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## The Determinant Factors of Real Estate Investment Trust (REIT)'s Performance: Evidence from Asian REITs

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*This paper investigates the factors that can influence the Real Estate Investment Trust (REIT)'s performance, paying particular attention to the listed REIT's in Asian. Samples of 45 Asian listed REITs are selected from five different countries namely Taiwan, Thailand, Malaysia, Hong Kong, Japan and Singapore for 5 years basis from 2007 to 2011 with 225 observations. Study used Net Asset Value (NAV) and Return as the proxy for REITs performance while risk, dividend yield, net income and size to represent the determinants variable. Applying correlations and multiple regression analysis, the results provide evidence on the association between NAV and return with risk, dividend yield, net income and size of REITs. Results of this study are hoped to help the investors and portfolio managers to deepen their understanding of the dependence factors that might influence the performance of REITs in Asian.*

**Keywords:** Net asset value (NAV), Real Estate Investment Trust (REITs), Risk and Dividend Yield.

### Introduction

Real Estate Investment Trust (REIT) is one of the asset class investment options that come into view among investors whose searching for an alternative investment. It was considered as less risky as opposed to equities, bond, property, trust fund and others related investments materials with potential for earnings enhancement. REIT is a company or a trust that pools fund from individual investors, acquires and operates income-generating real estate, and distributes the income derived from their own properties as dividends. Securities Commissions (SC) has defined REITs as "property trust fund" or as an investment trust investment vehicle that invests or proposes to invest at least 50% of its total assets in real estate. An investment in real estate may be by way of direct ownership or a shareholding in a single-purpose company

whose principal assets comprise real estate (SC, 2005).

The development of REITs in Asian began with the introduction of Japan REITs in 2001, and then followed by Singapore, Hong Kong, South Korea, Taiwan, and Malaysia. Likewise, not with standing global economic uncertainties, Asia real estate investment trusts (REITs) were highly sought-after by investors. As according to Professor Graeme Newell in a report by the Asia Pacific Real Estate Association (APREA), most Asia REIT markets achieved higher returns, lower risk and superior risk-adjusted performance than their respective stock markets, especially since the Global Financial Crisis (APREA, 2012). Hence, Asian REITs had become an attractive alternative for global investors thus examining REIT's performance is the vital factor that investors consider when they allocate capitals for their investments (Yu,

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2009). According to Wong (2005), REIT's gain its strengths since investors have the ability to invest into high profile and high value property for greater return by pooling of resources among REIT's investors. Thus, this study seeks to identify the factors that can heighten the REITs performance within the perspective of Asian listed REITs using NAV and Return over 2007 to 2011 periods. Which eventually, so far have not been thoroughly explore but these areas tend to instigate a considerable impact in the manner the literature on REITs performance from Asian perspective is understood.

## Literature Review

Several studies do specifically investigate the components of REITs' risk that becomes one of the factors determined on REITs return. Earliest study by Chan, Hendershott, and Sanders (1990) indicate that there are three factors driven of REIT and general stock market, i.e. changes in the risk, term structure and unexpected inflation. A conclusion supported by Cheong et al. (2006) who identify that REITs have a long-run cointegrative relationship with both the stock market and long-run interest rates.

Further, Conover, Friday and Howton (2000), found no significant relationship between REIT return and a constant beta using time-series and cross-sectional regression 1978–1994. Similar to the study by Chen and Peiser (1999) using the Correlation statistics analysis on S&P 500 Mid-Cap 400 for stock market returns, Compustat, S&P's corporate records, NAREIT for year 1993–1997 also found evidence that REIT portfolio average returns show no positive relationship with beta however variables such as volatility, geographical diversification, and property type specialization appear to have more positive impact.

Clayton and MacKinnon (2000) studied the determinants of both the level and changes in premiums to NAV in REIT pricing. They encountered that the level of premium to NAV is positively related to REIT size (market capitalization), debt to equity ratio and the level of REIT liquidity as measured by the relative effective

spread. Further Clayton and MacKinnon (2001) provide and run a model that links the relationship between REIT prices and the value of direct real estate (NAV) owned by REITs. They found a significant liquidity premium in REIT prices relative to property NAV that varies systematically with the liquidity of private real estate. The findings also showed a significant role for sentiment in REIT prices, returns, and the timing of both initial and seasoned REIT equity offerings over the past 1992 REIT era. Brent, Kelly, Lindsey and Price (2011) investigate the value (growth) determination of REITs is based on NAV per share as opposed to book value per share since the underlying value of the REITs' assets (NAV) drives the trading decision. They indicate that the market share prices and NAV prices generally differ indicating that the REIT is selling at a premium if it's traded at a price greater than its NAV. Ying (2004) studies on the long-run cointegration relationship and short-run dynamics between share prices and net asset values (NAV) of listed property companies in a panel context. This study shows that the empirical results both from individual property market and from the overall markets have consistently suggested a close relationship between stock prices and net asset values in the long run and short run. Besides that, they also found out that the NAV based property stock valuation theory empirically as one proxy to the fundamental value which can be relied as the principal basis for property company performance valuation.

The effect of size (market capitalization) on spreads and returns for stocks have received much attention in the finance literatures, however, there are little studies to date that explore the effects of size to the securitized real estate from the perspective of returns, risk, performance, diversification and allocation (Ali, 2006). One of the earliest researches done by McIntosh, Liang and Tompkins (1991) showed evidence of a size effect in REITs, demonstrating that small firms perform better than large firms. They found that smaller REITs provided greater return without greater risk, and there is a negative relationship between size and return. Ziering, Liang and McIntosh (1999), studied

the relationship between real estate size and risk-return profile which is performance measurement. They found that real estate size is a powerful moderator of risk/ return across the spectrum of size and that the largest category of real estate while providing investors with the highest average yield, also exhibits greatest volatility.

The study done by Ali (2006) examined the size effect to the performance of real estate shares based on the total of 30 real estate shares selected randomly from Bursa Malaysia and divided into three groups based on size represents by big, medium, small capitalization group. The results indicate that that big capitalization real estate shares have better performance than other real estate share with higher return and lower risk in the allocation with mixed assets. From Sharpe ratio and coefficient of variation (CV), big capitalization group has better performance and lower risk than a small group. The result is similar to previous research done by Conover, Friday, and Howton (1998) in which larger firms have a higher return and lower risk than small firms. They used the monthly stock prices, dividends and split information from January 1985 to June 1996 to examine the return of real estate firm related to size by using medians to measure return and standard deviation to measure risk. As according to Below, Stansell, and Coffin (2000) size is the most important factor influencing REIT investment with larger REITs owned by financial institutions. Negative cost elasticity's related to REIT interest expense indicates that larger REITs have superior access to institutional capital.

Even though a number of studies about REITs were undertaken in many countries around the world, however there are quite limited literature devotes from Asian perspective. According to Henderson Global Investors (Singapore) (2006), REITs offer a liquid proxy for the physical real estate market which means investors can build regional and diversified portfolios in a cheap and efficient manner without the complexities of buying physical real estate. The tax efficiency means they are high yielding, and the high yield tends to reduce share price volatility which makes REITs relatively low risk com-

pared to other equities. Yu (2009) reviews on the well-developed REITs markets in Japan, Singapore and Hong Kong and indicates that the performance and diversification effect of Asian REITs cannot be neglected even though Asia are still in the infant stage. The study also recommended that Asian REITs has the advantage to be added in the portfolio considering the low correlation with other assets which enhance diversification with high dividend yield. While, Ong (2011) examines the performance of Malaysia REIT based on the Net Asset Value approach (NAV). His study categorizes the NAV into NAV premium and NAV discounts by indicating that REITs which trades in NAV premiums has superior historical and future earning capabilities, organizational and operation efficiencies and quality of management. Whereas NAV discounts when its trade below the current stock prices which reflect a poor current and future prospects for firm earnings and mistakes in financing and operations decision.

Many researchers have studied on REITs from different views and in different environments however risk and return analysis is a much-examined area in REITs. Thus, the review of the literature that was established provides an ideal reference source of materials and research writings concerning return and risk profile of REITs in developing the hypothesis of research.

*H1: There is a significance relationship between REIT's Return and its determinant factors*

*H2: There is a significance relationship between REIT's NAV and its determinant factors*

## Research Method

This study focuses on the Asian listed REITs in Taiwan, Thailand, Malaysia, Hong Kong, Japan and Singapore. A sample of 45 REITs companies listed for five years from 2007-2011 was selected with a total observation of 225. All the data used in this study are obtained from Bloomberg and Thompson Data Stream. Essentially, there are range of valuation methodologies that can be used to evaluate the REIT's performance due to their commodity like assets such as discounted cash flows (DCF), dividend

discount model (DDM) or adjusted funds from operations (AAFO) and net asset value (NAV) methods (Clayton et al. 2007). Nonetheless, Widman (2007) in his study suggests that the majority of investors tend towards a NAV based approach. This study utilizes data (dependent variables) as NAV for the proxy of REIT's performance that was widely used in REIT's study i.e; Ong (2011), Brent et al. (2011), Ying (2004), and Clayton and MacKinnon (2000; 2001). It was computed by subtracting total liability from total asset and divided it with share outstanding. REIT's that trade with higher NAV premium is considered having more growth potential (Young, 1998). Second variable the we used as a proxy for performance is Return (Mohamad, Saad, and Bakar, 2011; Mohamad and Saad, 2012); For independent variables, this study uses beta to represent systematic risk which measures the systematic variation in returns relative to the market followed Chen and Peiser (1999), Ambrose and Linneman (2001), Mohamad, Saad, and Bakar (2011), and Mohamad and Saad (2012), dividend yield, net income (Widman, 2007) and size. The relation between the variables has been examined by making use of multiple regression analysis to examine the developed hypothesis. The regression models to be estimated to test the hypothesis are:

$$Return_{it} = \beta + \beta_1 RISK_{it} + \beta_2 DY_{it} + \beta_3 LnNI_{it} + \beta_4 Size_{it} + \varepsilon_i \quad 1)$$

$$NAV_{it} = \beta + \beta_1 RISK_{it} + \beta_2 DY_{it} + \beta_3 LnNI_{it} + \beta_4 Size_{it} + \varepsilon_i \quad 2)$$

where:

$i$  =  $i, \dots, N$ , refers to the company

$t$  =  $t, \dots, T$ , refers to time

$NAV$  = Net Asset value

$RISK$  = Systematic Risk

$DY$  = Dividend Yield

$LnNI$  = log of Net Income

$Size$  = Size (LnTotal Asset)

## Result and Discussion

The correlations between the variables were reported in Table 1. Results indicated no multi-

collinearity problems as the correlations were relatively low. According to Gujarati (1995), multicollinearity problems exist when the correlations value exceeded 0.80. The correlations results for  $NAV$  indicated a negative coefficient with  $RISK$  (-0.184) both at 1% significant level while positive significant correlations with  $LnNI$  (+0.183) and  $Size$  (+0.621). The result for Return indicating positive significant correlations with  $LnNI$  (+0.157) and  $Size$  (+0.221) at 1% and 5% significant level respectively. Although results of the estimated correlation coefficient indicate negatively and positively correlated however it still considers low; therefore, it is not large enough to cause any concern in the regression model.

To test the hypothesis that REITs's level of  $NAV$  and  $Return$  is a function of four tested variables which are  $Risk$ ,  $Dividend Yields$ ,  $Net Income$  and  $Size$ , the multiple regression analysis was performed using 225 firm-years observations and the results are presented in Table 2. To quantifies the severity of multicollinearity for this study, the variance inflation factor (VIF) test was performed, and results indicate a very low level of multicollinearity was present for all the two model since all the VIF value for all variable tested is less than 10. Even though there is no formal VIF value, however, values of VIF that exceed 10 are often regarded as indicating multicollinearity (e.g., Hair, Anderson, Tatham, and Black, 1995; Kennedy, 1992).

Results of the regression analysis in Table 2 provided partial confirmation for the research hypothesis. The results for  $RISK$  depicted a significant negative coefficient with  $Return$  and  $NAV$  with 5% and 1 % significant level respectively. This indicates that any increase in  $Return$  and  $NAV$  can be explained by a reduction in  $RISK$  where one unit increase in  $Return$  and  $NAV$  will reduce  $RISK$  by 2.335 units and 6.405 units respectively. It is specifying that a reduction in  $RISK$  will contribute towards a positive  $Return$  and  $NAV$  of the REIT's firms thus support hypotheses 1 and 2. The results evidence the attractiveness of Asian REITs risk trade off balance in investment portfolios since its offering higher returns with moderates risk level. Thus by adding REIT shares to a diversified

Table 1. Correlations analysis

	NAV	R	RISK	DY	lnNI	Size
NAV	1	.253**	-.184**	.082	.183**	.621**
R	.253**	1	-.120	-.093	.157*	.221**
RISK	-.184**	-.120	1	.064	.026	.164*
DY	.082	-.093	.064	1	-.156*	-.037
lnNI	.183**	.157*	.026	-.156*	1	.480**
Size	.621**	.221**	.164*	-.037	.480**	1

\*\* Correlation is significant at the 0.01 level

\* Correlation is significant at the 0.05 level

Table 2. Regression analysis of return and NAV with independent variables

	Return			
	Beta	t	Tolerance	VIF
Risk	-0.154	-2.335*	0.966	1.036
DY	-0.068	-1.031	0.97	1.031
lnNI	0.043	0.582	0.749	1.335
Size	0.222	2.971**	0.746	1.341
R	0.284			
R square	0.081			
F	4.823***			
D-W	2.091			
	NAV			
	Beta	t	Tolerance	VIF
Risk	-0.31	-6.405**	0.966	1.036
DY	0.106	2.193*	0.97	1.031
lnNI	-0.152	-2.760**	0.749	1.335
Size	0.748	13.588**	0.746	1.341
R	0.709			
R square	0.502			
F	55.52***			
D-W	1.726			

\*\* Correlation is significant at the 0.01 level

\* Correlation is significant at the 0.05 level

portfolio might consecutively raise the total portfolio returns with lower risk. However, the results for *Return* and *Risk* are in contradiction towards study's by Conover, Friday and Howton (2000), and Chen and Peiser (1999) which found evidence that REIT portfolio average returns show no positive relationship with beta. The regression results for *DY* indicating a 5% confidence having positive significant association with *NAV*, however, negative insignificant association with *Return*. These show that any changes in *DY* only significant in explaining the changes in *NAV*, but it cannot explain the changes in *Return* thus support hypothesis 2. As for this study is concerned, the higher the *DY*, the higher will be REIT's *NAV* indicating one unit increase in *NAV* can be explained by 2.193 unit increase in *DY*. As depicted by the results of *lnNI*, the coefficient is positive insignificant with *Return* however negatively significant in

explaining the changes of *NAV* at 1% confidence level. The results imply that an increase or decrease of net income of REIT's firms will have an influence in the *NAV*. Results for control variable i.e *Size* in relations with the *Return* and *NAV* in Asian is concerned both disclosed a positive significant association with *Return* and *NAV* at 1% significant level which support hypotheses 1 and 2. Given the positive and significant approximation for firm size, results exemplify that larger REIT's firms performs better with an enhancement in *Return* and *NAV* as compared to smaller REITs. This study forms an evidence for the listed REIT's in Asian as an indicator that larger REIT's enjoy significant advantages over smaller REITs with respect to economies of scale in revenues, expenses and capital which support the argument of Linneman (1997) and (Ambrose and Linneman, 2001). The results corroborate with the study

by Ziering and McIntosh (1999) and Mohd Ali (2006) which indicates that big capitalization real estate shares have better performance than other real estate share with higher return and lower risk in the allocation with mixed assets.

The regression results support hypothesis 1 and hypothesis 2 as depicted in Table 2, the  $F$  statistics is substantiated at the 1% significant level for Return (4.823) and NAV (55.52), implying the null hypothesis that the regressions coefficients are all zeros can be rejected at 1% level of significant. The  $r$  square indicates 50.2% variation of NAV can be explained by the independent variables while Return is only by 8.1 %. Though, the adjusted  $R$  square for Return statistically shows weak relationships as compared to NAV however, the estimated regressions for the two hypotheses is efficient for predictions, and all the hypotheses can be accepted implying that there are an associations between selected determinant factors for NAV and Return of REITs in Asian country is concern.

## Conclusion

This study attempts to see the determinants factors of REITs performance using a proxy of Return and NAV. From the findings that based on the regression result, it revealed that factors that should be considered by the investors in

determining REITs returns and NAV are Risk, Dividend Yield, Net Income and Size. The findings exhibit positive significant relations between Return with Size and NAV with Dividend yield and Size. As for risk is concern both shows having negative significant association with Return and NAV which evidence the benefit of REITs as a less risky alternative investment as opposed to regular listed equity stocks with potential for earnings enhancement. The result for Net Income indicating having negative significant relations with NAV but not significant with Return while results for Size both showing positive significant relations with Return and NAV. Although the alternate hypothesis are supported by the analysis, however the results of the present study are in contradiction to some previous studies on the issues. Nevertheless, we hope that the result can contribute to the body of knowledge and guidance to investors and portfolio managers to deepen their understanding of the dependence factors that might influence the performance of REITs in Asian. It was recommended that the study is further improved with more sample size, different internal and external variable which could provide a strong relationship between the variables and help to uncover the better REIT's performance from Asian perspectives. Thus, this study is left for the future to be further explored.

## References

- Ambrose, P.W. and Linneman, P. (2001), REIT Organizational Structure And Operating Characteristics, *Journal of Real Estate Research*, 21(3), 141-162.
- APREA (2012), The Investment Characteristics and Benefits of Asian REITs for Retail Investors, available at [http://www.propertyoz.com.au/library/APREA\\_The-Investment-Characteristics-and-Benefits-of-Asian-REITs-for-Retail-Investors-report.pdf](http://www.propertyoz.com.au/library/APREA_The-Investment-Characteristics-and-Benefits-of-Asian-REITs-for-Retail-Investors-report.pdf), (accessed 25 May 2013).
- Below, S.D., Stansell, S.R., and Coffin, M. (2000), The Determinants of REIT Institutional Ownership, *Journal of Real Estate Finance and Economics*, 21, 3, 263-278.
- Brent, W., Kelly, L., Lindsey, D., and Price, R. M. (2011), NAV and Risk: Case of REITs, *Journal of Business & Economics Research*, 9(7).
- Chan, K.C., Hendershott, P.H., and Sanders. A.B. (1990), Risk and Return on Real Estate: Evidence from Equity REITs, *The Journal of American Real Estate and Urban Economics Association*, 18, 431-52.
- Chen, J. and Peiser, R. (1999), The Risk and Return Characteristics of REITs, *Real Estate Finance*, 16(1), 61-8.
- Cheong, C., Gerlach, R., Stevenson, S., Wilson, P., and Zurbruegg, R. (2006), Permanent and Transitory Drivers Of Securitized Real

- Estate, *Financial Management Association*, Salt Lake City, Utah, USA, October 11-14.
- Clayton, J.F. and MacKinnon, G.H. (2000), Explaining the Discount to NAV In REIT Pricing: Noise or Information? Available at SSRN: <http://ssrn.com/abstract=258268> (accessed 28 May 2013).
- Clayton, J. F. and MacKinnon, G. H. (2001), The Time-Varying Nature of The Link Between Reit, Real Estate and Financial Returns, *Journal of Real Estate Portfolio Management*, 7, 1, 43-54.
- Conover, M.C., Friday, H.S., and Howton, S.W. (2000), An Analysis of the Cross Section of Returns For E REITs Using a Varying- Risk Beta Model, *Real Estate Economics*, 28(1), 141-63.
- Gujarati, D.N. (1995), *Basic Econometrics*, Third Edition, McGraw-Hill, New York.
- Hair, J.F.Jr., Anderson, R.E., Tatham, R.L., and Black, W.C. (1995), *Multivariate Data Analysis*, Third Edition, Macmillan, New York.
- Henderson Global Investors (Singapore) (2006), About Real Estate Investment Trusts (REITs), available at [http://www.fundsUPERMART.com/main/articleFiles/webarticles/2109/SG/Property%20Newsletter%20-%20Edition%209%20\(151206\).pdf](http://www.fundsUPERMART.com/main/articleFiles/webarticles/2109/SG/Property%20Newsletter%20-%20Edition%209%20(151206).pdf) (accessed 28 May 2013).
- Kennedy, P. (1992), *A Guide to Econometrics*. Oxford: Blackwell.
- Linneman, P.(1997), Forces Changing the Real Estate Industry Forever, *Wharton Real Estate Review*, 1(1), 1-12.
- McIntosh, W., Liang, Y., and Tompkins, D.L. (1991), An Examination of the Small-Firm Effect within the Real Estate Industry, *Journal of Real Estate Research*, 6(1), 9-16.
- Mohamad, N.E.A. and Saad, N. (2012), Syariah REITs Vis-A-Vis Conventional REITs: an Analysis, *Human Resource Management Academic Research Society*, ISSN: 2222-6990, 2(7), 1-17.
- Mohamad, N.E.A, Saad, N. and Bakar, S. (2011), REITs- Risk and Real Estate Investment Trust (REITs) Return: Evidence from Listed Public Trust (LPTs), *Indonesia Capital Market Review*, 3(1), ISSN 1929-8997.
- Mohd Ali, H. (2006), Size Effect on the Performance of Listed Real Estate Companies, *International Real Estate Research Symposium (Irrers)*, 11-13<sup>th</sup> April 2006, PWTC, Kuala Lumpur, Malaysia.
- Ong, T. S. (2011), A Study on the Performance of Malaysian Real Estate Investment Trust from 2005-2010 by using Net Asset Value Approach (NAV), *Int. J. Eco. Res.*, 2(10), 1-15.
- Securities Commission (2005), *Guidelines on Real Estate Investment Trusts*. Kuala Lumpur: Securities Commission Malaysia.
- Widmann, T. (2007), Valuing Equity REITs: A NAV Debate.
- Wong, J. (2005), REIT Return and Property Types, *PhD Thesis*. National Taichung University (NTCU).
- Ying, L. (2004), Long Term Relationship and Short Term Dynamics between Property Stock Prices and Net Asset Values in Asian-Pacific Region, *Unpublished M.Sc. Thesis*, National University of Singapore.
- Yu, G. (2009), Development: Performance and Existing Problem Analysis, An Overview of Asian REITs, available at [http://www.kth.se/polopoly\\_fs/1.159642!/Menu/general/columncontent/attachment/476.pdf](http://www.kth.se/polopoly_fs/1.159642!/Menu/general/columncontent/attachment/476.pdf) (accessed 30 may 2013).
- Ziering, B., Liang, Y., and McIntosh, W. (1999), REIT Correlations with Capital Market Indexes: Separating Signal From Noise, *Real Estate Finance*, 15(4), 61-67.