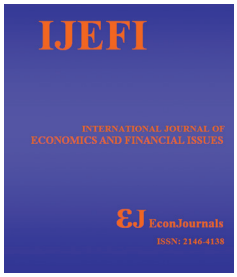

International Journal of Economics and Financial Issues

ISSN: 2146-4138

available at http: www.econjournals.com

International Journal of Economics and Financial Issues, 2024, 14(3), 206-211.

Interactions between Equity REITs and S&P 500 Returns

Matiur Rahman*

McNeese State University, Lake Charles, LA 70609, USA. *Email: mrahman@mcneese.edu

Received: 20 January 2024 **Accepted:** 08 April 2024 **DOI:** https://doi.org/10.32479/ijefi.15909

ABSTRACT

This paper seeks to reinvestigate the contemporaneous interactions using daily closing prices of US eREIT and S&P 500 indices to calculate their respective rates of return. Daily data are used from October 31, 2008 through October 31, 2023 with 3,856 observations. Data are obtained from (www.wsj.com and (https://finance.yahoo.com/). The time series data distributions of both variables are near-normal in term of their respective mean-to-median ratio with very low standard deviations. The Ordinary Least Squares (OLS) is applied to estimate regressions (1) and (2) for reliable and unbiased results, as it meets the statistical criteria for suitability. The regression results show evidence of weak interactions between them with bidirectional causal flows.

Keywords: S&P 500, eREIT, Correlation, OLS, Regressions, Causal Flows
JEL Classifications: R3, R330, G10, G11, G12, G14

1. INTRODUCTION

Real estate investment trusts (REITs) invest their funds primarily in real estate assets. REITs have a long US history. The Congress created the legislative framework for REITs in the 1960s. This legislative framework forces U.S REITs to designate at least 90% of their taxable income to shareholders via dividend payments.

Many econometricians have analysed the relationship of REITs with the aggregate stock market and more traditional real estate assets. Mueller and Pauley (1995) have argued that REITs are often considered to be very similar to utility stocks since they are usually assumed to be one of the most defensive sectors of the equity market due to their non-cyclical behavior. Investors buy REITs' shares that generate stable cash flows from dividends of net real estate rental income. REITs shares income is usually considered more stable than common stocks.

To note, in December 2016, the total capitalization of the REITs industry reached $1.02 trillion. Hybrid REITs disappeared, and the distribution between equity (eREITs) and mortgage REITs (mREITs) was 94.2% and 5.8%, respectively. Hybrid REITs were likely replaced from investors' selected portfolios that combine equity and mortgage REITs in the desired proportions with a stronger preference for the former. The average of annually compounded growth rate of the industry between 1980 and 2000 was 20.5%. Between 2000 and 2016, it stood lower at 12.5% (Roberto and Humberto, 2019).

Equity REITs as one of the investment vehicles have been gaining ascending attention since the 1990s. Unlike REITs, direct real estate investments suffer from high transaction costs, information asymmetry, relative low liquidity, financial crises exposures, etc. Whether REITs should be viewed as real estate investment or common stock has been a controversial and debatable topic in the existing literature. Investment in eREIT index notably benefits from diversification like S&P 500. So, understanding the dynamics between eREIT and S&P 500 is helpful to investment decision making for better portfolio diversification potentials.

eREITs are viewed as a considerably more secure business model than other REIT models and the literature on Real Estate

Investment Trust is mainly based on investigating in eREITs. While equity REITs actually invest in real estates and can increase their value by the rise in the value of the property and additional returns by selling properties. They are less vulnerable to interest rate increases than mREITs that are highly leveraged and riskier, though offering relatively higher dividend yields. However, eREITs outperform mREITs (Bley and Olson, 2005).

To reiterate, Real Estate Investment Trust (REIT) is a company that owns, operates, or finances income-generating real estate. It is modeled as mutual funds pooling the capital of numerous investors. This makes it possible for them to earn dividends from real estate investments without having to buy, manage, or finance any properties themselves (www.investopedia.com).

To add, the US S&P 500 index includes selected common stocks of eleven different sectors (Consumer Discretionary, Industrials, Information Technology, Financials, Healthcare, Energy, Consumer Staples, Utilities, Real Estate, Materials, and Communication Services) with differing weights in terms of market capitalization (www.investopedia.com).

Commonly, REITs are traded on major stock exchanges. The two main types of REITs are eREITs and mEITs. eREITs generate income through the collection of rent and from sales of the properties they own for the long-term. mREITs invest in mortgages and mortgage securities are tied to commercial and/or residential properties. Most REITs operate as eREITs, providing investors access to diverse portfolios of income-producing assets that they would not be able to afford on their own. These real estate companies own properties in a range of real estate sectors that are leased to tenants such as office buildings, shopping centers, apartment complexes and more. They distribute the bulk of their income to shareholders in the form of dividends. mREITs provide financing for income-producing real-estate by purchasing or originating mortgages and mortgage-backed securities and earning income from the interest on these investments (www.reit.com).

To add further, the key takeaways include (i) investment in real estate can diversify portfolio, but not all REITs are created equal; (ii) Some REITs investments are direct in properties, earning rental income and management fees. Other investments are in real estate debt, i.e., mortgages and mortgage-backed securities; (iii) in addition, REITs tend to focus on a specific sector of properties such as retail or shopping centers, hotels, and resorts, or healthcare and hospitals; (iv) one of the biggest benefits of REITs is their high-yield dividends; and (v) most REIT dividends don't meet the IRS definition of "qualified dividends." (www.investopedia.com).

Worzala and Bajtelsmit (1997) question, discuss and extensively analyze whether REITs are stocks or real estate investments. As early as 1987, Kuhle (1987) has reported empirical evidence indicating that, to a certain extent, REITs could offer benefits of diversification for investors holding equities. Those well-recognized findings triggered a number of follow-up research papers. Mull and Soenen (1997), for example, questioned this diversification potential and found positive correlations between the yields of REITs and traditional stock investments. Similar empirical evidence has also been reported in [e.g., Bharati and Gupta (1993), Mueller and Pauley (1995), Chandrashekaran (1999) and He et al., (2003)]. Chandrashekaran (1999) has pointed towards significant instabilities in the correlations between the returns of the two asset classes. Similar results have also been presented by Ghosh et al. (1996) as well as Liang and McIntosh (1998). Corgel et al. (1995) have published a very comprehensive overview on the topic in the mid-1990s.

The objective of this study is to examine (i) the correlation between eREIT index and S&P 500 returns, and how S&P 500 returns impact eREIT returns in the short run. Daily US data from October 31, 2008 through October 31, 2023 are used to investigate the above. The remainder of the paper proceeds as follows. Section II briefly reviews the related literature. Section III outlines the empirical design. Section IV reports results. Section V offers conclusions.

2. BRIEF REVIEW OF RELATED LITERATURE

Whether REITs should have been viewed as a real estate investment or more like a stock or bond has been a debated issue. Giliberto (1990), Myer and Webb (1993), Ling and Naranjo (1999), and Clayton and MacKinnon (2003) have examined the relationships between REITs, real estate variables and stock market. They found a link between the real estate price indices and U.S REITs, though weak and insufficient to explain REIT returns. These studies opined that U.S REITs have similar investment attributes of U.S. stocks with only a weak exposure to the underlying property markets.

Some other studies show that the REIT returns and risks can be explained by the same macroeconomic variables that show stock and bond returns and risks at a statistically significant level. Chan et al. (1990) show that REIT returns are associated with interest rates, inflation and risk premium. Peterson and Hsieh (1997) found that risk premiums on equity REITs are significantly related to risk premiums on a market portfolio of stocks as well as to the return mimicking portfolios for size and book-to-market equity factors in common stock returns over 1976-1992. Karolyi and Sanders (1998) used a multiple-beta-asset pricing model to examine the predictability of stocks, bonds, and REITs. They found that the REITs have a comparable return predictability to stock portfolios, and that REITs have a significant economic risk premium. Chan et al. (2005) concluded that REITs behaved more like stocks than bonds after institutional changes in the 1990s. Han and Liang (1995) indicate that the performance of REIT portfolio is consistent with the security market line for the 1970-1993 period with some variations over this period.

eREITs have a strong correlation with small stocks, but a low correlation with bonds suggesting that their risk-return profiles may resemble that of common stock. Quan and Titman (1999) find a significant long-term relationship between stock returns and the change in values of real assets and rental income. Likewise, Johnson (2002) suggests that momentum in real estate returns is caused by persistent shocks to dividend growth rates arising

from occasional structural shocks to the economy. Furthermore, long-term leases and spatial attributes of real estate allow REITs to provide investors with defensive performance during extreme market events. Consequently, Hung and Glascock (2008) indicate that high dividend payments by REITs can serve as a hedge against market downturns.

Uncertainty remains with respect to the risk-return constituents for real property as performance predictors vary over time in the forecast domain. Omokolade et al. (2016) emphasize that there is interest in real estate return predictability and persistence as REITs are an alternative investment class with a high frequency of observable data. Knowledge of variability in economic and financial variables has important implication for portfolio manager's interest in exploiting investment opportunities and regulators seeking market stability (Schindler, 2013; Adams et al., 2015). Given the dynamic nature of the factors affecting REIT returns, the changing traits of real estate investment over time and forecast horizon merit investigation.

Case et al. (2012) investigated the dynamic correlations between REIT and stock returns. They observed the correlations between the REIT and stock returns for three recognizable periods. The first period was from 1972 (the earliest date that data was available) to August 1991. During the first period, correlations were high and they did not drop below 59%. During the second period from September 1991 to September 2001, the correlations declined quite significantly. In September 2001, the correlation between REITs and stocks was only 30%. This sparked higher portfolio allocations in both assets for higher portfolio returns with no discernable rise in return volatility. During the third period, which began in October 2021 and ended in September 2008, correlations increased steadily over time approaching 59%. Case et al. (2012) show that the dynamic correlation between the REIT and stock returns varies over time turning equity REITs an effective tool for portfolio diversification.

Glascock et al. (2004) studied the reaction of equity REITs and stock markets during the market crash in October 1997 and suggested that REITs are good defensive stocks. The market crash was the result of an economic crisis in Asia and automated stock market program trading. The financial crisis during 2007-2009 was different resulting from the US real estate market debacle.

Simon and Ng (2009) analyzed the impact of the financial crisis on the dependence between the returns of REITs and common stocks. They used daily data from December 2004 to June 2008 with 852 observations and concluded that investing in REITs provides greater protection against drastic downturns of the U.S stock market. Sun et al. (2015) found that during the rebound period of 2009-2011, larger REITs encountered higher returns than smaller REITs, suggesting that large REITs may have overreacted to the negative shocks during 2007-2009. Luchtenberg and Seiler (2014) found unusually that real estate returns influenced stock market returns. Subrahmanyam (2007) studied the return spillovers from stock market returns to REIT returns with a lag, while REIT returns did not have any effect on stock market returns.

Bley and Olson (2005) used the monthly returns data of equity REIT, mortgage REIT and S&P 500 from 1972 to 2001. They found significant calendar effects for both REIT and S&P 500 indices with positive January-effect and negative August-and October-effects. They also found that the correlation coefficient between equity REIT and S&P 500 has been weakened over time, while equity REITs performed better compared to common stocks on a risk-return basis. They further suggested that equity REIT can indeed enhance portfolio risk-return spectrum and should be considered as a major asset class equivalent to stocks or bonds.

Fitzpatrick et al. (2014) compared the returns of S&P 500 and REIT indices using monthly return data from 2000 through 2011. They found that average returns for the S&P 500 was 2.44% while average REIT returns was 13.73% for the same period. With risk adjusted returns using coefficient of variation, they found that the REIT composite index took only 1.6497 units of risk for each unit of return while S&P 500 took 7.9959 units of risk per unit of return. Their findings suggest that even during the crisis period, REIT's risk-return relationship was favorable in comparison with that of common stocks. Therefore, they should be used in portfolio diversification.

Bhuyan et al. (2015) results were consistent with the Fitzpatrick et al. (2014) findings. They investigated the risk-reduction benefits of REITs and common stocks in portfolio diversification using monthly data for 2002-2012. They found that investors can enhance their portfolio performance by using equity REITs in diversification while mortgage REITs were found to be the worst asset class in diversifying portfolio. Even though the financial crisis was included in the sample period, they suggest that equity REITs offer discernible diversification benefits and even small investors should use equity REITs to diversify portfolio risk.

Kuhle (1987) investigates the effects of eREITs and mREITs on portfolio risk reduction, and suggests that no significant diversification benefits can be expected by adding mREITs to common stock portfolios. Danielsen and Harrison (2000) observed that eREITs have increased liquidity, consistent with financial assets held by mREITs. Chen et al. (2005) examine the effects of REITs in an investment portfolio from an asset allocation perspective and conclude that mREITs do not improve the mean-variance efficient frontiers. Lee and Chiang (2004) examine REITs returns from 1972 to 1999 and find that eREITs and mREITs are perfectly substitutable. In other words, both can be treated as a single asset class in constructing a diversified portfolio. Lee and Chiang (2004), and Chen et al. (2005) suggest that investors be able to enhance portfolio performance by adding only eREITs.

Some prior studies evidenced a long-term cointegration relation between the total price index of eREITs and that of mREITs (e.g., He, 1998; Glascock et al., 2000; and Hansz et al., 2016). Other studies have also found a causal relation and one-way feedback stemming from the total returns of eREITs to those of mREITs (e.g., Glascock et al., 2000; Hansz et al., 2016).

The relationships between REITs and equity indices, and bond indices appear to be mixed. However, bonds seem to be more correlated with REITs in the long run (Roberto and Humberto, 2019).

Perceivedly, REITs are a favorable investment from a portfolio diversification point of view (Tiwari et al., 2020). They enable investors to get exposures to international real estate properties without facing the drawbacks of direct real estate investment. The drawbacks entail a low degree of diversification, high transaction costs and market illiquidity.

Beasley (2020) states that REITs are a useful hedge against stock market volatility because REITs are securitized by physical real estate. They are presumed to be less affected by the broader swings in equity markets due to their typical resilience to macro-economic factors (Jain and Upadhyay, 2021). REITs also provide some protection against stock market downturns since REITs and stocks are less likely to fall in tandem.

Bossman et al. (2022) examine the impact of the COVID-19 pandemic on REIT returns for 12 top REIT regimes spread across America, Asia, and Europe under the bullish, bearish, and normal market conditions over the COVID-19 period (specifically from February 02, 2020 to January 24, 2022). They implement the quantile-on-quantile regression and causality-in-quantiles approach. They document a strong (weak) predictive power of COVID-19 cases on REIT returns within the lower (upper) conditioned quantiles. The findings are of importance to market participants, practitioners, and regulators across REIT regimes.

Katyoka and Stevenson (2023) investigate how U.K REIT volatility is related to implied volatility in the overall U.K stock market. The multivariate analysis utilizes both Constant Conditional Correlation (CCC) and Dynamic Conditional (DCC) GARCH specifications to analyze the interdependence. The findings confirm the presence of volatility transmission across the implied volatility of U.K. REITs and the U.K stock market implied volatility index.

3. EMPIRICAL DESIGN

First, the descriptive statistics (mean, median, and standard deviation) are computed for equity REIT and S&P 500 returns to ascertain their data distributions.

Second, correlation coefficients between the above variables are calculated to reveal the extents of their relationship.

Finally, the following linear regressions are estimated:

$$\% \Delta \text{ eREIT} = \alpha_0 + \beta_0 \% \Delta \text{ S\&P 500} + e_t \quad (1)$$

$$\% \Delta \text{ S\&P 500} = \alpha_1 + \beta_1 \% \Delta \text{ eREIT} + u_t \quad (2)$$

Equation (2) is the reverse specification of equation (1).

Where, eREIT = Equity REIT Index, S&P 500 = Index for US Stock market proxy, e and u = Error terms and, t = Time subscript.

Estimated β's are expected to be positive. The OLS estimation of the above linear regressions for reliable and unbiased results is suitable since mean of (e)=0, mean (u) = 0; e and u are identically and independently distributed (i.i.d), covariance between error term and independent variable = 0, the variance of error term is constant, there are no outliers with spikes and drifts and no evidence of perfect multilinearity (Stock and Watson, 2015).

The daily data sources include the Wallstreet Journal (www.wsj.com) and Yahoo Finance (https://finance.yahoo.com/). The sample period runs from October 31, 2008 to October 31, 2023 with 3,856 observations for this study.

4. RESULTS

As observed in Table 1, the mean-to-median ratio of each variable is within the close proximity of one, suggesting near-normal time series data distribution of each variable. The associated standard deviation of each variable also reveals very modest fluctuations with no unusual highs and lows in returns, as calculated by taking percentage changes of the monthly closing index values.

In Table 2, it is evidenced that the simple correlation coefficient is positive and very low, indicating very weak co-movement of the variables in the same direction meaning that they rise or fall very lowly in tandem.

Close inspection of the assumptions for OLS by plots confirm the suitability for linear and unbiased estimates of the parameters.

For estimated regression (1),	
Δ% eREITs=0.00049+	0.0047% Δ % S&P 500
(t=1.8187, pv=0.069)	(t=3.1463, pv=0.0017)

Finally, the estimated regression results are reported as follows:

$\bar{R}^2$ = 0.0023, F=9.8993; P-value (pv) = 0.0017, DW= 2.194, ρ (1-DW/2) = −0.097

The associated t-value and P-value of each estimated parameter are reported underneath within parenthesis. The estimated value of β_0 shows that %ΔS&P 500 positively influence % Δ eREIT. The effect is statistically significant in terms of both associated t-value and P-value. The adjusted-R^2 is quite low at 0.0023. The F-statistic is discernibly high at 9.8993 with nearly 99% confidence. The DW=2.194 and hence, ρ = −0.097. They show very mild negative autocorrelation. Thus, the signs of the estimated parameters are theoretically consistent and seemingly unbiased.

For estimated regression (2),	
Δ% S&P 500=−0.0321+	0.5397% Δ% eREITs
(t=−11.2440, pv=0.0265)	(t=1.8187, pv=0.0017)

$\bar{R}^2$ = 0.0023, F=9.8993, pv (P-value) = 0.0017, DW=2.317, ρ (1-DW/2) = −0.16

Likewise, the respective associated t-value and P-value for each estimated parameter are reported underneath within parenthesis. In

Table 1: Descriptive Statistics

	Mean	Median	Standard deviation	Mean/median
eREIT Close % Δ	0.00034339	0.000317708	0.016653243	1.09
S&P 500 Close % Δ	0.000319375	0.000281782	0.177569141	1.13

Table 2: Simple correlation coefficients

	eREITs Close % Δ	S&P 500 Close % Δ
eREITs % Δ	1	
S&P 500% Δ	0.050616192	1

this case, the estimated positive coefficient of β_1 is magnitudinally higher than that of β_0. As expected in a bi-variate linear case, adjusted-R^2 and F-values are identical for both equations (1) and (2). The DW = 2.317 and thus, $\rho = -0.16$. They suggest the presence if very mild autocorrelation. So, the estimated parameters have theoretically consistent signs.

5. CONCLUSIONS

Time series data distribution of each variable is near-normal. The extent of their co-movement is very weakly positive. Δ % S&P 500 and Δ % eREIT weakly and positively influence each other with evidence of subdued bidirectional causal flows. Inclusions of both eREIT and S&P 500 indices to extended portfolios would enhance the potential for overall diversification.

The major findings of this study are supported by a host of prior studies (e.g., Myer and Web, 1993; Clayton and MacKinnon, 2003; Adams et al., 2015; Case et al., 2012; Bley and Olson, 2005; Bhuyan et al., 2015; Beasley, 2020; Katyoka and Stevenson, 2023).

To note, changes in inflation rates emanating from macroeconomic policy uncertainty impact both REIT and equity returns. Likewise, changes in interest rates due to monetary policy changes also impact the above. Additionally, changes in dividend taxes have more bearings for REITs relative to common stocks. In brief, the findings have implications for investors and asset managers. They should closely monitor changes in the above to adjust their strategies for portfolio allocations and management.

In closing, eREITs can provide diversification benefits to a portfolio, yet many investors have remained underexposed to this asset despite its low correlation and notable trajectory of performance relative to other assets. Combining eREITs that exhibit low performance correlation can play an important role in reducing portfolio risk without sacrificing return potential reflecting the central focus of portfolio optimization.

REFERENCES

Adams, Z., Fuss, R., Schindler, F. (2015), The sources of risk spillovers among US REITs: Financial characteristics and regional proximity. Real Estate Economics, 43(1), 67-100.

Beasley, G. (2020), Real Estate Offers a Powerful Hedge Against Market Volatility. Available from: https://www.forbes.com/sites/forbesrealestatecouncil/2020/01/02/real-estate-offers-a-powerful-hedge-against-market-volatility/?sh=5eaae0117bad

Bharati, R., Gupta, M. (1993), Asset allocation and predictability of real estate returns. Journal of Real Estate Research, 7, 469-484.

Bhuyan, R., Kuhle, J., Al-Deehani, T.M., Mahmood, M. (2015), Portfolio diversification benefits using real estate investment trusts - an experiment with US common stocks, equity real estate investment trusts, and mortgage real estate investment trusts. International Journal of Economics and Financial Issues, 5(4), 922-928.

Bley, J., Olson, D. (2005), An analysis of relative return behavior: REIT vs. stocks. Academy of Accounting and Financial Studies Journal, 9(2), 71-88.

Bossman, A., Umar, Z., Teplova, T. (2022), Modelling the asymmetric effect of COVID-19 on REIT returns: A quantile-on-quantile analysis, Journal of Econometric Asymmetries, 26, e00257.

Case, B., Yawei, Y. and Yildiray, Y. (2012), Dynamic correlations among asset classes: REIT and stock returns. Journal of Real Estate Finance and Economics, 44(3), 298-318.

Chan, K.C., Hendershott, P.H., Sanders, A.B. (1990), Risk and return on real estate: Evidence from equity REITs. Real Estate Economics, 18(4), 431-452.

Chan, S.H., Leung, W.K., Wang, K. (2005), Changes in REIT structure and stock performance, evidence from the Monday stock anomaly. Real Estate Economics, 33, 89-120.

Chandrashekaran, V. (1999), Time-series properties and diversification benefits of REIT returns. Journal of Real Estate Research, 17, 91-112.

Chen, H.C., Ho, K.Y. Lu, C., Wu, C.H. (2005), Real estate investment trusts: An asset allocation perspective. Journal of Portfolio Management, Special Real Estate Issue, 2005, 46-54.

Clayton, J., MacKinnon, G. (2003), The relative importance of stock, bond and real estate factors in explaining REIT returns. The Journal of Real Estate Finance and Economics, 27(1), 39-60.

Corgel, J.B., Mcintosh, W., Ott, S.H. (1995), Real estate investment trusts: A review of the financial economics literature. Journal of Real Estate Literature, 3, 13-33.

Danielsen, B.R., Harrison, D.M. (2000), The impact of potential private information on REIT liquidity. Journal of Real Estate Research, 19, 49-71.

Fitzpatrick, B.D., Ali, S., Wiegle, G. (2014), Surprising comparison of risk and return factors between real estate investment trusts (REITs) and the S&P 500 index during the 2000-2011 time period. Journal of Business and Economics Research, 12(1), 47-54.

Ghosh, C., Miles, M., Sirmans, C.F. (1996), Are REITs stocks? Real Estate Finance, 13, 46-53.

Giliberto, S.M. (1990), Equity real estate investment trusts and real estate returns. Journal of Real Estate Research, 5(2), 259-264.

Glascock, J.L., Lu, C., So, R.W. (2000), Further evidence on the integration of REIT, bond, and stock returns. Journal of Real Estate Finance and Economics, 20, 177-194.

Glascock, J.L., Michayluk, D., Neuhauser, K. (2004), The riskiness of REITs surrounding the October 1997 stock market decline. Journal of Real Estate Finance and Economics, 28, 339-354.

Han, J., Liang, Y. (1995), The historical performance of real estate investment trusts. Journal of Real Estate Research, 10, 235-262.

Hansz, J., Zhang, Y., Zhou, T. (2016), An investigation into the substitutability of EREITs and MREITs in real estate portfolios. Journal of Real Estate Finance and Economics, 54, 338-364.

He, L.T. (1998), Cointegration and price discovery between EREITs and MREITs. Journal of Real Estate Research, 16, 327-338.

He, L.T., Webb J.R., Myer, F.C.N. (2003), Interest rate sensitivities of REIT returns. International Real Estate Review, 6, 1-21.

Hung, S.Y.K., Glascock, J.L. (2008), Momentum profitability and market trend: Evidence from REITs. The Journal of Real Estate Finance and Economics, 37, 51-69.

Jain, P., Upadhyay, A. (2021), Are REITs are more resilient than non-REITs? Evidence from natural experiments. Japan and the World Economy, 58(1), 1010-1069.

Johnson, T.C. (2002), Rational momentum effects. The Journal of Finance, 57(2), 565-608.

Karolyi, G.A., Sanders, A. (1998), The variation of economics risk premiums in real estate returns. Journal of Real Estate Finance and Economics, 17, 245-262.

Katyoka, M., Stevenson, S. (2023), Volatility transmission: Evidence from U.K REIT and Stock market implied volatility. Journal of Real Estate Portfolio Management, 1-16.

Kuhle, J., Walther, C., Wurtzebach, C. (1986), The financial performance of real estate investment trusts. Journal of Real Estate Research, 1, 67-75.

Kuhle, J.L. (1987), Portfolio diversification and returns benefits - common stock vs. real estate investment trusts. Journal of Real Estate Research, 2, 1-9.

Lee, M.L., Chiang, K.C.H. (2004), Substitutability between equity REITs and mortgage REITs. Journal of Real Estate Research, 26, 95-114.

Liang, Y., Mcintosh, W. (1998), REIT style and performance. Journal of Real Estate Portfolio Management, 4, 69-78.

Ling, D.C., Naranjo, A. (1999), The integration of commercial real estate markets and stock markets. Real Estate Economics, 27, 483-516.

Luchtenberg, K.F., Seiler, M.J. (2014), Did the recent financial crisis impact integration between the real estate and stock markets? Journal of Real Estate Portfolio Management, 20(1), 1-20.

Mueller, G.R., Pauley, K.R. (1995), The effect of interest-rate movements on real estate investment trusts. Journal of Real Estate Research, 10, 319-326.

Mull, S.R., Soenen, L.A. (1997), U.S REITs as an asset class in international investment portfolios. Financial Analysts Journal, 53, 55-61.

Myer, F.C.N., Webb, J.R. (1993), Return properties of equity REITs, common stocks, and commercial real estate: A comparison. Journal of Real Estate Research Paper, 8, 87-106.

Omokolade, A., Aye, G.C., Babalos, V., Economou, F., Gupta, R. (2016), Real estate returns predictibility revisited: Novel evidence from the US REITs market. Empirical Economics, 51(3), 1165-1190.

Peterson, J.D., Hsieh, C.H. (1997), Do common risk factors in the returns on the stocks and bonds explain returns on REITs? Real Estate Economics, 25, 321-345.

Quan, D.C., Titman, S. (1999), Do real estate prices and shock prices move together? An International Analysis. Real Estate Economics, 27(2), 183-207.

Roberto, J.S., Humberto, V.H. (2019), The real estate trusts industry and the financial crisis: Modeling volatility (1985-2016). Revista Mexicana de Economia y Finanzas, 14(2), 169-188.

Schindler, F. (2013), Predictibility and persistence of the price movements of the Sp/case-Shiller house price indices. Journal of Real Estate Finance, 46(1), 44-90.

Simon, S., Ng, W.L. (2009), The effect of the real estate downturn on the link between REITs and the stock market. Journal of Real Estate Portfolio Management, 15(3), 211-219.

Stock, H.J., Watson, W.M. (2015), Introduction to Econometrics. 3rd ed. Harlow: Pearson Education Limited.

Subrahmanyam, A. (2007), Liquidity, return and order-flow linkages between REITs and the stock market. Real Estate Economics, 35, 383-408.

Sun, L., Titman, S.D., Twite, G.J. (2015), REIT and commercial real estate returns: A postmortem of the financial crisis. Real Estate Economics, 43, 8-36.

Tiwari, A.K., Andre, C., Gupta, R. (2020), Spillovers between US real estate and financial assets in time and frequency domains. Journal of Property Investment and Finance, 38(6), 525-537.

Worzala, E., Bajtelsmit, V. (1997), Real estate asset allocation and the decisionmaking framework used by pension fund managers. Journal of Real Estate Portfolio Management, 3(1), 47-56.