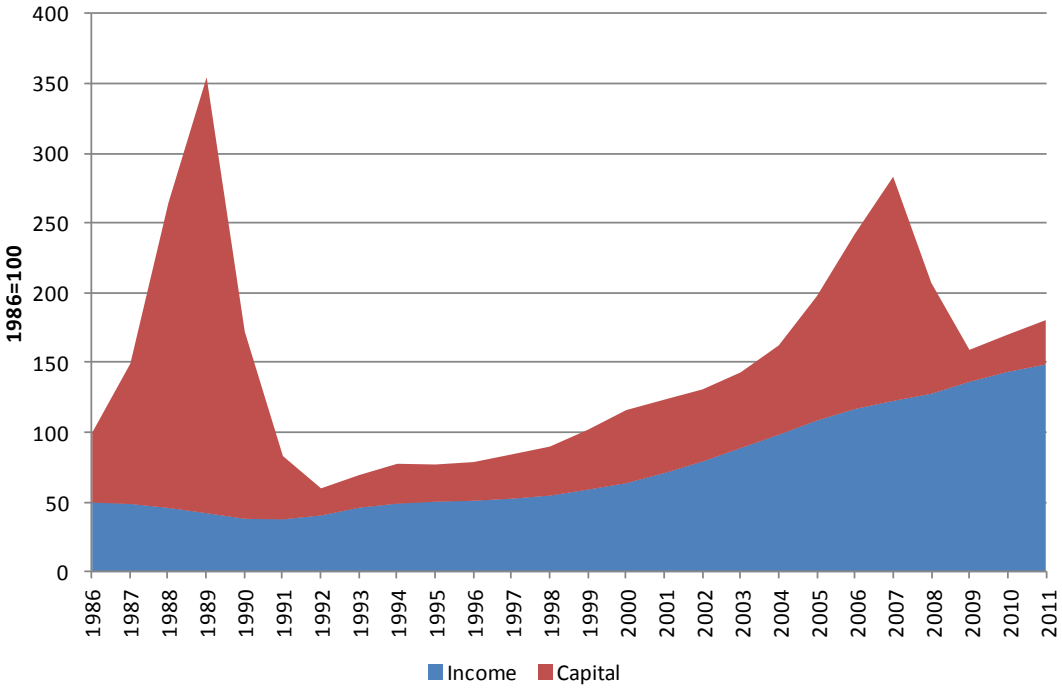
Source: IPD; Authors' calculations

Figure 17: IPD global income and total returns – unleveraged (1987-2011)



Source: IPD; Authors' calculations

Figure 18: IPD global income and total returns – 80% leveraged (1987-2011)



Source: IPD; Authors' calculations

4.2.3 Enhancing returns via trading and value-add activities

Given the opacity of real estate markets, the potential for sustained mispricing,[84] the idiosyncratic and lumpy nature of the investment medium and the ability for investors to manage the underlying asset, it is self evident that real estate investments allow investors to manage the performance of their funds to a greater extent than is possible with more 'passive' bond or equity based investments.

This argument is often used to present real estate as an inherently alpha-, or skill-based, investment the benefits of which are not limited to beta returns. By extension, it is suggested that allocations to the asset class should be enhanced where it is possible to access skilled investment platforms capable of profiting from these imperfections, and of passing those profits onto investors. Further, as detailed in Section 2, the scope for alpha delivery is often used as a criticism of the application of traditional, beta-based, approaches to asset allocation to private markets, including real estate.

However, as implied in Section 2, there are some fundamental weaknesses with this argument, particularly for large investors. For example:

(a) First, at the market portfolio or benchmark level alpha is, by construction, a zero sum game when compared to a well-defined beta;

(b) Second, attempts to enhance returns are seldom risk free and, therefore, should be associated with higher returns;

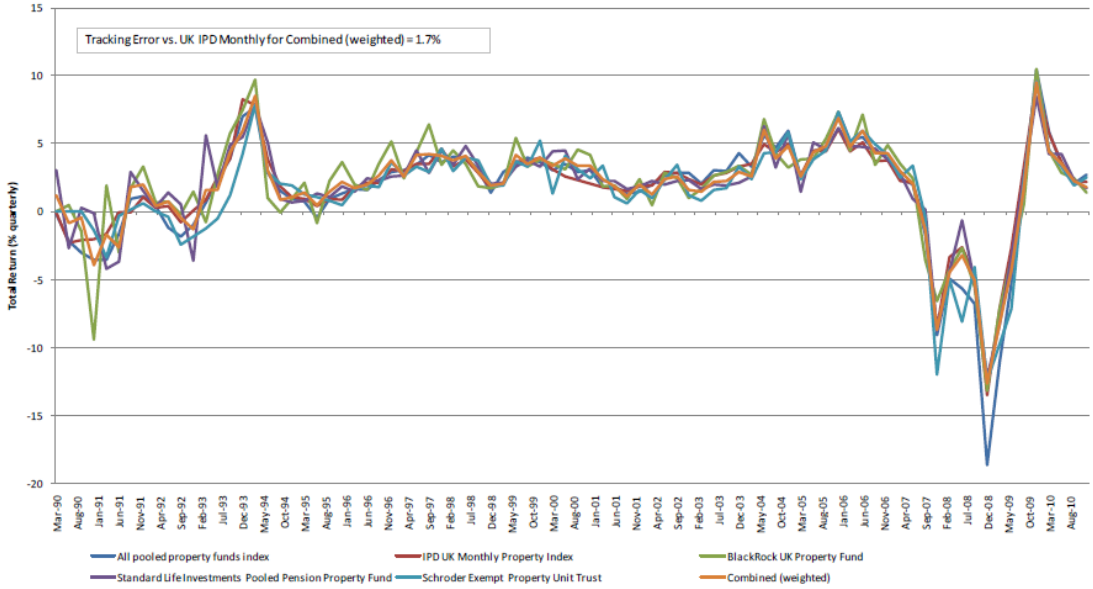
(c) Third, the process of seeking enhanced returns is likely to be associated with costs (e.g., transaction and search costs) that need to be 'earned back' via the value-add process; and

(d) Fourth, the process of seeking enhanced returns can change performance characteristics and, therefore, impact the alignment of the delivered portfolio with asset allocation assumptions.

As detailed in Figure 19 data from the UK Pooled Property Fund Index shows that even small funds have a very high (85%+) correlation with the UK monthly index. This is confirmed by the 2012 ULI / PFR study reported by Baum *et al.* (2012) which suggests that while it is possible for investment managers to influence performance via alpha generation activities, beta as defined by the index tends to dominate performance.[85]

[84] Ling *et al.* (2010).
[85] Callender *et al.* (2007), Mitchell & MacNamara (2011), Bond & Mitchell (2010), Baum *et al* (2011, 2012)

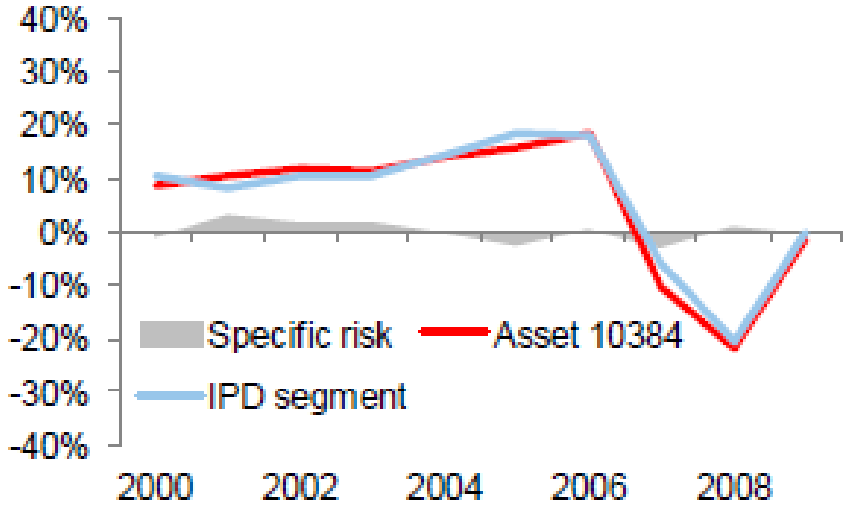
Figure 19: Selected UK PPFI fund performance vs. UK IPD Monthly Index



Source: IPD; Author's calculations

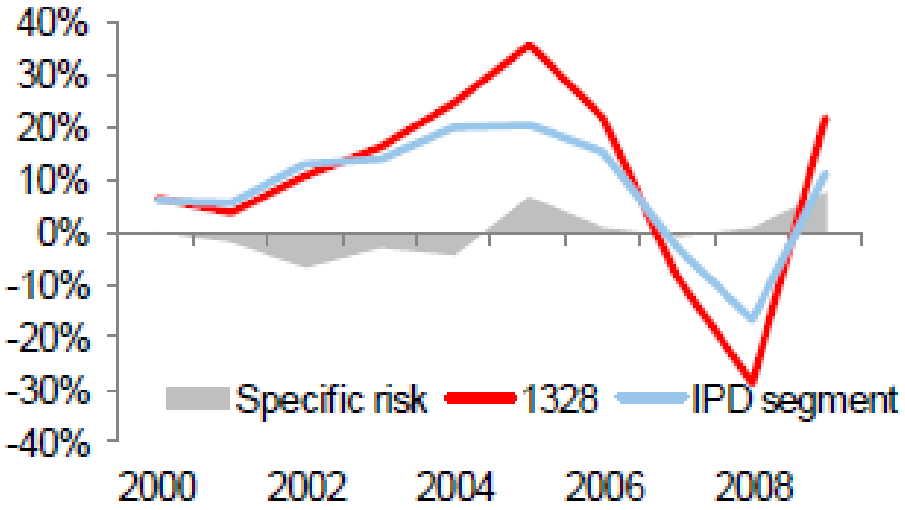
Mitchell & MacNamara (2011) provide similar information, albeit for shorter time periods. For a predominantly core UK portfolio, they find that performance can be explained by overall market movements (i.e., beta) rather than the idiosyncrasies of individual assets (Figures 20, 21 and 22). While they find that some assets display idiosyncratic characteristics, 70% of the investments analyzed performed in line with the 'market' or beta as defined by the IPD index.

Figure 20: UK Prudential Asset Level Performance vs. UK IPD (1)



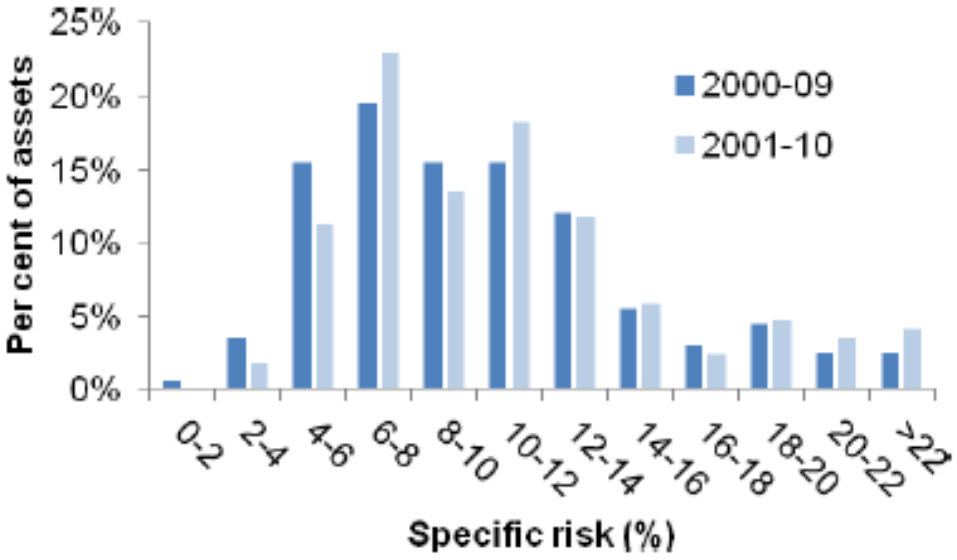
Source: Mitchell & McNamara (2011)

Figure 21: UK Prudential Asset Level Performance vs. UK IPD (2)



Source: Mitchell & McNamara (2011)

Figure 22: Distribution of individual property specific risk



Source: Mitchell & McNamara (2011)

Overall, the literature appears to find little evidence of persistent alpha in real estate fund performance.[86] For example, in an influential paper, Bond & Mitchell (2010) state: *"The widespread finding is that very few managers appear to be able to generate excess risk-adjusted returns. Furthermore, there is little evidence of performance persistence in either fund returns or risk-adjusted returns*" (p.54).

This finding is consistent with the literature on alpha for all asset classes. For example, Ang *et al.* (2011a) states: *"...recent theory and empirical evidence suggests that some fund managers may have talent and out-perform market benchmarks before fees. However, the evidence does not support the conclusion that superior ability filters through to the ultimate investors in those funds....most*

[86] Andonov *et al.* (2012), Kallberg *et al.* (2000), Baum *et al.* (2011), Bond & Mitchell (2010), O'Neal & Page (2000), Lin & Yung (2004), Ling (2005).

research suggests that pension funds are not able to identify top managers ex ante and the managers that serve the pension fund sector show little evidence of skill on a risk-adjusted basis" (p.12).

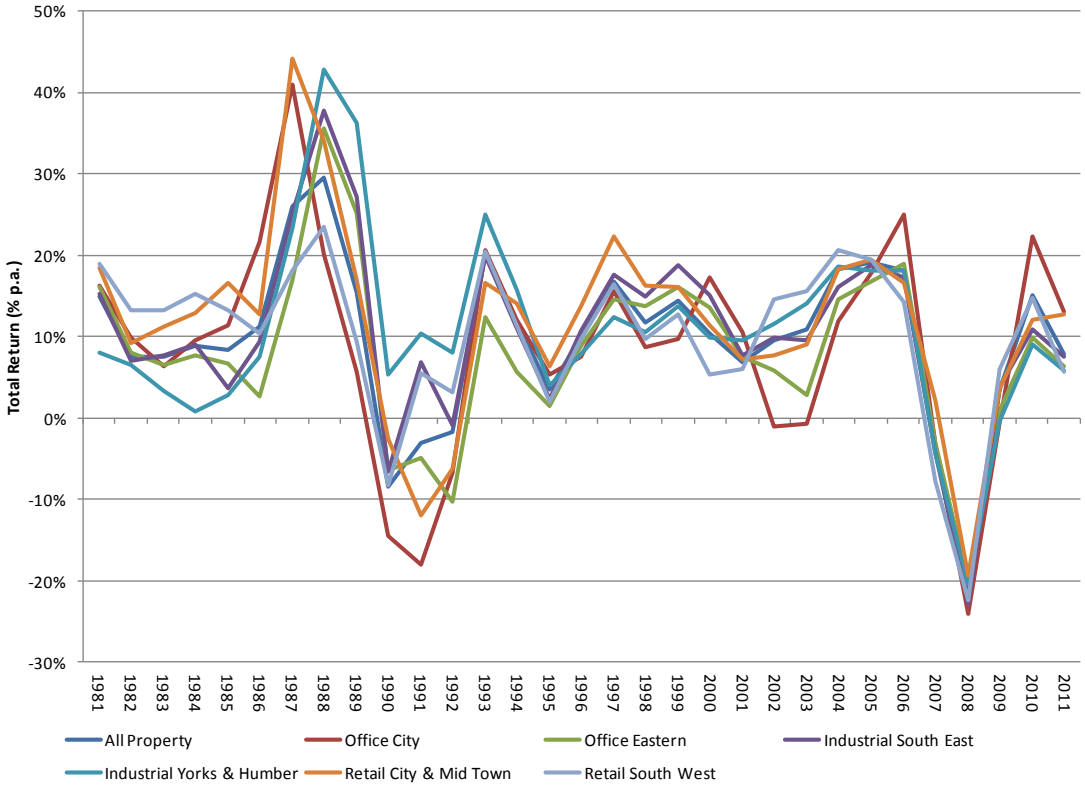
Interestingly, the literature suggests greater evidence of sustained alpha from higher-risk real estate, private equity and hedge funds than their lower risk counterparts.[87] However, given the wide range of investment strategies available to higher-risk investors (e.g., operational and financial gearing, trading, concentration bets etc.) and the known limitations of available benchmarks, it is reasonable to suggest that this conclusion might reflect the exclusion of beta sources from the adopted benchmark rather than genuine skill or alpha. Further, as suggested by Ang *et al.* (2011a) it is likely that where alpha is generated it is likely to be consumed by fees, rather than passed to the investor.

Mitchell & MacNamara (2011) finds that the distribution of returns appears to have become tighter over time, with a resultant reduction in idiosyncrasies and an increase in the correlation with market returns. This conclusion is in line with Callender *et al.* (2007) and MacKinnon (2010). All three papers suggest that idiosyncratic risks become more important during periods of market stability, and less important during periods of market volatility. Interestingly, Mitchell & MacNamara (2011) suggest that the importance of idiosyncratic risks is a function of the efficiency of the valuation system and, therefore, the institutional framework of the real estate market.

Based on the above discussion it is possible to conclude that 'index'-based real estate investment at the UK market level is likely to be dominated by beta. While this is particularly true for funds targeting diversified exposure to stabilized assets (i.e., funds that are trying to implement an IPD relative investment strategy), it also holds for funds seeking concentrated exposure in sub-markets within the UK. To illustrate, the average correlation between the UK IPD index returns and sub-index returns (such as City of London offices) is 86.5% over the period 1981-2011 (Figure 23).

[87] Kaplan & Schoar (2005) , Fung *et al.* (2008).

Figure 23: UK IPD Returns – All Property vs. Sub Sectors 1981-2011



Source: IPD

To test the validity of the above conclusion for the Global IPD Index, Kennedy (2011) uses implied prime return data from a range of sources including PMA, JLL REIS and CBRE EA combined with UK based asset return dispersion analysis from Callender *et al.* (2007) (Figure 24) and methodological support from Danielsson *et al.* (2006).

The analysis suggests that, allowing for the long-term hold periods typically associated with real estate investment, it is possible to replicate global IPD returns with a portfolio of stabilized assets with a tracking error of around 6% with a globally diverse portfolio (i.e., one that by capital value broadly reflects the assumed composition of the Global IPD Index) of between 100 and 300 assets (Figure 25). To achieve a tracking error of 4% would require a portfolio of up to 500 assets. The research suggests that such a portfolio would have delivered a correlation in excess of 80% with the assumed global benchmark index.[88]

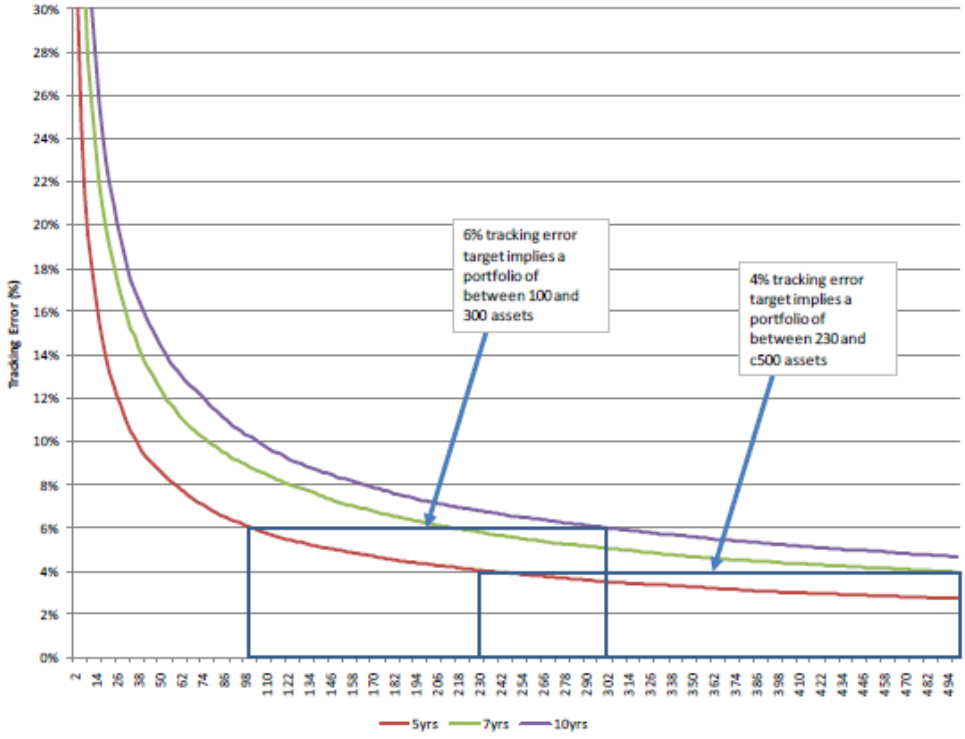
[88] To estimate the distribution of annual returns around the mean represented by IPD, data from Callender *et al.* (2007) are used together with a methodology based on the square root of time rule (see for example Danielsson & Zigrand (2006)). To adjust the analysis to allow for different hold periods annual dispersion estimates are converted to hold period estimates using the following equation: $\sigma_T = \sqrt{T}\sigma_i$. Where σ_T= hold period cross sectional dispersion; T= hold period; and σ_i= annual dispersion estimate. Similar estimates are produced using slightly different methodologies by Brown & Matysiak (2001), Baum & Strumpell (2006) and Callender *et al.* (2007).

Figure 24: UK return dispersion 1988-2004

	Standard Deviation %					
	1988	1991	1997	2001	2004	Average
Standard retail –South East	36.8	31.1	15.3	13.4	15.4	22.4
Standard retail – Rest UK	33.5	30.4	15.2	12.1	14.5	21.1
Shopping centres	17.3	13.9	9.5	7.7	8.0	11.3
Retail warehouses	15.5	14.7	12.3	30.5	11.0	16.8
City offices	21.3	41.5	41.2	31.9	28.5	32.9
West End offices	41.6	19.1	28.7	15.5	28.7	26.7
Rest of SE offices	34.0	17.5	16.2	11.3	12.9	18.4
Rest of UK offices	32.8	17.7	23.3	11.3	10.4	19.1
Industrial South East	33.5	13.6	12.8	14.4	11.6	17.2
Industrial rest UK	24.3	13.9	10.4	10.5	10.4	13.9
All property	35.1	26.6	21.3	18.2	16.9	23.6

Source: Callender et al. (2007)

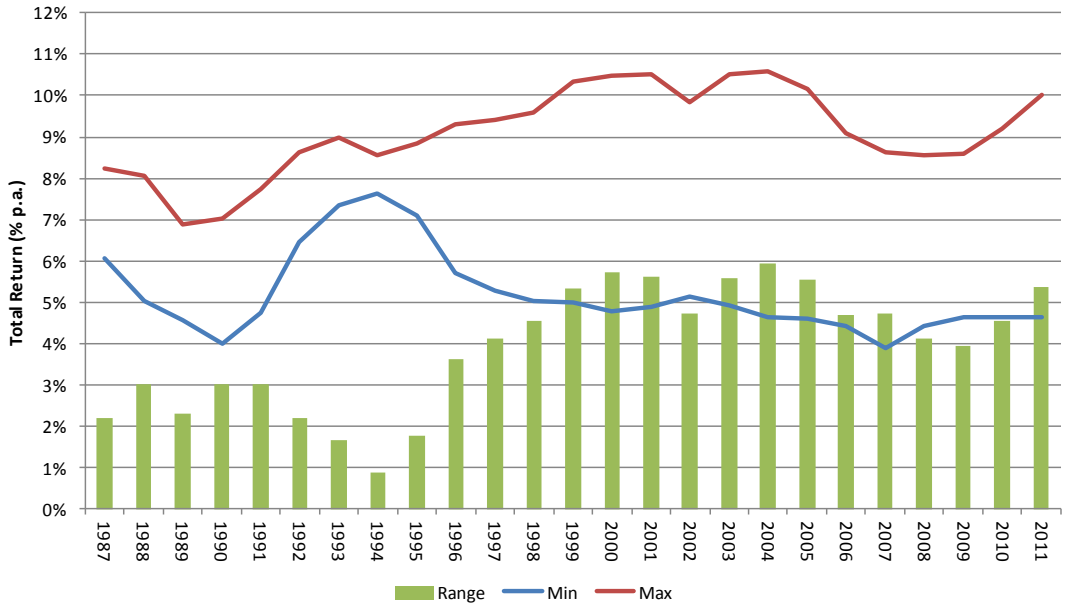
Figure 25: Global stabilised real estate portfolios and tracking error



Source: Kennedy (2011)

The tracking error calculations detailed above assume a portfolio with a broad level of both geographic and sectoral diversification. Clearly, this assumption limits potential tracking error and, therefore, enhances the correlation of the delivered portfolio with the Global IPD Index benchmark. Given the dispersion of index returns within the Global IPD Index (Figure 26) there is potential to enhance return via over- and under-weight positions in specific countries and markets. However, this does not mean that it is not possible to deliver benchmark returns, rather it suggests scope for positive (and negative) returns associated with 'bets' against the benchmark index.

Figure 26: IPD return dispersion by country



Source: IPD

Given the above discussion it is clear that it is possible to deliver 'beta' returns from a global real estate portfolio. While exposure to 300-500 assets suggests that only the largest funds will be able to achieve this directly (i.e., assuming leverage of 50% and a 10% allocation to real estate it implies an overall portfolio of $30bn and $125bn), smaller funds will be able to achieve similar diversification via the use of co-mingled vehicles or fund-of-fund structures.

An important limitation of this analysis is the direct link between the composition of the benchmark index and the delivered portfolio (i.e., the global analysis conducted by Kennedy (2011) was based on high quality stabilised assets and assumed a globally diverse portfolio). Breaking this link (e.g., by allowing for investments in real estate debt, listed real estate, higher risk real estate etc.) will reduce the relationship between the assumed benchmark index and delivered performance and, therefore, erode the relationship between asset allocation assumptions and the delivered portfolio.

As a result, it is possible to conclude that suggestions that *"...it is not possible to deliver 'beta' in real estate..."* are probably based on a mismatch between the benchmark used to define beta and the available investment universe. Further, while the availability of alpha is likely to be a function of market opacity, the level of investment risk, the skill of the investment team and the amount of capital under management, it is reasonable to assume from the research presented in this section that it will be hard to achieve on a consistent basis. Based on this research, it is likely that long-term 'alpha' generation claims typically associated with real estate investment are more likely to be a product of non-benchmark 'beta' returns rather than genuine skill based performance.[89]

[89] Farrelly & Baum (2008), Ang *et al.* (2009, 2011a).

4.3 Real estate as a source of portfolio diversification

Most commentators find that real estate has a substantial role in multi-asset portfolios as a diversifier. Indeed, Bond *et al.* (2007) suggests that its impact on a multi-asset portfolio due to diversification is likely to be greater than for other alternative asset classes (e.g., infrastructure, private equity etc.). Further, Sa-Aadu *et al.* (2010) suggests that the *"…typical institutional allocation to real estate may underweight the role of the asset class in a diversified portfolio."* Typically, these analyses attempt to adjust for the known limitations of real estate data and associated restrictions of Mean Variance Optimization.[90]

Several studies show that real estate returns have a low correlation with those of other asset classes (Table 9). For example, Hoesli & Lizieri (2007) find that *"…correlation analysis indicates that real estate investment should bring benefits to the mixed asset portfolio…."* suggesting that *"…directly held private real estate indices exhibit low positive correlations with equities and near zero correlations with bond returns in a wide range of countries…"*. Further, they suggest that while there are variations over time and correlations are unstable, they are rarely strongly positive (see also Lizieri *et al.* 2011).

Table 9: Correlation Matrix (Global Stabilised Real Estate vs. Global Bonds and Global Equities) 1981-2011

	Global Equities (MSCI GDP World and MSCI AC World)	Global Bonds (JP Morgan Global Broad Index)	'Stabilised' / Index Real Estate (after fees)	'Transitional' real estate (leveraged after fees)
Global Equities (MSCI GDP World and MSCI AC World)	100%	-0.4%	24.2%	32%
Global Bonds (JP Morgan Global Broad Index)	-0.4%	100%	-20%	-18.4%
'Stabilised' / Index Real Estate (after fees)	24.2%	-20%	100%	91%
'Transitional' real estate (leveraged after fees)	32%	-18.4%	91%	100%

Source: Datastream; IPD; NCREIF; Townsend; Author's Calculations

Interestingly, Eichholtz (1996) and Gordon *et al.* (1998) show that real estate's diversification attributes are more important than the level of risk-adjusted returns. Further, a number of studies investigate the impact of investment horizon on allocations and find that real estate is particularly beneficial for investors with long-term goals.[91]

Hoesli & Lizieri (2007) finds that most studies attempting to explain the drivers of real estate returns highlight both macro-economic and financial variables with the relationship between the two groups changing according to economic conditions and the nature of the lease structure. Further, they highlight that many studies detect a unique, priced, real estate factor that they suggest provides support for the inclusion of real estate in multi-asset portfolios.

[90] See for example Lizieri & Holesi (2007), Lizieri *et al.* (2011), Baum & Hartzell (2011), Lizieri et al.. (2011), Hoesli *et al.* (2004), MacKinnon & Al Zaman (2009) and Brounen *et al*. (2010).
[91] Hoevenaars *et al.* (2008), Chun *et al.* (2000); Fugazza *et al.* (2007), Anglin & Gao (2011), Rehring (2012)

Further, a number of papers suggest that the level of integration in real estate markets remains below that in other financial markets; suggesting relatively low correlations within the asset class and, therefore, enhanced benefits from a global approach to investment when compared to equities and bonds.[92] By extension, this finding increases the importance, from an asset allocation perspective, of real estate investors prioritizing diversification at geographic, sectoral and metro levels over the pursuit of enhanced returns via concentrated bets.

Hoesli & Lizieri (2007) and others[93] find that real estate returns can exhibit non-normal characteristics such as tail dependence and unstable correlations. More positively, analysis reported by Lizieri *et al.* (2011) suggests that the former characteristic is of greater concern to short-term and higher risk investors than long-term investors focused on stabilized or core equity assets. Further, they suggest that while unstable correlations can limit the benefits of real estate as a portfolio diversifier, they do not fundamentally change the diversification case for the asset class.

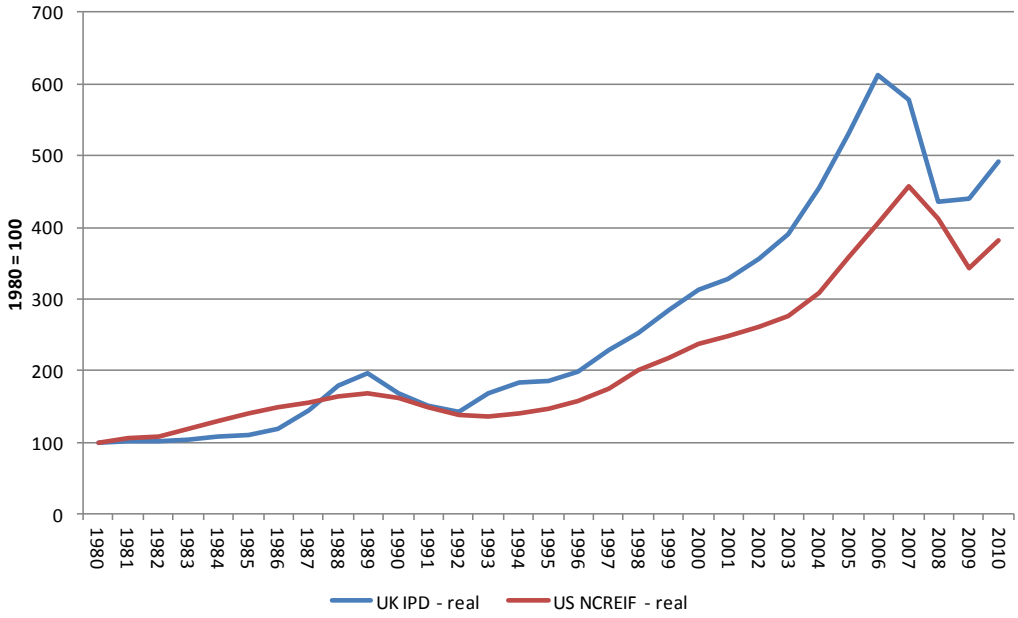
Interestingly, all of the papers cited in this section use either 'stablised' equity indices produced by organizations such as IPD or NCREIF, or REIT-based listed real estate indices. While the research available using higher-risk data is limited, analysis by Shilling & Wurtzebach (2010) and Merabet *et al.* (2010) using Townsend / NCREIF data suggests real estate's diversification potential is both market state and risk appetite dependent, with higher-risk exposures providing more limited diversification benefits at the overall portfolio level.

[92] Miles *et al.* (1990), Terhaar *et al.* (2003), Hoesli & Lekander (2005), Hoesli & Lizieri (2007), Liow *et al.* (2005), Hastings & Nordby (2007).
[93] Lizieri *et al.* (2011), Young *et al.* (2006), Young & Graff (1995), Graff *et al.* (1997).

4.4 Real estate as an inflation hedge

Recent studies on real estate as an inflation hedge suggest that index-based exposure to the asset class offers protection from expected but not unexpected inflation. In other words, real estate offers a partial inflation hedge.[94] Figure 27 shows real returns from UK and US index real estate over the period 1981-2011.

Figure 27: Real returns from UK and US real estate 1981-2011



Source: IPD; Datastream

There are two means by which real estate can provide a hedge against inflation:

(a) First, via changes in rental income after expenses; and

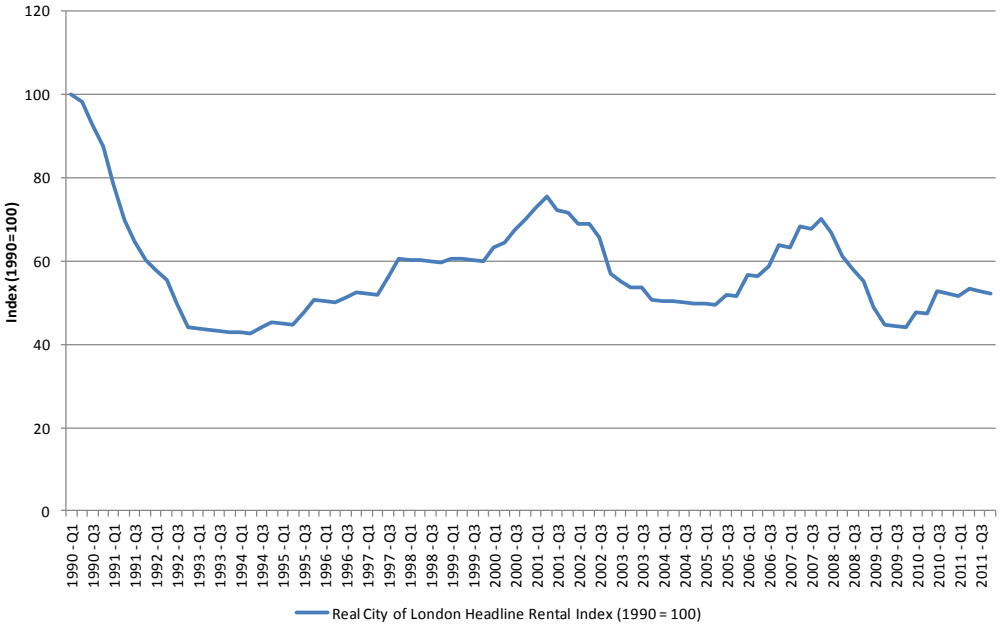
(b) Second, through the capitalization or valuation process.

However, the literature shows potential flaws with each mechanism.[95] It is these flaws that limit real estate's inflation hedging characteristics.

On the rental side, income streams may not keep pace with inflation, costs might increase at a greater rate than income, or increases might not be recoverable from the tenant. These effects can be both short- and long-term and may not be recovered by subsequent changes in rental and cost levels. Figure 28 shows real headline City of London office rents over the period 1981-2011. Figure 29 shows real UK IPD rents over the same period.

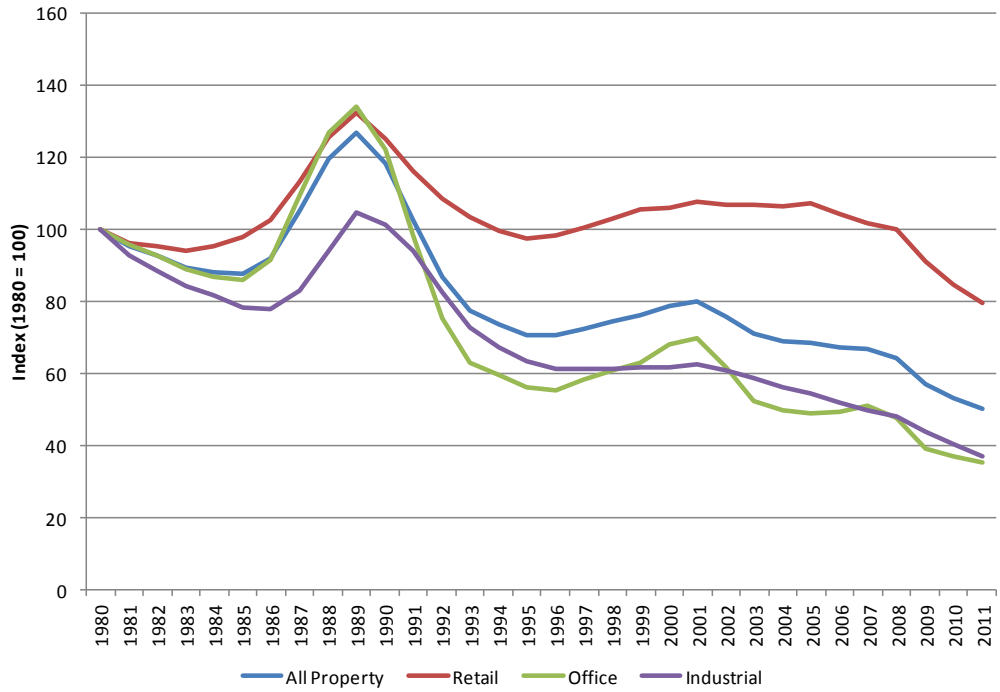
[94] Guasekarege *et al.* (2008), Hoesli *et al.* (2008), Case & Wachter (2011).
[95] Huang & Hudson-Wilson (2007), Hoesli *et al.* (1997).

Figure 28: Real City of London headline office rents 1981-2011



Source: PMA; Authors' calculations

Figure 29: Real UK IPD rents (after depreciation) 1981-2011



Source: IPD; Datastream; Authors' calculations

Peyton *et al.* (2008) suggests that it is property market fundamentals rather than movements in consumer or producer prices that drive real estate rents. Schofield (1996) and Hoesli *et al.* (1997) highlight that the effect of inflation on income streams is a function of both lease structures and portfolio composition – rather than just underlying economic conditions. Ganesan & Chang (1998) shows that long leases mean that Hong Kong real estate has failed to provide a good hedge against inflation.

On the capitalization side, while in theory the capitalization rate should be a function of the investors' required rate of return (Figure 30)[96] in practice there are problems with the transmission mechanism. Inflation expectations impact both the risk free rate and the expected rental growth components of the capitalization rate; the increase in one (RFR) should be perfectly offset by an increase in the other (RG+d), suggesting a perfect inflation hedge.

Figure 30: Determinants of real estate yields / capitalisation rates

$$k = RFR + RP - RG + d$$

However, there are two flaws with this argument. First, the capitalization rate will reflect expected rather than unexpected inflation;[97] and second, the calculation presumes that rental expectations will reflect expected inflation, which as highlighted above, might be incorrect. These observations support the assertion that real estate provides – at best – a partial hedge against inflation.

MacKinnon & Al Zaman (2009) support the partial hedging thesis, but find that real estate returns tend to overshoot inflation before falling back. They suggest that this characteristic creates short-term pricing risks for real estate investors and, therefore, impairs the inflation hedging characteristics of the asset class. Further, Hoesli *et al*. (2008) shows that the unwinding process from inflation shocks can be both long and gradual, suggesting that investors seeking to gain exposure to real estate as an inflation hedge are exposed to timing risks.

Based on UK data, Tarbert (1996) highlights the lack of any evidence of a long-run stable relationship between inflation and commercial property returns, suggesting a variable response to inflation over time. This finding is consistent with Lizieri *et al.* (2011). Other commentators suggest that the ability of real estate to hedge inflation is linked to market conditions,[98] with the benefits of inflation hedging being more significant in strong markets than weak (i.e., where investors are able to demand compensation for inflation they do so).

Interestingly, Hoesli *et al.* (1997) observe differences between the inflation hedging ability of offices and retail / industrial, the latter providing more protection than the former. Despite this Tarbert (1996) observes that while *"…hedging benefits appear to be relatively small in magnitude… commercial property is clearly a relatively superior hedge in comparison to both gilts and equities."*

A number of commentators qualify the above conclusions by highlighting data limitations. For example, Hoesli & Lizieri (2007) suggest that *"…available time series data are too short and too low frequency to permit reliable testing of mean reversion in private real estate markets…".* Further, Goetzmann & Valantis (2006) consider the inflation hedging abilities of unleveraged US index real estate (i.e., NCREIF) and comment on the problems associated with limited data –

[96] Fisher (1930), Baum & Crosby (2007).
[97] Schofield (1996).
[98] Wurtzebach *et al.* (1991), Hoesli *et al.* (1997), Schofield (1997) ,Huang & Hudson-Wilson (2007).

particularly assumptions of stationarity.[99] Despite this they suggest that real estate should provide a useful inflation hedge. Interestingly, they are more confident in real estate's hedging characteristics than the level or volatility of long-run returns.

Glascock *et al.* (2002) suggests that as REITs are primarily real estate they should share the inflation hedging characteristics of the direct asset class. However, the empirical results on the inflation hedging characteristics of REITs are mixed. For example, Chun *et al.* (2000) suggests that real estate securities exhibit a different response to inflation than unleveraged direct 'index' real estate. Indeed, most of the evidence suggests a negative relationship between inflation and listed real estate performance (i.e., the reverse of an inflation hedge).[100] However, Glascock *et al.* (2002) suggests that the difference between their hypothesis and sections of the literature is a *"…manifestation of the effects of changes in monetary policies…."* and conclude that the *"…assertion that REITs are perverse inflation hedges is… spurious."*

Kennedy (2009) considers the impact of leverage on the inflation-hedging characteristics of real estate. He shows that depending on the type of debt exposure added to the underlying real estate investment, inflation hedging characteristics can either be enhanced (e.g., via the use of long-term fixed rate debt) or undermined (e.g., through the use of high loan-to-value (LTV) variable debt).

Further, as the inflation-hedging characteristics of real estate are a function of the ability of the asset class to reflect changes in underlying economic conditions, it is reasonable to assume that higher-risk versions of the asset class, where returns are a function of arbitrage, skill or operational gearing as well as underlying market conditions, will have a weaker link with the overall price level than lower risk 'stabilised' or beta-based investments.

These assumptions are in line with the conclusions of Shilling & Wurtzebach (2010) and Merabet *et al.* (2010). As a result, while there is a reasonable case that real estate provides at least a partial inflation hedge this argument can be eroded by deviations from unleveraged low-risk equity index based exposure (e.g., via leverage, debt investments or higher risk exposure). In addition, as the inflation-hedging ability of real estate is a function of market state, there is a risk that the characteristic may only be available when it is required the least.

4.5 Summary

As discussed above there are four clear arguments for including real estate in a multi-asset portfolio:

(a) First, it is part of the market portfolio;

(b) Second, it can provide reasonable total and income returns;

[99] See also Goetzmann *et al.* (2005).
[100] Adrangi *et al.* (2004).

(c) Third, it offers diversification; and

(d) Fourth, it can provide a hedge against inflation.

These arguments are typically reflected in the investors' reasons for investing in real estate either as unqualified or qualified attributes (Table 10). However, as detailed in the preceding discussions there are important limitations with each argument.

Table 10: Investors' reasons for investing in real estate

	Fund	Inflation hedge	Overall Portfolio diversification	Income	Return
1	Government Pension Fund of Norway / Petroleum Fund	✓	✓	-	✓
2	ABP	✓	✓	-	✓
3	CalPERS	✓	✓	-	-
4	CalSTRS	✓	✓	✓	✓
5	Florida Retirement System	✓	✓	-	✓
6	New York State and Local Retirement System	✓	✓	✓	✓
7	Caisse de Depot et Placement du Quebec	✓	✓	-	✓
8	Ontario Teachers' Pension Plan	✓	✓	-	-
9	Teacher Retirement System of Texas	✓	✓	-	✓
10	Future Fund	✓	✓	-	✓
11	Washington State Investment Board	-	✓	✓	-
12	Alaska Permanent Fund	✓	✓	-	✓
13	Los Angeles County Employees Retirement Association	✓	✓	✓	-
14	Pennsylvania State Employees Retirement System	✓	✓	-	✓
15	New Zealand Superannuation Fund	-	✓	-	✓
	Overall	13/15	15/15	4/15	11/15

Source: Authors' research

First, 'index' based real estate only represents around 20% of the 'investible' stock typically targeted by global investors. Further, while asset allocation calculations commonly use data representing the characteristics of low risk, unlisted, unleveraged, equity real estate in developed markets, global investors invariably seek exposure to a broader base of assets – including exposure to debt, listed real estate, emerging markets, leverage and higher-risk forms of the asset class. These differences can often introduce additional sources of beta and alpha return into delivered performance and, therefore, lead to differences between anticipated portfolio characteristics and those provided by the delivered portfolio. In addition, they can lead to attribution challenges and the misidentification of beta as alpha.

Second, some of the literature suggests that real estate is a source of 'attractive' beta and alpha returns from both income and capital appreciation. There is limited empirical support for this assertion. Analysis of long-term risk-adjusted real estate returns at the global level suggests 'appropriate' rather than attractive returns. In addition, evidence highlights the difficulties associated with the delivery of long-term positive alpha – particularly for large global funds.

Interestingly, analysis of long-term higher-risk (or 'transitional') returns suggests poor risk-adjusted performance from the average fund. The data indicate that this finding can be explained by substantial fund selection risks (i.e., cross sectional variation), and volatile returns over time (i.e., poor average

performance hides attractive returns to market timing). In addition, while it is possible to structure real estate investments to provide income, the common use of leverage and the need to fund maintenance / capital expenditure can often lead to relatively low income distributions.

Third, the literature support the argument that real estate is a source of diversification – but only for low-risk stabilized or index equity exposure. Several papers find that real estate provides returns that are attractively correlated with equities and bonds. Further, the literature suggests that real estate's portfolio role is supported by a 'real estate factor' based on the institutional characteristics of the asset class (e.g., valuation framework, illiquidity, opacity etc.).

Several studies suggest that the investment strategy adopted and the form of the asset class included in the portfolio can influence real estate's diversification benefits and portfolio role. Investments in higher risk real estate, debt, leverage and so on, can fundamentally change the diversification benefits offered by 'real estate' and, therefore, alter its portfolio role and contribution to asset allocation strategies.

Finally, the literature suggests that both listed and unlisted real estate provides investors with at least a partial hedge against inflation. However, the available benefits are a function of both market state and the type of real estate included in the portfolio. Importantly, exposure to debt, leverage and higher-risk real estate can limit the inflation hedging characteristics offered by the asset class.

In essence, the evidence suggests that the investment case for 'stabilised' equity real estate is based on diversification rather than return. In turn, this implies that investments in this form of real estate (i.e., the form of the asset class typically used as the basis for asset allocation decisions) should be driven by 'beta' rather than 'alpha'. The evidence also suggests that the investment case for 'real estate' is linked to the definition of the asset class, and that portfolio level allocations developed on the basis of the characteristics of a specific sub-set of the broader asset class may not be applied directly to a broader definition without incurring risks at the asset allocation level (i.e., the delivery of portfolio characteristics that differ from those implied by asset allocation).

As will be clear from the preceding discussions in Section 2, this finding has important implications for alignment between asset allocation and implementation, as well as for the establishment of pool structures, benchmarks and guidelines for real estate portfolios. These issues are addressed in Section 5.

5. Aligning asset allocation and implementation in real estate

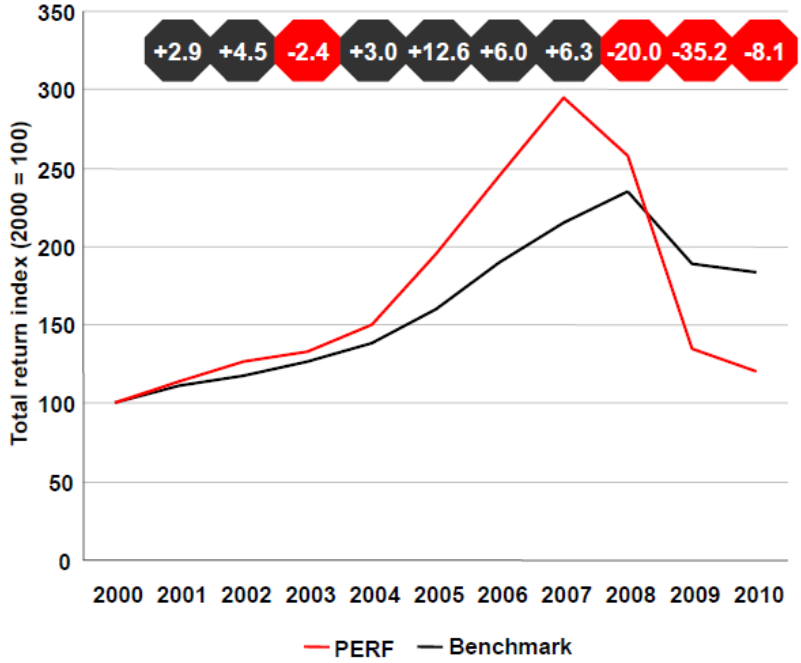
The following section is divided into two parts. First, through a case study some of the potential implications of misalignment between asset allocation and implementation are explored. Second, potential alignment options for asset allocation and real estate investment are considered.

5.1 CalPERS: a case study

The real estate market correction of 2008/9 offers numerous examples of the potential impact of misalignment between asset allocation intent and implementation. The following discussion uses data from the Californian Public Employees Retirement System (CalPERS). The selection of this fund reflects data availability rather than a desire to suggest atypical behavior or performance. Interestingly, research by Baum *et al.* (2011, 2012) suggests that issues associated with 'style drift' highlighted by the CalPERS example were relatively common within the real estate funds management industry over the last decade.

Figure 31 compares the performance of CalPERS' real estate portfolio vs. their NCREIF policy benchmark over the period 2000-2010. The data show clear out-performance over the period 2004-2008 and marked under-performance over the remainder of the period.

Figure 31: CalPERS portfolio and policy real estate returns 2000-2010



Source: Morrell & Kennedy (2011); CalPERS

According to Morrell & Kennedy (2011) and Ang & Kjaer (2011) these deviations were primarily due to investments in higher-risk equity and debt strategies – including development and land speculation. Further, while the policy benchmark index was limited to US real estate, the delivered portfolio included exposure to substantial international investments.

As a result, incremental returns over the policy benchmark were compensation for higher levels of 'beta' equity risk, including illiquidity and opacity, exposure to enhanced fat-tail and total capital loss risks, as well as exposure to forms of real estate beta explicitly excluded from the portfolios used to justify the original allocation (i.e., those included in the fund's NCREIF benchmark). Consequently, CalPERS' early 'out-performance', and subsequent 'under-performance' should be regarded as a potential (but not definitive) illusion (i.e., the result of benchmark misalignment, rather than genuine 'alpha').

More importantly, the protracted misalignment between the portfolio implied by the policy benchmark and that delivered by the investment team means that it is likely that the asset allocation team were unaware of the risks implied by the implementation approach adopted by the real estate group, and embedded in their approved guidelines.

As a result, the deviation in performance was, by definition, a failure of both asset allocation and implementation. Specifically, the asset allocation team should have been aware of the potential performance implications of the specified guidelines, implementation approach and investment committee approvals, while the implementation team should have sought guidelines that, based on their knowledge of the asset class, provided a closer proxy for the exposure implied by the policy benchmark and, therefore, the asset allocation process.[101]

Ang & Kjaer (2011) state: *"As real estate surged during the 2000s, CalPERS' internal controls on real estate investment withered and outside investment advisors held large sway and discretionary power to allocate billions of capital in real estate deals. They used it….. CalPERS used leverage extensively, up to 80% in some cases… in ways that were highly opaque even to CalPERS managers."* (p.3). While some of this behavior might have been relatively normal for high-risk opportunity funds, CalPERS' NCREIF benchmark reflected an asset allocation to stabilised equity risk.

It is important to note that this misalignment is not necessarily synonymous with 'poor' performance. It is perfectly possible that CalPERS' real estate team delivered returns in excess of the benchmark implied by their implementation strategy. The key point is not competence, or 'excess return', but alignment with asset allocation.

As suggested by the discussion in Section 2, it is perfectly possible for an investor charged with the implementation of specific allocations to deliver strong risk-adjusted returns at the asset level and, therefore, 'out-perform' while simultaneously under-performing at the overall portfolio level. This mismatch can have obvious asset allocation implications and can be explained by the delivery of the 'wrong' beta, or utilization of an alpha budget that could have been deployed elsewhere in a way that was: (a) more accretive; and (b) more consistent with overall asset allocation strategies.

[101] Ang *et al.* (2009, 2011a).

As suggested by the CalPERS example detailed above and indicated by the discussions in Section 4, there is no one 'correct' approach to alignment between asset allocation and implementation. The key requirement is consistency between assumptions underpinning allocation and implementation decisions.

5.2 Narrow and broad approaches to asset allocation alignment

This section reviews two alternative approaches to achieving alignment between asset allocation and implementation, based on either single or multiple beta-based pools. The options are not intended to be the only possible solutions to the issues detailed in this paper - by definition, they are extreme.. Rather they are intended to provide a framework for considering means by which real estate can be included in an asset allocation framework.

First, a 'narrow' approach represents an explicit attempt to tie investment activities to the exact form of the target beta via restrictive guidelines that limit scope for 'alpha' generation to security selection consistent with tight geographic and concentration limits. The approach can be combined with either single or multiple forms of the asset class (e.g., stabilised equity, transitional equity, real estate debt etc.), or limited to a single pool. By definition, this approach will limit 'real estate' exposure to the forms of the asset class identified at the asset allocation level. The approach also implies a restrictive and bureaucratic approach to portfolio construction that – *in extremis* – may be inconsistent with investment in an inherently opaque and entrepreneurial asset class.

Second, a broad approach implies a more flexible link between asset allocation assumptions and implementation. The approach is characterized by extremely flexible guidelines that permit wide deviations from the target beta reflected in the asset allocation. As a result, a single pool approach would not necessarily exclude investments in forms of real estate beta that are not part of asset allocation assumptions. Further, a multiple pool approach implies the likely overlap of beta exposures implied by asset allocation assumptions. Both versions of the broad approach would, therefore, offer investment teams substantial flexibility and, therefore, the opportunity to add value to the underlying allocation. While this flexibility could lead to 'genuine' skill based alpha, guideline flexibility means that it will be difficult to distinguish such returns from performance associated with 'excluded' beta.

Table 11 compares the two approaches assuming multiple pools. The table assumes asset allocation calculations based on index or beta returns of $r_{b1,}$ r_{b2} and r_{b3} and tracking error or alpha returns of α_{b1}, α_{b2} and α_{b3}.

Table 11: 'Narrow' and 'broad' benchmark approaches assuming multiple pools

Strategic Asset Allocation Pools	Benchmark and guidelines by pool	Potential differences
$r_{b1} \rightarrow r_{b1} + \alpha_{b1}$ $r_{b2} \rightarrow r_{b2} + \alpha_{b2}$ $r_{b3} \rightarrow r_{b3} + \alpha_{b3}$	*Narrow (Pool 1 – e.g., stabilised equity)* $r_{b1} \rightarrow r_{b1} + \alpha_{b1}$	None
	Narrow (Pool 2 – e.g., transitional equity) $r_{b2} \rightarrow r_{b2} + \alpha_{b2}$	
	Narrow (Pool 3 – e.g., real estate debt) $r_{b3} \rightarrow r_{b3} + \alpha_{b3}$	
	Broad (Pool 1 – e.g., stabilised equity) $r_{b1} \rightarrow r_{b1} + r_{b2} + r_{b3} + \alpha_{b1} + \alpha_{b2} + \alpha_{b3}$	$r_{b2} + r_{b3} + \alpha_{b2} + \alpha_{b3}$
	Broad (Pool 2 – e.g., transitional equity) $r_{b2} \rightarrow r_{b1} + r_{b2} + r_{b3} + \alpha_{b1} + \alpha_{b2} + \alpha_{b3}$	$r_{b1} + r_{b3} + \alpha_{b1} + \alpha_{b3}$
	Broad (Pool 3 – e.g., real estate debt) $r_{b3} \rightarrow r_{b1} + r_{b2} + r_{b3} + \alpha_{b1} + \alpha_{b2} + \alpha_{b3}$	$r_{b1} + r_{b2} + \alpha_{b1} + \alpha_{b2}$

Source: Authors' assumptions

Each approach has both strengths and weaknesses. While the 'narrow' approach provides a clear link between asset allocation and implementation, this is likely to be at the expense of the flexibility of the investment team and, potentially, their effectiveness. This weakness might be particularly significant for forms of the asset class where the level of the delivered risk-adjusted return is more important than its characteristics (e.g., transitional real estate).

Although the 'broad' approach offers maximum flexibility to the investment team – and therefore deals with the issues highlighted above – this is likely to be at the expense of alignment between asset allocation and implementation, from the perspective of risk, return and the characteristics of delivered performance. This weakness applies to both single and multiple pool versions of the approach. For example, assuming three allocations to $r_{b1} + \alpha_{b1}$, $r_{b2} + \alpha_{b2}$ and $r_{b3} + \alpha_{b3}$ and an asset allocation decision to move capital from the first pool to the third (e.g., from stabilized real estate to real estate debt), given the flexible guidelines assumed in the broad approach it would be possible for the investment team to comply with the asset allocation change without altering aggregate exposure at the overall portfolio level.

In other words, broad guidelines enhance the asset allocation role of the investment teams, and by extension can limit the impact of asset allocation decisions on the structure of the aggregate real estate portfolio. Given the opacity of some real estate investment structures and funds as well as recent performance relative to asset allocation targets, it is reasonable to assume that asset allocators might be reluctant to grant these levels of autonomy.

The fact that there are strengths and limitations associated with both of these extreme options means that neither should be viewed as a perfect solution to alignment issues. While the narrow approach will maintain links between asset allocation and implementation for either single or multiple pools – and, therefore ensure that the characteristics required to meet asset allocation goals are not sacrificed to achieve other objectives (e.g., return enhancement from excluded

beta sources) – this may be achieved via an inflexible and unattractive investment process that may jeopardize the delivery of both beta and alpha.

Similarly, while the broad approach might appeal to the entrepreneurial instincts of typical real estate investment managers – and therefore provide a context for exposure to sources of beta excluded from the asset allocation as well as genuine alpha – this might be at the expense of a clear link between target and delivered beta and, therefore, could be at odds with overall asset allocation objectives.

Given the above the 'correct' solution is probably a mix between the two extremes detailed in Table 11, tailored to reflect the specific requirements of each beta target or pool as well as the sophistication of the institutions' investment team. Irrespective of the selected approach, there should be clear alignment between the objectives of asset allocation and implementation functions.

While mandates focused on 'stabilized' real estate should adopt relatively restrictive or narrow approach to reflect the relative importance of diversification over return, mandates focused on the 'transitional' form of the asset class should provide greater flexibility for the implementation team. Further, while sophisticated investment teams with clear track records should be awarded significant flexibility for both stabilized and transitional mandates, a more cautious approach should be adopted towards groups without clear evidence of such attributes.

5.3 Linking asset allocation assumptions and portfolio underwriting

As detailed in Section 2, asset allocation decisions are based on estimates of expected returns, risks and correlation characteristics and 'alpha' associated with asset classes that are available to the investor. As a result, asset allocators need to form a view on the following core issues for each 'beta' or investment pool:

(a) First, expected / deliverable long-term 'beta' returns from specified asset classes and sub-sets thereof (e.g., stabilised real estate, transitional real estate etc.);

(b) Second, expected / deliverable long-term risk and correlations from specified asset classes and sub-sets thereof;

(c) Third, expected / deliverable 'alpha' returns from specified asset classes and sub-sets thereof;

(d) Fourth, the potential impact of 'alpha' on risk and correlation characteristics associated with target long-term 'beta' assumptions; and

(e) Fifth, the relative attractiveness of alternative deliverable 'alpha' sources given the target asset allocation strategy.

Given the inherent opacity of the global real estate market and the resultant complexity of analysis required to estimate expected beta returns for all forms of the asset class, it is highly likely that performance projections and associated data will be of higher quality if they reflect both bottom-up analysis from market level specialists (i.e., investment teams) and top-down input from multi-asset strategists (i.e., the asset allocation team). While the former will provide detailed market level information and understanding, the latter will provide broader insights into capital flows and economic trends as well as an inherently long-term perspective.

Investment teams can also help to challenge asset allocation analysis of risk, correlation and the feasibility, and potential consequences of, alpha delivery. They can also propose changes to benchmarks and guidelines set by the asset allocation team to help enhance the efficiency with which opportunities in their sector can be exploited, or to permit exposure to parts of the 'broad' definition of the asset class that they view as potential sources of attractive risk-adjusted returns (i.e., additional beta sources).

In addition to challenging asset allocation assumptions regarding expected returns, risk, correlation, alpha delivery and so on, the discussion process detailed above should also help challenge investment managers' underwriting assumptions at the individual transaction level. This does not mean that asset allocators should be involved in, or seek to influence portfolio level decisions; rather it suggests that the beta level discussion process should offer an additional perspective on underwriting assumptions and, therefore, help to enhance the quality of decision-making.

While the above dialogue is important for all asset classes, the complexity and opacity of the global real estate market, as well as the definitional uncertainties addressed in earlier sections of this paper, suggests that these discussions are likely to be particularly beneficial for all forms of real estate and other private markets.

However, while it is essential for asset allocators to engage with investment managers responsible for implementing asset class strategies, it is also important to ensure that asset allocation decisions are driven by top-down rather than bottom-up considerations. As detailed in Section 2, 'optimal' asset allocation strategies may be based on decisions that only make sense in the aggregate. As a result, there is a clear risk that allowing asset allocation decisions to reflect the aggregation of individual asset class specific preferences and views will lead to sub-optimal and internally inconsistent multi-asset portfolio structures.

5.4 Summary

The preceding discussion considered four inter-related issues:

(a) First, the size and composition of the global real estate market;

(b) Second, drivers of real estate performance associated with different forms of the asset class;

(c) Third, the roles of different forms of the asset class in multi-asset portfolios; and

(d) Fourth, issues associated with aligning real estate investment with asset allocation intent.

The key conclusion is that while real estate can be defined broadly to include all parts of the capital stack and risk spectrum, asset allocation decisions are commonly taken on the basis of a relatively narrow low risk equity 'index' based version of the asset class. This narrow definition implies a specific asset profile in terms of asset level risk (e.g., development, refurbishment etc.), type of real estate exposure (e.g., equity vs. debt etc.) and portfolio construction (e.g., leverage, asset concentration by market / geography etc.).

Despite this, investments in real estate that falls outside these definitions are commonly permitted, either explicitly or via weak processes. It is these differences that lead to the mistaken assumption that it is not possible to deliver 'beta' in real estate investment. Perhaps more importantly, they also lead to the misleading belief that real estate investment is an inherently alpha based activity.

While in some cases these deviations can result in minimal impact on the characteristics of delivered returns (e.g., listed real estate investments, use of leverage etc.), in others the impact can be substantial and have a fundamental effect on the role of real estate in a multi-asset portfolio (e.g., debt, higher-risk real estate investment etc.).

Consequently, although these deviations may lead to 'enhanced' performance at the asset level and on a risk-adjusted basis, this is likely to be at the expense of a marked difference between the actual and intended impact of all forms of real estate on the overall portfolio. As a result, 'enhanced' real estate returns may have been achieved at the expense of increased asset allocation risk, and likely overall portfolio risk.

However, this deviation is not – in itself – a problem. Where appropriate, asset allocation strategies can be developed to account for risks associated with the delivery of specific mandates. Rather it is the potential for a mismatch between asset allocation expectations (and assumptions) and implementation that is the key concern and risk. The discussion proposes two solutions to issues associated with the alignment of asset allocation and implementation for real estate.

First, asset allocators could 'permit' a defined scope for divergence between their assumed or base portfolio and the delivered exposure via flexible investment guidelines. This will provide the investment team with substantial flexibility, but at the expense of enhanced asset allocation risk. The approach could be associated with either a single pool (e.g., based on low risk real estate equity) or with multiple pools based on a number of distinct beta sources. While the combination of multiple pools with flexible guidelines implies potential for overlap between delivered exposures this should be acceptable if the associated asset allocation risk is reflected in overall portfolio strategy assumptions.

Second, asset allocators could insist on relatively tight guidelines and, therefore, a close relationship between the target portfolio implied by asset allocation assumptions and the delivered exposure. This could be associated with either multiple pools or a single pool. The approach will enhance the connection between the allocation decision and implementation and, therefore, limit asset allocation risks. However, the gains are likely to be at the expense of a more bureaucratic approach to real estate investment and, as a result, a less entrepreneurial investment culture.

Neither option is either correct or incorrect. The 'correct' solution will vary depending on the specific characteristics of the asset allocation driven mandate (e.g., stabilized vs. transitional real estate) and the track record / sophistication of the available investment conduit. Further, Institutions should select an approach and investment process that embeds co-operation between asset allocation and implementation teams and is consistent with their specific approach to investment, their culture, their strengths and weaknesses as well as their objectives for the asset class.

For example, an institution with specific and demonstrable advantages in real estate (e.g., due to the quality of their team) might wish to allocate to a particularly flexible definition of the asset class through either single or multiple pools, with the aim of capturing available alpha as well as unlocking additional forms of beta,[102] while allowing for potential portfolio consequences via specific adjustments to the overall asset allocation framework.

Perhaps the only clear error would be to fail to address the question of alignment between asset allocation and implementation at all, or to assume that success in this area is as straightforward in private markets such as real estate as it is in public markets with transparent and readily investible benchmarks. As highlighted in this paper, recent experience suggests that this approach would likely lead to a repeat of the problems faced by parts of the real estate investment industry over the last few years.

[102] Towers Watson (2012).

6. Summary and conclusions

As detailed in Section 2, asset allocation is an investment discipline that is concerned with the development of multi-asset portfolio strategies based on targeted exposures to a range of sources of beta and, potentially, alpha. The goal is to identify a deliverable multi-asset portfolio that is likely to meet the investor's objectives (e.g., income, risk, return, inflation hedge etc.) based on the complex interaction of expected returns, risk, correlation and implementation.

Importantly, these interactions can lead to asset allocation decisions that may be difficult to understand in the absence of a detailed appreciation of overall portfolio objectives and the assumptions underlying portfolio level decisions (e.g., expected returns for all asset classes, assumed correlations etc.). Often this can result in a perception that asset allocators have adopted sub-optimal approaches to specific asset classes (e.g., via the exclusion of specific investment 'opportunities'). While this is clearly possible, this accusation is frequently the result of limited information rather than a genuine asset allocation deficiency.

In liquid asset classes with accepted, investible benchmarks it is possible to deal with the impact of this perception on investment processes through the imposition of a direct link between asset allocation decisions and the delivered portfolio (e.g., via passive strategies). However, in private markets such as real estate, differences between the 'index' or 'benchmark' universe and the investible universe mean that there can often be substantial – and potentially intentional – deviations between the investment characteristics implied in asset allocation decisions and those delivered by investment teams. As detailed in Section 3, it is possible for these differences to have a fundamental impact on the contribution of the asset class to the overall portfolio and, therefore, undermine the rationale underpinning overall asset allocation decisions.

Further, as private markets – including real estate - are both complex and typically represent a relatively small part of overall portfolios, these potential deviations have historically been overlooked by asset allocators on the basis of materiality. However, over the last 20 years the growth of the real estate private equity industry, combined with an increase in the use of complex investment strategies and structures, has enhanced the potential 'cost' of misalignment. Arguably, the market correction of 2008/9 provided a clear demonstration of the potential consequences of the industry's approach as well as a valuable lesson.

Despite this, the key conclusion from this paper is not that real estate investment strategies should become slaves to a narrowly defined mandate based on equity based IPD / NCREIF benchmark replication. The discussion suggests that such an approach would likely lead to the underutilization of real estate in multi-asset portfolio strategies. Instead, it is that to achieve asset allocation alignment, real estate exposure should be divided into multiple pools representing distinct forms of the asset class (e.g., stabilised equity, transitional equity, debt etc.). In addition, the paper suggests that associated investment guidelines and processes should be collaborative and reflect portfolio wide asset allocation objectives of each pool. Further, where appropriate they should specifically target potential for 'additional' beta or, more marginally, 'alpha'.

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