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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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 economics 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 within these eight regions were analyzed using updated and expanded data similar to that used by Hartzell, Heckman and Miles. The analysis showed that 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:

<table>
<thead>
<tr>
<th>Growth Category</th>
<th>Example Markets</th>
</tr>
</thead>
<tbody>
<tr>
<td>Consistently Higher</td>
<td>Atlanta, San Francisco</td>
</tr>
<tr>
<td>Recently Higher Growth</td>
<td>Oakland, Jacksonville</td>
</tr>
<tr>
<td>Recently Lower Growth</td>
<td>Houston, Miami</td>
</tr>
<tr>
<td>Consistently Lower Growth</td>
<td>Kansas City, Cleveland</td>
</tr>
<tr>
<td>Cyclical Growth</td>
<td>New York, Indianapolis</td>
</tr>
</tbody>
</table>

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 and Examples](image)

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 deci-
sion. The emphasis of the user likely
will be different if the question is one
of overall portfolio allocation or one
deciding between two specific
acquisition alternatives. But the ques-
tion 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 chal-
enge 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
trading desk. With real estate,
however, no central clearing-house
for properties exists. The manager
must have the capability to execute
the strategy.

References
Firstenberg, Paul B., Stephen A. Ross and
Kandall C. Zisler. "Managing Real Estate
Portfolios." Goldman Sachs & Co.,
Firstenberg, Paul B., and Charles H. Wurtzebach.
The Portfolio Construction Process — The
Competitive Edge in Managing Real Estate
Portfolios." Prudential Realty Group.
Hartzell, David J., John Heckman and Mike
Miles. "Diversification Categories in Investment
Real Estate," Salomon Brothers, Inc.,
December 1986.
Hartzell, David J., David G. Shulman and Charles
H. Wurtzebach. "Reining in the Analysis of
Regional Diversification for Income Producing
Real Estate," The Journal of Real Estate Research
Wurtzebach, Charles H., and James R. Delisle.
"1989 Economic Location Diversification Analy-
Charles H. Wurtzebach, not a member of
the Society, is Vice President and Director
of Investment Research, The Prudential
Realty Group.

60th anniversary for
actuarial club
The Actuarial Club of the Pacific
States will mark its 60th anniversary
September 14-16 at the Four Seasons
Baltimore 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
and Thomas J. Fitzgerald

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 invest-
ment managers are still placed in the
position of explaining what makes
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 repres-
sents approximately 30% of the total
money in equity real estate from finan-
cial 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 through-
out 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
the case with most debt instruments,
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

<table>
<thead>
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<th></th>
<th>10 years</th>
<th>5 years</th>
<th>1 year</th>
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<tr>
<td>FRC Property Index</td>
<td>11.9%</td>
<td>8.3%</td>
<td>7.1%</td>
</tr>
<tr>
<td>S&amp;P 500</td>
<td>16.3</td>
<td>15.4</td>
<td>16.6</td>
</tr>
<tr>
<td>Salomon Bros. High-Grade Corp. Bond Index</td>
<td>10.9</td>
<td>15.0</td>
<td>10.7</td>
</tr>
<tr>
<td>90-Day Treasury Bills</td>
<td>9.4</td>
<td>7.3</td>
<td>6.8</td>
</tr>
<tr>
<td>Consumer Price Index</td>
<td>5.9</td>
<td>3.5</td>
<td>4.4</td>
</tr>
</tbody>
</table>

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.