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Real estate portfolio analysis: an emerging focus on economic location

by Charles H. Wurtzebach

Real estate practitioners are increasingly using "economic location," rather than "geographic location," as their primary analytic tool. That trend has gained substantial support among academics and practitioners who believe "economic location" is a more effective basis on which to build the analysis of risk in real estate portfolios.

Traditionally, real estate practitioners have viewed geographic diversification as an important portfolio characteristic. "Geographic diversification" usually referred to breaking the United States into the four broad regions of the East, Midwest, South and West. However, traditional methods used to analyze the locational diversification of real estate portfolios have proved to be less effective than previously thought.

The practical result of such a move is the management of real estate assets as portfolios, rather than as "accidental" collections of individual holdings, a new phenomenon in the investment industry.

The traditional approach

Managers of real estate portfolios traditionally have relied upon two approaches in analyzing diversification and in planning portfolio composition, including:

1. Allocation of assets among property types.
2. Allocation among geographic regions.

Diversification among the traditional property types, which include office, retail, industrial, residential and hotel, has been effective. Several studies have demonstrated the risk-reducing power of combining a variety of property types rather than concentrating holdings in one asset category.

However, the traditional approach to geographic diversification has not been supported as well, either by researchers or in practice.

Three forces culminated to place significant pressure on the traditional approach:

1. Researchers began to apply Modern Portfolio Theory to the analysis of real estate portfolios.
2. The effects of wildly variable regional real estate returns made practitioners look closely at the location risk in their portfolios.
3. Increasingly knowledgeable institutional investors began to press for greater sophistication in the management of their assets.

The effectiveness of any approach to diversification depends on the availability of types of investments whose returns are not highly correlated. In order to analyze the correlation of returns among alternative investments, return data of sufficient duration and breadth are required to ensure statistical reliability. Studies of diversification within the real estate asset class have been severely hampered by lack of such reliable data.

During the mid-1980s, however, researchers acquired access to acceptable data, and studies of the asset class at the portfolio level began. A 1986 study by Hartzell, Heckman and Miles concluded that diversification across the four traditional regions had limited effectiveness. The authors' work built on a 1982 study by Miles and McCue and led them to report "these results suggest that current industry practice represents little more than naive diversification." A 1987 study by Firstenberg, Ross and Zisler found the regional approach less effective than the property-type approach. These studies generally supported work done by other researchers in 1983 and 1984 based on other, less extensive data.

At the same time, empirical evidence was beginning to cast doubt on the traditional approach. In addition, the experience of practitioners added pressure for change. Nationally, investment managers experienced regionally based roller coaster performance over the 1975-87 period. The decline of the "Rust Belt" and the emergence of the "Sun Belt," in response to the combined effects of the oil crises of the 1970s and the high value of the dollar, were followed in the 1980s by depression in the "Oil

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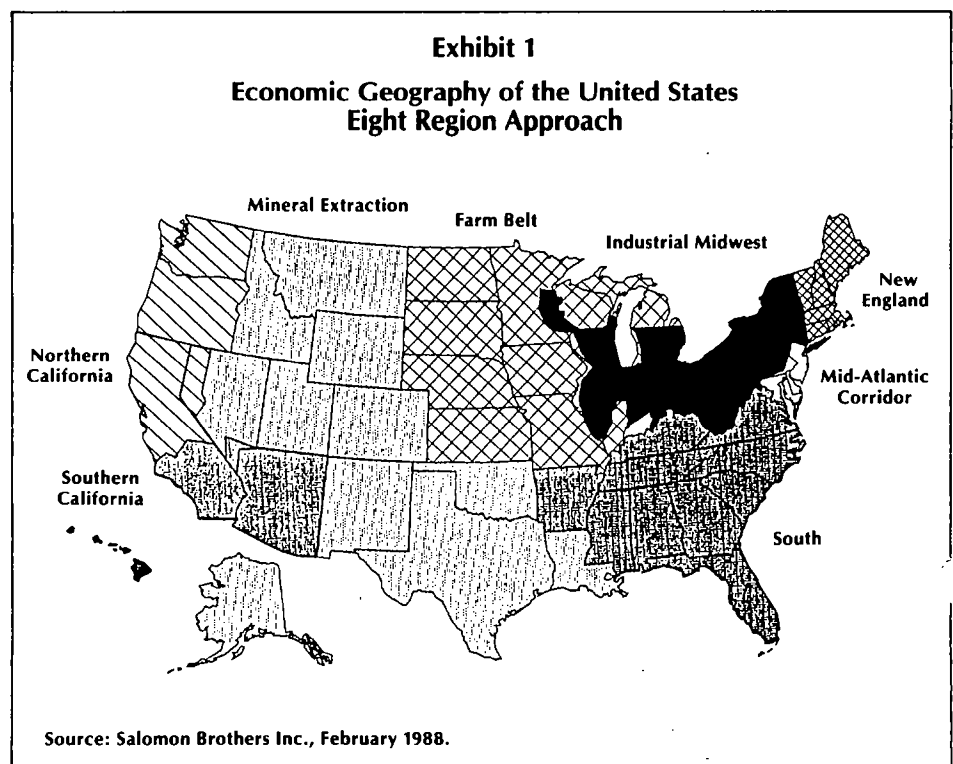
Exhibit 1

Economic Geography of the United States Eight Region Approach



Source: Salomon Brothers Inc., February 1988.

Portfolio analysis cont'd

Belt" and dramatic declines in property values in cities like Denver and Houston. While New Orleans is classified geographically as a southern city and Denver is in the western region, both cities responded to the same single economic variable – oil price. Supporters of real estate portfolio analysis took this analogy a step further. They say if oil-based economies cross regional boundaries, so do those heavily dependent on the hi-tech industries, defense spending, and manufacturing.

Clearly, the real estate industry needed to find a new way to describe location for the purpose of managing portfolios.

Refining the traditional approach

A study published in February 1988 by Hartzell, Shulman and Wurtzebach provides a bridge from the approaches based strictly on geography to those moving toward economic characteristics. In that analysis, the country was divided into the following eight regions based on a combination of geography and economic orientation (Exhibit 1):

1. New England
2. Mid-Atlantic Corridor
3. Old South
4. Industrial Midwest
5. Farm Belt
6. Mineral Extraction Area
7. Southern California
8. Northern California

The authors describe these as "cohesive economic activity regions." State boundaries are ignored in many cases where the state's economic activity is significantly varied within its borders. The return patterns of properties in those eight regions were analyzed using updated and expanded data similar to that used by Hartzell, Heckman and Miles. The analysis showed the "eight-region categorization produces lower correlation coefficients than the traditional classification into four regions" and further "suggests that the traditional four-region analysis does not capture the impact of regional diversification."

While this approach apparently provided significant advantages, the level at which the economic characteristics of a region were analyzed was not very refined. The approach is hybrid, not truly geographic but not purely economic either.

Approaches to defining economic location

A great deal of discussion in the industry today focuses on the concept of economic location. However, actual published data on either its definition or its use in managing portfolios are still scarce. To date, researchers and managers have taken two basic approaches to defining categories of locations:

1. Relative employment growth patterns.
2. Analysis of employment composition, or economic base analysis.

The employment growth approach

Unpublished research on 118 individual real estate markets done by Wurtzebach and DeLisle between 1986 and 1988 identifies five common patterns of employment growth among those markets and analyzes the effectiveness of using those patterns to establish portfolio diversification categories.

The employment growth data for each of the 118 markets for 1974 through 1987 were plotted against the employment growth of the United States as a whole. Deviations from the national patterns were tested for statistical significance. The definition of patterns was made in terms of relative growth rates, not absolute growth levels, so very large markets do not skew the groupings. The five categories identified are:

Growth Category	Example Markets
Consistently Higher Growth	Atlanta, San Francisco
Recently Higher Growth	Oakland, Jacksonville
Recently Lower Growth	Houston, Miami
Consistently Lower Growth	Kansas City, Cleveland
Cyclical Growth	New York, Indianapolis

This system of analysis was tested working with essentially the same data base used by Hartzell, Shulman and Wurtzebach in their 1988 study and provides superior diversification potential. Correlations among these categories were lower.

The economic base approach

Wurtzebach and DeLisle also have proposed a system of grouping the 118 markets analyzed into five broad categories describing employment characteristics in those markets:

Classification	Examples
Diversified	St. Louis, Wilmington
Energy	Houston, Tulsa
Government	Washington, San Antonio
Manufacturing	Chicago, Anaheim
Services	New York, San Francisco

Note: The authors report that these categories were intentionally designed to be broad enough to allow reliable testing against a data base of historical and forecasted returns. More narrow categories would have prevented reliable calculation of correlation and volatility figures.

Like the author's employment growth approach, analysis of the economic base approach showed it to have diversification characteristics superior to those of the traditional geographic approach. Correlation of returns among the economic base categories was lower than correlations among the four geographic areas.

The economic base approach has the advantage of facilitating the translation of sectoral forecasting to analysis of investment strategy.

Using economic location

The amount of work done to date on the concept of economic location will undoubtedly be multiplied many times over during the next few years. The idea is intuitively more appealing than its predecessor. In addition, initial research has suggested the concept is more effective, and the community of managers, investors and consultants has demonstrated enthusiasm for the approach. The ways in which the ideas, as they develop over time, are actually used in managing portfolios will vary widely.

For managers of large portfolios, one differentiation will likely be between those who have sufficient data to "optimize" on the category adopted and those who do not. If an investor has sufficient data to associate reliable correlation coefficients and standard deviation figures with the location categories being considered, he can use those to drive an "optimal asset allocation analysis." An efficient frontier can be developed and decision-making can be done in an explicit risk/return environment. If the manager does not have that sort of data base, portfolio composition decisions will be more subjective and probably more reflective of specific economic sector forecasts.

Another difference will occur between those using these ideas for

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Portfolio analysis cont'd

portfolio analysis and management and those using them primarily for analysis of a specific investment decision. The emphasis of the user likely will be different if the question is one of overall portfolio allocation or one of deciding between two specific acquisition alternatives. But the question does seem to be, "How will we use this approach?" rather than, "Will it be used?"

In conclusion, managers and investors alike must address the challenge of strategy implementation and execution. Real estate is not like stocks and bonds. Should a stock manager decide to change investment strategy, he only needs to call the tracting desk. With real estate, however, no central clearing-house for properties exists. The manager must have the capability to execute the strategy.

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60th anniversary for actuarial club

The Actuarial Club of the Pacific States will mark its 60th anniversary September 14-16 at the Four Seasons Biltmore Hotel in Santa Barbara. Enrolled actuary credit will be offered at the meeting. For further information, contact John Edwards at 818-577-1144.

Equity real estate

by Harry D. Pierandri
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Life insurance companies and pension funds are both in the business of building and preserving personal wealth. To this end, equity real estate has become an important part of their investment profiles. Real estate has been widely accepted as an asset class by mainstream institutional investors. However, real estate investment managers are still placed in the position of explaining what makes equity real estate different from other vehicles, how and why it performs well under various inflation scenarios, and the validity of appraisal-based real estate return components.

Equity real estate now constitutes approximately 4.9% of pension assets, and current projections call for this to increase to 6.3% by 1991. (Source: Greenwich Associates) Many larger corporate and public funds already have invested as much as 10% or more of their assets in it. With life insurance companies, equity real estate currently stands at approximately $37 billion, about 3.2% percent of their total assets. Additionally, this represents approximately 30% of the total money in equity real estate from financial institutions, the other two being commercial banks and savings and loan institutions. (Source: The Roulac Consulting Group of Deloitte, Haskins and Sells)

The industry standard, the FRC Property Index, shows equity real estate returns compare quite favorably to those of other asset classes:

Indeed, if one looks closely at the investment characteristics of equity real estate, the question is perhaps not why it has gained favor so quickly but why it took so long. Real estate has constituted the primary source of wealth around the world throughout most of history. In fact, it got its name because most lands belonged originally to a monarch, and "real" comes from the same Latin root as "royal."

Insurance companies have been investing in real estate since the 1800s. In the beginning and throughout most of this century, real estate was a static, put-and-take matter. Long-term mortgage loans were made at fixed rates. A property was appraised, and if underwriting criteria were met (loan to value ratios, debt service coverage), money was tied up for 25 or 30 years at a level rate of return. But in a strictly lending role, the mortgage bears a substantial part of the investment risk but not the accompanying upside potential. If the loan defaults, the company forecloses and has a property on its hands. As is the case with most debt instruments, if the property is a winner, the lender doesn't share in the winnings.

In the mid-1970s, major insurers like Equitable and Prudential began moving from strictly mortgage lending to acquiring and developing properties, either alone or with an equity joint venture partner/developer. At roughly

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For periods ending 12/31/88

	10 years	5 years	1 year
FRC Property Index	11.9%	8.3%	7.1%
S&P 500	16.3	15.4	16.6
Salomon Bros. High-Grade Corp. Bond Index	10.9	15.0	10.7
90-Day Treasury Bills	9.4	7.3	6.8
Consumer Price Index	5.9	3.5	4.4

Note: Returns are a combination of income and appreciation components. The FRC Property Index is composed of a universe of open-end equity real estate funds. These funds, which represent a broad range of property types and geographic locations, are considered excellent industry bellwethers.