PORTFOLIO PERFORMANCE OF M-REITS BEFORE, DURING AND AFTER THE GLOBAL FINANCIAL CRISIS

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ABSTRACT

The Global Financial Crisis has directly and indirectly affected the world economy; which caused the value of stock markets to decrease by more than 40% in some countries. In Malaysia, the Kuala Lumpur Composite Index (KLCI) recorded a 45% drop during the Global Financial Crisis period. Real Estate Investment Trusts (REITs) are often regarded as the lower risk investment options compared to the stock markets due to the nature of its structure. The aim of this study is to investigate the effect of the Global Financial Crisis on Malaysia Real Estate Investment Trusts (M-REITs) by looking at its portfolio performance from 2005 to 2013. This is done by evaluating Treynor and Sharpe ratio of M-REITs to identify its risk-adjusted return based on either systematic risks only (beta in Treynor ratio) or both systematic and unsystematic risks (standard deviations in Sharpe ratio). The result of this study will give an overall idea on the portfolio performance of M-REITs before, during and after the Global Financial Crisis.

Keywords: GFC, REITS, portfolio performance, Sharpe ratio, Treynor ratio, Malaysia

INTRODUCTION

REIT is a company which collects and invests the pooled capital of the investors to purchase and manage real estate, real estate-related assets, non-real estate-related assets, single-purpose asset owning companies, cash, deposits and money market instruments (EPRA, 2009). Examples of real estate are shopping complexes, hospitals, plantations, industrial properties, hotels and office blocks. The structure of REITs and unit trust funds is similar in a way that both are being managed by professionals; a registered valuer in the case of REITs and a fund manager in the case of unit trusts.

REITs have been known as a lower risk investment tools compared to other investment options such as owning shares in the stock markets or directly owning a real property as the movement of the stock price for REITs is not as volatile as stock markets while it still be able provide better liquidity compared to owning a physical property (Alias and Soi Tho, 2011). In addition to that, it offers the investors an opportunity to invest in large-scale real estate with only a fraction of the cost of direct investment by owning the shares of REITs. According to Stewart LaBrooy, the Chairman of the Malaysian REIT Managers Association, another distinctive advantage of REITs over ordinary company stocks is the high level certainty of dividend payouts, which are done either quarterly or half yearly which resulted in two types of returns to be expected from REITs investment - the dividend payouts and capital gains that arise from the appreciation of REITs price.

REIT companies usually generate steady income from the recurrent rental incomes of the properties owned such as offices, commercial buildings or service apartments. However from the empirical evidences of previous researches, REITs performance have been uncertain and inconclusive with some studies indicated that the REITs stocks may be worse than the stock market portfolio while the others suggested the equity REITs generally outperformed the stock market portfolio (Hamzah et *al.*, 2010). It was later found out by Hamzah *et al.* (2010) that the performance studies seem to be highly sensitive to the sample period of the respective studies. Ong *et al.* (2012) also reported divergent findings of REITs performance during the Global Financial Crisis and after the Global Financial Crisis which varied depending on the measurement tools used.

The Global Financial Crisis (GFC) was suggested to have started in July 2007 in the United States with the situation worsen in the third quarter of 2008 during the bankruptcy of the Lehman Brothers. Some of the developed countries which have interconnected financial systems with the US were affected by the first wave of the turmoil. In Malaysia, the economy is only affected by the second turmoil of the crisis; verified by a huge reduction in GDP growth from 4.7% in the third quarter of 2008 to 0.1% in the subsequent quarter, followed by negative growth in 3 consecutive quarters in 2009. Also, the Kuala Lumpur Composite Index (KLCI) has experienced a 45% drop since its highest in July 2008. Are M-REITs being affected by the Global Financial Crisis?

DEVELOPMENT OF M-REITS

According to Ooi *et al.* (2006) and Alias and Soi Tho (2011), the history of the property trusts in Malaysia started as early as 1989 with the introduction of Listed Property Trusts (LPT). It was the first country that introduced LPT in Asia region (Ooi *et al.*, 2006). However due to the restrictive regulatory framework in the Property Trust Guideline and the absence of tax transparency, the trusts were deemed to be unattractive by the investors (Ting, 2006; Chai *et al.*, 2011). Several guidelines were being issued and revised by the Security Commission in an attempt to improve the popularity of the trusts, but to no avail especially when the timing coincided with the 1997 financial crisis.

With the increasing popularity of Real Estate Investment Trusts (REITs) among Asian Countries, Listed Property Trusts in Malaysia were officially being relaunch to Real Estate Investment Trusts together with the granting of tax transparency status to REITs in 2005 (Ooi *et al.*, 2006; Alias and Soi Tho, 2011; Chai *et al.*, 2011). Ooi *et al.* (2006) reported that this has sparked an interest among the players in the industry. According the Osmadi (2010), this has also resulted in a surge the establishment of REITs since 2005. Table 1 shows the full list of REITs in Malaysia with the year being listed, capital and its current status. It can be seen from the table that majority of the REITs are listed in year 2006 and 2007. The development and transformation of the Listed Property Trusts (LPT) to Real Estate Investment Trusts (REITs) is as shown in Table 2 and the differences between REITs and Listed Property Companies are as shown in Table 3.

Table 1: Real Estate Investment Trusts in Malaysia
(Source: Bursa Malaysia)

No.	Name	Stock Quote	Year Listed	Total Assets (RM '000)	Current Status
1	AMANAH HARTA TANAH PNB	AHP	1989	136,640	Active
2	AL-AQAR HEALTHCARE	ALAQAR	2006	496,026	Active
3	AL-HADHARAH BOUSTEAD	BSDREIT	2007	517,834	Delisted
4	AMFIRST REIT	AMFIRST	2007	876,714	Active
5	AMANAHRAYA REIT	ARREIT	2007	789,884	Active
6	ATRIUM REIT	ATRIUM	2007	173,396	Active
7	AXIS REIT	AXREIT	2005	581,857	Active
8	CAPITAMALLS MALAYSIA TRUST	CMMT	2010	585,274	Active
9	HEKTAR REIT	HEKTAR	2007	587,797	Active
10	IGB REAL ESTATE INV TRUST	IGBREIT	2012	4,892,134	Active
11	KLCC PROPERTY HOLDINGS BHD	KLCC	2013	16,264,643	Active
12	PAVILION REAL ESTATE INV TRUST	PAVREIT	2011	3,681,088	Active
13	QUIL CAPITA TRUST	QCAPITA	2006	290,516	Active
14	SUNWAY REAL ESTATE INV TRUST	SUNREIT	2011	4,452,898	Active
15	TOWER REIT	TWRREIT	2006	567,244	Active
16	UOA REIT	UOAREIT	2006	431,851	Active
17	YTL HOSPITALITY REIT	YTLREIT	2006	1,381,961	Active

* Total assets as of year 2005 for company established before year 2005 or at the year listed for company established after year 2005.

Table 2: Developments of Real Estate Investment Trusts in Malaysia
(Source: Chin, 2006, cited in Alias and Soi Tho, 2011, p.42)

Date	Descriptions
1986	Approval of the establishment of regulatory framework of listed property trusts by the Central Bank of Malaysia. The principal regulation was the Companies Act 1965 and Securities Industry Act 1983.
1989	In order to provide a framework for the establishment of property trust fund in Malaysia, Property Trust Guideline (PTG) was issued.
October 1991	Specific Securities Commission guidelines for property trust fund was developed.
June 1995	The first edition of Guidelines on Property Trust Funds was issued by SC.
November 2001	SC revised the Guidelines on Property Trust Funds (2nd Edition).
2004	Announcement by the government that RPGT and stamp duty are exempted for sale of property to REITs.
January 2005	Guidelines on Real Property Investment Trusts (REITs) were issued (3rd Edition).Tax transparency for REITs was announced by government.
September 2005	In order to reduce the cost of establishment of REIT, government announced to allow tax deductions on legal, valuation and consultancy expenses incurred in the establishment of REITs.
November 2005	The issuance of Guidelines on Islamic Real Estate Investment Trusts.

Table 3: Differences between REITs and Property Companies
(Source: Bursa Malaysia)

	Listed REITs	Listed Property Companies
Earning Profile	A REIT is driven by recurring rental income	A property company seeks a combination of property sales, development profits, rental income and property investments
Capital Structure and Capital Flow	A REIT has low and defined level of retained earnings, low debt level defined by the regulators and strong cash flow from operations	A property stock has a high gearing ratio due to high capital expenditure required for property development and sometimes negative cash flow; and low dividend payouts
Dividend Distribution Policy	A REIT will distribute 90% – 100% of its retained earnings before tax	A property stock has no certainty of a dividend payout
Risk Profile	A REIT is a low risk, passive investment vehicle with a high certainty of cash flow from rentals derived from lease agreements with tenants	A property stock has a high development and financial risk
Corporate Governance	REITs are governed by multiple layers of stakeholders – unitholders, manger, trustees, regulating authorities ensuring that interest of minority unitholders are protected	A property stock is often dominated by a controlling shareholder which raises conflict of interest issues with minority shareholders

PREVIOUS STUDIES ABOUT THE EFFECTS OF GFC ON M-REITS

In the research of Hamzah *et al.* (2010), REITs outperformed the general market portfolio during crisis period but underperformed during pre-crisis and post-crisis period with higher systematic risks during pre-crisis and crisis period. It was then suggested that this is due to the "lag effect" of the property and construction sector as this sector is not able to absorb the effect of economic downturn instantly. This findings are supported by the research of Kok and Khoo (1995) where it is found out that generally the listed property trusts outperformed the market portfolio during bearish market period and underperformed during bullish market period.

However, according to Ong *et al.* (2012), Sharpe and Treynor ratio indicated that most Malaysia REITs underperformed the market portfolio at all times whereas Jensen's alpha implied that REITs underperformed the market portfolio in only

pre-GFC period but outperformed during GFC and post-GFC period. The similar result yielded from Jensen's alpha also appeared in the research of Osmadi (2010) where the Sharpe ratio indicated that Malaysia REITs underperformed the market portfolio before GFC but outperformed the market portfolio during GFC. It is suggested by Ong *et al.* (2012) that higher level of risk experienced by investors may be due to the short time frame since establishment of REITs.

The main objective in this research is to determine the portfolio performance of M-REITs before, during and after the Global Financial Crisis; thereby deduce the impacts of GFC on M-REITs.

DATA COLLECTION

The required data in this research are the stock prices of M-REITs and FTSE Bursa Malaysia Kuala Lumpur Composite Index (FBMKLCI) which can be acquired from KLSE.info and Yahoo Finance. Dividends issued are recorded in annual report of the respective REITs companies in Bursa Malaysia. Risk free rate represented by the Malaysia 3-months Treasury Bills, published by Bank Negara Malaysia.

RESEARCH METHODOLOGY

Most investment and portfolio management texts pointed out that the basic measures of performance are Sharpe ratio and Treynor ratio (Moy, 2009). This is because these measures consider the risk of returns which are not taken account of by other measures such as NAV, EVA, FFO and traditional financial performance measures. These measures were often being used to measure the performance of mutual funds. Due to the similarities between REITs and mutual funds, many researchers have also used these indicators to conduct studies on the performance of REITs.

Sharpe and Treynor ratio were often used together to measure the performance of a portfolio. In this research, the portfolio performance of M-REITs will be measured in terms of risk-adjusted returns using Sharpe and Treynor ratio. Both of the indicators will measure how much a fund has earned over the risk-free rate relative to the risk it is exposed to.

There are two types of risk – systematic risk and unsystematic risk. Systematic risk is also known as "market risk" or "un-diversifiable risk" and can be referred to as volatility; unsystematic risk is also known as "specific risk" or "diversifiable risk" and a type of uncertainty that comes with the company or industry, which can be reduced through diversification.

Both of the ratios were measuring the risk-adjusted returns therefore, the numerator of the formula will be the same for both of them. The only distinctive difference between them is Sharpe ratio captured both the systematic and unsystematic risks by using standard deviation as the denominator, whereas Treynor ratio focused only on the systematic risk, which is represented by beta. The formula of Sharpe ratio and Treynor ratio is as shown below.

Sharpe ratio

Sharpe Ratio = $\dfrac{R_r - R_f}{\sigma_r}$

R_r = the observed average return on REIT
R_f = the average return on Malaysia 3 months Treasury Bills
σ_r = the standard deviation of the returns on REIT

Treynor ratio

Treynor Ratio = $\dfrac{R_r - R_f}{\beta_r}$

R_r = the observed average return on REIT
R_f = the average return on Malaysia 3 months Treasury Bills
β_r = the beta of REIT in relative to market benchmark, FBMKLCI

Standard deviation was used to measure the fluctuations of stock price; the higher the standard deviation, the higher the volatility of REITs. On the other hand, beta is a measure of stock volatility in relation to the market benchmark. In the case of Malaysia, the market benchmark has been chosen to be FBMKLCI which comprises of 30 largest companies by market capitalisation in the FBM Emas. This is because it is made up of primary market movers which Bursa Malaysia claimed that it can more aptly define market activities while remaining representative of the Malaysian stock market.

Beta can be either 0, 1, <1 or >1. When beta = 0, the value of the security will remain unchanged regardless of the movement of market; beta = 1 indicates that the security's price will move with the market; beta < 1 indicates that the security's price is less volatile than the market; and lastly, beta > 1 indicates that the security's price is more volatile than the market which can result in higher rate of return but also pose higher risk.

A high and positive Sharpe ratio represents a superior risk-adjusted performance of a fund or outperforming the market whereas a low and negative Sharpe ratio is an indication of an unfavourable performance or underperforming the market. Likewise for Treynor ratio, the higher the ratio normally means the greater the portfolio's returns. However, due to the nature of the beta whereby it can be positive or negative, a positive ratio does not necessary mean that the fund is well-performed and vice versa. A positive Treynor ratio can be generated when both the risk-adjusted return and beta are positive or when both the risk-adjusted return and beta are negative. The same principle applies for the negative Treynor ratio, which can be due to a negative risk-adjusted return or a negative beta.

SCOPE OF RESEARCH

This study is confined to all the Listed Malaysia Real Estate Investment Trusts (M-REITs) in Bursa Malaysia from year 2005 to 2013. This includes Al-Hadharah Boustead REIT which has been delisted from Bursa Malaysia in February 2014 but excludes KLCC Stapled REIT which has just been listed in May 2013 as there is insufficient information to carry out analysis.

RESULTS

The ratios of Sharpe and Treynor measures for REITs at different period of time are shown in Table 4 to Table 7. The analysis between these results will be discussed in the next section.

Table 4: Portfolio Performance of M-REITs during the entire period – Establishment/ 2005 to 2013

REITs	Establishment	Average Return, R_r	Average 3 months Treasury Bills, R_f	Beta, β_r	Standard Deviation, σ_r	Risk-adjusted return $(R_r - R_f)$	Sharpe Ratio	Treynor Ratio
Amanah Harta Tanah PNB	Jan-05*	0.2763	2.8996	0.4613	2.5523	0.2757	0.1080	0.5978
Al-Aqar Healthcare	Aug-06	0.2406	2.9352	0.1231	2.3529	0.2400	0.1020	1.9505
Al-Hadharah Boustead	Feb-07	0.3246	2.9001	0.2240	2.2085	0.3241	0.1468	1.4467
Amfirst	Dec-06	0.2028	2.9098	0.2850	1.7007	0.2022	0.1189	0.7097
Amanah Raya	Feb-07	0.2172	2.8962	0.0919	2.3580	0.2167	0.0919	2.3584
Atrium	Apr-07	0.2790	2.8888	0.2337	2.0305	0.2784	0.1371	1.1916
Axis	Aug-05	0.3061	2.9360	0.3854	2.6253	0.3055	0.1164	0.7927
Capita Malls	Jul-10	0.3434	2.9579	0.3277	2.6416	0.3429	0.1298	1.0464
Hektar	Dec-06	0.3089	2.9123	0.2908	3.1284	0.3084	0.0986	1.0605
IGB	Sep-12	-0.1040	3.0196	0.1360	1.7859	-0.1046	-0.0586	-0.7692
Pavillion	Dec-11	0.3880	3.0181	0.2702	2.4422	0.3874	0.1586	1.4339
Quil Capita	Jan-07	0.2391	2.9057	0.5653	2.9369	0.2385	0.0812	0.4219
Sunway	Jul-10	0.3086	2.9569	0.5617	2.1769	0.3081	0.1415	0.5485
Tower	Apr-06	0.2868	2.9482	0.5949	2.5194	0.2863	0.1136	0.4812
UOA	Dec-05	0.2268	2.9476	0.3668	2.2727	0.2263	0.0996	0.6169
YTL Hospitality	Dec-05	0.1501	2.9476	0.3561	1.9855	0.1496	0.0753	0.4200
FBMKLCI	Jan-05**	0.1667	2.8996	0.9979	1.8246	0.1661	0.0910	0.1665

* Amanah Harta Tanah PNB was listed at Bursa Malaysia in December 1990. The period has been confined from 2005 to 2013 for research purposes.

** The data of FBMKLCI is taken from January 2005 to December 2013.

Table 5: Portfolio Performance of M-REITs during pre-GFC period – Establishment to Aug 2008

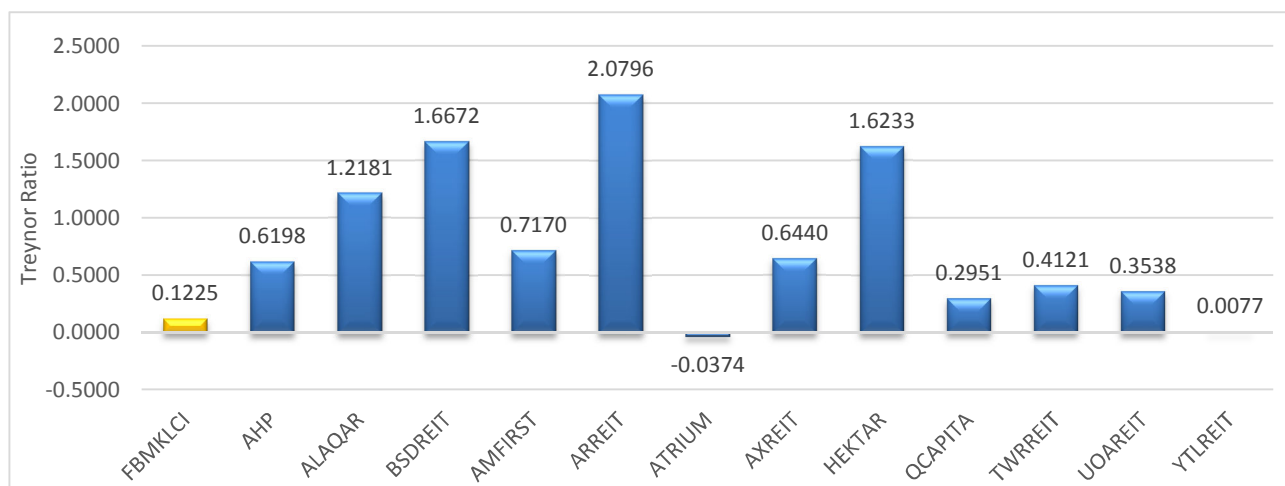| REITs	Establishment	Average Return, R_r	Average 3 months Treasury Bills, R_f	Beta, β_r	Standard Deviation, σ_r	Risk-adjusted return $(R_r - R_f)$	Sharpe Ratio	Treynor Ratio
Amanah Harta Tanah PNB	Jan-05*	0.3397	3.1157	0.5471	2.6359	0.3391	0.1287	0.6198
Al-Aqar Healthcare	Aug-06	0.1209	3.4141	0.0987	1.8392	0.1203	0.0654	1.2181
Al-Hadharah Boustead	Feb-07	0.2466	3.4117	0.1475	3.0329	0.2459	0.0811	1.6672
Amfirst	Dec-06	0.1710	3.4114	0.2377	1.7959	0.1704	0.0949	0.7170
Amanah Raya	Feb-07	0.2459	3.4133	0.1179	2.1450	0.2452	0.1143	2.0796
Atrium	Apr-07	-0.0083	3.4132	0.2386	3.0446	-0.0089	-0.0029	-0.0374
Axis	Aug-05	0.2060	3.2576	0.3190	2.7269	0.2054	0.0753	0.6440
Capita Malls	Jul-10	-	-	-	-	-	-	-
Hektar	Dec-06	0.3048	3.4104	0.1874	4.8202	0.3042	0.0631	1.6233
IGB	Sep-12	-	-	-	-	-	-	-
Pavillion	Dec-11	-	-	-	-	-	-	-
Quil Capita	Jan-07	0.2577	3.4114	0.8710	5.8565	0.2570	0.0439	0.2951
Sunway	Jul-10	-	-	-	-	-	-	-
Tower	Apr-06	0.2798	3.3904	0.6775	3.7925	0.2792	0.0736	0.4121
UOA	Dec-05	0.1024	3.3409	0.2876	2.5364	0.1017	0.0401	0.3538
YTL Hospitality	Dec-05	0.0045	3.3355	0.5102	2.6681	0.0039	0.0015	0.0077
FBMKLCI	Jan-05**	0.1225	3.1157	0.9948	1.7965	0.1219	0.0678	0.1225

* Amanah Harta Tanah PNB was listed at Bursa Malaysia in December 1990. The period has been confined from 2005 to 2013 for research purposes.

** The data of FBMKLCI is taken from January 2005 to December 2013.

Figure 1: Sharpe Ratio of M-REITs during pre-GFC period
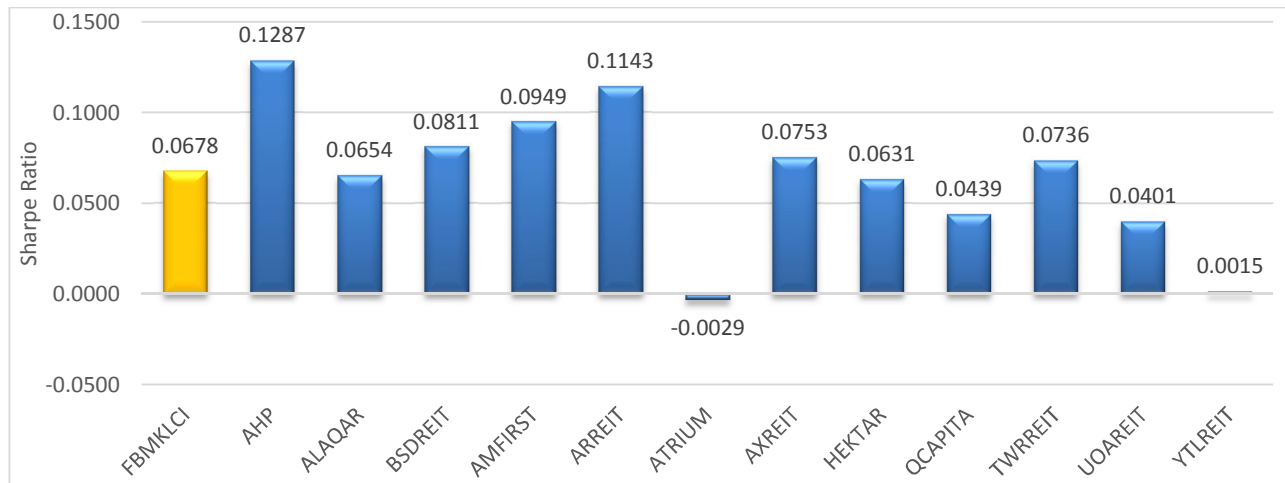
Figure 2: Treynor Ratio of M-REITs during pre-GFC period

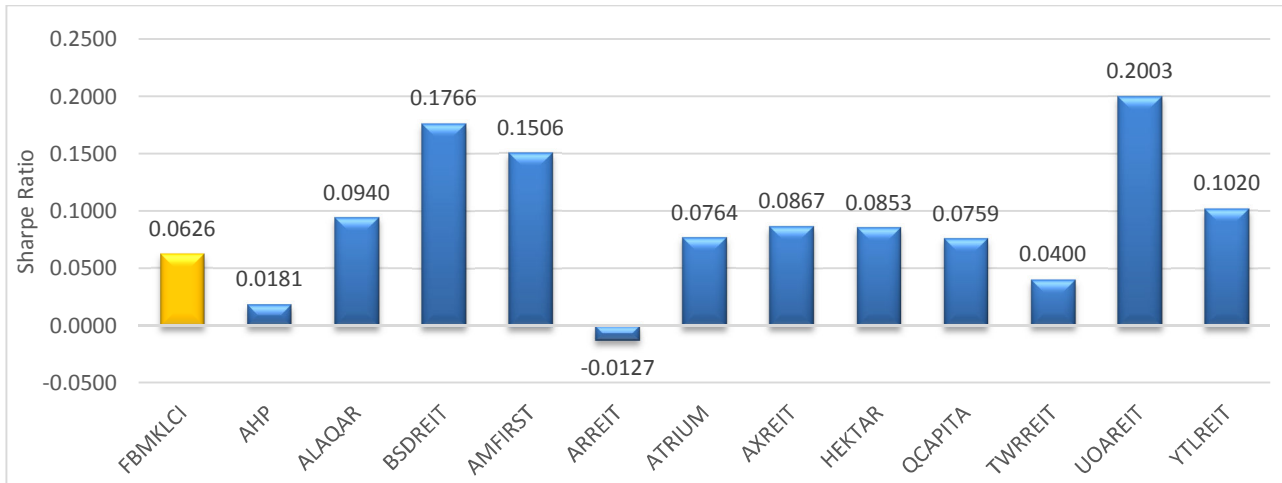**Table 6: Portfolio Performance of M-REITs during GFC period – Sep 2008 to Aug 2009**

REITs	Establishment	Average Return, R_r	Average 3 months Treasury Bills, R_f	Beta, β_r	Standard Deviation, σ_r	Risk-adjusted return $(R_r - R_f)$	Sharpe Ratio	Treynor Ratio
Amanah Harta Tanah PNB	Jan-05*	0.0698	2.5028	0.6346	3.8393	0.0693	0.0181	0.1092
Al-Aqar Healthcare	Aug-06	0.3047	2.5028	0.1654	3.2369	0.3042	0.0940	1.8398
Al-Hadharah Boustead	Feb-07	0.4299	2.5028	0.3661	2.4310	0.4294	0.1766	1.1728
Amfirst	Dec-06	0.3988	2.5028	0.3924	2.6443	0.3983	0.1506	1.0149
Amanah Raya	Feb-07	-0.0589	2.5028	-0.0143	4.6635	-0.0594	-0.0127	4.1422
Atrium	Apr-07	0.2180	2.5028	0.2327	2.8457	0.2175	0.0764	0.9347
Axis	Aug-05	0.3897	2.5028	0.6183	4.4892	0.3892	0.0867	0.6295
Capita Malls	Jul-10	-	-	-	-	-	-	-
Hektar	Dec-06	0.2935	2.5028	0.3696	3.4338	0.2930	0.0853	0.7928
IGB	Sep-12	-	-	-	-	-	-	-
Pavillion	Dec-11	-	-	-	-	-	-	-
Quil Capita	Jan-07	0.2563	2.5028	0.2964	3.3707	0.2558	0.0759	0.8632
Sunway	Jul-10	-	-	-	-	-	-	-
Tower	Apr-06	0.1206	2.5028	0.6898	3.0044	0.1201	0.0400	0.1741
UOA	Dec-05	0.6552	2.5028	0.4772	3.2693	0.6547	0.2003	1.3720
YTL Hospitality	Dec-05	0.2243	2.5028	0.0841	2.1940	0.2239	0.1020	2.6628
FBMKLCI	Jan-05**	0.1632	2.5028	0.9811	2.6003	0.1627	0.0626	0.1658

* Amanah Harta Tanah PNB was listed at Bursa Malaysia in December 1990. The period has been confined from 2005 to 2013 for research purposes.
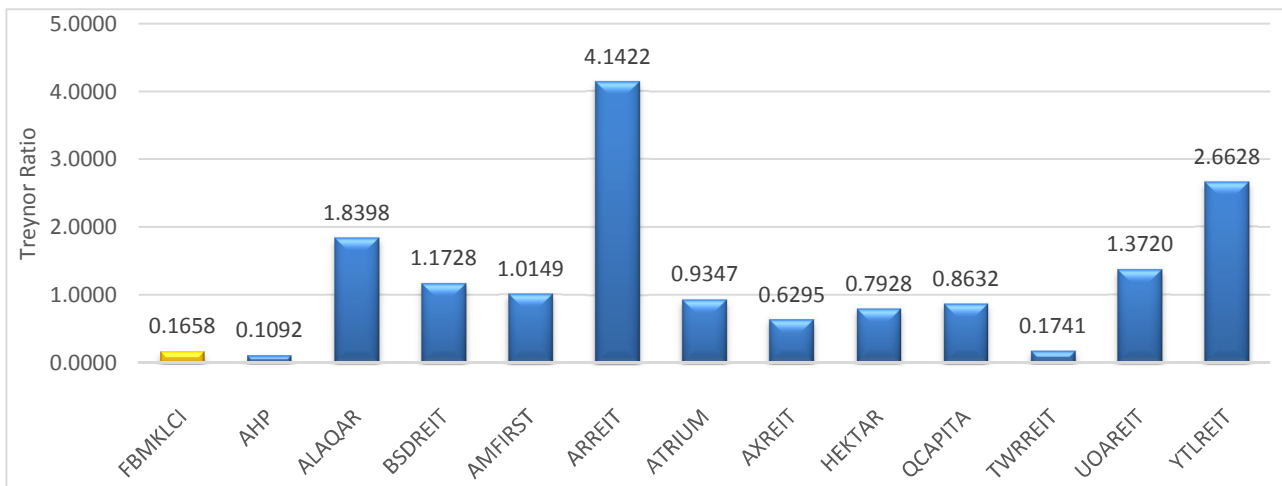
** The data of FBMKLCI is taken from January 2005 to December 2013.

Figure 3: Sharpe Ratio of M-REITs during GFC period

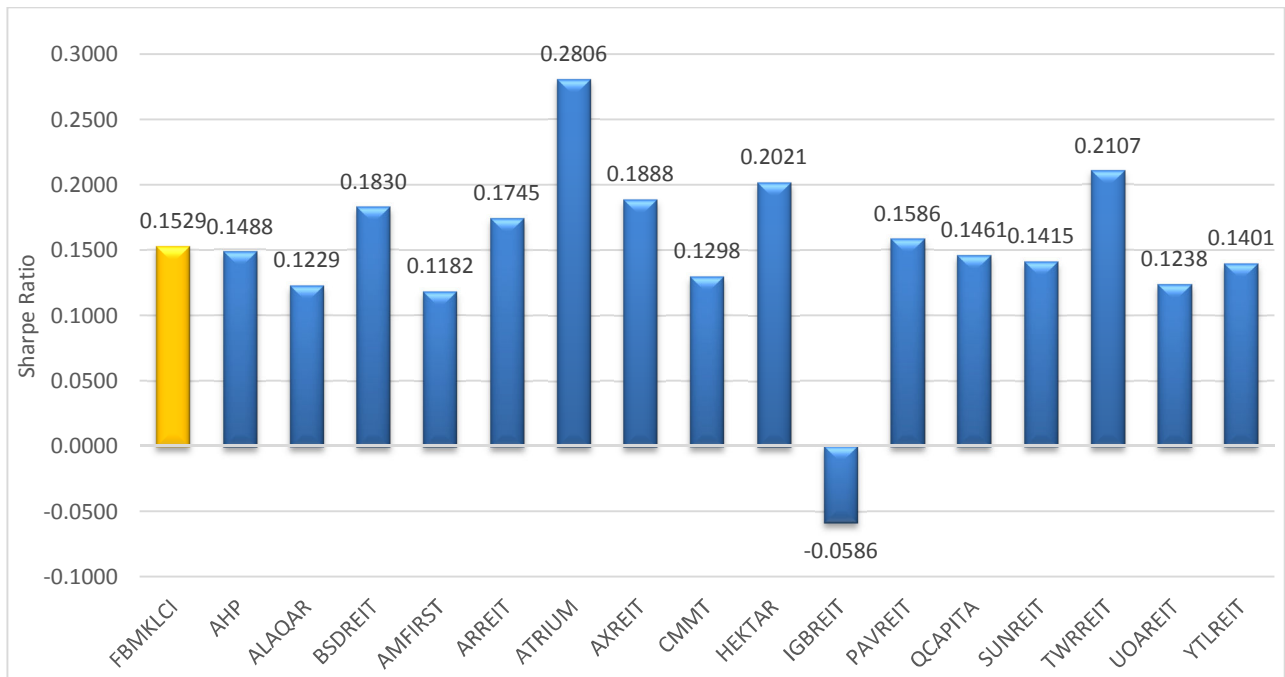**Figure 4: Treynor Ratio of M-REITs during GFC period**

Table 7: Portfolio Performance of M-REITs during post-GFC period – Sep 2009 to Dec 2013

| REITs	Establishment	Average Return, R_r	Average 3 months Treasury Bills, R_f	Beta, β_r	Standard Deviation, σ_r	Risk-adjusted return $(R_r - R_f)$	Sharpe Ratio	Treynor Ratio
Amanah Harta Tanah PNB	Jan-05*	0.2711	2.8100	0.1261	1.8187	0.2706	0.1488	2.1449
Al-Aqar Healthcare	Aug-06	0.2822	2.8100	0.1241	2.2914	0.2817	0.1229	2.2708
Al-Hadharah Boustead	Feb-07	0.3280	2.8100	0.2120	1.7894	0.3274	0.1830	1.5441
Amfirst	Dec-06	0.1692	2.8100	0.2616	1.4266	0.1686	0.1182	0.6447
Amanah Raya	Feb-07	0.2721	2.8100	0.1483	1.5561	0.2715	0.1745	1.8307
Atrium	Apr-07	0.3860	2.8100	0.2059	1.3738	0.3855	0.2806	1.8726
Axis	Aug-05	0.3573	2.8100	0.2924	1.8897	0.3567	0.1888	1.2200
Capita Malls	Jul-10	0.3434	2.9579	0.3277	2.6416	0.3429	0.1298	1.0464
Hektar	Dec-06	0.3142	2.8100	0.3878	1.5522	0.3136	0.2021	0.8088
IGB	Sep-12	-0.1040	3.0196	0.1360	1.7859	-0.1046	-0.0586	-0.7692
Pavillion	Dec-11	0.3880	3.0181	0.2702	2.4422	0.3874	0.1586	1.4339
Quil Capita	Jan-07	0.2280	2.8100	0.2799	1.5571	0.2275	0.1461	0.8127
Sunway	Jul-10	0.3086	2.9569	0.5617	2.1769	0.3081	0.1415	0.5485
Tower	Apr-06	0.3297	2.8100	0.3445	1.5620	0.3291	0.2107	0.9553
UOA	Dec-05	0.2030	2.8100	0.4060	1.6349	0.2024	0.1238	0.4985
YTL Hospitality	Dec-05	0.2235	2.8100	0.3046	1.5919	0.2230	0.1401	0.7321
FBMKLCI	Jan-05**	0.2049	2.8100	0.9956	1.3365	0.2043	0.1529	0.2052

* Amanah Harta Tanah PNB was listed at Bursa Malaysia in December 1990. The period has been confined from 2005 to 2013 for research purposes.

** The data of FBMKLCI is taken from January 2005 to December 2013.

Figure 5: Sharpe Ratio of M-REITs during post-GFC period

Figure 6: Treynor Ratio of M-REITs during post-GFC period
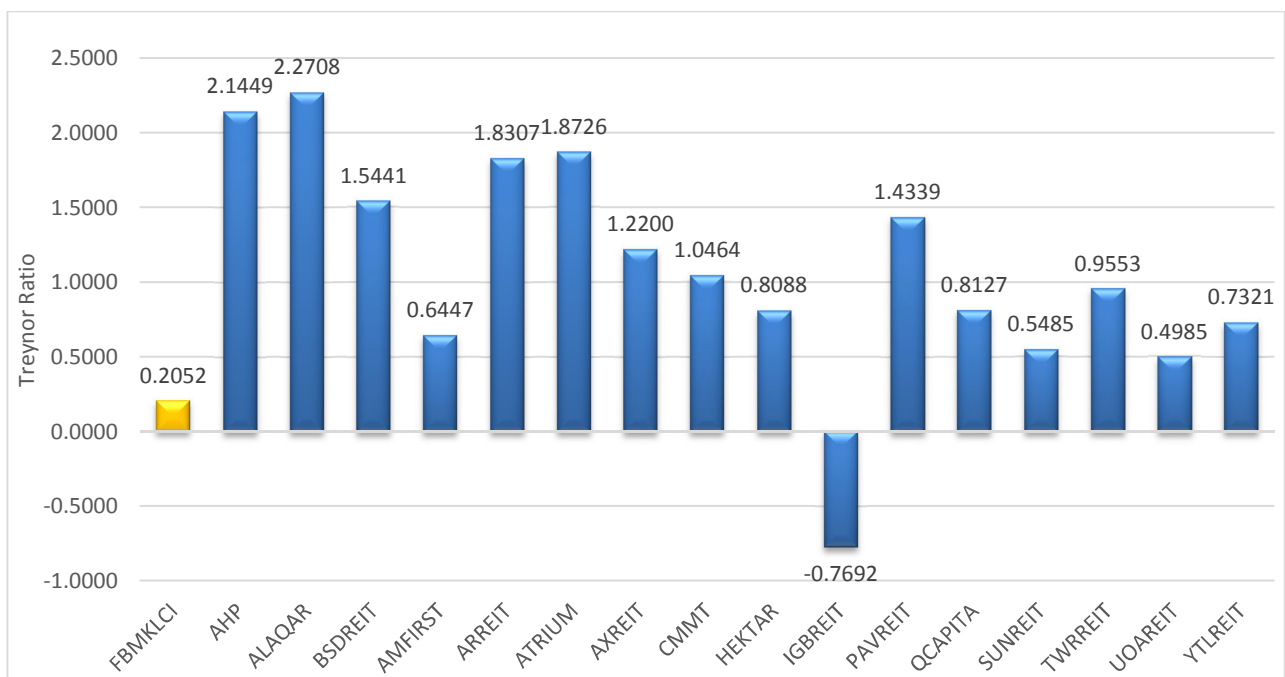
DISCUSSIONS

This research aimed to determine the portfolio performance of M-REITs during, before and after Global Financial Crisis. In this study, the GFC period had been identified as from September 2008 to September 2009 and any period before and after would be regarded as pre-GFC period and post-GFC period respectively. This is because GFC had impacted Malaysia on the third quarter of 2008.

It was found out that there were two waves for the establishment of REITs companies in Malaysia. The first wave is between 2005 and 2007 and the subsequent wave is between 2010 and 2012, which is after the GFC period. Among the sixteen (16) REITs companies in this research, thirteen (13) of them were established during the first wave and four (4) of them were established in the second wave (refer to Table 1). The four (4) companies that were listed in Bursa Malaysia after the GFC period are CMMT, IGBREIT, PavREIT and SunREIT.

As discussed in the earlier section, Sharpe and Treynor ratio are affected by standard deviation and beta respectively which are representing the risks in the investments. It was found out that generally the standard deviation for M-REITs was the lowest in post-GFC period. In other words, the fluctuations of the stock price was the smallest in post-GFC period compared to pre-GFC and GFC period. On the other hand, all the beta calculated were either between 0 and 1 or -1 and 0, indicating that the movements of the stock price of M-REITs are less volatile compared to the market benchmark, FBMKLCI (see Table 4 to Table 7).

M-REITs with poor performance

It was discovered that majority of M-REITs have positive Sharpe and Treynor ratio during pre-GFC, GFC and post-GFC period except for Atrium REIT, AmanahRaya REIT and IGBREIT. During pre-GFC period, 11 out of 12 REITs generated positive Sharpe and Treynor ratios except for Atrium REIT which had negative Sharpe and Treynor ratio of -0.0029 and -0.0374 respectively (refer to Table 5). The reason behind the poor performance was due to the unstable fall in stock prices since August 2007 which resulted in a negative risk-adjusted return. However during GFC and post-GFC period, Atrium REIT was able to posed good performance with positive results from Sharpe and Treynor indicator.

Similarly during the GFC period, 11 of out 12 REITs yielded positive Sharpe and Treynor ratio with ARREIT being the only one that had poor performance according to Sharpe indicator. It was found out that the undesirable performance of ARREIT during GFC period was only due to the decline in stock prices which causes the risk-adjusted return to be negative. However, the other factor which can affect the portfolio's return – the dividends, did not contribute to the poor performance as it constantly increases every year. Although ARREIT performed badly during GFC period, it had the highest positive Treynor ratio during pre-GFC period which indicates superior risk-adjusted performance. In addition, its Sharpe ratio during post-GFC period was above average compared to all the other REITs.

Figure 7: IGB stock price movements
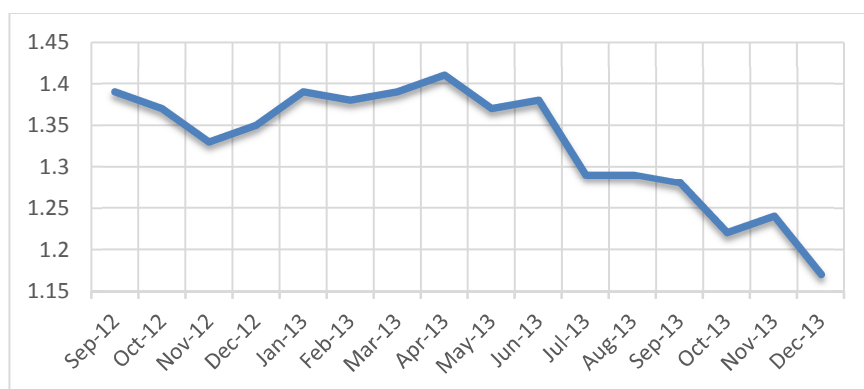
During the post-GFC period, 15 out of 16 REITs had achieved positive Sharpe and Treynor ratio with the exception of IGBREIT, which had negative ratio for both Sharpe and Treynor indicator at -0.0586 and -0.7692 respectively (refer to Table 7). Among all the other REITS which were established during the post-GFC period, IGBREIT was the only REIT with undesirable performance. To investigate this matter, the stock price movements and dividends of IGBREIT were analysed in details. It is found out that the stock price of IGBREIT increased with minimum fluctuations after the initial public offering (IPO) at December 2012 until the middle of April 2013, then it started to decline to about 14% lesser than its highest in record as of December 2013 (see Figure 7). On the other hand, the dividend issued is within the range

even though it is at the lower end of the range. When comparing the movements of the stock price for REITs established after the GFC period, it was discovered that all the stock prices fall at around the same period of time, which is from May 2013 to July 2013. Besides REITs established during the post-GFC period, other REITs listed during the first wave of establishments such as Axis REIT, Hektar REIT or Tower REIT also experienced a fall at around the same period of time but still generating positive Sharpe and Treynor ratio. The rationalization to the poor performance of IGBREIT is the short period of sample time. Since it was only established in September 2012, the falling of stock price starting from May 2013 will have a significant effect on its Sharpe and Treynor ratio.

Overall, the results had shown that majority of the M-REITs have superior risk-adjusted returns before, during and after the GFC period. Of all the poor performance indications from either Sharpe or Treynor ratio, 85% was due to the negative risk-adjusted return which is only affected by only the stock price in this case. The dividends issued did not have a huge impact on the risk-adjusted return as 50% had constant or slight increase in dividends every year and 37.5% had increment with minimum fluctuations of standard deviations less than 0.01%. The other 15% of the poor performance was due to the negative beta which resulted in negative Treynor ratio. It can therefore be concluded that the bad performance of REITs in this research was mostly due to the negative risk adjusted returns which was affected by the intensity of the falling of stock prices, not the dividends issued by the respective REITs.

Performance of M-REITs versus FBMKLCI

In this paper, both Sharpe and Treynor indicators had measured the risk-adjusted return of REITs. The only dissimilarity between them is the difference in denominator of the formula. In Sharpe indicator, the measure of return is based on total risks (systematic and unsystematic risks) whereas in Treynor indicator, the measure of return is based on systematic risk only.

According to Sharpe indicator, half of the REITs outperformed the market while the other half underperformed the market during pre-GFC period (see Figure 1). However, Treynor indicator revealed that 10 out of 12 REITs outperformed the market (see Figure 2). Over the GFC period, 9 out of 13 REITs outperformed the market by referring to Sharpe ratio while 11 out of 12 REITs outperformed the market by referring to Treynor ratio (refer to Figure 3 and 4). Throughout the post-GFC period, Sharpe indicator implied that 7 out of 16 REITs outperformed the market (see Figure 5). On the other hand, 15 out of 16 REITs outperformed the market using Treynor indicator (see Figure 6). It is also found out that during the post-GFC period, 3 out of 4 REITs that were listed in Bursa Malaysia during the second wave of establishments have underperformed the market by benchmarking with Sharpe ratio but outperformed the market by benchmarking with Treynor ratio. One of the explanations to this inconsistent finding is the short period of sample time for REITs established after the GFC period.

Overall, Treynor indicator suggested that majority of the M-REITs have performed better than the market before, during and after the GFC period whereas Sharpe indicator implied that 50% outperformed the market during pre-GFC period; 75% outperformed the market during GFC period; and 44% outperformed the market during post-GFC period. The results were similar to the findings of Hamzah *et al.* (2010) and Kok and Khoo (1995) to a certain extent where Sharpe ratio indicated that the performance of M-REITs are better during GFC period and comparatively poorer in pre-GFC and post-GFC period. However, the findings of this paper did not correspond to the research conducted by Ong *et al.* (2012) where she reported that most of the M-REITs underperformed the market at all times.

CONCLUSIONS

This paper had investigated the portfolio performance of M-REITs before, during and after the Global Financial Crisis. The findings had provided an insight on the portfolio performance of M-REITs by using Sharpe and Treynor indicator. The results generated were slightly different for Sharpe and Treynor measures. Although Sharpe measure indicated that most of the M-REITs have comparatively better performance than the market benchmark, FBMKLCI during GFC period compared to pre-GFC and post-GFC period, Treynor measure revealed that majority of the M-REITs outperformed the market benchmark, FBMKLCI during pre-GFC, GFC and post-GFC period. It is also discovered that majority of M-REITs were able to achieve positive Sharpe and Treynor ratio regardless of pre-GFC, during GFC or post-GFC period. Therefore, it can be concluded that the effect of GFC is insignificant towards the portfolio performance of M-REITs.

REFERENCES

Alias, A. and Soi Tho, C.Y. (2011). Performance of Analysis of REITs: Comparison between M-REITs and UK-REITs. *Journal of Surveying, Construction and Property*. 2(2011), pp.38-61.

Chai, M.Y., Choong, Y.J., Koh, C.W. and Tham W.J. (2011). *Malaysian Real Estate Investment Trusts (M-REITs): A Performance and Comparative Analysis.* Bachelor's Degree. University Tunku Abdul Rahman.

Chin,Y. H.& Rubi Ahmad. (2006). *An Evaluation of the Performance of Malaysian Real Estate Investment Trusts (M-REITs) 1990-2006.* Proceeding of Asia Pacific Management Conference XII.

EPRA (2009*). Global REIT Survey September 2009.* Belgium: EPRA.

Hamzah, A.H., Rozali, M.B. and Tahir, I. (2010). Empirical Investigation on the Performance of the Malaysia Real Estate Investment Trusts in Pre-Crisis, During Crisis and Post-Crisis Period. *International Journal of Economics and Finance.* 2(2), pp.62-69.

Kok, K. and Khoo, K. (1995). Performance of Property Trusts in the Kuala Lumpur Stock Exchange. *Capital Markets Review.* 3(1995), pp.1-19.

Moy, R.L. (2009). Practical Portfolio Performance Measurement and Attribution by Carl R. Bacon. *Financial Analysts Journal.* 65(1), pp.67-68.

Ong, T.S., Boon, H.T., Chin, H.S. and Yat, L.Y. (2012). Malaysia Real Estate Investment Trusts: A Performance and Comparative Analysis. *International Journal of Economics and Finance.* 4(5), pp.73-84.

Ooi, J.T.L., Newell, G. and Sing, T.F. (2006). The Growth of REIT Markets in Asia. *Journal of Real Estate Literature.* 14(2), pp.203-222.

Osmadi, A. (2010). *The Malaysian REIT Development and Their Role in a Portfolio.* Doctor Philosophy. University of Western Sydney.

Ting, K.H. (2006). Impact of the Asian financial crisis on corporate real estate disposals. *Journal of Corporate Real Estate.* 8(1), pp.27-37.

BIBLIOGRAPHY

Albrecht, T. (1998). The Search for the Best Financial Performance Measure: A Comment. *Financial Analyst Journal.* 54(1), pp.86-87.

Al-Haj, N.H.Y.Y. and Hashim, H. (2007). Empirical Trend on Factors that Influence the Institutional Investors towards Investing in Malaysia Real Estate Investment Trusts: A Preliminary Study. *Oxford Business & Economics Conference.* 24-26 June. Oxford University, United Kingdom.

Ali, H.M. (2006). Size Effect on the Performance of Listed Real Estate Companies. *International Real Estate Research Sysposium.* 11-23 April. PWTC Kuala Lumpur, Malaysia. 1-10.

Ambrose, B.W. and Linneman, P. (2001). REIT Organizational Structure and Operating Characteristics. *Journal of Real Estate Research.* 21(3), pp.141-162.

Anand, S. and Murugaiah, V. (2006). *Analysis of Components of Investment Performance – An Empirical Study of Mutual Funds in India.* Unpublished material.

Bacidore, J.M., Boquist, J.A., Milbourn, T.T. and Thakor, A.V. (1997). The Search for the Best Financial Performance Measure. *Financial Analysts Journal.* 53(3), pp.11-20.

Bacon, C.R. (2004). *Practical Portfolio Performance Measurement and Attribution.* England: John Wiley & Sons Ltd.

Capozza, D.R. and Lee, S. (1996). Portfolio Characteristics and Net Asset Values in REITs. *The Canadian Journal of Economics.* 29(2), pp.520-526.

Capozza, D.R. and Seguin, P.J. (1998). Debt, Agency and Management Contracts in REITs: The External Advisor Puzzle. *Journal of Real Estate Finance and Economics.* 20(1998), pp.91-116.

Ferguson, R. and Leistikow, D. (1998). Search for the Best Financial Performance Measure: Basics Are Better. *Financial Analysts Journal.* 54(1), pp.81-85.

Fortin, S., Tsang, D. and Dionne, F.P. (2008). *Performance Measurement and Recognition of Real Estate Assets: An International Exploration of Reporting Practices Adopted in the Real Estate Industry.* Canada: Real Property Association of Canada.

Grupe, M. and DiRocco, C. (2000) A Guide to Investing in Real Estate Investment Trusts. *American Association of Individual Investors Journal.* November 2000, pp.9-14.

Howe, J.S. and Shilling, J.D. (1990). REIT Advisor Performance. *AREUEA Journal*. 18(4), pp.479-500.

Jobson, J.D. and Korkie, B.M. (1981). Performance Hypothesis Testing with the Sharpe and Treynor Measures. *The Journal of Finance*. 36(4), pp.889-908.

Price, R.M. (2006). *A Study of REIT and Real Estate Mutual Fund Performance*. Doctor Philosophy. The Florida State University.

Shahid, M. (2007). *Measuring portfolio performance*. Master's Degree. Uppsala University.

Stutzer, M. (2000). A Portfolio Performance Index. *Financial Analysts Journal*. 56(3), pp.52-61.

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