

Does Real Estate Fund in Thailand Provide Diversification Benefits for Stock Investment?

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ABSTRACT

The real estate investment has been an alternative investment as a diversifier for traditional investment like the stock market. Previous studies have shown the diversification benefits of real estate investment for stock portfolios. This paper aims to examine whether and to what extent real estate funds can provide diversification benefits to investors. The information of stock returns and real estate funds in Thailand was gathered for the period during 2007 and 2015. The results show that there is no diversification benefit in terms of hedge or safe haven from real estate funds in Thailand. However, the average beta of real estate funds is relatively low and the risk-return performance of real estate funds remains attractive to be included in the portfolio.

Keywords: Diversification, Real Estate Investment, Alternative Investment, Safe Haven, Property Fund

INTRODUCTION

For years, owning real estate properties is considered one of the most conservative investments. Real estate investors normally expect a high return from both the income stream and value appreciation of the property itself. Some consider real estate a hedge against other investments, such as stocks, bonds, and commodities. A large number of investors thus include real estate in their portfolio to diversify their assets.

However, real estate owners encounter various difficulties and miscellaneous costs, for example, regular maintenance costs, taxes, and other unexpected expenses due to unpredictable circumstances. Although it is commonly believed that property value would always increase, the fact is that a bad investment decision could lead to a significant loss in property value, especially during the period of economic recession. Real estate investors are therefore exposed to high risks and are also confronted with liquidity issues, as such an investment takes a much longer time to sell or rent out. To these investors, the choices of property types are limited because unusual high capital requirements and special skills are needed so as to develop these properties, for example, retail shops, department stores, and office buildings. As a result, small and medium real estate investors have recently shifted their interest from real estate properties towards property funds, which provide asset diversification and thereby reduced risks.

This paper aims to examine whether real estate funds can provide diversification benefits against stocks. The role of real estate funds as a diversifier has been examined

AU Journal of Management, Vol. 14, No. 2 (2016). © Assumption University. All rights reserved. ISSN: 1686-0039.

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in terms of a hedge or a safe haven. Using the model proposed by Baur and Lucy (2010) and GARCH (1,1) to capture time-varying volatility, the analysis unveils a result that does not support that the real estate fund can be a hedge or a safe haven. However, the average beta of real estate funds is relatively low and the risk-return performance of real estate funds is attractive to be included in the portfolio.

LITERATURE REVIEW

Markowitz (1952) has used his seminal mean-variance theory to illustrate the concept of diversification. If an investor can include the asset with a low or negative correlation into the portfolio, the risk will be better diversified. For a well-diversified equity portfolio, it is difficult to come across any potential stock which is of a low or negative correlation with such a portfolio. Therefore, an investor may consider to add other asset classes into the equity portfolio to achieve further diversification.

Therefore, the investment in commodities like agricultural crops or precious metals can help achieve such further diversification for the equity portfolio. Jensen, Johnson, and Mercer (2000) have shown that commodity futures have a low correlation with equity portfolios and other asset classes. This low correlation is an attractive characteristic of commodity futures for general investors as a role of the diversifier. Baur and Lucy (2010) have studied the role of gold as a diversifier for traditional investment like stocks and bonds. They found that gold can be a hedge for stock investment. Moreover, gold can reduce the loss in the extremely negative stock market condition and is known as a safe haven.

Real estate is an alternative diversifier for stock investment. Kuhle (1987) has studied and found that including real estate into stock portfolios can create such portfolios more efficient. Chen, Ho, Lu, and Wu (2005) have investigated about the role of Real Estate Investment Trusts or REITs to improve the performance of stock portfolios. They found that Mortgage Real Estate Investment Trusts or MREITs cannot provide diversification benefits to stock portfolios but Equity Real Estate Investment Trusts or EREITs can enhance the performance of stock portfolios.

The study about the role of real estate investment in other countries yielded similar results. Lee and Kien (2009) have studied in the Malaysian real estate market and found that REIT portfolios can enhance the performance of stock investment in terms of diversification benefits. It can also reduce the downside risk. Adcock, Hua, and Huang (2013) have studied the correlation and integration between the Chinese stock market and property market. They found the negative correlation between the property price and B-share price implying that the risk diversification can be achieved by including B-share and real estate property in the portfolios.

METHODOLOGY

This study employs data about the stock market and real estate fund in Thailand. The information was collected from 2007 to 2015. In Thailand, the stock market is known as the Stock Exchange of Thailand. The major stock index, a value-weighted composite index, is commonly known as the SET Index, which is used in this study to represent the overall stock market performance. The real estate fund in Thailand has been established since 2003 that was known then as the Property Fund. Not until 2014 was the new form of the real estate fund rebranded as the Real Estate Investment Fund or REIT.

The return has been calculated in the logarithmic form based on the total return index as follows.

$$Return_{i,t} = \ln (TRI_{i,t}/TRI_{i,t-1}) \quad (1)$$

where $Return_{i,t}$ is the log return from investment i at time t , and $TRI_{i,t}$ is the total return index of investment i at time t . The return calculated from the total return index can better represent the actual return from investment because such a calculation includes both the capital gain and return from dividends.

This paper examines the role of real estate investment as a diversifier to a typical stock portfolio in terms of hedge or safe haven by using a regression model that we adopted from Baur and Lucy (2010) as follows.

$$r_{re,t} = \beta_0 + \beta_1 r_{set,t} + \beta_2 r_{set-,t} + \beta_3 r_{set10p,t} + \beta_4 r_{set1p,t} + \varepsilon_t \quad (2)$$

where $r_{re,t}$ is the return from the real estate fund at time t ; $r_{set,t}$ is the return from the stock portfolio at time t ; $r_{set-,t}$ is the return from the stock portfolio at time t only for the cast that the stock returns are negative; $r_{set10p,t}$ is the return from the stock portfolio at time t only for the cast that the stock returns are less than the 10th percentile; $r_{set1p,t}$ is the return from the stock portfolio at time t only for the cast that the stock returns are less than the first percentile; and ε_t is the white noise error term.

The inclusion of $r_{set-,t}$ in the model aims to capture the asymmetric relationship between the stock and real estate fund during the bear stock market. Moreover, $r_{set10p,t}$ and $r_{set1p,t}$ are added into the model to examine the relationship between the stock and real estate fund during periods when extremely negative stock returns occur.

However, the daily return can be subject to time-varying volatility that is commonly known as autoregressive conditional heteroskedasticity or ARCH. This paper employs the generalized autoregressive conditional heteroskedasticity or GARCH to model the time-varying volatility. One lag for both the GARCH term and ARCH term is used in the model and it is commonly called GARCH (1,1), which has the following expression.

$$\sigma_t^2 = \gamma_0 + \gamma_1 \varepsilon_{t-1}^2 + \gamma_2 \sigma_{t-1}^2 \quad (3)$$

where ε_{t-1}^2 is the ARCH term and σ_{t-1}^2 the GARCH term. The volatility persistence after any stock is the summation of both the coefficient of ARCH term and that of the GARCH term.

RESULTS

Table 1 reports the performance of the stock portfolio and real estate fund in Thailand during 2007 and 2015. The performance of the stock portfolio is based on the total return of the SET index that represents the average return from investing in the stock market. The real estate fund portfolio is the equally-weighted average return of all real estate funds in Thailand including both property funds and real estate investment trusts or REITs.

The average return on the stock portfolio is 0.0454% with an annualized return of 11.3392%. Meanwhile, the average return on the real estate fund is only 0.0233% with an annualized return of 5.8308%. The performance of the stock portfolio in terms of average return is clearly better than that of the real estate fund. However, the return on the real estate fund is less volatile than that of the stock investment. The standard deviation of the stock return is 1.3389%, which can be annualized as 21.1696%, whereas the standard deviation of the real estate fund return is only 0.4130% with the annual-

ized number of 6.5305%. Therefore, the performance of the real estate fund is attractive because of the risk-return tradeoff. Using the average yield of three-month treasury bills in Thailand, 2.4140%, as the risk-free rate, the Sharpe ratio of the stock investment is 0.4216. The Sharpe ratio of the real estate fund is clearly better at 0.5232.

TABLE 1
Descriptive Statistics of Return on Stock Portfolio and Real Estate Fund

Description	Stock Portfolio	Real Estate Fund
Mean Return	0.0454%	0.0233%
Standard Deviation	1.3389%	0.4130%
Annualized return	11.3392%	5.8308%
Annualized Standard Deviation	21.1696%	6.5305%
Sharpe Ratio	0.4216	0.5232
Beta	1.0000	0.1664



FIGURE 1
Cumulative Wealth of Investing THB 1,000,000 in Stocks and in the Real Estate Fund

The diversification benefit depends on the coefficient of correlation. During the study period 2007-2015, the correlation coefficient between the stock return and real estate fund return is 0.5393, which implies that the diversification benefit from investing in the real estate fund is only modest. The cumulative wealth of investing THB 1,000,000 in stock and in the real estate fund is respectively illustrated in Figure 1. The stock investment, in general, generated a better return than the real estate fund. However, the figure clearly shows that the performance of the stock investment is quite vol-

atile whereas the performance of the real estate fund is relatively stable. Although the return on both stock and real estate investment seems to move in the similar direction, the performance of the real estate investment declined only at the modest level during the periods of significant declines in the stock market.

The diversification benefit of investing in the real estate fund for stock investors is examined by the regression specification, Equation 2, which includes the impact of the time-varying volatility using GARCH (1,1). Table 2 reports the results of such a regression model used to estimate the role of the real estate fund as a hedge or a safe haven for stock investment.

TABLE 2
Regression Results

Coefficient	Model 1	Model 2
Mean Equation		
Intercept	0.0264** (4.66)	0.0367** (4.71)
$r_{set,t}$	0.1331** (30.76)	0.1088** (14.43)
$r_{set-,t}$		-0.0093 (-0.46)
$r_{set10p,t}$		0.0809** (5.16)
$r_{set1p,t}$		0.0648** (5.20)
Variance Equation		
Constant	0.0040** (6.63)	0.0031** (4.17)
ε_{t-1}^2	0.0867** (9.42)	0.0708** (5.90)
σ_{t-1}^2	0.8677** (74.13)	0.8957** (58.38)
Adjusted R-Square	0.2784	0.3187
Durbin-Watson	2.1262	2.1830

Note: The figures in parenthesis are z-statistics. * indicates significant at 5% and ** indicates significant at 1%.

Model 1 in Table 2 includes only stock returns as the explanatory variable whereas the second model is the full model that includes other terms to capture the possible asymmetric relationship between the bull market and the bear market. There is found no serious serial correlation as the Durbin-Watson statistics are close to two. The significance of both the ARCH and GARCH estimates in the variance equation shows that there is time-varying volatility that can be quite appropriately explained by GARCH (1,1). The sum of the coefficients of the ARCH term and the GARCH term represents the

persistent level. The persistent level of 0.95-0.96 reveals that the volatility lasted substantially long after any shock.

In the first model, the coefficient is positive and statistically significant, implying a significantly positive relationship between the return of stock market and that of the real estate fund. However, the size of the coefficient that can be interpreted in a similar way as a stock beta is relatively low at only 0.1331. During the periods of stock downturns, the performance on the real estate fund was also lower, but just a little.

In the second model, the coefficient of r_{set-t} is negative, and this shows that the real estate fund can be a potential hedge during stock market downturns. The total effect of the relationship between the return of stock investment and that of the real estate fund during the bear market is the summation between the coefficient of $r_{set,t}$ and r_{set-t} , which is 0.0995. The relationship between stock performance and real estate investment during the bear market is lower than the bull market. However, this negative coefficient is not statistically significant at any convention level. Therefore, there is a weak evidence that the real estate fund can be used as a hedge during the period that the stock market performance is negative.

During the strong bear market when the stock returns are lower than the 10th percentile and the first percentile, the coefficients are positive. These coefficients are inconsistent with what expected. If the real estate fund possessed the property as a safe haven for stock investment, the coefficients would be negative implying that the real estate fund could perform positively during the extreme stock market downturn. The total effect of the relationship between the returns of stock investment and real estate investment has increased to 0.1804 and 0.2452 respectively. Therefore, this result does not support the hypothesis that the real estate fund can be a safe haven during the period when stock performance is extremely negative.

In order to ensure the robustness of the results presented in Table 2, other volatility clustering models are also employed. The GARCH (1,1) is the basic volatility clustering model assuming the symmetric volatility for both positive and negative shocks. There are other GARCH-type models that can capture the asymmetric volatility. In this study, we present the results from regression specifications as described in equations 2 and 3 using EGARCH and GJR-GARCH.

EGARCH (the abbreviation of exponential generalized autoregressive conditional heteroscedasticity) has been developed by Nelson (1991), who used the logarithmic form of volatility allowing for asymmetric effects of volatility. The logarithmic form also reduces the non-negative restriction as required in the normal GARCH model. GJR-GARCH was pioneered by Glosten, Jagannathan and Runkle (1993) and this model is sometimes called threshold generalized autoregressive conditional heteroskedasticity. The GJR-GARCH model also includes the asymmetric effect of volatility in the model. The results of regression analysis using EGARCH and GJR-GARCH are presented in Table 3.

Table 3 shows the results of regression analysis using both GJR-GARCH and EGARCH. These results are similar to those derived from the normal GARCH (1,1). the coefficients of r_{set-t} are slightly negative but they are not statistically significant at any convention level. The total effect of the relationship between the stock return and the return of the real estate fund during the bear market is 0.0995 and 0.1005. Although the relationship is somewhat less significant when the stock market performs negatively, it is not statistically different from the relationship during a positive movement of the stock market. The coefficients of $r_{set10p,t}$ and $r_{set1p,t}$ are positive and significant at 1%. This result is in contrast to the role of the real estate fund as the safe haven of stock investment.

TABLE 3

Regression Results using GJR-GARCH and EGARCH

Coefficient	GJR-GARCH	E-GARCH
Mean Equation		
Intercept	0.0366** (4.69)	0.0366** (4.75)
$r_{set,t}$	0.1087** (14.38)	0.1090** (14.44)
$r_{set,t}$	-0.0092 (-0.46)	-0.0085 (-0.43)
$r_{set10p,t}$	0.0813** (5.18)	0.0813** (5.20)
$r_{set1p,t}$	0.0641** (5.13)	0.0614** (5.01)
Adjusted R-Square	0.3188	0.3189
Durbin-Watson	2.1831	2.1833

Note: See Table 2.

CONCLUSION

This paper aims to examine whether the real estate funds can provide diversification benefits for stock investors. The data used in this study is the return on the overall stock market and the equally-weighted return from all real estate funds in Thailand during 2007-2015. The regression analysis has been employed to examine whether investment in real estate funds can be a hedge or a safe haven for stock investors.

The results do not support real estate funds to be either a hedge or a safe haven. The total effect of relationship between stock returns and the returns of real estate funds is not negative in either the general market condition or extremely bad bear stock market. The possible explanation is that all real estate funds in this study have been listed in the Stock Exchange. During the stock market downturns, the performance of real estate funds may be affected by the overall market sentiment. Therefore, there is a positive relationship between stock returns and the returns of real estate funds, especially during when the stock performance is extremely negative due to negative market sentiment.

Although the real estate funds can be neither a hedge nor a safe haven for stock investment, investment in real estate funds is still attractive in terms of diversification. The average beta of real estate funds is relatively low and the risk-return performance of real estate funds is better than the overall stock market.

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