Country, Sector and Regional Factors in European Property Returns

Stephen Lee and Steven Devaney

The University of Reading
Business School,
Centre for Real Estate Research (CRER),
The University of Reading,
Reading,
RG6 6AW
England

Abstract

For those portfolio managers who follow a top-down approach to fund management when they are trying to develop a pan-European investment strategy they need to know which are the most important factors affecting property returns, so as to concentrate their management and research efforts accordingly. In order to examine this issue this paper examines the relative importance of country, sector and regional effects in determining property returns across Europe using the largest database of individual property returns currently available.

Using annual data over the period 1996 to 2002 for a sample of over 25,000 properties the results show that the country-specific effects dominate sector-specific factors, which in turn dominate the regional-specific factors. This is true even for different sub-sets of countries and sectors. In other words, real estate returns are mainly determined by local (country specific) conditions and are only mildly affected by general European factors. Thus, for those institutional investors contemplating investment into Europe the first level of analysis must be an examination of the individual countries, followed by the prospects of the property sectors within the country and then an assessment of the differences in expected performance between the main city and the rest of the country.

Keywords: *Country, sector and regional effects, dummy variable regressions*

Country, Sector and Regional Factors in European Property Returns

Introduction

A number of studies have shown the considerable benefits to be gained from the international diversification of the real estate portfolio (see Lizerli et al, 1998 for a review). Nonetheless most institutional investors still display a 'home bias', i.e. concentrating their property holdings in domestic markets. A number of explanations have been proposed for this home bias, none of which is sufficient to explain or adequately account for the concentration in home markets (see Uppal, 1992 and Worzala, 1994). Consequently, the low weighting of international property in portfolios is surprising.

However, it appears that the situation is changing. For instance, Jones Lang LaSalle (2003) suggest that 40% of the €33bn worth of transactions in Europe in 2002 were cross-border, and a similar picture as shown by DTZ (2003). Thus, there is general agreement that international real estate investment, especially into Europe, will be an important part of future institutional investment strategies, as market participants become more familiar with the range of property markets in Europe and as the quality of real estate market information improves.

For those investors who seek to take advantage of the increased diversification and greater investment opportunities in international markets, the lure of such an expansion into unfamiliar territory may prove illusory, however, unless they are fully cognisant of the increased risks involved. In other words, the implementation of an effective international investment strategy must focus the appropriate dimensions of risk. Thus, in developing a pan-European property portfolio investors need to focus on whether country, sector or regional factors are the main determinants of property returns so as to structure their management and research efforts accordingly.

The question as to whether countries are relatively more important than sectors or regions in explaining property returns across Europe has been previously investigated by D'Arcy and Lee (1998). This study used simple dummy variables to identify the country, sector and regional affiliation of each property. When these dummy variables were regressed on the cross-section of property returns, the estimated coefficients on the dummy variables are the implicit, or "pure", return effects of the different factors. Using data over the period from 1990 to 1996, D'Arcy and Lee (1998) found that the country effects were greater than the sector-specific factors that in turn were greater than the regional effects. In other words, real estate returns are mainly determined by local (country specific) conditions and are only mildly affected by general European factors.

We extend this previous study in three ways. First, in the case of the previous study, the data used were hypothetical returns of modern high specification buildings, i.e. the rents quoted were not actual rents but rather a valuer's view of the open market rent based on market knowledge. The applicability of the results to actual property portfolios is therefore rather unclear. In addition, the data used came from different service providers consequently the precise specification of the hypothetical buildings is likely to vary across countries. Thus, although the data series are internally consistent within countries they are likely to be dissimilar across countries. In contrast, the data used here is from the Investment Property Databank (IPD), and are based on actual property valuations and calculated to a consistent

methodology, even where the data comes from a partner organisation. The returns are therefore likely to be more comparable across countries, sectors and regions.

Second, the analysis is based on the returns that are from a much broader data set and covers up to 25,000 individual properties. In contrast, the previous study by D'Arcy and Lee (1998) the data was only based on the performance of 159 real estate locations in Europe, comprising 44 industrial, 57 office and 59 retail "properties", in nine countries. The results here should, therefore, provide a clearer picture of the benefits of country, sector and regional effects in the process of portfolio construction.

Finally, using monthly data over the period 1987:1 to 2002:12 Lee and Devaney (2003) show that in the UK while sector-specific factors dominate the regional-specific factors for the vast majority of the time there were periods when the regional factors were of equal or greater importance than the sector effects i.e. the results were time-varying. In particular, the sector effects tended to dominate during volatile periods of the real estate cycle, whereas during periods of relative calm the sector and regional effects are of equal importance. In contrast, D'Arcy and Lee (1998) found that across Europe the ratio of the sector and regional effects was about 1:1, even in the turbulent period of the early 1990s, indicating that sector and regional effects are of equal importance in determining property returns after removing the country effect. Consequently, in order to examine this issue in more depth we conduct the analysis over the period from 1996 to 2002 to investigate whether the results found in the previous study are still relevant to the European property market in a calmer investment climate.

We use the individual property data to estimate a dummy-variable factor model of property returns similar to that used in the previous study. Specifically, the model distinguishes between four kinds of factors. First, a pan-European effect that captures broad co-movement across property returns in the Europe, in effect controlling for the European property cycle. Second a pure country factor that controls for country effects on property returns. Third, we use a sector-specific factor to capture differences across property-types, and fourth we incorporate a regional-specific effect, which reflects the different characteristics of the local market in each country. Finally, we use this model to produce two statistical criteria against which the relative importance of the country, sector and regional factors in determining property returns can be assessed. We begin by calculating the absolute average of the country, sector and regional coefficients. Next, we examined the average adjusted R-squared values of the individual impact of the country, sector and regional dummies on property returns.

The remainder of the paper is structured as follows. The next section explains the factor model of Heston and Rouwenhorst (1994). The third section describes the data. Section 4 presents the results for the data from nine countries, three sectors and two regions. The robustness of the results is then examined in Section 5 by using slightly different data set, i.e. a sub-set that includes those countries which have residential properties. The final section presents the conclusions.

Methodology

Following Heston and Rouwenhorst (1994, 1995), we assume that the return on each property depends on four components: a pan-European factor (α), a country-specific factor (β), property-sector factors (λ) and regional factors (δ) and a property-specific disturbance (ε).

The paper estimates a time-series for the realisation of the common national factor, country-specific factors, sector-specific factors and regional-specific factors by running the following cross-sectional regression every year from 1996 to 2002 using the following equation:

$$R_i = \alpha + \sum_{j=1}^{C} \beta_{i,j} F_j + \sum_{k=1}^{S} \lambda_{i,k} F_k + \sum_{m=1}^{R} \delta_{i,m} F_m + \varepsilon_i \qquad (1)$$

where:

R_i	= the return of property i in time period t	i = 1,....N
α	= the return on the market in general	
β_j	= the return to the country factor j	j = 1,.....C
λ_k	= the return to the sector factor k	k = 1,....S
δ_m	= the return to the regional factor m	m = 1,....R
F_j	= 1 if the property is in country j, 0 otherwise.	
F_k	= 1 if the property is in sector k, 0 otherwise	
F_m	= 1 if the property is in region m, 0 otherwise.	

Equation (1) cannot be estimated in its present form because it is unidentified due to perfect multicollinearity. Intuitively, this is because every property belongs to a country, region and a sector, so that country, region and sector effects can be measured only relative to a benchmark. One possibility would be to arbitrarily choose one region in one sector in one country as a base, and estimate equation (1) under the restriction that these country, sector and region dummies are zero.

Rather than apply such an arbitrary country/sector/regional choice, Morgan (1964), Sweeny and Ulveling (SU) (1972), Suits (1984) and Kennedy (1986) have all introduced proposals for presenting the results of a regression when there are one or more qualitative variables. Morgan (1964) illustrated the transformation for a single dummy variable with three classes using a hypothetical problem. SU extended the approach of Morgan to several dummy variables as well as explanatory variables. Suits (1984) and Kennedy (1986) present a similar transformation to that of SU. All authors suggest that once a restricted version of equation (1) is estimated the coefficients of the deleted country, sector and region can be recovered by adding a constant to each of the estimated country, sector and regional coefficients and subtracting the sum of the three constants from the intercept α. Where the constants to be added and subtracted are the proportions of the data in each country j, sector k, and region m.

This approach simplifies the interpretation of the coefficients but does not affect the statistical properties of the model (see Suits, 1984) and Kennedy, 1986). The intercept α reflects the return on the equal-weighted portfolio of the sampled property across Europe - a benchmark against which the country-, sector- and regional-specific factors are measured. Because equation (1) is estimated year-by-year, α will vary over time, capturing the impact of the European property cycle on property returns across the different countries, sectors and regions. Thus, the estimated country, sector and regional coefficients represent excess returns relative to this return. In other words, the country-specific coefficients represent "pure" country effects after adjusting for differences in sector and regional composition across the sample. A similar argument can be made for the sector and regional coefficients.

We follow the literature in using different metrics to quantify the importance of country, sector and regional effects. First we follow Rouwenhorst (1999) in using mean absolute deviations (MADs) of the country (β), sector (λ) and regional (δ) coefficients from equation

(1). We report the equal-weighted average for the countries, sectors and regions to compare the relative importance of the country, sector and regional effects. The country MAD can be interpreted as the average tracking error for returns on sector- and regional-neutralised country portfolios relative to returns on the European average. The sector and regional MADs have an analogous interpretation. We then consider the ratio of these absolute values to each other as a measure of the relative importance of the each factor to each other (Cavaglia et al, 2000). Intuitively, the implication of the MADs for portfolio managers is as follows, if the ratio is greater than one the return of a portfolio that is not diversified across countries will on average deviate from the benchmark portfolio more than a portfolio that is not diversified across sectors and regions. The sector and regional ratios have a similar interpretation.

For the second metric we follow Beckers et al (1996) and compare the explanatory power of the individual factors, as measured by their adjusted R^2 values, in determining property returns relative to that of the full model including all factors. The difference in the cross-section of explanatory power measures the contribution of the omitted variable to explaining individual property returns in a given period t.

Data

It is important that the data used in this study is a realistic and unbiased representation of the performance of property in the Europe. The source of this data is IPD, who provides performance measurement services and produce indices in a number of countries across Europe, either themselves or together with partner organisations[1]. The data used are the total returns for individual property investments. The countries and number of properties used in the analysis are shown in Table 1. All properties used in each year were standing investments (i.e. not developed or bought or sold during the year).

Table 1: Number of Properties

Country	1996	1997	1998	1999	2000	2001	2002
Denmark					861	1,432	1,440
France			1,636	2,242	2,990	3,986	4,139
Germany	528	625	743	879	1,986	2,668	2,125
Netherlands	4,382	4,609	5,212	5,879	6,204	6,004	5,794
Norway					186	187	276
Portugal					135	178	241
Spain						226	235
Sweden		1,654	1,839	2,091	1,591	2,261	1,929
UK	12,594	11,779	11,840	11,002	10,619	8,766	9,570
Overall	17,504	18,667	21,270	22,093	24,572	25,708	25,749

The starting year of the analysis is 1996 as this was the first year where individual level returns for more than two countries were available. It also enabled a slight overlap with the study of D'Arcy and Lee (1998), which ended in 1996.

Sectors and regions for each country then had to be defined. In the case of regions, while NUTS level breakdowns were available, in several countries data was found to be overwhelmingly concentrated in one or two major cities. This placed a restriction on the degree of regional analysis that could be performed. Thus, the classification of regions is kept as simple as possible. The regions used in the final analysis were "main city" (typically

[1] All analyses were performed by IPD to protect investor confidentiality.

the Capital) and "rest of the country". Nonetheless, even this classification entailed the abandonment of one country (Ireland) due to excessive concentration of properties in Dublin.

The low frequencies of data in the early periods also placed a restriction on the classification of properties into sectors. Nonetheless, in every country, there was a sufficient sample of retail, office and industrial investments for these types to be used. In addition, this simple classification has the advantage that on average the sector and region portfolios are of equal size. Thus, we mitigate any potential bias against finding important regional effects induced by more refined sector classifications compared with regional portfolios that are larger and therefore more diversified (see Griffin and Karolyi, 1998). One set of analyses were therefore performed with these two regions and three types as segments. However, in several countries, residential property is an important part of the property investment market. For instance, almost half the Netherlands database is made up of residential properties. So a second set of analyses were performed for those countries where residential formed a segment. The results for both of these analyses are discussed below.

Results

We first discuss the time-series excess coefficients of the country, sector and region effects. Table 2 gives these values for the nine individual countries, three sectors and two regions and for the individual years from 1996 to 2002.

Table 2: Country, Sector and Regional Coefficients 1996-2002

Country, Sector, Region	1996	1997	1998	1999	2000	2001	2002
European Portfolio	**8.95**	**13.43**	**11.36**	**14.49**	**11.32**	**8.55**	**9.58**
Country Coefficients							
Denmark					**-4.30**	**3.60**	**1.61**
France			**-9.02**	**-1.98**	**-1.43**	**1.38**	**2.09**
Germany	**-3.49**	**-11.15**	**-8.25**	**-11.21**	**-7.58**	**-4.18**	**-5.15**
Netherlands	**1.50**	**-1.74**	**3.24**	**1.12**	**3.87**	**2.62**	**-1.72**
Norway					**-3.75**	**2.26**	**-1.42**
Portugal					**-0.71***	**4.89**	**2.50**
Spain						**1.12***	**-0.24***
Sweden		**-5.10**	**-0.33***	**-0.59***	**4.99**	**-3.22**	**-3.80**
UK	**-0.16**	**1.26**	**0.36**	**0.70**	**-0.42**	**-0.77**	**1.10**
Sector Coefficients							
Retail	**0.07***	**0.00***	**-1.18**	**-1.30**	**-3.40**	**-1.03**	**3.24**
Office	**-1.54**	**-0.66**	**1.08**	**1.15**	**3.24**	**0.68**	**-2.70**
Industrial	**2.39**	**1.08**	**1.06**	**1.03**	**1.42**	**0.55**	**-0.36**
Regional Coefficients							
Main City	**1.42**	**3.33**	**2.05**	**1.77**	**3.32**	**0.48**	**-1.19**
Rest of the country	**-0.43**	**-1.08**	**-0.75**	**-0.72**	**-1.44**	**-0.23**	**0.65**
Overall Adjusted R^2 %	**2.27**	**6.46**	**6.11**	**5.15**	**14.95**	**4.62**	**7.35**

Note: All the coefficients are significant at the 5% level, except those marked *

The interpretations of the coefficients are, as outlined above, the impact on property returns of each factor (country, sector and region) net of a common pan-European effect. For example, the coefficient for the UK in 1996 (-0.16%) indicates that investment in an equal weighted portfolio of UK properties under-performed by 0.16% compared with the equal weighted pan-European property portfolio. In contrast, in 1997 investment in an equal-weighted UK portfolio out-performed the European average by 1.26%. In a similar way, if the coefficient for office property in 1996 (-1.54%) is considered it suggests that investment in an equal-weighted portfolio of office properties diversified across Europe under-performed by 1.54% compared with the European property market in general. Similarly, investment in a

portfolio of office, retail and industrial properties concentrated in the main cities across Europe offered returns in excess of the European benchmark in each year except for 2002.

These results show that the worst country to invest in, over this period, would have been Germany, which produced returns significantly below the European average in every year. In contrast, returns in the Netherlands and the UK significantly out-performed the European average most of the time. Of the three sectors industrials performed the best and retail the worst on average, while investment in the main cities would have produced better returns than in the rest of the country in every year apart from 2002.

As a final point the coefficients in Table 2 show that the 'best' portfolio to hold in 1996 would have been a portfolio of industrials properties, over-weighted in the main city of the Netherlands. In contrast, the 'best' portfolio to hold in 2002 would have been invested in Portuguese retail properties outside of Lisbon. This shift in composition largely reflects cyclical influences specifically the difference in timing of both business and property cycles across Europe.

The final row of Table 2 shows that the explanatory power as measure by adjusted R^2 of the country, sector, and regional dummies are all small. On average the country, sector and regional dummies explained only 6.70% of individual property returns across Europe over this period. The average figure is also considerable less than the 35% figure in the study by D'Arcy and Lee (1998). This result is to be expected because this study is based on individual property whereas the study by D'Arcy and Lee (1998) used city level data. The city portfolios would, therefore, have eliminated much of the property specific risk of the individual property data resulting in higher adjusted R^2 figures.

Table 3 shows the metrics used to assess the relative importance of the country, sector and regional factors in determining individual property returns. Panel A of Table 3 presents the absolute average excess coefficients (MADs) of the country, sector and regional effects, while Panel B of Table 3 shows the adjusted R^2 values resulting form the addition of the sector factors and then sector and regional-specific factors to the country effects.

Table 3: Measures of Relative Importance

Panel A: MAD	**1996**	**1997**	**1998**	**1999**	**2000**	**2001**	**2002**	**Average**
Country	**0.92**	**2.20**	**1.40**	**1.25**	**2.38**	**0.35**	**0.92**	**2.83**
Sector	**1.33**	**0.58**	**1.10**	**1.16**	**2.69**	**0.75**	**2.10**	**1.39**
Region	**1.72**	**4.81**	**4.24**	**3.12**	**3.38**	**2.67**	**2.18**	**1.35**
Panel B: Incremental Adj. R-square								
Country	**0.46**	**4.25**	**3.99**	**3.21**	**5.49**	**4.02**	**3.37**	**3.54**
+ Sector	**1.29**	**0.08**	**1.14**	**1.17**	**6.79**	**0.53**	**3.64**	**2.09**
+ Region	**0.52**	**2.13**	**0.98**	**0.77**	**2.67**	**0.07**	**0.34**	**1.07**

The final column of Panel A of Table 3 shows that the absolute average of the country effects (2.83) is greater than that for the sector–specific factors (1.39) which in turn are greater than those for the regional effects (1.35). These figures are comparable to those from D'Arcy and Lee (1998) with MADs for the country, sector and regional effects of 3.13, 1.73 and 1.78, respectively.

The ratio of the country coefficients to that for the sector and regional coefficients is about 2:1. This suggests that country effects are twice as more important in determining property returns than either the sector or regional factors. In contrast, the sector and regional effects

are almost the same at about 1:1. These results are similar to the findings of D'Arcy and Lee (1998) were the ratio of country to the sector and regional effects was about 1.8:1 in both cases, while the ratio of the sector an regional effects was about 1:1. Thus, even in calmer periods of the property market across Europe once the country effect is accounted for property returns are equally influenced by the sector and regional factors.

The final column of Panel B of Table 3 shows that the adjusted R^2 figures present a similar ranking of the country, sector and regional effects as those above, i.e. country effects (3.54%) are greater than sector-specific factors (2.09%) which in turn are greater than regional effects (1.07%). The ratios of the adjusted R^2 figures for the country, sector and regional effects provide a stronger case for the importance of the country factor in explaining individual property returns, with the ratios for the average adjusted R^2 figure of the country effects to that of the sector and regional factors of 1.7:1 and 3.3:1 respectively. The ratio of the sector average adjusted R^2 figure to that of the region effects is about 2:1. Indicating that sector factors are twice as important in determining property returns than the regional effects. This supports the view that country effects dominate sector effects which in turn dominate the regional effects.

Robustness of the Results

Residential property forms a significant component in a number of European countries. The robustness of the results above was, therefore, tested by including this addition sector to the three used above. However, this meant excluding Portugal and the UK from the study and shortening the period of analysis from 1997 to 2002, the results of which are presented in Tables 4 and 5[2].

Table 4: Country, Sector and Regional Coefficients Including Residential: 1996-2002

Country, Sector, Region	1997	1998	1999	2000	2001	2002
European Portfolio	**11.65**	**11.20**	**14.23**	**13.27**	**9.64**	**8.11**
Country Coefficients						
Denmark				**-5.79**	**4.28**	**3.74**
France		**-8.92**	**-4.74**	**-3.65**	**-0.29**	**1.43**
Germany	**-6.76**	**-7.84**	**-10.15**	**-8.00**	**-5.20**	**-5.03**
Netherlands	**1.30**	**3.71**	**2.76**	**4.08**	**2.02**	**0.39**
Norway				**-4.36**	**2.14**	**-0.39**
Spain					**1.56***	**2.40**
Sweden	**-1.08**	**0.59**	**1.57**	**4.56**	**-1.75**	**-1.74**
Sector Coefficients						
Retail	**-2.05**	**-1.04**	**-1.84**	**-3.15**	**-1.17**	**1.35**
Office	**-1.24**	**1.36**	**1.56**	**2.12**	**0.16***	**-1.03**
Industrial	**-1.71**	**-0.67**	**-1.20**	**-1.89**	**-0.74**	**-0.38**
Residential	**2.18**	**-0.15**	**0.27**	**0.54**	**0.80**	**0.35**
Regional Coefficients						
Main City	**0.24***	**0.90**	**1.91**	**1.36**	**-0.19***	**-0.88**
Rest of the country	**-0.08**	**-0.45**	**-1.01**	**-0.76**	**0.12**	**0.62**
Overall Adjusted R^2 %	**5.60**	**12.73**	**9.06**	**12.50**	**5.13**	**4.99**

Note: All the coefficients are significant at the 5% level, except those marked *

Table 4 shows the excess return coefficients for the seven countries, four sectors and two regions with data from 1997 to 2002. The results for the country coefficients, although

[2] The robustness of the results was also tested by using the data from the three countries for which complete data was available over the full sample period; Germany, Netherlands and the UK. However, as the outcome was identical to those shown in Tables 2 and 3 the results are not shown for brevity. These tables are available upon request.

different in magnitude from those in Table 2, show much the same story. The worst country to invest in, over this period, would have been Germany and the best the Netherlands. Of the four sectors industrials still show the best performance and retail the worst, with investment in the main cities still presenting better returns than in the rest of the country. If we concentrate on the residential coefficients they show that over this period holding residential properties diversified across Europe significantly out-performed the benchmark portfolio in each year, except 1998.

Table 5: Measures of Relative Importance: Including Residential

Panel A: MAD	1997	1998	1999	2000	2001	2002	Average
Country	3.05	5.27	4.81	5.07	2.46	2.16	3.45
Sector	1.80	0.81	1.22	1.92	0.72	0.78	1.21
Region	0.16	0.67	1.46	1.06	0.15	0.75	0.71
Panel B: Incremental Adj. R-square							
Country	3.63	12.18	7.35	10.13	4.78	4.16	7.04
+ Sector	1.97	0.39	0.88	1.96	0.35	0.54	1.02
+ Region	0.00	0.16	0.83	0.41	0.00	0.29	0.28

The two metrics used to assess the relative importance of the country, sector and regional factors in determining individual property returns are shown in Table 5. Table 5 shows that the MADs and adjusted R^2 figures presents a similar picture as Table 3, i.e. country effects dominate sector effects, which in turn dominate regional effects. For instance, the final column of Panel A of Table 5 shows that the absolute average of the country effects (3.45) is greater than that for the sector–specific factors (1.21) which in turn are greater than the regional effects (0.75). However, the ratio of the country effect coefficients to that for the sector and regional coefficients is about is greater than above with figures of 3:1 and 5:1 respectively. The ratio of the sector and regional effects is about 1.7:1, a figure in line with the results above.

The R^2 figures present a similar picture as those above, i.e. country effects (7.04%) are greater than sector-specific factors (1.02%) which in turn are greater than regional effects (0.28%). The ratios of the adjusted R^2 figures for the country, sector and regional effects, however, provide a stronger case for the importance of the country factor in explaining individual property returns, with the ratios for the average adjusted R^2 figure of the country effects to that of the sector and regional factors of 7:1 and 25:1 respectively. While, the ratio of the sector average adjusted R^2 figure to that of the region effects is about 3.6:1. This suggests that the country effect is even more important in explaining property returns in those countries with a high percentage of residential property.

All of which indicates that the conclusions that the country effect is greater than the sector effect, which in turn is more important than the regional factor found in the previous study by D'Arcy and Lee (1998) are robust even if different data, countries, sectors, regions and time period are used in the analysis.

Conclusions

For those portfolio managers who follow a top-down approach to fund management when they are trying to develop a pan-European investment strategy they need to know which are the most important factors affecting property returns, so as to concentrate their research efforts in these areas. In order to investigate this issue this paper up-dates the previous study by D'Arcy and Lee (1998) by examining the relative importance of country, sector and

regional effects in determining individual property returns across Europe over the period 1996 to 2002.

Using for a sample of over 25,000 properties the results show that the country-specific effects dominate sector-specific factors, which in turn dominate the regional-specific factors. This is true even for different sub-sets of countries and sectors. In other words, real estate returns are mainly determined by local (country specific) conditions and are only mildly affected by general European factors. Thus, for those institutional investors contemplating investment into Europe the first level of analysis must be an examination of the individual countries, followed by the prospects of the property sectors within the country and then an assessment of the differences in expected performance between the main city and the rest of the country.

References

Beckers S., Connor, G. and Curds, R. (1996) National Versus Global Influences on Equity Returns. *Financial Analysts Journal*, 52, 2, March/April, p. 31-39

Cavaglia, S., Brightman, C. and Aked, M. (2000) The Increasing Importance of Industry Factors, *Financial Analysts Journal*, September/October, 41-54

D'Arcy, E. and Lee, S. (1998) A Property Portfolio Strategy for Europe: A Review of the Options. *Journal of Property Portfolio Management*, **4**, 2, 113-123.

DTZ (2003) *Money into Property*

Grinold R., Rudd, A., and Stefek, D. (1989), Global Factors: Fact or fiction?, *Journal of Portfolio Management*, 16, 79-88

Hamelink, F., Hoesli, M., Lizieri, C. and MacGregor, B.D. (2000) Homogeneous Commercial property markets Groupings and Portfolio Construction in the United Kingdom, *Environment and Planning A*, 32, 323-344.

Heston, S.L. and Rouwenhorst, K.G. (1994) Does Industrial Structure Explain the Benefits of International Diversification? *Journal of Financial Economics*, 36, 3-27

Heston, S. L. and Rouwenhorst, K.G. (1995) Industry and Country Effects in International Stock Returns, *The Journal of Portfolio Management*, Spring, 53-58

IPD (2003) *European Property Overview to end-2002*, London: Investment Property Databank Ltd.

Jones lang Lasalle (2003) *Cross-Border Real Estate Investments*, European capital markets Research Report.

Kennedy, P, (1986) Interpreting Dummy Variables, *Review of Economics and Statistics*, 68, 174 175

Lee, S. and Devaney, S. (2003) *Changes in the Relative Importance of Sector and Regional Factors: 1987-2002*, Presented at the Annual Meeting of the Pacific-Rim Real Estate Society Bangkok, Thailand

Lizieri C, Johnson, R. and Worzala, E. (1998) *To Hedge or Not to Hedge: International Real Estate Investment Under Exchange Rate Uncertainty*, London: RICS Books

Morgan, J. (1964) A Note on the Interpretation of Multiple Regression Using Dummy Variables, *Survey Research Centre, Institute for Social Research, University of Michigan*, April, 28, 2-3

Rouwenhorst, G., (1999) European Equity Markets and EMU: Are the Differences Between Countries Slowly Disappearing? *Financial Analysts Journal*, May-June, 57-64

Suits, D. B. (1984) Dummy Variables: Mechanics Vs Interpretation, *Review of Economics and Statistics*, 66, p. 177-180

Sweeny, R. and Ulveling, E. (1972) A Transformation for Simplifying the Interpretation of Coefficients of Binary Variables in Regression Analysis, *The American Statistician*, 26, 30-36

Uppal, R. (1992) Economic Determinants of the Home Bias in Investors' Portfolios: A Survey, *Journal of International Financial Management and Accounting*, **4**, Fall, 171-189.

Worzala, E. (1994) Overseas Property Investments: How are they Perceived by the Institutional Investor? *Journal of Property Valuation and Investment*, **12**, 3, 31-47.