The Implications for Regional Investment of Diversification Strategies in Commercial Real Estate Portfolios

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Abstract

A number of studies have examined the benefits of regional diversification strategies within commercial real estate portfolios with two approaches adopted; the first is based on primary contiguous geographical regions while the second employs areas based on economic function. In general, the conclusion is that diversifications strategies based on simple geographical areas adds little, if anything, while economic based regions have shown much greater potential. The economic regions approach to portfolio analysis appears to be a much more valuable tool in evaluating regional real estate investment opportunities and risks. The reason is that this method allows consistent risk measurement between aerial units and enables the portfolio manager to develop a geographically diversified portfolio through the use of economically cohesive regions.

The aim of this paper is therefore to identify how the application of geographic real estate diversification strategies in the UK determines the flows of funds coming into regions, and the consequent impacts on regional investment in the regional built environment.

Keywords: *Regional Diversification, Economic and Geographic regions, Investment Flows*

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1. Introduction

Geographic diversity is a fundamental tenet in portfolio management, the goal of geographic diversity, however, is difficult to achieve because of two problems: measuring risk consistently among geographic areas, and how to establish boundaries. For instance, if geographical areas are based on counties or local authorities, although the analysis is a useful starting point it will be in some sense limited by the fact that the geographic units are not necessarily economically cohesive and are often too large to be appropriate bases for a strategy of investment diversification and balance. This has led real estate researchers to question whether conventionally defined geographical 'regions' are appropriate for property portfolio purposes, a view that is not new but is gaining more mainstream acceptance.

Later research then has tended to search for regions defined by economic base - classifying urban areas in terms of function rather than administratively defined boundaries. The studies show that economically defined urban areas are preferred to administrative regions as the basis for diversification(see Hartzell et al, 1986, Hartzell et al, 1987, Wurtzebach (1988), Malizia and Simmons, 1991, Mueller and Ziering, 1992, Mueller, 1993, Ziering and Hess 1995 and Lee and Byrne (1998) among others). In other words, investors should think of economic diversification as providing additional portfolio risk reduction over and above the benefits provided by traditional geographic diversification.

Most previous research on this issue is based in the US with studies in other countries largely hampered by lack of real estate data and/or acceptable definitions of economic regions. In particular, little work has been done in the UK to try and link the performance of economic regions to real estate performance even though McNamara and Morrell (1994) highlighted this issue over a decade ago. This paper then is a first attempt to examine institutional geographic real estate diversification strategies in the UK and to link these regional diversification strategies to the investment flows coming into the regions, and the consequent impacts on regional investment in the regional built environment.

The remainder of the paper is organised as follows. The next section reviews the previous studies of regional diversification. Section 3 examines the holdings by institutional investors in the standard administrative regions of the UK. Section 4 concludes the paper and suggests future areas of research.

2. Studies of Regional Diversification

Real estate fund managers use many diverse measures to evaluate their portfolios. Among these is the degree to which the portfolio is diversified geographically. Fund managers believe that geographic diversification insulates the portfolios from local or regional market volatility, as exemplified by the office market collapses that occurred in London in the early 1990s. Intelligent geographic diversification balances the opportunity for gain against the risk of loss. For instance, Webb and McIntosh (1986), in a survey of Real Estate Investment Trust (REIT) investment practices, reported that nearly 91% of investors who make systematic efforts to diversify their portfolios vary the geographic locations of properties. Louargand (1992) reports similar findings for pension funds which found that 72% of real estate portfolio managers diversify by regional diversification strategies. A later survey by Worzala and Bajtelsmit (1997) of pension funds found the figure almost unchanged at 73%.

Due to local market effects, geographic diversification has been shown to offer risk reduction benefits within the real estate portfolio, see Viezer (2000) for a comprehensive review. As a result, a great deal of research has been done to develop various types of geographic diversification strategies for real estate portfolios. However, it is not always the case that the best diversification comes from investing in geographically distant markets. Likewise, markets with similar economic land use are not always spatially clustered. For instance, in the past, pursuing a "pure" administrative geographic diversification, you could make big investments in the City of London and Edinburgh office markets and say, 'I'm geographically diversified' but in fact you are not diversified because those markets share similar economic drivers that make them behave the same way (i.e. both accommodate a large number of government offices as capital cities and both contain large amounts of office space for the banking and insurance industries).

As Redfearn (2000) argues, real estate is a derived demand and, as such, changing local fundamentals, such as employment, income, population, etc., generate changes in market conditions. The degree of correlation between outcomes in any two real estate markets is therefore a function of the extent to which their economic fundamentals are similar. In this way the local economic composition of the area systematically influences the correlation of movements in real estate markets between regions, independent of physical proximity. This relationship is consistent with the theory that aggregate industry shocks are transmitted to local economies as a function of the types of economic activity undertaken by an urban area, i.e. diversification strategies need to be more sophisticated than simply spreading investment across great distances. Therefore, portfolio risk in real estate market requires an understanding the economic risk to which the local markets are exposed. In other words, investment strategies based naïve administrative geographic groupings built solely on contiguity add little, if anything, to a successful real estate diversification strategy (Goetzmann and Wachter, 1995; and Hartzell et al, 1986). In contrast, economically based real estate diversification strategies have proved more successful.

Hartzell et al (1987) compared the naive four geographic regional classification system used by NCREIF against the Salomon Brothers economic geography system, which segmented the US into eight regions having similar economic characteristics. Their results indicated significantly greater diversification potential of the Salomon Brothers system due to the lower correlation among the eight regions over that of the naïve four region scheme. The results are consistent with the intuitive hypothesis that if demand for real estate is related to basic economic factors, then the creation of geographic regions by economic concepts will produce a more efficient diversification strategy. Malizia and Simons (1991) confirmed these results by comparing demand factors in the economic based geographic regions used on three different classification schemes showing that the Salomon Brothers' classification consistently exhibited higher regional homogeneity than did the NCREIF and Bureau of Economic Analysis (BEA) classifications. However, both of theses studies continued to defining regions on a contiguous basis, even if such economic regions were no longer state based.

Wurtzebach (1988) broke the contiguous geographic constraint and grouped the US Metropolitan Statistical Areas (MSAs) based on employment in their dominant industries and employment growth patterns and found that such a classification showed greater risk reduction benefits than the naïve NCREIF scheme. The non-contiguous grouping scheme of Wurtzebach was subsequently compared with the contiguous geographic grouping schemes in Mueller and Ziering (1992), and was found to be a superior diversification strategy. Later Mueller (1993) developed an economic base diversification scheme using the one-digit Standard Industrial Classification (SIC) codes to group 316 US MSAs into nine categories.

The author then compared the standard NCREIF four region split, the Hartzell et al (1987) eight region structure and the nine region classification based on SIC's, with the nine economic grouping scheme seeming to provide the greatest diversification benefits.

Outside the US little work as been done to compare the relative benefits of the administrative and economically defined regional diversification approaches, with the noticeable exception of the study by Lee and Byrne (1998). Using annual data over the period 1981 to 1995 Lee and Byrne (1998) examined the relative performance of three regional real estate diversification schemes; (1) a naive three super regional scheme composed of London, the Rest of the Southeast and the Rest of the UK; (2) the 11 standard regional of the UK (with the Southeast further broken down into London and the Rest of the Southeast to reflect the dominance of London in real estate portfolios) and (3) an economically based classification of the UK based on the work of Green and Owen (1990) who classified 322 Travel-to-Work Areas into 10 clusters that appeared to have easily identifiable features; such as Unemployment Blackspots; Resorts, and Service Growth Areas. Lee and Byrne (1998) concluding that the economic based regions provides a more intuitive way to diversify a real estate portfolio than either of the other two "pure" geographical schemes.

The contemporary position then is to define 'regional areas' based on economic function, rather than administrative convenience, since it will be the economic structure that will lead to differences in demand and hence property performance. In particular, the economic regional analysis approach appears to have at least two distinct advantages over a simple geographical analysis in evaluating regional real estate investment opportunities and risks. First, the method allows consistent risk measurement between geographic units and enables the portfolio manager to develop a geographically diversified portfolio through the use of economically cohesive regions. Second, the approach enables managers to evaluate individual local markets while retaining the broader, regional view of economic risk. For instance, it is easy to get caught up in hot markets or in deal making, but such a short-term focus ultimately fails to assemble portfolios that are diversified. In other words, a portfolio made up of the 'best deals' can quickly turn into a one dominated by under-performing investments (Wurtzebach, 1994). The experience of 1980s investment in the City of London office market revealed the weakness of this "building by building" approach to property portfolio construction. However, when the economic analysis of regional areas is integrated within the portfolio process, the resultant portfolio is likely to be more balanced. To implement such an approach requires some sort of classification of urban areas. This has led to the use of clustering techniques to try and group together urban areas that exhibit similar characteristics and then to try and give the clusters clear and recognisable labels.

For instance, Ziering and Hess (1995) group together markets based on a variety of factors that describe the nature, character, and underlying economic drivers of markets. Approximately 100 US local markets were classified into seven economic location categories: Traditional American, Lifestyle/Leisure, Oil/Energy, New Age, Government/Education, Regional Center/Distribution, and Older Financial Cultural. The authors argue that such an approach provides more efficient diversification than either the four-region approach or the one-digit SIC code classification schemes used by previous authors with the average pairwise correlation of the seven groups of 0.65. However, although the authors argue that the indicators provide important information regarding long-term behaviour they caution against simply taking the results at face value as cyclical fluctuations and structural changes in the economy mean that the indicators are likely to be subject to variation going forward.

Nelson and Nelson (2003) extended the appraoch of Ziering and Hess (1995) and use a much broader set of measures of economic health to develop a number of state clusters in the US. Using data from the annual report of the Corporation for Enterprise Development (CFED) the authors classify the US into seven clusters and although there is evidence of a strong geographic influence not all are synonymous with "pure" geographic regions. Nelson and Nelson (2003) then tested the diversification benefits of the classification scheme by constructing efficient frontiers based on the seven clusters and comparing the results to the efficient portfolios derived from the eight Salomon Brothers regions, the four- and eight-region used by NCREIF together with the census bureau nine-region classification. The results indicated that the portfolios based on the seven clusters developed from on long-term patterns in economic activity provide the potential for superior diversification benefits than may be found by utilising previous economic activity based approaches and naive geographic patterns.

Hess and Liang (2004) provide an alternative grouping of 361 MSAs in the US and suggest eight clusters based on economic characteristics, geographic proximity and absolute size provide the best classification of urban areas. Like Redfearn. (2000) the authors argue that geographic proximity does not necessarily mean social and economic similarity between cities; that the economic structure of a city affects the performance of its real estate and that cities can have similar economic structural bases despite being very far apart, while some cities that are very close can have quite different economies. In order to categorise the MSAs into similar groups Hess and Liang (2004) used cluster analysis on 34 socio-economic; 12 growth characteristics; seven inventory variables; and one measure of technological exposure; reduced, through the use of principal component analysis, to four indexes for each MSA. The authors maintain that the eight clusters provide a simple, intuitive, and most importantly, more effective guidance to diversifying the real estate portfolio; increased portfolio focus by targeting certain markets to take advantage of business and property market cycles and provide a better way to benchmark performance.

Even then, knowing how a local economy is performing does not necessarily give a good indication of how the commercial property market is performing as differences in demand and supply conditions can weaken the link between the local economy and the local property market. For example, job growth converts into demand growth differently in different areas, depending on the local economy and skill base, while real estate demand growth translates into rent increases differently depending on availability of developable land. In other words, economic growth and rent growth maybe only loosely related.

For instance, Liang and McIntosh (1998) examined the relationship between employment growth and real estate returns using annual data over the period from 1983 to 1997 for 46 major MSA's in the US. The authors found that employment growth contributes to real estate return only in the short term (e.g. one year), but there was no relationship between expected return and employment growth over the long term (e.g. 10 years). However, Liang and McIntosh (1998) find that employment risks, as measured by employment growth beta or volatility, are positively linked to real estate risk, beta and volatility. The authors therefore conclude that the analysis of local market employment growth is important for real estate decision making because employment growth risk is positively related to real estate risk but that investors should not price employment growth too aggressively into their long-term real estate investments as employment growth is only significantly positively related to real estate return in the short term.

Key et al (1998) draw similar conclusions for the UK. Using economic data from the Local Economic Profiling System developed by Public and Corporate Economic Consultants

(PACEC) they investigated the correlation between economic and property market performance. Their analysis found that there was only a weak association between long-run office property returns and employment growth, while industrials showed no associations between employment change and long-run performance.

3. Institutional Investment in the Standard Regions of the UK

A institutional real estate investor following the economic regional diversification strategy would gain the greatest benefit by limiting its allocations to a few diverse 'economic regions' and so reduce risk and redundancy in a portfolio. Indeed, there is some evidence that institutional investors concentrate their real estate holdings in preferred regions when diversifying their portfolios geographically, however, the evidence suggests that these favoured regions may not be economically diverse.

Shilton and Stanley (1995) found that institutional investors in the US are highly concentrated in a very few major metropolitan areas. They found, for example, that over 50% of the real estate stock was located in the top twenty counties and over 60% in the top thirty counties, in 1993. Since there are over 320 MSA's in the US they concluded that the high degree of geographic concentration cannot be explained by population size or total employment within the counties and metropolitan areas, but that other factors such as past growth, and the amenity levels may need to be examined to explain such concentration.

In the UK, Key et al (1998) found that although investment has tended to flow to 'growth' locations, geographical location appears to have been a stronger influence on investment flows than economic performance. Key et al (1998) showed that the volume of office investment in individual local authorities in the UK is weakly associated with total employment, but quite strongly linked to total Financial & Business Services (FBS) employment, especially in London and surrounding areas, which account for 60% of total capital value in all Districts listed. In particular, authors found that 24 out of the 26 Districts with the strongest investment inflows are virtually all in the South East. In other words, office investors plainly favoured specific areas of the UK as primary locations for their portfolios. The exhibits below show that this is still the position today across all property types.

Exhibit 1: Average Percentage of Number of Properties and Capital Values in the All Retail, Standard Retail, Retail Warehouses, Industrial and Office Sectors Across the Standard Regions of the UK: 1981 – 2003

Sector	Retail		Standard Retail		Retail Warehouses		Industrial		Office	
Region	% Num	% Cap	% Num	% Cap	% Num	% Cap	% Num	% Cap	% Num	% Cap
Greater London	20.2	22.1	20.8	28.9	13.5	21.4	16.5	21.9	44.8	21.4
South East	18.5	17.3	19.1	16.2	17.0	18.6	25.5	30.1	18.7	18.6
South West	10.3	8.1	10.3	8.7	11.8	11.3	8.7	7.1	5.7	11.3
East Anglia	9.1	10.6	8.9	8.4	11.5	11.9	14.0	13.4	7.0	11.9
East Midlands	5.2	5.1	5.1	4.9	7.3	5.6	6.0	5.3	1.9	5.6
West Midlands	6.6	7.5	6.2	5.4	8.0	6.8	7.7	7.6	3.9	6.8
North West	8.7	8.9	8.5	8.0	8.5	6.7	6.9	5.5	4.9	6.7
Yorkshire and Humberside	7.4	6.1	7.6	6.7	7.4	4.9	6.0	4.1	3.2	4.9
North	2.8	3.9	2.7	2.1	2.5	1.5	1.4	0.8	0.9	1.5
Scotland	7.4	8.1	7.2	8.1	8.2	8.6	5.7	3.1	8.0	8.6
Wales	3.7	2.4	3.7	2.6	4.4	2.6	1.6	1.0	1.0	2.6

Exhibit 1, taken from IPD (2004) shows the percentage number of properties and percentage of capital value held, on average over the period 1981 to 2003 for the sectors: All Retail, Standard Retail; Retail Warehouses, Industrials and Offices across the Standard Regions of the UK.

A casual inspection of Table 1 clearly shows the dominance of London and the South East in terms of number of properties held and capital allocations; irrespective of property sector. Indeed, Exhibits 2 to 6 illustrate that this position has hardly changed over the last 23 years for the individual years 1985, 1988, 1991, 1998 and 2003.

Exhibit 7 shows the average purchase and sales intensity in the sectors and across the regions over the period from 1981 to 2003. Purchase and sales intensity was calculated by the following equation:

$$\frac{P(S)_{i,j,k} / Held_{i,j,k}}{\sum_i P(S)_{i,j,k} / \sum_i Held_{i,j,k}} \qquad (1)$$

where *P(S)(i,j,k)* is the value of purchases (sales) by investors in year j, in region i and in sector k. *Held(i,j,k)* is the capital value of investments held in year j, in sector k and region i. The numerator is the ratio of purchases (sales) in a region of a sector relative the holdings in the region of that sector in a particular year. The denominator is the ratio of total purchases (sales) of the sector to the total holdings of the sector in a particular year.

Equation 1 measures the purchasing (selling) intensity in a given region of the sector relative to the overall purchasing (selling) intensity in a particular year. It corrects for the fact that investors might be purchasing (selling) less in a given region at a given time because they are purchasing (selling) less of the whole sector. So, if 50 percent of purchases in sector k were in region i in a particular year, which only accounts for 20 percent of the holdings in that sector, the purchase intensity of that region according to equation (1) is 2.5. Having computed this number for each region and year in each sector, we average it over the 23 years from 1981 to 2003 to give the average purchase (sales) intensity for each of the standard regions for the various property types.

Exhibit 7 shows that if the purchase (sales) value is less than 100% the region experienced a lower level of purchases (sales) relative to overall purchases (sales) in that sector. So for instance, the top half of Table 2 shows that Greater London had fewer purchases across *all sectors* relative to all purchases across the regions. In particular, Greater London had the least level of purchases of any sector and in all regions in Standard Retail shops at more than 25% less than the average, which implies investors were avoiding this sector. In contrast, Wales had an average purchase intensity much greater than almost any other region, irrespective of the sector, which implies that investors were focusing on Wales as a region in all property types.

The second half of Exhibit 7 shows the average sales intensity over the 1981 to 2003 period. Again this exhibit shows that Greater London had less sales activity than most regions except for Offices which shows a 7% increase in sales over the last 23 years. This implies that once investor's are in the Greater London region they tend to stay, although there as been some rationalisation in the office market. In contrast, the East Midlands region showed an increase in sales intensity across all sectors and suggests that investors were reducing their holdings in this area.

Exhibit 7: Purchase and Sales Intensity 1981-2003

Purchases	Retail	Standard Retail	Retail Warehouse	Industrial	Office
Greater London	80%	74%	90%	82%	89%
South East	106%	110%	105%	100%	138%
South West	110%	111%	111%	100%	115%
East Anglia	100%	100%	94%	101%	127%
East Midlands	109%	110%	84%	123%	105%
West Midlands	107%	107%	115%	93%	104%
North West	108%	115%	123%	107%	111%
Yorkshire and Humberside	98%	115%	113%	98%	95%
North	93%	105%	118%	111%	103%
Scotland	108%	118%	114%	110%	109%
Wales	126%	114%	122%	138%	133%
Sales	**Retail**	**Standard Retail**	**Retail Warehouse**	**Industrial**	**Office**
Greater London	94%	94%	99%	100%	107%
South East	104%	109%	115%	100%	79%
South West	97%	93%	135%	105%	92%
East Anglia	81%	106%	89%	104%	86%
East Midlands	133%	108%	113%	104%	103%
West Midlands	98%	104%	103%	87%	97%
North West	111%	102%	141%	120%	101%
Yorkshire and Humberside	102%	101%	102%	93%	88%
North	80%	95%	95%	145%	136%
Scotland	118%	111%	148%	129%	90%
Wales	97%	99%	115%	105%	147%

A sequence of individual years is shown in Exhibits 8-12 for 1985, 1988, 1991, 1998 and 2003.

Exhibit 13 shows the average level of net investment intensity over the period 1981 to 2003, where investment intensity is the ratio of purchase to sales intensity. Exhibit 13 shows that if the P/S value is less than 100% the region experienced a lower level of purchases to sales, i.e. a net decrease in investment, while a value greater than 100% indicates a net increase in investment.

Exhibit 13: Net Investment Intensity (P/S): 1981-2003

Region/Sector	Retail	Standard Retail	Retail Warehouse	Industrial	Office
Greater London	86%	79%	90%	83%	84%
South East	102%	100%	91%	100%	174%
South West	113%	119%	83%	96%	125%
East Anglia	124%	95%	105%	97%	148%
East Midlands	82%	101%	74%	118%	102%
West Midlands	110%	103%	112%	107%	108%
North West	98%	112%	87%	89%	110%
Yorkshire and Humberside	96%	114%	110%	105%	108%
North	116%	111%	123%	76%	76%
Scotland	92%	106%	77%	85%	121%
Wales	130%	116%	106%	132%	91%

The figures in Exhibit 13 show that Greater London showed a net decrease in investment in *all sectors*. However, Exhibits 1 to 6 shows that Greater London is still the favoured region for investors in terms of numbers of properties held and capital allocations. The two regions

that have seen the greatest increase in net investment are the West Midlands and Wales, which both saw an increase in net investment across almost all sectors. This suggest that there as been some attempt at catch up in these regions but the holdings in the West Midlands and Wales still account for only a tiny fraction of properties and capital value by investors (Exhibit 1).

In summary, the exhibits seems to suggest that investors have been rationalising their holdings in the regions especially Greater London, possibly in an effort to reduce management costs, rather than focusing investment on regions with the greatest performance in economic growth. This supports the findings of Key et al (1998) and Shilton and Stanley (1995) that geographical location appears to have been a stronger influence on investment flows than economic performance. In other words, institutions invest in favoured regions of the UK as primary locations for their portfolio holdings in real estate. This clearly has major implications for the risk profile of real estate portfolios with concentration in local economies highly exposed to changes in similar economic activity. The results also suggest that any effort to regenerate a regional built environment by promoting institutional investment into the area is likely to fail unless the region has the attributes that investors favour. Further work is therefore required to reveal these attributes.

4. Conclusion

A number of studies have examined the benefits of regional diversification strategies within commercial real estate portfolios with two approaches adopted; the first is based on primary contiguous geographical regions while the second employs areas based on economic function. In general, the conclusion is that diversifications strategies based on simple geographical areas adds little, if anything, while economic based regions have shown much greater potential. In particular it has been argued that portfolio risk in real estate market requires an understanding the economic risk to which the local markets are exposed. In other words, the economic regional approach to portfolio analysis appears to be a much more valuable tool in evaluating regional real estate investment opportunities and risks. The reason is that this method allows consistent risk measurement between aerial units and enables the portfolio manager to develop a geographically diversified portfolio through the use of economically cohesive regions.

At this stage however we are constrained by the use of standard administratively defined regions, which are so widely drawn as to be an inappropriate base for a real estate investment strategy. Nonetheless, the exhibits clearly demonstrate that institutional holdings and investment flows over the period from 1981 to 2003 are highly skewed to certain favoured regions irrespective of property type and that the real estate investment by institutional investors seem to have very little to do with regional economic performance. Consequently, the role institutional investors have in structuring the built environment within regions varies enormously from area to area. More work therefore is necessary to understand the impact of local market's economic base has on real estate investment by institutions. In particular, future work will try to develop a refined classification for the economic regions of the UK by using a large data set of socio-economic data and then examining the commercial real estate performance in such aerial units to reveal the characteristics that shape institutional investment flows into these areas.

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