THE DEVELOPMENT AND PRELIMINARY PERFORMANCE ANALYSIS OF THAI REITS

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Abstract - Understanding the development and performance of Thai Real estate investment trusts (REITs) is crucial. REITs were first introduced to investors as an investment tool, which could produce high dividends with moderate risk. In order to gain a basic understanding of this new attractive financial tool in Thailand, the risk and return characteristics of REITs were analyzed and investigated and correlations between the returns from REITs and other investment assets were derived. This research explores Thai REITs data in both width and depth aspects. The results of this study will be of benefit to investors and provide important information to them when making decisions about investments in the Thai REITs market. Investors will know what information is relevant to the investment return of Thai REITs and can use this knowledge to improve their investment performance.

Keywords - Property Fund, REITs, Risk, Returns, Thailand

I. INTRODUCTION

Apart from conventional direct investment in real estate, as is well known, there are various ways of investing in real estate such as open and closed - ended funds, listed real estate companies and REITs (Obereiner and Kurzrock, 2012). There are a number of indirect real estate investmentin Thailandsimilar to REITs, which are properties trusts invested where the amount invested is more than 500 million THB in properties. The Stock Exchange of Thailand (SET) introduced property funds (PFUND) in 2003 as a new indirect investment tool(SET, 2015a).These investment vehicles were an tool to solve the illiquidity of real estate after occuring the Asian financial crisis in 1997. Even though, the REITs is well-known and concentrated worldwide investment vehicle, REITs had been planned for introduction in 2007 to replace these property funds. However, the Securities Exchange of Thailand (SET) generally replaced the Property Fund for Public Offering (PFPO) withThai REITs on 1 January 2014(Jirapan Chorruk and Worthington, 2010).The rapid increase in the securitization of real estate through REITswhich are closed-end investment companies. REITs offer investors the opportunity to invest in real estate related assets, has caused a drastic change in the Thai real estate industry(Stock Exchange of Thailand,2015b).

In recent years, Thailand has experienced in the political turmoil which real estate has been an attractive sector for investors and developers during unstable situation(Benjamas, Campbell and Emekter, 2009).Nowadays, institutional investors in particular, prefer to invest indirectly in real estate because of the disadvantages of direct real estate investment, particularly its illiquidity (Ciochetti, Craft and Shilling, 2002; Lin and Yung, 2006; Maurer and Sebastian, 2002). Not only the disadvantage in direct real estate investment are low liquid assets, but also limited to a group of investors for a few reasons. First, the direct real estate investment requires a lot of money (Venmore-Rowland, 1990).Furthermore, the transaction cost for trading and the others costs for transferring such as the withholding tax, stamp duty or even the specific business tax in real properties is very high. In this case, the real estate agent's commission in Thailand is around 3% of real property's price. Last but not least, the restriction for foreign ownership over the real property. In Thailand, foreigners can buy condominium but not allowed to buy land. Moreover, indirect real estate investments have some appealing characteristics compared to direct investments in real estate. First, direct property investment is characterized by low information efficiency and insufficient market transparency(Capozza, Seguin,1999), whereas the indirect real estate market is generally more informationally efficient, and has higher liquidity, a greater number of market participants, and smaller transaction costs. (Wilson and Zurbruegg, 2003). Second, the value of a listed real estate company is determined by daily demand and supply on the stock market and its share price is affected by investor sentiment(Chang, Chen, and Leung, 2011). In addition, since investing in direct real estate may not be viable for many Thai investors because of high capital requirements,investors with limited capital may choose to invest in property stocks as a means of accessing direct property as pointed out by Venmore-Rowland (1990). The recent creation, in Thailand of a regulatory framework for REITs sheds light on the progress of REITs in Thailand. Thai REITs are expected to drive continued growth in the real estate market in Thailand in the future.

In this paper, an overview of the development and performance of ThaiREITs will be presented and both the return and risk aspects of performance will be examined. However, REITsmarket is still very young, analysis of the Thai REIT market is not practicable

because of the lack of historical data. With this limited history, investors will be able to make decisions based on the accurate and timely information. This paper therefore examines the following questions: First, what is the risk and return performance and what are the specific characteristics of Thai REITs? Second, what is the risk-adjusted performance of Thai REITs compared to stocks, bonds and property companies?Therefore, in this paper, the existing problems of the ThaiREIT market will also be analyzedand the findings of his research have important implications for Thai and international investors as well as policymakers.

II. LITERATURE REVIEW

2.1 The history of REITs in Thailand

Thailand's real estate and capital markets are still not matured. The Stock Exchange of Thailand (SET) introduced Property Funds for Public Offering (PFPOs) in 2003. REITs are a more effective, attractive and transparent investment vehicle than property funds which they were designed to replace. The SET began planning to launch REITs in 2007, although they were not actually authorized until 2014(NAREIT, 2016).

Initial stage about Property Funds for Public Offering (PFPOs), Property funds are required to hold real properties at least 75% of their net asset value. They are allowed to invest in both freehold and leasehold real estate project, however, the construction of these real property projects must be located in Thailand and must be completed at least 80%.The fundamental return of property funds is mostly from the rental. The price appreciation of the invested real properties adds to property funds' return. After Property funds have purchased, it is required to hold these real properties at least one year and are not allowed to invest in the dormant land. Their investment purpose is to receive rent income, but not to speculate on real estate's price appreciation. Thus, in general property funds usually buy real properties and hold them in long period. Property funds in Thailand are found under the old Act, Securities and Exchange Act BE 1992. They are required to be closed-end funds and must have minimum capital of 500 million baht (NAREIT, 2016). Under the old act, property funds are regulated to be less flexible than Real Estate Investment Trust in some aspects. For example, the debt leverage is limit at 10% of their net asset value, their major shareholder's ownership is limited not more than one third of the total outstanding shares, and their management must be sent from the asset management companies which established the fund.

The second stage, Thailand introduce REIT to replace the property funds under the Trusts for Transactions in the Capital Market Act B.E. 2007 (Trust Act). The Securities and Exchange Commission of Thailand (SEC) in the beginning published the regulatory framework for setting up real estate investment trusts (REITs) in Thailand on October 11, 2010 and the REITs framework is structured similarly to that for mutual funds (Thai property fund, 2015). All REIT units must be listed on the SET. The first listed Thai REIT is Impact Growth Real Estate Investment Trust (IMPACT). According to DBS Vickers research, there are 51 PFPOs and 5 REITs listed on SET with a combined market capitalization of 9.3 billion US$ (SEC, 2016). The new REIT will bring more flexibility to the real estate security in Thailand capital market. Major shareholder will be able to hold more proportion of shares, the minimum debt level will be higher and the management could be any real estate experts who are approved by the Securities Exchange Commission of Thailand. After the introduction of REIT, the asset management company will not be allowed to launch new property funds but the existing property funds are still allowed to operate and trade in the market.

In summary, the overall perspective and framework of REITs is similar to property funds in terms of their purpose and the minimum requirement for investment in real estate assets(Chan, Erickson and Wang, 2003). However, there are some differences between REITs and property funds, for instance, REITs may invest in any type of property even in overseas property. Moreover, REITs can invest in entity property assets such as buildings, land or real estate-related securities, but the property funds are generally established to invest in a specific property(Block, 2006).

2.2 The REITs situation in Thailand

The Real Estate Investment Trust (REIT) provided investors the new opportunity for investment in real property and the real estate through capital market. In general, Real Estate Investment Trusts (REITs) are grouped into Mortgage REITs,Equity REITs and the Hybrid REITs. For more detail, as we known that the Mortgage REITs which holds mortgage portfolio, the Equity REITs which holds real property portfolio for investment, and the Hybrid REITs which invest in both mortgages and real properties. However, REITs allow investors to invest in specific real estate types as a shareholder in buildings rather than as the owner, with specific tax benefits. In general,a REIT is a company that owns and operates income-producing real estate including offices, serviced apartments, warehouses, hospitals, shopping centers, hotels and factory space. Nowadays, growth rates in REITs in Thailand are beginning to improve compared to those in other parts of Asia, such as Japan, South Korea and Singapore. REITs are expected to drive continued growth in the Thai real estate market(Vesarach and Nopphon, 2011). Moreover, it is expected that increased information disclosure requirements should improve property market transparency and Thailand has seen a continuous improvement in property

transparency over the past several years. According to JLL's biannual Global Real Estate Transparency Index, Thailand's property market improved its global ranking from 39thplace in 2012 and 2010 to 36th in 2014. Among seven Asian countries covered in the 2014 index, Thailand ranks third after Singapore and Malaysia. Since REITs are subject to strict governance and regulations which improve transparency in the Thai property market, it is expectedthat this will result in higher investor confidence, Both Thai and foreigner investors who look for attractive yields, liquidity and lower risks should find Thai REITs an improvement over their property fund portfolio.

Recently, understanding the performance of real estate investment in capital market is very important. The lack of knowledge on the real estate securities' performance could deter investors from building efficient portfolios. We can say that the less understanding in the real estate securities' performance makes the investment in this area less efficient, deters the growth of economy especially in developing countries.

III. DATA

Variable	Source	Index
REITs	TH Bank of Thailand	Total Return
Property Companies	TH Bank of Thailand	Total Return
Common Stock	SETSMART	Total Return
Bonds	TH Govt. Bond Yield	Long-term bond

IV. METHODOLOGY

To compare the performance of the real estate stocks against the performance of the general stock market, the mean nominal rates of return, standard deviation, Coefficient of Variation, and Sharpe ratio are examined.

4.1 Return Measurements

In theory, the performance of a real estate security could be valued in the same way like other assets traded in the stock exchange of Thailand. According to discounted cash flow model, its value is the sum of the present value of its expected future cash flows as below:

$$V = \sum_{i=1}^{n} \frac{CF_i}{(1+r)^n} \quad (1)$$

where
V is value of any asse
CF_i is cash flow at time i
ris discount rate

Performance was measured by total returns. Total returns were continuously compounded and calculated based on actual returns. The total return for each period was calculated as follows:

$$R_t = ln\left(\frac{R\ Index_t}{R\ Index_{t-1}}\right) \quad (2)$$

The mean return is the average value of returns across time and represents expected performance (ex-ante) or achieved performance (ex-post). The formula for computing the mean of a series of periodic returns is as follows:

$$\bar{R} = \left(\frac{1}{n}\right)\sum_{n=1}^{N} R_t \quad (3)$$

where$\bar{R}$is the ex-post mean return. While it is acknowledged that the ex-post mean return from a given historical sample may not be equal to the ex-ante (expected) mean return, denoted $E(R)$, it is a reasonably good guide to the expected return in the near future.

4.2 Risk Measurements

The volatility of an asset can be measured by the standard deviation of the total return index and in this study was calculated from a historical sample of periodic returns, by the following formula:

$$s.d. = \sqrt{\frac{\sum_{t=1}^{T}(R_t-\bar{R})^2}{T-1}} \quad (4)$$

4.3 Risk-adjusted Return Measurements

4.3.1 Sharpe Ratio

In our study, we employed monthly returns to calculate the annual standard deviations and compounded REITs return. All the returns were measured in their respective local currencies.Excess returns are measured by the difference between the individual firm's nominal rate of return and the risk free rate, which is represented by the yield on three-month treasury bills. To measure the risk-adjusted returns of REITs, we adjust the excess returns against the standard deviation (total risks) because the idiosyncratic risks of individual REITs stocks are more significant in less developed markets. Thus, the Sharpe index adjusts returns by both the risk free rate of return and the standard deviation of the returns, with the numerator measuring the firm's risk premium and the total variability of the returns. The Sharpe ratio is computed for each company for each year using monthly returns data as follows:

$$S\ \ arpe\ Ratio\ = \frac{R_i - R_f}{\sigma} \quad (5)$$

where
$\sigma$is the standard deviation of the rate of return for security i

R_f is the risk free rate of return
R_i is the compounded annual return for company i

4.3.2 Coefficient of Variation

The risk-adjusted returns of an asset are measured by the risk/return ratio or the coefficient of variation (CV). The formulais defined as the ratio of the amount of risk (standard deviation) to the average returns. The CV can be estimatedas follow:

$$\widehat{CV} = \frac{s.d.}{\bar{R}} \quad (6)$$

V. EMPIRICAL RESULTS

Tables1 shows the results of the analysis of the performance of the ThaiProperty Fund, shares and property companies over the period 2009 Q2 – 2015 Q3, and Table 2 shows the performance of REITs, since their inception in 2014 Q4 to2015Q3. The analysis reveals that the performance of the ThaiProperty Fund was distinctly different from that of shares and property companies. In particular, The ThaiProperty Fund provided an average return of 7.17% during the study periodand recorded a significantly lower level of risk (8%) than property companies (11.62%) and shares (8.47%). It was found that the strongest correlation was between shares and securitized real estate companies, indicating that investors received a low diversification benefit from property stocks during this period. It can be concluded that Thai REITs may offer a good option for diversification against both shares and listed property portfolios.

	2009		2010		2011		2012		2013		2014		2015		The whole sample	
	$\bar{R}1$ (%)	$\bar{R}2$ (%)	$\bar{R}1$ (%)	$\bar{R}2$ (%)	$\bar{R}1$ (%)	$\bar{R}2$ (%)	$\bar{R}1$ (%)	$\bar{R}2$ (%)	$\bar{R}1$ (%)	$\bar{R}2$ (%)	$\bar{R}1$ (%)	$\bar{R}2$ (%)	$\bar{R}1$ (%)	$\bar{R}2$ (%)	$\bar{R}1$ (%)	$\bar{R}2$ (%)
SET Index	17.52		9.30		-0.70		7.94		1.69		2.97		-3.23		4.61	
Propcon Index	24.81		8.40		-1.87		10.68		2.79		3.45		-1.03		6.08	
BBKCP	6.79	0.85	4.11	1.56	-0.16	1.38	3.99	1.39	2.06	1.27	1.05	0.96	0.87	1.64	4.86	1.30
CPNRF	9.45	1.19	8.28	2.66	4	2.73	11.23	3.52	0.16	3.12	2.48	6.72	2.58	3.34	10.23	3.41
CTARAF	-0.06	4.43	4.66	1.62	1.02	-23.88	7.94	1.08	-6.96	0.01	-10.74	-1.12	-0.62	-0.27	-1.36	-2.95
FUTUREPF	5.52	2.07	9.83	3.19	4.28	2.63	9.9	4.02	-0.64	4.11	3.05	3.23	5.07	2.94	10.18	3.22
GOLDPF	7.74	1.77	2.91	1.52	-1.84	-24.41	4.76	0.31	-7.83	0.89	0.59	-2.44	1.9	0.54	1.80	-3.45
LUXF	2.14	2.09	-1.52	2.52	-8.38	1.60	16.6	0.75	-6.80	0.91	0.4	2.28	5.87	1.52	2.22	1.66
MIPF	-32.75	2.53	0	2.15	1.8	2.19	-17.07	2.39	-20	2.03	12.32	2.33	-20.51	1.82	-19.44	2.21
MJLF	4.13	2.28	7.9	1.38	3.88	-22.93	9.24	2.36	-1.57	2.09	2.84	2.19	2.93	2.07	8.09	-1.79
MNIT	-0.09	0.34	-2.75	1.69	3.01	0.95	0.67	-0.83	-16.83	-13.12	0.58	0.82	-1.86	0.87	-4.92	-1.47
MNIT2	1.4	2.47	0.66	2.23	2.33	1.52	2.38	1.89	2.09	1.82	-1.68	1.72	-0.69	1.91	1.75	1.92
MNRF	1.72	4.79	2.16	1.84	0.56	3.70	4.03	1.78	1.05	1.34	-0.81	1.76	-8.64	-0.29	-0.10	2.12
QHOP	0.53	1.39	5.32	3.05	2.48	1.69	5.92	2.08	-7.54	-2.94	-10.32	0.43	4.45	2.17	0.20	1.07
QHPF	11.44	1.76	6.09	1.31	-1.7	1.48	10.11	1.54	-2.07	1.44	1.85	2.08	4.55	2.04	7.83	1.64
SPF	14.76	1.23	6.47	0.28	1.53	2.07	46.47	2.46	3.65	3.23	2.94	2.81	4.59	2.83	13.35	2.14
TFUND	4.17	1.54	4.65	1.74	0.6	1.78	3.39	0.80	0.59	2.40	0.89	1.89	0.87	1.52	4.03	1.68
TIF1	1.57	-65.76	3.93	-49.63	-0.02	-24.65	1.3	1.06	0.93	1.98	2.85	1.37	1.45	1.39	3.32	-18.18
TU-PF	-2.81	-0.35	-2.61	-1.25	2.31	4.88	0.62	-0.30	-12.15	-4.42	-13.62	-7.50	-8	-2.09	-10.16	-1.60
URBNPF	-4.5	0.64	-5.56	-4.97	-6.75	0.09	-1.08	-3.57	-1.06	-5.70	0.8	-0.17	4.9	1.16	-3.46	-2.00

Table 1 Returns from REITs and property funds between 2009Q2 – 2015Q4

	2009		2010		2011		2012		2013		2014		2015		The whole sample	
	S.D.1	S.D.2	S.D.1	S.D.2	S.D.1	S.D.2	S.D.1	S.D.2	S.D.1	S.D.2	S.D.1	S.D.2	S.D.1	S.D.2	S.D.1	S.D.2
SET Index	0.062		0.064		0.060		0.049		0.092		0.070		0.033		0.084	
Propcon Index	0.087		0.097		0.070		0.073		0.163		0.080		0.029		0.115	
BBKCP	0.013	0.006	0.012	0.004	0.014	0.002	0.031	0.002	0.016	0.002	0.019	0.010	0.039	0.001	0.030	0.005
CPNRF	0.069	0.020	0.009	0.022	0.054	0.007	0.020	0.004	0.102	0.015	0.060	0.044	0.010	0.009	0.063	0.024
CTARAF	0.029	0.018	0.021	-0.022	0.011	0.498	0.030	0.015	0.091	0.014	0.102	0.018	0.069	0.025	0.082	0.196
FUTUREPF	0.014	0.001	0.019	0.035	0.071	0.014	0.065	0.019	0.031	0.012	0.037	0.001	0.023	0.001	0.052	0.012
GOLDPF	0.0778	0.019	0.028	0.017	0.030	0.504	0.044	0.004	0.068	0.013	0.029	0.051	0.056	0.013	0.063	0.199
LUXF	0.0355	0.018	0.034	0.032	0.079	0.021	0.059	0.014	0.075	0.005	0.028	0.020	0.047	0.010	0.094	0.016
MIPF	0.5528	0.025	0.000	0.048	0.034	0.030	0.567	0.030	0.577	0.036	0.213	0.032	0.533	0.032	0.398	0.027
MJLF	0.045	0.005	0.018	0.018	0.056	0.501	0.043	0.003	0.046	0.003	0.064	0.0019	0.030	0.003	0.052	0.197
MNIT	0.025	0.028	0.025	0.021	0.038	0.011	0.030	0.016	0.237	0.149	0.060	0.003	0.021	0.004	0.107	0.074
MNIT2	0.018	0.012	0.021	0.009	0.018	0.006	0.035	0.004	0.044	0.009	0.016	0.006	0.016	0.003	0.028	0.010
MNRF	0.004	0.041	0.012	0.011	0.008	0.022	0.011	0.005	0.010	0.010	0.025	0.005	0.106	0.021	0.054	0.022
QHOP	0.095	0.007	0.033	0.023	0.051	0.002	0.037	0.016	0.110	0.014	0.037	0.009	0.092	0.025	0.088	0.022
QHPF	0.029	0.001	0.014	0.016	0.023	0.004	0.032	0.002	0.084	0.004	0.044	0.009	0.022	0.007	0.062	0.006
SPF	0.055	0.005	0.019	-0.019	0.009	0.010	0.048	0.003	0.081	0.004	0.060	0.005	0.031	0.005	0.070	0.013
TFUND	0.132	0.005	0.028	0.011	0.081	0.028	0.037	0.025	0.060	0.002	0.038	0.002	0.015	0.007	0.057	0.014
TIF1	0.085	0.570	0.033	0.573	0.053	0.489	0.039	0.006	0.021	0.004	0.038	0.002	0.027	0.005	0.040	0.401
TU-PF	0.032	0.011	0.023	-0.008	0.057	0.078	0.055	0.043	0.063	0.044	0.072	0.120	0.071	0.035	0.078	0.067
URBNPF	0.179	0.014	0.112	-0.146	0.071	0.014	0.034	0.052	0.080	0.082	0.033	0.006	0.092	0.029	0.089	0.050

Table 2SD from REITs and property funds between 2009Q2 – 2015Q4

	2009		2010		2011		2012		2013		2014		2015		The whole sample	
	CV1	CV2	CV	CV2	CV	CV2	CV	CV2	CV	CV2	CV	CV2	CV	CV2	CV	CV2
SET Index	0.356		0.684		-8.562		0.616		5.437		2.358		-1.037		1.828	
Propcon Index	0.349		1.152		-3.730		0.679		5.838		2.330		-2.809		1.891	
BBKCP	0.188	0.654	0.296	0.258	-9.042	0.168	0.786	0.109	0.789	0.171	1.816	0.986	4.474	0.062	0.612	0.376
CPNRF	0.733	1.645	0.109	0.179	1.355	0.265	0.180	0.123	65.107	0.482	2.405	0.656	0.377	0.281	0.613	0.696
CTARAF	-49.095	0.395	0.449	1.865	1.103	-2.085	0.373	1.387	-1.307	107.738	-0.946	-1.600	-11.137	-9.436	-6.044	-6.662
FUTUREPF	0.255	0.036	0.190	0.227	1.657	0.532	0.657	0.484	-4.776	0.295	1.212	0.035	0.444	0.036	0.513	0.365
GOLDPF	1.005	1.054	0.953	0.938	-1.648	-2.066	0.915	1.284	-0.869	1.512	4.839	-2.081	2.946	2.364	3.522	-5.760
LUXF	1.658	0.869	-2.196	0.737	-0.939	1.326	0.356	1.899	-1.101	0.553	6.913	0.866	0.793	0.668	4.236	0.949
MIPF	-1.688	0.991	0.000	1.336	1.911	1.360	-3.320	1.233	-2.884	1.793	1.729	1.366	-2.598	1.735	-2.048	1.219
MJLF	1.090	0.234	0.223	0.548	1.444	-2.186	0.466	0.136	-2.904	0.135	2.243	0.088	1.024	0.153	0.648	-10.962
MNIT	-26.267	8.094	-0.894	1.202	1.274	1.150	4.445	-1.947	-1.409	-1.132	10.273	0.366	-1.123	0.400	-2.162	-4.995
MNIT2	1.267	0.491	3.127	0.917	0.773	0.375	1.478	0.201	2.091	0.511	-0.954	0.371	-2.333	0.142	1.577	0.500
MNRF	0.204	0.859	0.541	0.464	1.368	0.594	0.284	0.277	0.922	0.724	-3.089	0.255	-1.226	-7.009	-54.258	1.013
QHOP	17.898	0.469	0.616	0.220	2.031	0.095	0.618	0.768	-1.459	-0.459	-0.360	2.013	2.077	1.130	43.044	2.051
QHPF	0.250	0.076	0.227	0.596	-1.335	0.235	0.317	0.098	-4.075	0.288	2.380	0.425	0.489	0.332	0.785	0.346
SPF	0.371	0.402	0.292	6.368	0.592	0.486	0.294	0.132	2.229	0.129	2.036	0.169	0.675	0.164	0.524	0.590
TFUND	3.158	0.290	0.604	0.293	13.410	1.547	1.104	3.152	10.284	0.080	4.246	0.098	1.758	0.474	1.412	0.841
TIF1	5.392	-0.866	0.841	-1.155	-250.662	-1.985	3.004	0.589	2.230	0.217	1.335	0.178	1.892	0.338	1.220	-2.207
TU-PF	-1.132	-3.242	-0.896	-1.873	2.462	1.592	8.957	-14.179	-0.519	-1.002	-0.530	-1.598	-0.887	-1.689	-0.764	-4.178
URBNPF	-3.978	2.151	-2.023	-1.400	-1.049	15.130	-3.153	-1.452	-7.490	-1.430	4.096	-3.311	1.882	2.517	-2.576	-2.525

Table 3 CV from REITs and property funds between 2009Q2 – 2015Q4

	2009		2010		2011		2012		2013		2014		2015		The whole sample	
	$R1^2$	$R2^2$	$R1^2$	$R2^2$	$R1^2$	$R2^2$	$R1^2$	$R2^2$	$R1^2$	$R2^2$	$R1^2$	$R2^2$	$R1^2$	$R2^2$	$R1^2$	$R2^2$
BBKCP	-0.772	-0.176	0.555	0.221	-0.126	-0.228	-0.106	0.621	0.309	0.369	-0.967	-0.976	-1.000	-0.989	-0.343	-0.349
CPNRF	0.956	0.918	-0.451	-0.518	-0.680	-0.500	0.951	0.263	0.274	0.214	0.232	0.270	0.557	0.669	-0.094	-0.098
CTARAF	0.930	0.468	-0.115	0.109	-0.165	0.021	0.989	0.674	0.881	0.861	0.262	0.277	-0.840	-0.755	0.178	0.201
FUTUREPF	0.769	0.9999	0.771	0.730	0.690	0.831	-0.721	-0.012	0.808	0.799	-0.481	-0.455	0.874	0.934	0.0499	0.130
GOLDPF	-0.9995	-0.741	-0.294	0.152	-0.118	0.053	-0.270	-0.273	-0.238	-0.230	0.261	0.294	0.072	0.213	0.134	0.165
LUXF	-0.965	-0.564	0.336	0.647	0.425	0.218	-0.568	-0.240	0.006	0.053	-0.543	-0.508	0.120	0.259	-0.027	0.076
MIPF	-0.887	-0.375	-0.358	-0.026	0.024	-0.019	0.154	-0.508	-0.256	-0.217	0.237	0.231	-0.144	-0.020	-0.073	-0.031
MJLF	0.739	0.999	0.727	0.637	-0.108	0.067	0.078	0.712	0.383	0.377	0.097	0.076	-0.781	-0.862	0.131	0.153
MNIT	0.770	0.9999	0.882	0.742	0.148	0.425	0.749	0.963	0.602	0.602	-0.678	-0.648	0.960	0.911	0.327	0.314
MNIT2	-0.580	-0.970	-0.275	-0.547	0.115	-0.030	-0.034	0.820	0.732	0.707	-0.311	-0.283	0.888	0.814	0.187	0.109
MNRF	0.994	0.686	0.356	0.003	-0.653	-0.868	-0.669	0.261	0.691	0.653	0.126	0.150	0.701	0.593	0.388	0.355
QHOP	0.761	1.000	-0.363	-0.275	-0.522	-0.371	-0.888	-0.241	-0.152	-0.212	0.368	0.398	0.033	0.175	0.061	0.161
QHPF	-0.688	-0.994	-0.296	-0.685	-0.472	-0.515	-0.889	-0.818	0.095	0.030	-0.916	-0.926	0.577	0.455	-0.201	-0.342
SPF	0.696	0.064	0.753	0.846	-0.675	-0.437	-0.221	0.613	0.165	0.199	-0.375	-0.387	-0.204	-0.341	-0.188	-0.289
TFUND	-0.602	-0.976	-0.213	-0.214	0.506	0.703	-0.800	-0.787	-0.239	-0.175	0.048	0.026	-0.579	-0.458	-0.152	-0.098
TIF1	0.942	0.498	0.281	-0.068	-0.864	-0.837	0.979	0.665	0.505	0.457	-0.631	-0.602	0.881	0.805	-0.236	-0.391
TU-PF	1.000	0.755	-0.218	0.223	-0.708	-0.856	0.6996	0.797	0.126	0.133	0.913	0.900	-0.854	-0.772	0.116	0.135
URBNPF	0.196	-0.487	0.630	0.708	-0.043	0.292	0.547	-0.087	-0.385	-0.446	0.024	-0.017	-0.941	-0.979	0.006	-0.095

Table 4R^2 from REITs and property funds between 2009Q2 – 2015Q3

	2009		2010		2011		2012		2013		2014		2015		The whole sample	
	$R3^2$	$R4^2$	$R3^2$	$R4^2$	$R3^2$	$R4^2$	$R3^2$	$R4^2$	$R3^2$	$R4^2$	$R3^2$	$R4^2$	$R3^2$	$R4^2$	$R3^2$	$R4^2$
BBKCP	-0.322	0.370	-0.098	0.133	-0.892	-0.993	0.904	0.799	0.907	0.909	0.957	0.965	0.411	0.280	0.663	0.689
CPNRF	0.914	0.959	-0.930	-0.855	0.610	0.807	0.361	-0.466	0.100	0.999	0.855	0.857	-0.239	-0.109	0.734	0.732
CTARAF	-0.070	-0.701	0.785	0.468	0.159	0.447	-0.059	-0.557	0.975	0.973	0.913	0.904	-0.725	-0.845	0.422	0.388
FUTUREPF	-0.981	-0.620	0.676	0.319	0.824	0.900	-0.174	-0.434	0.977	0.961	0.929	0.940	-0.399	-0.189	0.392	0.429
GOLDPF	-0.050	0.610	0.119	0.230	0.545	0.800	-0.799	-0.019	0.419	0.361	0.983	0.978	0.448	0.663	0.445	0.549
LUXF	-0.625	0.030	-0.182	-0.592	-0.179	-0.475	-0.915	-0.836	-0.459	-0.515	0.712	0.705	-0.322	-0.080	0.093	0.049
MIPF	0.717	0.998	0.000	0.000	0.872	0.840	-0.066	-0.874	0.365	0.370	0.789	0.803	-0.020	-0.236	0.050	0.011
MJLF	-0.984	-0.634	-0.352	-0.641	0.740	0.726	0.827	0.010	0.557	0.504	0.830	0.812	-0.997	-0.958	0.354	0.362
MNIT	0.934	0.479	0.130	0.160	0.591	0.548	0.533	0.991	0.653	0.621	-0.095	-0.055	-0.233	-0.062	0.322	0.275
MNIT2	-0.596	-0.975	-0.275	-0.653	-0.800	-0.642	0.807	0.873	-0.195	-0.253	0.682	0.698	-0.928	-0.983	0.040	0.019
MNRF	0.763	1.000	-0.486	-0.469	0.406	0.611	0.2037	0.0107	0.563	0.547	0.1965	0.224	0.503	0.386	0.307	0.406
QHOP	-0.441	-0.918	0.945	0.756	0.881	0.924	-0.047	-0.126	0.984	0.976	-0.727	-0.715	-0.941	-0.824	0.2619	0.178
QHPF	0.506	-0.175	-0.203	-0.331	-0.761	-0.937	0.169	-0.685	0.835	0.798	0.957	0.948	-0.896	-0.796	0.6742	0.569
SPF	-0.925	-0.457	0.496	0.573	0.375	0.338	0.237	-0.613	0.934	0.924	0.959	0.963	-0.904	-0.968	0.666	0.602
TFUND	-0.069	-0.700	-0.875	-0.600	0.409	0.571	0.064	-0.804	0.986	0.995	0.874	0.885	-0.923	-0.893	0.367	0.284
TIF1	-0.998	-0.721	-0.326	-0.179	0.325	0.560	0.103	0.804	0.354	0.373	0.602	0.610	-0.510	-0.523	0.010	0.163
TU-PF	0.597	0.975	0.256	0.553	-0.773	-0.907	0.483	0.992	0.627	0.576	0.374	0.401	-0.862	-0.899	0.219	0.254
URBNPF	-0.454	-0.924	-0.441	-0.756	0.859	0.631	-0.065	0.719	0.701	0.653	0.070	0.029	0.938	0.888	-0.019	-0.164

Table 5R^2 from REITs and property funds between 2009Q2 – 2015Q3

	The Whole Sample (Quarterly Returns)										Capital gain / Loss Quarterly (%)	Return Dividend (Yearly%)	ReturnWhole sample (%)
	Price					NAV							
	$\bar{R}$ (%)	S.D.	CV	R^2(SET)	R^2(PROP)	$\bar{R}$(%)	S.D.	CV	R^2(SET)	R^2(PROP)			
Office													
BBKCP	4.86	0.03	0.61	0.69	0.66	1.30	0.005	0.376	-0.35	-0.34	0.88	6.85	6.83
MIPF	-19.44	0.40	-2.05	0.01	0.05	2.21	0.027	1.219	-0.03	-0.07	-13.28	4.56	4.56
QHPF	7.83	0.06	0.79	0.57	0.67	1.64	0.006	0.346	-0.34	-0.20	4.06	6.94	7.96
Shopping Mall													
CPNRF	10.23	0.06	0.61	0.73	0.73	3.41	0.024	0.696	-0.10	-0.09	3.28	6.08	8.71
FUTUREPF	10.18	0.05	0.51	0.43	0.39	3.22	0.012	0.365	0.13	0.05	3.19	5.92	3.50
MJLF	8.09	0.05	0.65	0.36	0.35	-1.79	0.197	-10.962	0.15	0.13	2.05	7.20	8.98
Apartment and Single house													
CTARAF	-1.36	0.08	-6.04	0.39	0.42	-2.95	0.196	-6.662	0.20	0.18	-2.67	16.88	16.37
GOLDPF	1.8	0.06	3.52	0.55	0.44	-3.45	0.199	-5.760	0.17	0.14	-0.66	8.76	6.62
LUXF	2.22	0.09	4.24	0.05	0.09	1.66	0.016	0.949	0.08	-0.03	-0.79	8.26	8.25
MNIT	-4.92	0.11	-2.16	0.27	0.32	-1.47	0.074	-4.995	0.31	0.33	-3.96	15.76	15.90
MNIT2	1.75	0.03	1.58	0.02	0.04	1.92	0.010	0.500	0.11	0.19	-0.87	9.29	9.28
MNRF	-0.1	0.05	-54.26	0.41	0.31	2.12	0.022	1.013	0.36	0.39	-1.88	13.4	13.40
QHOP	0.2	0.09	43.04	0.18	0.26	1.07	0.022	2.051	0.16	0.06	-1.58	8.79	13.46
TU-PF	-10.16	0.08	-0.76	0.25	0.22	-1.60	0.067	-4.178	0.14	0.12	-5.27	-	12.96
URBNPF	-3.46	0.09	-2.58	-0.16	-0.02	-2.00	0.050	-2.525	-0.10	0.01	-1.80	-	-1.32
Warehouse Industrial													
TFUND	4.03	0.06	1.41	0.28	0.37	1.68	0.014	0.84	-0.10	-0.15	2.09	6.45	6.49
TIF1	3.32	0.04	1.22	0.16	0.01	-18.18	0.401	-2.21	-0.40	-0.24	1.72	6.99	7.00
Airport													
SPF	13.35	0.07	0.52	0.60	0.67	2.14	0.012	0.59	-0.29	-0.19	6.92	5.39	1.15

Table 6 Diversity of Real Estate Securities According to Types of Underlying Real Properties

Notes : All Table Calculated by author

Table 1
$\bar{R}1$ (%) = Returns from REITs and property funds Calculated from Unit Price (2009Q2 – 2015Q4)
$\bar{R}2$ (%) = Returns from REITs and property funds Calculated from NAV (2009Q2 – 2015Q4)

Table 2
S.D.1 = Standard Deviation Calculated from Unit Price (2009Q2 – 2015Q4)
S.D.2 = Standard Deviation Calculated from NAV (2009Q2 – 2015Q3)

Table 3
CV1 = Coefficient of Variationof REITs and property funds, Calculated from Unit Price (2009Q2 – 2015Q4)
CV2 = Coefficient of Variationof REITs and property funds, Calculated from NAV (2009Q2 – 2015Q4)

Table 4
$R1^2$ = The Coefficient of Determination between REITs and PropconCalculated from NAV (2009Q2 – 2015Q3)
$R2^2$ = The Coefficient of Determination between REITs and SET Calculated from NAV (2009Q2 – 2015Q3)

Table 5
$R3^2$= The Coefficient of Determination between REITs and PropconCalculated from Unit Price(2009Q2 – 2015Q4)
$R4^2$ = The Coefficient of Determination between REITs and SETCalculated from Unit Price (2009Q2 – 2015Q4)

CONCLUSIONS

Economic modernization in the 21th century, the globalization link many aspects of finance instrument together. As we know that, investment created wealth. Moreover, investors get the benefits from financial markets through primary or secondary markets, currency markets, or by investing in real estate sector.Nowadays, the real estate investment is growing and become a alternative investment. Not only institutional but also individual investors search for the low correlation assets to diversify their risk and improve their investment performance. Currently, investors can purchase of real properties through capital market in terms of the real estate securities such as property funds or Real Estate Investment Trusts (REITs). This is called indirect real estate investment, which provides more flexibility and creates liquidity to investors. Moreover, the investment in capital market allows small investors with less capital can participate in real estate investment.

The rapid increase in the securitization of real estate through REITs, which are closed-end investment companies offering investors the opportunity to invest in real estate related assets, has caused a dramatic change in the Thaireal estate industry since 2014.As an early stage of REITs in Thailand, Thai REIT market analysis is not practicable because of the lack of historical data. The purpose of this study was to examine the performance of ThaiREITs compared to stocks and securitized real estate shares over the period 2009–2015based on theestimated risk-adjusted performance of ThaiREITs compared to that of other investment assets (the Thai Property Fund, stocks, and property shares).In Thailand, previous studies of REIT-securitized real estate have only focused on the performance of REITs versus common stocks. This study not onlycompared the results of REITsto common stocks but also to other securitized real estate (both the Thai Property Fund and property shares)and found thatthe returns from ThaiREITs appear to be much more like those from unsecuritized real estate than those from common stocks. Regarding the performance of REITs, theresultsof this study suggest that REITs do not produce extraordinarily positive performance. Althoughthesefindingsare only based on limited data, it is hoped that they can help investors and fund managers,tomake betterinformed investment decisionsregarding Thai-REITs as well as guiding academics in the fieldsince this study provides interesting and important insightsinto the performance of ThaiREITs. Finally yet importantly, we can say that funds could be mobilized from both domestic and foreign investors to support the growth of countries, especially developing countries that have limited capital.

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