An Analysis of U.K Property Funds Classified According to U.S Styles:
Core, Value-added and Opportunistic

by

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Abstract

This analysis explores the feasibility of sorting UK funds into three different styles, which are widely used in the US. In an overview of major factors' impact on the expected risk of a fund, the analysis shows that leverage is by far the most influential factor, followed by the subtype diversification. In a preliminary style-classification, the study uses Loan-to-Value ratio (LTV) as the dominant factor, defining funds with no debt as *core*, funds with LTV lower than 40% as *value-added*, and funds with higher than 50% LTV ratios as *opportunistic*. Then the study makes some adjustments to this classification based on the observation of the funds' attributes other than LTV, and the adjusted classification ends up with 19 core funds, 22 value-added funds and 21 opportunistic funds. After that, three major differences between the UK and US funds are found. First, the core approach represents a smaller portion of the UK funds than the US funds and the opposite is true for the value-added approach. To improve the feasibility of researchers comparing funds within these two countries, the thesis suggests using a fourth style, *core-plus*. Second, the average LTV for core and value-added approaches is much lower in the UK than in the US. Third, the US opportunistic funds seem to have better performance than their UK counterparts with similar leverage ratio, while future studies would help draw more precise conclusions about the performance comparisons.

Thesis Supervisor: David Geltner

Title: Professor of Real Estate Finance

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Chapter 1: Introduction

1.1 Background

In today's real estate investment world, the three styles of *core*, *value-added* and *opportunistic* are widely used in classifying real estate on both property and portfolio levels. Generally speaking, the core approach means holding highly-occupied properties of institutional subtypes[1] in domestic first-tier metropolitan areas, with very little leverage. The value-added approach involves more redevelopment and leasing to add more value to properties than the core approach, and also more leverage and some exposure to non-institutional subtypes[2]. The opportunistic approach, with the highest leverage ratio among the three, generally involves development, the holding of distressed properties, overseas investment, and land speculation. Besides these three styles, a fourth one called *core-plus* is also used by investors to refer to the approach between core and value-added. However, in most white papers and documents, core-plus is not listed officially as the other three yet.

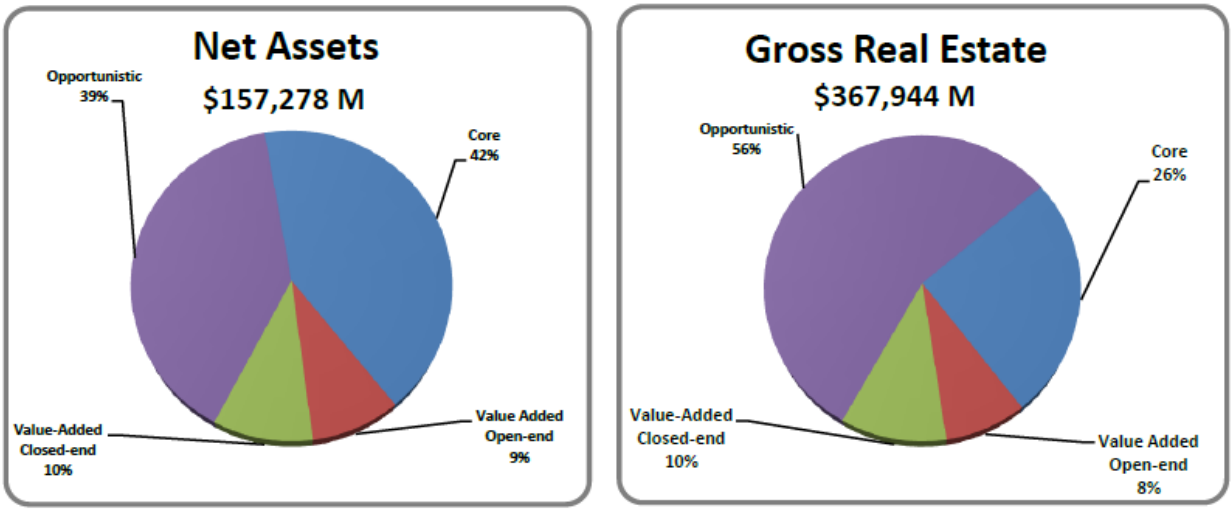
Among these styles, opportunistic is the more recent one, emerging no earlier than the beginning of the 1990's, but ever since then it has gained an increasing share of new investment activities in the US. Figure 1-2 shows its growth from the early 1990's to the early 2000's. By the end of 2008, despite a huge loss during the financial crisis, opportunistic funds still represented more

[1] In the US, Institutional subtypes include office, retail, industrial and multi-family housing.

[2] Non-institutional subtypes include but are not restricted to Hotels, Golf courses, Prisons and Hospitals.

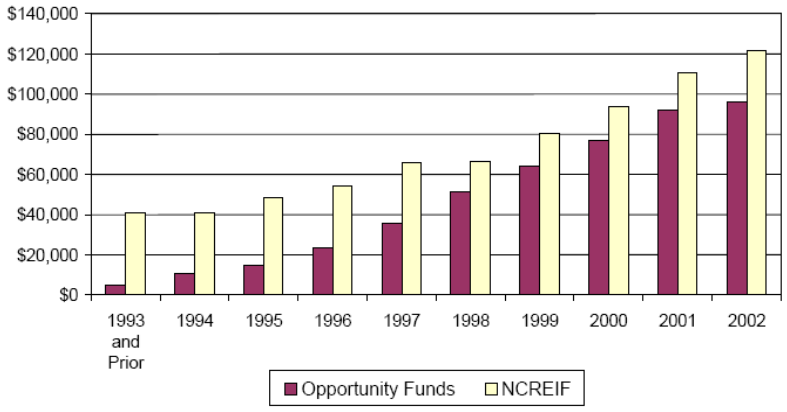
than one third of all the US funds in terms of Net Asset Value (NAV), as is shown in Figure 1-1. At the same time, the core approach remains the cornerstone, representing the largest share among all funds.

Figure 1-1 Distribution of US funds among three styles, 1Q/2009



Source: NCREIF & the Townsend Group

Figure 1-2 Opportunistic funds equity commitments vs. NCREIF property index ($Mn)



Source: Pension Consulting Alliance, Inc.

The categorization of funds is useful to investors in several ways: first, it provides a rough but useful description of the expected risk and return for each fund. Such a description helps buyers choose proper funds to fit their investment purposes. In addition, it improves the transparency of

real estate markets, and helps fund managers market their products, because a lack of symmetric information contributes to under-pricing. Based on Rock (1986) study, a discount is required to entice uninformed buyers to join informed buyers in IPO offerings[3].

Furthermore, the classification of styles also provides a benchmark for each group to measure managers' performance, making "apples-to-apples" comparison possible. The classification of three (or four) styles also enables better due diligence through the tracking of style drift, and facilitate the creation of new indices. [4]

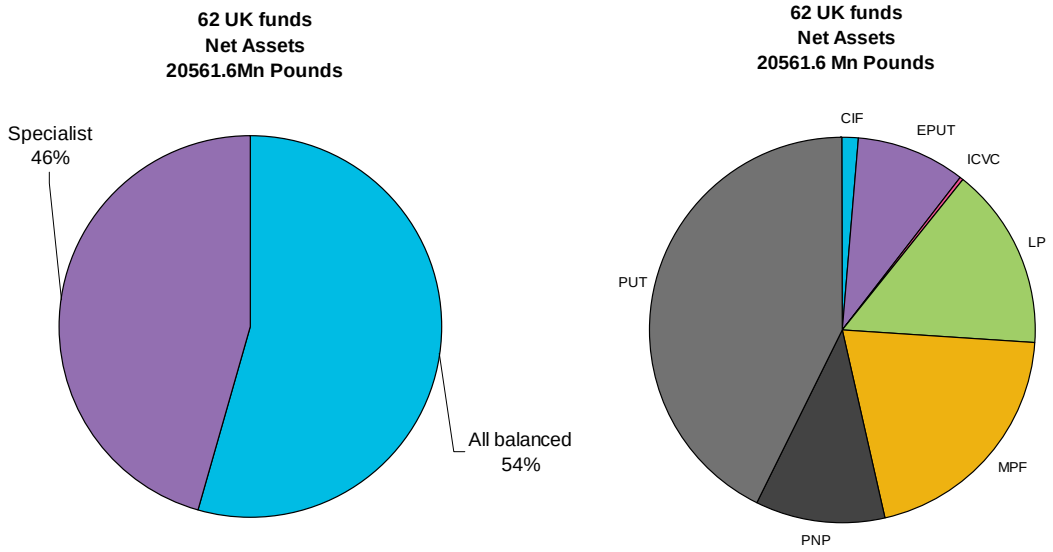
In the UK, the styles of core, core-plus, value-added and opportunistic are often used in classification and fund-performance comparison. However, an official classification doesn't appear either in the real estate indices or in the documents of most funds. Instead, the conventional ways of classification for UK property funds are:

a) *Balanced* or *Specialist*. Balanced funds generally hold a wide mix of property assets, diversified both by subtype and sub region, while Specialist funds normally focus on specific subtypes or on properties within particular geographic regions.

[3] Kevin Rock, why new issues are underpriced, Journal of Finance Economics, 15-1986

[4] NCREIF Styles White Paper Committee, Real Estate Investment Styles: Trends from the Catwalk, Oct 2, 2003

Figure 1-3 Composition of UK funds



b) *PUT* or *LP* or *ICVC*[5] or *MPF*[6], etc. These are abbreviations for funds' management types. For example, A PUT is a collective investment scheme where the underlying properties are held on trust for the participants. A Limited Partnership (LP) has at least one general partner, who has unlimited liability while the other partners' liabilities are limited to the extent of their capital invested in the partnership.

Balanced funds are less volatile while specialist funds try to get higher than market return by exploiting their expertise pursuing special opportunities. However, this classification doesn't

[5] An Investment Company with Variable Capital (ICVC) is an open-ended collective investment scheme structured as a corporation.

[6] A Managed Property Fund (MPF) is similar to an Exempt PUT in operating effectively free of tax, in being unitized and being open-ended. However, unlike PUTs, they do not distribute their income and are managed mainly by insurance companies as vehicles for investment by their occupational pension fund clients.

have a high correlation with the expected risk/return that the US-three style-definition displays. Therefore, applying the US-three style-definition to the UK funds, and translating the conventional classifications into a generally accepted standard will be necessary and meaningful.

1.2 Literature review

• Style-classification for real estate investment

The definitions of the three styles have different versions, but a systematic and quantitative one has hardly been put forward yet. A description by NCREIF and the Townsend Group is: "Core funds typically utilize low leverage and invest domestically in stabilized assets, whereas Opportunistic funds typically utilize high leverage, take on more market risk, and may invest domestically and/or internationally. Value-added generally falls somewhere between the two."[7]

The definition raised by Ron Kaiser[8] (2005) covers more factors such as property subtype and the size of value: "'Core' has traditionally involved investments in generally fully leased, multi-tenant properties more than $5 million in size, in major metropolitan areas, owned with little or no mortgage debt. 'Value-added' approaches generally involve relatively substantial redevelopment or releasing of a property to increase its potential value at a rate in excess of general market trends. 'Opportunistic' originally involved the purchase of distressed properties at rock-bottom prices and their redevelopment, but has evolved to other aggressive forms of

[7] NCREIF and the Townsend Group, Real Estate Fund Indices and Vintage Period Performance Report, Q1/2009
[8] Ronald W. Kaiser, Director and Co-founder of Bailard Investing.

investing such as new property development and heavily leveraged property ownership."[9] Within the same paper, Kaiser mentions that "some consultants use absolute targets: 'core 8-10%, core-plus 10-12%, value-added 12-14%, and opportunistic 14%'; and others use a relative yardstick: NPI+100, NPI+200 and NPI+500 basis points."

INREV (An European Association for Investors in Non-listed Real Estate Vehicles) has also developed a set of descriptive definitions, which covers more factors, including proportion of income-return and diversification among markets and property types.

Table 1-1 Definitions of styles by INREV

Core	A fund which invests predominantly in mature sectors and countries. The fund will use low leverage, have no or very low development exposure and generate a high proportion of return through income. It will be well diversified through large holdings of assets and/or countries.
Value-added	A fund which may invest in any country or property type and deliver returns from a balance of income return and capital appreciation. The fund may allocate all of investments to less mature markets or alternative sectors, development or other forms of active management, such as active leasing risk, and moderate leverage. Return will come through adding value to the property through active asset management such as a reletting, refurbishing and redevelopment.
Opportunistic	A fund which typically uses high leverage, has a high exposure to development or other forms of active asset management, and will deliver returns primarily in the form of capital appreciation. The fund may invest in any markets or sectors, and may be highly focused on individual markets or property types.

Source: INREV, Real Estate Fund Style Framework, Jan, 2009

To figure out how people make the US-three style-classification in their own ways, both the NCREIF Styles White Paper Committee (2003) and Ron Kaiser (2005) surveyed some investors/managers, and they both got divergent results. For example, to answer what "the maximum leverage ratio of core approach" is, one respondent in NCREIF's survey suggested

[9] Ronald W. Kaiser, Investment Styles and Style Bosex in Equity Real Estate: Can the Emerging Model Succeed in Classifying Real Estate Alternatives? Journal of Real Estate Portfolio Management, Jan-Apr 2005.

30% while the other one suggested 70%. In Kaiser's survey, the answers range from "non to little", 30% to 50%. For "the leverage ratio of value-added", people in Kaiser's survey give answers ranging from "max 50" to "up to 100%".

The NCREIF Styles White Paper Committee (2003) name eleven attributes including leverage ratio, regional distribution and so on, to define styles; but a further development of the definition in REIS, which was supposed to be published the following year, was absent. Ron Kaiser (2005) raised ten factors, which are similar to those eleven attributes, to be used in the US-three style-classification (See Tables 2-2,2-3,2-4).

- **Real estate fund performance in the UK and the US**

McGreal, Adair and Webb (2009) construct sixteen mean-variance optimal portfolios of private real estate from the UK and the US from 1Q/1986 to 3Q/2007. Three subtypes, office, retail and industrial, are included. The research shows that the high risk portfolios using total returns are 100% UK. For all three subtypes and when the three subtypes are combined, offices never enter the optimal portfolio for either the US or the UK. In the optimal portfolios combining three types and both income-only and appreciation-only returns in both countries, income-only retail from the UK is the best choice for the low risk portfolio; Income-only industrial from the US is the best choice for the medium risk portfolio; and income-only industrial from the UK is the best and only choice for the high risk one. To some extent, this explains why core funds, focusing on

stabilized assets with high income return, have relatively higher Sharpe ratio in both countries for the past five years[10].

Table 1-2 US and UK retail, office, and industrial: income vs. appreciation (quarterly)

Risk Level	USRI (%)	USRA (%)	USOI (%)	USOA (%)	USII (%)	USIA (%)	UKRI (%)	UKRA (%)	UKOI (%)	UKOA (%)	UKII (%)	UKIA (%)	E (R)	Std. Dev.
Low Risk	0.0	6.2	0.0	0.0	0.0	0.0	73.7	0.0	0.0	0.2	15.2	1.4	1.52%	0.17%
Medium Risk	3.0	6.4	0.0	0.0	50.2	0.0	20.7	0.0	0.0	0.0	18.9	0.7	1.84%	0.19%
High Risk	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	100.0	0.0	2.09%	0.33%

Source: Journal of real estate portfolio management. Jan-Mar, 2005, p92

- **Diversification of real estate portfolios**

In the survey by Louargand (1992), 125 fund advisors and sponsors responded about the criteria for diversification in their portfolios. As is shown in Table 1-2 and 1-3, the majority of the respondents rely on property types first and location second. The size factor also has a high citation rate, although it is not considered as among the top two criteria.

Table 1-3 Explicit diversification criteria in equity portfolios (percent affirmative choice for each criteria)

	"Do you use any of the following as explicit criteria for diversification in your equity Real estate portfolio?"		
Property type	89%	Property age	17%
Property size	50%	Region	72%
State	22%	Metropolitan area	39%
Submarket	26%	Economic location	41%
Tenant type or business	34%	Lease terms	32%
Fixed allocation by category	5%	other	13%
No systematic diversification criteria	8%		

Source: Journal of Real Estate Research, Vol. 7. Fall 1992, p365

[10] See the Sharpe ratios for UK and US funds in Appendix A and B.

Table 1-4 Ranking of diversification criteria for equity portfolios (frequency of ranking)

	"Please rank your top five criteria for diversification in your real estate portfolio (1= Most important, 5=Least important)				
Criteria ranking	1st	2nd	3rd	4th	5th
Property type	54	22	9	5	0
Region	12	32	14	3	3
Economic location	13	17	21	10	6
Metropolitan area	7	11	11	7	5
Submarket	1	6	6	6	5
Tenant	1	5	11	17	11
Lease terms	2	3	8	9	14
Age	1	3	3	8	7
Size	0	12	16	14	11
other	8	1	2	1	3

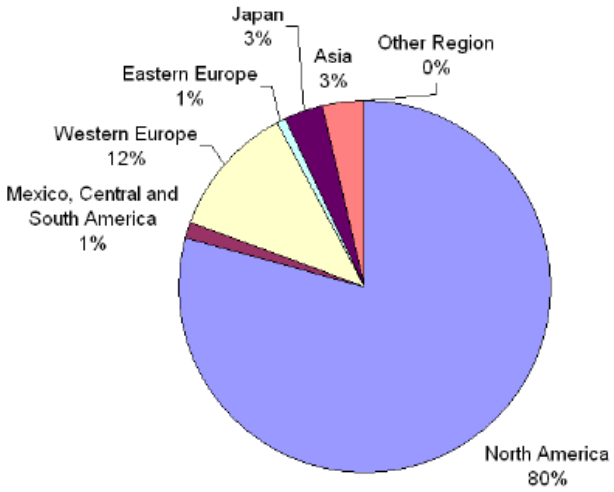
Source: Journal of Real Estate Research, Vol. 7. Fall 1992, p366

From the Real Estate Fund Indices and Vintage Period Performance Report, first quarter 2009 (the NCREIF& Townsend Report) by NCREIF and the Townsend Group, we see that in the US, only opportunistic funds have real estate investments in regions other than the Americas.

In the White Paper "Real estate opportunistic funds: Déjà Vu all over again" by Pension Consulting Alliance, Inc., over one hundred opportunistic funds are surveyed about their diversification by sub regions and subtypes. In total, 92% of their investments are allocated in North America and Western Europe. Including Japan, the mature market represents more than 95% of all investments.

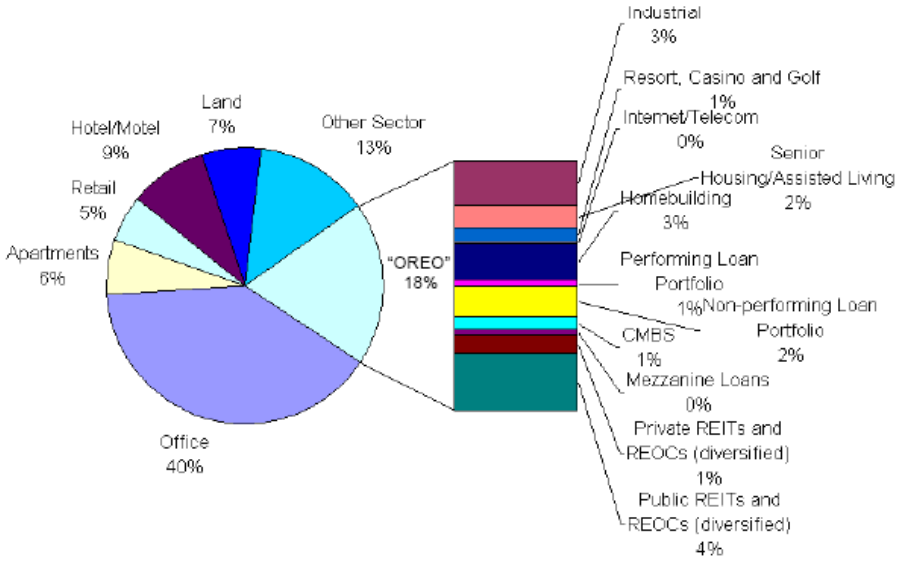
In terms of subtypes, Office, Hotel, Apartment and Retail are the top four largest categories, amounting to about 58% of total assets. Industrial, which is considered as an institutional subtype, represents only 3 percent of the total asset value of opportunistic funds.

Figure 1-4 Opportunistic funds' diversification by geography, as of 2001



Source: Pension Consulting Alliance, Inc.

Figure 1-5 Opportunistic funds' diversification by sectors, as of 2001

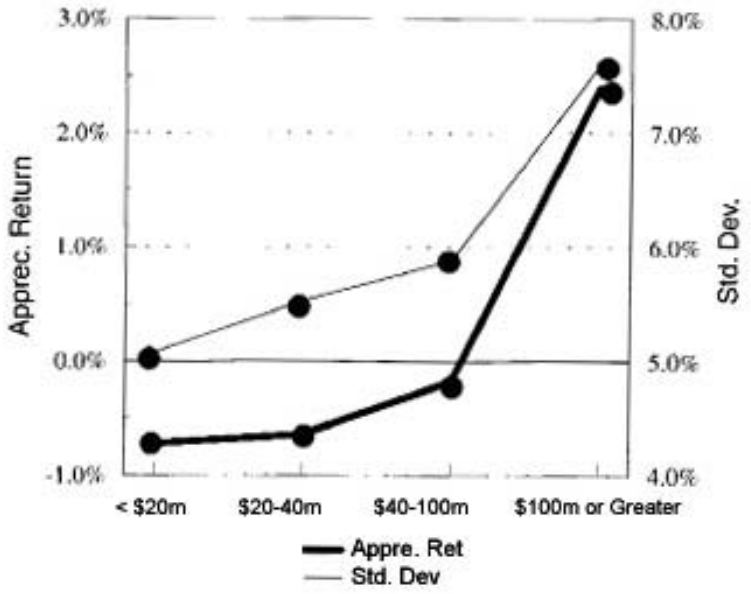


Source: Pension Consulting Alliance, Inc.

- **Property size**

Ziering and McIntosh (1999) investigate a number of real estate properties and find that property size is positively correlated with risk-return levels across a relatively broad continuum. They divide 2,332 properties into four size categories: <$20m, $20m-$40m, $40m-$100m, >$100m. Based on the data from 1981 to 1998, trophy properties (larger than $100m) show higher volatility both in their values and incomes.

Figure 1-6 Relationship between property size and risk-return profile (1991-1998)



Source: Journal of Real Estate Portfolio Management.

1.3 Data

- **UK funds**

The data on UK funds used in this analysis is provided by Investment Property Databank[11] (IPD), a globally famed company in real estate performance analysis. The IPD data set covers 62 UK property funds, all of which are investing in the UK's domestic market. The following attributes are provided for the 62 UK funds:

* Fund types: Balanced/ Specialist funds, PUT/ICVC/LP funds, Closed/Open-ended funds.

* Balance sheet information: Gross Asset Value (GAV), Net Asset Value (NAV), Debt, Gearing on GAV[12], Gearing on NAV, Net debt[13].

* Distribution: Distribution among sub regions and subtypes.

* Diversification: Concentration on the Top 10 investments or tenants, average Lot-size.

* Investment restrictions: Maximum exposure to development, maximum cash holdings, and maximum lot-size[14], etc.

* Performance: quarterly and annually fund-level return since as early as year 1990.

* Other attributes: e.g. taxes, fees, restrictions, total units.

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[11] http://www.ipd.com/

[12] Debt divided by GAV. It is the same measure and Loan-to-value ratio.

[13] Net Debt (ND) =All borrowings less any cash balances held

[14] Lot-size is the market value of a property.

In terms of timeliness, the data for GAV, NAV, Debt, Cash holding, fund type, distribution, performance is updated to 1Q/2009, and data for other attributes are up to 3Q/2008.

•US funds

In the absence of fund-level data, we use the NCREIF& Townsend Report as the source of data on the US funds.[15] Over 300 funds are included in the fund pool, although fund-level data is not available. By calculating attributes and performance of the UK funds in a similar way as the NCREIF& Townsend Report (See Appendix A), some comparative studies between the UK and US funds are possible.

The following data are provided in the NCREIF& Townsend Report:

* Demographic attributes of the three styles including total NAV /GAV, market share, fund count and manager count.
* Periodic returns for different length of history for three styles (calculated by value /equal weighted, open/closed end, and net/gross of fee).
* Sharpe ratio, volatility for three styles (calculated by value /equal weighted, open/closed end).
* Leverage ratio for three styles (calculated by value /equal weighted, open/closed end).
* Vintage period performance, etc.

[15] Part of the report is shown in appendix B.

1.4 Methodology

This thesis explores a quantitative and practical way to sort property funds into the three styles, with the knowledge that UK and US funds have different characteristics. The focus and main difficulty of the study is to find the attributes between the funds' attributes and the expected risk/return. Both quantitative and qualitative methods are utilized. Following the classification we conduct some comparative studies between the UK and the US funds sorted according to the same styles.

First, we go over several factors suggested to be used in the US-three-style classification, including Loan-to-value ratio (LTV), Net Asset Value (NAV) and property size. Four regressions are conducted to determine the factors' impact on volatility. We expect to see significant differences among these factors' relevance to the volatility from the regression. Second, we begin the classification by using a dominant factor, LTV. The classification process should be iterative. After a series of observations of the relationship between each factor and LTV, some outliers are identified and a few funds are re-classified. Finally, a comparison between UK and US funds shows the advantages and disadvantages of utilizing this US-three-style classification to UK funds.

Chapter 2: Overview of Relevant Factors

2.1 General definition of core, value-added and opportunistic styles

The definition of styles in the real estate investment world is far from clear or commonly accepted. A general description appears in the NCREIF& Townsend Report: "Core funds typically utilize low leverage and invest domestically in stabilized assets, whereas opportunistic funds typically utilize high leverage, take on more market risk, and may invest domestically and/or internationally. Value-added generally falls somewhere between the two." [16] At times, investors use absolute return targets to help define the difference among investment styles, with core returning 8-10%, core-plus delivering 10-12%, value-added providing up to 12-14%, and opportunistic investments yielding higher than 14%. A relative yardstick is also often used for the three styles, such as the NCREIF Property Index return plus 100, 200 or 400 basis points.[17]

The ultimate criteria to determine a fund's style should be the expected risk and return, a point about which most investors agree. A common way to estimate the risk/return of an investment vehicle is looking at its historical performance, but this shortcut is not practical for property funds because investors need to know the risk/return especially when a fund has just been founded. So investors need to examine some inherent factors to make the estimation. In practice,

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[16] NCREIF & the Townsend Group, Real Estate Fund Indices and Vintage Period Performance Report, First Quarter 2009, July 2009

[17] Ron Kaiser, Investment Styles and Style Boxes in Equity Real Estate: Can the Emerging Model Succeed in Classifying Real Estate Alternatives?, Journal of Real Estate Portfolio Management, 2005

this classification work is not done in a very objective and quantitative way. According to the NCREIF& Townsend Report, funds in the US are classified into style indices based on two factors: 1) the style classification the manager uses when marketing the fund; 2) the assessment that Townsend and NCREIF personnel make upon the "overall goals, objectives, and strategies" [18]of the funds. During the second stage of classification, the personnel review many factors, including "investment discretion, various layers of portfolio and investment level risks, and limited performance history,"[18] and the process can be "somewhat subjective." [18]Sometimes the Townsend and NCREIF do have different opinions about a fund's style from those of the fund managers.

If we call the stock classification-method *factor-oriented*, then the real estate classification method is indeed *return-oriented*. [19] In the stock market, before tracing the return of each group, people sort securities according to quantitative factors such as size and Book-to-Market ratio. In contrast, the classification of core, value-added and opportunistic starts from the expected return. Being return-oriented generates some inherent difficulty in the classification of real estate investments, since the relationship between a factor such as property size and the expected return is difficult to recognize and calculate.

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[18] NCREIF & the Townsend Group, Real Estate Fund Indices and Vintage Period Performance Report, First Quarter 2009, July 2009.

[19] Ron Kaiser (2005) pointed out that styles in security market and real estate market are classified in different directions. In the stock market, stocks are classified using factors like size and Book-to-Market ratio and then examined for their performances, while in real estate markets assets are pooled based on their expected performance.

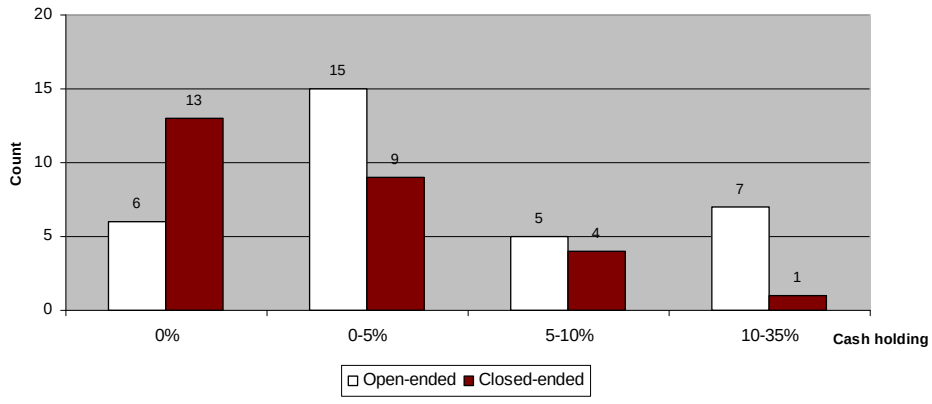
2.2 Factors used in defining styles

Apart from the expected return, which is the most common and explicit way to classify styles, both the NCREIF Styles White Paper Committee (2003) and Ron Kaiser (2005) suggest a list of other factors to use in the classification. With the two lists combined, there are 17 different factors in total. These factors can be divided into three categories: finance, property and operating.

- **Financial factors**

There are three financial factors: leverage, non-real estate assets and fund size. Leverage is perhaps the most important factor due to its significant and direct influence on the expected risk and return. The biggest non-real estate asset in property funds is cash. Cash (or other equivalent risk-free assets) generates no return, so holding cash will simply lower both a fund's risk and return. In theory a fund should hold cash as little as possible to maximize the total return, unless it face pressures of redemption or it has transactions to make. In Figure 2-1, we see that most closed-ended funds have less than 5% of their total assets in cash.

Figure 2-1 Cash holdings and term structures among 62 UK funds



Fund size is another important financial attribute of property funds. Generally, larger funds (funds with larger asset value and more properties) tend to have lower risks, because they are better at avoiding idiosyncratic risks (they achieve better diversification) than smaller funds. Thus, for core funds whose partial task is to duplicate the general market return, a large size is very favorable, or even necessary. For opportunistic funds, whose objective is to focus on special opportunities, a small equity size with more debts will be a better choice. As is shown in Table 2-1, in the US, the average gross size of core funds is about five times that of the other two styles. At least in the US, size can be a key factor to distinguish core funds from the other styles.

However, diversification can be a double-edged sword for large core funds when it is unconstrained. Unrestricted diversification can also add more risk. For example, bringing hotel or prison assets into a portfolio makes it less core and more opportunistic.

Table 2-1 Sizes of three styles in the US, 1Q/2009

	Core	Value-added	Opportunistic
NAV	66004	29128	62147
GAV	94269	68572	205103
Fund Count	21	80	212
Average Size (NAV)	3143.0	364.1	293.1
Average Size (GAV)	4489.0	857.2	967.5

Table 2-2 Financial factors

	By NCREIF	By Ron Kaiser	Correlation with risk
1	Permitted and Actual Leverage	Degree of Leverage	Strongly Positive
2	Percentage of non-real estate assets	-	negative
3	Composite Size (Total Asset Value) and Number of Investments	-	negative

- **Property factors**

Property factors include property size, property type, location and the stage of development, etc. About property size, there are two different opinions about its relationship with the volatility. Traditionally, most investors define larger properties as *institutional assets*, which are less risky, because large properties normally target high-quality tenants and long-term leases. However, the study by Ziering and McIntosh (1999) shows that large "trophy" properties are more volatile than smaller properties, and produce 200 bps higher returns.

Another property factor is property type, or subtype. In the US, the four major types of Office, Multi-family housing, Retail and Industrial are traditionally considered as *core subtypes*. The Hotel, although included in the NCREIF Property Index (NPI), is not supposed to be a core subtype, and it makes the NPI different from a Core Index[20].

In the UK, however, residential properties are not considered institutional due to reasons of the social mindset and land use restrictions. First, the "property ladder" is very desirable in the country, and the percentage of residential ownership is much higher than in the US. Second, it is relatively more difficult to conduct large-scale residential projects, which are preferred by institutional investors.

Property location has several different levels ranging from country, region, state and metropolitan area, down through submarket. On the country level, the domestic market is

[20] NCREIF Styles White Paper Committee, Real Estate Investment Styles: Trends from the Catwalk, Oct 2, 2003.

considered less risky than international markets, at least from the perspective of an investor from mature markets such as the US, UK, or Japan. In the US, only opportunistic funds are allocating their capital globally[21]. On the regional level, the first-tier metropolitan areas, such as the top thirty MSAs in the US[22], are often considered to be institutional or core.

Additionally, a diversified portfolio among *core subtypes* or *core regions* is even less risky. According to a survey by Louargand (1992), subtype and location are the two most important criteria in real estate diversification. Regressions in Section 2.3 will show the impact of subtype diversification on a fund's volatility. Furthermore, Chapter 3 makes more observations about the dispersion of specialist funds among three style boxes.

Early stages of real estate lifespan have significantly higher risks than the holding of a stabilized, fully-occupied property, because the earlier the stage is, the more likely something unexpected could happen. Normally, land speculation, entitlement and development belong to the opportunistic approach, while leasing and redevelopment belong to value-added.

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[21] Appendix B, page 59.

[22] Ronald W. Kaiser, Investment Styles and Style Bosex in Equity Real Estate: Can the Emerging Model Succeed in Classifying Real Estate Alternatives? Journal of Real Estate Portfolio Management, Jan-Apr 2005.

Table 2-3 Property factors

	By NCREIF	By Ron Kaiser	Correlation with risk
4	-	Property Size	Not clear
5	Distribution of Assets by Property Subtype	Property Type	Risk of diversification among core subtypes < Risk of one core subtype < Other subtypes
6	Distribution of Assets by Sub region	Property Location	Risk of diversification among core regions < Risk of one core region < Other regions
7	Distribution of Assets by Lifecycle (operating, redevelopment or others)	Stage of Development	Early stages are more risky
8	-	Property Quality level	Negative correlation
9	-	Occupancy Level	Negative correlation

Table 2-4 Operating factors

	By NCREIF	By Ron Kaiser	Correlation with risk
10	Discretion	-	-
11	Distribution of Assets by Investment Structure	Degree of Ownership Control	Direct ownership is less risky
12	-	Exit Strategy	-
13	Exposure by MSA – Top Ten with Exposure Percentage	-	-
14	Exposure by Industry – Top Ten Tenants with Exposure (based upon revenue) Percentage	-	-
15	Percentage Leased by Property Type (square feet or units) and Percentage Expiring by Year	-	-
16	Schedule of Assets (non-identifying) for each Portfolio included in the Composite.	-	-
17		Targeted Strategies	-

- **Operating factors**

One important factor among this category is the ownership control. It is widely believed that direct holdings will reduce unexpected results for real estate investments. However, most factors in this category are hard to measure directly.

- **Rearranging the UK fund factors**

Besides the fund factors given in the IPD data set, I also rearrange some of them into new attributes, which are believed to have clearer quantitative relationship with the volatility. Table 2-5 provides a list of all factors used in this study for the 62 UK funds.

Factor 8, the Property Count Ratio (PCR) is a measure to represent the diversification among different properties, and it has a better linear relationship with the risk than factor 7, the Property Count. To demonstrate how diversified a fund is among different subtypes, an economics definition of Herfindahl-Hirschman Index (HHI)[23] is borrowed. The HHI here represents how diversified a fund is among four categories: *Office*, *Retail*, *Industrial* and *Other subtypes*.

[23] HHI is a measure of market concentration. It is calculated by squaring the market share of each firm competing in a market, and then summing the resulting numbers. HHI = s_1^2 + s_2^2 + s_3^2 + ... + s_n^2 (where s_n is the market share of the ith firm).

Table 2-5 UK fund factors

	Factors	Formula	Unit
1	Loan-to-Value ratio (LTV)	=Debt/ GAV	(%)
2	Leverage ratio (LR)	=1/(1-LTV)	(%)
3	Gearing ratio	=Net Debt/NAV	(%)
4	Net debt	=debt less any cash balance holdings	
5	Cash holding ratio	=Cash/ NAV	(%)
6	Average lot-size		(£m)
7	Property Count	=GAV/ Average lot-size	-
8	Property Count Ratio (PCR)	=1/ (property count)^0.5	-
9	Subtype distribution	=GAV in 3 major subtypes[24]/GAV	(%)
10	HHI by subtypes	=HHI ratio of weight in 3 major subtypes and other subtypes[25]	-
11	Sub region distribution	=GAV in South East/GAV	(%)
12	Net Asset Value		(£m)
13	Direct holding ratio	=GAV in Direct holdings/ GAV	(%)
14	Concentration on the top 10 properties	=GAV of the biggest 10 properties/ GAV	(%)
15	Concentration on the top 10 tenants	=Revenue from the top 10 tenants/ Revenue	(%)
16	Less than 10 yr expiring lease	=Revenue from leases expiring in less than 10 years/ total revenue	(%)
17	Max. development exposure	Regulated by the fund	(%)
18	Max. speculative Development exposure	Regulated by the fund	(%)
19	Open/Closed-ended	Regulated by the fund	-
20	Fund age	-	years

[24] Based on the data set, three major subtypes include office, retail and industrial.

[25] HHI=$(100\times GAV_{office}/GAV)^2+(100\times GAV_{retail}/GAV)^2+(100\times GAV_{industrial}/GAV)^2+(100\times GAV_{other\ types}/GAV)^2$. A fund focusing 100% on shopping centers has the HHI of 10000. For funds with cash holdings, The HHI can be lower than 2500, because the NAV in cash is not included in this formula. To some extent that makes the HHI more relevant here because cash generates no volatility.

2.3 Analysis of major factors' impact on volatility

A series of regressions is performed in order to see the impact of several factors on the volatility. The factors used in the regressions are selected because: 1) they are believed to be highly relevant; 2) they are likely to have linear relationship with the volatility; and 3) the data for these factors are available from the UK funds data set.

For the first step, we conduct a regression of the volatility of funds' annual returns on the three most important attributes: leverage, size and the diversification among subtypes. Suppose the equation is:

$$\sigma = a + b_1 \times LR + b_2 \times PCR + b_3 \times HHI, \qquad \text{(Regression 1)}$$

where:

- σ= volatility of a fund's annual returns.
- LR=1/ (1-LTV).
- PCR=1/ $(N)^{1/2}$=1/ $(GAV/\text{average lot-size})^{1/2}$.
- HHI = the HHI ratio of percentages among Office, Retail, Industrial and Other properties.

10 yrs' performance, 25 samples		
	Coefficients	t Stat
Intercept	6.432871	8.112179
LR	5.645482	7.048608
PCR	-1.63041	-0.27082
HHI	0.000312	2.584518
R square	0.853167	
Adjusted R Square	0.83219	

7 yrs' performance, 33 samples		
	Coefficients	t Stat
Intercept	6.587835	5.114511
LR	6.745736	6.387127
PCR	9.745693	1.501467
HHI	0.000298	1.489908
R square	0.797363	
Adjusted R Square	0.7764	

We run the regression under two scenarios with either the past 7 years' data or the past 10 years'. Thus, one scenario has a more reliable calculation for volatility while the other one has more samples. From the results shown above, we can see that LR definitely has a dominant influence on a fund's risk. The PCR's coefficient is negative under the first scenario and positive under the second one, so its relationship with risk is not clearly shown. For HHI we have a statistically significant result, showing that when HHI rises by its standard deviation[26] , the volatility increases by about 1(%).

For the next step, we introduce lot-size and several dummy variables for the funds' subtype focus. The equation is:

$$\sigma = a + b_1 \times LR + b_2 \times PCR + b_3 \times HHI + b_4 \times \text{Lot-size} + b_5 \times \text{Office} + b_6 \times \text{Retail} + b_7 \times \text{Industrial} + b_8 \times \text{Other-subtype},$$ (Regression 2)

where:

- σ=volatility of a fund's annual returns.
- LR=1/ (1-LTV).

[26] The standard deviation of HHI for the 25 samples is 3200, and the one for the 33 samples is 3394.

- PCR =1/ $(N)^{1/2}$=1/$(GAV/average\ lot\text{-}size)^{1/2}$.
- HHI = the HHI ratio of percentages among Office, Retail, Industrial and Other properties.
- Lot-size= Average lot-size in million pounds.
- Office, Retail, Industrial, Other-subtype: "1' for fund focusing on the category, all "0" if it is a balanced fund.

10 yrs' performance, 25 samples		
	Coefficients	t Stat
Intercept	3.621435	1.519912
LR	6.522742	3.552593
PCR	0.516459	0.072704
HHI	0.001023	1.758003
Lot-size	-0.03053	-0.68894
Office	-3.9847	-0.90225
Retail	-4.91274	-1.20232
Industry	-5.40328	-1.45421
Other-subtype	0	0
R square	0.877595	
Adjusted R Square	0.827193	

7 yrs' performance, 33 samples		
	Coefficients	t Stat
Intercept	12.17389	4.713322
LR	6.266543	4.234533
PCR	-10.0202	-1.12336
HHI	-0.00081	-1.07609
Lot-size	0.050498	1.372422
Office	11.53783	2.166832
Retail	8.786336	1.661488
Industry	6.549478	1.340609
Other-subtype	11.80696	1.906518
R square	0.864772	
Adjusted R Square	0.819696	

From the results of two scenarios of Regression 2, we see that LR still exhibits a strong positive correlation with risk. However, none of the other factors have consistent results. Under the two scenarios, when PCR and HHI have positive coefficients, the other variables have negative ones, and vice versa.

Actually, HHI and the four dummy variables all indicate the information about property subtype, so we believe part of the reason for the non-significant result lies on the conceptual overlapping of these factors. If we diminish the dummy variables and use the following formula:

$$\sigma = a + b_1 \times LR + b_2 \times PCR + b_3 \times HHI + b_4 \times Lot\text{-}size, \quad \text{(Regression 3)}$$

then the results are:

10 yrs' performance, 25 samples		
	Coefficients	t Stat
Intercept	5.753884	3.261339
LR	6.346254	3.500875
PCR	-0.42658	-0.06329
HHI	0.000297	2.323892
Lot-size	-0.01901	-0.43304
R square	0.85453	
Adjusted R Square	0.825437	

7 yrs' performance, 33 samples		
	Coefficients	t Stat
Intercept	8.998964	5.486443
LR	4.962613	3.856906
PCR	-1.60447	-0.19999
HHI	0.000393	2.035401
Lot-size	0.068399	2.181522
R square	0.826801	
Adjusted R Square	0.802058	

Under both scenarios, LR and HHI have statistically significant results. Clearly, a lower HHI (which means involving more subtypes) will reduce a fund's risk, by a rate of about 1.2(%) per standard deviation of HHI. PCR shows a weakly negative relation with volatility. Lot-size shows a positive relation with volatility, and it has a statistically significant result from the regression of the second scenario.

With knowledge of the dominant impact of LR in any regression we conduct here, I decide to construct a fourth regression without LR on the right side of the equation based on the data about non-leveraged funds. Again, dummy variables are not utilized, so the new equation is:

$$\boldsymbol{\sigma = a + b_1 \times PCR + b_2 \times HHI + b_3 \times Lot\text{-}size,} \qquad \text{(Regression 4)}$$

and the regression result is:

10 yrs performance, 10 samples		
	Coefficients	t Stat
Intercept	11.13676	23.33384
PCR	-16.803	-3.04504
HHI	0.000676	5.073193
Lot-size	0.050525	1.412925
R Square	0.843968	
Adjusted R Square	0.765953	

From the result above, we see that PCR is negatively and HHI is positively related to the volatility (both coefficients are significant). The result of HHI shows that when HHI rises by its standard deviation[27] , the volatility increases by about 1.92(%). Lot-size has a positive relation with the volatility, but it fails to have a significant result.

Both HHI and Lot-size have consistent results through the four regressions, and their coefficients are match our understanding about their roles. However, the result we have for PCR is surprising. A negative coefficient for PCR means that the more properties a fund has (the lower

[27] The standard deviation of HHI for the 10 samples is 2845.

PCR is), the more volatile it tends to be. By definition this relation is not true. Based on the regression of volatility solely on PCR, it is not true either[28]. The surprising result occurs mainly because of shadow impacts from other factors and also due to the limited amount of samples. Further research will provide better results.

In the fourth regression, HHI again shows a positive relationship with the volatility. Lot-size has a weakly positive coefficient.

From the regressions above, we can conclude:

- **The use of leverage is by far the dominant factor.** (LR)
- **The more subtype-diversified a fund is, the less volatile it is, and the relationship is relatively strong.** (HHI)
- **The larger the average lot-size is, the more volatile a fund tends to be, but the relationship is not strong.** (Lot-size)
- **The relationship between property count and volatility is not clear from the regressions.** (PCR)

[28] We get a statistically significant coefficient of *30.5* for PCR, from the regression of: $\boldsymbol{\sigma = a + b_1 \times PCR,}$ using data for the past 10 years.

Chapter 3: Classification Process

3.1 The LTV-dominated classification

Nearly half of the 17 attributes NCREIF and Ron Kaiser listed are available in the IPD fund data set, but there is very limited explanation about how to apply these factors quantitatively. Based on analysis in Chapter 2, we choose Loan-to-value (LTV) ratio as the dominant factor in the classification of styles for two reasons: it has a strong influence on the expected risk/return and the dispersion of LTV has a natural gap between 40%-50%.

- **LTV has the strongest influence to the expected risk and return**

Based on the analysis in Section 2.3, LTV undoubtedly has the biggest impact on a fund's risk. Additionally, we can make a rough calculation about the range of possible returns for different approaches based on certain assumptions in Table 3-1.

Table 3-1 Major factors' influences on expected return

	Range of factor	Range of return	Assumption
Core approach	-	10%	
Using Debts	LTV: 0 – 80%	10%-44%	7% interest rate
Doing developments	Exposure: 0 – 30%	10%-14.5%	Return of 25% for development
Holding other subtypes	Exposure: 0%-100%	10%-15%	Return of 15% for other subtypes

- **The natural gap**

Ranging from 0% to 80.2%, the values of LTV show a natural gap between 40%-50%. The equal-weighted average for leverage ratio of funds above the gap is 65%, similar to that of the US opportunistic funds, 67.4%.

Meanwhile, there are 17 funds with zero LTV ratios, possibly because of their own regulations. These funds are the most risk-averse, and they amount to about one third of all funds, so preliminarily, they can be defined as core funds.

Core funds in the US have an average LTV of 30.7%, by the end of the first quarter of 2009. Actually, it is rare to see property funds with no loans in the US[29]. The critical difference in LTV between the US core funds and the UK core funds seems to be a deficit of the classification, but basically it is inevitable.

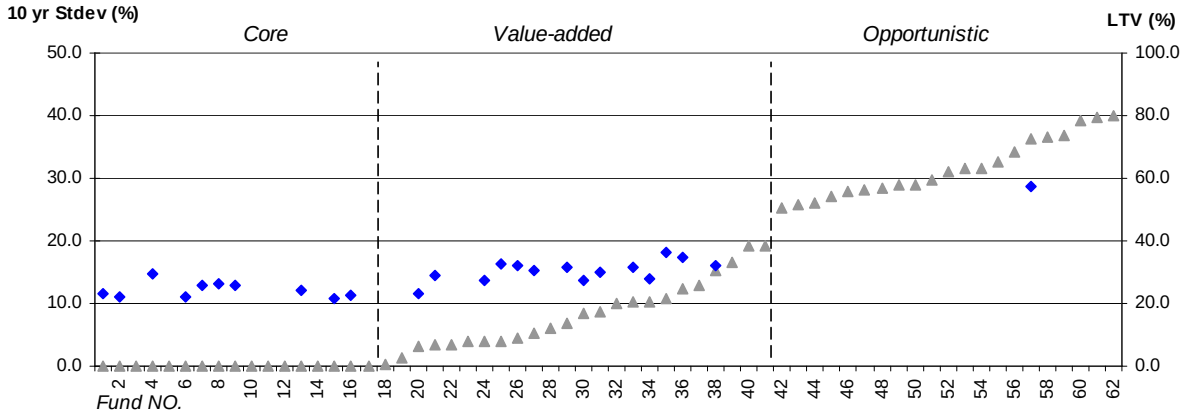
Table 3-2 Result of the preliminary classification

	Core		Value-Added			Opportunistic	
	All Core	Open-ended Core	All Value-add	Open-end Value-add	Closed-end Value-add	All Opportunistic	Closed-end Opportunistic
NAV ((£m)	5779.2	5082.03	10905.02	5712.72	5192.31	3877.35	3361.15
LTV	0.0%	0.0%	15.6%	15.0%	16.3%	64.1%	64.7%
Manager Count	14	13	18	14	6	17	13
Fund Count	17	15	24	15	9	21	17

[29] This phenomenon illustrates the appetite for unlevered returns in the UK, possibly because some unit trusts are tax transparent so leverage is less beneficial to them, and/or the investors simply prefer to make their own leverage at home.

Table 3-2 shows the result of the preliminary classification. There are 17 "core" funds with zero leverage ratio, 24 "value-added" funds with 0-40% leverage ratio (mean of 15.6%) and 21 "opportunistic" funds with more than 50% leverage ratio (mean of 64.7%). As we can see in Figure 3-1, this classification has a good match with the observation of the funds' historical volatility.

Figure 3-1 Preliminary classification: LTV, Volatility



3.2 Dispersion of other factors among the three style boxes

After the LTV-dominated classification, the dispersion of other factors among the three boxes deserves attention. Any abnormal trends or extreme outliers found may provide clues for adjustment to the classification. At the same time, I calculate the correlation and ranking correlation between each factor and LTV.

- **Financial factors -NAV, GAV, Property Count and Cash holding ratio**

The NAV has a negative correlation with LTV, meaning that funds seeking higher risks and high returns tend to be smaller. As Figure 3.2 shows, funds with higher than £ 1Bn NAV fall into core and value-added boxes only. The Gross Asset Value (GAV), which includes debt, shows a weakly positive correlation with LTV. This result is different from what we get from the US funds (Table 2-1). In the US, core funds have by far the largest average size than the others, but in the UK, fund sizes of three styles are closer to each other. No obvious outlier is found for UK funds here.

Another size factor, the Property Count (GAV/average lot-size) shows a relatively strong negative correlation with LTV, indicating that the diversification among properties is important to investors. The first outlier, Fund 42, has about 270 different properties. We also notice that it has about 5% cash holding, which lowers its real LTV ratio. However, we prefer not to move Fund 42 to the value-added box because it is a specialist fund investing 100% in healthcare properties. According to analysis in Section 2.3, subtype diversification has the second biggest

influence on a fund's volatility. Another outlier, Fund 53, has more than 390 properties, the most among all funds. It can't be easily removed from the opportunistic box either, because its LTV is too high.

Cash holding percentage (Cash/GAV×100%) shows a relatively strong negative correlation with LTV. No obvious outlier is found. However, among the value-added funds, Funds 20 and 19 have more cash than their debts. So these two funds have zero Net Debt. We should consider moving these two funds from the value-added category to the core.

Table 3-3 NAV and LTV

Available samples	62	Mean of Co/Va/Op	340.0 / 454.4 /184.6
Correlation	-0.313	Outliers	
Pearson ranking correlation	-0.299		

Figure 3-2 NAV and LTV

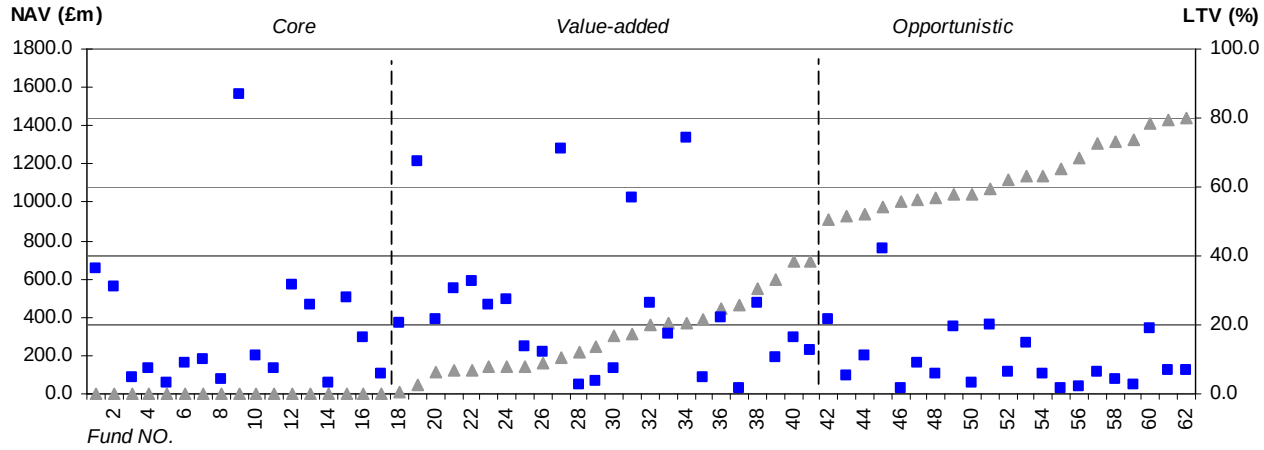


Table 3-4 GAV and LTV

Available samples	60	Mean of Co/Va/Op	424.3 / 672.7 /682.3
Correlation	0.133	Outliers	
Pearson ranking correlation	0.193		

Figure 3-3 GAV and LTV

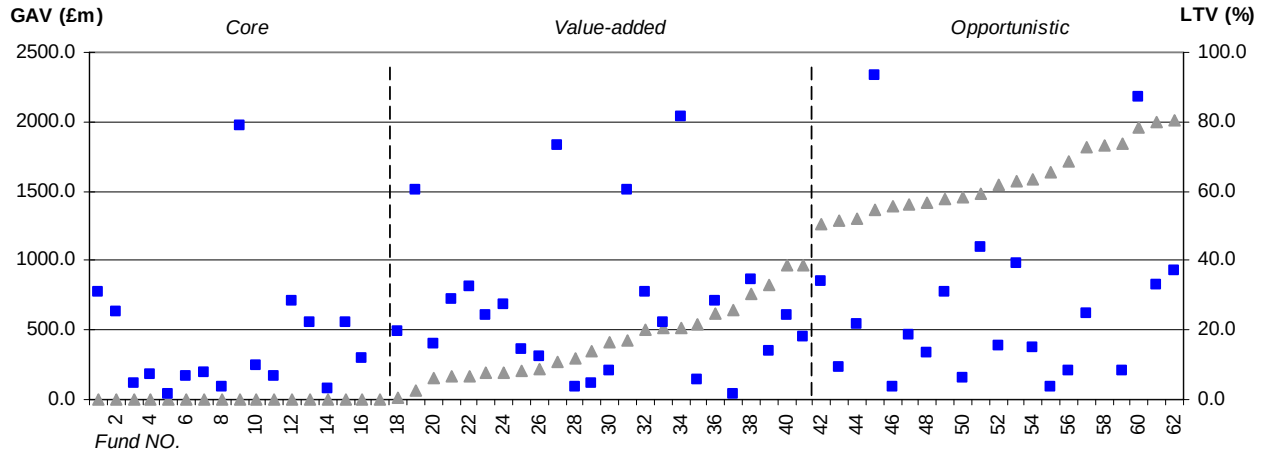


Table 3-5 Property Count and LTV

Available samples	54	Mean of Co/Va/Op	69.2 / 39.2/ 56.7
Correlation	-0.029	Outliers	Fund 42, 53
Pearson ranking correlation	-0.317		

Figure 3-4 Property Count and LTV

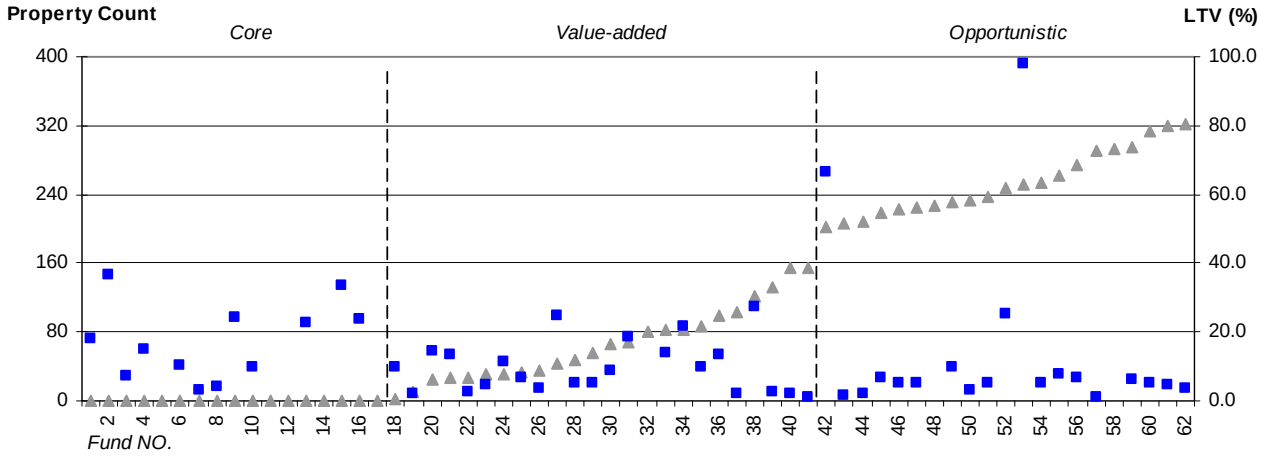
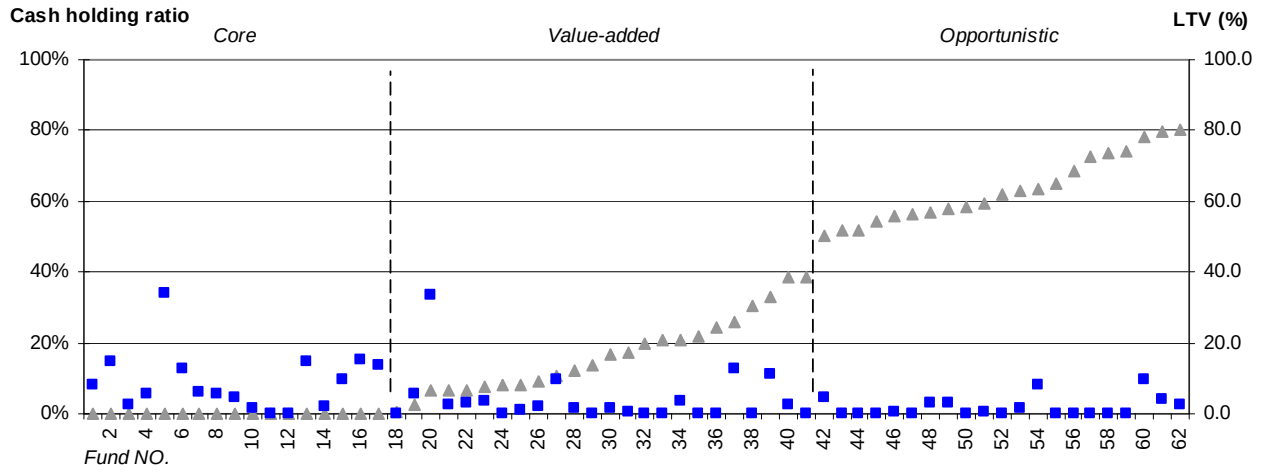


Table 3-6 Cash holding ratio and LTV

Available samples	62	Mean of Co/Va/Op	8.8%/ 3.9% / 1.8%
Correlation	-0.337	Outliers	Fund 20
Pearson ranking correlation	-0.425		

Figure 3-5 Cash holding ratio and LTV



- **Property factors –Average Lot-size, Subtype Distribution and Property Concentration**

The dispersion of average lot-size seems to support the findings of study by Ziering and McIntosh (1999). The average lot-size tends to be higher when a fund is less risk-averse (with higher LTV) and the correlation is relatively high. The most obvious outlier is Fund 19, a specialist fund investing in shopping centers, but the extremely high lot-size is still not enough to make it an opportunistic fund, given its low LTV. However, it makes me believe that Fund 19 should stay in the value-added box, although its Net debt is zero.

The concentration on the top ten investments measures how diversified a portfolio is among different properties (in a way other than PCR). Those with higher exposure to their ten largest properties tend to be less diversified. This factor has a weak positive correlation with the LTV ratio. It generates two outliers, Funds 42 and 53, the same as the property count observation does.

Figure 3-8 shows how much the funds are investing in three major subtypes (Office, Retail and Industrial). Although the ranking correlation between the two factors is low, we still notice that subtypes besides the three major ones are considered opportunistic. At the same time, Figure 3-9 shows that specialist funds obviously tend to be using more debt while most balanced funds have lower LTV. This supports the findings about HHI's strong correlation with the expected volatility in Section 2.3.

Table 3-7 Average lot-size and LTV

Available samples	54	Mean of Co/Va/Op	7.4/ 29.2/ 36.1
Correlation	0.283	Outliers	Fund 19
Pearson ranking correlation	0.288		

Figure 3-6 Average lot-size and LTV

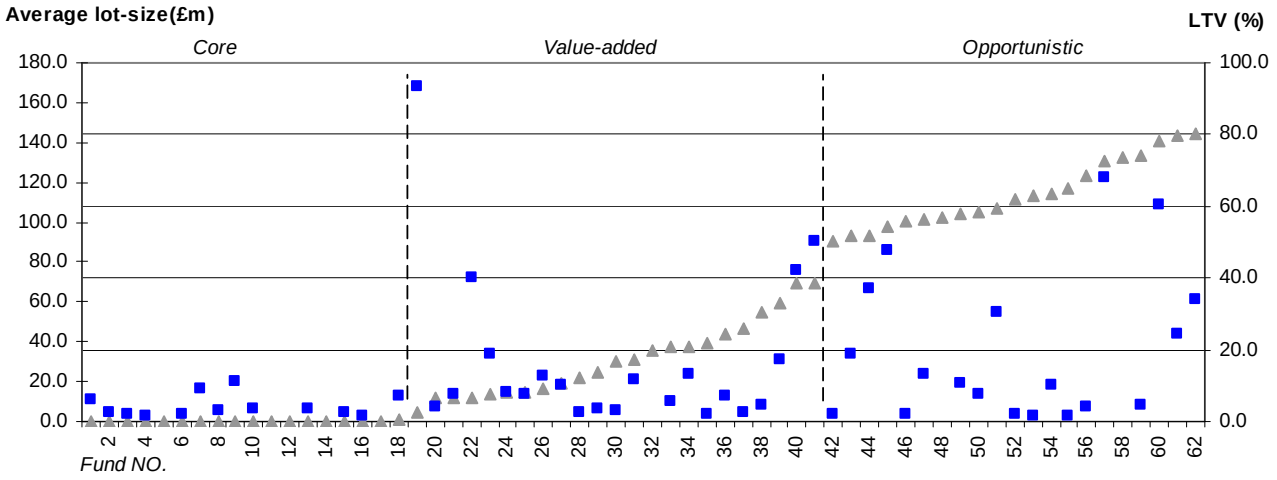


Table 3-8 Concentration on the 10 largest investments and LTV

Available samples	56	Mean of Co/Va/Op	51.8/ 64.0/ 68.0
Correlation	0.239	Outliers	Fund 42
Pearson ranking correlation	0.265		

Figure 3-7 Concentration on the 10 largest investments and LTV

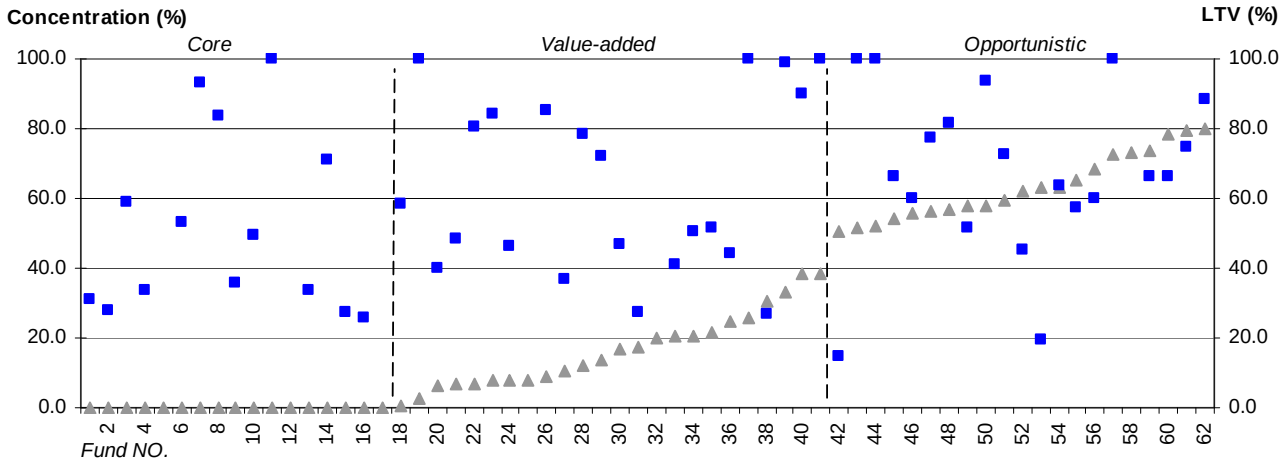


Table 3-9 Concentration on three subtypes and LTV

Available samples	62	Mean of Co/Va/Op	92.5%/ 95.1% / 75.5%
Correlation	-0.235	Outliers	Fund 14
Pearson ranking correlation	0.069		

Figure 3-8 Concentration on three subtypes and LTV

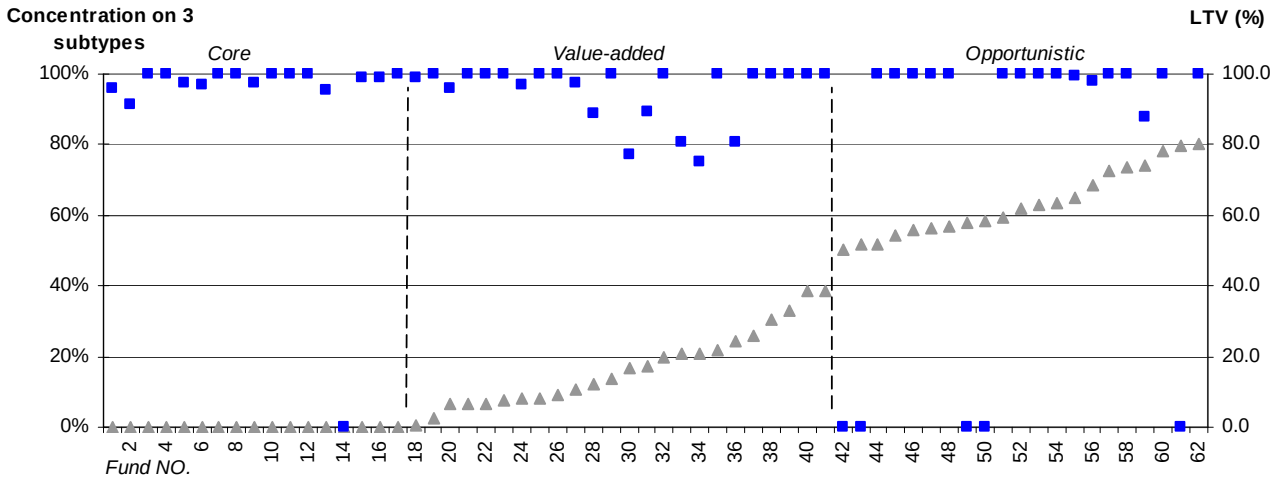
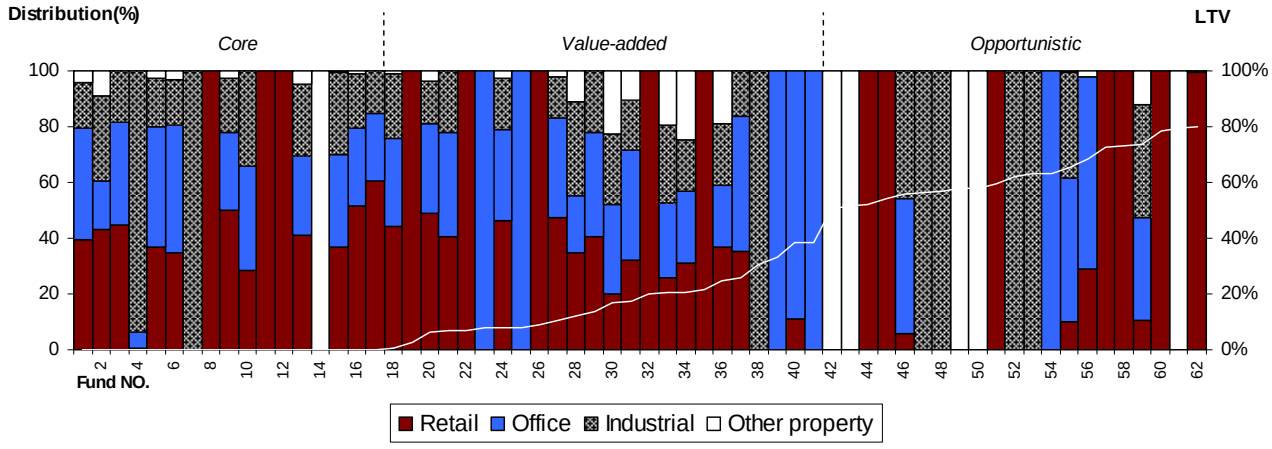


Figure 3-9 Distribution in Subtypes



(Fund 14: Residential; Fund 42: Health care; Fund 43& 61: Leisure estate; Fund 49& 50: Student housing)

- **Term structure, Age and Development exposure**

Most core funds are open-ended while most opportunistic funds are closed-ended. This is the same phenomenon as the US funds exhibit.

Figure 3.11, showing ages of the 62 funds[30], tells us that most highly-levered UK funds were founded after year 2003, the end of last downturn of the real estate market. The past eight years is also a highly productive period for funds with zero or little debts. However, the time during 1996-2000 is a relatively void period with very few funds founded.

Although the real exposure to development for any fund here is unavailable, I still try to get a hint from the funds' restrictions (this information is still absent for some funds) on the exposure. However, no obvious trend is found. Fund 35 is an outlier, but without enough data about its real exposure to development, any adjustment will be bold.

[30] More precisely, it shows how many years' performance is available for each fund in the UK-fund data set.

Figure 3-10 Term Structure and LTV

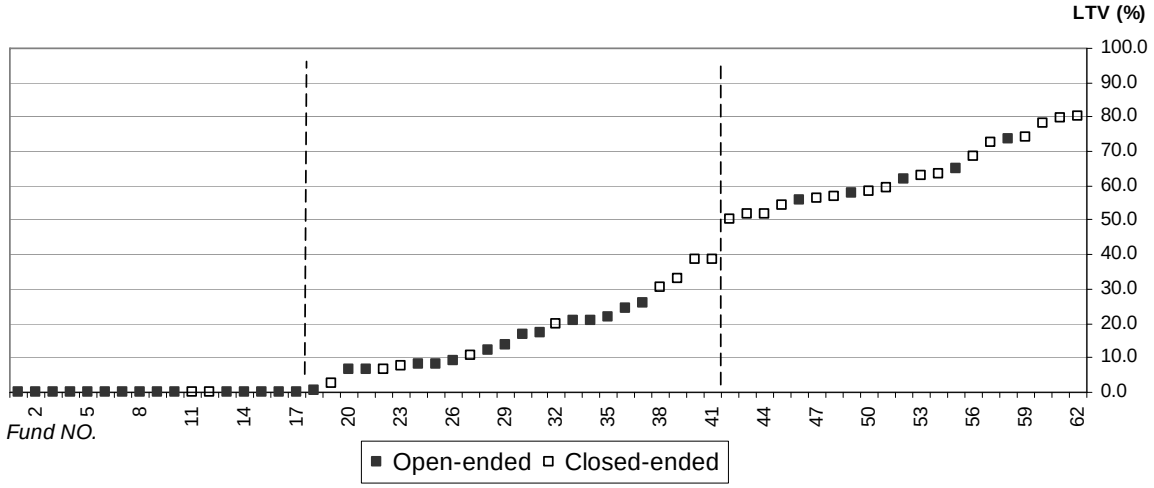


Figure 3-11 Fund Age and LTV

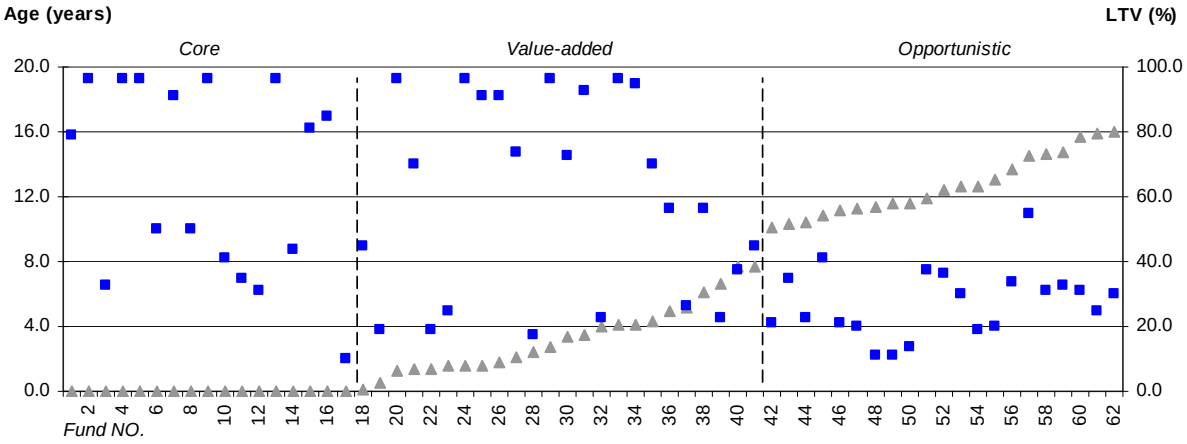
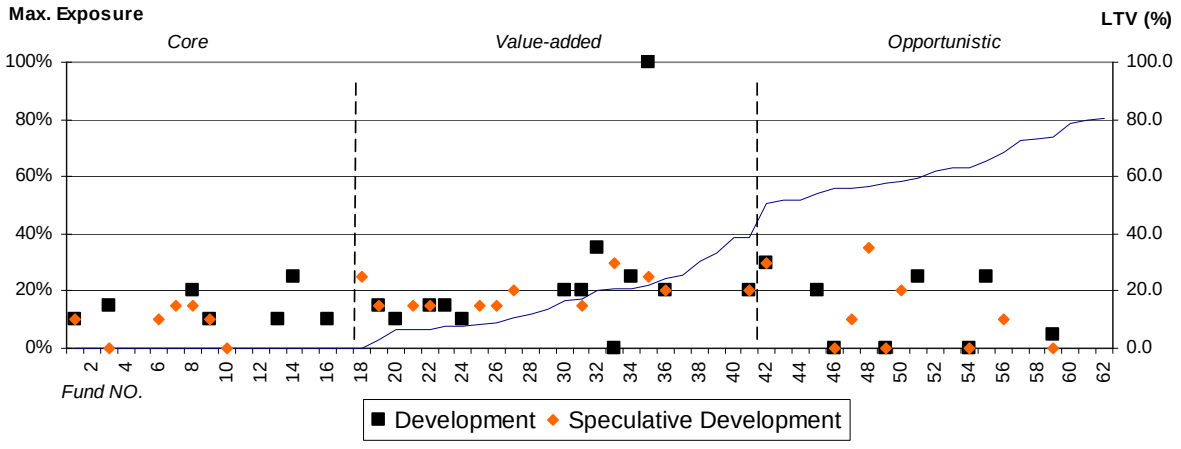


Figure 3-12 Max. Exposure to Development and LTV



3.3 Adjusted classification

After the observations in Section 3.2, two adjustments have to be made to the preliminary classification. Fund 20 has to be moved from the value-added box to the core box, because: 1) it has zero Net debt, 2) it is a balanced fund and 3) its volatility is lower than those of other value-added funds (Figure 3.1). Another fund that was treated "unfairly", I believe, is Fund 18 in the value-added box. Its LTV ratio is 0.3%, which is not distinguishable with zero, and it is a balanced fund pursuing diversification among the major three subtypes. It should also be moved to the core style-box

Thus we redefine fund 20 and fund 18 as core funds instead of value-added funds. The other 60 funds will remain as what they were. After the adjusted classification, there are 19 core funds, 22 value-added funds and 21 opportunistic funds.

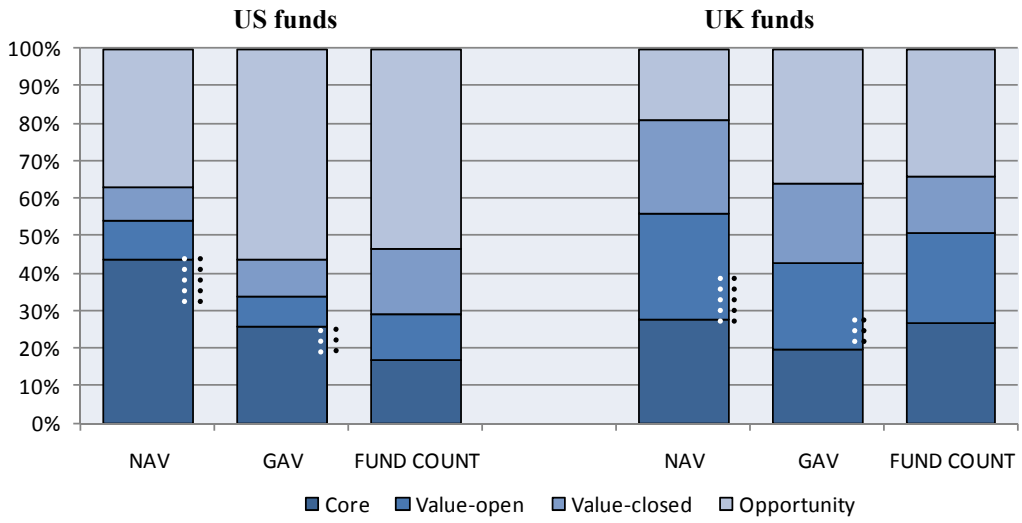
Table 3-10 Result of the adjusted classification

	Core		Value-Added			Opportunistic	
	All Core	Open-ended Core	All Value-add	Open-end Value-add	Closed-end Value-add	All Opportunistic	Closed-end Opportunistic
NAV (£m)	6543.4	5846.3	10140.8	4948.5	5192.3	3877.3	3361.2
LTV	0.3%	0.3%	16.2%	15.9%	16.3%	64.1%	64.7%
Manager Count	16	15	16	12	6	17	13
Fund Count	19	16	22	13	9	21	17

Chapter 4: Style-comparison between UK and US Funds

4.1 Market share and size

Figure 4-1 Basic composition of UK and US funds



After making the US-three style-classification to UK funds, some immediate style-comparison between the two countries' funds seems necessary. A few significant differences appear in basic attributes such as fund size and market share. The first difference is the market shares of core and value-added. In the US, value-added funds represent much larger a portion (44%) than they do in the UK (31%) in terms of NAV. In terms of GAV the contrast is similar (25% compared to 20%). At the same time, value-added in the US represents a much smaller proportion than it does in the UK. This creates some inconveniency for researchers to compare fund styles between the two countries. If we introduce the fourth style, *core-plus,* the inconveniency would be mitigated. The core-plus funds are majorly hidden in the core category in the US and value-added in the UK, as is shown by the dot lines in Figure 4-1. If the dot-line areas in the figure are defined as

core-plus, core, core-plus and value-added will have much more similar market shares in both countries.

The second difference is the between the market shares of opportunistic funds. In the US opportunistic funds represent a much larger proportion (56% of total GAV) than they do in the UK (35% of total GAV). One possible reason is the extra appetite of US investors for international investments. In the US over 40% opportunistic capital is allocated in markets other than the North America. The internationally-oriented capital all add to the opportunistic funds, making opportunistic the largest style in the US in terms of GAV. However, all the 62 UK funds in our data set invest domestically.

Third, there is a significant contrast between the average sizes of UK and US core funds. The average size for US core funds is much larger than that of any other groups. Most US core funds are open-ended, and they have been active for a long time, making it possible for them to grow into very large sizes.

4.2 LTV

The difference in LTV between the UK and US funds is significant. While the average LTV for US core funds is about 30%, most UK core funds have zero LTV. Similarly, LTV of value-added in the UK (18%) is much lower than it is in the US (50%). As mentioned before, there is a great demand for un-geared real estate return in the UK. Some investors prefer to use gearing by themselves. And since some unit trusts are tax transparent, they are less inclined to use leverage.

Figure 4-2 Average sizes of the UK and the US funds[31]

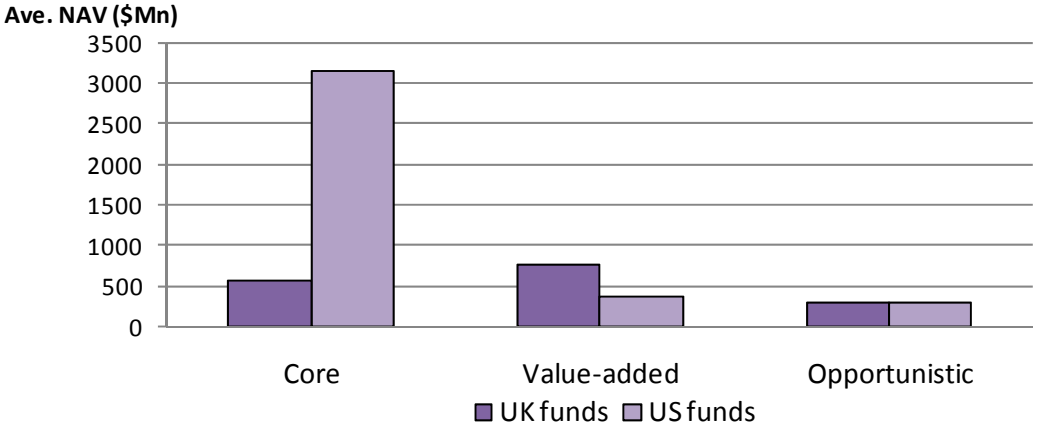
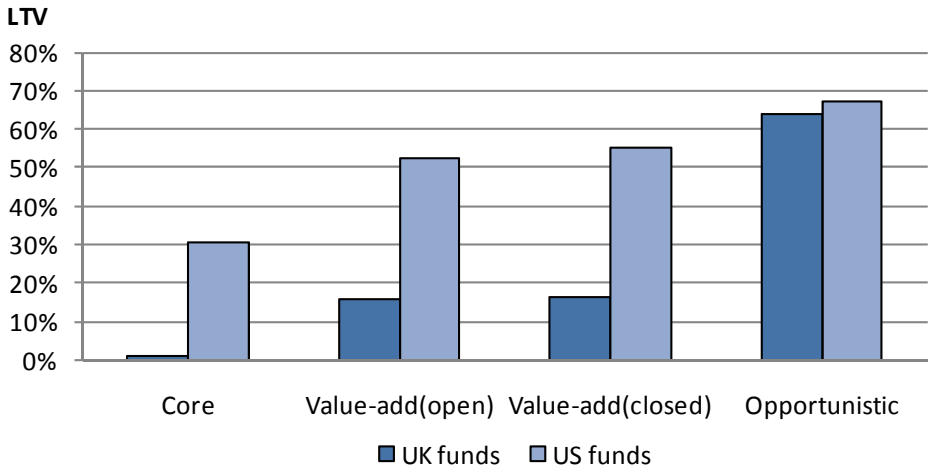


Figure 4-3 LTV ratio comparison



[31] Calculated using the currency rate of: 1 British pound=1.641US dollars

4.3 Performance

Figures 4-4, 4-5 and 4-6 show a series of performance comparisons between UK and US funds. During year 2006-2007, the US opportunistic funds delivered excellent returns, which could not be explained by their LTV. As is shown in Figure 4-3, the US and UK opportunistic funds have similar LTV, while the average LTV is much lower in the UK. If LTV is the dominant factor for expected risk/return, we should see extremely high peak in the opportunistic category in the UK, not in the US.

What can explain the performance of US opportunistic funds? And what is the reason for the performance of UK opportunistic funds? The first reason possibly lies in the flaw of data used here: 1) the UK funds' LTV might vary in the history but I am only using the current data (1Q/2009) and 2) there is only one sample for UK opportunistic funds (all the other UK opportunistic funds have ages smaller than 10 years). The second reason might be the profit from overseas markets. The US opportunistic funds have nearly half investments in markets other than North America. However, further studies will give better explanations.

Figure 4-4 Comparison of UK and US "style indices"[32]

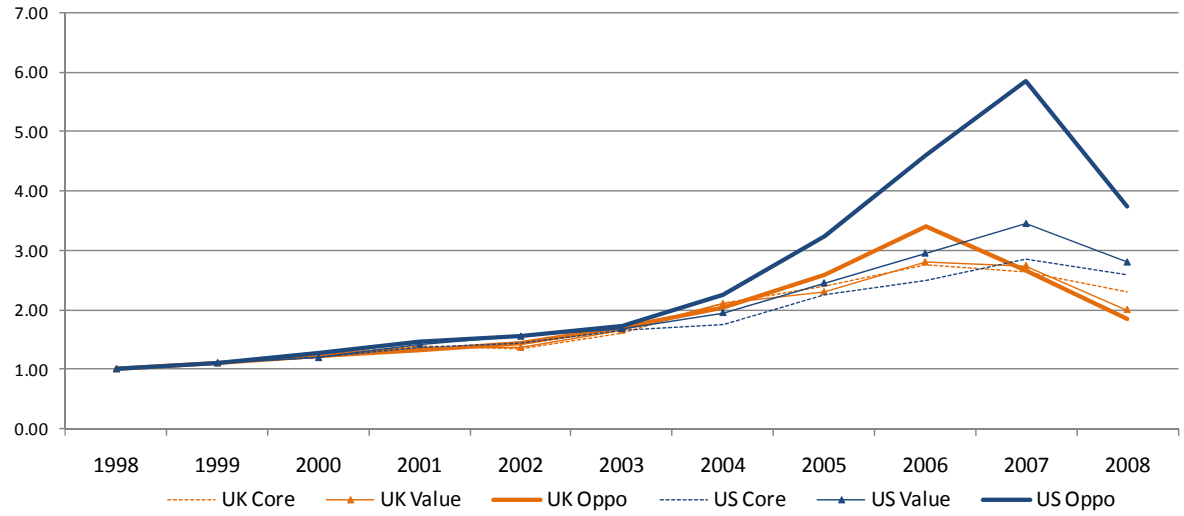
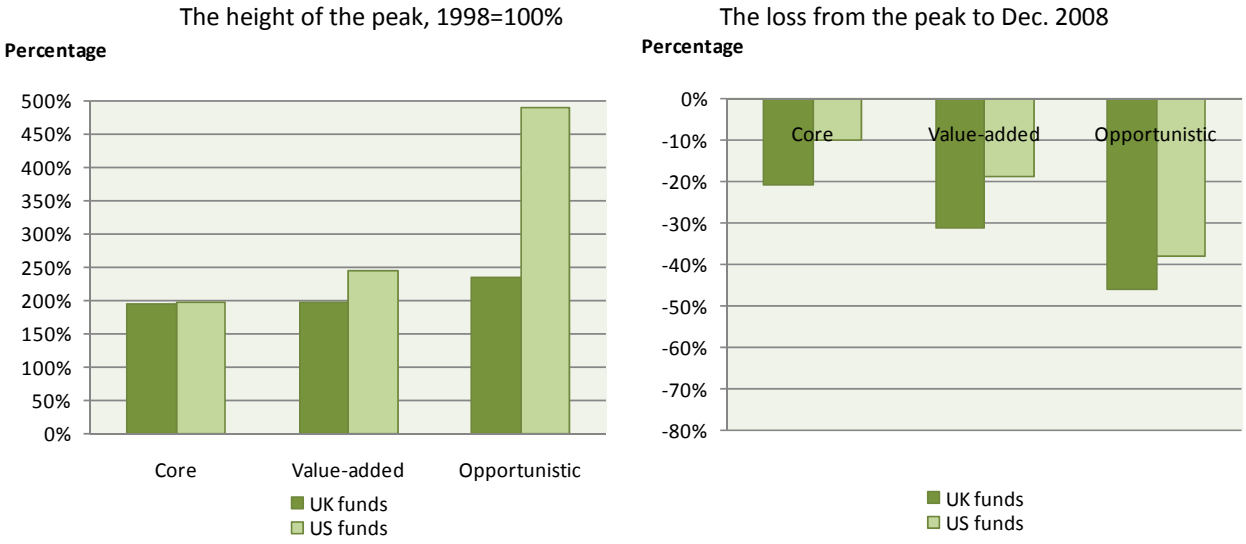
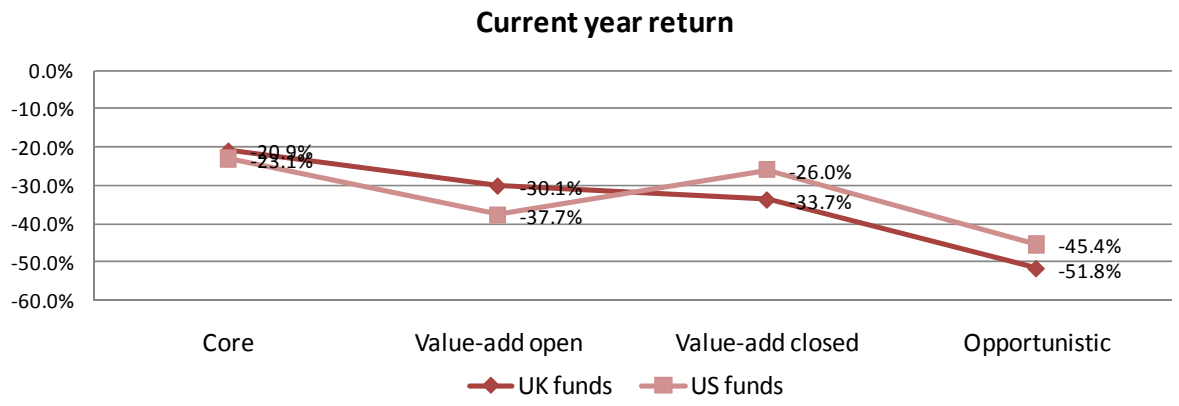


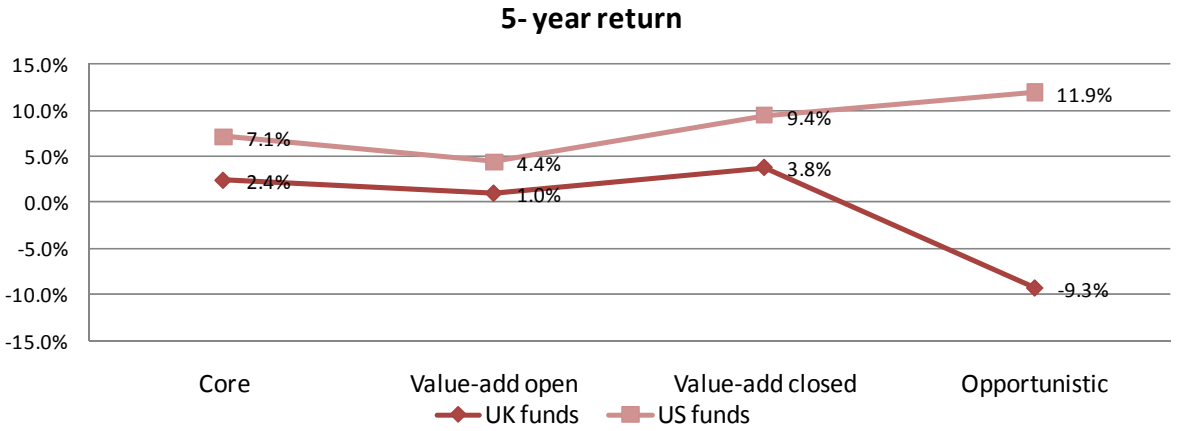
Figure 4-5 Comparison of market peaks in the UK and the US

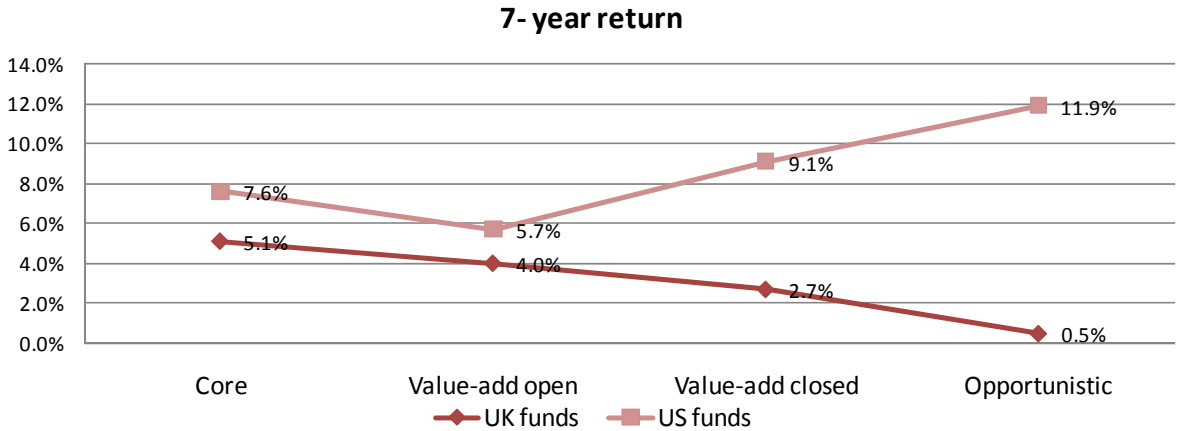


[32] Each index is created using annual equal-weighted return, due to the limited data.

Figure 4-6 Comparison of annualized return for UK and US funds (up to 1Q/2009)







Appendix A: UK-Funds Report, Q1/09

The following tables and figures are generated based on the data provided by IPD about 62 funds in the UK.

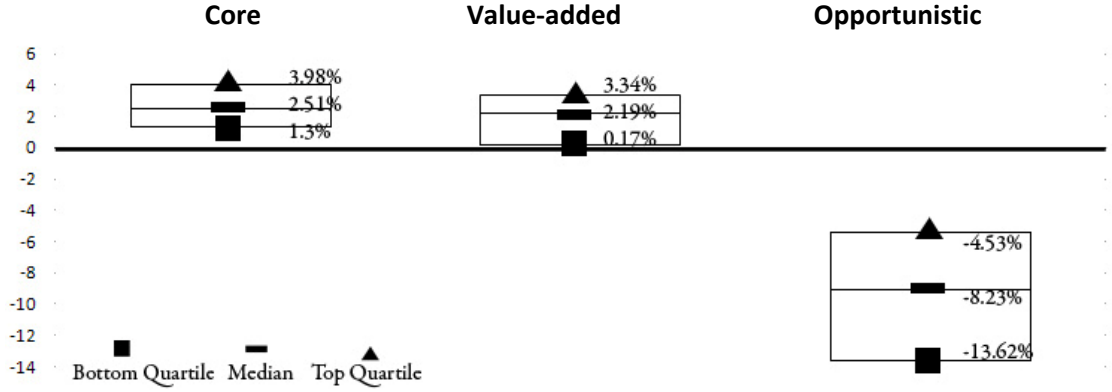
Time-Weighted Index Returns

Returns (Equal Weight)		Core		Value-Added			Opportunistic	
		All core	Open-end	All value-add	Open-end	Closed-end	All Opportunistic	Closed-end
Qtr	Total return	-7.99%	-5.5%	-9.3%	-9.7%	-8.7%	-22.8%	-24.7%
	prior qtr. total return	-10.5%	-10.4%	-16.3%	-14.6%	-18.7%	-27.0%	-27.7%
calendar year	Current year	-21.1%	-20.7%	-32.2%	-31.2%	-33.7%	-51.8%	-54.2%
	prior year	-7.2%	-7.5%	-10.1%	-11.1%	-8.6%	-14.5%	-15.1%
	2008	-18.2%	-18.0%	-28.4%	-27.1%	-30.5%	-42.0%	-43.7%
	2007	-3.4%	-3.7%	-3.3%	-5.1%	-0.6%	-5.8%	-6.2%
	2006	16.2%	16.5%	24.6%	20.1%	31.1%	25.7%	27.2%
	2005	17.0%	17.0%	19.3%	19.4%	19.0%	26.8%	28.0%
	2004	17.4%	17.5%	19.6%	19.3%	20.5%	27.0%	26.1%
Annualized	3 year	-6.6%	-6.6%	-10.0%	-10.6%	-9.2%	-23.4%	-24.1%
	5 year	2.4%	2.4%	1.8%	1.0%	3.8%	-9.3%	-9.7%
	5 yr Stdev	18.5%	18.4%	24.9%	23.3%	26.6%	34.8%	34.6%
	5 yr Sharpe ratio	-0.0418	-0.0429	-0.0449	-0.0764	0.0291	-0.3541	-0.3666
	7 yr	5.1%	5.1%	3.7%	4.0%	2.7%	0.5%	0.7%
	10 yr	6.9%	6.9%	6.0%	5.8%	7.3%	-1.94%	-1.94%

Balance Sheet and Other Information (£m)

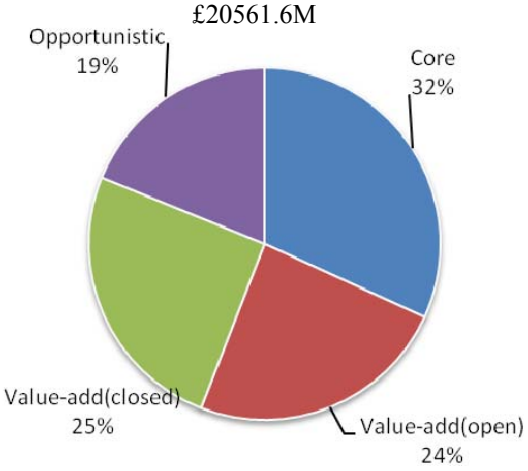
	Core		**Value-Added**			**Opportunistic**	
	All core	**Open-end**	**All value-add**	**Open-end**	**Closed-end**	**All Opportunistic**	**Closed-end**
NAV(Q1/09)	6543.4	5846.3	10140.8	4948.5	5192.3	3877.3	3361.2
Cash % (NAV)	5.9%	6.7%	4.2%	3.3%	5.1%	10.2%	9.9%
LTV (Q109)	0.4%	0.4%	16.2%	15.9%	16.3%	64.1%	64.7%
Managers	16	15	16	12	6	17	13
Funds	19	16	22	13	9	21	17

Total Return, Gross- Annualized 5 year

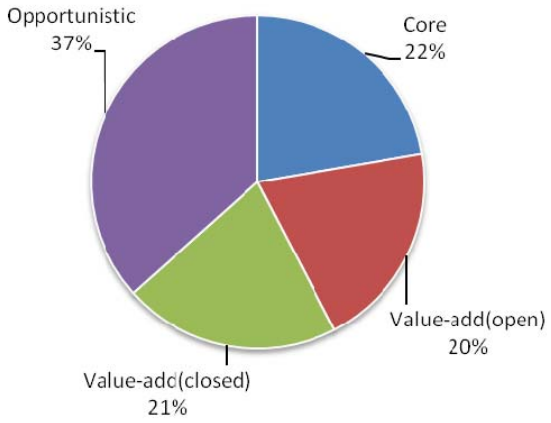


Fund Indices – Attributes (Q1/2009)

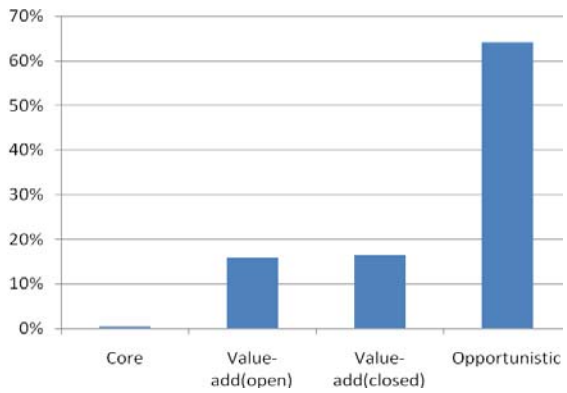
Net Assets
£20561.6M



Gross Real Estate
£29493.3M

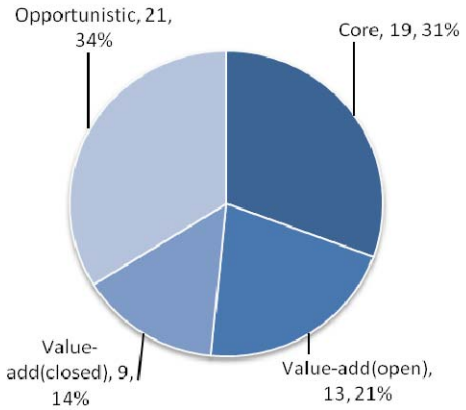


Leverage

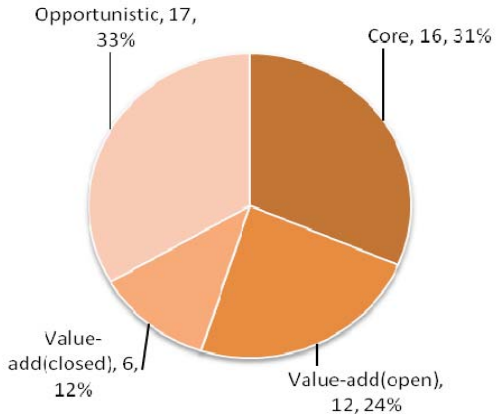


Regional Diversification
(All in the UK)

Fund Count
62



Manager Count



Appendix B: US-Funds Report, Q1/09

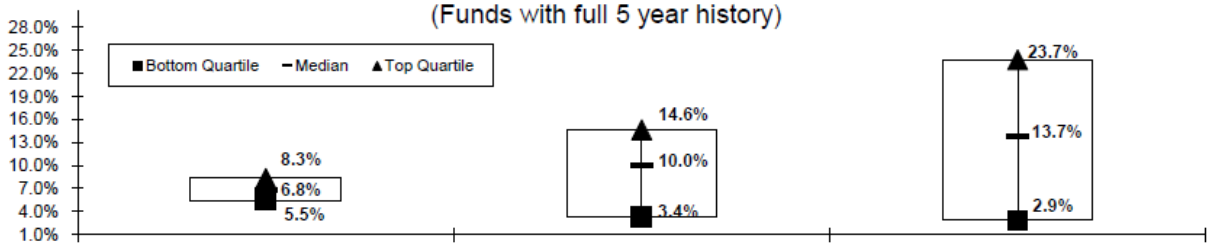
The following tables and figures are selected from the Real Estate Fund Indices and Vintage Period Performance Report, First Quarter 2009 by NCREIF and the Townsend Group.

Time-Weighted Index Returns [1]

	Gross of Fee Returns	Core			Value-Added			Opportunistic
		All Core	Open-end	NFI-ODCE	All Value-Added	Open-end	Closed-end	All Opportunistic [2]
QTR	Income	1.3%	1.3%	1.3%	1.1%	0.9%	1.2%	0.1%
QTR	Appreciation	-14.7%	-14.7%	-14.9%	-16.4%	-23.3%	-9.2%	-14.8%
QTR	Total Return	-13.4%	-13.4%	-13.7%	-15.3%	-22.3%	-8.0%	-14.8%
QTR	Prior Qtr. Total Return	-10.7%	-10.7%	-10.9%	-17.3%	-17.4%	-17.1%	-26.2%
4 QTR Roll	Current Year	-23.1%	-23.1%	-23.4%	-32.0%	-37.7%	-26.0%	-45.4%
4 QTR Roll	Prior Year	13.0%	13.0%	13.1%	14.1%	13.5%	14.7%	15.6%
Calendar Year	2008	-10.0%	-10.0%	-10.0%	-19.4%	-19.3%	-19.5%	-36.4%
Calendar Year	2007	15.9%	15.9%	16.0%	17.4%	17.4%	17.3%	25.7%
Calendar Year	2006	16.5%	16.5%	16.3%	19.5%	18.9%	20.0%	42.9%
Calendar Year	2005	21.2%	21.2%	21.4%	27.5%	24.8%	30.4%	44.5%
Calendar Year	2004	13.7%	13.1%	13.1%	17.8%	16.7%	18.7%	29.7%
Annualized	3 Year	0.4%	0.4%	0.3%	-2.5%	-5.6%	0.5%	-2.2%
Annualized	5 Year	7.1%	7.1%	7.0%	6.9%	4.4%	9.4%	11.9%
Annualized	5 Year Standard Deviation	10.10%	10.09%	10.21%	13.70%	15.36%	13.10%	21.24%
Annualized	5 Year Sharpe Ratio	0.461	0.458	0.448	0.354	0.171	0.545	0.514
Annualized	7 Year	7.6%	7.5%	7.4%	7.4%	5.7%	9.1%	11.9%
Annualized	10 Year	8.2%	8.2%	8.2%	8.7%	7.4%	9.9%	12.0%

Total Return, Gross - Annualized 5 Year - Universe Statistics

(Funds with full 5 year history)



	Core	Value-Added	Opportunistic
Dispersion	2.05%	8.44%	19.07%
# of Funds	15	34	88

Balance Sheet and Other ($ millions)

Active Funds As of 03/31/2009	Core			Value-Added			Opportunistic
	All Core	Open-end	NFI-ODCE	All Value-Added	Open-end	Closed-end	All Opportunistic [2]
Gross Real Estate Assets	94,269	94,269	83,626	68,572	29,905	38,667	205,103
Net Assets	66,004	66,004	60,104	29,128	13,756	15,372	62,147
Cash %	2.9%	2.9%	2.8%	5.9%	6.8%	5.0%	8.0%
Leverage%	30.7%	30.7%	29.6%	54.0%	52.7%	55.3%	67.4%
Contributions (Qtrly activity)	262	262	153	820	466	354	6,485
Distributions (Qtrly activity)	674	674	533	233	133	99	108
Managers	20	20	14	39	11	33	83
Funds	21	21	14	80	15	65	212
Prior Qtr. Fund Count	21	21	14	87	15	72	227

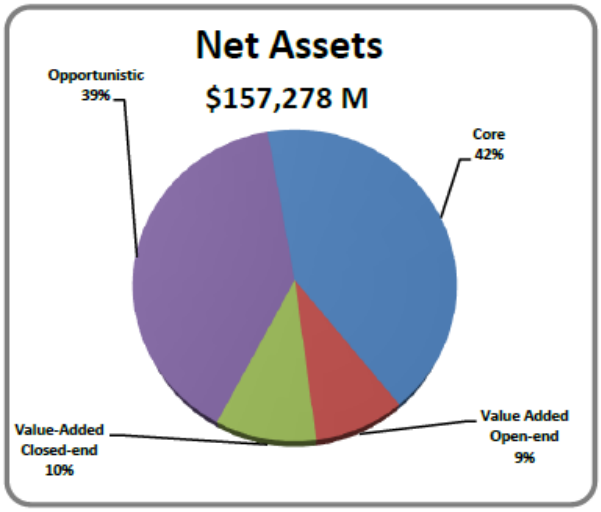
(1) All Indices are calculated by geometrically linking quarterly time-weighted before advisory fee (gross) returns, weighted based on the funds' quarterly average weighted capital. The Core Indices are products of NCREIF, the National Council of Real Estate Investment Fiduciaries. The NFI-ODCE is the NCREIF Open-end Diversified Core Equity Index (see separate report for more detail). The Value-Added and Opportunisitic Indices are joint products of NCREIF and The Townsend Group (TTG). Open-end and closed-end fund data is provided by NCREIF and TTG, respectively.

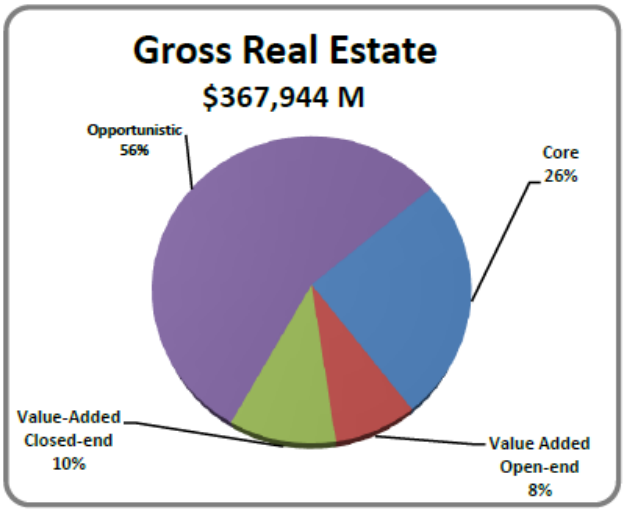
(2) All Opportunistic includes Non-U.S. funds available for investment to U.S. Institutional Investors. See the region diversification graph on page 5 for the composition of fund investments across geographic locations.

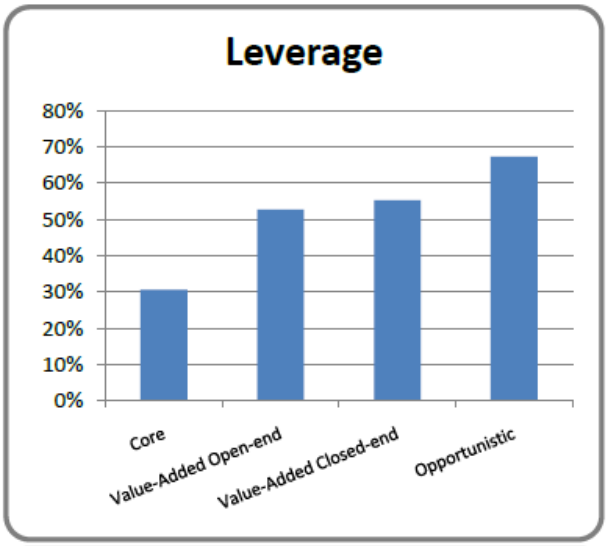
Time-Weighted Returns

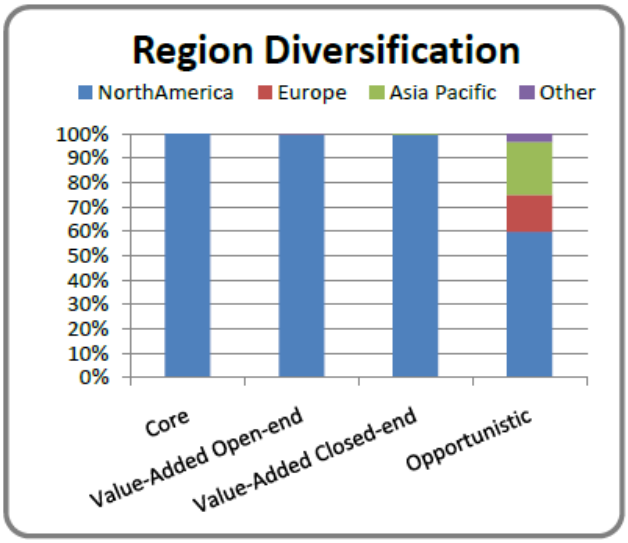
	Core			Value-Added			Opportunistic
Current Quarter	All Core	Open-end	NFI-ODCE	All Value-Added	Open-end	Closed-end	All Opportunistic
Value Weight - Gross of Fee	-13.4%	-13.4%	-13.7%	-15.3%	-22.3%	-8.0%	-14.8%
Value Weight - Net of Fee	-13.4%	-13.4%	-13.9%	-15.6%	-22.6%	-8.3%	-14.7%
Equal Weight - Gross of Fee	-12.0%	-12.0%	-12.5%	-10.4%	-20.6%	-8.0%	-6.8%
Equal Weight - Net of Fee	-11.6%	-11.6%	-12.7%	-10.3%	-20.9%	-7.8%	-7.1%
Trailing Four Quarters							
Value Weight - Gross of Fee	-23.1%	-23.1%	-23.4%	-32.0%	-37.7%	-26.0%	-45.4%
Value Weight - Net of Fee	-23.5%	-23.5%	-24.0%	-32.4%	-38.4%	-26.0%	-45.1%
Equal Weight - Gross of Fee	-22.0%	-22.0%	-22.7%	-27.8%	-34.9%	-26.1%	-28.4%
Equal Weight - Net of Fee	-22.0%	-22.0%	-23.3%	-27.3%	-35.7%	-25.3%	-29.5%
Prior Four Quarters							
Value Weight - Gross of Fee	13.0%	13.0%	13.1%	14.1%	13.5%	14.7%	15.6%
Value Weight - Net of Fee	11.9%	11.9%	12.0%	12.0%	12.1%	11.9%	11.7%
Equal Weight - Gross of Fee	12.1%	12.1%	13.1%	16.6%	13.2%	17.3%	18.9%
Equal Weight - Net of Fee	11.1%	11.1%	12.0%	13.6%	11.8%	14.0%	12.7%
3 Year							
Value Weight - Gross of Fee	0.4%	0.4%	0.3%	-2.5%	-5.6%	0.5%	-2.2%
Value Weight - Net of Fee	-0.4%	-0.4%	-0.6%	-4.0%	-6.8%	-1.1%	-4.9%
Equal Weight - Gross of Fee	-0.1%	0.7%	0.6%	1.4%	-4.6%	2.7%	4.9%
Equal Weight - Net of Fee	-0.7%	0.1%	-0.3%	-0.4%	-6.0%	0.9%	0.5%
5 Year							
Value Weight - Gross of Fee	7.1%	7.1%	7.0%	6.9%	4.4%	9.4%	11.9%
Value Weight - Net of Fee	6.2%	6.2%	6.1%	5.1%	2.9%	7.3%	8.6%
Equal Weight - Gross of Fee	6.6%	7.2%	6.9%	9.4%	5.5%	10.3%	14.0%
Equal Weight - Net of Fee	5.7%	6.4%	5.9%	6.9%	3.7%	7.6%	9.4%
5 Year Std Dev.							
Value Weight - Gross of Fee	10.10%	10.09%	10.21%	13.70%	15.36%	13.10%	21.24%
Value Weight - Net of Fee	9.96%	9.95%	10.15%	13.36%	15.27%	12.41%	19.97%
Equal Weight - Gross of Fee	9.55%	9.65%	9.96%	12.65%	14.50%	12.53%	14.48%
Equal Weight - Net of Fee	9.27%	9.39%	9.91%	11.77%	14.35%	11.48%	13.58%
5 Year Sharpe Ratio							
Value Weight - Gross of Fee	0.461	0.458	0.448	0.354	0.171	0.545	0.514
Value Weight - Net of Fee	0.374	0.372	0.353	0.226	0.076	0.404	0.379
Equal Weight - Gross of Fee	0.429	0.491	0.447	0.562	0.244	0.633	0.809
Equal Weight - Net of Fee	0.337	0.415	0.349	0.387	0.124	0.455	0.526
7 Year							
Value Weight - Gross of Fee	7.6%	7.5%	7.4%	7.4%	5.7%	9.1%	11.9%
Value Weight - Net of Fee	6.6%	6.5%	6.4%	5.7%	4.3%	7.2%	8.9%
Equal Weight - Gross of Fee	7.2%	7.4%	7.3%	9.4%	7.4%	9.9%	14.3%
Equal Weight - Net of Fee	6.3%	6.6%	6.3%	7.1%	5.7%	7.5%	9.7%
10 Year							
Value Weight - Gross of Fee	8.2%	8.2%	8.2%	8.7%	7.4%	9.9%	12.0%
Value Weight - Net of Fee	7.3%	7.2%	7.2%	7.1%	6.0%	8.2%	9.3%
Equal Weight - Gross of Fee	7.9%	8.1%	8.0%	10.6%	10.0%	10.9%	14.2%
Equal Weight - Net of Fee	6.9%	7.2%	7.0%	8.5%	8.1%	8.7%	9.9%

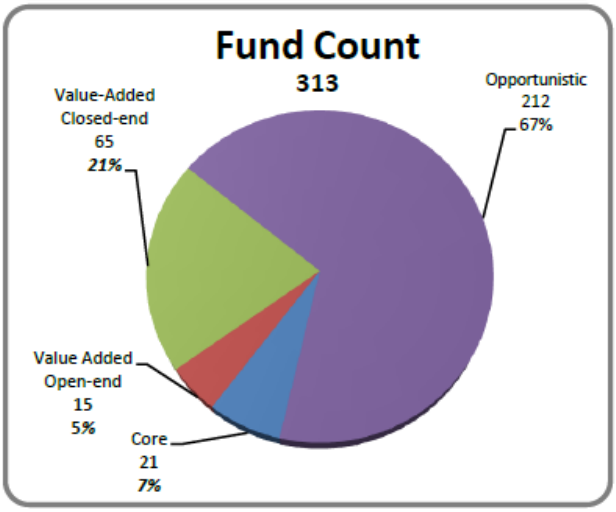
Fund Indices- Attributes. March 31, 2009

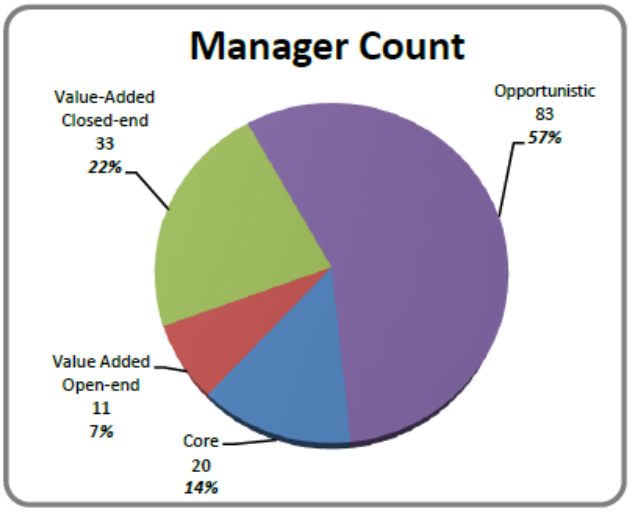












Appendix C: The Attribute List of 62 UK Funds

These attributes are provided or calculated using the data set provided by Investment Property Databank (IPD).

Fund NO.	Style	LTV (%) Q1/09	NAV (£m) Q1/09	GAV (£m) Q3/08	NAV (£m) Q3/08	Age (yr)	Spclst 1=yes	Closed 1=yes	Direct hold (%)	Prpty Count	Ave. Lot-size (£m)	Cash hold (%)	<5 yrs lease (%)	Top 10 tenants (%)	Top 10 invtmts (%)	3 types (%)	HHI	Max. Cash (%)
62	Opntc	80.2	125.1	923.7	393.9	6	1	1	100	15.0	61.6	15.1	21.5	49.7	88.5	100.0	9485	
61	Opntc	79.7	124.4	825.2	316.5	5	1	1	97	18.6	44.3	14.6	6.5	44.7	74.9	0.0	9195	*
60	Opntc	78.4	344.0	2181.5	1050.6	6	1	1	100	20.0	109.1	372.9	32.3	23.0	66.2	100.0	8165	*
59	Opntc	73.9	43.9	211.0	88.0	7	0	1	100	25.1	8.4	6.3	28.2	47.3	66.2	87.8	3262	*
58	Opntc	73.4	80.3			6	1									100.0	10000	
57	Opntc	72.6	111.9	613.0	312.5	11	1	1	100	5.0	122.6	3.7	31.9	23.1	100.0	100.0	10000	*
56	Opntc	68.6	40.0	203.0	86.0	7	1	1	80	27.4	7.4	43.0	64.0	37.8	60.0	97.8	5571	*
55	Opntc	65.2	24.6	91.4	42.4	4	0	0	100	31.5	2.9	3.9	67.6	53.2	57.4	99.4	4187	*
54	Opntc	63.3	108.7	367.4	167.6	4	1	1	100	20.0	18.4	19.7	55.9	56.3	63.7	100.0	8425	*
53	Opntc	63.1	261.3	981.4	479.8	6	1	1	93	392.6	2.5	6.6	77.8	12.8	19.4	100.0	9667	*
52	Opntc	61.9	112.3	386.0	194.0	7	1	0	100	101.6	3.8	11.8	80.3	8.8	45.5	100.0	10000	*
51	Opntc	59.3	360.4	1090.0	605.0	8	1	1	100	20.0	54.5	70.9	9.0	51.3	72.6	100.0	9866	25.0
50	Opntc	58.2	61.5	160.4	91.8	3	1	1	100	12.0	13.4	0.4	62.9		93.9	0.0	10000	*
49	Opntc	58.0	348.6	768.5	442.1	2	1	0	100	40.0	19.2	88.6	99.0		51.7	0.0	9415	*
48	Opntc	56.7	108.8	340.3	172.9	2	1	1	100			11.3	11.7	88.3	81.5	100.0	9428	*
47	Opntc	56.2	162.1	462.7	285.9	4	1	1	97	19.6	23.6	0.0	20.6	72.5	77.5	100.0	10000	20.0
46	Opntc	55.8	30.7	84.4	50.2	4	0	0	100	21.1	4.0	4.5	28.5	52.9	59.8	100.0	4419	*
45	Opntc	54.4	753.7	2333.0	1314.0	8	1	1	78	27.1	86.1	1.8	12.4	41.7	66.5	100.0	10000	*
44	Opntc	51.9	195.9	535.3	323.8	5	1	1	100	8.0	66.9	0.2		45.2	100.0	100.0	10000	*
43	Opntc	51.6	91.9	235.0	135.0	7	1	1	100	7.0	33.6	0.6	1.8	75.9	100.0	0.0	10000	*
42	Opntc	50.5	387.1	853.0	482.0	4	1	1	100	266.6	3.2	33.6	0.0	54.9	14.8	0.0	9128	*
41	Val-ad	38.5	223.2	450.3	314.2	9	1	1	100	5.0	90.1	9.4	25.7	*	100.0	100.0	10000	*
40	Val-ad	38.4	295.9	603.3	441.9	8	1	1	88	8.0	75.7	30.3	28.2	65.6	90.0	100.0	7652	*
39	Val-ad	33.1	187.4	345.1	282.7	5	1	1	100	11.0	31.4	32.3	33.1	68.2	98.7	100.0	7912	
38	Val-ad	30.3	471.1	860.0	650.0	11	1	1	100	110.3	7.8	0.0	63.8	14.4	26.7	100.0	10000	*
37	Val-ad	25.7	24.8	38.0	33.1	5	0	0	100	9.0	4.2	4.1	66.8	43.3	100.0	100.0	2934	*
36	Val-ad	24.6	397.1	705.0	571.0	11	0	0	94	54.2	13.0	10.8	43.4	25.4	44.1	80.9	2688	40.0

Fund NO.	Style	LTV (%) Q1/09	NAV (£m) Q1/09	GAV (£m) Q3/08	NAV (£m) Q3/08	Age (yr)	Spclst 1=yes	Closed 1=yes	Direct hold (%)	Prpty Count	Ave. Lot-size (£m)	Cash hold (%)	<5 yrs lease (%)	Top 10 tenants (%)	Top 10 invtmts (%)	3 types (%)	HHI	Max. Cash (%)
35	Val-ad	21.8	86.1	145.7	110.6	14	1	0	100	39.4	3.7	1.0	46.8	30.4	51.4	100.0	9966	10.0
34	Val-ad	20.7	1339.7	2041.1	1764.0	19	0	0	86	85.8	23.8	91.9	28.3	34.5	50.7	75.2	2414	10.0
33	Val-ad	20.7	312.8	550.0	447.0	19	0	0	67	55.0	10.0	0.4	56.8	19.7	40.8	80.7	2546	7.5
32	Val-ad	20.0	472.7	770.9	667.0	5	1	1	0			0.2	11.9	23.5		100.0	9998	0.0
31	Val-ad	17.3	1022.5	1508.7	1326.1	19	0	0	48	73.2	20.6	6.0	53.9	29.7	27.2	89.5	2856	*
30	Val-ad	16.7	137.3	209.1	197.8	15	0	0	81	36.1	5.8	2.9	36.3	50.4	47.0	77.2	2514	*
29	Val-ad	13.8	69.3	122.0	101.0	19	0	0	100	20.0	6.1	0.0	56.3	52.0	72.0	100.0	3532	*
28	Val-ad	12.0	48.6	88.1	68.6	4	0	0	100	21.0	4.2	0.0	50.9	53.8	78.4	88.9	2795	*
27	Val-ad	10.7	1283.0	1826.6	1841.1	15	0	1	93	99.8	18.3	92.2	26.2	26.4	36.9	97.7	3054	*
26	Val-ad	8.9	219.4	312.9	293.6	18	1	0	87	13.7	22.8	4.8	19.8	26.9	85.4	100.0	9639	*
25	Val-ad	8.1	249.5	363.7	337.5	18	1	0	100	26.9	13.5	4.6	56.0	53.9		100.0	9793	*
24	Val-ad	8.0	495.6	677.0	629.0	19	0	0	82	45.4	14.9	11.4	20.4	39.5	46.3	97.1	3543	10.0
23	Val-ad	7.7	460.7	608.0	714.0	5	1	1	100	18.0	33.8	126.8	41.7	47.5	84.2	100.0	9312	*
22	Val-ad	6.7	584.1	810.6	786.7	4	1	1	81	11.2	72.5	13.8	8.6	51.7	80.5	100.0	9438	*
21	Val-ad	6.6	545.7	718.0	696.0	14	0	0	95	54.0	13.3	9.8	37.1	24.1	48.4	100.0	3355	*
20	Core	6.4	391.1	397.0	465.0	19	0	0	85	57.5	6.9	102.3	34.6	39.9	40.1	96.1	1622	25.0
19	Val-ad	2.7	1214.3	1510.2	1546.2	4	1	1	100	9.0	167.8	63.8	29.4	23.1	100.0	100.0	8949	*
18	Core	0.3	373.1	483.5	480.2	9	0	0	92	39.0	12.4	0.0	21.7	34.4	58.5	98.9	3494	*
17	Core	0.0	105.9			2	0									100.0	3318	
16	Core	0.0	293.8	295.6	330.5	17	0	0	100	95.4	3.1	36.0	56.2	23.0	25.7	99.0	2768	*
15	Core	0.0	497.7	560.5	644.6	16	0	0	92	133.5	4.2	83.6	63.7	16.8	27.3	99.2	2435	*
14	Core	0.0	59.9	72.0	72.6	9	1	0	100			0.8	100.0		71.2	0.0	9588	*
13	Core	0.0	462.4	558.0	569.0	19	0	0	100	90.0	6.2	16.4	46.2	29.9	33.7	95.4	2330	20.0
12	Core	0.0	565.8	707.0	709.0	6	1	1	37			0.0	22.3	26.9		100.0	10000	*
11	Core	0.0	131.3	164.0	164.2	7	1	1	100			0.0	16.5	36.8	100.0	100.0	10000	*
10	Core	0.0	197.7	250.2	260.3	8	0	0	99	38.5	6.5	10.1	30.6	37.0	49.4	100.0	3268	*
9	Core	0.0	1563.8	1967.5	2030.6	19	0	0	88	96.9	20.3	54.7	10.2	17.8	35.9	97.4	3329	*
8	Core	0.0	74.0	94.3	97.1	10	1	0	100	16.0	5.9	3.1	42.5	29.8	83.5	100.0	8876	*
7	Core	0.0	177.6	199.0	218.6	18	1	0	100	12.0	16.6	1.7	39.2	51.3	93.2	100.0	8804	*
6	Core	0.0	157.1	173.0	192.0	10	0	0	100	42.2	4.1	19.0	44.1	43.7	53.3	96.8	2735	
5	Core	0.0	58.4	44.4	67.8	19	0	0	1			10.2				97.3	1538	34.5
4	Core	0.0	131.4	185.3	204.9	19	1	0	100	59.8	3.1	18.3	59.9	16.4	33.8	100.0	7860	*

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3	Core	0.0	86.8	115.4	118.0	7	0	0	100	28.1	4.1	2.7	56.8	42.3	59.2	100.0	3525	20.0
2	Core	0.0	558.3	628.6	749.2	19	0	0	94	146.2	4.3	111.0	21.0	31.9	28.0	91.2	2278	*
1	Core	0.0	657.2	774.6	834.3	16	0	0	100	71.7	10.8	59.7	32.5	23.1	31.2	96.0	2902	

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