THE FINANCIAL PERFORMANCE OF REAL ESTATE INVESTMENT TRUSTS

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Abstract. The intent of this article is to update the performance evaluation of Real Estate Investment Trusts. This update is important for three reasons. First, REITs today are one type of vehicle that permits the analysis of real estate assets in a modern portfolio context. Second, the performance of REITs was considered exceptionally good in recent years on a risk-adjusted basis. This would suggest a market imperfection in the pricing of REIT shares which is difficult to support in light of the efficient market hypothesis. Third, recent studies on the performance of REITs have only covered time periods from 1963 to 1979 and an update to include the most recent six-year time period would offer valuable insight into REIT performance.

INTRODUCTION AND PURPOSE

Modern portfolio theory suggests the existence of a market portfolio consisting of all assets available for investment. Real estate assets, in the United States, represent a significant portion of the nation's wealth. However, real estate assets trade infrequently and inclusion in the market portfolio for valuation purposes is often difficult if not impossible. Therefore, the availability of shares of Real Estate Investment Trusts (REITs), which trade on organized security markets, is seen by the investment community as one way to incorporate real estate assets in portfolios for analysis. Research interest in the performance of REIT stocks has been based on both the rapid growth and popularity of these stocks and also on the substantial troubles which the industry experienced during the 1974-1976 period. Consequently, the intent of this study is to update the performance evaluation of shares of REIT stocks. This research is germane for three reasons. First, REITs today are one type of vehicle that permits the analysis of real estate assets in a modern portfolio context. Second, the performance of REITs was considered exceptionally good in recent years, even on a risk-adjusted basis. This would suggest a market imperfection in the pricing of REIT shares which is difficult to support in light of the efficient market hypothesis. Third, recent studies on the performance of REITs have only covered time periods from 1963-1979 and an update to include the most recent six-year time period would offer valuable insight into REIT performance.

The research is organized as follows: the first section presents a brief overview of studies that examined the historic performance of REITs. The second section develops the research design and methodology which is employed to examine the performance of REITs during the 1973-1985 period. This section also includes an interpretation of the empirical analysis performed. Finally, the third section contains the conclusions.

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SURVEY OF HISTORIC REIT PERFORMANCE

Past studies which exist have examined the performance of REITs over a period of 1963-1979. In one of the earlier studies, Smith and Shulman [14] compared the performance of a small group of REITs to that of closed-end investment companies over the twelve-year period from 1963 to 1974. Although the authors focused upon equity REITs, mortgage investments held by the trusts examined amounted to as much as 49.1% of several REIT portfolios included in the study. Smith and Shulman found that, when excluding the year 1974 from the study, both closed-end funds and REITs outperformed the market by an annual average of 0.4% and 0.6%, respectively. Also, much greater performance variation was found for each subperiod studied during which both closed-end funds and REITs significantly over or underperformed the market. The authors concluded that equity REITs, over the time period studied, had similar returns to those of a diversified portfolio of common stock.

Davidson and Palmer [4] examined the performance of common stocks, stocks of homebuilding firms, and equity REITs over the 1972-1977 period, using the Capital Asset Pricing Model. They found that, while growth rate returns of the REITs were less than that of common stocks (as measured by the *S&P Index*), the average arithmetic return was greater for REITs. Equity REITs were found to have greater total risk, as measured by the standard deviation of return, than common stocks. Finding lower beta values for REITs (0.87 on average) than the market, however, supports their contention that the local market conditions may play a larger role than overall market conditions in determining the returns of income property. Davidson and Palmer came to no overall conclusions concerning the performance of REITs.

Smith [13] compared the performance of REIT shares to that of commingled real estate funds (CREFs) during the 1965-1977 period. On a before-tax, before-financing, internal rate of return based on income and changes in share prices, Smith found the average annual rates of return for REITs to be significantly lower than that of CREFs and the variability of REIT returns significantly higher than that of CREF returns. He attributed the differences in variation to the frequency of valuation of both types of instruments.

Burns and Epley [2] attempted to determine whether the addition of REITs to a diversified common stock portfolio would enhance portfolio returns and/or diversification. They hypothesized a low correlation between common stock returns and REIT share returns and suggested that portfolios consisting of common stocks and REIT shares would show greater diversification benefits than portfolios consisting of either security type alone. The authors examined this issue by comparing proximity and characteristics of efficient frontiers of portfolios consisting either of stock, REITs, or a combination of both. Efficient frontier proximity of mixed portfolios was found to be superior to those of single asset-type portfolios. Burns and Epley, contrary to Smith and Shulman, concluded that REITs offered significant portfolio diversification benefits when compared to common stock portfolios. This phenomenon was based on the low return correlation of REITs with common stocks.

One of the most comprehensive recent studies on the performance of real estate assets and REITs was performed by Zerbst and Cambon [16] who assessed historical risks and returns and compared them to the performance of other assets such as stocks and bonds. In comparing returns, standard deviations of returns, and coefficients of variation, the authors extended and summarized findings from seventeen previous studies. Zerbst and Cambon concluded that real estate assets showed returns roughly similar to those of other assets, at least since 1950. However, they also noted that during periods of inflation, real estate assets had slightly better performance results than common stocks, fixed income investments, and the rate of inflation.

The examination of the standard deviations of returns showed that while real estate assets, in general, appeared to have lower risk, the risk of REITs was found to be similar to common stocks.

In summary, previous studies suggest that, on average, REITs performed no better or worse than common stocks nor were they more or less risky than common stocks. During particular subperiods, REIT shares tended to show greater performance variation and over or underperformed the market significantly. Empirical evidence has also suggested a diversification potential of REIT shares when included in portfolios with common stock.

RESEARCH DESIGN AND METHODOLOGY

The purpose of this research is to update REIT risk-adjusted return performance versus the average performance of common stocks as measured by the *Standard and Poor's 500 Index.* Specifically, the performance of REITs on a risk-adjusted basis will be examined over the 1973-1985 time period. The primary hypothesis to be tested will determine if REIT performance, on a risk-adjusted basis, is significantly different from that of common stocks.

The time period chosen for this research is from January 1973 to December 1985. In order to compare the performance of REIT shares to that of common stocks, a measure of performance that adjusts nominal investment returns for risk was chosen. A measure similar to the one developed by Jensen [8] is used to calculate the risk-adjusted returns of REIT shares. This measure of abnormal return can be defined as:

$$\alpha_{j,t} = [R_{j,t} - r_{f,t}] - \beta_{j,t}\,[r_{m,t} - r_{f,t}] \qquad (1)$$

where,

$\alpha_{j,t}$ = Abnormal risk-adjusted return for real estate investment trust j which is a measure of the ex-post risk-adjusted return in period t

$R_{j,t}$ = Return of real estate investment trust j in period t

$r_{f,t}$ = Risk-free rate of return in period t

$\beta_{j,t}$ = Beta of real estate investment trust j in period t

$r_{m,t}$ = Return of *Standard and Poor's Index* of 500 common stocks in period t.

Abnormal returns of REIT shares in any one year are expressed by the alpha value percentage in equation (1).Positive alpha percentages indicate that investors received a greater annual return than that which they could have expected on a risk-adjusted basis. Negative alpha percentages indicate that, in the particular year analyzed, investors received a lower return than expected on a risk-adjusted basis. In other words consistent positive or negative alpha percentage values would reflect inefficient markets.

THE SAMPLE

The sample consists of 102 REITs whose shares traded on various exchanges over the period 1973-1985. The monthly rates were determined from sources such as Value Line, the *Standard and Poor's Stock Reports*, and the National Association of Real Estate Investment

Trust's REIT fact book. The return of the *Standard and Poor's 500 Index* and the Treasury Bill rates were used as proxy measures of the stock market and the risk-free rate of return.

THE PERFORMANCE OF REITS

The hypothesis states the risk-adjusted return performance of REITs is not significantly different from those returns exhibited by the stock market. This implies that the alpha values of REIT shares, on average, would not be expected to be significantly different than zero. This hypothesis is based on the efficient market hypothesis which states that security prices fully reflect all available information and prices and react instantaneously, or nearly so, in an unbiased fashion to new information, thus yielding no excess returns above expected returns.[1] Further, if excess or abnormal returns do exist, they are rapidly reduced and eliminated through the continual price readjustment process in an efficient market. Therefore, persistent positive or negative alpha values would indicate an inefficient REIT market.

Equation (1) was used to calculate the alpha value for each REIT in the sample for each year starting in 1973 and ending in 1985. Individual alpha values were then summed and averaged for each year. In addition, the standard deviation of alpha values was calculated for each REIT analyzed.

Exhibit 1 presents the annual average alpha values and standard deviations of alpha values for all REITs examined from 1973 to 1985. The annual average alpha values were

Exhibit 1
Annual Means and Standard Deviations of Alpha Values of REITs for the Years 1973 to 1985

Mean Alpha Values						
1973	1974	1975	1976	1977	1978	1979
-.053	-.288	-.138	-.031	.079	.131	.169
1980	1981	1982	1983	1984	1985	
.188	.114	.084	.068	.077	.062	
Standard Deviations of Alpha Values						
1973	1974	1975	1976	1977	1978	1979
.190	.220	.202	.223	.225	.140	.257
1980	1981	1982	1983	1984	1985	
.226	.172	.131	.127	.107	.095	

Source: The statistics were calculated from equation (1).

negative during the years 1973 to 1976, ranging from -28.8% in 1974 to -3.1% in 1976, indicating below-average performance in comparison to the *Standard and Poor's Index* of 500 common stocks. Average alpha values since 1977 ranged from a high of 18.8% in 1980 to a low of 6.2% in 1985.

Exhibit 1 also presents the average standard deviations of alpha values of all REITs analyzed for each year. The greater the variation in alpha values, the higher the variation in REIT performance. Conversely, the lower the variation in alpha values, the more uniform the return performance. Therefore, a consistent decrease in standard deviations would suggest a more stable REIT industry as measured by return performance. During the period from 1973 to 1977, the average standard deviation values remained relatively unchanged in the 19-to-22% range. However, beginning in 1980, a continual decrease in the average standard deviation of alpha values has occurred. This would suggest the REIT industry is experiencing more stable rates of returns. This, in part, may be explained by more conservative REIT management when compared to the earlier time period of 1973 to 1976. This more conservative management is partially reflected in the makeup of the portfolios of many REITs whose investments consist of longer-term equity and mortgage assets rather than short-term construction development loans.

Statistically, the difference between the average alpha values and zero can be measured to determine if the difference is significant. Exhibit 2 presents the results of critical and calculated Z-values at a level of significance of .01. In all but three years (1973, 1976, 1977) over the thirteen-year period examined, a significant statistical difference exists between average alpha values and zero. The magnitude of the difference, represented by the calculated Z-value, ranges from a low of -7.17 in 1974 to a high of 6.52 in 1984.

Finally, Exhibit 3 reports the mean alpha values and standard deviations of alpha values

Exhibit 2
Test of Significant Difference of Alpha Values From Zero for the Years 1973-1985

Year	Critical Z-Value	Calculated Z-Value
1973	-2.33	-1.58*
1974	-2.33	-7.17
1975	-2.33	-3.92
1976	-2.33	-.82*
1977	+2.33	+.21*
1978	+2.33	+5.69
1979	+2.33	+5.38
1980	+2.33	+7.01
1981	+2.33	+5.74
1982	+2.33	+5.81
1983	+2.33	+4.91
1984	+2.33	+6.52
1985	+2.33	+3.81

*Not statistically different from zero at a level of significance of .01

Exhibit 3:
Annual Mean Alpha Values and Standard Deviations of Alpha Values of Equity and Mortgage REITs For the Years From 1980 - 1985

	Mean Alpha Values					
	1980	1981	1982	1983	1984	1985
Equity REITs	.2079	.1574	.1072	.0819	.0899	.0862
Mort. REITs	.0716	.0205	.0421	.0508	.0151	.0143
Calculated "t" Values	6.377*	6.623*	5.345*	4.809*	5.632*	6.143*
	Standard Deviations of Alpha Values					
	1980	1981	1982	1983	1984	1985
Equity REITs	.1720	.1260	.1070	.0922	.0879	.0823
Mort. REITs	.1750	.1742	.1330	.1350	.1510	.1436

*Significant at the .01 level

Source: The statistics were calculated using equation (1).

between equity and mortgage REITs over the last six-year period. This time period was chosen because prior to 1980 many REITs underwent reorganization and a major shifting of assets from short-term to long-term investments occurred. Hence data prior to 1980, in many cases, does not reflect new investment strategies.

Exhibit 3 indicates that a significant statistical difference exists between mean alpha values of equity and mortgage REITs at the .01 level of significance. The calculated "t" values are significant for each of the six years analyzed. In addition, Exhibit 3 reports the standard deviations of alpha values.

The standard deviations of alpha values reported in Exhibit 3 reflect the relative risk for each group of REITs. The standard deviations of alpha values of mortgage REITs was higher than that of equity REITs in each of the six years, which indicates a greater heterogeneity and, therefore, greater investment risk for mortgage REITs. Also, while investment risk for mortgage REITs remained relatively high and unchanged over the six-year period, the investment risk of equity REITs declined by approximately 50% from 1980 to 1985.

INTERPRETATION OF RESULTS

Given the fact that Exhibit 2 reveals significant differences of average alpha values from zero in ten of the thirteen years examined, the question of market efficiency arises. The results of this research might, therefore, be interpreted in either one of two ways.

The Case for Inefficient REIT Markets

The concept of inefficient markets is a phenomenon which has been debated extensively in the field of real estate. Because the real estate asset is neither homogeneous nor traded frequently, it is often difficult to determine the "market price" of the asset. Conversely, it is argued that the real estate market has become more efficient with the "securitization" of real estate assets.[2] The true degree of market efficiency, therefore, likely lies between the two extremes.

Given the results of the current research, however, it can be argued that in the case of REIT markets, a somewhat inefficient market does exist. This would be supported by the fact that consistent positive or negative alpha values existed in ten of the thirteen years analyzed. Further, it could be argued that this is true because REITs purchase assets in many different geographical real estate markets which are each uniquely inefficient to some degree. Therefore, it would seem plausible that the REIT industry, in general, is inefficient to some degree.

The Case for Efficient Markets

The efficient market hypothesis states that a market is efficient if security prices adjust *rapidly* to the infusion of new information and current prices reflect all available information including the risk involved. Therefore, the case for efficient markets could be argued given the results of this research, with the relevant question relating to the interpretation of the word "rapidly." As indicated in Exhibit 1, the trend of alpha values is directed toward zero. For example, during the years of poor REIT performance (1973-1975), the negative alpha values became smaller tending toward zero. The large negative values in 1974 and 1975 reflect years of poorest performance for REITs in general.

The years 1977 through 1980 reflect periods of highest alpha values with significant excess returns. However, this period of high alpha values has been followed by successively lower annual alpha values. This trend, if continued, will in theory result in alpha values equal to zero. The zero alpha value would suggest an efficient market. The issue of how rapidly the REIT market responds is suspect in terms of the efficient market hypothesis. However, in theory it could be argued that REIT markets are efficient but they do take a longer time period to adjust to relevant information. This being the case, average alpha values for REITs will likely decline to the zero level in the near future.

SUMMARY AND CONCLUSIONS

The purpose of this research was to examine and update REIT share performance after adjusting nominal returns for risk. Share performance was measured through a comparative analysis with the *Standard and Poor's Index*, using a methodology similar to the Jensen measure for excess returns.

The results of the research indicate that significant alpha or excess returns occurred during ten years of the thirteen-year period analyzed. It can be concluded that REIT stocks either significantly under or overperformed the *Standard and Poor's 500 Index.*

However, the findings lend some support to the conclusion that shares of REITs are priced somewhat efficiently. This notion is supported by the fact that the pricing model

employed in this study is based on expectations whereas the model was actually used in an ex post analysis. In particular, alpha percentages of abnormal return performance were highest during the years of poor REIT performance (1973-1976) and declined in following years. In each successive year following the 1974-1976 period it is likely that investors perceived investment risk (ex ante) to be higher than it actually turned out to be (ex post). It appears that adjustments took place in these ensuing years as witnessed by the diminishing excess ex ante returns. Thus, while the abnormal returns, contrary to the efficient market hypothesis, remained for several years following the troubled time period, they diminished over time. In addition, the variance in alpha values decreased over the thirteen-year period suggesting a more stable REIT industry environment. Finally, cases were presented for both inefficient and efficient REIT markets according to the definition of the efficient market hypothesis.

In the final analysis, future research should be directed to address the following questions:

- Will REIT excess returns continue to decrease to zero? Such findings would support the efficient market hypothesis.
- Can information about risks, earnings potential, and value of various REITs be adequately analyzed by the investor and incorporated in an efficient stock price similar to that of other common stocks?
- Are REITs significantly different from common stocks in risk and return performance to warrant inclusion in a portfolio to enhance diversification benefits?
- Does the relatively small financial size of the majority of REITs in part explain the positive alpha values [6]?

NOTES

[1]Frank K. Reilly, *Investment Analysis and Portfolio Management* (New York: The Dryden Press, 1985), pp. 163-164.

[2]Stephen E. Roulac, Influence of Capital Market Theory on Real Estate Returns and the Value of Economic Analysis. *The Real Estate Appraiser and Analyst*, 44:6 (NovemberDecember 1978): 62-71.

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