RISK AND RETURN ANALYSIS OF TAX ADJUSTED VERSUS UNADJUSTED REITS INDEXES AND OTHER FINANCIAL INDEXES

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ABSTRAK

Kajian ini membangunkan indeks terlaras dan tidak terlaras cukai bagi amanah pelaburan hartanah (REITs) Malaysia berdasarkan kaedah nilai wajaran dengan menggunakan data bulanan bagi 19 REITs Malaysia dari Januari 1999 hingga Disember 2014. Ianya juga menyiasat prestasi indeks REIT terlaras cukai berbanding tidak terlaras cukai dan petunjuk kewangan yang lain serta manfaat kepelbagaian REIT Malaysia, Indeks Komposit Kuala Lumpur (KLCI), Indeks Hartanah Kuala Lumpur (KLPI) dan Bil Perbendaharaan 3-Bulan Malaysia berasaskan teori portfolio moden Markowitz. Kajian ini mendapati indeks REIT terlaras cukai mengatasi indeks REIT tidak terlaras cukai, KLCI dan KLPI menggunakan variasi koefisien (CV). Bil Perbendaharaan 3-Bulan Malaysia menyediakan CV terendah dan ianya dianggap sebagai aset prestasi terbaik bagi pelabur benci risiko. Tambahan pula, REIT Malaysia didapati mempunyai korelasi positif yang rendah dengan KLCI berbanding KLPI, menunjukkan ianya mempunyai manfaat kepelbagaian yang lebih tinggi; manakala Bil Perbendaharaan 3-Bulan Malaysia adalah berkorelasi negative dengan petunjuk kewangan lain.

Kata kunci: indeks terlaras cukai, indeks tidak terlaras cukai, teori portfolio moden Markowitz, variasi koefisien (CV), korelasi

ABSTRACT

This study develops the tax adjusted and unadjusted Malaysian real estate investment trusts (REITs) indexes based on the value weighted approach by using a monthly data of 19 Malaysian REITs from January 1999 to December 2014. It also investigates the performance of the tax adjusted versus unadjusted Malaysian REITs indexes and other financial indicators, and diversification benefit of the Malaysian REITs, Kuala Lumpur Composite Index (KLCI), Kuala Lumpur Property Index (KLPI) and Malaysia 3-month Treasury bills based on the Markowitz's modern portfolio theory. The study finds that the tax adjusted REITs index outperforms the unadjusted REITs index, KLCI and KLPI based on the coefficient of variation (CV). The Malaysia 3-month T-bills provides the lowest CV and it is considered to be the best performing asset for risk averse investors. Furthermore, Malaysian REITs are found to have a lower positive correlation with the KLCI than the KLPI, indicating that it has a higher diversification benefit. Malaysia 3-month Treasury bills are negatively correlated with the other financial indicators.

Keywords: Tax adjusted REITs index, unadjusted REITs index, Markowitz's modern portfolio theory, coefficient of Variance, correlation.

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CHAPTER 1

INTRODUCTION

1.1 Background of the Study

Real estate investment trust (REIT) is a security investing in real estate directly and sold like a stock on the major exchanges. The traditional real estate investment trust is a closed-end fund created especially for mortgage-related assets or / and real properties (Chen & Eley, 2003). Since the REITs were introduced in the United States (US) in 1960, REITs have become a popular investment tool, which have attracted huge investment capital, especially in developed countries. With the rapid development of the REITs industry, more countries have established REITs index in order to assist and to enhance the development of REITs, as well as to attract more REITs investors. Some of these indexes are: Dow Jones US Select REIT index in the US; S&P/ASX 200 A-REIT in Australia; S&P Singapore REIT index; Tokyo Stock Exchange REIT index and Hang Seng REIT index in Hong Kong. However, there is no REIT index developed in Malaysia, although the REITs industry is gaining its popularity.

The development of a reliable, timely REITs index is significant for decision makers and fund managers. REITs index can be used as a benchmark to measure the performance of individual REIT, to provide a standard performance of a specific industrial sector or regional market, to serve as a proxy for investment such as index fund and to be used as an underlying asset for derivatives investment (Schoenfeld, 2002).

The growth of global REITs market has encouraged a number of studies looking into the performance and diversification benefits of REITs, especially in developed market (Burns & Epley, 1982; Goebel & Kim, 1989; Kuhle & Walther, 1986; Smith & Shulman, 1976; Sagalyn, 1990). In the Malaysian market, the number of studies are rather limited (Kok & Khoo, 1995; Newell, Ting & Acheampong, 2002; Ting, 1999). This is probably due to the limited number of Malaysian REITs and the lack of a Malaysian REITs index to be used for comparison purposes. Similar to the US, the Malaysian REITs showed mixed results possibly due to the small sample and short study period. With an increasing number of REITs listed on Bursa Malaysia, it provides an avenue for this research to be implemented. A tax adjusted REITs which is lacking in the Malaysian market is developed and compared to the other financial indexes.

1.2 Overview of REITs Industry

REIT investment was established by the American Congress in 1960 in order to provide an opportunity for investors to invest in real properties (Graff, 2001). Since then, more countries have established REITs around the world, such as Netherlands (1969), Australia (1985), Canada (1994), Belgium (1995) and Turkey (1996) (EPRA, 2014). A recent data shows that the total market capitalization of global REITs has increased to USD 1,392 billion as of 2014. The details are shown in table 1.1:

Table 1.1:
Overview of the 2014 global REITs

Continent	No. of REITs	Capitalization (USD million)
Europe	133	179,814
South and North Americas	475	919,785
Australia	57	89,491
Asia	171	181,620
Middle East Africa	20	21,527
Global	**856**	**1,392,237**

Source: EPRA global REIT survey, 2014

From table 1.1, South and North Americas have the highest market capitalization of USD 919.8 billion, contributing 66 percent of the global REITs market capitalization, followed by Asia and Europe. There are 856 established REITs around the world as of 2014. Among these countries which have developed REITs, the US and Australia have established a successful real estate investment framework and vehicles (Hamzah & Rozali, 2010). Furthermore, a series of REITs indexes such as the S&P United States REIT index and S&P/ASX 200 A-REIT have been created to provide performance benchmarks to investment decision makers in the US and Australia.

European REITs started earlier than that of the Asian market. However, the total Asian REITs market capitalization has exceeded the European market (EPRA, 2014). A better transparency and maturity in the Asian real estate markets might have contributed to the development of Asian REITs. The survey on transparency and maturity in some Asian real estate markets by LaSalle (2004) indicated that Hong Kong, Singapore, Malaysia and Japan were respectively the seventh, ninth, twentieth, twenty-sixth most transparent markets all over the world, and they have improved

considerably since 1997. Asian REITs markets provide new opportunities of diversifying into real estate assets of these Asian countries for international funds (Newell, Liow, Ooi & Zhu, 2005). After the Asian financial crisis in 1997, Asian countries, particularly South Korea, Singapore and Japan have successfully established REITs markets. In brief, market capitalization of South Korea REITs have reached USD 847 million, with eight REITs as of 2014. Singapore launched REITs in July 2002, thirty-seven REITs have been listed with USD 52 billion in the Singapore Exchange (SGX) by 2014. There were forty-six REITs listed on the Tokyo Stock Exchange in 2014 ever since two REITs were launched in 2001. Moreover, market capitalization of Japan REITs has reached USD 84.1 billion in 2014 (EPRA, 2014). A study conducted by Newell, Yue, Wing and Kei (2010) has shown that there were 101 REITs among Asian countries with a market value of more than USD 54 billion, capturing 14 percent of the global REIT market value in June 2009. Subsequently, three years later, the number of Asian REITs jumped to 171, with a market capitalization of USD 181.6 billion (EPRA, 2014). As more REITs are being offered, a number of countries developed their REITs index such as Japan REITs index, Singapore REITs index and Hong Kong REITs index (Pham, 2012).

1.3 Development of REITs in Malaysia

Malaysia was among the earliest country in Asia that developed REITs (formerly known as listed property trusts, LPTs) in 1989 (Newell, Ting & Acheampong, 2002). In 1986, the Malaysian Central Bank approved the regulatory framework to govern

the establishment and operation of listed property trusts under the Companies Act 1965 and the Securities Industry Act 1983. In 1991, the Securities Commission (SC) Malaysia replaced Bank Negara Malaysia to regulate the property trust funds and introduced specific Securities Commission guidelines on listed property trust in the same year. The guidelines were revised in 1995 (Newell, Ting & Acheampong, 2002). SC issued a consultation paper on guidelines of property trust funds on October 1991, consultation paper on property trust funds and real estate investment trusts on March 2002, and embarked upon a consultation process in relation to property trust funds vis-a-vis the likes of similar products in other jurisdictions, such as property funds in Singapore and REITs in the US (Securities Commission, 2002).

However, the development of Malaysian REITs was quite slow. Listed property trusts did not develop as expected. In the following 15 years from 1989, there were only four REITs listed in Bursa Malaysia, namely, Arab-Malaysian First Property Trust (1989), First Malaysia Property Trust (1989), Amanah Harta Tanah PNB (1990) and Mayban Property Trust Fund One (1997). Early studies conducted by Ting (1999), and Newell, Ting and Acheampong (2002) found that Malaysian listed property trusts performed poorly and it is associated with the lack of awareness of the listed property trusts among investors.

In order to encourage the development of the REITs industry in Malaysia, accelerate the growth and enhance REIT attractiveness, Securities Commission Malaysia improved the new guidelines for the REITs industry and rebranded listed property

trusts as real estate investment trusts on 3rd January 2005. The objective of the new guidelines was to enhance awareness amongst local industry players and property developers and attract new players (Securities Commission, 2005). Following the implementation of new guidelines, three new REITs were listed on the Bursa Malaysia during 2005, namely, Axis Real Estate Investment Trust (July, 2005), Starhill Real Estate Investment Trust (December, 2005) and UOA Real Estate Investment Trust (December, 2005). In 2008, a revised guidelines on real estate investment trusts was issued by the Securities Commission Malaysia to enhance the attractiveness of Bursa Malaysia to be a destination for REIT listings and to promote a competitive REITs industry regionally (Securities Commission, 2008). Today, a total of 17 Malaysian REITs are listed on Bursa Malaysia since the new guidelines on REITs were implemented.

Other than improving the guidelines on REITs, the Malaysian government also provided several incentives starting from the budget 2004. A series of tax incentives have been introduced to accelerate the growth of REITs during the annual budget. Thus far, there are three tax incentives that were announced in the 2007, 2009 and 2012 budget that affect REITs investors. The Malaysian government reduced the tax rate on the dividend of unit holders, and had extended the tax incentives for REITs till end of 2016. The tax incentives only applied to REITs that distribute at least 90 percent of their total income as dividends. In the 2007 budget, the tax rates on individuals and domestic unit trust investors have been reduced to 15 percent, while a rate of 20 percent is paid by foreign institutional investors. This favorable tax initiative is valid

from 2007 till the end of 2011 (KPMG Budget Highlights Tax Commentary, 2007). In the 2009 budget, which was presented on 29th August, 2008, the tax rates on those parties were further reduced to 10 percent by the government. Finally, in the 2012 budget, presented on October 2011, the period of tax reductions has been extended to December 31, 2016 (Malaysia Tax and Business Booklet, 2010, 2012). The summary is shown in table 1.2.

Table 1.2:
Tax rate on the REITs dividend

Budget	**Validity Period**	**Dividend Tax***	
		Individual and domestic investors	Foreign institutional investor
2007 Budget	Until end of 2011	15%	20%
2009 Budget	Until end of 2011	10%	10%
2012 Budget	Extend to end of 2016	10%	10%

*Source: KPMG Budget Highlights Tax Commentary (2007),Malaysia Tax and Business Booklet (2010, 2012); *Tax rates are applied on REITs where 90% or more of the REIT's total income is distributed.*

Tax rate on dividend is a significant consideration for shareholders who invest in REITs and it directly influences the net profit of investing in REITs. Newell, Ting and Acheampong (2002) stated that one of the initiatives to increase the progress of REITs is to establish tax-exempt dividend status.

The establishment of the new guidelines and tax initiatives has helped increased the market capitalization and the number of Malaysian REITs. The following figure shows the growth of the total market capitalization of REITs in Malaysia from the period of January 1999 to December 2014.

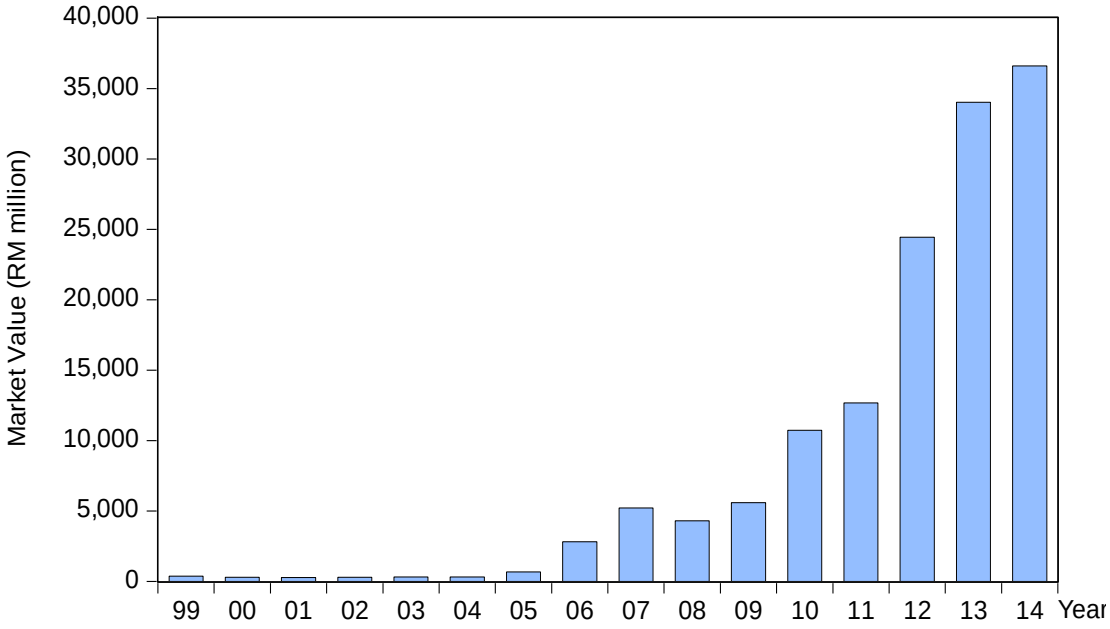

Figure 1.1:
Total market value of the Malaysian REITs (RM million)
*Source: Datastream.*Includes market capitalization of a stapled group*

Based on figure 1.1, the real estate investment trusts have increased from RM304 million in 2004 to RM607 million in 2005. Subsequently, along with the implementation of tax incentives, the total market value of REITs has achieved beyond RM36 billion by the end of 2014.

1.4 Problem Statement

The last section of this study has shown that Malaysian REITs industry has improved ever since the implementation of the new guidelines on REITs in 2005, in addition to the tax incentives provided by the Malaysian government which were announced in the 2007, 2009, and 2012 budgets. The total Malaysian REITs market capitalization has reached RM36 billion as at the end of 2014. It is expected that the demand for REITs would continue to grow further as the public becomes more aware of their

existence. At present, among the 24 indexes that exist on the Bursa Malaysia (refer to table 1.3), no index could really measure the performance of the Malaysian REITs.

Table 1.3:
Indexes listed on the Bursa Malaysia

FTSE Bursa Malaysia Index Series

Indexes	**Number**
FTSE Bursa Malaysia EMAS Index	1
FTSE4Good Bursa Malaysia Index	1
FTSE Bursa Malaysia Fledgling Index	1
FTSE Bursa Malaysia Palm Oil Plantation Index	1
FTSE Bursa Malaysia ACE Index	1
FTSE Bursa Malaysia Small Cap Index	1
FTSE Bursa Malaysia EMAS Shariah Index	1
FTSE Bursa Malaysia Small Cap Shariah Index	1
TSE Bursa Malaysia EMAS Industry Indices	10
FTSE Bursa Malaysia Kuala Lumpur Composite Index (KLCI)	1
FTSE Bursa Malaysia Mid 70 Index	1
FTSE Bursa Malaysia Top 100 Index	1
FTSE Bursa Malaysia HijrahShariah Index	1
FTSE Bursa Malaysia Asian Palm Oil Plantation Indexes	2
Indexes numbers	**24**

Source: Bursa Malaysia

Lee and Ting (2008), Olanrele, Said, Daud and Majid (2015) and Pham (2012) also reported that REITs index was not available in the Malaysian market. The lack of Malaysian REITs index makes it difficult to measure the performance of individual REIT. The market would not be able to evaluate its performance which makes it hard to decide if it is a worthwhile investment. Furthermore, Newell (2008) stressed the importance of having a REITs index, where he stated that the increase in Asian REITs

market required a competitive REITs benchmark so that the performance of REITs could be measured. This necessitates the need to develop a REITs index for the Malaysian market. In addition, as the Malaysian government improved the tax incentives where the dividend tax rate for individual investors has decreased to 10 percent from 28 percent in 2009 and 2012 budgets, the development of REITs index would need to take into account of the changes in tax rate from 2007 to 2014. A tax adjusted REITs index would ensure that performance of REITs is being measured correctly. As such, this study intends to develop the tax adjusted REITs index.

Studies on Malaysian REITs are rather limited. Early studies such as Kok and Khoo (1995), Ting (1999), Newell, Ting and Acheampong (2002) and Hamzah and Rozali (2010) analyzed the REITs performance by using a small sample size and covering relatively short periods. It is possibly due to the poor development of Malaysian REITs during those times. With a limited number of sample, the finding might not be reliable. This is evident in the inconsistent results reported by a few researchers. Kok and Khoo (1995) and Ting (1999) found that Malaysian REITs generally outperformed the KLCI and the property sector index during 1991 to 1995 and 1991 to 1997. In contrast, Newell, Ting and Acheampong (2002) and Hamzah and Rozali (2010) showed that Malaysian REITs underperformed the financial indicators, except during financial crisis (1997-1998) in the study of Hamzah and Rozali (2010). As stated by Benjamin, Sirman and Zietz (2001), the different sample size and study period could cause the inconsistent results on the studies of REITs. As the number of Malaysian REITs has increased to 17, a more reliable analysis could be made.

Furthermore, most of these studies (Kok & Khoo, 1995; Newell, Ting & Acheampong, 2002; Ong, 2012; Ting, 1999) did not take into account of dividend when they calculated returns except for the work of Hamzah and Rozali (2010) and Osmadi (2010). In addition, previous studies on the performance of Malaysian REITs were mostly done before the implementation of the favorable dividend tax incentives (Kok & Khoo, 1995; Newell, Ting & Acheampong, 2002; Ting, 1999; Hamzah & Rozali, 2010). Hence, the REITs returns calculated by these studies were unadjusted by the tax rate on dividend. To fill the gap, in this study, the performance of REITs is measured by taking into account on the newly constructed tax adjusted REITs index.

1.5 Research Objectives

There are three objectives of the study which are as follows:

1. To compare the risk and return of the newly developed tax adjusted and unadjusted REITs indexes.
2. To compare the risk and return of tax adjusted REITs index with the FTSE Bursa Malaysia KLCI, Kuala Lumpur Property Index (KLPI) and the Malaysia 3-month Treasury bills (T-bills).
3. To identify the portfolio diversification benefits of the Malaysian REITs, KLPI and Malaysia 3-month T-bills.

1.6 Research Questions

Based on the research objectives, there are there research questions, which are:

1. Is there a difference in the risk and return of the tax adjusted versus the unadjusted

REITs indexes?

2. Is there a difference in the risk and return of the tax adjusted REITs index as compared to the FTSE Bursa Malaysia KLCI, KLPI and Malaysia 3-month T-bills?
3. Is there any diversification benefits of the Malaysian REITs, KLPI and Malaysia 3-month T-bills in a mixed-asset portfolio?

1.7 Significance of the Study

Malaysia as one of the emerging countries in Southeast Asia, has enjoyed high economic growth exceeding 8 percent per year from 1989-1997 (Loh, 1997) and the economy still keeps a strong growth rate since 1997. Meanwhile, Malaysia is seen as one of emerging property markets. It provides significant investment opportunities related to the property market and is considered one of the most transparent Asian property markets, only exceeded by Singapore and Hong Kong (LaSalle, 2008). In addition, Malaysia heads the development of Islamic finance and Islamic REITs, which is the first Asian country to develop Islamic REITs. Today, the number of Malaysian REITs that are listed on the Bursa Malaysia has increased to 17 from original 3, and total market capitalization has increased since the new guidelines and tax incentives were implemented. These developments and achievement indicate that REITs become an attractive industry in the Malaysian market that might attract investors. Therefore, forming a value weighted tax adjusted Malaysian REITs index would be useful as it provides a standard REITs performance for comparison purposes in investment decision making to the investors and fund managers.

According to Olanrele, Said, Daud and Majid (2015), there are only Japan REITs index and Singapore REITs index in the Asian REITs presently. Bursa Malaysia does not provide any REITs index for investors. In general, the progress of the market forces innovation and improvement of the financial markets. It is time for Bursa Malaysia to have its own REITs index. Due to the special tax exemption on REITs dividend tax rate since 2007, the first tax adjusted REITs index will be created in order to measure the performance of REITs to investors in the REITs sector. With the development of the REITs index, researchers who study the Malaysian REITs sector can directly use the REITs index to analyze the performance of REITs, unlike previous studies (Hamzah & Rozali, 2010; Kok & Khoo, 1995; Newell, Ting & Acheampong, 2002; Ong, 2012; Ting, 1999) measured performance of REITs based on individual REIT, subsequently, using the average to compare with other financial indicators.

The United States and Australia have provided a successful REITs investment vehicle to their investors (Hamzah & Rozali, 2010). The participation rate of Malaysian shareholders in REITs is still lower as compared to other countries (Newell & Osmandi, 2009). Newell and Osmandi (2009) stated that there seems to be a lack of awareness of REITs among the investors in Malaysia. Development of REITs index and comparing the performance of individual REIT with the newly developed REITs index would enable potential investors to understand the REITs industry better and increase their awareness on the existence of such product. In addition, the creation of REITs index would help in the development of other investment alternatives, such as REITs index funds, future and option. Investors would have more selection of investment

products.

1.8 Organization of the Study

Chapter one provides the background and development of REITs industry in Malaysia. It also describes the problem statement, research objectives and significant of the study. Chapter 2 reviews the theory used in this study, the advantages and disadvantages of different indexes as well as empirical findings on the performance of REITs index as compared to other financial indicators. Subsequently, chapter three discusses the methodology while chapter four analyzes the findings. The conclusion of the study is done in chapter 5.

CHAPTER 2

LITERATURE REVIEW

2.1 Introduction

Chapter one has mainly described the background, problem statement, objectives and significance of the study. This chapter will focus on the underlying theory and empirical evidence of the risk and return analysis of REITs. Markowitz modern portfolio theory will be explained, which is followed by a discussion on the comparison of different indexes. Subsequently, the performance of REITs is presented.

2.2 Markowitz Modern Portfolio Theory

There was no specific way to measure risk when the investment community talked about risk in the early 1960s. Markowitz (1952, 1959) developed the basic portfolio model which derived the expected rate of return for a portfolio and expected risk measure, which is also known as the modern portfolio theory. Markowitz (1952) indicated that the variance of the return was meaningful to measure the risk of a portfolio. He looks into the effect of covariance among assets in a portfolio in order to form an efficient portfolio that has the lowest standard deviation given a specific return. Markowitz (1952) came up with the mean-variance analysis under the basic assumption, whereby investors are risk-averse. Risk-averse investors prefer higher returns to lower returns at a given risk level; whereas, for a given expected return level, investors prefer lower risk to higher risk. In addition, Markowitz pointed out that it is not enough to invest in more securities in trying to minimize variance of a portfolio. It

is necessary to invest in securities which have low covariance among themselves. Lenoard (1999) summarized the nutshells of modern portfolio theory based on Markowitz (1991) as shown in table 2.1:

Table 2.1:
Nutshells of Modern Portfolio Theory

1. The objective is to form an efficient portfolio, which has the smallest possible standard deviation for a given return (coefficient of variation).
2. The average return, the variance in the return and covariance among assets in the portfolio are the variables to consider in forming the portfolio.
3. The asset with lower variance is more profitable as all else equal.
4. The variance of the portfolio can be reduced by diversifying assets and reducing the covariance among assets.

Source: Leonard (1999)

Rubinstein (2002) stated that Markowitz's modern portfolio theory was common among portfolio managers who use it to form their portfolios and measure the performance of portfolios. Goetzmann and Ukhov (2005), Yu (2009), Newell, Yue, Wing and Kei (2010) and Osmadi (2010) used Markowitz' modern portfolio theory as the underlying theory to describe the risk and return characteristics of available investments. Similarly, this study also utilizes the modern portfolio theory as the underlying theory behind measuring the risk and return characteristics of the Malaysian REITs industry.

2.3 Comparison of Price Weighted, Value Weighted and Unweighted Indexes

Price index or price weighted index is an arithmetic average of current stock prices (Reilly & Brown, 2012). Christopherson, Carino and Ferson (2009) stated that the first

widely followed index was price weighted index created by Charles Dow in 1884. Dow Jones Industrial Average (DJIA) was developed form this price weighted index, which reflects the mean price of 30 industrial stocks. However, the price weighted index just focuses on the stock price, and the movements of price weighted index will be strongly affected by the higher price of stocks which are included in forming the price weighted index. According to Christopherson,Carino and Ferson (2009), price weighted index has shortcoming for portfolio evaluation as the price weighted index does not explain about the movement of the stock prices of the small-cap, mid-cap, or large-cap companies. Furthermore, Olanrele, Said, Daud and Majid (2015) also stated that stock market price weighted index is based solely on share price movement which makes it difficult to be used for performance comparison. Moreover, Nyberg and Vaihekoski (2009) stated that the price index return does not include dividend gain, but value weighted index does as it captures the real return due to dividends.

The Standard Statistics Company created the first published market value weighted index in 1923 to overcome the limitation of the price weighted index (Christopherson, Carino & Ferson, 2009). Reilly and Brown (2012) calculated the value weighted index by deriving the initial total market capitalization of all stocks used in the index. The market value equals the total number of outstanding shares multiplied with the current market prices. Based on Christopherson, Carino and Ferson (2009), the disadvantage of a value weighted index is that companies with large market capitalization had more influence on the movement of the value weighted index. Arnott, Hsu and Moore (2005) further added that market capitalization is highly correlated with trading liquidity due

to the greater weight of the large market capitalization companies. However, an advantage of value weighted index is that it could automatically rebalance as security prices fluctuate. Thus, it requires less rebalancing than other types of indexes. Christopherson, Carino and Ferson (2009) indicated that value weighted was an objective way to measure the relative economic importance of index constituents, and market's assessment of relative firms' values could be clearly measured by valuing outstanding shares at market prices. Furthermore, Sharpe (1991) emphasized that an index must be weighted based on market value in order to represent the risk and return characteristics of a market or segment. Hence, many countries have used the value weighted index as the market benchmark for the equity markat, such as the S&P 500 (USA), AUX 200 (Australia) and FTSE BM KLCI (Malaysia).

Unweighted index or equally weighted index means that all the stocks carry equal weight regardless of their market value and price. Reilly and Brown (2012) showed that the movements of the equally weighted index were based on the average percentage changes in price or value for stocks listed in the index without weight adjustment. Generally, the unweighted index is used by investors who randomly selected stock or invest the same capital in each stock for their portfolio. Arnott, Hsu and Moore (2005) indicated that equally weighted index lacked the liquidity and capacity found in value weighted index, and characteristics of its return could not represent the aggregate equity market.

The importance of using an appropriate index could be seen in the estimation of beta.

According to Al-Khalialeh and Al-Omari (2004), Elgers and Murray (1982), Roden (1981) and Saniga, Thomas and Gouldey (1981), the use of value weighted index and equally weighted index would produce different beta. The accuracy of beta relies a lot on the type of index used. Kim (1989) pointed out that the beta has been popularly used to measure the systematic risk of a particular industry or single firm by investors and researchers. A wrong estimation of beta would affect security performance. Sharpe (1991) emphasized that the estimation of beta should use the market value weighted index in order to represent a market.

Based on the comparison of price weighted, value weighted index and equally weighted index, market value weighted REITs index could represent the performance of REITs industry (Sharp, 1991). This is further supported by Olanrele, Said, Daud and Majid (2015), Osmadi (2010) and Pham (2012) where they developed value weighted REITs index to study the performance of REITs industry. As such, this study is also using the value weighted REITs index as the benchmark for the REITs industry in Malaysia. Another important reason of using value-weighted index is to have a consistent comparison with the KLCI and KLPI as they are also value weighted indexes. To measure the performance of Malaysian REITs, the value weighted REITs index is adjusted by the REITs dividend tax rate to take into account the dividend tax incentives.

2.4 Performance of REITs

Development of the US REITs industry has attracted many researchers (Burns & Epley,

1982; Goebel & Kim, 1989; Howe & Shilling, 1990; Kuhle & Walther, 1986; Sagalyn,1990; Smith & Shulman, 1976) to study on REITs. Goebel and Kim (1989), Howe and Shilling (1990), Kuhleand Walther (1986) found that REITs underperformed the stock market portfolio or benchmark. On the other hand, some studies (Burns & Epley, 1982; Sagalyn, 1990; Smith & Shulman, 1976) suggested that the performance of REITs was similar and better than the benchmark performance. There are mixed findings on the performance of REITs in the US.

An earlier study conducted by Kuhle and Walther (1986) compared the performance of 102 REITs performance with the Standard and Poor's 500 Composite (S&P 500) index. Kuhle and Walther (1986) suggested that the performance of REITs was poor during the middle 1970s. One of the results shows that net returns of 102 REITs were less than the returns of S&P 500 index during 1973 to 1976. Similarly, Goebel and Kim (1989) found that REITs especially finite-life REITs, had underperformed the market when they were compared to the performance of 32 survivor REITs with the S&P 500 index during 1984 to 1987 by using the Jensen Alpha index based on monthly returns. Consistent with Howe and Shilling (1990) where they use monthly returns on 105 US REITs from 1973 to 1987 to calculate the Jensen Alpha index, REITs were found to underperform the Center for Research in Security Prices (CRSP) equally weighted index.

In contrast, several studies (Burns & Epley, 1982; Sagalyn, 1990; Smith & Shulman, 1976) suggested that the US REITs performed better than the market portfolio. Smith

and Shulman (1976) investigated the performance of 16 US REITs by comparing to the S&P 500 index, savings accounts and 15 closed-end funds from 1963 to 1974. The Jensen Alpha index was used to measure performance. The finding showed that REITs outperformed the S&P 500 index over the 1963 to 1974 period except for the year 1974. Similarly, Burns and Epley (1982) suggested that the performance of the mixed-asset portfolio which contained 35 survivor REITs was superior to the performance of S&P 500 index during the period from 1973 to 1985. Their results are supported by Sagalyn (1990) who compared the performance of REITs and S&P 500 index by taking quarterly returns of 20 survivor REITs from 1973 to 1987 based on the Jensen Alpha index. The study found that 20 survivor REITs outperformed the S&P 500 index.

Thus far, there are mixed and inconclusive results of the US REITs market. The inconclusive findings could be associated with different study periods, such as Smith and Shulman (1976) found REITs outperformed the S&P 500 for 1963 to 1994; while, Kuhle and Walther (1986) suggested that US REITs underperformed during a period of study from 1973 to 1976. In addition, Benjamiin, Sirman and Zietz (2011) showed that studies on the risk and return characteristics of the US REITs do not have consistent results due to the use of different sample size for different periods or the methods used to measure performance.

In Singapore, studies on Singaporean REITs (S-REITs) mostly conducted related to key specific issues, such as corporate governance of S-REITs (Lecomte & Ooi, 2013), the role of China property in specific S-REITs (Quek & Ong, 2008), wealth effects

(Ooi, Newell & Sing, 2011), the role of S-REITs in downside risk asset allocation framework (Sing & Ling, 2003) among others. However, the studies on the risk and return of S-REITs are limited. Newell, Pham and Ooi (2015) used monthly total returns of S-REITs index over the period from July 2003 to June 2013 using the Sharpe ratio and reward-to-risk ratio to measure the risk-adjusted performance of S-REITs. The findings indicated that S-REITs had the highest average annual return among the overall stock market, property companies and bonds during the period. In addition, S-REITs were the best-adjusted asset class, with the highest sharp ratio. In other emerging Asian REITs markets, there are some researches on REITs being conducted, such as, in Japan REITs (Newell & Peng, 2012), in Hong Kong REITs (Newell, Yue, Wing & Kei, 2010) and in Taiwan REITs (Peng & Newell, 2012). Newell and Peng (2012) and Newell Yue, Wing and Kei (2010) found that J-REITs and Hong Kong REITs outperformed the shares and property companies as well as deliver portfolio diversification benefits during 2001 to 2011, and December 2005 to December 2008 respectively. However, Peng and Newell (2012) showed that Taiwan REITs underperformed the construction share sectors over 2005 to 2011 on a risk adjusted basis. Furthermore, Pham (2012) found that the correlation among Taiwan REITs, Hong Kong REITs and Japan REITs was low over 2006 to 2011.

As for Malaysia, previous empirical studies on the performance of REITs are rather limited. Earlier research conducted by Kok and Khoo (1995) investigated the systematic risk and performance of three REITs, namely Arab Malaysian First Property Trust (AMFPT), Amanah Harta Tanah PNB (AHP) and First Malaysian

Property Trust (FMPT) from 1991 to 1995. Sharp index, Jensen Alpha index and Treynor index were used to analyze the data. The findings indicated that the three listed property trusts generally outperformed the market portfolio, but underperformed during rising market and the systematic risks were generally low. However, the systematic risks were higher in declining market. Similarly, Ting (1999) found that the first three listed property trusts also outperformed the KLCI, property and plantation sectors using the Sharpe index over the period from 1991 to 1997. The results also revealed that LPTs have a higher annual risk and a high correlation with the KLCI, property and plantation sector indexes.

However, Newell, Ting and Acheampong (2002) investigated the performance of the first four listed property trusts which are FMPT, AHP, Mayban Property Trust Fund One (Amanah Harta Tanah PNB 2, AHP2) and AMFPT by analyzing a longer interval from 1991 to 2000. The study used the average annual return to measure the return of LPTs portfolio, standard deviation to measure risk, and coefficient of variations to measure risk-adjusted returns. The results showed that only AHP performed better than the KLCI, KLPI and Kuala Lumpur Office Property Index during the period; whereas the standard deviations of FMPT, AHP, and AHP2 were higher. Based on the coefficient of variation measure, each LPT underperformed the KLCI and KLPI. Similarly, Hamzah and Rozali (2010) investigated the performance of four LPTs (or REITs) by using the Sharpe, Treynor and Jensen Alpha indexes. Authors found that the REITs portfolio underperformed the KLCI and KLPI during 1995 to 1997 and 1998 to 2005, but outperformed the market portfolio during the financial crisis (1997-

1998).

Ong et al. (2012) took a larger sample size as compared to earlier studies (Hamzah & Rozali, 2010; Kok & Khoo, 1995; Newell, Ting & Acheampong, 2002; Ting, 1999). Their study investigated the performance of 14 REITs listed in Malaysia over the period from 2005 to 2010, without taking into consideration of dividends. The results showed that most REITs underperformed the market indices before, during and after the global financial crisis based on Treynor and Sharp measurements. However, based on Jensen index, REITs performed better than the market portfolio during and after the GFC. The findings contradicted the result of Hamzah and Rozali (2010) who found that Malaysian REITs underperformed the KLCI and KLPI after the financial crisis. Differences in the period of study and sample size would likely explain the different results.

Other than looking at performance, researchers also examine diversification benefits of REITs. In the US, Lee and Stevenson (2005) stated that REITs could be added into an existing investment portfolio for investors to gain diversification benefits. In contrast, Kuhle (1987) and Gyourko and Nelling (1996) found that there was little value to include REITs in an investment portfolio. Georgiev, Gupta and Kunkel (2003) indicated that REITs did not provide diversification benefit when combined together with shares and bonds in a portfolio. Zhang (2006) mentioned that Asian REITs had their unique characteristics compared to western countries and could be used as a risk diversification tool considering the differences of geographical areas. As for Malaysia,

Newell et al. (2002) found that each of the LPT was correlated to KLCI (r = 0.56 to 0 .77) and KLPI (r = 0.53 to 0.85) over the period from 1991 to 2000. Similarly, Ting (1999) also reported that LPTs were highly correlated with KLCI (r = 0.88 to 0.97) and property sector (r=0.971 to 0.996). These findings are in contrast to the results of Osmadi (2009), who showed that REITs had lower correlations with KLCI and property shares during 1989 to 2005. In addition, Lee and Ting (2008) found that REITs portfolio was weakly correlated with KLCI (0.512) and property shares (0.480) from 1991 to 2006. They also found that bond was negatively correlated with REITs, KLCI and KLPI during the study period.

This study tries to expand the existing academic studies related to the performance of REITs in Malaysia unlike previous studies (Kok & Khoo, 1995; Newell, Ting & Acheampong, 2002; Ong, 2012; Ting, 1999) that did not take into consideration of dividend. The study will follow Hamzah and Rozali (2010) and Osmadi (2009) where they calculated returns of REITs including dividends. However, this study will be the first study to measure the performance of Malaysian REITs by constructing a newly tax adjusted Malaysian REITs index and comparing it with the unadjusted REITs index and other financial indicators. Furthermore, this study uses a longer period which is 16 years to measure the performance of the Malaysian REITs and examine the REITs diversification benefits based on a value weighted tax adjusted index.

CHAPTER 3

DATA AND METHODOLOGY

3.1 Introduction

This chapter would discuss on the data collection, construction of value weighted unadjusted and tax adjusted REITs indexes, and method used to measure the risk and return of Malaysian REITs and other financial indicators.

3.2 Data Collection

There are a total of 20 Malaysian REITs which have been listed on the Bursa Malaysia. Three REITs were delisted, one was suspended, and sixteen REITs are available in the Malaysia REITs market. Parker (2011) indicated that the index would not be able to represent the entire specific market if the sample of the index did not include all firms in this market. Therefore, in order to represent the total Malaysian REITs industry, all of Malaysian REITs are included in this study, except KLCC REIT. The reason it is excluded is because of KLCC REIT could not be separated from the stapled group which includes ordinary share of KLCC Property Holdings Berhad. The details of 20 listed REITs are described in table 3.1. In order to develop the value weighted tax adjusted Malaysian REITs index, the data used in this study consist of monthly adjusted share prices, unadjusted dividend rate which refers to the unadjusted cash dividend payment (Datastream) and it is consistent with dividend per share announced by the REITs on the Bursa Malaysia, ex-dividend dates and market values for the selected Malaysian REITs over the period of 16 years from January 1999 to December

2014. The data were obtained from Datastream. Other than this, the corporate tax rate and REITs dividend tax rate were listed in table 3.2, collected from the KPMG Budget Highlights Tax Commentary (2007) and PWC Malaysian Tax and Business Booklet (2010/2011, 2012/2013) over the years from 1999 to 2014.

Table3.1
20 listed REITs on the Bursa Malaysia

N.	Company Name	Date Listed	State
1	AmFirst REIT*	21-Dec-06	Existing
2	Sunway REIT	8-Jul-10	Existing
3	YTL Hospitality REIT	16-Dec-05	Existing
4	UOA REIT	30-Dec-05	Existing
5	Tower REIT	12-Apr-06	Existing
6	Hektar REIT	4-Dec-06	Existing
7	Mrcb-Quill REIT	8-Jan-07	Existing
8	AmanahRaya REIT	26-Feb-07	Existing
9	Atrium REIT	2-Apr-07	Existing
10	AmanahHarta Tanah PNB	28-Dec-90	Existing
11	CapitalMalls Malaysia Trust (formerly known as Starhill REIT)	16-Jul-10	Existing
12	Pavilion REIT	7-Dec-11	Existing
13	IGB REIT	21-Sep-12	Existing
14	KLCC REIT**	9-May-13	Existing
15	Axis REIT	3-Aug-05	Existing
16	AL-Aqar Healthcare REIT	10-Aug-06	Existing
17	AL-Hadharah Boustead REIT	8-Feb-07	Delisted in 2014
18	First Malaysian Property Trust	Nov-89	Delisted in 2002
19	AmanahHarta Tanah PNB2(formerly known as Mayban Property Trust Fund One)	25-Mar-97	Delisted in 2009
20	AmFIRST Property Trust (formerly known as Arab Malaysian First Property Trust)*	28-Sep-89	Suspended in 2006

Source: Bursa Malaysia and Osmadi (2010)
**Am FIRST Property Trust (AmFPT) was suspended on Dec 2006; AmFPT distributed units of AmFIRST REIT to existing unit holders of AmFPT on the basis of one for one,*

and cash distribution on the basis of RM 0.4 for one unit of AmFPT.
***KLCC REIT will not be included in developing the Malaysian REITs index because it was stapled with KLCC Property Holdings Berhad on May 9, 2013.*

Table 3.2:
Tax rates from 1999 to 2014

Year	**99**	**00**	**01**	**02**	**03**	**04**	**05**	**06**	**07**	**08**	**09**	**10**	**11**	**12**	**13**	**14**
Corporate Tax Rate	28 %	28 %	28 %	28 %	28 %	28 %	28 %	28 %	28 %	27 %	26 %	25 %	25 %	25 %	25 %	25 %
REITs Dividend Tax Rate	28 %	28 %	28 %	28 %	28 %	28 %	28 %	28 %	15 %	15 %	10 %	10 %	10 %	10 %	10 %	10 %

Sources: KPMG Budget Highlights Tax Commentary (2007) and Malaysian Tax and Business Booklet (2010, 2012)

For the purpose of comparison, the monthly returns of KLCI and Kuala Lumpur Property Index that represent the performance of the Malaysian stock market and the Malaysian real estate companies sectors as well as the Malaysia 3-month T-bills which is a proxy for the Malaysian risk-free rate of return were used. Monthly data of KLCI, KLPI and Malaysia 3-month T-bills were collected from Datastream for a period from January 1999 to December 2014.

3.3 Returns of Individual REITs

In order to answer the first objective of this study which is to examine whether there is a difference in the return of the unadjusted versus the tax adjusted REITs indexes, the tax adjusted and unadjusted returns are calculated as follows. First, if there is no dividend payment during the month, a return will be calculated as shown in equation (1).

$$R_{it} = \frac{P_{it}}{P_{it-1}} - 1 \qquad (1)$$

where:

t is for month *t*, *t-1* is the previous month;

R_{it} is the return of the REIT*i* at month *t*;

P_{it} is the price of REIT*i* at month *t*;

P_{it-1} is the price of REIT*i* at month *t-1*.

When there is a dividend payment during the month, the return will be calculated by taking into account of dividend payment. The unadjusted return involving dividend is calculated as in equation (2).

$$R_{it} = \frac{P_{it}+D_{it}}{P_{it-1}} - 1 \quad (2)$$

where:

D_{it} is the dividend per share during month t.

To fulfill the objective of this study which is to compare the performance of a tax adjusted REITs index with the unadjusted REITs index, FTSE KLCI, FTSE KLPI and the Malaysia 3-month T-bills, a tax adjusted return of individual REIT needs to be calculated using equation (3).

$$AR_{it} = \frac{P_{it}+ D_{it}\times(1-RT_{it})/(1-CT_t)}{P_{it-1}} - 1 \quad (3)$$

where:

AR_{it} is the tax adjusted return for REIT *i* at month *t*;

RT_{it} is the dividend tax rate of REIT *i* at month *t*;

CT_t is the corporate tax rate at month *t*.

3.4 Development of REITs Index

This section presents the method used to calculate the tax adjusted and unadjusted REITs index. Based on Nyberg and Vaihekoski (2009), the unadjusted returns and tax adjusted returns for month t are calculated by summing the weighted unadjusted returns and adjusted returns of each REIT based on their market value at month t-1. The unadjusted return of REITs index is calculated as in equation (4)

$$IR_t = \sum_{i=1}^{n} \frac{M_{it-1} \times R_{it}}{M_{t-1}} \quad (4)$$

where:

IR_t is the unadjusted return of REITs index for month t.

M_{it-1} is the market value of REIT i at month t-1;

M_{t-1} is the total market value of REITs at month t-1.

To calculate the value weighted tax adjusted return of REITs index, the R_{it} would be replaced by AR_{it} as shown in equation (5).

$$AIR_T = \sum_{i=1}^{n} \frac{M_{it-1} \times AR_{it}}{M_{t-1}} \quad (5)$$

where:

AIR_t is tax adjusted return of REITs index at month t.

To form the REITs index, the index levels are set at the base value of 100 on 1st January 1999. By using the unadjusted returns of REITs index which is calculated based on equation (4), the unadjusted REITs index is calculated as shown in equation

(6).

$$I_t = 100 \times (1 + IR_1) \times (1 + IR_2) \ldots \times (1 + IR_t) \quad (6)$$

where:

I_t is the unadjusted REITs index at month t.

To calculate the tax adjusted REITs index, the unadjusted REITs index returns IR_t would be replaced by the tax adjusted REITs index returns AIR_t as shown in equation (7).

$$AI_t = 100 \times (1 + AIR_1) \times (1 + AIR_2) \ldots \times (1 + AIR_t) \quad (7)$$

where:

AI_t is the tax adjusted REITs index at month *t*.

3.5 Risk and Return Analysis

To compare the performance of the tax adjusted REITs index with the unadjusted REITs index, FTSE BM KLCI, KLPI and Malaysia 3-month T-bills, the return and risk are calculated for all. First, the mean returns are calculated by averaging the monthly returns of the unadjusted and tax adjusted REITs indexes, as well as the other financial indicators over the relevant time period. Second, the standard deviation is calculated. Standard deviation is the average deviation of random variables from their expected value. It is the square root of the variance (Markowitz, 1952). It is calculated as follows:

$$\sigma_i = \sqrt{\frac{\sum_{t=1}^{n}(R_{it}-\bar{R}_i)^2}{n-1}} \quad (8)$$

where:

σ_i is the standard deviation for portfolio *i*;

n is the sample size;

R_{it} is the return of portfolio *i* at time *t*;

$\bar{R}_i$ is the average return for portfolio *i*.

Sharpe index and Treynor index are normally used to compare the performance of alternative assets, but many researchers have noted that it is difficult for average investors to interpret the results (Bernstein, 2007; Travers, 2004). Hence, in order to compare performance (risk and return), a coefficient of variation is computed following the work of Newell, Ting and Acheampong (2002), Han and Liang (1995) and Liow (2001). Coefficient of variation (CV) measures the risk per unit of return of a portfolio. It is appropriated to rank investment portfolios with different return and standard deviation. If a portfolio's CV is lower than the market, it would indicate that the portfolio outperforms the market (Han & Liang, 1995; Liow, 2001). The coefficient of variation is calculated as follows:

$$CV_i = \sigma_i/\bar{R}_i \quad (9)$$

where;

CV_i is the coefficient of variation for portfolio *i*.

To answer the third objective of this study which is to see if there areany diversification

benefits of Malaysian REITs when combine with other financial indicators, a correlation analysis is implemented. Correlation refers to a measure of the extent to which two sets of variables tend to move up and down together, which has a range between -1 to +1 (Markowitz, 1959). There could be a diversification benefit, if correlations among assets in a portfolio are low positive or negative (Yu, 2009). The equation to calculate the correlation coefficient is as follow:

$$C_{(x,y)} = \frac{COV(x,y)}{\sigma_x \sigma_y} \quad (10)$$

where:

COV(x, y) is the covariance between returns of asset *x* and asset *y;*

σ_x is the standard deviation of the returns for asset *x;*

σ_y refers to the standard deviation of the returns for asset *y.*

CHAPTER 4

DATA ANALYSIS AND RESULTS

4.1 Introduction

Chapter 3 has covered the data collection, and research design to answer the objectives of the study. This chapter presents the tax adjusted and unadjusted REITs indexes which is followed by a comparison of the performance of tax adjusted REITs index with the KLCI, KLPI and 3-month T-bills. Subsequently, diversification benefit of Malaysian REITs is analyzed as well.

4.2 Value Weighted Tax Adjusted and Unadjusted REITs Indexes

Figure 4.1 presents the value weighted tax adjusted and unadjusted Malaysian REITs indexes from January 1999 to December 2014. Both Malaysian REITs indexes had the same performance before 2007 when the Malaysian REITs dividend tax reduction has not been implemented. Once the REITs dividend tax rates have been implemented, value weighted tax adjusted REITs index was higher than the unadjusted REITs index. The tax adjusted REITs index had increased to 576.24 from the base value of 100; however, the unadjusted REITs index increased up to 515.09 by December 2014. The gap between two REITs indexes was 61.16% from the base value of 100 during the period from 2007 to 2014. On average, there is a gap difference of 7.65% of the base value per year, which shows a different performance between the two REITs indexes. In other word, the unadjusted Malaysian REITs index could not measure the real performance of the Malaysian REITs industry. This is because the dividend tax rate

reductions on REITs offer a higher return to REITs investors due to the lower tax payment. Consequently, tax adjusted REITs index will be higher than the unadjusted REITs index.

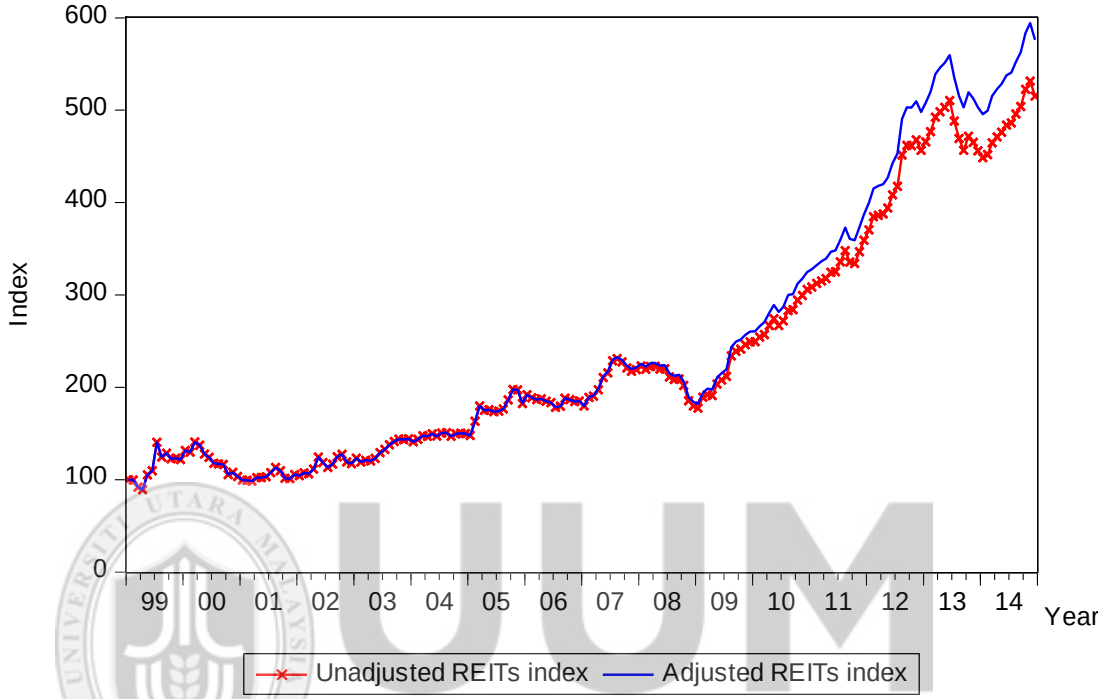

Figure 4.1:
Value weighted tax adjusted and unadjusted M-REITs indexes

During the early period of study, the development of the Malaysian REITs was poor, which is consistent with the findings of the earlier studies (Newell, Ting & Acheampong, 2002; Hamzah & Rozali, 2010). They reported that Malaysian REITs have performed poorly since 1980s till the year 2004. Furthermore, performance of the REITs index in the early period is also supported by Newell and Osmandi (2009) who indicated that investors in Malaysia seemed lack the awareness of REITs.

Table 4.1 presents a comparison on the return and risk characteristics of the tax adjusted and unadjusted REITs indexes. The results indicate that the value weighted

tax adjusted Malaysian REITs index has a higher monthly return (1.0082%) than the unadjusted M-REITs index (0.9486%). Meanwhile, the risk (standard deviation) of tax adjusted index (4.2780%) is almost similar to the unadjusted index (4.2701%). However, the coefficient of variation of the tax adjusted REITs index was 4.2431%, which is lower than the unadjusted REITs index (4.5015%). This indicates that the tax adjusted REITs index has lower risk than the unadjusted REITs index for every unit of return which also implies that the tax adjusted REITs index has performed better than the unadjusted REITs index on a risk adjusted basis over January 1999 to December 2014.

Before the implementation of the tax incentives in the REITs industry (1999-2006), there is no difference on the performance of both REITs indexes. After January 2007, the tax adjusted Malaysian REITs index provides a higher average monthly return (1.2295%) and risk (2.8609%) than the unadjusted REITs index which has a mean of 1.1109% and a risk of 2.8455%. The coefficient of variation for the tax adjusted REITs index is 2.3268 which is lower than the unadjusted REITs index with a CV of 2.5614. It shows that the both REITs indexes have provided a higher average monthly return with a lower risk and a lower coefficient of variance after the implementation of the tax incentives. The maximum (28.2852%) and minimum (-11.5548%) monthly returns for both indexes are the same from 1999 to 2014 and 1999 to 2006. It indicates that the highest and lowest monthly returns present before the implement of tax reductions. After the tax incentives, the gap between the maximum and minimum monthly return for both indexes becomes smaller.

Table 4.1:
Descriptive statistical analysis of the Malaysian REITs indexes

Index	Mean (%)	Maximum (%)	Minimum (%)	Std. Dev.(%)	CV
January 1999-December 2014					
Unadjusted REITs index	0.9486	28.2852	-11.5548	4.2701	4.5015
Adjusted REITs index	1.0082	28.2852	-11.5548	4.2780	4.2431
January 1999-December 2006: Before tax incentives					
Tax Adjusted and Unadjusted REITs indexes	0.7846	28.2852	-11.5548	5.3497	6.8186
January 2007-December 2014: After tax incentives					
Unadjusted REITs index	1.1109	10.5536	-8.2308	2.8455	2.5614
Adjusted REITs index	1.2295	10.9485	-8.2308	2.8609	2.3268

4.3 Performance of Tax Adjusted Index versus KLCI, KLPI and 3-month T-bills

Figure 4.2 presents the performance of the tax adjusted Malaysian REITs over January 1999 to December 2014, along with the KLCI and KLPI. The upward trend in the post-Asian economic crisis over 1999 to 2000 and the post-global economic crisis over 2009 to 2011 are clearly reflected in figure 4.2. Movement of the tax adjusted Malaysian REITs is close to the movement of the KLCI over 1991 to 2010. However, previous studies show inconsistent results. For instance, Hamzah and Rozali (2010) reported that the REITs portfolio underperformed the market indices from 1998 to 2005; whereas Ong et al. (2012) found that REITs performed better than the market portfolio from September 2007 to 2010 based on Jensen index. The contradictory results might have been caused by the shorter period of analysis. After 2010, the tax

adjusted Malaysian REITs index has experienced a rapid growth going beyond the KLCI, KLPI and the Malaysia 3-month T-bills. The KLPI was always remained to underperform the KLCI, KLPI and the Malaysia 3-month T-bills.

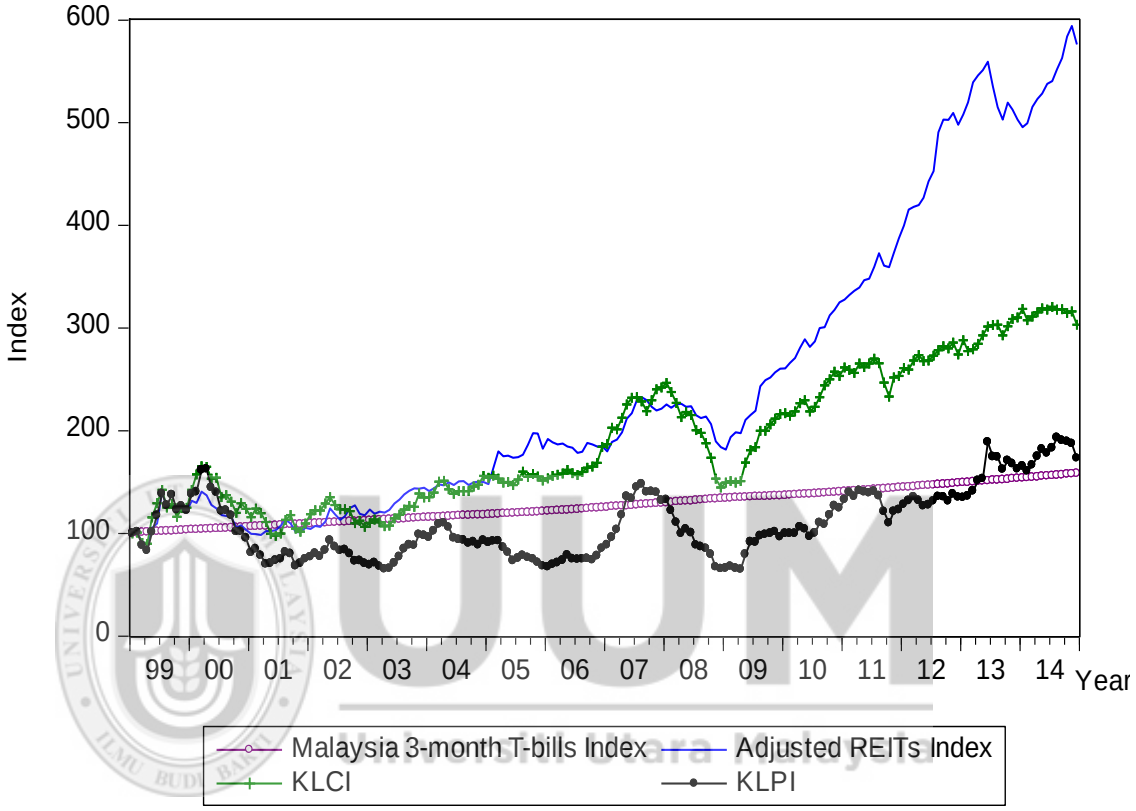

Figure 4.2:
Indexes of the tax adjusted REITs, KLCI and KLPI

Table 4.2 listed the annual returns for tax adjusted REITs index and other financial indicators. The results showed that the KLCI, KLPI and Malaysian REITs perform worst in 2008, with an annual return of -49.45%, -66.62% and -17.86% respectively. This shows that the influence of GFC on Malaysian REITs has less impact as compared to the KLCI and KLPI. Hamzah and Rozali (2010) also found that LPTs outperformed the market portfolio during financial crisis which is consistent with the finding of this study. GFC does not affect the performance of the Malaysia 3-month T-bills which

have an almost flat returns before, during and after the GFC. For investors, investing in the Malaysia 3-month T-bills and REITs is better than the market portfolio and KLPI. The highest return for Malaysian REITs and KLCI is in 2009, with a respective 35.73 %, and 41.53 %, whereas for the KLPI, the highest return is 47.13 % in 2007.

Table 4.2:
Annual returns of the REITs index and financial indicators

Year	Adjusted REITs return %	FBMKLCI index return %	KLPI index return %	3-month T-bills return %
1999	25.82	29.05	27.34	3.05
2000	-14.40	2.47	-20.01	2.87
2001	2.56	-8.76	-19.98	2.78
2002	12.37	-1.51	-3.61	2.71
2003	21.14	24.72	34.59	2.80
2004	3.94	15.35	-3.75	2.39
2005	21.36	-2.60	-30.04	2.52
2006	1.73	20.16	23.64	3.24
2007	18.62	28.36	47.13	3.44
2008	-17.86	-49.45	-66.62	3.38
2009	35.73	41.53	42.68	2.05
2010	22.58	16.45	27.37	2.61
2011	17.94	0.88	0.90	2.92
2012	25.74	8.19	9.81	3.04
2013	1.46	12.75	21.92	3.00
2014	13.83	-2.00	7.31	3.13

Figure 4.3 further shows the annual returns of all indexes. Annual returns of the KLPI have the highest volatility, especially during the GFC, where it gives the lowest returns of -66.62% although in 2007 it has the highest return of 47.13%. The volatility of the Malaysian REITs and KLCI are lower than the KLPI. The findings are consistent with previous study by Lee and Ting (2008). They found that the standard deviations of REITs (0.064) and KLCI (0.08) were lower than the KLPI (0.107).

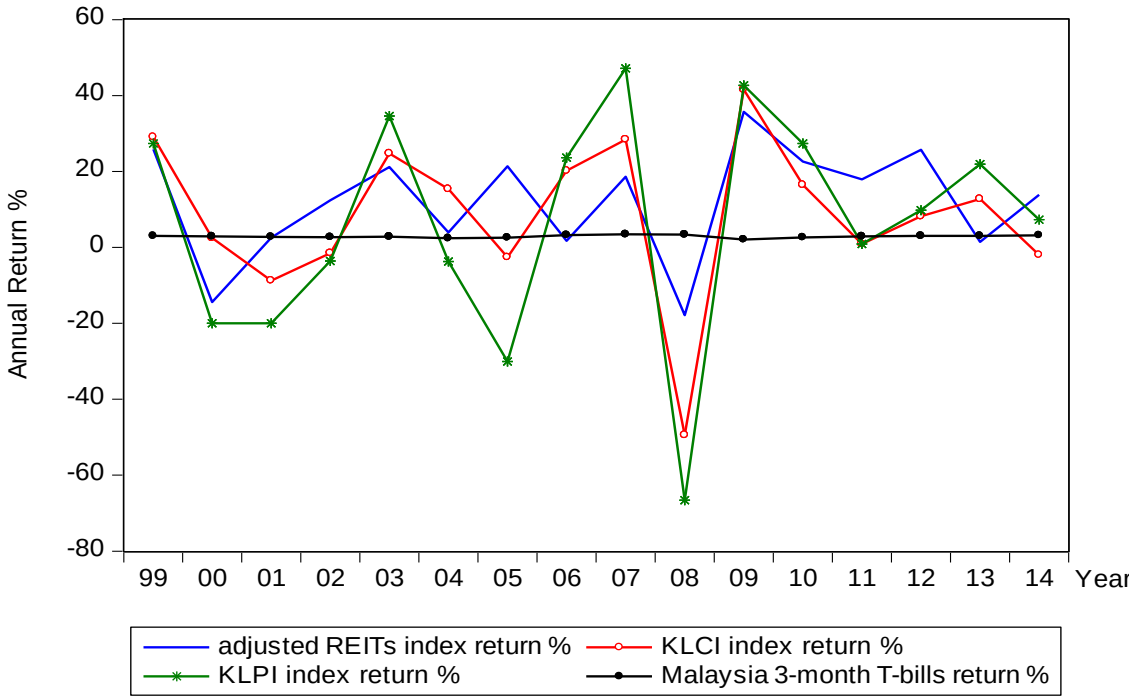

Figure 4.3

Annual return of the REITs index and other financial indicators

Table 4.4 is used to compare the risk and return performance of the tax adjusted Malaysian REITs index to the FTSE BM KLCI, KLPI and Malaysia 3-month T-bills over the period January 1999 to December 2014. The finding shows that the Malaysian REITs (1.0082%) has the highest monthly return, which is higher than the Malaysia 3-month T-bills (0.2405%), KLPI (0.5167%) and KLCI (0.7100%). As for the risk (standard deviation), the tax adjusted Malaysian REITs index has the lowest risk level of 4.2780% as compared to the KLCI (5.1154%) and KLPI (6.8446%). This is consistent with the work of Lee and Ting (2008) who reported a similar finding. A close examination shows that the KLCI and KLPI have a higher risk, but a lower average monthly return which is inconsistent with the risk and return principle. The result is possibly due to their negative returns, especially during the GFC that has affected the average return and the higher variance of returns during the GFC.

Based on the coefficient of variation, the tax adjusted Malaysian REITs index (4.2431%) has the lowest risk per unit of return than the KLCI (7.2048%) and KLPI (13.2473%), indicating that the Malaysian REITs outperform the KLCI and KLPI. This finding is consistent with Kok and Khoo (1995) and Ting (1999). They also showed that REITs portfolio generally outperformed the market portfolio. However, the finding contradicts to Newell, Ting, and Acheampong (2002) who reported that each LPT underperformed the KLCI and KLPI based on the coefficient of variation. The contradictory result of this study may have been caused by the different study period (1991-2000) used by the authors. As for Malaysia 3-month T-bills, based on CV, it is the best alternative investment asset as compared to the Malaysian REITs, KLCI and KLPI over this study period as it provides the lowest risk per unit of return, which is consistent to the finding of Lee and Ting (2008). Therefore, according to the historical data in this study, Malaysia 3-month T-bills is the best security for risk-averse investors, but for risk-seeking investors, Malaysian REITs would be the preferred choice due to the higher return.

Over January 1999 to December 2006, the average monthly return of the tax adjusted REITs index is lower than the KLCI. In contrast, after the implementation of the tax incentives, average monthly return of REITs is more than doubled the return of the KLCI. The CV is also much lower than the KLCI. It indicates that the tax incentives assist the development of the REITs industry. It supports the statement of Newell, Ting and Acheampong (2002) who stated that the tax-exempt on dividend is one of the initiatives to increase the development of the REITs industry.

Table 4.3:
Performance of REITs index and other financial indicators

Indicator	Mean (%)	Maximum (%)	Minimum (%)	Std. Dev.(%)	CV
January 1999-December 2014					
Tax Adjusted REITs Index	1.0082	28.2852	-11.5548	4.2780	4.2431
KLCI	0.7100	28.5029	-12.2273	5.1154	7.2048
KLPI	0.5167	23.3114	-15.4602	6.8446	13.2473
Malaysia 3-month T-bills	0.2405	0.4500	0.1500	0.0396	0.1648
January 1999-December 2006: Before tax incentives					
Tax Adjusted REITs Index	0.7846	28.2852	-11.5548	5.3497	6.8186
KLCI	0.8305	28.5029	-12.2273	6.2111	7.4790
KLPI	0.0861	21.7172	-15.2330	7.1919	83.5604
Malaysia 3-month T-bills	0.2354	0.4500	0.1500	0.0408	0.1733
January 2007-December 2014: After tax incentives					
Tax Adjusted REITs Index	1.2295	10.9485	-8.2308	2.8609	2.3268
KLCI	0.5908	12.0518	-11.7142	3.7596	6.3638
KLPI	0.9428	23.3114	-15.4602	6.4923	6.8862
Malaysia 3-month T-bills	0.2456	0.3000	0.1500	0.0380	0.1546

4.4 Correlation Analysis

Table 4.5 presents the correlation analysis of the Malaysian REITs with the other financial indicators over January 1999 to December 2014. The results show that Malaysian REITs index has a low correlation with the KLCI (0.58) than the KLPI with the KLCI (0.79). The finding supports the studies by Lee and Ting (2008) and Osmadi

(2009) who also found that Malaysian REITs had a low correlation with the KLCI. Markowitz's modern portfolio theory argues that the risk of a portfolio could be reduced by diversifying assets which are able to reduce the covariance among assets. Hence, there is a portfolio diversification benefit by combining the Malaysian REITs with the stocks that formed part of the KLCI. The high correlation of the KLPI (0.79) with the KLCI is consistent with the finding of Newell, Ting, and Acheampong (2002) and Lee and Ting (2008). Malaysian REITs are highly correlated with the KLPI (0.62), reflecting their industries are related, which supports the finding of Newell, Ting, and Acheampong (2002). Finally, the Malaysia 3-month T-bills has a low negative correlation with the Malaysian REITs (-0.22), KLCI (-0.22) and KLPI (-0.16). This is understandable because if the market is offering a higher interest rate, investors would shift from the equity market to the fixed income market. This finding supports the study by Lee and Ting (2008) who found that the bond returns have a low negative correlation with the value weighted REITs index (-0.004), stocks (-0.123) and property shares (-0.085).

Table 4.4:
Correlation analysis: January 1999 – December 2014

Sector	M-REITs Index	KLCI	KLPI	Malaysia 3-month T-bills
M-REITs Index	1.00			
KLCI	0.58**	1.00		
KLPI	0.62**	0.79**	1.00	
Malaysia 3-month T-bills	-0.22**	-0.22**	-0.16*	1.00

**Correlation is significant at the 1% level (2-tailed)
*Correlation is significant at the 5% level (2-tailed)

CHAPTER 5

CONCLUSION

5.1 Introduction

The findings of this study are summarized in this chapter. The implication of the study is described, which is then followed by a discussion on the limitations and recommendation for future research.

5.2 Summary of Findings

Value weighted tax adjusted Malaysian REITs index was constructed by using a monthly data over the period of January 1999 to December 2014. Comparison among the tax adjusted REITs index, unadjusted REITs index and other financial indicators was conducted to check on the returns, standard deviations and coefficient of variations. To answer the first objective, the tax adjusted REITs index outperforms the unadjusted REITs index after the implementation of tax reductions on dividend. The average return of tax adjusted REITs index (1.0082%) is higher than the unadjusted REITs index (0.9486%) and the coefficient of variation of the tax adjusted REITs index (4.2431%) is lower than the unadjusted REITs index (4.5015%) over the period from January 1999 to December 2014. The difference between tax adjusted and unadjusted REITs indexes starts from January 2007 when the tax incentives were implemented. Over the years from January 2007 to December 2014, the average monthly return of the tax adjusted REITs index is 1.2295%, which is higher than the unadjusted REITs index (1.1109%).

In answering the second objective, comparison among the tax adjusted REITs index with the KLCI, KLPI and Malaysia 3-month T-bills is presented. The highest annual returns for the tax adjusted Malaysian REITs index and KLCI were in 2009, representing 35.73% and 41.53 % respectively. The highest annual return for the KLPI is 47.13 % in 2007, while the Malaysia 3-month T-bills has the highest annual return with 3.16% in 2007. Meanwhile, the KLCI, KLPI and Malaysian REITs suffered the worst annual returns during the GFC (2008), with a respective return of -49.45%, -66.62% and -17.86%. The average monthly performance of the REITs index and other financial indicators shows that REITs index has the highest average monthly return with 1.0082%. It is followed by the KLCI (0.7100%), KLPI (0.5167%) and Malaysia 3-month T-bills (0.2405%). KLPI has the highest risk level, with a standard deviation of 6.8446%, and the Malaysia 3-month T-bills provides the lowest risk which is 0.15%. Finally, on a risk adjusted basis, the Malaysian REITs has a coefficient variation of 4.2315 outperforming the KLCI (7.2048) and KLPI (13.2473) during the period study. Based on the CV, Malaysia 3-month T-bills is the best alternative investment asset that provides a return with low risk. In addition, the average monthly return of the tax adjusted REITs index is lower than the KLCI from January 1999 to December 2006. However, after the implementation of the tax incentives, REITs index provides much higher average monthly return (1.2295%) than the KLCI (0.5908%).

In terms of diversification benefits, the Malaysian REITs has a low correlation (0.58) with the KLCI as compared to the correlation between the KLPI and KLCI (0.79), indicating that combining the Malaysian REITs with stocks provides some

diversification benefits. Similarly, by including the Malaysia 3-month T-bills (-0.22) and the Malaysian REITs in a portfolio could also reduce the portfolio risk as proposed by Markowitz (1952, 1959). The correlation between REITs and KLPI is slightly higher (0.62), which shows a lower diversification benefit among them.

5.3 Implications of the Study

This study has developed a tax adjusted Malaysian REITs index over the period of January 1999 to December 2014. The Malaysian tax adjusted REITs index could provide a historical perspective of the Malaysian REITs performance for the past 16 years. Investors would be able to use the tax adjusted Malaysian REITs index to get more insights about the performance of Malaysian REITs so as a better investment decision could be made. At the same time, investors can use the Malaysian REITs index as a yardstick to determine the superiority of REITs. In addition, a comparison of the performance of the Malaysian REITs with other financial indicators shows that the Malaysian REITs provides the highest return and the lowest risk level as compared to the KLCI and KLPI. Thus, a clear decision could be made where for risk-seeking investors, they should invest in REITs. For risk-averse investors, the Malaysia 3-month T-bills should be selected as it has the smallest standard deviation, and the lowest risk level per unit of return.

For fund managers, they could develop a portfolio by combining Malaysian REITs, stocks and the Malaysia 3-month T-bills as the finding of this study shows Malaysian REITs has low correlation with the KLCI and negative correlation with the Malaysia

3-month T-bills. Therefore, fund managers could add REITs, stocks and Malaysia 3-month T-bills to reduce the total risk of a portfolio.

For the regulators, the findings of this study show that the performance of the Malaysian REITs has shown a lot of improvement over since the implementation of the tax incentives. This indicates that the Malaysian regulators have been effective in revising the dividend tax policy as it has enhanced the development and growth of the REITs industry. The regulators could continue its existing policy on the Malaysian REITs.

5.4 Limitations of the Study

The tax adjusted Malaysian REITs index was developed by using the listed REITs in Bursa Malaysia. All except one of the REITs are included in developing the Malaysian REITs index. However, before 2005, the number of REITs was less than five. The limited number of REITs in constructing the REITs index might cause a problem where the index will be strongly influenced by the performance of a single REIT, especially on REIT that has a larger market capitalization.

The one REIT which is not included in developing the tax adjusted Malaysian REITs index is the KLCCP Stapled Group. KLCC Real Estate Investment Trust (KLCC REIT) was listed on Bursa Malaysia on 9 May 2013. It was stapled with the KLCC Property Holdings Berhad to form the KLCCP Stapled Group. This study could not separate the KLCC REIT from the KLCCP Stapled Group. Thus, the KLCC REIT was not included into the development of the Malaysian REITs index. However, the market value of

KLCCP Stapled Group was 52% of the total market value of the Malaysian REITs index on December 2014. Its exclusion would mean that the newly developed index might not represent the whole REITs industry as it lacks the KLCC REIT.

5.5 Recommendation for Future Study

In constructing the Malaysian REITs index, this study used monthly data. Future research could take weekly data as it could provide more observations. A large sample would enable this study to conduct a detailed analysis and provide credible results. For instance, the use of more data to calculate the correlation might change the result. In addition, more robust analysis of performance could be presented instead of just focusing on the coefficient of variation. Although one of the reasons to use this approach is that the results could easily be understood by average investors (Bernstein, 2007; Travers, 2004), future study should also consider other performance measures. This would include the Sharp Index, Treynor Index and Jensen Alpha index which take into account the systematic and unsystematic risk.

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