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SOURCES OF ALPHA AND BETA IN PROPERTY FUNDS

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1. Introduction

Since the mid 1990s, in a generally strongly performing property market, there has been huge growth in the aggregate size and number of global property funds in both listed (REIT) and unlisted formats. Fund managers have been able to raise significant capital, particularly for unlisted funds which reward them with performance fees without the manager necessarily being able to provide clear evidence of historic out-performance against market benchmarks or targets, or structure performance.

In a more challenging, mature, and increasingly transparent market this is unlikely to continue to be the case. It will be increasingly possible to assemble performance records, and following this there will be more detailed analysis of those records. Potential analytical performance systems will include traditional attribution methods but will also cover the performance concepts of alpha and beta widely used in other asset classes.

This paper will examine issues related to this. What creates beta, and what drives alpha in real estate investment? How can it be measured and isolated? How do these concepts relate to traditional attribution systems? Can performance records and performance fees adequately distinguish between these drivers? In this paper we illustrate these issues by reference to a case study addressing the complete performance record of a single unlisted fund.

2. Concepts of alpha and beta in finance and fund management literature

There are many references to alpha and beta as sources of risk-adjusted performance in alternative asset classes, with most work focussed on hedge funds (see, for example, Litterman, 2008). The concept of alpha and beta is drawn directly from Sharpe's capital asset pricing model (CAPM): see Sharpe (1964). Anson (2002) describes CAPM as a regression model which can be used to determine the amount of variation in the dependent variable (the fund return) that is determined or explained by variation in the independent variable (the appropriate market return):

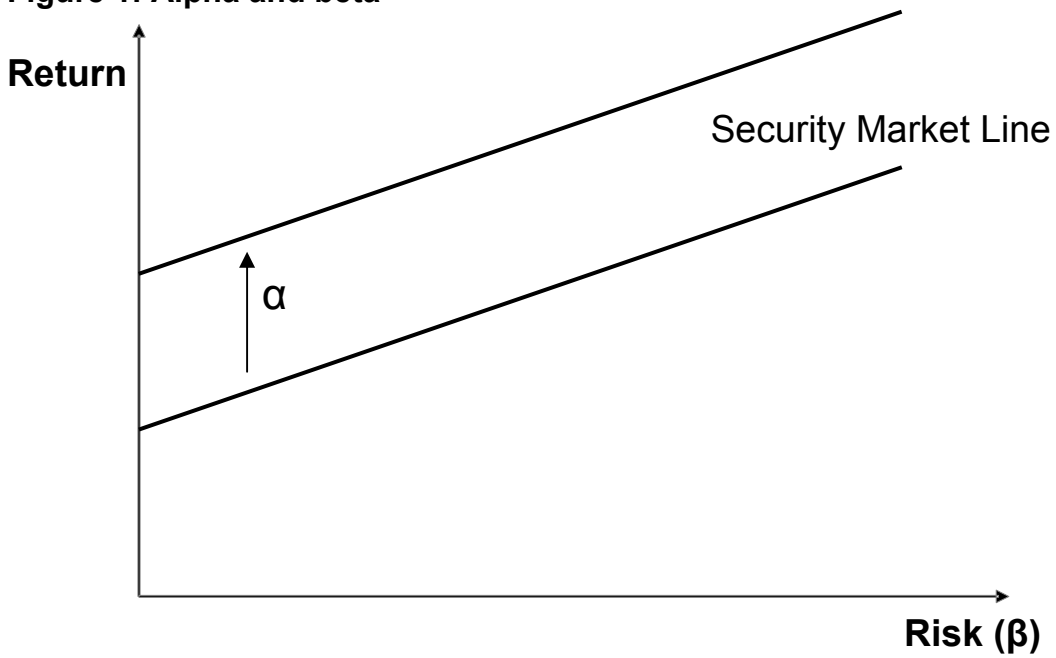
$$Investment\ Return = \alpha + \beta * Benchmark\ Return + \varepsilon$$

The important measure of manager performance is the intercept term α, which represents the excess return earned by the fund over and above that of the benchmark. However, it is important that this is measured as a risk-adjusted return, in other words that the effect of pure risk is taken out of the intercept. The security market line (SML) posits that higher risk assets and portfolios should earn higher returns. A higher risk portfolio should out-perform a lower risk portfolio on a risk-unadjusted basis. This does not mean that the manager has shown any skill. However, out-performance of the SML implies that skill has been demonstrated and this is measured by the intercept term, or alpha, as illustrated in Figure 1.

It is possible to measure alpha and beta for a property fund, provided one has a series of fund returns and a series of appropriate benchmark returns over the same period. This is calculated by regressing the fund returns on the benchmark returns and observing the measured values of alpha (α) and beta (β). A value for

β in excess of unity implies that fund returns are highly sensitive (or geared) to the market return, suggesting high risk assets, a high risk portfolio or a high risk strategy. A high value for α suggests that an excess return has been earned by the fund over the risk-adjusted benchmark return.

Figure 1: Alpha and beta



Source: authors, after Sharpe (1964)

3. Concepts of alpha and beta in property investment

Sources of alpha and beta

As detailed earlier in Section 2, positive alpha represents out-performance of the SML and implies that the manager has demonstrated skill. In property fund management managers can exercise skill when structuring their portfolios from a top-down perspective (allocating to markets and sectors) and at the stock level (sourcing and managing their assets). Out-performance at the portfolio structure is delivered by managers who, *ceteris paribus,* allocate relatively more to outperforming sectors or geographies. This implies that the manager has a forecasting capability which is their source of their out-performance allocation policy.

As noted by Geltner (2003) out-performance at the stock level is very different to that of traditional securities fund management, and this is largely due to the 'private equity' characteristics of property. Properties are selected by investor/owners and require ongoing asset management which encompasses a number of activities. These are all potential sources of alpha.

Alpha in property management can arise from operational cost control, tenant relationship management, asset maintenance, leasing strategy, marketing and asset enhancement/refurbishment via capital expenditure.

Alpha can also be generated when assets are bought and sold. For example managers who are able to purchase assets at discounts, recognize latent value that is not reflected in valuations, negotiate attractive prices, and who have the ability to execute more complex deals and thus face less competitive pricing, will *ceteris paribus*, outperform their benchmarks.

Property investment risk (beta), like alpha, can be broadly separated into both structure and stock beta. Within the constraints of a domestic benchmark 'structure' beta arises from allocations to more volatile sectors such as CBD office markets. When mandates allow for global investment, exposures to more risky geographies such as emerging markets are then a source of additional risk. Defining structure risk in a purely quantitative manner is difficult in some situations because certain aspects are difficult to quantify. For example, differences in transparency and property rights may not be reflected in the relative performance of market data.

Stock level beta is an area of potential confusion. For example, development can often be referred to as a source of alpha in a given portfolio. This is incorrect, as development in itself is a more risky property strategy and should be reflected by a higher beta. Development alpha is obtained by out-performing development managers. Thus there is a continuum of asset level risk ranging from ground rent investments, to assets with leasing risk and high vacancy, to speculative developments, all of which should have a hierarchical range of betas.

Previous studies

The received wisdom is that it is easier to find alpha, those returns that are due to manager skill, in an inefficient market. It is also generally accepted that commercial property is an inefficient market; however, empirical studies do not find strong evidence of delivered alpha in property fund management. Lee (1997) examines the UK pooled funds market using both the traditional CAPM equation and also the Henriksson and Merton (HM) extended CAPM model which measures the timing and selection ability of managers. Timing in this respect relates to the ability of managers to increase beta in rising markets. Using both methods Lee's study finds little evidence of manager alpha but does find that selectivity dominates timing in driving property fund performance using the HM model. Lee and Stevenson (2002) revisit this work using meta analysis. Again there is evidence that managers are unable to outperform through timing but there is evidence that they improve their risk-adjusted performance through selection.

In research undertaken for the UK Investment Property Forum (IPF) using data from the Investment Property Databank (IPD), Bond and Mitchell (2008) discovered little evidence of systematic out-performance for most property fund managers. Lee's (2003) study of the UK pooled funds universe and again found little evidence of either short or long term performance persistence. However, both studies found that a small number of funds in the top decile showed

persistent risk-adjusted out-performance, but most managers were unlikely to offer consistently above or below average returns

Bond and Mitchell suggest that manufacturing beta exposure (mimicking the returns of the market) is difficult because property is a heterogeneous asset class. In addition, the operational cost of managing passive property exposure is not significantly lower than active property management. The IPF research found that although the IPD property score, a measure of how good the fund's stock selection is, it was the strongest driver of performance and alpha in the period measured, it was no use in predicting either in the following period. This lack of alpha persistence leads to an increase in the importance of beta as driver of performance. The study also surveyed a number of investors and consultants who saw property as a beta asset class, so that one could conclude that the lack of observed alpha is not an issue for institutional investors.

Empirical work indicates that: a large number of properties are required in order to get down to systematic risk levels and, on average, some 10 per cent of an individual property's return is accounted for by a broad market factor (Brown and Matysiak, 1999). Baum (2006) showed that specific risk is a function of lot size and diversification efficiency. Sectors in which the performance of individual assets is similar and where lot sizes are high are difficult to diversify.

4. Attribution systems in property performance measurement

Property investors have used performance measurement or benchmarking services for several years. They exist, first and foremost, to show whether a portfolio has achieved a rate of return better or worse than the 'market' average, or met investment objectives specified in a more sophisticated fashion. After benchmarking there is an inevitable demand for 'portfolio analysis' which addresses the question: "why did we out- (under-) perform the benchmark?"

Baum, Key et al, (1999), suggest that the ideal system of portfolio analysis would identify the contribution of all aspects of portfolio strategy and management to relative returns. It would separate, for example, profits earned on investments from returns on held properties. Those are two distinctly separate activities with different return and risk characteristics, and reflect different features of management 'skill'. Among held properties, relative return may be influenced by anything and everything from the broadest allocation of investment between sectors to skill in selecting tenants, negotiating rent reviews, and controlling operating expenses.

In practice, the heterogeneity of individual properties and complexity of property management mean that the contributions of different functions and skills to portfolio performance are hard to disentangle. Attribution analysis as used in practice seeks to separate (at least) two components of a portfolio's relative return. The first is relative return which is due to 'structure' - the allocation of investment to 'segments' of the market with different average rates of return. The second is 'stock selection' - the choice of individual assets within each market segment which have returns above or below the averages for that market segment.

Attribution analysis is of importance in property fund management, not just in terms of analysis, but also in the specification of investment objectives, the selection of managers, and setting performance-related rewards. Yet the academic and professional literature which deals with attribution of relative returns in property fund management is very thin. The literature on portfolio analysis for equities - the original source of the attribution technique - is not only surprisingly scanty, but sets out several apparently different methods of defining and calculating attribution components. In addition, connecting return attribution with concepts of alpha and beta has not been attempted.

The standard approach to the analysis of equity portfolios (as pioneered by Brinson et al (1986)) starts from three primary contributors to portfolio return: policy, structure and stock. Policy is the fundamental selection of the benchmark against which the portfolio's performance is to be measured. Structure is the allocation of portfolio weights to 'segments' of the market - typically but not necessarily defined by a mixture of property types and geographical locations. Stock is the selection of individual investments within each segment which deliver returns above or below the average for that segment. Lo (2007) takes the measurement method further, but based on the same stock and structure approach. Mathematically the standard approach is as follows:

$$Relative\ Return = ((1 + Portfolio\ Return) / (1 + Benchmark\ Return) - 1)$$

$$Structure\ Score = (Portfolio\ Weight - Benchmark\ Weight) * Benchmark\ Return$$

There are then two attribution methods that can be employed to calculate the selection score; two and three component attribution. Two component performance attribution calculates the selection score as follows:

$$Selection\ Score\ (Two\ Component) = Portfolio\ Weight * ((1 + Portfolio\ Segment\ Return) / (1 + Benchmark\ Segment\ Return) - 1)$$

The three component method selection score is only slightly different and uses the benchmark weight instead of the portfolio weight:

$$Selection\ Score\ (Three\ Component) = Benchmark\ Weight * ((1 + Portfolio\ Segment\ Return) / (1 + Benchmark\ Segment\ Return) - 1)$$

As a result, the three component structure and stock scores do not sum to the relative return and thus there is a residual term known as the cross-product:

$$Cross\ Product = Relative\ Return - ((1 + Structure\ Score) / (1 + Selection\ Score) - 1)$$

This cross product or interaction term, as it is also known, has been a source of much disagreement amongst practitioners. Most studies and performance measurement suppliers, including IPD, use the two component method outlined above or incorporate it in the structure score. However, a number of parties such as Hamilton and Hienkel (1995) relate the cross product term to management decisions. They suggest that a positive cross product term reflects a manager's decision to focus on a segment where they have 'stock' skills or specialisation. Keeris and Lanbroek (2005) highlight the potential importance of the cross

product term and show that when portfolios are structured in increasingly different ways to the benchmark, its relative importance grows.

Several considerations bear upon the choice of segmentation: statistical, practical and convention (see also Litterman, 2008). Statistically each segment should contain a sufficient number of properties for the average return to be reasonably robust: that is, each segment should ideally only reflect *systematic risk*. The optimum segmentation of the market is that which statistically explains the most variance in individual property returns. Practically, segments most usefully cover property categories or areas for which property market information, with supporting information on (say) demographic and economic factors, are readily available to support analysis and forecasting. And, by convention, segments will be most acceptable to investors where they follow the generally accepted ways of dividing and analysing the market: it would be difficult to offer an analysis service in the UK, for example, which did not show City of London offices as a 'segment'.

Property fund managers may adopt asset allocation positions which are different from the segment weighting of the benchmark for a variety of reasons. This may be the result of tactical asset allocation, so that views of likely market returns influence a manager to adopt an underweight or overweight position relative to the benchmark in an attempt to produce out-performance. It may be the result of strategic asset allocation or policy, where issues other than pricing – for example, liability matching – influence the asset allocation mix. It may also be the conscious or unconscious result of the style of the fund manager.

To some extent, this term has been appropriated (or misappropriated) by followers of Sharpe's so-called 'style analysis' (Sharpe, 1988). This purely statistical method of analysis attempts to measure investment policy retrospectively by estimating the goodness of fit of returns with benchmark returns on investible asset types. Baum and Key (2000), on the other hand, use the term in an attempt to reflect more commonly-used judgements of investment style in fund management. Is the manager's style top-down or bottom-up? Is the manager a value manager or a growth manager?

This definition of style implies some persistent bias in the property portfolio structure which is the result of preference or of habit. It may lead to long-term out-performance, or it may not. Style may be associated with investment houses, with individuals or with funds. Arguably, there is far too little explicit differentiation between house styles in property fund management: see Baum and Key (2000). The boom in unlisted funds, multi manager mandates and funds of funds may change this.

Geltner (2003) adopts a different and original approach to performance attribution. He is concerned to dig deeper into the stock selection effect, and adds a second level of performance attribution, splitting stock effects into the following four sub-activities:

- Property selection
- Acquisition transaction execution
- Operational management

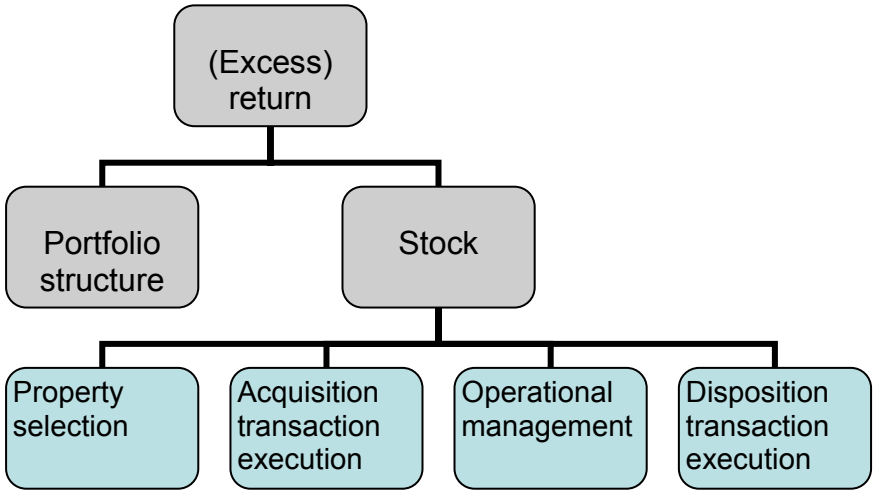
- Disposition transaction execution

If appropriate benchmark return data is available – IRRs, not time-weighted returns, he recommends, because the timing of expenditure is under the manager's control - then the manager's relative skill might be measurable. He attempts to measure the impact of these activities by reference to three variables:

- Initial yield
- Cash flow change
- Yield change

This second level of attribution is interesting, but Geltner makes no attempt to relate these activities to alpha and beta. We can perhaps attempt to do so in the context of the higher level attribution approach.

Figure 2: Attribution of property returns



We suggest that each of the activities shown in Figure 2 can be alpha-generating. They key issue, it appears, is whether the activities deliver extra returns through skill or through risk. If all portfolio segments are of similar risk, then positive excess returns generated by the portfolio structure relative to a benchmark will produce alpha. If they result from taking overweight positions in high risk markets, then they generate beta.

The same distinction can be applied to some of Geltner's second tier. Property selection can deliver higher initial returns through skill or through risk. It can deliver positive cash flow change through skill (executing excellent active asset management or development) or through risk (undertaking 'average-skill' development; buying empty buildings) The same is true of operational management. Excellence in transaction execution appears to be a pure alpha activity. Unfortunately, all other variables may be either beta or alpha activity, and this attribution system does not help us to relate additional return through higher initial yields, better cash flow growth or better yield improvement to pure alpha or pure beta activity.

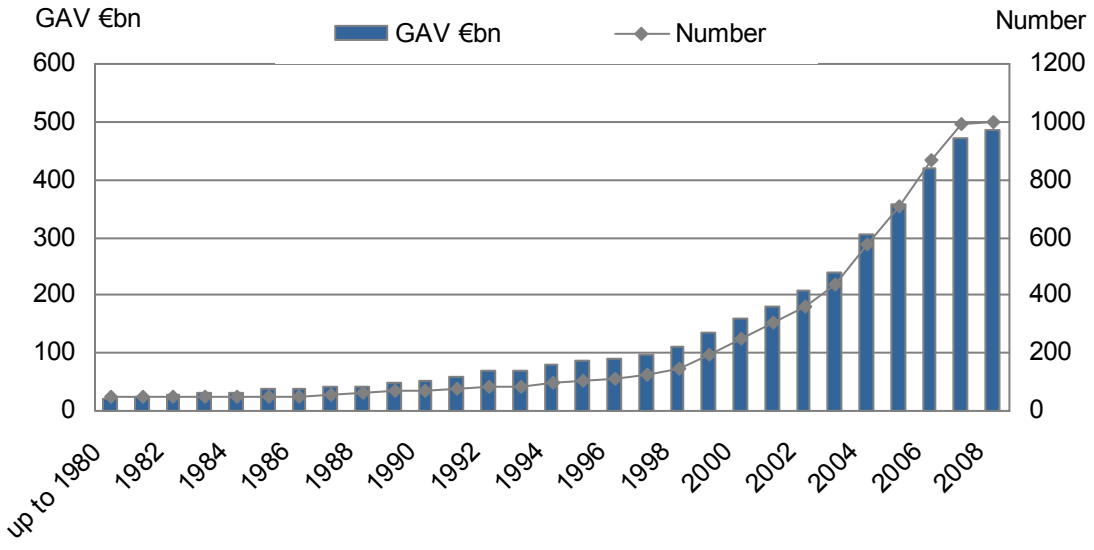
When we consider these factors in the context of unlisted funds, alpha and beta separation is somewhat easier.

5. The growth in unlisted funds

The growth seen in the unlisted market has helped facilitate growing cross-border property investment in Europe and across the world. Unlisted funds are now the preferred conduit for investors who are looking to invest in direct property outside of their own domestic markets. The biggest barrier to cross border investment is scale and even the largest institutional investors would not be able to construct portfolios of a satisfactorily diversified size. Other barriers to entry to direct investment that unlisted funds overcome include access to local expertise and tax efficient holding structures. There is therefore a requirement for greater resources and methods to analyse these vehicles and critically whether managers can demonstrate reasons for their historical track record and evidence of out-performance.

Investing in unlisted funds is an attractive way to reduce the specific risk inherent in direct property investing. Leverage increases the appeal of unlisted funds, as this has improved returns and less equity capital is needed to gain access to large portfolios, but leverage carries with it financial risk which will offset to some extent the risk reduction which investors require (Baum, 2006). The market is as yet highly immature, and time will tell which of these are the dominant drivers of the risk and return characteristics of unlisted funds.

Figure 3: Growth of the European (inc. UK) unlisted indirect market



Source: Property Funds Research, January 2008

The value of commercial property owned by institutional investors around the world has been estimated (RREEF, 2007) to be around $16 trillion at the end of 2006. This is the investable stock, meaning stock that is of sufficient quality to become institutional investment product, and which therefore represents the potential for market growth if owner-occupation rates were to tend to zero. The $16 trillion investable stock of property can be further disaggregated by

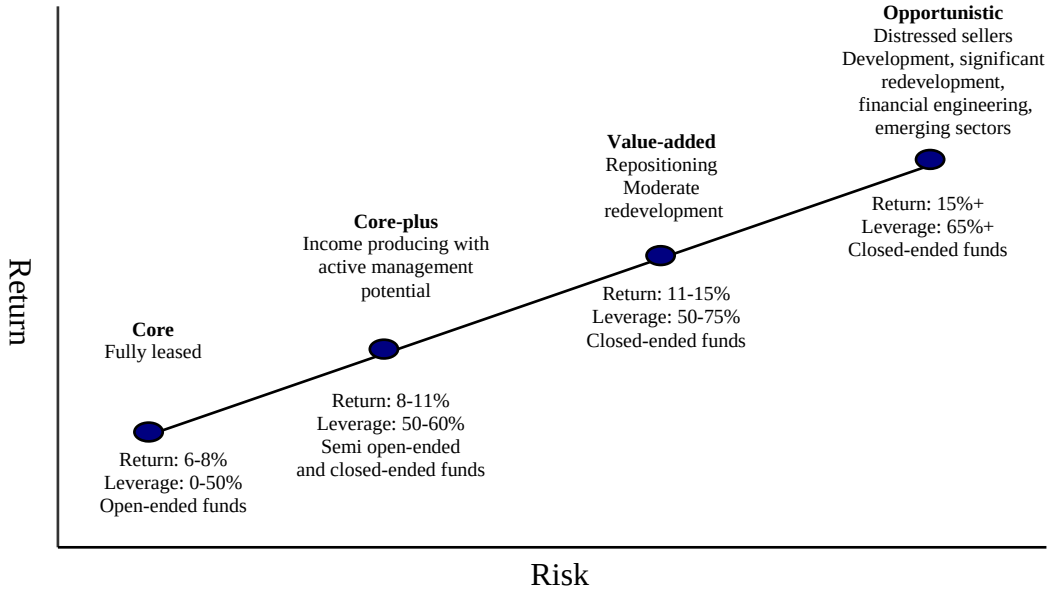
ownership structure. According to Property Funds Research (PFR) estimates, $4.5 trillion or 28% of the total stock is held by listed and unlisted property vehicles, with 16% held in listed vehicles and 12% in unlisted funds.

The universe of unlisted property vehicles has grown dramatically over the last ten years with the most dramatic activity being in the last five (see Baum, 2008). In Europe, the number of funds in the PFR Universe has grown on average by over 20% per annum over the past ten years. Over the same period GAV has grown by 10% annually. This explosive growth is demonstrated in Figure 3.

Funds are differentiated by risk style types. The vehicles included in PFR's universe and in INREV's vehicle database are classified as being one of three styles; core, core-plus/value-added and opportunity. Core funds are low risk funds with no or low gearing, while opportunity funds are higher risk, higher target return funds with high levels of gearing. These styles are summarised in Figure 4.

Until the end of the 1990s European value-added and opportunity funds were barely in existence. At the beginning of the 1990s core funds accounted for 97% of the market by GAV. This compares to just over 60% at January 2008. Opportunity funds experienced rapid growth between 2000 and 2003 but value-added funds then emerged as the style of choice, with the majority of funds launched since 2005 have been value-added. The gearing level within funds has, on average, increased.

Figure 4: Unlisted fund risk styles

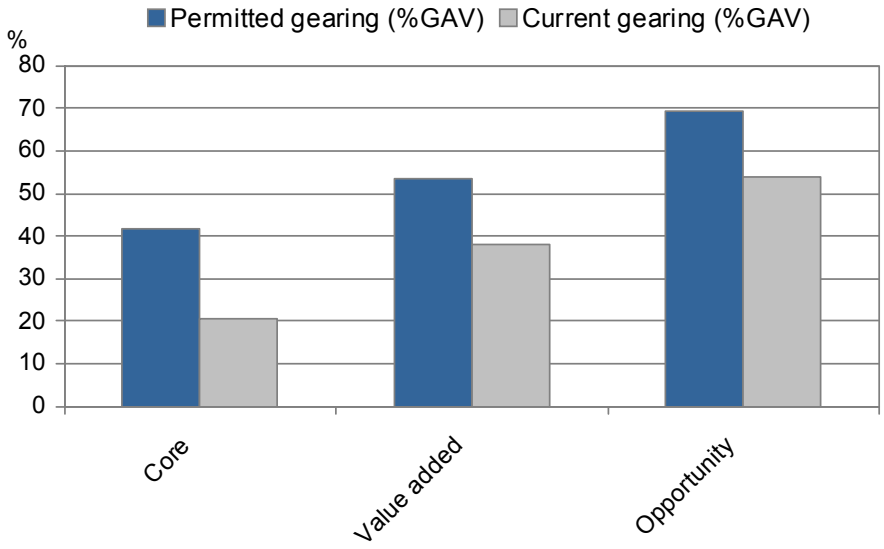


Source: CBRE Investors, January 2008

PFR records permitted gearing based on the level of debt in a vehicle as a percentage of GAV (see Figure 5). Funds have permitted gearing levels ranging up to 85%, although typical gearing levels are far more conservative than this. Actual gearing levels average 25% for core funds, just below 40% for value-added funds, and just below 55% for opportunity funds. Permitted gearing levels are around 40%, 55% and 70% respectively. Vehicles in PFR's universe have a

variety of other investment restrictions aimed at limiting the risk of a particular portfolio of investments. For example, development is limited to anywhere between 10% and 30% of GAV. There is likely to be some kind of investment restriction based on the amount invested in any single asset, typically in the region of 15% of GAV.

Figure 5: Current and permitted gearing by fund style



Source: Property Funds Research, January 2008

Table 3 shows the delivered and expected returns on a series of high return funds with typical performance fees or carried interests.

Table 3: Total returns, fund series – fee impacts (rounded)

Fund	Gross IRR	Net IRR	Fee impact	Fee impact %
1	29.0%	25.0%	4.0%	13.8%
2	17.0%	13.0%	4.0%	23.5%
3	33.0%	25.0%	8.0%	24.2%
4	35.0%	30.0%	5.0%	14.3%
5	27.0%	21.0%	6.0%	22.2%
6	46.0%	37.0%	9.0%	19.6%
7	21.0%	16.0%	5.0%	23.8%
8	34.0%	27.0%	7.0%	20.6%
9	16.0%	13.0%	3.0%	18.8%
10	20.0%	15.0%	5.0%	25.0%
11	18.0%	14.0%	4.0%	22.2%
12	20.0%	16.0%	4.0%	20.0%
13	14.0%	12.0%	2.0%	14.3%
14	20.0%	15.0%	5.0%	25.0%
Mean	25.0%	19.9%	5.1%	20.5%

Source: authors

The average difference between the gross of fees IRRs earned by the fund and the net IRRs delivered to investors is just over 5%, or just over 20% or one-fifth

of the gross IRR. This is a substantial additional fee load for the investor and should therefore be justified in a relative context.

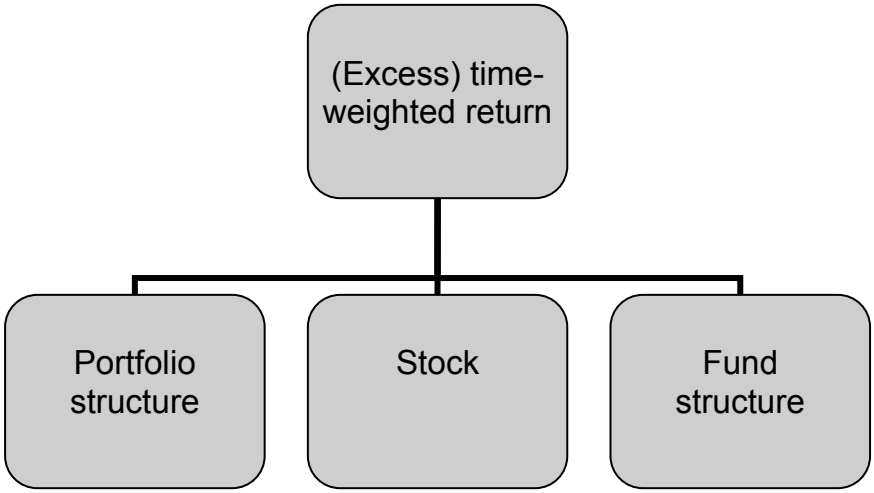
Property Funds Research data suggests that typical annual fund management fees excluding performance fees average around 0.8% of gross asset values, taking away less than 1% return every year. Hence the fee impact shown in Table 4 seems high, and is explained by 'carried interest' or performance fees. High fees may be justified if the manager has earned the fee through the exercise of skill. But, as we have seen, a higher risk portfolio should out-perform a lower risk portfolio on a risk-unadjusted basis. This means that the manager could earn a high fee by taking risk with the client's capital. Performance fees should reward alpha, but they may reward pure beta.

In addition, performance fees may represent a form of free option (asymmetrical, as options tend to be) for the manager. High returns may lead to high fees (there is an 85% correlation between the gross IRR and the fee impact in Table 4) and limit the investor's upside without limiting the manager's upside; while the opposite situation may describe the downside, as the investor will directly suffer, but the manager will not. Hence there is a large incentive for managers to create high returns, which is good; but and whether alpha or beta delivers those returns may be immaterial, and that is not good.

6. The attribution of returns on property funds

Risk and return attribution systems now need to be developed for property funds and property fund managers. As an example, Baum (2007) focuses on the additional return and risk contribution of fund structure to the traditional structure and stock factors. Under this proposed approach, it is necessary to take away vehicle return effects in order to expose the property effect, and then to deduct the structure contribution to reveal the stock contribution.

Figure 6: Time-weighted return attribution for a property fund



Source: Property Funds Research

Fund structure is a factor specific to property held in a vehicle or wrapper. This factor will impact on the returns from listed REITs and property companies, and

from unlisted funds, alike. There are two main drivers of the fund structure impact: fund expenses and management fees; and leverage.

Baum (2007) uses empirical evidence derived from the IPD UK Pooled Property Fund Index, measuring the fund structure effect by taking the fund returns, the funds' quarterly gearing levels, interest rates and annual fee structures, and 'de-gearing' the gross of fee returns. Deducting this vehicle impact leaves the property contribution. Deducting the structure contribution to the property return from the derived property level return series produces the stock contribution to return.

Using the sets of data described above, the tracking error of 18 funds against the IPD UK Pooled Property Fund Index were computed. In addition, depending on the funds' reporting and data availability, the earliest available period for each fund in which all necessary data were available was used to predict the tracking error given the above approach. The actual fund tracking errors (over the time periods corresponding to each fund's data availability) were then compared to the predicted fund tracking errors. The fit between actual and predicted fund tracking error was higher than the fit between actual and observed property tracking error, validating the inclusion of gearing and fee factors in a fund risk measure.

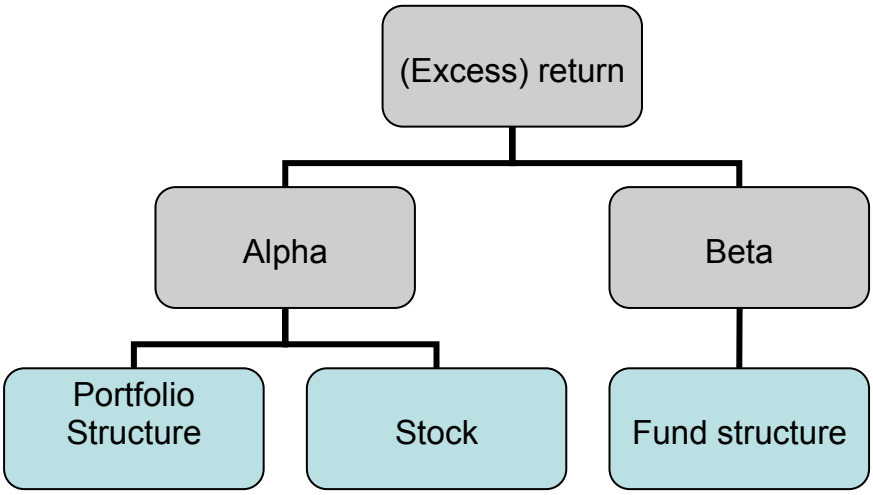
Bostwick and Tyrell (2006) show how leverage can change the relationship of return and risk non-proportionately. Nonetheless, as illustrated in Baum, (2007) and CBRE (2008) it is generally accepted that the greater the use of debt finance the greater the risk of a property fund or portfolio. Hence, while there may be some skill in financial structuring, pure leverage is largely a beta generating activity. Expenses and fees simply limit the impact of that beta contribution. Hence fund structure adds beta.

As discussed above, if all portfolio segments are of similar risk, then positive excess returns generated by the portfolio structure relative to a benchmark will produce alpha. If they result from taking overweight positions in high risk markets, then they generate beta. In the context of unlisted funds, which are largely owned by diversified investors or by fund of fund managers, much of this risk is diversified away. Hence, unless we can observe a strong bias to emerging markets in the portfolio structure, we can suggest that structure contributes alpha.

The same argument can be broadly applied to stock. Property selection can deliver higher initial returns through skill or through taking risk, but unless we can observe a strong bias to risky property types through, for example, pure development exposure or high vacancy rates, then the stock impact can be assumed to deliver pure alpha.

Finally, the unlisted fund draws capital from investors over a period of time which could be as much as four years. The timing of the drawdown is within the manager's control, meaning that an IRR approach is appropriate for return measurement. The benchmark, however, will report a time-weighted return. The difference can be attributed to the manager's skill in investment timing and therefore fund drawdowns - in simple terms, an alpha activity.

Figure 7: Time-weighted alpha and beta attribution for a property fund



We arrive at a four-stage first tier of alpha/beta attribution. This is as follows:

(i) Fund structure, which is largely the leverage impact, will contribute primarily to beta. Fees will limit the return, however created, and performance fees create a non-symmetric return delivery which is problematic for investors and can for ease be assigned to beta.

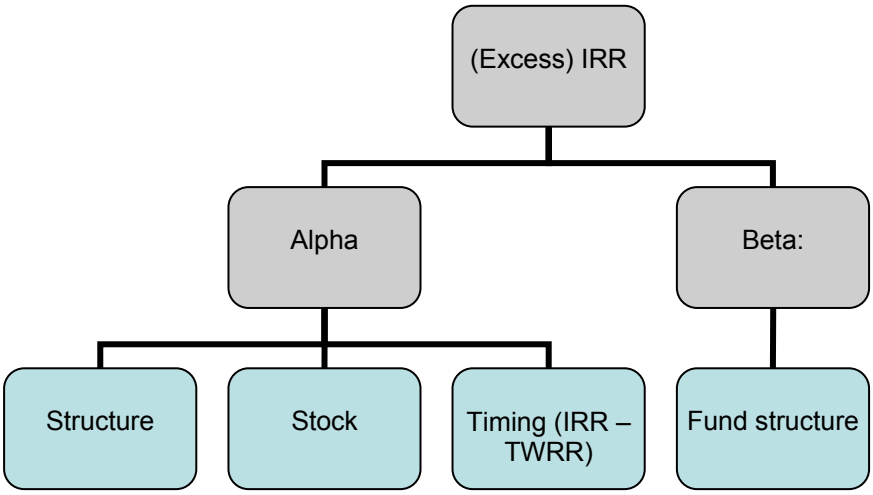
(ii) Portfolio structure needs to be judged as either an overweight position to more risky markets, or less risky markets, which will produce a beta impact, or as a set of positions with no greater or lesser market risk, in which case any extra return created through portfolio structure is wholly alpha. For most core and core-plus funds this is most likely to be an alpha generating activity.

(iii) Stock selection also needs to be judged as favouring more or less risky assets, which will produce a beta impact, or as a set of investments with no greater or lesser market risk, in which case any extra return created through stock selection is wholly alpha. For most core and core-plus funds this is most likely to be an alpha generating activity.

(iv) The return impact of the timing of drawdowns can be attributed to the manager's skill in investment timing and is an alpha activity. This will be of greater importance in value-added and opportunistic funds which have shorter investment horizons and look to distribute capital back to investors more quickly.

None of the above is intended to suggest that isolating and measuring alpha or beta will be easy or non-controversial. The choice and/or availability of benchmarks in particular is a limiting factor. Judging whether greater risk is being taken at the structure or stock level will be a matter of opinion and is therefore a pragmatic, and not likely to be an academically satisfying, question.

Figure 8: Money-weighted return attribution for a property fund



Source: authors

7. 7. Alpha and beta in property funds: a case study

We have used a case study to illustrate the property fund attribution framework set out in Section 6.

The case study examines a closed-ended value-added UK-focussed unlisted fund, which commenced its acquisition program in Q4 2001 and was effectively liquidated by Q4 2006. Quarterly performance data was made available for this entire period. The fund purchased 22 assets with an average book cost of £4.5 million and a total portfolio book cost of £99 million. Equity contributions totalled £26 million and leverage ranged from 65-70% throughout the fund's life.

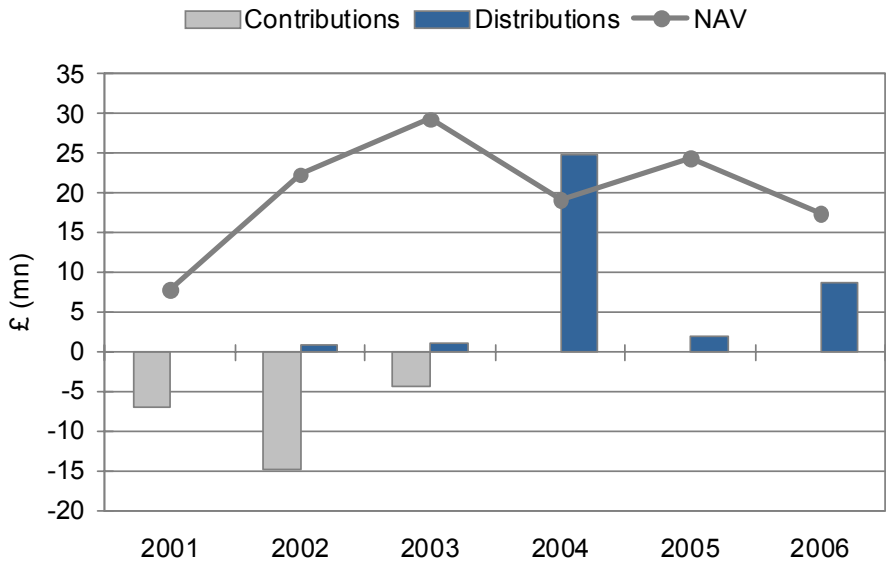
The average holding period of the assets was 2.5 years and on face value the manager was looking to exploit deal-making and transaction skills. This level of turnover is not unusual for value added and opportunistic funds, but it is relatively high. As a result capital was distributed back to investors soon after the investment period had been completed, as illustrated by the overall cashflows of the fund below in Figure 9. Therefore the timing effect discussed in Section 6 above was expected to be significant.

For the property fund attribution analysis both the fund and property level time weighted returns were available, but only cash flow data at the fund level fund was available. The property-level time-weighted returns were calculated by IPD and the time-weighted fund returns and cash flow data for the fund were provided by the manager. It should be noted that we have had to exclude the first quarter's performance for detailed attribution analysis as time-weighted property level returns were not available.

The fund had mandate to invest across the UK and so we have chosen to perform the property fund attribution analysis against the UK IPD universe. Although the fund was held back from building a well diversified by its investment capacity, it was nonetheless very concentrated from a portfolio structure

perspective, with holdings in only four of the twelve UK PAS segments and 55% in one of these.

Figure 9: Cash flow profile, case study fund



Source: authors

Under Baum and Key's (2000) style definitions we would label this fund manager as specialist, where the manager is holding high weights in segments where selection skills are believed to be strong. Therefore, *a priori* we believed that the interaction effect would be significant and this was indeed the case.

The results of the attribution analysis are detailed in Table 4.

Addressing property level performance first, the fund has produced relative out-performance of 1% per annum over the 5 year measurement. The manager has under-performed due to portfolio structure, by almost 2% per annum. Two component performance attribution suggests that the manager has out-performed due to stock selection, but we believe that the three component method provides a much richer explanation as the source of out-performance in this instance, and is therefore the appropriate attribution method.

With such a relatively high interaction score we can say that the manager has out-performed by concentrating in preferred segments, and this has been the entire source of property out-performance. However, at this stage we cannot be sure whether this out-performance has been driven by any alpha or is simply the result of higher relative risk in the portfolio.

The fund structure effect is presented on a gross and net basis. The gross total returns encompass leverage and all expenses associated with the fund bar the investment manager fees inclusive of performance fees paid. The gross structure added 15.0% to the property level return.

Fees to the fund manager reduced the gross structure effect by 5.3% (or 17.2% in relative terms), and this represents additional beta. Out-performance peaked in years 3 and 4 of the fund, when investments were being realised and value-added initiative completed, and therefore will have seen the greatest capital returns.

Table 4: Property fund return attribution

	2002	2003	2004	2005	2006	*5 year*
Property Level						
Property TWR	12.6%	10.5%	23.7%	25.5%	8.8%	*16.0%*
Benchmark TWR	9.2%	10.5%	17.4%	19.1%	18.5%	*14.9%*
Relative	3.1%	0.0%	5.4%	5.4%	-8.2%	*1.0%*
Structure Score	-3.3%	-3.7%	-3.2%	0.8%	-0.2%	*-1.9%*
Selection Score (Two Component)	6.1%	3.4%	8.4%	4.7%	-8.0%	*2.8%*
Selection Score (Three Component)	-6.3%	-7.0%	-2.9%	-11.5%	-13.8%	*-8.4%*
Interaction Effect (Three Component)	12.4%	10.4%	11.3%	16.2%	5.8%	*11.2%*
Fund Level						
Gross TWR	15.7%	20.1%	73.1%	52.3%	5.1%	*31.0%*
Gross Fund Structure Score	3.1%	9.6%	49.4%	26.8%	-3.7%	*15.0%*
Net TWR	11.8%	16.7%	57.6%	40.1%	8.7%	*25.6%*
IM Fee Reduction	-3.9%	-3.4%	-15.5%	-12.2%	3.6%	*-5.3%*
IM Fee Reduction %	25.0%	17.1%	21.1%	23.3%	-70.1%	*17.2%*
Net Fund Structure Score	-0.8%	6.2%	34.0%	14.6%	-0.1%	*9.7%*
Net MWR						*29.9%*
Timing Score						*4.3%*

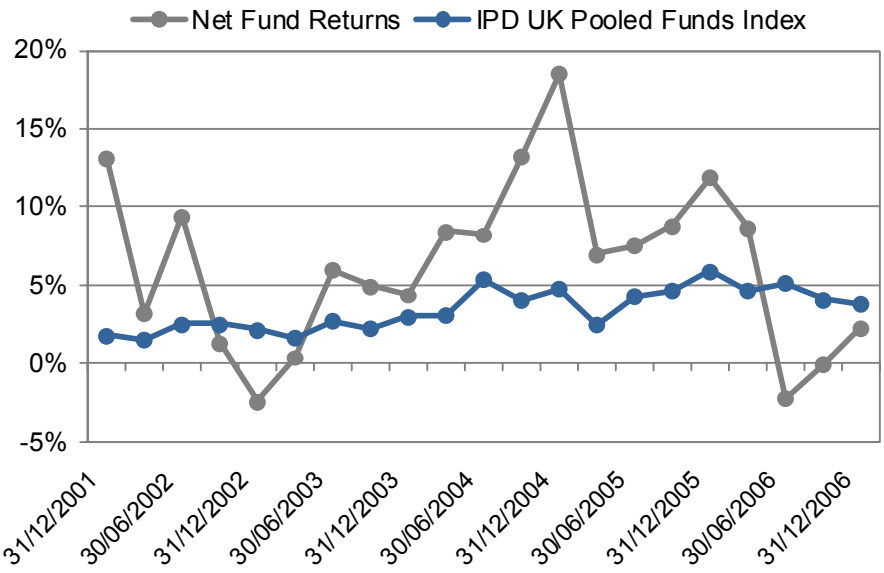
Source: authors' calculations

Finally, over the life of the fund the timing of property cash flows added 4.3% to the return delivered to investors. Thus we can conclude that the manager has delivered alpha given the relatively short hold period of assets in the portfolio.

Thus it is clear that from a visual inspection of the historical return of the fund versus the IPD UK All Pooled Funds Index. We recognise that our attribution analysis was conducted on the IPD Universe and not the fund's benchmark, and this is a source of inconsistency and potential error. We did not have sufficient data for the benchmark available to perform the required detailed attribution analysis. However, the IPD UK All Pooled Funds Index tracks the universe closely in terms of performance, and therefore this error is likely to be small.

The fund's annualised total time-weighted return over the measurement period was 25.6% versus its benchmark return of 14.9%. However, the fund's annualised standard deviation was 23.0% compared to the benchmark equivalent which was 5.3%. We therefore proceed to employ the CAPM model to assess the risk-adjusted performance of the fund. The result is an alpha of zero but a positive and significant beta.

Figure 10: Quarterly time weighted returns - fund v IPD Index



Source: IPD, authors' calculations

Table 5: Case study alpha and beta estimates for case study net total returns

	Alpha	**Beta**
Coefficient	0.00	1.73
t - statistic	-0.04	1.98
R – Squared	0.18	
Observations	20	

Source: authors' calculations

Unfortunately the CAPM regression is not particularly robust statistically with the alpha coefficient being insignificant. However, the beta coefficient is statistically significant at the 6% level. Despite this, the equation provides some insight into performance and it suggests that the out-performance delivered was a result of higher beta.

The high beta reflects the level of gearing at the fund level, and the asset level and portfolio structure risk. The beta coefficient is also much higher than previous UK property fund beta estimates which have focussed on the pooled managed fund universe, and typically have low levels of gearing and are well diversified. To the authors' best knowledge, this is the first occasion in which the risk-adjusted performance of a value-added or opportunistic fund has been assessed via performance attribution in the literature, and funds of this risk profile are becoming increasingly common.

The fund in question delivered a return (IRR) of nearly 30% to investors. The benchmark delivered a time-weighted 16%. The 14% out-performance comes

primarily from fund structure (leverage net of fees, a beta activity), which is worth 10%, and timing, an alpha activity, worth 4%.

There is little evidence of alpha outside the effect of timing. The combination of structure and stock appears to add 1% return, but this is dominated by the interaction or cross-product term of over 11%. This is a small fund, and statistical significance may be elusive, but it appears that a regression–based CAPM approach (which ignores the timing effect) confirms this as there is no significant alpha in this analysis. Beta, on the other hand, is significant. Yet large performance fees appear to have been paid to the manager to compensate him for his skill.

8. Conclusions

The growth seen in the unlisted market has helped facilitate growing cross-border property investment in Europe and across the world. Unlisted funds are now the preferred conduit for investors who are looking to invest in direct property outside of their own domestic markets. There is therefore a requirement for greater resources and methods to analyse these vehicles and critically examine whether managers can demonstrate reasons for their historical track record and evidence of out-performance to justify performance fees.

We used a case study of a single value-added unlisted fund to compare traditional attribution results with an examination of CAPM-style alpha and beta return attribution.

Fund structure, which is largely the leverage impact, will contribute primarily to beta. In the case study, we found this effect to be very large.

Portfolio structure needs to be judged as either an overweight position to more risky markets, or less risky markets, which will produce a beta impact, or as a set of positions with no greater or lesser market risk, in which case any extra return created through portfolio structure is wholly alpha. For most core and core-plus funds this is most likely to be an alpha generating activity. In the case study, if there is no systematic allocation to risky sectors, alpha would be generated through selecting the best markets. This is an open question requiring further enquiry.

Stock selection also needs to be judged as favouring more or less risky assets, which will produce a beta impact, or as a set of investments with no greater or lesser market risk, in which case any extra return created through stock selection is wholly alpha. For most core and core-plus funds this is most likely to be an alpha-generating activity. For the case study fund, this is an open question requiring further enquiry.

The return impact of the timing of drawdowns can be attributed to the manager's skill in timing and is an alpha activity. In the case study, this was very positive.

The regression approach demonstrated significant beta and no alpha, largely confirming the traditional analysis, with the exception of the timing effect. It is suggested that a full analysis of fund performance will require the use of both approaches and a professional and pragmatic interpretation of the results.

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