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Investing in Real Estate Investments Trusts (REITs) Provides Performance and Risk Diversification Benefits: A Malaysia and Japan Analysis

David Ching Yat, Ng
Faculty of Accountancy and Management,Universiti Tunku Abdul Rahman

Teck Chai, Lau
Southampton Business School University of Southampton Faculty of Accountancy and Management

Shubatra Shanmugaretnam
Faculty of Accountancy and Management, Universiti Tunku Abdul Rahman

Fitriya binti Abdul Rahim
Faculty of Accountancy and Management, Universiti Tunku Abdul Rahman

Abstract
This study analyses the effectiveness of risk diversification and investment performance between M-REITs' and J-REITs' by comparing the diversification measures (unsystematic risk divided by total risk and one-minus R squared) including their respective Sharpe Ratio, Treynor Ratio and Jensen's Alpha calculated on each REITs. The study period for M-REITs' and J-REITs extends from 2008 to 2017. Resultsindicate that M-REITs' performed better than J-REITs' in terms of Sharpe ratio, Treynor ratio, and Jensen's Alpha. Total risk of J-REITs' are higher than M-REITs'. The Beta values for both M-REITs' and J-REITs' are less than one, implying that both categoriesof REITs are less risky than the market index. M-REITs' have lower R-Squared values than S-REITs', which suggest that M-REITs' are poorly diversified against J-REITs' and therefore, M-REITs' have more diversification opportunities. The diversification measures computed for M-REITs' are higher than J-REITs' and would imply that M- REITs' have better rate of returns if M-REITs' diversify their risk (higher risk diversification benefits). The findings from this study aims to help investors to make better investment decision when investing in M-REITs' and J-REITs'. The findings from this study aims to assist investors determine better investment decisions when considering investing in M-REITs' and J-REITs'.
Keywords: M=REITs, J-REITs', Performance, Risk Diversification Benefits.

Introduction

This research's main focus is to compare/investigate the performance and risk diversification benefits of Real Estate Investment Trust (REITs) between Malaysia and Japan. This research evaluates the REITs' performance and risk benefits for Malaysia and Japan by studying their weekly share price from the year 2008 to year 2017, a 10 years study. Extracting secondary data from weekly share price returns, financial analytics tools like beta measure ($\beta\beta$), R-squared, Sharpe Ratio, Treynor Ratio, and Jensen Alpha will be calculated and applied as measuring tools.

Hypotheses of Study

Hypothesis 1

HH_{00}: M-REITs' β > J-REITs' β (M-REITs' have higher Beta [market risk] compared to J-REITs)
$HH11$: M-REITs' β < J-REITs' β (M-REITs' have lower Beta [market risk] compared to J- REITs)

Hypothesis 2

HH_{00}: M-REITs' Rd < J-REITs' Rd (M-REITs have lower risk diversification benefits compared to J-REITs)
$HH11$: M-REITs' Rd > J-REITs' Rd (M-REITs have higher risk diversification benefits compared to J-REITs)

Hypothesis 3

HH_{00}: M-REITs' SR < J-REITs' SR (M-REITs have lower Sharpe ratio compared to J- REITs)
$HH11$: M-REITs' SR > J-REITs' SR (M-REITs have higher Sharpe ratio compared to J- REITs)

Hypothesis 4

HH_{00}: M-REITs' TR < J-REITs' TR (M-REITs have lower Treynor ratio compared to J- REITs)
$HH11$: M-REITs' TR > J-REITs' TR (M-REITs have higher Treynor ratio compared to J- REITs)

Hypothesis 5:

HH_{00}: M-REITs' αi < J-REITs' αi (M-REITs have lower Jensen's Alpha compared to J- REITs)
$HH11$: M-REITs' αi > J-REITs' αi (M-REITs have higher Jensen's Alpha compared to J- REITs)

Overview

Previous studies indicate that there is a general consensus that REITs worldwide largely produce positive returns and outperform their national indices, according to a study of 204 REITs from different countries over a 20-year period by Brounen and de Koning (2013). This is further corroborated by Moss et al. (2015), who found that on a global scale, investing in REITs can be beneficial to both dedicated REIT-only portfolios and multi-asset portfolios in the form of enhanced returns, diversification and reduced risk.

However, some studies have found exceptions. In a study of Nigerian REITs, Olanrele et al. (2015) found that despite the generally superior performance of REITs, Nigerian REITs underperformed, suggesting that the benefits of REITs may not be absolute, and may depend on other factors. Furthermore, there was evidence to suggestthat this may not be isolated solely to developing countries with emerging economies like Nigeria, as a study conducted by Ng et al. (2018) showed that even some REITs in Singapore, a well-developed high-income country can underperform.

Malaysian Context- Reits Performance and Risks

Ng et al. (2018) analysed the performance of sixteen MalaysianREITs from year 2007 to 2016 by applying three standard performance measurement tools: Sharpe Ratio, Treynor Ratio and Jensen's Alpha to estimate the risks, returns and performance of each M-REIT. The study concluded that investing in M-REITs will provide a preferable return because every one of the M-REITs outperformed the market benchmark during the time period. This is further reinforced in a study by Olanrele et al. (2014), who analysed the performance of three M-REITs over a five-yearperiod (2008-2014) using a hedonic regression model. The study found that all the M- REITs outperformed the market index throughout the time period, albeit with some sectoral capacity underperformance. The results of both studies are generally consistentwith Brounen and de Koning's (2013) results that concluded REITs tend to provide a higher return than the market index and saving accounts. Low and Johari (2014) studied the performance and risk diversification of 12 M-REITs throughout the 2007-2012 period utilizing Jensen's Alpha, Treynor Ratio, and the Sharpe Ratio. Additionally, theyutilized an alternative approach to performance evaluation known as the M-squared measure, developed from Markowitz's (1952) portfolio theory, which focused on the idea of manipulating leverage to accomplish the best fund performance for any risk level. The results from the study indicated that the total risk of Malaysian REITs came mostly from the unsystematic risk component, which indicates significant opportunitiesto diversify. The study also highlights the importance of accounting for risk in performance analyses of REITs.

To investigate the risk diversification impact of M-REITs on portfolio diversification, Jalil et al. (2015) analysed expected return, standard deviation, and the efficient frontier of 13 M-REITs, with the results showing that the addition of M-REITs to an investment portfolio portrays significant risk diversification benefits. The research also indicates that although REITs are riskier than direct real estate investment, they can potentially bring higher returns given their volatility toward upper part of the efficiencyfrontier, making them the optimal choice for aggressive investors. The overall results of the study goes on to conclude that REITs can be especially beneficial during periods ofeconomic downturn due to their perfectly negative correlation to the general market, contradicting the findings of the study by Chiang et al. (2013).

A study by Hamzah and Rozali (2010) that also utilized the three measures methods (Sharpe Ratio, Treynor Ratio and Jensen Alpha) found that the risk-adjusted performance of M-REITs varied throughout the time period under study, and that the systematic risk of M-REITs in general were considerably higher than the market duringeconomic crisis compared to the period immediately after the crisis, during which time the systematic risks became significantly lower.

Japanese Context- Reits Performance and Risks

Japan was one of the first countries in Asia to establish a REIT market, with the first J- REIT being listed in 2001. It has since become one of the largest and most well- developed REIT markets in the world, and the largest in Asia (Miyakoshi et al., 2016). A study by Su et al. (2010) examined and compared the characteristics of Japanese REIT with United States' REIT. They found that J-REITs generally have "hybrid" characteristics, featuring traits found in both stocks and bonds. Pham (2012) examined the dynamics of returns and volatility in the Asian REIT marketsusing the EGARCH model, the results indicated that the returns in the Japanese REITs

market has significant influence on returns in emerging REITs markets, such as those in Malaysia and Taiwan. The study concluded that while this is true for mean returns, it isnot true for REIT market volatility, where Japan was affected more by other Asian REIT markets, making it a returns transmitter but a volatility receiver. This is consistent with the findings from a study by Nawawi et al (2010), which found that the Japanese REIT market had some influence on Malaysian REITs. An empirical study on the risk-adjusted performance and portfolio diversification benefits of sub-sector J- REITs was done by Cho (2017). The research utilized the Sharpe Ratio analysis, risk- return ratio and reward to risk ratio to assess risk-adjusted return performance, and correlation coefficient analysis to assess diversification benefits for seven sub-sector J- REITs throughout the period from 2010-2015. The results of the study indicated that sub-sector REITs such as hotel and industrial REITs outperformed traditional benchmark REITs, while also finding that J-REITs have generally low diversification benefits given their close correlation to the Japanese stock market. On the risk-adjusted performance of J-REITs as a whole, an empirical study was done by Newell and Peng (2012), where the risk-adjusted performance and diversification benefits of J-REITs from 2001 to 2011 were analysed by using the Sharpe Ratio. The research found that over the sample period, J-REITs provided the best risk-adjusted performance comparedto bonds, property companies, and stocks. The study concluded that a mixed-asset portfolio including J-REITs would outperform one without J-REITs, highlighting the benefits of J-REITs. Furthermore, the study found that the risk-adjusted performance of J-REITs was even better after the financial crisis period compared to before, which may imply J-REITs' resilience to financial crises. However, according to Miyakoshi et al. (2016), the Japanese REIT market remains vulnerable to two kinds of so-called "shocks", the first being financial market shock caused by international financial crises, while the second relates to natural disasters which commonly plague Japan, such as tsunamis and earthquakes. Despite that, a study by Jain (2017) suggests that J-REITs may actually be less affected by financial crises compared to non-REIT common stocks on the Tokyo Stock Exchange. Another study relating to the subject wasdone by Shimizu et al. (2015), which utilized a new method to estimate commercial property price indexes using J-REIT data. They found that the price of REITs could be useful to gauge the commercial property prices, implying a degree of correlation between the two.

Data Collection

The sampling data consists of 16 M-REITs and 57 J-REITs from the period 2008 to 2017 for both countries. The same 10-year range was used to ensure a consistent comparison amongst both countries. The matrix used to compare both REITs was stated above and will be further explained below. This study extracts secondary data from verified and credible sources as well as the application of well-justified and tested mathematical formulas to obtain the required data.

Secondary data Collection

The weekly stock prices of all the 16 M-REITs' and 57 J-REIT's listed from the year 2008 to year 2017 were extracted from Bloomberg terminal. The weekly share prices ofM-REITs' and J-REITs' were used to compare against the indexes from KLPR KL Property Index and Tokyo Stock Exchange REIT Index. The reason why KLPR KL Property Index was used is because of the absence of a REIT index generated in Bursa Malaysia. In other words, the best alternative that can be used as a metric to compare

with M-REITs would be the KLPR KL Property Index, Malaysia' property index.
The weekly returns of the 16 M-REITs and 57 J-REITs were calculated using thefollowing formulas:

$$RR = \frac{PPtt - PPtt-1}{XX} \times 100 \quad (1)$$

where, tt PP_{tt-1}

R_t = M-REIT/J-REIT stock price for week t
P_t = Closing share price of M-REIT/J-REIT at the chosen day of week t
P_{t-1} = Closing share price of M-REIT/J-REIT at the chosen day of week before week t The weekly returns for KLPR KL Property Index and Tokyo Stock Exchange REITsIndex were calculated with the following formula:

$$RR_{iiiiiiiii} = \frac{IItt - IItt-1}{XX} \times 100 \quad (2)$$

$tt-1$
where,
Rindex = Index for week t
I_t = Closing index value on chosen day of week t
I_{t-1} = Closing index value on chosen day of week before week t

Calculating Reits' Risk Features

The standard deviation of each REIT was calculated before being used to determine the volatility of each REIT against the respective property index, namely the KLPR KL Property Index for M-REITs and the Tokyo Stock Exchange REITs Index for J-REITs.The REITs' standard deviation is a statistical measure of the volatility of their individualsample weekly return. Risk averse investors may prefer an investment portfolio with lower standard deviation compared to its benchmark value as it implies lower volatility, and therefore lower risk or uncertainty within the portfolio.

$$\sigma\sigma = \sqrt{\frac{\sum_{ii=1}^{ii} (ii - \mu\mu)^2}{ii-1}} \quad (3)$$

where,

X_i = weekly return of REITs
μ = the mean return of REITs for the year (%)n = sample period (years)
Besides that, the total risk (comprising of market risk and unsystematic risk) of each of the 57 J-REITs and 16 M-REITs were calculated and compared with the followingformula:

$$\sigma\sigma^2 = \beta\beta^2 . \sigma\sigma^2 + \sigma\sigma^2 \quad (4)$$

where, iii mm ii
σ^2 = Total risk for REITs i
β^2 = Square of Beta of REITs

σ_m^2 = Variance of return of the market portfolio $\beta_i^2 \sigma_m^2$ = Systematic risk of REITs

σ_e^2 = Unsystematic risk of REITs

Diversification can be defined as "the process of allocating capital in order to reduce the exposure to risk" (Ng et al., 2018). In other words, diversification is a way for investors to reduce volatility by mixing a wide variety of investments within a portfolio.

A REIT's risk diversification benefits can be determined by the ratio of its unsystematic risk to total risk, which serves as a measure of risk "diversifiability" (Kim et al., 2002). This diversifiability measure can be determined in one of two ways. Thefirst method is by simply dividing the unsystematic risk over total risk. The closer the ratio is to 0, the more insignificant the unsystematic risk component of the REIT. Conversely, the closer the ratio is to 1, the more significant the unsystematic risk component of the REIT.

The first method of calculating the Diversifiability Measure is shown below:

$$DDiiDDiiDDDDiiDDiiDDDDiiDDiittDD\ MMiiDDDDMMDDii = \frac{\sigma\sigma_{ii}^2}{\sigma\sigma^2} \quad (5)$$

where,

$\sigma\sigma_{ii}^2$ = Unsystematic Risk of REITs

$\sigma\sigma^2$ = Total Risk of REITs

The second method is by using the following formula: one minus R-squared (1 –R- squared). The further the ratio is from 0, the more unsystematic risk remains in the portfolio to be diversified away. However, if a portfolio's Diversifiability Measure has a ratio that is close to 0, it *has little unsystematic risk remaining* and *is not diversifiable*. The second method of calculating the Diversifiability Measure is shown below:

$$DDiiDDiiDDDDiiDDiiDDDDiiDDiittDD\ MMiiDDDDMMDDii = 1 - RR^2 \quad (6)$$

where,

R^2 = R-squared

The formula for calculating the R-Squared value of REITs is shown below:

$$RR^2 = \frac{\beta_i \beta_m \sigma_m^2}{\sigma\sigma_{ii}^2} \quad (7)$$

where,

RR^2 = R-Squared

$\beta\beta^2$ = Square of portfolio's beta
σ^2_m = Variance of return of the market portfolio β^2. σ^2_i = Systematic risk component of REITs σ^2 = Total risk

In addition to being used to calculate each REIT's diversifiability measure, the R- squared of each REIT is also used to examine the market movement of each REIT that can be predicted by the movement of the portfolio benchmark. In sum, the R-squared demonstrates the relationship between the total risk and systematic risk, as it explains how much of the total risk is affected by systematic risk. The higher the value of R- squared, the higher the likelihood that the REIT moves in the same direction as the market index, indicating that the inherent total risk within the REIT is affected by the systematic risk. Conversely, if the R-squared has a low value, it shows that the REIT does not move along with the market index, indicating that the REIT does not behave much like the market index.

Calculating Reits' Performance (Sharpe Ratio, Treynor Ratio, and Jensen's Alpha)

The risk-adjusted performance measures of the REITs are computed using the Sharpe Ratio, Treynor Ratio and Jensen's Alpha to determine:
how the REITs are performing against the projected risk, and
the possible excess return from each REIT against the market index.

The Sharpe Ratio calculates the return generated in excess of the risk-free rate of return per unit of standard deviation in each REIT. The standard deviation is used to present the diversity of the returns over a sampling period.
The formula for calculating the Sharpe Ratio is shown below:

$$SSRR = \frac{DDii - DDDD}{\sigma\sigma ii} \quad (8)$$

where,
SR = Sharpe Ratio
ri = average return of REITs rf = risk free rate of return
$\sigma\sigma ii$ = standard deviation of REITs

The higher the value of Sharpe Ratio, the more attractive the REIT's return is against the risk-free rate of return. A positive Sharpe Ratio value indicates returns generated in excess of the risk-free rate of return, while a negative Sharpe Ratio value indicates that the portfolio generates a lower return compared to the risk-free rate of return.
The Treynor Ratio is a performance metric for determining how much more return was earned for each unit of risk taken on by a portfolio (Treynor, 1965). Like the Sharpe Ratio, it is used to determine the additional profits earned as more risk is taken on. However, unlike the Sharpe ratio, the Treynor utilizes β (market risk) to measure volatility instead of total risk (standard deviation).
The formula for calculating the Treynor Ratio is shown below:

$$TTTT = \frac{rrii - rrff}{\beta\beta ii} \quad (9)$$

where,
TR = Treynor Ratio
r_i = average return of REITs r_f = risk free rate of return
$\beta\beta$i = beta of portfolio

Generally, the higher of the Treynor ratio, the more attractive the return is, adjusted forthe level of risk taken. The higher the Treynor Ratio is, the greater the REIT's excess returns gained against the portfolio benchmark.

Jensen's Alpha is an evaluation tool used to determine the abnormal return on each REITover the expected or required return as determined by the capital asset pricing model (CAPM), given the REITs' beta and the average market return (Jensen, 1968). In sum, it utilizes the CAPM to estimate the rate of return based on market volatility by measuring the REITs' beta and comparing it with the market beta (Fama & French, 2004).

The formula for calculating Jensen's Alpha is shown below:

$$\alpha_{ii} = R_{ii} - [R_{FF} + \beta_{ii}(R_{mm} - R_{FF})] \quad (10)$$

where,

α_{ii} = Jensen's Alpha for REIT R_i = return of REIT

R_f = risk free rate

β_i = beta of portfolio

R_m = return of portfolio market

Empirical Findings

Risk Features of Reits

Table 2, Table 2.1 and Table 2.2 indicates the overall average weekly returns of the 16 M-REITs, calculated at approximately 0.2060% and the average return of all M-REITsactually performed much better than the KLPR KL Property Index, which stands at 0.0725%. On the other hand, for the 57 J-REITs, the overall average weekly returns stand at 0.1918%, which also generated excess return against the Tokyo Stock ExchangeREIT Index of 0.0112%. Comparing both M-REITs' and J-REIT's overall average weekly returns, M-REITs with 0.2060% actually performed slightly better than J- REITs' 0.1918%, generating slightly more returns. The overall rate of return generated by J-REITs' is lesser than those in M-REITs' due to some of the J-REITs' such as Nippon Healthcare Investment Corporation, Healthcare & Medical Investment Corporation, Nomura Real Estate Master Fund, Inc., and Mitsubishi Estate Logistics REIT Investment Corporation generated negative overall weekly returns and it vastly underperformed against the Tokyo Stock Exchange REIT Index of 0.0112%. These reported negative average returns in the end of 2017 affected the average rate of return in the overall REITs market in Japan, whereas on the other hand, none of the 16 M- REITs have negative weekly returns, which boosted the overall average weekly returnsof M-REITs. J-REITs' had a higher standard deviation of approximately 3.6384% as compared to M-REITs' approximately 2.0573%. J-REITs achieved a significantly higher average return volatility in which it exceeded the Tokyo Stock Exchange REIT Index's average return volatility of approximately 2.5922%. However, M-REITs achieved a lower average return volatility compared to the market index of KLPR KL Property Index, which is approximately 2.1952%, slightly higher than M-REITs' 2.0573%. The total risk is calculated using the squared of the average return volatility. For J-REITs, it is calculated at approximately 15.12367% and it is significantly higher than M-REITs' calculated value at approximately 4.38548%. Thus, concluded from thetotal risk value from both REITs is that both markets take a significantly different total risk. The total risk taken by J-REITs is approximately 3 times larger than M-REITs. In addition to that, the systematic risk of J-REITs fluctuates between from the lowest value approximately 1 to highest value 29 approximately, whereas the systematic risk of M- REITs is only lower than 1%, where the highest value is only 0.64270%. This means that there is a significant un-diversifiable risk inherent in most of the J-REITs. Moreover, the average beta generated in the J-REITs',

approximately 0.84143, which is greater than M-REITs' beta value of 0.21224. This explains the high systematic risk bear by J-REITs compared to M-REITs, which in other words it is more volatile against the marketmovement. Among all 57 J-REITs, there are 15 different companies with beta value higher than 1, whereas on the other hand M-REITs highest beta value is only valued at 0.36520. The higher the beta value, the more the portfolio contributes towards the average systematic risk of the entire market. From the M-REITs' perspective however, the findings have shown that the volatility of each M-REIT against the market movement is relatively low compared to J-REITs as it contributes a much lower level of systematic risk. In conclusion, M-REITs has a relatively lower systematic risk and total risk in relative to J-REITs and it can be speculated that M-REITs' can be considered as a defensive investment portfolio as it has lower risk and less susceptible to market movement changes whereas J-REITs is a speculative investment portfolio which it has much more risk and higher degree of volatility against the market movement. In terms of R-squared, M-REITs has a much-lowered average value of approximately 0.05951, whereas relatively J-REITs has a higher average value of 0.39949, which is about 7 times higher than M-REITs' R-squared value. This can be concluded that the fund of J-REITs is highly diversified compared to M-REITs. For both J-REITs and M-REITs, the findings show that majority of the total risk is the unsystematic risk, in which it has a larger influencing factor over both REITs compared to systematic risk. However, the diversification measure of M-REITs' is almost one-fold higher than J-REITS', which M-REITs' and J-REITs' is valued at 0.94049 and 0.60051 respectively. For M-REITs',most of the diversification value is at least approximately 0.84 and above, which in otherwords means that most M-REITs have high diversification value and has greateropportunities for diversification. On the other hand, J-REITs have distinctive difference between the highest value REIT, which is Daiwa House REIT Investment Corporation,valued at 29.69231, and the lowest value, Mitsubishi Estate Logistics REIT Investment Corporation valued at 1.41898. This implies that J-REITs has significantly loweropportunities for diversification compared to M-REITs.

Sharpe, Treynor and Jensen's Alpha Ratio Analysis of M-reits' and J-reits' Respectively.

In Table 3, Table 3.1 and Table 3.2, from the Sharpe ratio aspect, M-REITs has a higherratio compared to J-REITs, valued at 0.34647 compared with J-REITs' average REITs'Sharpe ratio at 0.16901. It can be concluded that the overall performance of M-REITsis comparatively more attractive compared to J-REITs because of its Sharpe Ratio beinghigher than the other. In M-REITs, Sunway Real Estate Investment Trust performed best, contributing 0.76650 in Sharpe ratio whereas Hektar Real Estate Investment Trustunderperformed against the overall average Sharpe ratio at 0.11230. That being said, allof the M-REITs portfolio does not yield a negative ratio return, whereas on the other hand, J-REITs have 8 out of 57 REITs with negative values, which in other words meansthat it underperformed against the investments which generates risk free rate of return, hence the negative value ($r_f > r_i$).

While both Treynor Ratio records an average positive value of Treynor Ratio, M-REITs' are relatively better than J-REITs', which both valued at 0.56422 and 0.11397 respectively. In M-REITs, the REIT with the highest Treynor Ratio is Al-'Aqar Healthcare REIT, standing at 1.01897, and not surprisingly M-REITs does not record any negative Treynor Ratio. On the other hand, J-REITs have the same 8 out 57 REITs that generates a negative value ratio, which indicates that the REITs have been underperformed against the investments which generates risk free rate of return, or in other words underperformed against the market benchmark. According to the table, J- REITs lowest value of Treynor Ratio stands at -0.31262 by Nippon Healthcare Investment Corporation, and the highest value stands at merely 0.76097 by Marimo Regional

Revitalization REIT,Inc. M-REITs have been generating an average negative Jensen Alpha, -0.02858, whereas J-REITs stay slightly above 0, valued at 0.00076. J- REITs recorded a higher Jensen Alpha ratio as compared to M-REITs, only 18 out of 57of J-REITs yield a negative value, which in the other words means that 39 of J-REITs outperformed against the benchmark of Tokyo Stock Exchange REIT Index. On the other hand, M-REITs, which average yields a negative return value, and have none REITs higher than the 0 value, have all underperformed against the KLPR KL PropertyIndex. In addition to that, there are still some J-REITs that yield negative Jensen Alpha ratio, in which some of it included are Nippon Healthcare Investment Corporation, Mitsubishi Estate Logistics REIT Investment Corporation, and Healthcare & Medical Investment Corporation. However, in comparison to M-REITs who have all negative Jensen Alpha values, J-REITs outperformed relatively. In sum, J-REITs performed much better against the benchmark of market portfolio compared to M-REITs.

Conclusion and Implications

This research was conducted to compare and analyze the overall performance between 2 distinctive REITs, which is Malaysia, M-REITs and Japan, J-REITs, by applying risk-adjusted measures of Sharpe Ratio, Treynor Ratio and Jensen's Alpha. The research alsocompared and contrast risk diversification effectiveness of both M-REITs and J-REITs by using the diversifiability measure. For both REITs, the study period is from 4th January 2008 to the last date 29th December 2017. Results indicated between M-REITs and J-REITs, the overall average weekly return of M-REITs is higher than J-REITs, revealing that M-REITs outperformed J-REITs. Applying the Sharpe ratio, Treynor Ratio, and Jensen's Alpha, on average, M-REITs performed better in two of three performance measures, yielding positive results in all Sharpe and Treynor Ratio whilst yielding negative results in Jensen's Alpha. While M-REITs were the defensive investment portfolio to consider, the negative Jensen's Alpha value provided evidence that it does not earn any excess returns and it is not earning the proper return for its levelof risk. However, M-REITs do generate a better return than investment with risk free rate of returns in Malaysia as compared to J-REITs in Japan due to its high Sharpe and Treynor ratio. According to Sharpe Ratio, all M-REITs' achieved a positive Sharpe Ratio value in contrast to J-REITs' 8 out of 57 REITs which recorded negative returns Ican be concluded that overall J-REITs gained lesser returns as compared to risk free rate of returns against the volatility of the portfolio. On the other hand, Treynor ratio resultsindicated that all M-REITs have gained positive Treynor values, while J-REITs yielded8 out of 57 REITs with negative results. This revealed that J-REITs do not perform up to a risk-free rate level against the market risk, beta. Between M-REITs and J-REITs, the positive ratios of M-REITs indicated that they are able to gain better returns in compared to risk free rate. Besides, based on Jensen's Alpha, all M-REITs have yieldeda negative value return. It is observed that M-REIT underperformed against the KLPR KL Property Index. However, on the other hand, only 18 out of 57 of J-REITs have negative alpha values, on average they have shown a positive alpha value which in otherwords, they outperformed the Tokyo Stock Exchange REIT Index.

The risk features of M-REITs and J-REITs are compared according to the data given. Firstly, the total risk of M-REITs is lower than J-REITs. The Beta values for both M- REITs and J-REITs are less than 1, implying that both REITs are less risky or less volatile against market movement. Besides that, M-REITs have a lower R-squared valueas compared to J-REITs, which in other words means that M-REITs are poorly diversified than J-REITs. In turn, data suggest that M-REITs have more diversified opportunities. M-REITs have a higher diversification measure as compared to J-REITs,which suggests that M-REITs may have better risk diversification benefits.

In a nutshell,the findings suggest that low-risk appetite investors would prefer investing in M-REITsrather than J-REITs, because they carry a lower risk. Moreover, M-REITs outperformed their risk-free rate of returns and also KLPR KL Property. In conclusion, investors should make careful consideration and plan their investing strategies by evaluating the market trend with the essential financial analysis of the market movement. In addition to that, the REITs' nature of investments offers a certain protection against capital loss against the volatility of the market as well as the economy.

The purpose of this study is to look in depth into the transparency of both M-REITs andJ-REITs for the readers to understand the risk it would take to invest in both REITs by providing a variety of different but meaningful quantitative evaluation of the past performance of both Malaysia Real Estate Investment Trust and Japan Real Estate Investments Trust. However, there are many other factors investors should also take into account when they choose which market to invest in that were not included into this research, which are intangible qualities like corporate management, trust management, growth strategy and the asset quality of each REITs. All these qualities have to be carefully evaluated by the investors so that it will provide a better insight and a better overall picture on the performance in order for the investor to make a careful yet preciseinvestment decision.

Table 1. Major Findings on Hypotheses Testing

No.	Hypotheses	Findings	Conclusion
1	HH_{00}: M-REITs' β > J-REITs' β (M-REITs' have higher Beta [market risk] compared toJ-REITs)	M-REITs' Beta (0.21224) < J-REITs' Beta (0.84143)	**Reject H0**
	HH_{11}: M-REITs' β < J-REITs' β (M-REITs' have lower Beta [market risk] compared to J-REITs)		Do not Reject H1
2	HH_{00}: M-REITs' Rd < J-REITs' Rd (M-REITs have lower risk diversification benefits compared to J-REITs)	M-REITs' Rd (0.94049) > J-REITs' Rd (0.60051)	**Reject H0**
	HH_{11}: M-REITs' Rd > J-REITs'' Rd (M-REITs' have higher risk diversification benefitscompared to J-REITs')		Do not Reject H1
3	HH_{00}: M-REITs' SR < J-REITs' SR (M-REITs have lower Sharpe ratio compared to J-REITs)	M-REITs' SR (0.34647) > J-REITs' SR (0.16901)	**Reject H0**
	HH_{11}: M-REITs' SR > J-REITs' SR (M-REITs' have higher Sharpe ratio compared to J-REITs)		Do not Reject H1
4	HH_{00}: M-REITs' TR < J-REITs' TR (M-REITs have lower Treynor ratio compared toJ-REITs)	M-REITs' TR (0.56422) > J-REITs' TR (0.11397)	**Reject H0**
	HH_{11}: M-REITs' TR > J-REITs' TR (M-REITs have higher Treynor ratio compared to J-REITs)		Do not Reject H1

5	HH_{00}: M-REITs' αi < J-REITs' αi (M-REITs have lower Jensen's Alpha compared to J-REITs)	M-REITs' αi (-0.02858) < J-REITs' α (0.00076)	Do not Reject H0
	HH_{11}: M-REITs' αi > J-REITs' αi (M-REITs have higher Jensen's Alpha compared to J-REITs)		**Reject H1**

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Table 2 – Summary of Risk features between M-Reits and J-Reits

Risk Features (Average)	**M-REITs**	**J-REITs**
Weekly Return	0.2060%	0.1918%
Standard Deviation	2.0573%	3.6384%
Total Risk	4.38548%	15.12367%
Systematic Risk	0.23722%	6.29537%
Unsystematic Risk	4.14827%	8.82830%
R-Square	0.05951	0.39949
Beta	0.21224	0.84143
Diversifiability Measure	0.94049	0.60051

Table 2.1: Risk Features of M-REITs

No	REITs	Beta (β)	R-Square	Total Risk	Systematic Risk	Unsystematic Risk	Diversifiability Measure
1	Amanah Harta Tanah PNB	0.22226	0.05886	4.51170	0.26558	4.24612	0.94114
2	Al-'Aqar Healthcare REIT	0.12343	0.01646	4.98091	0.08197	4.89894	0.98354
3	AmFirst Real Estate Investment Trust	0.23635	0.12452	2.40998	0.30008	2.10990	0.87548
4	AmanahRaya Real Estate Investment Trust	0.12063	0.02216	3.56635	0.07902	3.48733	0.97784
5	Atrium Real Estate Investment Trust	0.13296	0.04224	2.24505	0.09483	2.15022	0.95776
6	Axis Real Estate Investment Trust	0.25158	0.06230	5.45716	0.34000	5.11715	0.93770
7	CapitaLand Malaysia Mall Trust	0.21954	0.02242	7.82562	0.17542	7.65019	0.97758
8	Hektar Real Estate Investment Trust	0.11844	0.01435	5.28984	0.07591	5.21393	0.98565
9	IGB Real Estate Investment Trust	0.22541	0.04259	3.66354	0.15604	3.50750	0.95741
10	KLCC Real Estate Investment Trust	0.36520	0.09467	7.58227	0.71779	6.86449	0.90533
11	MRCB-Quill REIT	0.22846	0.08138	3.44532	0.28038	3.16494	0.91862
12	Sunway Real Estate Investment Trust	0.25567	0.05434	4.37654	0.23782	4.13872	0.94566
13	Pavilion Real Estate Investment Trust	0.22691	0.02557	5.92869	0.15158	5.77711	0.97443
14	Tower Real Estate Investment Trust	0.28208	0.16004	2.67074	0.42742	2.24331	0.83996
15	UOA Real Estate Investment	0.22217	0.07005	3.79371	0.26576	3.52795	0.92995
16	YTL Hospitality REIT	0.16477	0.06026	2.42033	0.14584	2.27449	0.93974
	Average	**0.21224**	**0.05951**	**4.38548**	**0.23722**	**4.14827**	**0.94049**

Table 2.2: Risk Features of J-REITs

No	REITs	Beta (β)	R-Square	Total Risk	Systematic Risk	Unsystematic Risk	Diversifiability Measure
1	Nippon Building Fund Inc.	1.05948	0.74450	16.44993	12.24700	4.20294	0.25550
2	Japan Real Estate Investment Corporation	1.08694	0.72995	17.65861	12.88997	4.76864	0.27005
3	Japan Retail Fund Investment Corporation	1.11227	0.68302	19.76195	13.49771	6.26423	0.31698
4	ORIX JREIT Inc.	1.08720	0.69376	18.58899	12.89628	5.69271	0.30624
5	Japan Prime Realty Investment Corporation	1.27053	0.69916	25.19073	17.61225	7.57847	0.30084
6	Premier Investment Corporation	0.96169	0.29050	34.73544	10.09050	24.64494	0.70950
7	TOKYU REIT, Inc.	1.13078	0.69682	20.02077	13.95087	6.06991	0.30318
8	Global One Real Estate Investment Corporation	0.96512	0.55156	18.42540	10.16264	8.26276	0.44844
9	United Urban Investment Corporation	0.87776	0.57507	14.61748	8.40603	6.21146	0.42493
10	MORI TRUST Sogo Reit, Inc.	0.83063	0.55106	13.66028	7.52767	6.13261	0.44894
11	Invincible Investment Corporation	0.86412	0.23567	34.56931	8.14695	26.42235	0.76433
12	Frontier Real Estate Investment Corporation	0.77830	0.44499	14.85217	6.60909	8.24308	0.55501
13	HEIWA REAL ESTATE REIT, Inc.	1.07636	0.43907	28.78908	12.64028	16.14880	0.56093
14	Japan Logistics Fund, Inc.	0.69160	0.37541	13.90102	5.21858	8.68245	0.62459
15	Fukuoka REIT Corporation	0.81344	0.52932	13.63855	7.21922	6.41933	0.47068
16	Kenedix Office Investment Corporation	1.40471	0.42310	50.88238	21.52852	29.35386	0.57690
17	Ichigo Office REIT Investment Corporation	0.65409	0.18893	24.70724	4.66791	20.03932	0.81107

18	Daiwa Office Investment Corporation	1.34148	0.40964	47.93036	19.63401	28.29635	0.59036
19	Hankyu Hanshin REIT, Inc	0.73896	0.51877	11.48430	5.95770	5.52660	0.48123
20	Starts Proceed Investment Corporation	0.62408	0.22331	19.02882	4.24933	14.77949	0.77669
21	Daiwa House REIT Investment Corporation	0.74770	0.17042	35.79186	6.09955	29.69231	0.82958
22	Japan Hotel REIT Investment Corporation	0.80339	0.26827	26.24948	7.04190	19.20758	0.73173
23	Japan Rental Housing Investments Inc.	1.10999	0.32732	41.06812	13.44261	27.62552	0.67268
24	Japan Excellent, Inc.	1.12602	0.65379	21.15901	13.83366	7.32536	0.34621
25	Nippon Accommodations Fund Inc.	0.63064	0.35308	12.28944	4.33913	7.95031	0.64692
26	MCUBS MidCity Investment Corporation	1.03114	0.38129	30.42434	11.60053	18.82381	0.61871
27	Mori Hills REIT Investment Corporation	0.89503	0.48250	18.11400	8.74007	9.37393	0.51750
28	Industrial & Infrastructure Fund Investment Corporation	0.82439	0.44531	16.65145	7.41498	9.23648	0.55469
29	Advance Residence Investment Corporation	0.94987	0.54637	8.50021	4.64425	3.85596	0.45363
30	Kenedix Residential Next Investment Corporation	0.88037	0.50211	8.46552	4.25061	4.21491	0.49789
31	Activia Properties Inc.	1.07848	0.63902	10.06192	6.42981	3.63210	0.36098
32	GLP J-REIT	0.76095	0.37903	8.90385	3.37486	5.52898	0.62097
33	Comforia Residential REIT, Inc	0.97425	0.53810	10.21203	5.49511	4.71693	0.46190
34	Nippon Prologis REIT, Inc.	0.82814	0.46859	8.49944	3.98272	4.51672	0.53141
35	Hoshino Resorts REIT, Inc.	0.75960	0.29901	8.58392	2.56671	6.01721	0.70099

36	One REIT, Inc.	0.82950	0.34467	8.39213	2.89250	5.49963	0.65533
37	AEON REIT Investment Corporation	0.75163	0.24942	9.55702	2.38367	7.17335	0.75058
38	Hulic Reit, Inc.	1.06792	0.51600	9.46456	4.88367	4.58089	0.48400
39	NIPPON REIT Investment Corporation	0.81540	0.42265	6.92428	2.92654	3.99774	0.57735
40	Invesco Office J-REIT, Inc.	0.70258	0.38584	5.75040	2.21873	3.53167	0.61416
41	Nippon Healthcare Investment Corporation	0.36047	0.10319	5.88998	0.60776	5.28222	0.89681
42	Tosei Reit Investment Corporation	0.68588	0.35251	6.13910	2.16412	3.97498	0.64749
43	Sekisui House Reit, Inc.	0.84874	0.51395	6.46964	3.32505	3.14458	0.48605
44	Kenedix Retail REIT Corporation	0.89145	0.48583	7.67970	3.73105	3.94865	0.51417
45	Healthcare & Medical Investment Corporation	0.79941	0.38513	7.83560	3.01769	4.81791	0.61487
46	Samty Residential Investment Corporation	0.57659	0.32191	5.04754	1.62485	3.42269	0.67809
47	Nomura Real Estate Master Fund, Inc.	1.03353	0.55293	7.58317	4.19298	3.39020	0.44707
48	Ichigo Hotel REIT Investment Corporation	0.43071	0.04043	19.02070	0.76895	18.25175	0.95957
49	LaSalle LOGIPORT REIT	0.58407	0.24715	3.11776	0.77056	2.34720	0.75285
50	Star Asia Investment Corporation	0.45723	0.13668	3.42418	0.46802	2.95616	0.86332
51	Marimo Regional Revitalization REIT, Inc.	0.39821	0.07171	3.17764	0.22788	2.94976	0.92829
52	Mitsui Fudosan Logistics Park Inc.	0.96681	0.21817	6.06509	1.32324	4.74186	0.78183
53	Ooedo Onsen Reit Investment Corporation	0.48746	0.07085	4.85282	0.34384	4.50898	0.92915
54	SAKURA SOGO REIT Investment Corporation	0.39607	0.07922	2.90618	0.23023	2.67595	0.92078

55	MIRAI Corporation	0.74843	0.24846	3.62144	0.89979	2.72166	0.75154
56	MORI TRUST Hote Reit, Inc.	0.62154	0.20527	3.04232	0.62449	2.41784	0.79473
57	Mitsubishi Estate Logistic REIT Investment Corporation	0.73810	0.36099	2.22059	0.80160	1.41898	0.63901
	Average	**0.84143**	**0.39949**	**15.12367**	**6.29537**	**8.82830**	**0.60051**

Table 3 – Summary of Performance between M-Reits and J-Reits

Performance Ratio	**M-REITs**	**J-REITs**
Sharpe Ratio	0.34647	0.16901
Treynor Ratio	0.56422	0.11397
Jensen's Alpha	-0.02858	0.00076

Table 3.1: Sharpe, Treynor and Jensen's Alpha Ratio of M-REITs'

No	REITs	Sharpe Ratio	Treynor Ratio	Jensen'sAlpha
1	Amanah Harta Tanah PNB	0.13951	0.21164	-0.02879
2	Al-'Aqar Healthcare REIT	0.35499	1.01897	-0.03184
3	AmFirst Real Estate Investment Trust	0.12794	0.13340	-0.02853
4	AmanahRaya Real Estate Investment Trust	0.20320	0.50498	-0.03257
5	Atrium Real Estate Investment Trust	0.44131	0.78948	-0.03178
6	Axis Real Estate Investment Trust	0.47665	0.70259	-0.02659
7	CapitaLand Malaysia Mal Trust	0.43648	0.88290	-0.02746
8	Hektar Real Estate Investment Trust	0.11230	0.34618	-0.03277
9	IGB Real Estate Investment Trust	0.28726	0.38721	-0.02807
10	KLCC Real Estate Investment Trust	0.51970	0.62204	-0.02188
11	MRCB-Quill REIT	0.16114	0.20783	-0.02860
12	Sunway Real Estate Investment Trust	0.76650	0.99563	-0.02588
13	Pavilion Real Estate Investment Trust	0.36659	0.62445	-0.02745
14	Tower Real Estate Investment Trust	0.14893	0.13697	-0.02669
15	UOA Real Estate Investment	0.34729	0.48333	-0.02827
16	YTL Hospitality REIT	0.65380	0.97994	-0.03015

Average of M-REITs'	**0.34647**	**0.56422**	**-0.02858**

Table 3.2: Sharpe, Treynor and Jensen's Alpha Ratio of J-REITs'

No	REITs	Sharpe Ratio	Treynor Ratio	Jensen's Alpha
1	Nippon Building Fund Inc.	-0.00809	-0.00492	0.00089
2	Japan Real Estate Investment Corporation	0.00500	0.00307	0.00127
3	Japan Retail Fund Investment Corporation	0.08995	0.05707	0.00231
4	ORIX JREIT Inc.	0.10333	0.06505	0.00224
5	Japan Prime Realty Investment Corporation	0.02299	0.01442	0.00288
6	Premier Investment Corporation	0.03873	0.03768	0.00183
7	TOKYU REIT, Inc.	0.01953	0.01227	0.00183
8	Global One Real Estate Investment Corporation	-0.01723	-0.01216	0.00030
9	United Urban Investment Corporation	0.18045	0.12477	0.00121
10	MORI TRUST Sogo Reit, Inc.	-0.00279	-0.00197	-0.00055
11	Invincible Investment Corporation	0.03813	0.04118	0.00139
12	Frontier Real Estate Investment Corporation	0.10560	0.08301	0.00017
13	HEIWA REAL ESTATE REIT, Inc	0.06848	0.05419	0.00248
14	Japan Logistics Fund, Inc.	0.14600	0.12495	-0.00012
15	Fukuoka REIT Corporation	0.13216	0.09525	0.00049
16	Kenedix Office Investment Corporation	0.04587	0.03698	0.00537
17	Ichigo Office REIT Investment Corporation	0.17329	0.20905	0.00067
18	Daiwa Office Investment Corporation	0.04189	0.03432	0.00468
19	Hankyu Hanshin REIT, Inc	0.06678	0.04862	-0.00060
20	Starts Proceed Investment Corporation	0.14903	0.16536	-0.00008
21	Daiwa House REIT Investment Corporation	0.30537	0.38787	0.00272
22	Japan Hotel REIT Investment Corporation	0.31448	0.31837	0.00246
23	Japan Rental Housing Investments Inc.	0.05103	0.04677	0.00320
24	Japan Excellent, Inc.	0.02552	0.01655	0.00190

25	Nippon Accommodations Fund Inc.	0.25912	0.22866	-0.00003
26	MCUBS MidCity Investment Corporation	0.03295	0.02798	0.00197
27	Mori Hills REIT Investment Corporation	0.05367	0.04051	0.00069
28	Industrial & Infrastructure Fund Investment Corporation	0.35927	0.28230	0.00187
29	Advance Residence Investment Corporation	0.57687	0.28108	0.00137
30	Kenedix Residential Next Investment Corporation	0.47677	0.25013	0.00069
31	Activia Properties Inc.	0.52452	0.24490	0.00169
32	GLP J-REIT	0.49329	0.30707	0.00066
33	Comforia Residential REIT, Inc	0.32291	0.16814	0.00139
34	Nippon Prologis REIT, Inc.	0.43836	0.24498	0.00095
35	Hoshino Resorts REIT, Inc.	0.50836	0.31126	0.00150
36	One REIT, Inc.	0.19263	0.10679	0.00036
37	AEON REIT Investment Corporation	0.07564	0.04938	-0.00091
38	Hulic Reit, Inc.	0.20063	0.09175	0.00174
39	NIPPON REIT Investment Corporation	0.28527	0.14614	0.00065
40	Invesco Office J-REIT, Inc.	0.13017	0.07053	-0.00095
41	Nippon Healthcare Investment Corporation	-0.29251	-0.31262	-0.00623
42	Tosei Reit Investment Corporation	0.11675	0.06695	-0.00039
43	Sekisui House Reit, Inc.	0.05029	0.02392	0.00014
44	Kenedix Retail REIT Corporation	-0.00591	-0.00292	0.00020
45	Healthcare & Medica Investment Corporation	-0.21528	-0.11967	-0.00252
46	Samty Residential Investment Corporation	0.01890	0.01169	-0.00195
47	Nomura Real Estate Master Fund, Inc.	-0.06165	-0.02608	0.00000
48	Ichigo Hotel REIT Investment Corporation	0.15125	0.24312	-0.00042
49	LaSalle LOGIPORT REIT	0.25492	0.12234	-0.00047
50	Star Asia Investment Corporation	0.44725	0.28734	-0.00005
51	Marimo Regiona	1.07086	0.76097	0.00191

	Revitalization REIT, Inc.			
52	Mitsui Fudosan Logistics Park Inc.	0.48042	0.19426	0.00489
53	Ooedo Onsen Reit Investment Corporation	0.12461	0.08939	-0.00152
54	SAKURA SOGO REIT Investment Corporation	0.44746	0.30574	-0.00073
55	MIRAI Corporation	0.37039	0.14950	0.00169
56	MORI TRUST Hotel Reit, Inc.	0.04019	0.01790	-0.00067
57	Mitsubishi Estate Logistic REIT Investment Corporation	-0.39016	-0.12504	-0.00304
Average of J-REITs'		**0.16901**	**0.11397**	**0.000076**