Emerald Journal of Property Investment & Finance

The Performance of a Blended Real Estate Portfolio for UK DC Investors

Journal:	*Journal of Property Investment & Finance*
Manuscript ID:	JPIF-10-2014-0064
Manuscript Type:	Academic Paper
Keywords:	Finance, Portfolio management, Listed real estate, Unlisted real estate, Investment, Pension fund

Introduction

This paper seeks to provide a better understanding of the performance implications for investors who choose to combine a global listed real estate with an unlisted real estate allocation. Specifically, it provides a detailed investor level analysis of the impact of combining UK unlisted fund and global listed real estate fund exposures to satisfy the requirements of a real estate allocation in a UK Defined Contribution Pension fund ("DC"). The catalyst for this paper was the recent report by the Pensions Institute (2013). This highlighted both the rationale for real estate in DC funds, and specifically, the use of a blended product, which combined a 70% UK unlisted allocation with a 30% global listed allocation, to provide this exposure. For the purposes of this study we refer to this 70/30 mix as the "UK DC Real Estate Fund".

There are currently three factors which are of utmost importance to investors, which lie behind the increased interest in blending listed and unlisted real estate namely, liquidity, cost and ease of execution. It is well understood that direct real estate can be a beneficial component of a multi-asset portfolio primarily due to the diversification benefits that it provides. However, one of the key challenges for both asset allocators and product developers is how to provide a direct or at least a direct-proxy real estate exposure in a mixed asset portfolio with acceptably high levels of liquidity and low levels of cost. This is a challenge for all private market asset classes. Clearly, a 100% exposure to unlisted funds or direct real estate would not be expected to meet these practically demanding criteria.

Aside from these general considerations, there are a number of specific reasons why this topic is particularly relevant currently. Most recently, and of most significance to investors, the decision by the UK's National Employment Savings Trust ("NEST") to include a 20% allocation to real estate in its DC fund, and for that 20% allocation to be executed via a hybrid vehicle (managed by Legal and General). This comprises a 70% weighting to UK direct real estate via their unlisted fund, and a 30% weighting to listed real estate via a Global REIT tracker fund. There has also been an increase in the emphasis placed by investors and investment consultants on liquidity post the GFC. This clearly is an advantage for listed real estate relative to unlisted real estate. There continues to be significant growth in "real asset "allocations (i.e. real estate,

commodities, and infrastructure). A number of practitioners (Towers Watson, JP Morgan, Brookfield et al.) have suggested that this real asset allocation could increase to 20% of portfolio weightings.

However, recent evidence identifies that there has been reluctance by a number of UK and European institutions to incorporate listed real estate into their real estate allocation - Baum and Moss (2013). This can be attributed to a number of reasons, ranging from the different volatility profile of listed real estate to practical aspects of integrating a team that invests in both listed and unlisted vehicles. Prima facie, a simple, cost effective, and mechanistic approach to combining listed and unlisted real estate should satisfy the criteria outlined above and practically be sufficiently straightforward to execute such that a large internal resource should not be required. However, the performance impact of blended listed and unlisted real estate exposures has received little academic and/or practiconer attention.

Thus more work is required to examine in detail the risk and return implications of adding listed real estate to an unlisted real estate portfolio. This paper seeks to do this in the context of the UK DC Real Estate Fund and answer the following questions:

i. Return enhancement: What is the "raw" performance impact of adding listed real estate to an unlisted portfolio?
ii. Risk adjusted impact: What is the impact on portfolio volatility and risk-return measures?
iii. Tracking error: Does adding a global listed element significantly increase the tracking error of the portfolio relative to a UK direct property benchmark?

Notably this study uses actual fund rather than index data (i.e. measures delivered returns to investors), has chosen a global rather than single country listed real estate securities allocation and is focused on providing clarity around the real estate exposure for a specific investment requirement, the UK DC Pension Fund market.

Prior Work

There has been a significant body of work undertaken by both practitioners and academics on the beneficial impact of adding unlisted and listed real estate to an investor's portfolio, but there is little available research on incorporating blended real estate exposures.

Lee (2005) looked at the justification for including direct real estate in mixed asset portfolio and showed that its inclusion generally enhanced terminal investor wealth. Bond et al (2007) investigated the performance of alternative asset classes and their risk-return contributions in a multi-asset portfolio context for a UK investor. On a risk-adjusted basis, direct UK real estate was one of the best-performing asset classes over the sample period studied and had significantly better risk hedging characteristic than any of the other asset classes. The body of work studying the inclusion of unlisted real estate in multi-asset portfolios shows that it provides both diversification and risk reduction benefits as well as return enhancement. Most of this research has been focussed on domestic real estate allocations although Hoesli et al (2004) showed that incorporating a non-domestic real estate allocation was generally beneficial. This result varied by investor jurisdiction with optimal real estate allocations ranging from 15 to 25%.

Lee (2010) found that that REITs offer different benefits to different asset classes in the mixed asset portfolio and that these benefits have changed over time. Thus, whether REITs can have a place in any future mixed-asset portfolio largely depends on the relative return performance of REITs versus the alternative asset classes within the mixed-asset portfolio. Lee and Stevenson (2005) showed that the diversification benefits from REITs improved as investment horizon increased. Hoesli and Oikarinen (2012) and Yunus et al (2012) are recent studies exploring the realtionships between unlisted and listed real estate markets. The results of this of work show that listed real estate becomes more influenced by direct real estate performance as time horizons increase with shorter term movements being more heavily influenced by broader stock markets. REITs are seen to produce real estate returns over the medium (three year) term (Hoesli and Oikarinen, 2012), as well as having useful predictive properties (Cohen & Steers, 2009). Whilst investors can benefit from the clear long term relationship between direct and listed real estate,

the trade-off faced is between the enhanced liquidity and heightened short-term volatility, which creates a higher degree of correlation with broader equity markets.

Only a handful of studies have looked at the impact of combining listed and unlisted portfolios to enhance risk-adjusted performance in a pension fund context. Stevenson (2001) demonstrated that the inclusion of domestic and international listed real estate securities allocations diversified direct US real estate portfolios. However, the results were largely contingent upon whether the direct portfolio was itself well diversified by sector and/or US region. A study commissioned by NAREIT in (2011) also focussed on US markets started with the premise that for most investors, gaining access to real estate exclusively through publicly traded REITs is the most practical way to invest in the asset class. The sample was comprised of 22 years of historical data show that an optimally blended portfolio including approximately one-third in REITs has provided stronger returns, even on a risk-adjusted basis, than portfolios dominated by private real estate investments. This was due to the strong outperformance by REITs and investing is much less costly than private real estate investing. The "lead/lag" relationship between REITs and private real estate was found to create an opportunity for diversification within the real estate asset class that can demonstrably reduce volatility.

Data and Methodology

As this study seeks to estimate realistic investor total returns from exposure to a UK DC investor pooled fund solution, we have created a sample comprising both existing unlisted real estate and global real estate listed securities (REIT) funds. The unlisted real estate funds were sourced from The Townsend Group database and the global real estate securities funds from the Consilia Capital database. The sample comprises five unlisted UK managed real estate funds and four global listed securities fund. The sample time series data available was for the 15 years to 30th June 2013.

The five UK unlisted real estate funds selected were large managed real estate funds (i.e. they reinvest income) and quarterly performance was provided by Investment Property Databank

("IPD"). All of these funds have relatively liquid open-ended structures and typical hold cash balances of 5-8% of NAV. Monthly total returns have been created by interpolation and we recognise that this will create a degree of artificial smoothing. All performance provided did not include the impact the subscription/redemption costs, but is calculated net of fees and fund running costs. The estimated TER for these funds is approximately 0.9% of NAV p.a..

The four global listed real estate securities funds were required to have a 15 year track record. This excluded some funds which had previously been used in the Consilia Capital study. The performance data was sourced from Bloomberg and is denominated in US dollars. The funds are all open-ended, and we have provided investor level returns by deducting the requisite transaction costs. When introducing a global exposure investors must also contend with the associated currency risk, although specific asset class characteristics will determine the extent to which this risk will be actively mitigated.

A non-domestic fixed income allocation is typically thought to require hedging so as to mitigate currency risk which dominates investor returns. Conversely listed equity allocations are generally not fully hedged. With the global listed funds being USD denominated and approximately 50% of the global REIT universe also being USD denominated, the USD is the key currency to hedge although an exposure to a global basket of currencies would remain. Additionally we would also expect that this currency basket would 'hedge-itself' to a certain extent given the net effect of various currencies moving in different directions. To assess the currency risk faced by a UK investor we have calculated the performance of the global listed real estate fund exposure on an unhedged and hedged GBP basis. The results are as follows:

Table 1: Currency Impact – Global Real Estate Securities Funds (Monthly Statistics)

Clearly unhedged GBP based performance is closely related to performance in USD terms. Whilst both risk and return has marginally improved for a UK investor on this basis, the key finding is that currency risk essentially neutral over the full 15 year period. Both the correlation and R-Squared measures point to a close association in GBP based returns and this is due to the impact of currency risk being denominated by global listed real estate security market

movements. Given this and due to the additional complexity of managing a currency hedging programme and the potential incompatibility of currency derivative instruments within many UK pension scheme types, we have assumed an unhedged USD exposure for the purposes of this study.

These two exposures were then combined to simulate the delivered performance of the UK DC Real Estate Fund. The summary statistics for the sample used in this study are shown in Table 2.

[Table 2: Monthly Summary Statistics]

Using this sample we explore the short run risk and return dynamics using monthly frequency data. We believe that the past 15 years can be characterized by four separate phases where economic and capital market conditions have materially differed and impacted real estate markets accordingly. The first of these was the TMT boom and subsequent bust; the second was the subsequent strong rise in UK commercial real estate values up to the recent market peak in the summer of 2007; thirdly there was then the impact of the Global Financial Crisis ("GFC") which led to UK commercial real estate values falling to a trough two years later; and finally there has been a moderate recovery which has benefitted from monetary policy stimulus – "quantitative easing". Within these phases we assess the relative performance of unlisted UK real estate funds and global listed securities, as well as a blended 70:30 allocation.

We believe that there a number of reasons why this study differs from prior work and adds to the current thinking on real estate asset allocation. Firstly, we have taken actual fund data rather than index data i.e. we are analysing deliverable returns to investors. A number of previous studies have used IPD/NCREIF indices as a proxy for direct real estate and an EPRA Index as a proxy for listed real estate. The sample we have used in this study comprises UK unlisted real estate funds, and actively managed global listed real estate funds. The reason for using funds data is that we are interested in implementable investor level returns, and capturing both the cost leakage and tracking error that arises at when executing an investor's exposure.

Whilst listed markets can be passively replicated this is not possible for direct real estate and so tracking error is inevitable when allocating to the asset class. For the single series of returns we use an un-weighted average of the fund returns. The sample comprises five large unlisted UK real estate funds, and four of the leading global real estate securities funds. We have chosen global listed funds for reasons of liquidity, diversification, fund availability, and the Legal & General / NEST precedent. Our study is thus seeking to provide greater understanding around the real estate asset exposure for a specific investment requirement, namely the UK DC market.

Secondly, rather than use a single period, or peak to trough periods, we have broken down the study into analysis during distinct stages of the cycle and over the full horizon (15 years). We believe that this is relevant to asset allocators to help them assess how listed and unlisted perform at times when real estate criteria is a key driver , as well as times when macro themes are the most significant determinant of returns. Thirdly we have shown the impact of different thresholds of listed real estate on portfolio performance, which are maintained throughout the period. We have not used any portfolio optimisation techniques to determine these weightings. We have also assessed risk using measures which account for the non-normality seen in direct real estate performance. Fourthly, our dataset comprises UK unlisted funds and global real estate securities funds, whereas previous studies have looked at the performance impact of combining listed and unlisted indices of the same country.

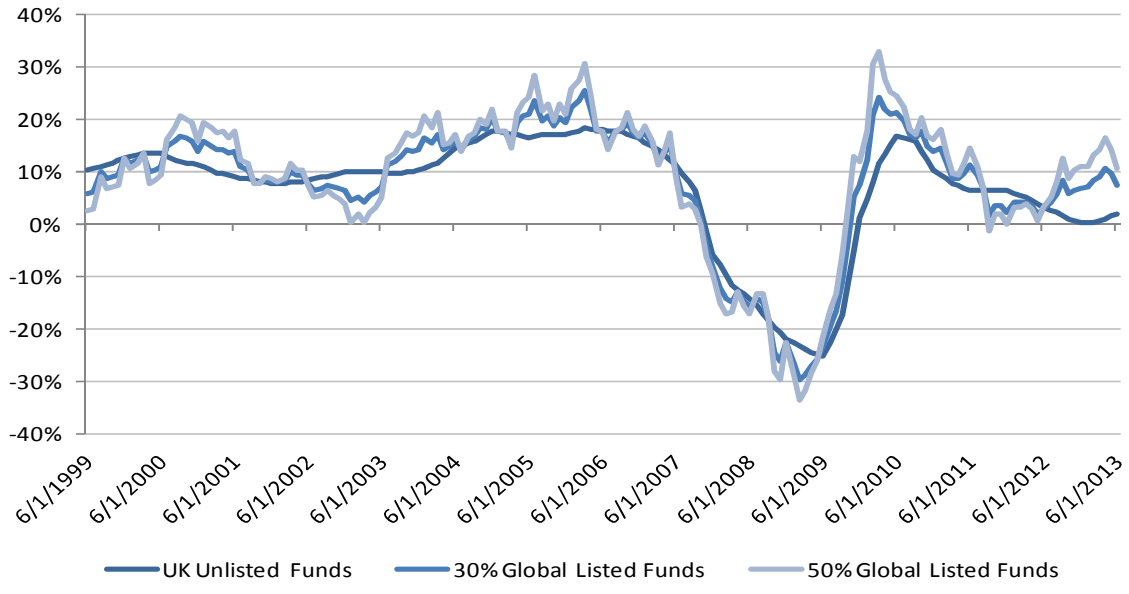
Results

Total Returns

Firstly, we examine delivered investor total returns and have used 12 month rolling returns, with monthly frequency for valuations. Our data starts from June 1998, so the first data point is June 1999. We believe that showing the results on a rolling monthly basis shows a far better impression of the dynamics and quantum of the results.

The pattern is as we would expect, given the gearing, predictive nature and equity market characteristics in the listed sector, namely that when direct real estate values are rising steadily (2003-2007) listed real estate enhances unlisted returns, when real estate values are falling (2007-2009) they detract from performance (but only marginally), and when capital values are steady (+/- 2% p.a.) the result will be more dependent upon non real estate influences. This can be seen during the TMT led boom and bust where between 1998 and 2003 real estate returns were positive, yet listed performance was mixed in relative terms. However, what is noticeable in Figure 1 is the consistency of the return enhancement form adding listed. Of the 180 months in the period listed real estate enhanced returns in 105 (i.e. 58% of them).

Figure 1: Rolling 12 Month Total Returns



The next question to be asked is regarding the cumulative impact of these gains, and what strategies could be used to minimise the maximum drawdown seen from 2007-2009. To do this we divided the study into the four clearly identifiable periods described above namely:

i. The TMT led boom and bust – June 1998 to June 2003.
ii. Rising real estate values – June 2003 to June 2007.
iii. The global financial crisis – July 2007 to June 2009.
iv. The QE led recovery September 2009 to June 2013.

As can be seen from Tables 3 and 4 the results provide a strong case for incorporating listed into an unlisted portfolio. At the most basic level, over the 15 year period studied, adding 30% global listed exposure to UK unlisted funds would have added 18.8% to the cumulative performance of unlisted funds in isolation and 0.9% p.a. on an annualised basis. In terms of breaking down these returns into different periods of the cycle, clearly the impact of the Dot-Com bubble and subsequent bust has dragged the historical benefit of including a listed exposure, although performance during this period was still positive. Whilst this was to be expected during the real estate driven bull market due to the gearing, and predictive power of listed real estate what we believe will surprise many is the fact that during the GFC the inclusion of a 30% listed real estate weighting led to only a marginal (-1.3% over a two year period) diminution in returns. This represents an extremely small cost when taken against the dramatic improvement in liquidity as a result of the listed weighting.

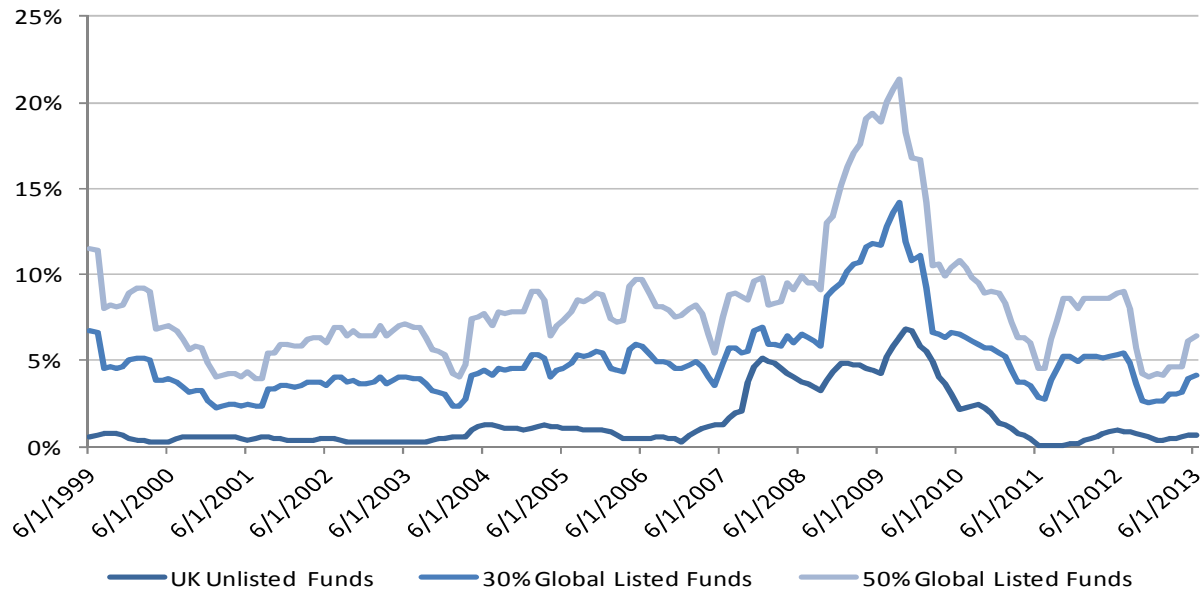
[Table 3: Cumulative Total Returns]

[Table 4: Annualized Total Returns]

Risk Measures

Having looked delivered performance trends we now turn to the traditional investor risk measures volatility and tracking error. In Figure 2 below we employ a similar approach. As before, we have used a 12 month rolling volatility window, with monthly frequency for valuations. Again the pattern is broadly as would be expected, with the portfolio volatility increasing with the percentage of listed added. However, we would point out that the returns data we have taken for the unlisted funds is based on stated NAV, and takes no account of secondary pricing i.e. the 'real' cost of entry and exit at a point in time (assuming the availability of sufficient liquidity). If we were to take account of this (which broadly mirrors the NAV based pricing in the listed sector) then the difference between the volatility of listed and unlisted would be reduced.

Figure 2: Rolling 12 Month Total Volatility



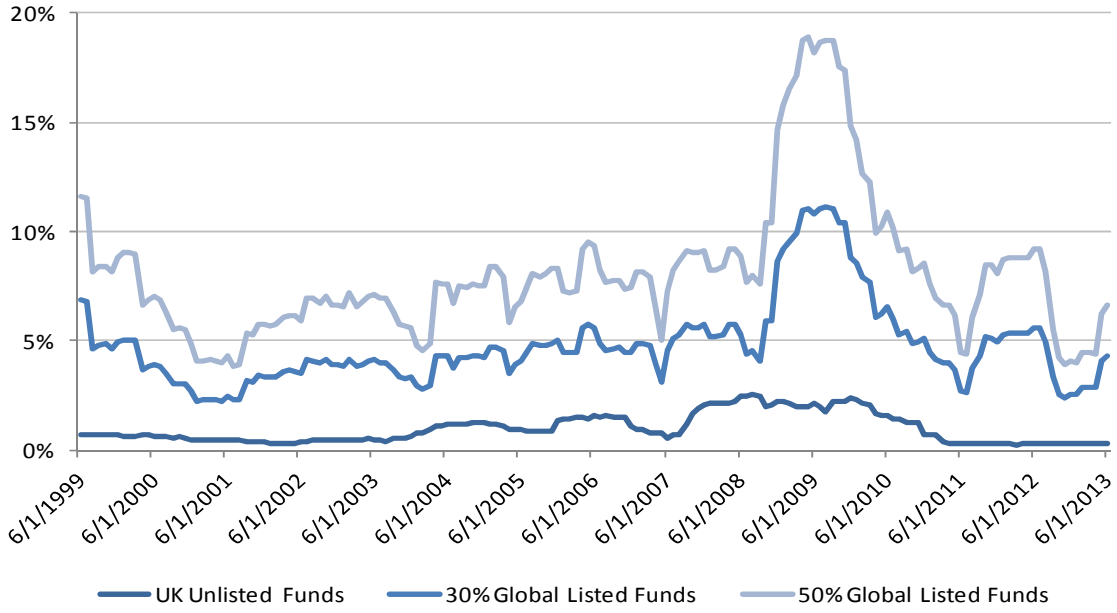
Looking at the breakdown of volatility by period in Table 5 we can see that taking fund NAVs rather than secondary pricing volatility has reduced post GFC whilst the price of liquidity in listed funds is reflected in the maintained higher level of volatility post GFC. Outside of the GFC period the volatility pattern remained remarkably consistent. It should also be noted that the

unlisted fund returns shown below were interpolated from quarterly performance numbers and so exhibit a high degree of valuation smoothing.

[Table 5: Annualised Volatility]

We also conduct the same analysis using tracking error as the risk measure. One of the major issues that has been raised by asset managers is that whilst adding a global real estate listed securities fund exposure may improve returns, surely it significantly increases tracking error to the underlying (domestic) real estate benchmark? In this instance this is the IPD Monthly Total Return Index which represents a 'true' direct return exposure. Looking at Figure 3 we can see the result. Table 6 shows that by moving from a 100% weighting to UK real estate, to a 70% weighting in a pooled fund solution (with 30% Global REITs) the tracking error increases from 1.2% to 5.2%. Practitioners can therefore now attempt to quantify the tracking error risk they are likely to encounter when adding global listed real estate to the portfolio. Tracking-error noticeably increased during the GFC, for all real estate exposures considered.

Figure 3: Rolling 12 Month Tracking Error



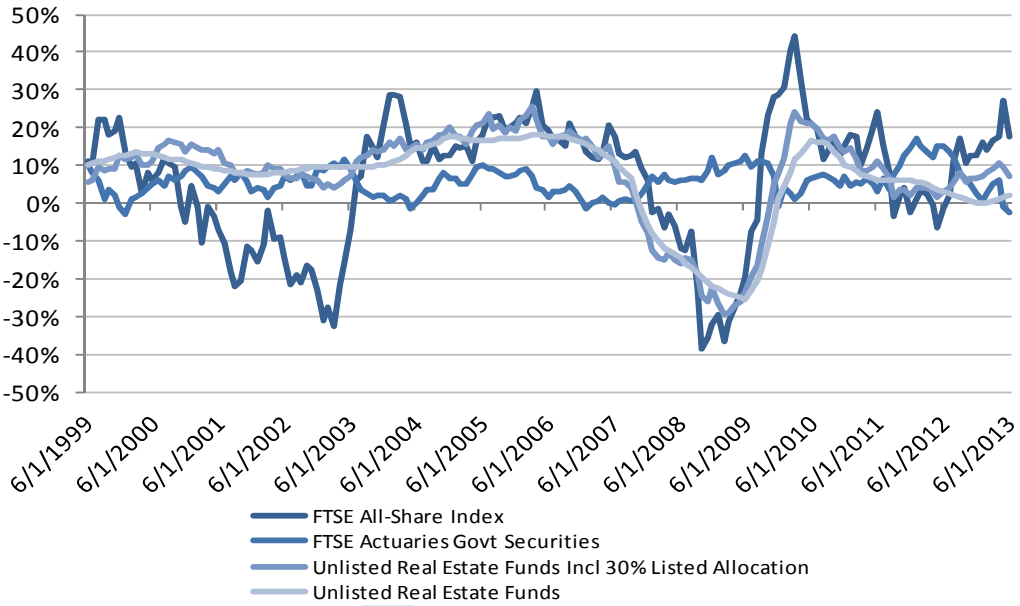
[Table 6: Annualised Tracking Error]

The results in Table 6 show that there is a strong case for UK investors to include a global listed real estate securities exposure to their domestic real estate allocation. Over the period considered in this study a 30% allocation to global listed led to a 0.9% p.a. improvement in performance. However, this exposure clearly led to increases as measured by both absolute volatility and tracking error when measured against the IPD Monthly Index, a measure of direct private real estate market returns. So given the need to create a more liquid portfolio to satisfy the needs of the burgeoning DC market, we can see that over the past 15 years that the inclusion of a 30% global securities exposure provided improved returns of c. 1% p.a. but came at the 'expense' of an additional c. 4% tracking error. This isn't high in the context of active equity funds e.g. Vanguard (2012) and as a result of the inability of managers to closely replicate the performance of a direct property benchmark such as the IPD Monthly Index, we consider this to be an attractive trade-off and certainly one which should be tolerable for investors within the asset class.

Multi-Asset Context

In similar vein to the analysis above we initially assess the shorter-term periodic risk-return dynamics of both unlisted real estate fund performance and a combined 70:30 allocation to unlisted and global listed securities funds. This is contrasted with UK equity market and UK government bond performance over the same period. Firstly we consider rolling annual performance patterns:

Figure 4: Real Estate & Other Asset Classes Rolling 12 Month Total Returns



As can be seen in Figure 4, the performance of both real estate portfolios' was initially largely uncorrelated with equity markets. This relationship shifted post 2003 and through the GFC, a closer correlation is evident. If investors seek to make real estate allocations so as to diversify against equities then asset allocation frameworks will need to account for these changing correlation regimes. However, when contrasted with government bond market performance both real estate portfolios were uncorrelated. Over the entire 15 year time period both real estate portfolios outperformed equities and bonds:

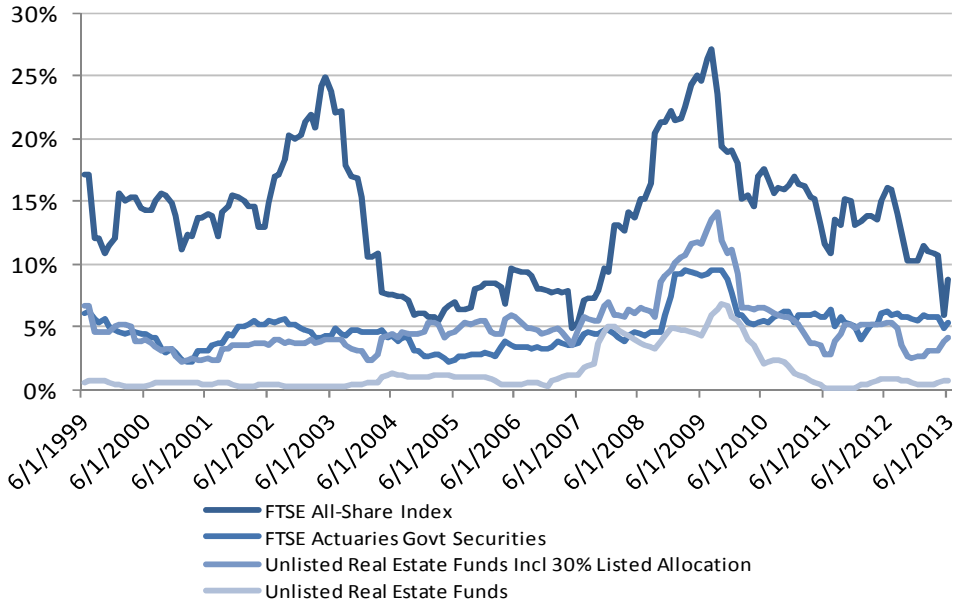
[Table 7: Real Estate & Other Asset Classes Cumulative Total Returns]

[Table 8: Real Estate & Other Asset Classes Annualised Total Returns]

The outperformance of unlisted real estate funds over bonds was 1% p.a. and when factoring in the typical 1-1.25% p.a. fund fees/costs and cash performance drag this equated to an approximate delivered risk premium from direct real estate above bonds of 2-2.25%. However, equity market performance was significantly negatively impacted by two severe market downturns during the period and as a result underperformed both real estate portfolios and only

marginally outperformed bonds. Clearly this is out of line with typical institutional investor expectations of c. 4-6% p.a. premium from this asset class.

Figure 5: Real Estate & Other Asset Classes Rolling 12 Month Volatility



The rolling volatility profile shows the extreme movement seen in equity market volatility. It is also interesting to see the correlation spike in volatility during the GFC where dislocated capital markets led to both the risk and return of multiple asset classes moving in tandem. Outside of the GFC period the volatility pattern for bonds and real estate remained broadly consistent.

Conclusions

Given the increasing requirements for greater liquidity from the defined contribution pensions market, real estate portfolios will increasingly need to incorporate listed allocations within them. A number of existing funds have the ability to include listed real estate in their portfolio but choose not to do so. Similarly a number of investors do not regard listed real estate as part of their overall real estate allocation. This study has sought to understand the performance and risk characteristics of a blended real estate portfolio through cyclical phases over the past fifteen years. The UK DC Real Estate Fund studied reflects the most prominent real estate solution currently available for UK defined contribution investors. The results and analysis provided

reflect the a likely set of investor outcomes by using a sample of UK unlisted and global listed real estate funds which differentiates it from prior work which has typically utilised single country index data.

The study has answered a number of specific issues relating to the integration of a global listed real estate portfolio with a UK unlisted portfolio. In terms of delivered performance an investor in the UK DC Real Estate Fund would have experienced material return enhancement relative to a pure unlisted solution. Over the past 15 years (to 30th June 2013) a 30% listed real estate allocation provided a total return enhancement of 19% (c. 1% p.a. annualised) to unlisted real estate portfolios. Over the past 10 years this was 43% (c. 2% p.a. annualised) and over five years the enhancement was c. 4% p.a. annualised, amounting to +390% in absolute terms.

The 'price' of this enhanced performance and improved liquidity profile is, unsurprisingly, higher portfolio volatility. However, because of the improved returns, the impact on the Sharpe Ratio i.e. measured risk adjusted returns is less significant. The study also found that that there was an additional 4% tracking error cost relative to the direct UK real estate market when including 30% listed allocations. We believe that this is surprisingly small given that the listed element comprises global rather than purely UK stocks. We also find that c. 1.2% tracking error arises for a well-diversified unlisted portfolio highlighting that pure IPD index performance is unachievable using a basket of available diversified unlisted real estate funds.

There is a clear need for further work in this area given growing requirements for more liquid exposures in real estate and other real asset portfolios. This study analyzed one specific solution which has been adopted in the UK market. Further work should focus on the studying the 'optimal' real estate portfolio allocations to both domestic and global unlisted and listed exposures. The results of this are likely to vary on the investor jurisdiction being considered. More sophisticated risk and resulting risk-return measures should also be utilized.

References

Baum, A and Moss, A. (2013), "Are listed real estate stocks managed as part of the real estate allocation?" *EPRA*.

Bond, S., Hwang S., Mitchell P., and Satchell, S. (2007), "Will private equity and hedge funds replace real estate in mixed-asset portfolios?", *Journal of Portfolio Management,* Vol. 33, No. 5: pp. 74-84.

Clare A., Seaton J., Smith P., Thomas S. (2012), "The trend is our friend: risk parity, momentum, trend following and global asset allocation", CAMA Working Paper

Cohen & Steers, (2009), "Listed Real estate Performance as a Predictor of Direct Real Estate Performance".

Hoesli, H., Lekander, J. and Witkiewicz, W. (2004), "New international evidence on real estate as a portfolio diversifier," *Journal of Real Estate Research*, Vol. 26(2), 161-206.

Hoesli, M. and Oikarinen, E. (2012), "Are REITs real estate? Evidence from international sector level data", *Journal of International Money and Finance,* Vol. 31(7), 1823-1850.

Lee, S. (2005), "The return due to diversification of real estate to the US mixed-asset portfolio", *Journal of Real Estate Portfolio Management*, 11, 19-28.

Lee, S.L (2010), "The changing benefit of REITs to the mixed-asset portfolio"*, Journal of Real Estate Portfolio Management*", Volume 16, Number 3, 201-215.

NAREIT, (2011), "Optimising risk and return in pension fund real estate: REITs, private equity real estate and the blended portfolio advantage".

Pensions Institute (2013), "Returning to the core: Rediscovering a role for real estate in defined contribution pension schemes".

Stevenson, S. (2001), "The long-term advantages of incorporating indirect securities in direct real estate portfolios", *Journal of Real Estate Portfolio Management*, 7, 5-16.

Teborek M., Cohen J. (2012), "Real assets for the defined contribution menu", *Russell Investments*.

Vanguard, (2012), "The search for outperformance: evaluating 'active share".

Young, M. (2008), "Revisiting non-normal real estate return distributions by property type in the US", *Journal of Real Estate Finance and Economics*, Vol 36, 233-248.

Yunus, N., Hamsz J.A. and Kennedy, P. (2012), "Dynamic interactions between private and public real estate markets: Some international evidence", *Journal of Real Estate Finance and Economics*, Volume 45, No 4, 1021-1040.

Table 1: Currency Impact – Global Real Estate Securities Funds (Monthly Statistics)

Asset	Local ($USD)	GBP Unhedged	GBP Hedged
Annualized Mean	10.23%	10.56%	10.36%
Annualized Volatility	20.20%	16.3%	20.25%
Correlation With USD Total Return	0.3%	0.90	1.00
RSq With USD Total Reutn		0.82	1.00

Table 2: Monthly Summary Statistics

Asset	Mean	Maximum	Minimum	Std. Dev.	Skewness	Kurtosis
Unlisted Property Funds	0.6%	2.4%	-4.2%	1.1%	-2.1	8.6
Global Listed Funds	0.9%	16.3%	-18.2%	5.4%	-0.5	4.3
Cash	0.3%	0.6%	0.0%	0.2%	-0.4	1.8

Table 3: Cumulative Total Returns

		Total Returns			
Period	**Dates**	**UK Unlisted Funds**	**Global Listed Funds**	**70:30**	**Return Enhancement From Adding Listed**
TMT Boom & Crash	June 1998 - June 2003	65.5	33.9	56.0	-14.4%
Rising UK Property Values	July 2003 - June 2007	81.7	107.7	88.4	8.2%
Global Financial Crisis	July 2007 - June 2009	-33.0	-34.5	-33.5	-1.3%
QE Led Recovery	July 2009 - June 2013	32.3	103.6	52.2	61.6%
Past Five Years	July 2008 - June 2013	4.1	62.6	20.3	390.6%
Past Ten Years	July 2003 - June 2013	59.7	154.8	85.6	43.3%
Full Period	**June 1998 - June 2013**	**166.4**	**270.8**	**197.7**	**18.8%**

[Table 4: Annualized Total Returns]

Period	Dates	Annualized Total Returns (%)			
		UK Unlisted Funds	Global Listed Funds	70:30	Return Enhancement From Adding Listed
TMT Boom & Crash	June 1998 - June 2003	10.1%	7.2%	9.0%	-1.1%
Rising UK Property Values	July 2003 - June 2007	15.0%	19.7%	16.1%	1.0%
Global Financial Crisis	July 2007 - June 2009	-19.8%	-16.3%	-19.8%	0.0%
QE Led Recovery	July 2009 - June 2013	7.0%	19.0%	10.7%	3.6%
Past Five Years	July 2008 - June 2013	0.6%	12.6%	3.8%	3.3%
Past Ten Years	July 2003 - June 2013	4.9%	12.2%	6.7%	1.9%
Full Period	**June 1998 - June 2013**	**6.6%**	**10.6%**	**7.5%**	**0.9%**

Table 5: Annualized Volatility

Period	Dates	Annualized Volatility (%)		
		UK Unlisted Funds	Global Listed Funds	70:30
TMT Boom & Crash	June 1998 - June 2003	0.6%	16.5%	4.3%
Rising UK Property Values	July 2003 - June 2007	1.3%	16.1%	4.9%
Global Financial Crisis	July 2007 - June 2009	4.2%	31.0%	9.3%
QE Led Recovery	July 2009 - June 2013	2.0%	15.3%	5.1%
Past Five Years	July 2008 - June 2013	4.6%	22.5%	7.9%
Past Ten Years	July 2003 - June 2013	4.4%	19.9%	7.2%
Full Period	**June 1998 - June 2013**	**3.7%**	**18.8%**	**6.4%**

Table 6: Annualised Tracking Error

Period	Dates	Annualized Tracking Error (%)		
		UK Unlisted Funds	Global Listed Funds	70:30
TMT Boom & Crash	June 1998 - June 2003	0.5%	16.6%	4.4%
Rising UK Property Values	July 2003 - June 2007	1.1%	15.8%	4.6%
Global Financial Crisis	July 2007 - June 2009	2.3%	30.7%	8.3%
QE Led Recovery	July 2009 - June 2013	0.9%	15.2%	4.9%
Past Five Years	July 2008 - June 2013	1.4%	22.0%	6.4%
Past Ten Years	July 2003 - June 2013	1.5%	19.3%	5.6%
Full Period	**June 1998 - June 2013**	**1.2%**	**18.4%**	**5.2%**

Table 7: Real Estate & Other Asset Classes Cumulative Total returns

Period	Dates	Total Returns			
		FT All Share Index	FTSE Actuaries Govt Securities	Unlisted Property Funds	70:30
TMT Boom & Crash	June 1998 - June 2003	-16.4	40.2	65.5	56.0
Rising UK Property Values	July 2003 - June 2007	101.7	11.7	81.7	88.4
Global Financial Crisis	July 2007 - June 2009	-30.0	19.9	-33.0	-33.5
QE Led Recovery	July 2009 - June 2013	77.3	24.5	32.3	52.2
Full Period	**June 1998 - June 2013**	**109.4**	**133.8**	**166.4**	**197.7**

Table 8: Real Estate & Other Asset Classes Annualised Total Returns

Period	Dates	Annualized Total Returns (%)			
		FT All Share Index	FTSE Actuaries Govt Securities	Unlisted Property Funds	70:30
TMT Boom & Crash	June 1998 - June 2003	-2.1%	6.9%	10.6%	9.3%
Rising UK Property Values	July 2003 - June 2007	17.9%	2.8%	16.1%	17.2%
Global Financial Crisis	July 2007 - June 2009	-15.7%	9.4%	-18.2%	-18.4%
QE Led Recovery	July 2009 - June 2013	14.2%	5.8%	7.3%	11.1%
Full Period	**June 1998 - June 2013**	**6.1%**	**5.8%**	**6.8%**	**7.5%**