MALAYSIAN REAL ESTATE INVESTMENT TRUSTS (M-REITs): A PERFORMANCE AND COMPARATIVE ANALYSIS

BY

CHAI MUN YEE
CHOONG YOU JIAN
KOH CHIN WEI
THAM WAI JING

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DECLARATION

We hereby declare that:

(1) This UBFZ3026 Research Project is the end result of our work and that due acknowledgement has been given in the references to ALL sources of information be they printed, electronic, or personal.

(2) No portion of this research project has been submitted in support of any application for any other degree or qualification of this or any other university, or other institutes of learning.

(3) Equal contribution has been made by each group member in completing the research project.

(4) The official word count of this research report is *20,168 words*.

Name of Student:	**Student ID:**	**Signature:**
1. Chai Mun Yee	08UKB05200	_____
2. Choong You Jian	07UKB05935	_____
3. Koh Chin Wei	07UKB05469	_____
4. Tham Wai Jing	07UKB06513	_____

Date: 20 April 2011

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Apart from this, we would also like to thank the lecturer and tutor of this subject as well as other UTAR lecturers and tutors who directly or indirectly guided us with new insights and ideas on the path of completing this study. In addition, we wish to thank our parents for all their supports, be it morally, efforts or monetary, as well as their encouragements given to us.

Last but not least, we are utmost glad and sincerely grateful to have such cooperative group members of diversified backgrounds that are willing to search and share all relevant knowledge and information pertaining to completing this research successfully. Indeed, we have shared, learnt and experienced various memorable moments together throughout the voyage of completing this meaningful research.

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PREFACE

Our goal to conduct this research is to fulfill the requirement of UBFZ 3026 Research Project of University Tunku Abdul Rahman. We believed that this goal has been realized.

A comprehensive and complete research studies includes:

- A clear explanation of the objectives on the study conducted
- Conduct a through literature review related to the study
- Describe the method of carrying out the study through secondary data
- A deep and clear discussion on the study
- Provide an updated and reliable results and findings

Besides that, the research is conducted based on the guidelines that consist of 3 main sections:

First section: Preliminary pages that include title pages, copyright pages, acknowledgement, declaration, abstract, table of contents, list of table and preface.

Second section: The body (content) of the research

Chapter 1: Introduction

Chapter 2: Literature Review

Chapter 3: Research Method

Chapter 4: Analysis and Results

Chapter 5: Conclusion and Recommendation

Third section: The end materials consist of references and appendixes

Fulfilling the above criteria completes this research study.

ABSTRACT

This study examines the performance of Malaysian Real Estate Investment Trusts (M-REITs) using Sharpe's Index measurement for year 2001 to 2010. The observation years were segregated into three categories which are pre-crisis, crisis and post-crisis period to determine the effects of the 2008 U.S. subprime mortgage crisis on the performance of M-REITs. The M-REITs stock prices were benchmarked against the market proxies which are the FBMKLCI, FBMEMAS and FBM Kuala Lumpur Property Index (KLPI). Besides that, this study also compares the level of returns, degree of risks and correlations of M-REITs with regional peers, namely, the Hong Kong, Singapore and Taiwan REIT market. The results indicate that M-REITs underperformed the broader market during both pre-crisis (2001-2007) and post-crisis period (2009-2010). However, M-REITs displayed superior performance relative to the broader market during the financial crisis period (2008). This study also concludes that M-REITs possess lower degree of overall risk or volatility as compared to the broader market, especially with the property market. In terms of correlation of returns, results indicate that there exist significant (definite) but weak correlation between M-REITs with the market portfolio. Additionally, this study found that M-REIT market has had emerging performance among regional REIT markets in the post-crisis years. Lastly, this study also found that M-REITs do provide an effective mean of hedging against inflationary pressures over the period.

CHAPTER 1: INTRODUCTION

1.0 Introduction

The discussion on this chapter is divided into six sections. In the first section, we provide the background of study in which we highlighted the general overview of our research topic, followed by the problem statements of the research. The third section lists down the research questions and the research objectives are presented in the fourth section. The fifth section then discusses the significance of this study followed by the last section which states the organization of the study.

1.1 Background of the Study

In the past decades, more and more investment opportunities had surfaced with the advent of a myriad of financial products through innovative and rigorous financial engineering. More comprehensive financial instruments such as derivatives and trusts have been introduced into the global financial arena to meet and cater with the ever increasing demand for investable instruments. Investors worldwide; be it institutional or individual, have sought out to invest their accumulated wealth because investments would enable them to safeguard as well as generate more wealth during the good times.

Real estate or the property sector is deemed as one of the few unique sectors within every economy. This is because this particular sector is one of the largest and most significant sector in most economies and yet, it is also the harbinger of problem in most of the financial crises that occurred in the past decades, as it did during the collapse of Japanese property bubble in the late 1980s, subprime mortgage crisis in the U.S. in 2008 and subsequent burst of the Dubai property bubble in 2009. Thus, it is worthwhile to conduct studies on this particular sector to understand what it could actually offer and its

potential as well as how investors could be protected from its collapse in the future.

Conventionally, investments in real estate could be in the form of owning physical properties or investing in publicly listed property stocks as well as property related debt securities such as bonds issued on developing property projects. Continuous financial innovation has expanded the investment spectrum within the real estate sector with the advent of Real Estate Investment Trusts. Real Estate Investment Trusts or known globally as REITs is one of the forms of unit trusts or trust funds which specialize on real estate or property investments.

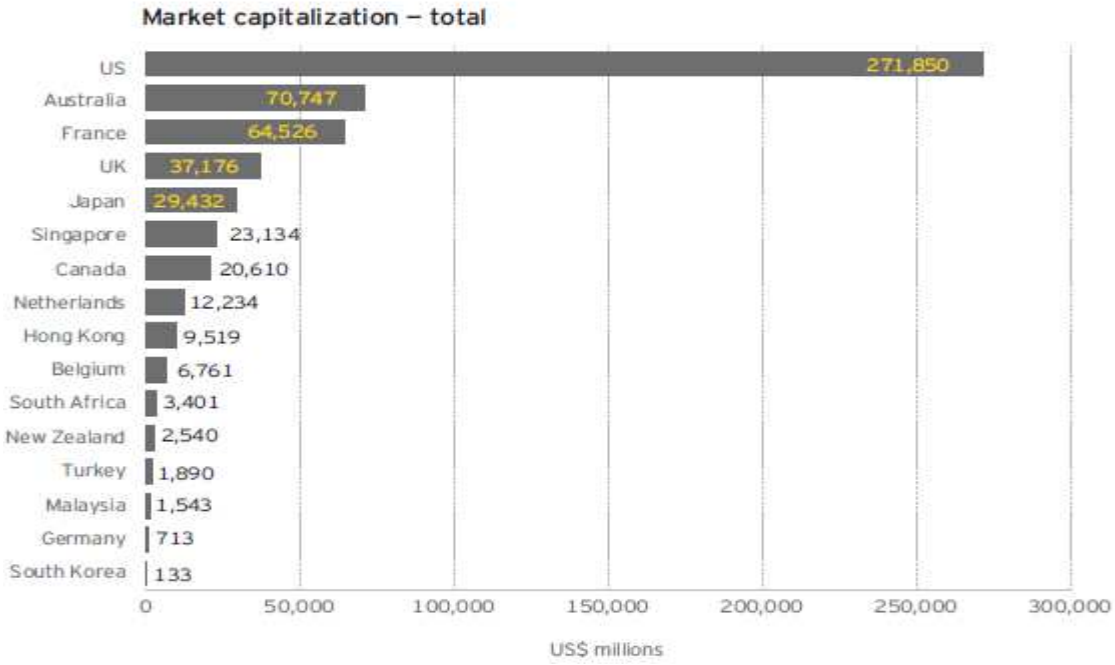
REITs were firstly introduced back in the 1960s in the U.S. when the Congress of United States passed on a bill that enabled groups of small investors to pool their resources in the form of trust funds and invest in income-producing properties. REITs are collective investment vehicle where investors' capital are pooled and primarily invested in real estate assets and other real estate related assets. Real estate assets may consist of residential or commercial buildings, retail or industrial lots, hospitals or health care facilities, resorts or hotels and specialty-built buildings. Other real estate related assets could be equities in public-listed property companies and any listed or unlisted debt securities of property companies. REITs funds are also permitted to invest in non-real estate related assets, asset-backed securities and other liquid assets with limits on investable amount prescribed by a regulatory body. REITs stocks could be privately held or publicly traded on stock exchanges. REITs generate investment returns from the rental income collected plus any capital appreciation arising from holding the real estate or property over the period. Investors in REITs, called unit holders (similar to that of ordinary unit trusts), receive their returns in the form of dividends as well as any capital gains during the holding period.

Publicly listed REITs collect funds through initial public offerings (IPOs) and the funds are used to manage properties. REITs have gained popularity as an investment instrument nowadays because they enable smaller investors to invest in real estate without the need of large initial outlay since the property sector, especially physical property, is capital intensive. In addition, REITs are also attractive to the investors because they carry low risks and yet, being able to provide high dividend yields. Since REITs invest in a portfolio of real estate assets such as offices, shopping centers, apartments and retail, they offer steady stream of incomes that is derived from the rental of properties in the particular portfolio. Furthermore, REITs are granted tax transparency that is, federal income tax exemption, if they distributed a minimum of 90 per cent of their net income to the investors as dividends.

REITs in the United States and Listed Property Trusts (LPTs) in Australia have had a long and successful history as effective real estate investment vehicles. In the recent years, REITs have expanded globally, with REIT markets being established in Asia and Europe (EPRA, 2004). Over the past two decades, REITs in Asia have seen exponential growth. In the Asian region, Japan, Singapore and Hong Kong are among the market leaders of REITs. The liquidity and efficiency of the real estate market in Asia have significantly improved subsequent to the introduction of the REITs market (Quek & Ong, 2008). The REITs market took off in Japan and Singapore in 2001 and 2002 respectively. South Korea established its REIT legislation in 2001 while Taiwan launched its first REIT in 2004. Hong Kong was the latest to introduce a listed REIT in 2005. According to the latest Global Real Estate Investment Trust Annual Report 2010 released by Ernst & Young, for the year ending Dec 31, 2009, Asia's REIT industry has a total market capitalization of USD 63.76 billion (RM 218.06 billion @ RM 3.42/USD 1). Figure 1 shows that Japanese REITs market is taking the lead with a market capitalization of USD 29.43 billion (RM 100.65 billion) followed by Singapore with USD 23.13 billion

(RM 79.10 billion). With a market capitalization of USD 1.543 billion (RM 5.28 billion), the Malaysian REITs market is considered to be in its infancy stage.

Figure 1.1: Major REITs Market Capitalization as at Dec 31, 2009



Source: Global Real Estate Investment Trust Annual Report (2010)

A survey by Jones Lang LaSalle back in 2004 has shown that level of maturity and transparency in many Asian real estate markets such as Hong Kong, Singapore, Malaysia and Japan have seen considerable improvement since the Asian financial crisis in 1997. As such, international real estate securities funds that have invested in real estate companies in several Asian countries could enjoy long-term diversification benefits within their portfolios (Bond, Karolyi & Sanders, 2003; Garvey, Santry & Stevenson, 2001). The emergence of REITs in Asia offers new opportunities for international funds to diversify into real estate assets in these Asian countries (Newell, Liow, Ooi & Zhu, 2005).

Real estate investment trusts (REITs) are previously known as listed property trusts (LPTs) in Malaysia. In Asia, Malaysia was the first country in Asia to introduce property trusts. The first property trust was listed on the Kuala Lumpur Stock Exchange (KLSE) in 1989. Prior to 2005, there were four property trusts listed on the KLSE, namely, Arab-Malaysian First Property Trust (Aug 1989), First Malaysia Property Trust (Nov 1989), Amanah Harta Tanah PNB (Dec 1990) and Mayban Property Trust Fund One (Mar 1997) (Ooi, Newell & Sing, 2006). These property trusts were, however, not popular among the institutional investors as their public listings had received mild responses from investors (Newell, Ting and Acheampong, 2002). Back then, the regulatory framework approved by the Bank Negara Malaysia (BNM) in 1986 was restrictive and provided no tax transparency for REITs net income. Other issues that impeded the sector were potential conflicts of interest, lack of focus on asset management and relatively thin trading volume. Even a revision of the property trust guidelines by Bank Negara Malaysia in 1995 failed to spark any interest among domestic investors. The most recent liberalization in the guidelines was announced by Securities Commission (SC) in February 2005. Prime features of the revision focus on granting tax transparency status to REITs and liberalizing a REIT's borrowing (debt) limits to 35% of total asset value. Listed property trust funds will also be renamed REITs, which is a standardized global term.

Additional listings of M-REITs continued in 2005 subsequent to further revision on REITs guidelines with Axis REIT being the first new REIT listed in the main board of KLSE in August 2005. As at 2010, the two most recent REITs listing in Bursa Malaysia are Sunway City REIT (known as SUNREIT), which is the largest IPO of REIT in Malaysia, and CapitaMall Malaysia Trust REIT (known CMMT), which is the first foreign-sponsored REIT in Malaysia. As at January 31, 2011, there are 14 REITs listed in Bursa Malaysia with an aggregate market capitalization of around USD 3.50 billion (RM 10.679 billion, RM 3.05/USD 1).

Given the concerted efforts by the Malaysian government to promote REITs as a new investment instrument to expand Malaysian real estate sector, major growth could be ignited in the domestic REIT market in the foreseeable future. We believe that Malaysia will position itself as an emerging REITs market in Asia in time to come, given the vast potential of the domestic property sector through the initializing of the government's Economic Transformation Plan (ETP) which highlights and targets a significant boost to the domestic property sector in the medium to long-term.

1.2 Statements of Problem

M-REITs are deemed as one of the newer investment instruments introduced in Malaysia and the M-REITs market is seen as relatively small as compared to its regional peers such as Singapore, Hong Kong and Taiwan. The current M-REITs market has seen increasing appeal to domestic and foreign investors, especially in the past 3 years. Despite that, market sentiment, especially from individual investors still relatively mild even with continuous listings of M-REITs on Bursa Malaysia. With the growing relevance of REITs as investment instrument, study needs to be conducted to evaluate the current performance of all M-REITs stocks in relative to the broader equity market as well as with existing regional peers - Singapore, Hong Kong and Taiwan.

Given that M-REITs are now trying to attract more and more domestic and foreign investments, it is more timely and worthwhile to conduct a research in order to evaluate the performance of all listed M-REITs stocks and compare their performance with the broader stock market as well as with other existing regional peers such as the Singapore, Hong Kong and Taiwan REIT indexes. In addition, our research would also study the correlation between return on M-REITs share prices and return on broader market prices being proxied by several Bursa Malaysia indices such as the FBM Property Index, FBMKLCI Index and FBMEMAS Index.

Furthermore, we found that most researchers only confine their studies on M-REITs prior to and until 2005 only. At such, their studies primarily focus only on the performance of the initial four LPTs, while ignoring the other M-REITs listed subsequently (Kok & Khoo, 1995; Newell, Ting & Acheampong, 2002; Sing, Ho & Mak, 2002; Ooi, Newell & Sing, 2006; Ting & Yunus, 2006; Hamzah, Rozali & Tahir, 2010). So far, there is only very few researches that utilize the 12 listed M-REITs with sampling period up to 2009 (Tan, 2009) and we found that no studies is being conducted for all the 14 M-REITs listed. As compared to previous studies that mainly emphasized on attribution of the infamous Asian financial crisis in 1997, we hope to highlight the more recent externalities that affected the global financial market such as the recovery of massive sell down of global equities from the September 2001 attack on the World Trade Center (WTC), inflating of global property bubbles during 2004 to 2007 due to low interest rate levels in the U.S. and more critically, the subsequent burst of the U.S. subprime mortgage bubble in 2007 and the most recent Euro credit crunch as well as collapse of Dubai property sector in 2008 and 2009 respectively, that sent a tidal of equity sell down and created major instability in the global financial market. All these externalities occur during the time frame of 2001 to 2010.

In addition, M-REITs do provide certain notable advantages as an investment as compared to either equities or bonds. M-REITs present lower risk than the equity market while yielding above average return than that of the bond market. Thus, it is recommended that M-REITs should be used as a mean to diversify portfolio investments. However, the potential of M-REITs for achieving appropriate portfolio diversification still relatively uncertain for most funds managers as the exposure given for this type of investment is rather insufficient. The inclusion of M-REITs in most domestic fund managers' portfolio still relatively limited. Moreover, given that M-REITs are dividend-yield based investment, whereby dividend yields are more significant than capital appreciation, increasing global and domestic inflation levels might

have cast doubt on M-REITs as worthwhile investments. The increasing inflationary pressure in the recent years has mounted onto the effectiveness of M-REITs serving as a hedging tool for investors.

1.3 Research Questions

Our study seeks to highlight and understand several major questions pertaining to M-REITs. The questions are as follow:-

- How did each M-REIT perform in terms of its share prices or investment returns relative to broader market prices during the sampling period?
- How did the Malaysian REITs market perform as compared with its regional peers during the sampling period?
- What is the correlation of M-REITs stocks price movements with broader market prices?
- What is the spread between returns on M-REITs stocks and Malaysian riskless profit rate?
- Are M-REITs an acceptable tool for hedging against inflation as measured in terms of rate of return and inflation rate?

NOTE: Broader market performance encompasses the performance of entire Malaysian property sector, measured using FBM Property Index and Malaysian equity market, measured using FBM KLCI and FBMEMAS Index. Regional peers' performances are measured using their respective REIT Indexes. Lastly, Malaysian risk-free rate is measured using the prevailing Malaysian T-bill rate.

1.4 Objectives of Study

The primary aims of this study are as follow:-

- *To evaluate the performance of each and every M-REITs company using its share prices.*

- *To determine how are M-REITs performing relative to the broader market performance.*
- *To compare the performance of Malaysia's REITs market with its regional peers.*
- *To examine the relationship of association between M-REITs share prices and broader market prices (proxied by FBM Property Index, FBM KLCI Index and FBMEMAS Index).*
- *To determine if M-REITs provides good hedge against inflation and are worthwhile investment.*

1.5 Significance of Study

Since the Malaysian REIT market is undergoing a period of development and expansion in order to position itself as an emerging REIT market in the region, this study is utmost vital as it provides all potential investors as well as non-investing individuals with a *broader and deeper understanding* on the nature and the development of M-REITs market in the past, present and future. We hope to expand the existing knowledge on M-REITs so those larger groups of people are able to understand what REITs are and what they could offer as an investment instrument.

In addition, the findings of this study could offer useful information on the performance of M-REITs so that potential investors could be able to *make a more accurate decision* on their investments. Through our study, investors could also determine if M-REITs are *worthwhile investment* to be included in their portfolios and could be used to safeguard their wealth in times of financial distress and to generate more wealth in good times. Although the outcomes of our study could not guarantee an accurate prediction for the future, it could, however, be a yardstick or *basis for investment consideration* based on historical perspective to determine the *potential and predictability of return* on each and every of the listed M-REITs. Furthermore, our study could also provide a glance on the *behavior of M-REITs* being compared to the

broader stock market. Last but not least, our study could also provide *references for other researchers and academicians* to continue investigate on any REIT-related areas in the future as a mean of continual extension and expansion of every existing literature on this topic.

1.6 Organization of Study

This study consists of five chapters and the contents have been arranged with the introduction in Chapter 1 and general explanation on the overview of this study, followed by literature review in Chapter 2 which reviews the relevant literature and theoretical framework. Subsequently, research method in Chapter 3 describes the research design, data collection and methodology and Chapter 4 analyzes the findings of this study as well as providing interpretation on the results. Lastly, Chapter 5 discusses the overall conclusion besides providing some recommendations and policies for future researches.

CHAPTER 2: LITERATURE REVIEW

2.0 Introduction

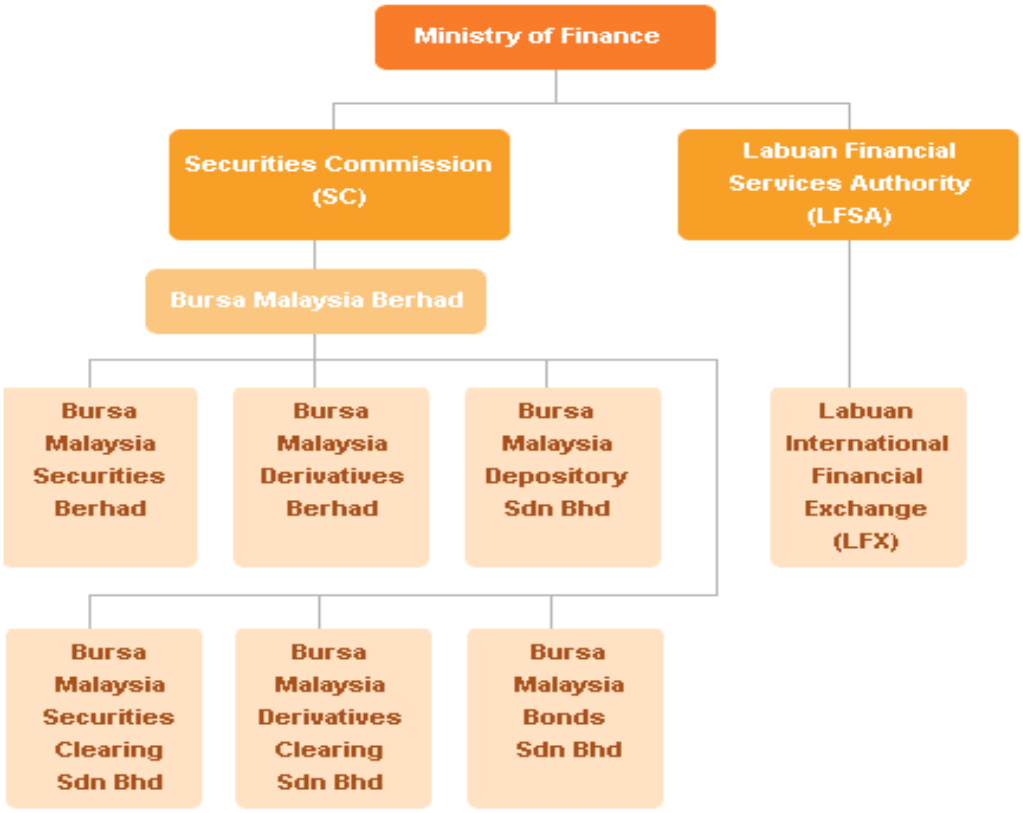
This chapter will begin with the discussion of Bursa Malaysia and the background of FTSE Bursa Malaysia Kuala Lumpur Composite Index (FBMKLCI), FTSE Bursa Malaysia EMAS Index (FBMEMAS) and Kuala Lumpur Property Index (KLPRP). Next, the chapter will explain the development of REITs in Malaysia by explaining the efforts for promoting M-REIT industry by the government of Malaysia. Subsequently, a general comparison of the REITs industry between Malaysia and other regional countries will be provided. Then, the key attractions or the advantages of REITs will be clarified. In addition, the U.S. subprime mortgage crisis would be highlighted, followed by listing the historical risk-free and inflation rates in Malaysia. Finally, review on literatures of previous studies on REITs-related topics will be thoroughly discussed in this chapter.

2.1 Bursa Malaysia Berhad

Bursa Malaysia, the securities commission of Malaysia is an exchange holding company approved under Section 15 of the Capital Markets and Services Act 2007 according to Bursa Malaysia website (http://www.klse.com.my/website/bm/). In the year 1960, Malayan Stock Exchange was established for public trading of shares, where the board system had trading rooms in Singapore and Kuala Lumpur that linked by direct telephone lines. Kuala Lumpur Stock Exchange (KLSE) Berhad being incorporated as a company and took over the trading operations on KLSE in year 1976. On April 14, 2004, KLSE Berhad has changed its name to Bursa Malaysia Berhad, following the demutualization exercise. Bursa's vision is to be the preferred partner in Asia for fund-raising, trading and investment by offering fair and systematic markets for the investors to trade with different products. Bursa Malaysia was listed on Main Board of Bursa Malaysia Securities Berhad on March 15, 2005. It divided into three categories, which are securities clearing, derivatives and bonds. In

December 2008, Bursa launched the Bursa Trade Securities, which enables faster processing and execution of orders and provides wider trading functions and features. On August 3, 2009, Bursa combined the main board and the second board of Bursa Malaysia into a single market known as the Main Market while the Malaysian Exchange of Securities, Dealing & Automated Quotation (MESDAQ) was renamed as Access, Certainty and Efficiency (ACE). Figure 2.1 shows the regulatory structure of Bursa Malaysia under the supervision of Securities Commission (SC) and Ministry of Finance (MOF).

Figure 2.1: Regulatory Structure



Source: Bursa Malaysia (http://www.klse.com.my/website/bm/about_us/the_organisation/regulatory_structure.html)

2.1.1 Bursa Malaysia Indices

The barometer of the Malaysian stock market was launched on January 2, 1970 as Industrial Index with 30 industrial stocks with base year of 1970. The exchange and industry representatives agreed that the stock market needed an index that is reflective of the general performance of the market, responsive to the expectations of investors, indicative of any changes in government policies as well as reactive to the structural changes in the economy.

FTSE Bursa Malaysia Kuala Lumpur Composite Index (FBMKLCI) uses the real time basis of every 15 seconds and closing prices sourced from Bursa to provide calculation and adjustments to the FBMKLCI. The calculation is based on a value weighted formula and adjusted by a free-float factor. The free-float factor is used to determine the attribution of the company's market activities in the index (degree of investable opportunity) and each company is required to have a minimum free float of 15 per cent. Table 2.1 summarized the major highlights of FBMKLCI from its inception year in 1986 until today.

Table 2.1: Milestones of KLCI

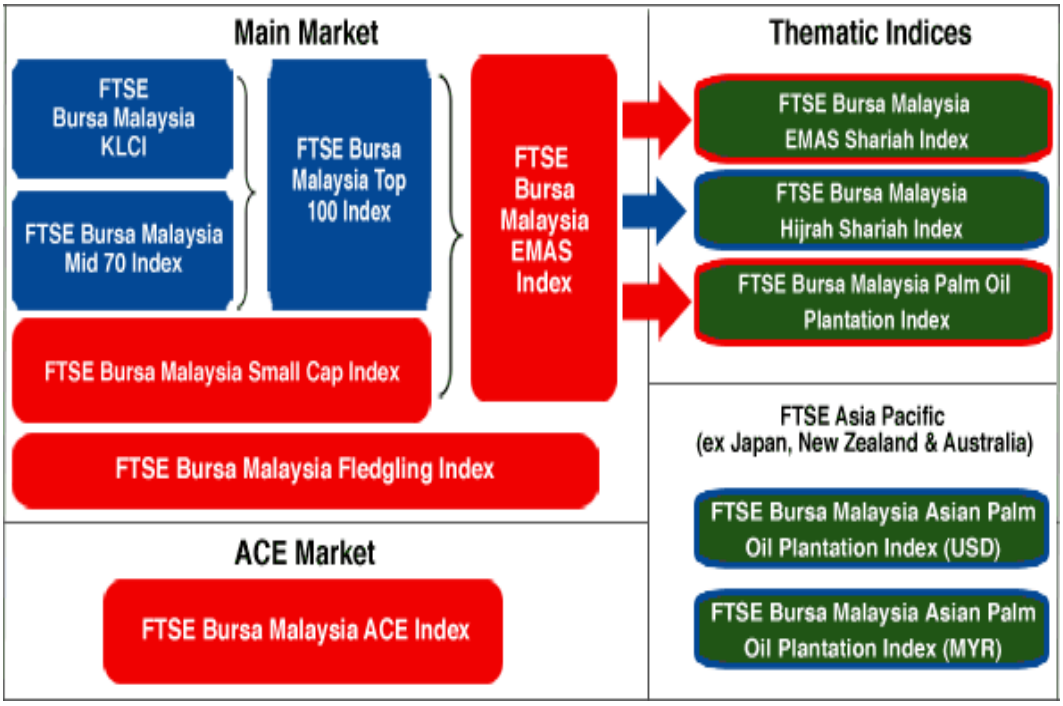
4 April 1986	The KLCI was launched as an open-ended index with a total of 83 companies and calculated three times a day. Trading volume criteria was set at minimum 250 lots per annum.
30 January 1990	Calculation frequency was increased to every 15 minutes.
29 May 1992	Trading volume criteria was increased to minimum of 1,000 lots per annum.
18 April 1995	Number of constituents was increased to and fixed at 100 largest capitalization companies as to accommodate the listing of stock index futures. Computation frequency was increased to every 60 seconds.

19 March 1998	Enhancement to the objectives to better track the economy.
25 May 2005	Discontinued the practice of adjusting index base for dividends.
6 July 2009	Changed name to FTSE Bursa Malaysia KLCI (FBMKLCI).The number of constituents is reduced and fixed at 30 largest capitalization free-float weighted companies and adopts the FTSE Bursa Malaysia Index calculation methodology. The index computation is as follow:- $\frac{\text{Current Aggregate Market Capitalization}}{\text{Base Aggregate Market Capitalization}} \times 100$

Source: Bursa Malaysia (http://www.klse.com.my/website/bm/market_information/fbm_klci.html)

Bursa Malaysia Main Market consists of nine main sector indices, which encompasses the following: (i.) *construction*; (ii.) *consumer product*; (iii.) *finance*; (iv.) *industrial product*; (v.) *mining*; (vi.) *plantation*; (vii) *property*; (viii.) *technology* and (ix.) *trading and services*. According to Tan (2009), the property sector index, known as FBM Kuala Lumpur Property Index (FBMKLPI), tracks the stock prices of 88 listed property companies with its base year on 1970. Then, FBM KLCI, the main market indicator in Bursa Malaysia, serves as a benchmark to tracking the stock prices of 30 largest companies by full market capitalization in Bursa Malaysia, while the FTSE EMAS Index comprises and measures the stock prices of the 360 constituents of the FTSE Bursa Malaysia Top 100 Index and FTSE Bursa Malaysia Small Cap Index, which appears as a better approximation for the performance of Bursa's Main Market. Figure 2.2 illustrates the structure of FTSE Bursa Malaysia indices for both Main and ACE market.

Figure 2.2: Structure of FTSE Bursa Malaysia Indices



Source: Bursa Malaysia (http://www.klse.com.my/website/bm/market_information/ftse_bursa_index.html#FBMKLCI)

2.2 Development Real Estate Investment Trusts (REITs) in Malaysia

REITs were initially established in the United States in the early 1960s. In Malaysia, Hamzah, Rozali and Tahir (2010) mentioned that the legislation to permit the formation of listed property trusts (similar to REITs) was the first to be introduced in Malaysia among Asia countries, with the Arab Malaysian First Property Trust (AMFPT) being listed on Kuala Lumpur Stock Exchange as the first Listed Property Trust (LPT) on August 28, 1989. By the end of the 1990s, there are four LPTs on the KLSE, with the second LPT, First Malaysian Property Trust (FMPT) that was established in November 23, 1989 and third LPT, Amanah Harta Tanah PNB (AHTP), which was launched in December 28, 1990 and followed by Mayban Property Trust Fund One (MPTF1), which was listed on March 25, 1997. However, after listed for thirteen years, FMPT ceased listing on July 2002. At the end of April 2005, there were only three LPTs left on Bursa

Malaysia which are, AmFirst Property Trust (formerly Arab Malaysian First Property Trust), Amanah Harta Tanah PNB and Amanah Harta Tanah PNB 2.

New guidelines on real estate investment trusts (REITs) are introduced by Securities Commission in 2005 and the term listed property trust (LPT) is renamed as REIT, as to standardize the term with other countries. The first Malaysian REIT (M-REIT), known as Axis REIT, was subsequently listed on Bursa Malaysia in 2005. Table 2.2 below summarizes of the list of publicly listed M-REITs as at January 31, 2011.

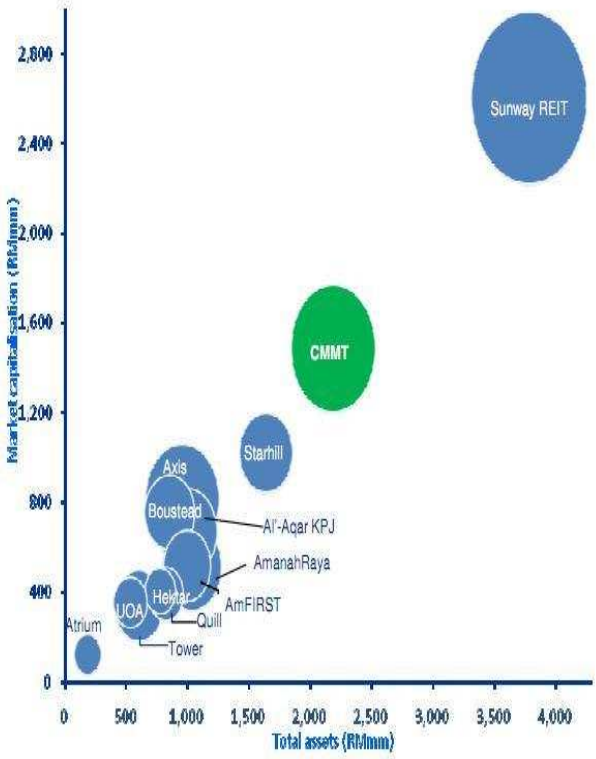
Table 2.2: List of M-REITs as at January 31, 2011

No	REIT Fund	Management Company	Listing Date	Fund Trustee	Property Portfolios
1.	Al-Aqar KPJ REIT	Damansara REIT Managers Sdn Bhd (717704-V)	10 Aug 2006	AmanahRaya Trustee Berhad (766894-T)	Health Care
2.	Al-Hadharah Boustead REIT	Boustead REIT Managers Sdn Bhd (90953-K)	8 Feb 2007	CIMB Trustee Berhad (167913-M)	Plantation
3.	AmanahRaya REIT	AmanahRaya-JMF Asset Management Sdn Bhd (309646-H) / AmanahRaya-REIT Managers Sdn Bhd (856167-A)	26 Feb 2007	CIMB Trustee Berhad (167913-M)	Diversified
4.	Amanah Harta Tanah PNB	Pelaburan Hartanah Nasional Berhad (175967-W)	Dec 1990	Amanah Raya Berhad (344986-V)	Diversified
5.	AmFirst REIT	Am ARA REIT Managers Sdn Bhd (730964-X)	21 Dec 2006	Mayban Trustees Berhad (5004-P)	Commercial
6.	Atrium REIT	Atrium REIT Managers Sdn Bhd (710526-V)	Apr 2007	BHLB Trustee Berhad (313031-A)	Industrial
7.	Axis REIT	Axis-REIT Managers Berhad (649450-W)	3 Aug 2005	OSK Trustees Berhad (573019-U)	Commercial / Office
8.	CapitaMalls Malaysia Trust	CapitaMalls Malaysia REIT Management Sdn Bhd (819351-H)	16 Jul 2010	AmTrustee Berhad (163032-V)	Retail
9.	Hektar REIT	Hektar Asset Management Sdn Bhd (732261-T)	4 Dec 2006	AmTrustee Berhad (163032-V)	Retail

No	REIT Fund	Management Company	Listing Date	Fund Trustee	Property Portfolios
10.	Quill Capita Trust	Quill Capita Management Sdn Bhd (737252-X)	8 Jan 2007	Mayban Trustees Berhad (5004-P)	Commercial
11.	Starhill REIT	Pintar Projek Sdn Bhd (314009-W)	16 Dec 2005	Mayban Trustees Berhad (5004-P)	Retail
12.	Sunway REIT	Sunway REIT Management Sdn Bhd (806330-X)	8 Jul 2010	OSK Trustees Berhad (573019-U)	Commercial / Retail
13.	Tower REIT	GLM REIT Management Sdn Bhd (659312-H)	12 Apr 2006	AmTrustee Berhad (163032-V)	Commercial / Office
14.	UOA REITS	UOA Asset Management Sdn Bhd (692939-U)	Dec 2005	OSK Trustees Berhad (573019-U)	Commercial

Figure 2.3 below detailed the 14 M-REITs listed on Bursa Malaysia in terms of capitalization, total assets and fund floating percentage. As at September 30, 2010, M-REITs have had a total market capitalization approximately RM 10.065 billion with total assets in the trusts of about RM 14.792 billion. The three largest REITs in Malaysia in terms of market capitalization and total assets are Sunway REIT, CapitaMall Malaysia Trust and Starhill REIT.

Figure 2.3: Market Capitalization and Total Assets of M-REITs as at September 30, 2010



Malaysian REITS	Cap. (RM mil)	Assets (RM mil)	Float (%)	Float (RM mil)
CMMT	1,485.0	2,185.4	58.3	865.8
Sunway Reit	2,599.7	3,359.7	61.8	1606.6
Starhill	1,019.7	1,618.7	32.9	335.5
Axis	811.9	907.7	80.0	649.5
Al-Hadharah Boustead	752.0	865.6	39.6	297.6
Al-'Aqar KPJ	667.2	1,011.3	58.5	390.4
Amanahraya	515.9	748.0	51.7	266.5
AmFirst	510.5	1,044.2	81.4	415.3
Hektar	403.2	777.1	28.6	115.3
Quill	390.1	818.2	39.9	155.6
UOA	351.7	519.4	39.3	138.2
Tower	339.4	598.8	79.6	270.2
Atrium	121.8	182.3	71.0	86.4
Amanah Harta Tanah	96.5	155.5	60.0	57.9
M-REITS Simple Average	718.9	1,056.6	55.9	
M-REITS Median	513.2	841.9	58.4	
Total	10,064.7	14,791.9		

Source: Bloomberg and CapitaMalls Malaysia Trust's presentation slides for CIMB Retail Investors (http://capitamallsmalaysia.listedcompany.com/newsroom/CMMT091110.pdf)

Figure 2.4: M-REITs Equity Standing as at June, 2010

REIT PERFORMANCE

NAME OF REIT	DATE LISTED	OFFER PRICE (RM)	CLOSING PRICE 30 JUN 10 (RM)	% CHANGE SINCE DEC 09	52-WEEK HIGH (RM)	52-WEEK LOW (RM)	DISTRIBUTION YIELD (JUN 10)
Amanah Harta Tanah PNB	28-Dec-90	N/A	0.940	2.73%	0.970	0.830	7.45%
Axis-REIT	3-Aug-05	1.25	2.020	4.66%	2.070	1.500	5.69%
Starhill REIT	16-Dec-05	0.96	0.855	0.00%	0.920	0.820	7.89%
UOA REIT	30-Dec-05	1.15	1.410	10.16%	1.460	1.160	8.16%
Tower REIT	12-Apr-06	1.07	1.190	4.39%	1.230	0.995	8.40%
Al-Aqar KPJ REIT	10-Aug-06	0.95	1.030	4.57%	1.110	0.900	10.71%
Hektar REIT	4-Dec-06	1.05	1.240	10.71%	1.300	0.900	8.39%
Amfirst REIT	20-Dec-06	1.00	1.170	12.50%	1.220	0.885	8.33%
Quill Capita Trust	8-Jan-07	0.84	1.010	-6.48%	1.100	0.910	7.60%
Al-Hadharah Boustead REIT	8-Feb-07	0.99	1.300	0.00%	1.390	1.160	7.15%
Amanahraya REIT	26-Feb-07	0.895	0.855	0.00%	0.925	0.715	6.54%
Atrium REIT	26-Mar-07	1.05	0.960	4.35%	0.985	0.650	7.71%

Source: REITS around Asia. (2010).

Al-Aqar KPJ REIT and Al-Hadharah Boustead REIT were the first Islamic REITs to be introduced in Malaysia, followed by Axis REIT which was transformed from conventional REIT into Islamic REIT on December 2008 according to Tan (2009). Islamic REITs have to comply with the existing Syariah law requirements. Table 2.3 below summarized the differences between conventional REITs and Islamic REITs.

Table 2.3: Difference between Conventional and Islamic REITs

	Conventional REITs	Islamic REITs
Syariah Committee/Syariah Advisors	There is no need for any Syariah Committee/Advisors.	Islamic REIT must appoint a Syariah Committee/Advisors to ensure compliance with Syariah requirements.
Permissibility of activities carried out by tenants	No restriction.	Only permissible activities allowed.
Insurance for properties	Conventional insurance with insurance companies as approved by trustee.	The managers need to consider the availability of Islamic insurance/Takaful before opting for conventional insurance.
Financing / Funding requirement	No restrictions.	Financing must be Syariah compliant.

Source: Ting, K.H. and Md. Noor, A.R. (2007) Islamic REIT: A Syariah-compliant investment option, 12th Asian Real Estate Society Conference Macau, China.

2.2.1 Malaysian Government Efforts on Promoting M-REITs Industry

On average, REIT investment returns in developed market are peaked around 3 to 5% year-on-year (y-o-y) basis, depending on its individual fund performance. Comparatively, M-REITs appear to be very attractive because as Malaysia is in the phase of emerging developing nation, domestic property values are still within a relatively lower price range behind many developed countries in Asia as their volumes are still not very dense and thus, there exists vast potential for growth for Malaysian property sector. This reason has emerged as an opportunity with M-REITs able to generate average attractive

yields between 6 to 8% which is higher than REITs in other major developed countries.

Regionally, REIT markets around Asia have an advantage feature over M-REITs. Countries such as Hong Kong and Singapore both have 0% withholding tax as compared to 10% in Malaysia. For many years, the tax regime for M-REITs has lagged behind our neighbors in Singapore, making the latter a more attractive destination for REIT listings. Hence, the government and Securities Commission (SC) have to come up with certain improved initiatives to promote the Malaysian REITs market.

On January 3, 2005, the SC released new guidelines on M-REITs in an effort to accelerate capital market growth and establish a vibrant and competitive REIT industry in Malaysia. Key features included the relaxation of restrictions on M-REITs for the following transactions such as borrowings limits, acquisition of leasehold properties and acquisitions of real estates that are encumbered by financial charges. In order to promote the development of M-REITs or Property Trust Funds (PTFs), REITs or PTFs approved by the SC were given tax incentives or treatment such as chargeable income distributed to unit holders was exempted from income tax and the accumulated income that has been taxed and subsequently distributed was eligible for tax recovery by unit holders. At the same time, to promote the growth of Islamic capital market, the SC also issued new guidelines for establishment of Islamic REITs, on November 21, 2005. These guidelines are to further facilitate the development of a new Islamic capital market product and thus, making Malaysia the first jurisdiction in the global Islamic financial sector to issue such guidelines. These guidelines were expected to serve as a global benchmark for the development of Islamic REITs in other countries.

If any M-REIT company distributes at least 90% of its net income, then its undistributed net income would be tax exempted. REIT managers in Malaysia

are hoping that the government would also waive the 10% withholding tax for resident and non-resident individuals. The reduced withholding tax of 10% on individual and non-corporate investors is only available up to December 31, 2011. Subsequently, M-REITs dividends received after the due period will be taxed at original 20% for foreign institutional investors and 15% for non-corporate investors (including resident and non-resident individuals). The reduction or removal of withholding tax has always been included in the proposal of Malaysia REIT Managers Association (MRMA) for the government to consider during the annual budgets. In Budget 2010, the Real Property Gain Tax (RPGT) was reinstated, mainly to curb the heat of speculative buying in real estates or properties. However, no announcement on any changes in the REIT industry was made at the time.

It is highly hoped across the industry that the reduced withholding tax of 10% will be extended, if not further reduced (compared to 0% withholding tax in Singapore and Hong Kong) in the upcoming Budget 2011, to give a broad tax direction and tax position to REIT investors beyond 2011.

Besides that, the government has also set up a regulatory framework for Islamic REITs as another step to strengthen the country's reputation as the world's Islamic finance hub. The regulatory framework is also similar for both with exception that Islamic REITs must comply with the Syariah requirement, where Islamic REIT is required to appoint a Syariah Advisor or Committee who will act as advisor to the REIT and be the point of reference and consultations on permitted investments as provided under the Securities Commission guideline on Islamic REITs.

The distribution of income, although similar with those of conventional REITs where it should only be made from realized gains or realized income, for Islamic REIT these income must be earned from Syariah compliant activities or from the activities within the 20% benchmark. This benchmark is used to

assess the level of contribution from mixed rental payment from non-Syariah compliant activities such as the rental payment from premises that are involved or dealing with gambling and sales of liquor.

Narrowing down to the Malaysian market, to date, there are 14 M-REITs being offered in Malaysia inclusive of two Islamic REITs, namely Al-Aqar KPJ REIT, being the first Islamic REIT in the world and Al-Hadharah Boustead REIT, being the first Islamic plantation REIT in the world. Both the Al-Aqar KPJ REIT and Al-Hadharah Boustead REIT rank amongst the top 3 REIT in Malaysia in terms of dividend yield.

2.3 Essence of Attractions for M-REITs

According to Stewart LaBrooy, chief executive officer of Axis REIT Managers Bhd, even though in year 2009 M-REITs were facing distress impact from the global economic crisis, but the companies were still able to distribute about 70 to 80% of their net income and retained earnings to the M-REITs investors. As a result, the prime appealing factor of M-REITs is that the unit or shareholders would receive steady and generous dividend income from the distributor annually. He further states that with high dividend yields of about seven 7% annually, low entry cost and supported with efficient level of corporate governance, M-REITs should be the choice of investment for investors from all levels besides adding on that the size of assets of M-REITs has ballooned to about RM 16 billion.

Furthermore, M-REITs actually enable investors to free up their time and yet having the management of the real estates into the hand of capable professionals with expertise in managing properties. They would be responsible to perform their job by maximizing the shareholders' wealth as a result of improving the yields, expanding the trusts' portfolios by acquiring more strategic assets and increasing the total market value of the assets under their management.

Life is full of uncertainties. Therefore, M-REITs would also offer investors the liquidity to be able to convert their investments easily into cash within three days, as and when the investors would like to. Partial liquidation of investment is not available for investments in physical properties, while M-REITs do allow investors to liquidate any part of the shares as required or needed, instead of all the shares held, at any point in time.

Last but not least, M-REITs allow investors to have a partial ownership in larger scales real estate or properties such as retail and industrial complexes with minimal initial outlay, yet being able to reap benefits from the growth and development of such assets. Contrary, investment in physical properties would certainly be impossible for smaller investors such as the household or individual investors as they would have limited capacity to own and manage such physical assets. Thus, M-REITs present investors with wider range of investment opportunities within the real estate sector in Malaysia.

2.3.1 Regional REIT Markets: *An Overview*

Table 2.4 Comparison of M-REITs with Regional Peers

		MALAYSIA	SINGAPORE	HONG KONG	TAIWAN
General	*Stock exchange listing*	Optional	Optional	Mandatory	Optional
	Management	External	External	External	External or Internal
	Maximum leverage (% of gross assets)	50%	Between 35% and 60%	45%	35%
	Structure	Unit trust	Collective investment scheme (unit trust) or corporation	Unit trust	Trust (REIT or investment trust
	Management structure	External	External	Internal/External	Internal/External
Distribution	*Operative income minus capital gains*	Not explicit	90%	90%	100%
Asset type	*Real Estate Investment*	70%- 75%	70%	100%	75%
	Development activities	Maximum 30%	Maximum 10%	max 10%	not allowed
	Vacant land	Nil.	Not allowed	Not allowed	Nil.
	Overseas investment	Subject to approval	Maximum 10% Subject to conditions	Allowed	Allowed
Income tax rate		27%	20%	17.50%	Progressive to 40% (depending on income)
Number of REITS		12	22	8	8
Market Capitalization (US$ billions)		1.542	23.134	9.518	2.248

Source: Ernst and Young (2010) and REITs around Asia (2010)

For comparison purposes, we chose to compare M-REITs with several developing Asian countries as they are within the similar development stage in terms of REIT market growth. Excluding Japan, all Asian REITs outperformed the rest of the world in terms of return on investments, according to the Global REIT Report 2010 by Ernst and Young. Except Japan, which has a different economic profile than the rest of the region, Asian economies have generally been more elastic to the financial crisis. The Asian REIT sector's one- and three-year total returns are the relative outperformers according to Ernst and Young Global REIT Report 2010.

Singapore REIT (S-REIT) legislation was first introduced in 2002 and is widely regarded as one of the more liberal regimes in the region. Indeed, Singapore authorities are trying to position the Singapore stock exchange (SSE) to be one of the most important stock exchanges in the region, competing against the likes of Tokyo (TSE) and Hong Kong (HKSE). Its REITs legislation was last modified via a revision of the Property Fund Guidelines in October 2005. In March 2007, the Monetary Authority of Singapore issued a list of recommendation for further development of the REIT codes including increasing the minimum requirement of investment in real estate from 35% to 75% to match closer equivalent rates in Hong Kong, as well introducing a licensing framework for REIT managers. In early 2009, Singapore has had the worst overall performance whose economy was seen as particularly vulnerable during the aftermath of the financial crisis in 2008. Since March 2009, S-REITs have rebounded strongly as global financial markets have stabilized.

Hong Kong REIT (HK-REIT) legislation was first established back in July 2003, but did not initially meet the same level of success as other countries, partly because of the lower level of tax transparency. HK-REIT companies are subjected to 16% property tax for property held directly. Since then a number of changes have been made to the legislation in an effort to stimulate demand

including allowing of holding international assets and the ability to hold property via special purpose vehicles (SPVs) operated by the REIT managers. There is only 17.5% profit tax charged upon profits from this SPVs. Malaysia and Hong Kong are railing in positive returns over the last three years. Only Singapore recorded a negative 3-year rate of return of - 4.15 %.

REITs came into effect in Taiwan following the enactment of Real Estate Securitization Law in 2003. This legislation was passed in response to the need to stimulate the real estate market in Taiwan and to provide another investment alternative to institutional investors as well as the general public, whose choices had been limited mostly to funds focusing on corporate bonds and shares. To meet the TW-REIT laws, a trust must have been established for three years and meet certain standards of credit rating. Subject to approval by the authority, TW-REITs can invest in completed overseas assets, whereas investment in property development is still not allowed, despite efforts of certain interest groups to reverse this regulation when it was introduced in 2003.

Additionally, Thailand which also operates REITs since 2000s has a REIT market capitalization of US$2.248 billion as of June 2010, was not included in our comparison as there are certain political turmoil in the country that affected its property sector growth. It would not be as comparable to proxy Thailand for performance comparison. Japan, on the other hand, was thought to be more in an advance or developed stage of REIT market as compared to Malaysia since it is a well-developed country. Thus, we did not take into account of Japan REITs (J-REITs) in this study as we will not be comparing REIT market of similar level or prospects.

2.3.2 U.S. Subprime Mortgage Crisis 2008: *Causes and Consequences*

We have chosen an observation period inclusive of the U.S. subprime mortgage crisis in 2008 and have broken down our research period into three subcategories which are the pre-crisis, crisis and post-crisis periods as the Malaysian REITs market has been undeniably affected by the crisis. The cataclysmic event did not happen out of a sudden. There are certain causes which contributed to the crisis development.

From 2002 to 2004, American banks had lent billions of dollars of mortgage loans to people with low incomes, of which many of them do not have the capacity to repay their loans. On 30 June 2004, the U.S. Federal Reserve (Fed) started a cycle of interest rate rises that will lift borrowing cost from 1%, their lowest level since the 1950s, up to the current level of 5.25%. The Fed had increased interest rates 17 times in a row as it tries to tame inflation in the U.S. economy. The Fed halted the rise in June 2006 and has not lifted borrowing costs from 5.25% since then.

Subsequently, from August 2005 through 2006, the high borrowing costs started to impact the property market in the United States as the property boom began to unwind and the bubbles began to pop. Property prices tumbled and development projects declined sharply. Subprime mortgages were on default and the default rate increases by the day, as more and more borrowers found it impossible to finance or refinance their existing loans. As property prices tumbled, they could not liquidate their property to cover their mortgages. Those who borrowed to purchase property during the boom had to sell off their property by marking down prices, as much as 50% to 70%. Large chunks of subprime loans across the U.S. were defaulted. Shares in New Century Financial, one of the biggest sub-prime lenders in the United States were suspended for fears of bankruptcy on 12 March 2007. Finally on 2 April, New Century Financial files for bankruptcy. On 4 July 2007, The United Kingdom's Financial Services Authority (FSA) announced that it will

take action against five brokers that sell sub-prime mortgages. United States Federal Reserve chairman, Ben Bernanke, at that time warned that the crisis in the U.S. subprime mortgage market could swell up to USD 100 billion. Subsequently, on August 3, 2008, the U.S. stock market plunged as many fear of their exposure to the problems in the subprime market. On August 9, 2008, French largest bank, BNP Paribas suspends three investment funds worth 2 billion Euros, citing problems in the US subprime mortgage sector. The next day, global stock markets stayed under severe intense pressure, especially with London FTSE 100 index having its worst fall in more than four years. On August 13, 2007, European Central Bank (ECB) pumped 47.7 billion Euros into the money market, its third cash injection since the crisis unfolds. The U.S. Federal Reserve had to cut its interest rate at which it lends to large banks by a quarter of a percentage point to help the banking sector to deal with credit exhaustion. By early November 2008, the S&P 500 was down 45 % from its 2007 peak, housing prices dropped 20%, on average, off their 2006 peak together with U.S. futures markets signaling another 30% to 35% potential drop. In December 2008, the Fed further lowered the federal funds rate target to a near-zero range of 0% to 0.25% as last efforts to restore credit stability in the market.

As the crisis began affecting the financial sector beginning in February 2007, largest European bank, HSBC, wrote down its holdings of subprime-related Mortgage-Backed Securities (MBS) by USD 10.5 billion. During 2007, at least 100 mortgage companies were either shut down, suspended operations or sold. Top managements such as the CEO of Merrill Lynch and Citigroup resigned within a week of each other in late 2007. About USD 750 billion of subprime related securities had been recognized as of November 2008. Upon the collapse of one of the largest investment bank in U.S., Lehman Brothers Holdings, and other major financial institutions such as Bear Stearns Co. and AIG in September 2008, the crisis hit a key point. Many other major financial institutions such as Merrill Lynch, Citigroup, Fannie Mae and Freddie Mac

have had to be rescued as they were in the brink of collapse. Hundreds of billions of dollars of credit were dried up and trillions of dollars worth of equity capitalization were wiped off global stock market during the crisis, as the event would become the worst economic crisis in U.S. since the Great Depression in 1932. From late 2007 to early 2009, many economist regard the grim period as the Great Recession, which saw increasing unemployment rates and declining growth rates in the U.S. economy.

To prevent the already severe state of global financial market from spiraling into further depths, the US Federal Reserve in partnership with central banks all around the world has taken several steps to address the crisis. In November 2008, the Fed announced to pump in USD 600 billion to help purchase the subprime-related or subprime-collateralized debt securities of the government sponsored enterprise (GSE), to help lower the mortgage rates. The Federal Open Market Committee (FOMC) decided to purchase an additional USD 750 billion worth of GSE's debt securities on March 2009. The committee also purchased up to USD 300 billion long-term Treasury securities in order to increase money supply in the U.S. economy after the crisis. Then-U.S. president, President George Bush signed into a law an economic stimulus package worth of USD 168 billion on February 13, 2008. Subsequently, President Barack Obama also signed the American Recovery and Reinvestment Act of 2009, on 17 February 2009, with USD 787 billion economic stimulus package with a broad spectrum of spending and tax cuts.

Similarly in Asia, when the crisis worsened beginning in mid 2008 to early 2009, Asian markets across the board also felt the immediate spiraling effect, including Malaysia's FBMKLCI which had dropped to the lows of 800-point level from its highs of 1500-point level in early 2008, shedding almost 50%. Malaysia's broader market tumbled to the worst point since the 1997 Asian financial crisis. Thus, the unfolding subprime crisis in the U.S. indeed has a great effect on the Malaysian economy and financial market as well. As such,

based on the occurrence of the crisis, we divided the periods of our study into three categories. The pre-crisis period was from 2001 up till 2007, crisis period was in 2008 while the post-crisis period, which is the aftermath recovery stage, was from 2009 till 2010. Such division would enable clear observation of the U.S. subprime crisis effect onto the performance of M-REITs.

2.3.3 Malaysian Treasury bill (T-bill) and Inflation Rates

Table 2.5 shows the historical short-dated Malaysian Treasury Bills rates (3-month) in the past 10 years (2001-2010). Our study uses the Malaysian T-bill rates as a proxy for measuring the risk-free rate of return in Malaysia for a given year. From 2004 until 2010, Malaysia's average annual risk-free interest rate was around 2.91% and reaching a monthly-high of 3.50% in April 2006. A record monthly-low rate of 2.00% was noted in February 2009, subsequent of the financial crisis that hit the Malaysian economy in mid 2008.

Table 2.5: 3-Month Malaysian Treasury bill (T-bill) Rates

Years	3-month Treasury bill Rates (%)
2001	2.792
2002	2.732
2003	2.788
2004	2.396
2005	2.496
2006	3.227
2007	3.434
2008	3.390
2009	2.053
2010	2.594

Source: Bank Negara Malaysia

Table 2.6: Malaysian Annual Inflation Rates

Years	Inflation Rates (Consumer Price Index)
2000	1.6
2001	1.4
2002	1.8
2003	1.1
2004	1.4
2005	3.0
2006	3.6
2007	2.0
2008	5.4
2009	0.6
2010	1.7

Source: Bank Negara Malaysia

The consumer price index or inflation rates shown in Table 2.6 refer to the general rise in prices measured against a standard level of purchasing power in Malaysia. From 2005 till 2010, the average inflation rate was 2.77% reaching a historical monthly-high of 8.5% in July 2008 and a record monthly-low of -2.4% in July 2009. Inflation erodes our purchasing power and with the Malaysian economy experiencing an expansionary state in 2010 and expected for few more years to come, rising inflation is bound to happen. Nowadays, with the general saving rates around similar or even lower than the domestic inflation rate, most people are trying to find other options of investment vehicle which enable them to hedge against inflationary pressures as a mean to safeguard their wealth. Thus, this study determines whether M-REITs are an appropriate investment tool for effective inflation hedging.

2.4 Reviewing Previous Literatures: *REITs' Returns, Correlations and Risks*

Generally, most equity investments depend on capital gain as main source of return for investors. When there is a positive movement on share prices, investors will gain and loss if the share prices move otherwise. REIT shares have been deemed to have less than favorable capital gains due to lower stock price fluctuations, but they have had stable and sizeable dividend payouts annually. Investments in REITs and the real estate market have certain similarity that both of them would result in ownership of the properties being invested through stock market or physical property market but the prime difference is that REITs are more liquid than real estate because with REITs, investors can easily get in and out from buying and selling of the REITs stocks through the stock market, whereas buying and selling of real estates such as landed properties and shop lots would take much longer time for bargaining or looking for potential buyer and seller. The process of selling or buying a real estate will be more complicated and time consuming.

2.4.1 REITs Performance Review during U.S. Subprime Crisis

Basse, Friedrich and Bea (2009) indicated that based on their research, they found that investing in REIT is more risky than utility stocks during financial crisis in U.S. from 1999 until 2009. The performance of Real Estate Investment Trusts (REITs) or Listed Property Trusts (LPT) in Malaysia for 1995 to 2005 was examined by Hamzah, Rozali and Tahir (2010). They tested by using three standard performance measurement methods (Sharpe Index, Treynor Index and Jensen Index) and found that the risk-adjusted performance of REITs vary over time and the average systematic risks of REITs were slightly higher than the market portfolio during the pre-crisis and crisis periods but were significantly lower in the post-crisis period.

Bley and Olson (2003) have stated in their research that the equity REITs market should be avoided for about four months after a large monthly gain. Both stocks and REITs display mean reversion after large declines, the investment advice was to avoid selling immediately after a large decline in asset value. Glascock, Michavluk and Neuhauser (2004) found that the decline in REIT stock value was about the one-half as large as the decline of non-REIT stocks and REITs like defensive stocks in general that they are less significant declines during the market-wide disturbances in New York on 1997.

2.4.2 Performance Reviews: *REITs, Stock Market and Property Market*

Study done by Corgel and Roger (1991) mentioned that the returns of REITs vary widely with the stock market in the short run spectrum, but tend to be higher correlated over longer holding periods. Still, the REITs' returns are more reflective of the changes in the rentals and values of the underlying real estates in the trusts portfolios.

Myer and Webb (1993) stated that equity REIT returns appear to be much more strongly related to closed-end funds or those on unsecuritized commercial real estates. The equity REIT index returns were found to Granger caused the unsecuritized real estate returns for most of the real estate or property indices.

Tan (2009) researched on the performance of Malaysian REIT stocks relative to Bursa Malaysia stock index from the period of June 2007 until June 2009. The correlation between Bursa indices return and Malaysia REITs return is found to be definite but low and the systematic risks of Malaysia REITs are lower than that of the broader market. In the study, Tan's results shown that the performance of M-REITs is influenced by the stock market movement over the same period through Granger Causality factor.

2.5 Chapter Summary

This chapter provides a discussion on Bursa Malaysia and several Bursa indices used throughout the study and followed by detailed discussion on the background and development of M-REITs since its introduction. Besides that, the study also compares the state of REITs market between Malaysia and other Asian peers. Also in this chapter, the efforts made by the Malaysian government to promote the domestic REITs market are explained. Finally, reviews on the literatures of previous studies on REITs-related topics are presented.

2.6 Summary of Reviews on Existing Literatures

Table 2.7 below summarizes the existing literatures on REITs and its related fields together with their main findings and conclusions conducted by past researchers and academicians.

Table 2.7: Summary of Existing Studies on REITs and Related Fields

Author(s)	Published Title	Sample Used	Technique	Finding(s) / Conclusion(s)
Basse, Friedrich and Vazquez Bea (2009)	REITs and the Financial Crisis: Empirical Evidence from the U.S.	Dow Jones Composite REIT Total Return Index and S&P 500 Utilities Total Return Index in U.S. (1999 – 2009)	Time series – Johansen test, Quandt-Andrews breakpoint test.	The relationship between the monthly return on the utilities sector equity index and the return on the REIT index has changed dramatically. Investing in REITs seems to have become more risky than investing in utility stocks during financial crisis.

Bley and Olson (2003)	An Analysis of Relative Return Behavior: REITs vs. Stocks	Monthly Index Prices of Equity REITs, Mortgage REITs and S&P 500 in U.S. (1972 – 2001)	Time series analysis.	Equity REITs can enhance the risk-return relationship of a general stock portfolio and probably should be added to many investors' stock and bond portfolios. Mortgage REITs may be useful for diversification, but greater benefits are obtained by adding equity REITs to a portfolio.
Bradley, Capozza, and Seguin (1998)	Dividend Policy and Cash Flow Uncertainty	416 of observations from 75 equity REITs (1985 – 1992)	Net Asset Values (NAVs).	Standard corporate financial theory suggests that, under general conditions, investment and financing decisions are independent. And the result stated that when evaluating potential projects managers should indicate both systematic and non-systematic components of risk impact dividend policy.

Chandrashekaran (1999)	Time-Series Properties and Diversification Benefits of REIT Returns	The returns on S&P500 index as stock market and the returns on the Shearson-Lehman Government/Corporate Bond Index as bond market returns (1975 – 1996)	Time-series - Mean, Standard Deviation, Sharpe Ratio, Correlations, Regression and Covariance.	REIT Index variances and covariances with other asset classes decline after an up-move in the REIT Index and increase after a down-move in the index. This implies that REIT stocks may have an important role to play in dynamic asset allocation strategies.
Corgel and Roger (1991)	Market Trading Characteristics of REITs: Tests of the Stock Market and Hybrid securities Hypothesis	19 equity trusts, 22 hybrid trusts, and 11 mortgage trusts. Sample included REITs listed on NYSE, American Stock Exchange, and traded over the counter that appear on the 1987 S&P Comustat PDE tape. Monthly returns on REIT (1981 – 1986)	Mean, OLS regression, Partial test.	No consistent patterns are evident when three types of REITs were compared. Returns on REITs are subject to short-run movements in the stock market. The need to analyze each REIT independently from others.

Glascock, Michayluk, and Neuhauser (2004)	The Riskiness of REITs Surrounding the October 1997 Stock Market Decline	2510 stocks in samples, 2383 is common stock and 127 is REIT stock in New York (October1 – 22, 1997)	Cross section - Open-to-close return: used first and last record of the transaction price, or used the midpoint of the bid-ask spread.	The REITs did decline as market prices dropped, however, the magnitude of the decline was only about half as large as that of non-REIT stocks. Both REITs and utility stocks had less return variation during market decline. The standard deviation has high explanatory power for the cross-section of the returns to non-REIT stocks, but is unable to explain the cross-section of REIT return.
Hamzah, Rozali, and Tahir (2010)	Empirical Investigation on the Performance of Malaysian Real Estate Investment Trusts in Pre-Crisis, During Crisis and Post-Crisis Period	Monthly returns adjusted for dividends and bonuses distributed to unit holders (1995 – 2005)	Jensen Alpha, Treynor, and Sharpe Index.	Adjusted Sharpe and Treynor Index produce similar results in terms of relative investment performance. REITs in general outperformed the market portfolio during the crisis but underperformed in the pre-crisis and post-crisis period. Whereas Adjusted Jensen Alpha Index suggested that REITs on average generated better performance than market portfolio during the crisis but recorded poorer performance in the pre-crisis and post-crisis period.

Kim H.L. (2002)	Performance of Hotel Real Estate Investment Trust: A Comparative Analysis of Jensen Indexes	183 REITs traded in U.S. on 1993 - 1999	Jensen Alpha Index.	Average performance of hotel REITs was inferior to that for office, industrial residential, and diversified REITs but similar to that for healthcare and retail REITs for the period 1993-1999.
Kuhle (1987)	Portfolio Diversification and Return Benefits – Common Stock vs. Real Estate Investment Trusts (REITs)	Ex post monthly prices and dividends for a total of 82 firms – 26 equity REITs, 16 mortgage REITs, and 42 common stocks listed on various stock exchanges (1980 – 1985)	Monthly standard deviation, Z-score.	Risk reduction is greater for common stocks than for real estate assets as the number of assets held in the portfolio are increased from one to twelve. The overall performance of mixed portfolios of common stock and REITs is not significantly different from that of portfolios of only common stocks. However, the statistical difference in performance between REITs and common stocks is apparently decreasing.

Kutsuna et al (2008)	The Pricing and Underwriting Costs of Japanese REIT IPOs	40 Japanese REIT IPOs during 2001 to 2006	Mean, average, and OLS regression model.	Final offer price of J-REIT IPOs is a significant factor influencing the first day return to subscribers and in determining the amount of money left by the issuing firm itself
Lee et al (2005)	The New Real Estate Investment trusts in Malaysia: Lessons from Listed Property Trusts	Two sets of structured questionnaires consisting of open-ended and Likert summated scale questions for: (1) Institutional Investors and (2) Corporations intending to list REITs	Questionnaires.	The plans of REIT corporations are very positive and meet the overall demand of investors

Liao & Mei (1992)	Risk Characteristics of Real Estate Related Securities – An Extension of Liu and Mei (1992)	Salomon Brother MBSs return index, the equity and mortgage REITs and real estate stocks. Monthly stock tape for the returns on REITs and real estate stocks. Both value-weighted stock return series and a government bond portfolio return series is the capital market portfolio. The dividend yield for all assets.	Mean, Std Deviation, Correlation, and Two-Factor Model.	They found that the expected excess returns on real estate related securities are more predictable than expected excess returns on value-weighted stocks and bonds. The investor should invest on right market timing is the most important matter. The real estate market conditions have significant influence on bonds and mortgage-backed securities (MBS). MBS is more similar to bonds rather than mortgage REITs. Real estate stocks have a very high sensitivity toward stock market portfolio. The finding suggests that real estate stocks are not helping on diversifying the stock market risk.

Ling et al (2000)	The Predictability of Equity REIT Returns: Time Variation and Economic Significance	Equity REIT net-of-T-bill return, the REIT net-of-S&P 500 return, and the REIT net-of-small-cap return, current one-month T-bill rate (TBILL), the spread between the yield- to-maturity (YTM) on a 30-year government bond and the T-bill rate (TERM). The spread between the YTM on AAA corporate bonds and the YTM on 30-year government bonds (PREM)	OLS regression model, adjusted R-squared and R-squared.	1. excess returns are far less predictable out-of-sample than in-sample 2. zero-transaction-cost active-trading strategies based on out-of-sample predictions modestly outperform REIT buy-and-hold strategies for some time periods. However, when typical transaction costs of active-trading are introduced, these active trading profits largely disappear

Mull and Soenen (1997)	U.S. REITs as an Asset Class in International Investment Portfolios	Monthly REIT returns (Equity REIT index), monthly stock market and gold returns (1985 – 1994)	Average return and volatility, coefficient of variation and Sharpe Ratio.	REITs provided a hedge against inflation for investors from the G-7 countries. Strong positive correlation with stocks, thereby limiting the REITs' potential for risk reduction through portfolio diversification. Portfolio of domestic stocks and bonds increase the portfolio's Sharpe Index, although not by a statistically significant margin.
Myer and Webb (1993)	Return Properties of Equity REITs, Common Stocks, and Commercial Real Estate: A Comparison	Data on equity REITs was taken from CRSP daily return tapes. Three stock indices included CRSP value-weighted index, equally weighted index, and S&P500 index (1978 – 1990)	Closed-end fund, mean, standard deviation, skewness, kurtosis, autocorrelations, Granger causality test.	REIT returns are much more strongly related to unsecuritized real estate returns than are the returns on stocks or closed-end funds. The equity REIT index returns were found to Granger cause unsecuritized real estate returns for most of the real estate indices.

Newell & Acheampong (2001)	The Dynamics of Property Trust Risk and Correlation	Monthly Listed Property Trust total return series (1980 – 2000)	Correlation and Semi-Correlation Analysis, portfolio risk.	The finding raise 2 issues: Asset allocation is a forward-looking process to accommodate and take advantage of future asset market movements, and it is a naïve investment strategy to simply use the historic ex-post inter-asset correlations in asset allocation models. The continued diversification benefits of LPTs in an environment of increasing stock market volatility.
Ooi et al (2006)	The Growth of REIT Markets in Asia	Common stocks performance, REIT performance and REIT regulations in Japan, Singapore, South Korea, Taiwan, Hong Kong and Malaysia	Analysis of Asian REIT markets.	Governments do have an important role to play in developing successful REIT markets.

Simon and Ng (2009)	The Effect of the Real Estate Downturn on the Link between REITs and the Stock Market	Daily REITs indices and S&P 500 index data from 12 December 2004 -30 June 2008	Inference of tail dependence with copulas.	1) Both before and after the outbreak of the recent financial crisis investing in REITs provides better protection against severe downturns of the stock market in the United States than a foreign common stock index. 2) The outbreak of the current crisis seems to (a) have little impact on the potential of REITs to provide protection against severe stock market losses, and have driven a wedge between the different types of REITs.
Su et al (2010)	The Hybrid Characteristic of REIT Returns: Evidence from Japanese and U.S. States Markets	REIT daily data for Japan and the U.S.	ARIMA model, Liung-box Q test, GARCH model, Threshold Autoregression model and variance.	The two REIT markets are affected by low stock market volatility, and not by high volatility

Subrahmanyam (2007)	Liquidity, Return and Order-Flow Linkages Between REITs and the Stock Market	Long time series of daily order-flow and liquidity data from 1988 to 2002	Granger-causality, VAR	Order flows and returns in the stock market negatively forecast REIT order flows. Real estate markets are viewed as substitute investments for the stock market, which causes down-moves in the stock market to increase money flows to the REIT market.
Tan (2009)	Performance of Malaysia REIT Stocks Relative to Bursa Malaysia Stock Index	Daily and monthly closing price of KLCI, Property index, EMAS index, Mid 70 index and small cap index together with all 13 REITs stock listed in FTSE Bursa Malaysia from June 2007 until June 2009	Time Series – Sharpe Index, Simple Regression, correlation, unit root test and granger causality test	The finding shown that M-REITs can still consider as a good investment since it generally performed better than KLCI. The systematic risk of M-REITs is lower than the market portfolios which indicate that M-REITs are less volatile than the stock market. Overall, most of the M-REITs returns are affected by stock market indices and therefore the investors should aware of the stock market condition.

Ting and Mohd. Yunus (2007)	Stability of Dividends and FFOs: The Case of REITs in Malaysia	Data for the calculation of FFOs , dividend information on LPTs and Monthly closing prices of LPTs from 1989 to 2005	Correlation coefficient	Dividends declared by listed property trusts (LPTs) are found to be not stable as it is affected by the level of funds from operations (FFOs) attained by LPTs. FFOs are in turned affected by its sources of income.
Yan and Yung (2006)	Equity Capital Flows and Demand for REITs	NAREIT data from 1993 to 2001	VAR approach and Granger causality test	REIT market returns affect REIT equity capital flows during 1993 to 2001. REIT market returns contain additional information about REIT equity capital flows. REIT equity capital flows do not cause revisions in expected cash flows (dividends) that are strong enough to impact REIT returns.

CHAPTER 3: RESEARCH METHODOLOGY

3.0 Introduction

Research methodology is a set of procedures or methods used to conduct an empirical study systematically. It collects and analyzes all relevant information for our study. Besides that, the methodologies also help us to understand the analysis of our findings as well as illustrating the whole picture of the research procedures. Research methodology refers to overall approach to the research process, from the theoretical underpinning to the collection and analysis of the data (Jill & Roger, 1997).

In this chapter, we will deal with the determination of research design and data sourcing. The main focus is to discuss and clarify how the study would proceed. Thus, the methodology of this piece of study will clearly illustrate the research design, data collection methods, sampling techniques, fieldwork procedures and data analysis methods in order to fulfill the aim of this study.

3.1 Research Design

Research design is a master plan specifying the methods and procedures for collecting and analyzing the needed information. It is a framework or blueprint that plans the action for the research project. The objectives of the study determined during the early stages of the research are included in the design to ensure that the information collected is appropriate for solving the problems. Research design can be defined as the plan and structure of investigation so conceived as to obtain answers to research questions. It comprises the outline for the collection, measurement, operational implications to the final analysis of data. In overall, a research design expresses both the structure of the research problem and the plan of investigation used to obtain empirical evidence in relations to the problem.

According to Sekaran (2003), research design involves a series of rational decision making choices. Issues relating to decisions regarding the purpose for study (exploratory, descriptive, hypothesis testing), its temporal aspects (time horizon) and the level at which the data will be analyzed (unit of analysis) are integral to research design. Bryman and Bell (2007) stated that a research design provides a framework for the collection and analysis of data. A choice of research design reflects decisions about the priority being given to a range of dimensions of the research process.

For our research, we are using longitudinal studies. According to Sekaran (2003), longitudinal studies are studies with which the researcher might want to study people or phenomena at more than one point in time in order to answer the research questions. There are mainly four types of basic research methods which were surveys, experiments, secondary data and observation. Secondary data is used in our study because we are analyzing the performance of Malaysian Real Estate Investment Trusts (M-REITs) and compare with that of FTSE Bursa Malaysia EMAS Index (FBMEMAS), FTSE Bursa Malaysia Kuala Lumpur Composite Index (FBMKLCI), FTSE Bursa Malaysia Kuala Lumpur Property Index (FBMKLPI) and regional REITs indexes. Subsequently, the M-REITs are then benchmarked against the Malaysian Treasury bill rate (risk-free rate) as well as national annual inflation rate for further analysis.

3.2 Data Collection Method

For data collection method, we used secondary data to complete this study. The secondary data are gathered from several notable sources such as directly from Bursa Malaysia's archive and Bloomberg database, Bank Negara Malaysia official website as well as KLSETracker.com which is a registered equity database used by securities firms.

Firstly, we looked into the databases for weekly M-REITs stock prices, FTSE Bursa Malaysia KLCI, FTSE Bursa Malaysia KLPI, FTSE Bursa Malaysia EMAS indexes, regional REITs indexes, 3-month Malaysian T-bill rates and national annual inflation rates for the period of 10 years. As we looked into the establishment years for each prices and indexes, we noted that Malaysian Listed Property Trusts (LPTs) had been renamed Malaysian Real Estate Investment Trusts (REITs), beginning from 2005, which mainly to be more consistent with standardized term. Besides that, during the period in our study, we also found out that the Kuala Lumpur Composite Index (KLCI) was renamed into FTSE Bursa Malaysia Kuala Lumpur Composite Index (FBMKLCI) and the enhancements were implemented on 6 July 2009. The Kuala Lumpur Property Index is a capitalization-weighted index of all property stocks within the FBMEMAS Index. This index was developed and launched back then on 16 October 1991. The previous index name is known as KLEMAS.

As there is no parallelism in the index formation period and the number of the M-REIT companies under the index, the data collected is not parallel and inconsistent in terms of time horizon comparison. In order to solve this problem, we try to use the average-weighted indexes and rates within the period to match with the existing data availability of each M-REIT. Fortunately, we managed to compute those averages from our raw data.

The choices of independent and dependent variables for this study are vital and must be addressed carefully. For our study, there are seven independent variables or entity factors to be examined which are M-REITs stock prices, FTSE Bursa Malaysia Kuala Lumpur Composite Index (FBMKLCI), FBM Property Index, FBMEMAS Index, regional REITs Indexes, annual dividend yields of M-REITs as well as national annual inflation rate. All these entity factors are then used to determine the performances of M-REITs and

comparison with the market is then being carried out to evaluate relative performances.

Table 3.1: Definition of Independent and Dependent Variables

Variable(s)	Name	Definition
Independent		
X_1	Weekly M-REITs stock prices	Represent stock prices of 15 M-REIT companies from the year 2001 to 2010, which consists of *AHP, AHP2 (delisted in March 2009), ACRIT, ALAQAR, BSDREIT, AMFIRST, ARREIT, ARIUM, QCAPITA, CMMT, SUNREIT, HEKTAR, STARREIT, TWREIT* and *UOA.*
X_2	FTSE Bursa Malaysia Kuala Lumpur Composite Index (FBMKLCI)	Represents closest performance approximation to the Malaysian market portfolio of big-cap stocks from the year 2001 to 2010.
X_3	FTSE Bursa Malaysia Kuala Lumpur Property Index	Represents performance of Malaysian property sector companies from year 2001 to 2010.
X_4	FTSE Bursa Malaysia EMAS Index	Represents broader range of Malaysian public listed companies in Bursa Malaysia which encompasses smaller subset indexes in Bursa Malaysia from year 2001 to 2010.
X_5	Regional REITs Indexes	Represents Hong Kong REIT, Malaysia REIT, Singapore REIT and Taiwan REIT indexes from year 2001 to 2010 (subject to establishment years).
X_6	Annual dividends of M-REITs	Represents M-REITs annual dividend yields for every year available, subject to establishment years.
X_7	Annual inflation rates	Represents Malaysia's annual inflation rates from year 2001 to 2010.

Dependent		
Y_1	Performance of each M-REIT relative to Malaysian equity indices as well as M-REIT market to regional REIT markets performance	Measured using M-REITs' annual returns, standard deviation, Sharpe's index, Pearson correlation and dividend yield-inflation measure for the period of concern.

3.3 Sample Design

According to the Zikmund (2003), sampling frame is the list of elements from which the sample may be drawn. The sampling design used in our thesis is the non-probability sampling. According to the Zikmund (2003), non-probability sampling is the probability of any particular member of the population being chosen is unknown. In this study, we used the FBM Property Index, M-REIT stock prices, FTSE Bursa Malaysia Kuala Lumpur Composite Index (FBMKLCI), FBM KLPI index and regional REITs indexes which are obtained from Bursa Malaysia archives and Bloomberg database while the Malaysian T-bill rates and national annual inflation rates are sourced from Bank Negara Malaysia (BNM) statistical database. Therefore, we can conclude that the sampling design for this study is non-probability sampling.

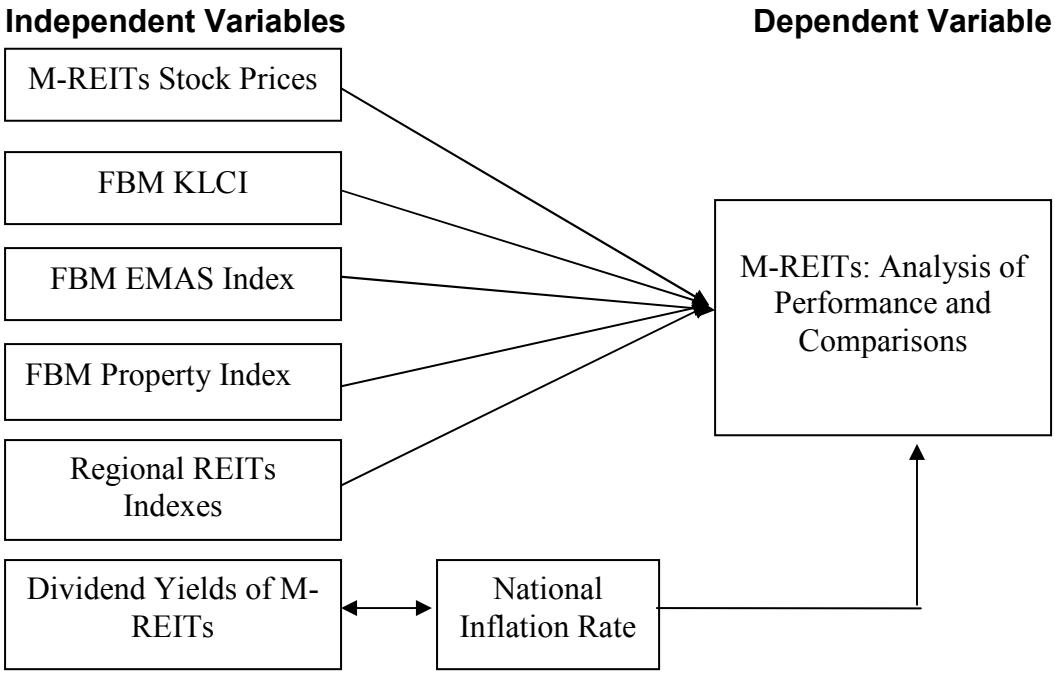
3.4 Theoretical Framework

According to Sekaran (2000), theoretical framework is a conceptual model of how one theorizes or makes logical sense of the relationships among the several factors that have been identified as important to the problem. In other words, theoretical framework is supposed to help the reader understand the relationships of the variables and factors that have been deemed relevant to the problem.

Variable is anything that may assume different numerical or categorical values. Dependent variable is a criterion or a variable that is to be predicted

or explained, while independent variable is a variable that is expected to influence the dependent variable. Its value may be changed or altered independently of any other variable.

Figure 3.1: Theoretical Framework



3.5 Measurement of Data

To measure each of the variables enlisted, we compute the monthly and yearly return from raw data for the stock prices of M-REITs, FBMKLCI values, FBMKLPI values, FBMEMAS index values as well as regional REITs indexes values respectively. M-REITs stock prices or returns are used as a proxy for comparison with other index values. In our study, the M-REIT index consists of all 14 publicly listed REITs companies in Malaysia. The sample we used in our study happened also to be the overall population for M-REITs sector in Malaysia, as well as including the AHP2, which was delisted in March 2009, which made our total observations to be 15 M-REITs altogether. As there were newer M-REITs listings (SUNREIT and CMMT) on Bursa Malaysia in

2010, the above sample period is chosen to make a better analysis on the performance of more M-REITs with similar time period coverage. By using the period of 2001 to 2010, we could also eliminate the lagging impact from the 1997 Asian financial crisis towards the M-REITs stock returns by providing three years for buffering. This is to ensure that our findings on M-REITs performance would not include the effects from the infamous 1997 Asian financial crisis event. At the same time, we could also analyze the impact from more recent financial externalities, especially the U.S. subprime mortgage crisis in 2008 that very much affected the global equity markets, of which is also the key concern in this study.

The monthly returns of M-REITs stocks were first derived from the adjusted and weighted prices of M-REITs stocks on each final week of the month. The monthly return in stock price is computed based on:-

$$R_t = \frac{(P_t - P_{t-1})}{P_{t-1}} * 100$$, whereby

R_t = M-REIT stock return for month t.

P_t = Closing stock price of M-REIT at final week of month t.

P_{t-1} = Closing stock price of M-REIT at final week of month prior to month t (previous month).

Similarly, the monthly returns for FTSE Bursa Malaysia KLCI, FBMEMAS Index, FBM Property Index and Regional REITs index are computed based on:-

$$\text{Rindex}_t = \frac{(\text{index}_t - \text{index}_{t-1})}{\text{index}_{t-1}} * 100$$, whereby

Rindex$_t$ = Equity index return for month t.

Index$_t$ = Closing index value at final week of month t.

Index$_{t-1}$ = Closing index value at final week of month prior to month t.

It should be noted that the monthly returns for M-REITs stock prices and equity indices are calculated based on end-of-month weekly closing prices.

Subsequently, we compute the 10-year total annual return of each M-REIT by summing up all the monthly returns for each of the year. In our study, we have calculated the total annual return for each M-REITs, equity indices and M-REITs and regional REITs indexes. In addition, we also provide calculation on the annual M-REITs' dividend yields and compare the yields with the national inflation rates for the purpose to determine whether investment in M-REITs provide a mean to hedge against the inflationary pressure. The formula to compute annual M-REIT dividend yields (%) are as follows:-

$$\textbf{Annual Dividend Yield} = \frac{\textbf{Total dividend payouts for year t}}{\textbf{Average stock price for the year t}}$$

We choose to use Microsoft Excel to analyze and examine the raw numerical data and their calculation and to present the data in tabular form.

3.6 Hypotheses

To examine the empirical relationship between the independent variables and dependent variables, a hypothesis has to be established. A hypothesis is an unproven proposition or supposition that tentatively explains certain facts or phenomena. A hypothesis exists when a proposition is formulated for empirical testing, which can be described as declarative statements about the relationship between two or more variables (Cooper & Schindler, 2008).

According to Sekaran (2003), a hypothesis can be defined as a logically conjectured relationship between two or more variables expressed in the form of a testable statement. In conducting this study and to fulfill the proposed research objectives, certain variables were tested in based on established hypothesis. The null hypotheses (H_O) and alternate hypotheses (H_1) developed for this study is as follows:-

Hypothesis 1

In order to examine the relationship of association (correlation) between M-REITs stock returns and market returns, we suggest that

H_o: β=0 (There exists no correlation between M-REITs and stock market indices)

H_1: β≠0 (There exists significant correlation between M-REITs and stock market indices)

Hypothesis 2

In order to examine the relationship of association (correlation) between M-REITs index and regional (Singapore, Hong Kong and Taiwan) REITs indexes, we suggest that

H_o: β=0 (There exists no correlation between M-REITs index and regional REITs indexes)

H_1: β≠0 (There exists significant correlation between M-REITs and regional REITs indexes)

3.7 Sampling Size

The proposed sample size of this research for the independent variables of M-REITs, FBMKLCI, FBMEMAS, KLPI Index and regional REITs Indexes are weekly data for 10 years, from year 2001 to 2010. For Malaysian T-bill rates and national inflation rates, the sampling size is the monthly data of both rates for similar 10-year period. Lastly, the sampling size for dividend yields of M-

REITs is the annual dividend payments of each M-REIT for the 10-year period. By dividing our data into weekly and monthly observations, our model tends to be normally distributed as according to Central Limit Theorem which stated that sufficiently large sample sizes will assume that the normality of data distribution holds. Additionally, we have segregated the 10-year sampling period into three distinctive period categories which are namely, (i.) pre-crisis period, from year 2001 to 2007; (ii.) crisis period, in year 2008 and (iii.) post-crisis period, from year 2009 to 2010. This segregation is done in order for our study to present a vivid illustration on how the cataclysmic U.S. subprime mortgage crisis in 2008 could affect the M-REITs as well as the broader market performances.

3.8 Data Analysis Methods

Data analysis provides explanation on how collected data is being processed, analyzed and interpreted accordingly to suit the aim of the study. In order to obtain better and consistent results, researchers have to apply different types of analysis and hypothesis testing methods. Following are the methods of analysis that we have proposed to use in analyzing the data collected for our study:-

3.8.1 Standard Deviation

Standard deviation, σ, is widely used to measure the variability dispersion, to express the variability of a population and measure confidence statistical conclusion. In economic study, standard deviation is widely used to measure the total variability or risk of an investment's return. The higher the value of standard deviation, the higher the total risk of the investment. The average standard deviation are computed for each M-REITs, equity indexes and regional REITs indexes by summing up the annual standard deviations for each period (pre-crisis, crisis and post-crisis) and divided by the number of years included for the respective period. Total risk measurement consists of systematic risk and unsystematic risk. As we know, market risk or systematic

risk such as political risk and inflation risk cannot diversified and is generally measured by beta, β, while the unsystematic risk can be minimized and even eliminated by using the factors which are controllable by the people in the market. Beta is more accurate in measuring the systematic risk of a portfolio rather than any individual securities. The degree of risk representation with beta is higher with a portfolio of assets as compared to representing risk of individual asset. Thus, in our study, we used the standard deviation for measuring the dispersion of individual M-REITs return from their mean return. Standard deviation formula is expressed as below:

$$\sigma = \sqrt{\frac{\sum_{i=1}^{n} (x_i - \mu)^2}{n - 1}}$$

, whereby

X_i = monthly return (%)

μ = the mean return for the year (%)

n = sample period (years)

3.8.2 Sharpe's Index

The primary objective of this study is to compare the performance of M-REITs along with each of the other indexes and evaluate overall investor portfolio containing all the three indexes as benchmark. Sharpe's Index (SI) is a measure of performance of M-REITs with others market indexes over a given period of time. SI evaluates the investment or security performance based on the amount of reward received per unit of risk taken.

The important aspect of the Sharpe's Index is that this performance indicator takes into consideration the total risk of the portfolio or security. In order to use the Sharpe's Index, we must obtain the portfolio or security's return, risk-free rates of return and the standard deviation of the particular portfolio or

security. Sharpe's decision rule is to choose investment positions with higher Sharpe ratio, whereby Sharpe ratio is defined as a ratio of risk premium (rate of return net of riskless rate) to position of total risk, expressed as standard deviation of returns of a specific investment.

As compared with Treynor Index and Jensen Alpha Index measures, which are commonly used to measure investment performances, Sharpe's measure appears to be more practical and concrete in measuring each M-REITs performance. This is because both Treynor and Jensen Alpha measurements are subjected to generic weaknesses of the Capital Asset Pricing Model (CAPM), under which, both measures assumed that all investors have fully diversified their portfolio by holding 20 or more securities. Hence, only systematic risk is taken into account (non-systematic risk is assumed to be fully diversified) in computing Treynor and Jensen Alpha measures while Sharpe's measure accounts for both systematic and non-systematic risks in evaluating level of investment returns and its performance. If portfolio diversification assumption is relaxed, or where only individual security is being assessed instead of a portfolio, Sharpe's measurement would be practically more appropriate than Treynor and Jensen Alpha measures.

For the risk-free rate of return, we used the average return (over the period of time) of short-dated (3-month) Malaysian T-bills. The standard deviation of returns is a measure of the total risk of the security or portfolio. The formula for Sharpe's Index is illustrated as below:-

$$SI = \frac{\text{(Total Monthly Return, } R_p \text{ - Risk-Free Return, } R_f\text{)}}{\text{Standard Deviation, } SD_p}$$

By using the Sharpe's Index formula, we compute the average Sharpe's Index for each M-REIT for each of the segregated periods (pre-crisis, crisis and post-crisis). Next, we rank and sort the M-REITs companies, REIT

indexes and equity indices according to the SI measurement rule to determine their performance during the respective periods.

3.8.3 Spearman rank Correlation Test

According to Plata (2006), Spearman's rank correlation coefficient is a non-parametric (distribution-free) rank statistic as a measure of the strength of the associations between two variables. Correlation coefficient is a statistical measure of the covariation, or association, between two variables. It also indicates the strength and direction of a linear relationship between two random variables. The correlation between two variables reflects the degree to which the variables are related. Spearman's coefficient is not just a measure of the linear relationship between two variables. It assesses how well an arbitrary monotonic function can describe the relationship between two variables, without making any assumptions about the frequency distribution of the variables. It does not assume that the relationship between the variables is linear, nor does it require the variables to be measured on interval scales. It can also be used for variables measured at the ordinal level.

In principle, Spearman's rank correlation coefficient is simply a coefficient in which the data are converted to ranks before calculating the coefficient.

Nowadays, correlation coefficients are widely used in statistical analyses. Correlation has a coefficient values ranging from -1.0 to +1.0. A coefficient value of +1.0 shows that there exist a perfect positive linear relationship, whereas a value of -1.0 indicates a perfect negative linear relationship. In this study, we are testing the correlation between M-REITs and FBMKLCI index, FBMEMAS index, FBMKLPI index as well as the correlation between M-REITs index with regional REITs indexes by using the Spearman rank correlation test (conducted with SPSS 14.0). When computing the correlation coefficients, we use two-tailed rather than one-tailed test because we are

examining whether there exist any significant correlation relationship between the variables, at all, regardless of the relationship directions (positive and negative).

The strength of the association is then explained by using the Guildford's rule of thumb for all the calculated coefficient values.

Table 3.2: Definition of Correlation Coefficient Value

Correlation Coefficient Value	Description on the Strength of Association
0.91 – 1.00	Very Strong
0.71 – 0.90	High
0.41 – 0.70	Moderate
0.21 – 0.40	Small but definite relationship
0.00 – 0.20	Slight, almost negligible

3.9 Chapter Summary

In this chapter, we would explain the procedures and data analysis methods used in conducting this study. It includes the research design, samples and sample sizes used, methods of data collection as well as the data analysis methodologies. We also stated our theoretical and empirical frameworks to illustrate a clearer picture on the overall relationship between the dependent variables and independent variables (entity factors) used in this study. According to the flow, we would first select the appropriate data and identify their sample sizes. Once we sourced the data, we will establish the hypotheses. Then, we will run the proposed tests and analysis procedures from calculating the total returns to standard deviations, Sharpe's Indexes and rankings as well as Spearman rank correlation tests. From the above tests and analyses, we hope to obtain the results and findings which would be used to fulfill the objectives in this study.

CHAPTER 4: ANALYSIS AND RESULTS

4.0 Introduction

This chapter analyzes and interprets the empirical results obtained from examining the data collected. Firstly, we outlined the total annual returns calculated for all the M-REITs and equity indices for the period of concern. Next, we used standard deviation of returns as a calculation of total risk of each M-REITs and equity indices. In the following section, risk-adjusted performance for the individual M-REITs and equity indices are being measured using Sharpe's Index. Furthermore, we will also provide performance comparison between the M-REIT market and several regional REIT markets being proxied by their indexes. A correlation analysis is then performed to examine the association between each M-REITs' stock price movements to that of equity indices. In addition, we will also examine the correlation between M-REIT index with Hong Kong, Singapore and Taiwan REIT indexes. Finally, we would review on the feasibility and effectiveness of M-REITs as inflation hedging tool by examining the dividend yields of M-REITs and compare to prevailing annual inflation rate across our sampling period.

4.1 Total Annual Return

The annual return that we have calculated is the total monthly returns for a particular year and it is on a year-on-year (y-o-y) basis. We have categorized the total annual return for M-REITs, equity indices and REITs indexes into pre-crisis, during crisis and post-crisis period. The findings on return in this study are representative from year 2001 until year 2010.

4.1.1 Total Annual Return for M-REITs

From Appendix I - Table 4.1, we can analyze that during pre-crisis period, both AHP and AHP2 have a negative annual return in 2001 and 2004. Then,

AXREIT, STAREIT, and TWREIT have negative annual returns in 2006, followed by ALAQAR and AMFIRST, which have negative returns in 2007 during the pre-crisis period category. Subsequently, we can see that all of the M-REITs have been affected by the financial crisis that hit back in 2008, with all their returns on that particular year being in the negative territory.

As the market rebounded in the post-crisis period, all of the M-REITs have shown healthy and substantial recovery, as being illustrated by their strong positive annual returns in both 2009 and 2010, predominantly AXREIT (81.3%), ATRIUM (59%), HEKTAR (60.5%), and UOA (52.4%). It should be noted that AHP2 was delisted in March 2009 due to poor performance since listing, (Amanah Harta Tanah PNB2 to be delisted, 2009). According to Lo Kok Kee, who represented a group of unit holders of not less than 50 members, said that the property portfolio have depreciated in value of 17%, on average, after 11 years of listing. Also, both CMMT and SUNREIT were newly listed in July 2010 and their performance based on total returns is unrepresentative of their general performance.

Our finding here is similar with Glasscock, 2004, that when the general stock market prices are declining, the REITs share prices would also behave similarly and thus, the REITs' return will be lesser during the market decline stage. However, investors would also be able to capture the rebounding effect with REITs as implied by the notable price appreciation of M-REITs during the post-crisis period (market recovery stage).

4.1.2 Total Annual Return for Equity Indices

Based on the annual return that we have computed as shown in Table 4.2, all the three indices have lackluster performance with negative returns in year 2001, 2002 and 2005 during the pre-crisis period. During the financial crisis in 2008, all equity indices had shown dramatic decline with the KLPI plummeting the most by falling 62.55% in terms of annual return. Based on a REIT

industry market research report in the U.S, our finding is consistent with the fact that the financial crisis back then, known as the subprime mortgage crisis was caused primarily by the bursting of property bubble in the U.S. which caused instability in the global property market and thus, the domestic property sector was also being affected. However, all indices have strong positive returns during post-crisis period with the FBMKLPI becoming the best performer among the three market indices.

Table 4.2: Total Annual Return for Equity Indices

EQUITY INDICES	Time Categories									
	Pre Crisis							Crisis	Post-Crisis	
	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
KLPI	(1.60)	(8.34)	32.86	(0.83)	(30.12)	29.02	40.73	(62.55)	43.12	30.65
KLCI	(0.61)	(4.85)	19.26	16.07	(0.59)	20.21	29.14	(48.78)	39.05	18.97
EMAS	(1.92)	(4.15)	22.03	11.96	(6.34)	22.95	32.85	(51.09)	41.43	20.42

4.1.3 Total Annual Return for REITs Indexes

The total annual return for the REITs indexes of Hong Kong, Malaysia, Singapore and Taiwan are shown in Table 4.3. Similar to that of M-REITS and equity indices, the REIT market in Malaysia and our regional peers are also affected by the subprime mortgage crisis in 2008, as shown with negative annual return for all markets, with Singapore REIT index tumbled the most. During the period, M-REIT index has shown relatively resilient behavior by yielding lower negative return (-20%) as compared to both Singapore (-61%) and Hong Kong (-22%) markets. In the post-crisis period, however, Singapore and Hong Kong REIT indexes shown highest positive aggregate annual return (74%) followed by M-REIT index (54%). Taiwan REIT index yielded lowest positive annual return (40%) by comparison. Our findings show that the M-REIT market is relatively less affected by the severity of the financial crisis or we could say the degree of resiliency of M-REIT market is relatively higher as compared to other regional REIT markets.

Table 4.3: Total Annual Return for REITs Indexes

REIT INDEXES	Time Categories					
	Pre Crisis			Crisis	Post-Crisis	
	2005	2006	2007	2008	2009	2010
HONG KONG REIT		7.66	12.09	(22.23)	48.19	26.41
MALAYSIA REIT	(7.94)	(2.66)	18.98	(19.90)	34.55	20.27
SINGAPORE REIT	3.45	41.88	9.53	(60.92)	54.84	20.16
TAIWAN REIT	0.36	10.06	(13.19)	(5.32)	28.99	11.02

4.2 Standard Deviation for M-REITs, Equity Indices and REITs Indexes

The standard deviation calculated in this research is a measure of total risk or the volatility of returns for the M-REITs and benchmark equity indices from year 2001 until 2010. Standard deviation of the REITs indexes are calculated from year 2005 until 2010. The sampling period is categorized into 3 different sub-periods to illustrate periodical findings. The sub-periods consist of pre-crisis period which is from 2001 till 2007, crisis period which is on 2008 and post-crisis (recovery) period which is from 2009 till 2010. Average standard deviation for each M-REITs, equity benchmarks and REIT indexes are displayed for each sub-period, as shown in Table 4.4.

Table 4.4: Average Standard Deviation for M-REITs, Equity Indices, and REITs Indexes

M-REITs	Pre-crisis	Crisis	Post-Crisis
AHP	4.03	7.16	2.76
AHP2	5.92	3.74	12.50
AXREIT	6.02	6.56	5.66
ALAQAR	2.56	4.44	3.57
BSDREIT	4.52	4.07	4.17
AMFIRST	3.82	4.66	3.93
ARREIT	1.99	3.37	3.28
ATRIUM	4.00	5.36	4.73

M-REITs	Pre-crisis	Crisis	Post-Crisis
QCAPITA	9.84	5.23	3.66
CMMT			4.08
SUNREIT			2.41
HEKTAR	8.97	7.54	5.12
STAREIT	4.26	2.43	3.54
TWREIT	5.54	6.45	4.78
UOA	4.10	5.23	3.54
EQUITY INDICES			
KLPI	5.85	5.93	5.87
KLCI	4.02	4.72	3.38
EMAS	4.66	5.12	3.76
REIT INDEXES			
HONG KONG REIT	4.89	9.06	5.33
MALAYSIA REIT	3.07	3.33	2.43
SINGAPORE REIT	5.43	8.60	5.65
TAIWAN REIT	2.71	7.21	3.36

In the pre-crisis period, QCAPITA is the riskiest M-REITs with the highest average standard deviation (SD) for the period of 9.64% while ARREIT is the least volatile M-REITs with lowest SD for the period of only 1.99%. Among the equity benchmarks, KLPI has the highest volatility (5.85%) followed by FBMEMAS (4.66%) and FBMKLCI (4.02%). There are 4 M-REITs which display lower volatility than the broader market which are ARREIT, ALAQAR, AMFIRST and ATRIUM while all M-REITs are less risky than KLPI except TWRREIT, AHP2, AXREIT, HEKTAR and QCAPITA. On the other hand, M-REITs market is relatively less volatile than Hong Kong and Singapore REITs market among regional peers.

During the crisis period, we can see that AHP2, ALAQAR, BSDREIT, AMFIRST, ARREIT and STAREIT are less volatile than the broader market as a whole. The SD for FBMKLCI, FBMEMAS and KLPI is 4.72%, 5.12% and

5.93% respectively. Hektar has a highest SD of 7.54% and the return of the year is -68.12%, the lowest negative returns among M-REIT.

During the recovery period, all M-REITs except AHP2 shown lower volatility than KLPI, which is the riskiest among the equity indices, due to its announcement of delisting back in March 2009 subsequent to reports of subpar performance by its unit holders,. Overall, AHP, ARREIT and SUNREIT displayed lower risk than the broader market as a whole, on average. Their SD for the period is lower than that of FBMKLCI of 3.38%, which is the least volatile among equity benchmarks.

In terms of regional REIT market volatility, we could notice that M-REITs market has displayed higher stability as compared to its peers over the three periods, as shown by M-REIT index's relatively low and consistent SD ranging from 2% – 3% across the different sub-periods. Our findings imply that M-REITs market does possess lesser overall risk as compared to its more developed regional peers. Thus, foreign investors with certain risk preference should also consider the level of risk in M-REIT market, which appears lower than our regional peer, when choosing to have international diversification among the REIT markets.

4.3 Sharpe's Index for Risk-Adjusted Performance Measurement

In our research, we used Sharpe's Index to measure the performance of individual M-REIT companies, equity indices as well as the Hong Kong, Malaysia, Singapore and Taiwan REIT markets. We have also segregated our analysis of Sharpe's Index into pre-crisis, during crisis, and post-crisis period to allow for more illustrative comparison. Sharpe's Index measures the performance of portfolios or assets based the spectrum of total risk. Sharpe's Index measures the ratio of risk premium to the standard deviation of return

for each M-REIT companies. Positive value shows returns are in excess of total risk taken in a particular investment after considering the riskless return factor. Higher Sharpe's value implies higher return for the level of risk taken for an investment. The risk premium on a portfolio is derived by netting the risk-free rate from total return achieved.

4.3.1 Sharpe's Index for M-REIT and Equity Indices

Based on Appendix J - Table 4.5, we found the results of Sharpe's measure for each M-REIT on year-on-year (y-o-y) basis from year 2001 until year 2010. For M-REITs' performance during the pre-crisis period, AHP has low negative Sharpe's values in year 2001, 2002, 2004, and 2006. On the other hand, AHP2 has high negative Sharpe's values but only in year 2001 (-4.02) and 2004 (-6.04) and a low negative value in year 2005 (-0.01). In the year of 2006, all the M-REITs experienced negative Sharpe's values with the exception of AHP2 which marked rather high positive Sharpe of 3.99. In 2007, the year before crisis, nine M-REITs have positive Sharpe's value with TWREIT (5.89), HEKTAR (5.08) and UOA (3.96) taking the lead. During the year, only ALAQAR, AMFIRST, ATRIUM and QCAPITA have negative Sharpe's values. As shown in Table 4.5, all the equity indices also have negative Sharpe's values in the year 2001, 2002 and 2005.

During the crisis period in 2008, all M-REITs recorded negative Sharpe's values with STAREIT, ATRIUM and HEKTAR among the worst performers with relatively high negative Sharpe's values of -10.54, -9.79 and -9.49 respectively. Over the period of post-crisis, M-REITs were recovered from crisis and the have a better performance when compared to year 2008 with AXREIT taking the lead while ARREIT and SUNREIT still lagging behind other M-REITs

Table 4.6: Average Sharpe's Measure for M-REITs and Equity Indices

M-REITs	Pre-crisis	*Ranking*	Crisis	*Ranking*	Post-crisis	*Ranking*
AHP	0.55	8	(1.71)	**1**	4.01	9
AHP2	(0.04)	9	(2.55)	**2**	1.54	16
AXREIT	(0.29)	11	(7.70)	**7**	8.28	**1**
ALAQAR	(1.32)	15	(2.80)	**3**	3.13	13
BSDREIT	3.63	**2**	(8.76)	**10**	3.90	10
AMFIRST	(1.24)	14	(3.37)	**4**	4.96	8
ARREIT	1.10	*6*	(5.01)	**5**	1.13	18
ATRIUM	(0.70)	13	(9.79)	**12**	5.87	*4*
QCAPITA	(0.17)	10	(7.13)	**6**	2.31	14
CMMT	-	-	-	**-**	1.21	17
SUNREIT	-	-	-	**-**	3.15	12
HEKTAR	5.08	**1**	(9.49)	**11**	5.54	7
STAREIT	(4.34)	16	(10.54)	**13**	1.96	15
TWREIT	1.37	*5*	(7.97)	**9**	3.57	11
UOA	(0.52)	12	(7.77)	**8**	5.61	6
EQUITY INDICES						
KLPI	0.58	7	(11.11)	16	5.85	5
KLCI	2.36	3	(11.05)	15	7.61	2
EMAS	2.14	4	(10.64)	14	7.38	3

Based on average risk-adjusted performance, shown in Table 4.6, we could notice that 2 M-REITs, namely HEKTAR and BSDREIT, have outperformed the broader market during the pre-crisis period with their Sharpe's ranking higher than that of FBMKLCI, FBMEMAS and KLPI. Aside from that, TWREIT and ARREIT have both outperformed KLPI during the same period. The other M-REITs have lagged behind the broader market during this period.

During the crisis period in 2008, all the M-REITs have outperformed the broader market with all the equity benchmarks showing dismal performances

due to beaten down equity returns during that year. All three equity benchmarks have the lowest Sharpe's ranking for the period. Thus, we could conclude that M-REITs have displayed certain degree of resiliency during financial or economic crisis period.

In the recovery years, where the equity benchmarks shown significant improvements, AXREIT still manage to outrank the broader market in terms of risk-adjusted performance while ATRIUM has outperformed the KLPI during the same period. During this recovery period, the remaining M-REITs are seen to have relatively dismal performance when being compared to the equity benchmarks.

Our study finds that M-REITs underperformed the broader market adjusted to overall risk during both pre-crisis and post-crisis period but during the financial crisis period, M-REITs display superior overall risk-adjusted performance relative to the equity market, which is similar to the findings obtained in Tan, 2009. Investors would thus, be better protected from the downturn effects in both the equity and property market during financial crisis period with investments in M-REITs.

4.3.2 Sharpe's Index for REIT Indexes

Table 4.7 shows the average of annual Sharpe's Index values for four REIT market indexes with their overall risk-adjusted performance rankings for our three different sampling sub-periods.

Table 4.7: Average Sharpe's Index and Ranking for REIT Indexes

REIT INDEXES	Pre-crisis	*Ranking*	Crisis	*Ranking*	Post-crisis	*Ranking*
HONG KONG REIT	1.20	2	(2.83)	2	6.97	2
MALAYSIA REIT	(0.91)	3	(6.99)	3	10.73	**1**
SINGAPORE REIT	2.85	**1**	(7.48)	4	5.82	3
TAIWAN REIT	(1.35)	4	(1.21)	**1**	4.88	4

Our finding illustrates that among the four REIT markets, Singapore REIT market is the best performer during pre-crisis period followed by Hong Kong. These two markets have been relatively established and have been in the radar of international investors over the years. Our M-REIT market ranks third while Taiwan REIT market trails last. This is due to the fact that M-REIT market had subjected to minimal activity during the period which saw inactivity and relatively thin trading volumes.

During the financial crisis year, all REIT markets showed negative Sharpe's values indicating dismal performances in tandem with the global equity market slump. However, Taiwan REIT market has outperformed all other markets during the period with lowest negative Sharpe's value.

Then, post-crisis period has seen the emerging of M-REIT market as the best performer among its regional peers with an overwhelming Sharpe's value way above Hong Kong, Taiwan and Singapore indicating the M-REIT market is beginning to gain momentum in catching up in terms of providing solid performance to investors. M-REIT market has shown tremendous improvements over this period as the market is garnering more and more attention from investors, government and individuals where the market is booming with several sizeable and notable new M-REITs listings such as CMMT and SUNREIT (largest M-REIT IPO). As such, it indicates that M-REIT market is becoming a better investment option for global fund managers seeking to enter the REIT market around this region.

4.4 Correlation Analysis between M-REITs and Benchmark Equity Indices

The correlation coefficient that we used to examine the relationship between M-REITs and equity indices is known as Spearman rank correlation coefficient test. The equity indices that we have indicated in this research are proxies by FBMKLCI, FBMEMAS and KLPI. We test the correlation based on the monthly return or stock price movement from year 2001 until 2010 subject to the number of years each particular M-REIT have been established with the relative years of equity indices. The correlation is considered to be statistically significant when the p-value is less than either 10% (0.1), 5% (0.05) or 1% (0.01) level of significance.

Table 4.8: Spearman Rank Correlation Coefficient between M-REITs and Equity Indices

M-REITs	KLCI	KLPI	EMAS
AHP	0.3569**	0.4221**	0.3332**
AHP2	0.1518	0.2535*	0.15578
AXREIT	0.3603**	0.3979**	0.4214**
ALAQAR	0.2048	0.3801**	0.2993*
BSDREIT	0.4434**	0.5288**	0.5180**
AMFIRST	0.4428**	0.5848**	0.3014*
ARREIT	0.3464*	0.3259*	0.3246*
ATRIUM	0.3645*	0.3988**	0.4437**
QCAPITA	0.4404**	0.4349**	0.4839**
CMMT	-0.7000	-0.1000	-0.3000
SUNREIT	-0.5000	0.4000	0.2000
HEKTAR	0.4472**	0.4154**	0.3553*
STAREIT	0.5054**	0.4943**	0.3817**
TWREIT	0.4564**	0.4900**	0.4457**
UOA	0.4635**	0.5456**	0.3904**

NOTE:

*** Correlation is significant at the 0.01 level (2-tailed).*

** Correlation is significant at the 0.05 level (2-tailed).*

Based on the Table 4.8, we found that the correlation of seven M-REITS which are AHP, AXREIT, BSDREIT, QCAPITA, STAREIT, TWREIT and UOA, are statistically significant at 0.01 (1%) level of significance with all the three FBMKLCI, KLPI and FBMEMAS indices. These M-REITs have relatively low to moderate positive correlation ranging from 0.35 to 0.60 with the equity benchmarks with STAREIT (r = .5054) having highest correlation with FBMKLCI, AMFIRST (r = .5848) having highest correlation with KLPI and BSDREIT (r = .5180) having highest correlation with FBMEMAS Index.

However, AHP2 displayed significant correlation at 5% level of significance with KLPI only with correlation of 0.2535, whereas it is not significant at both 0.01 level and 0.05 level with FBMKLCI and FBMEMAS because of the time period of concern, and the stock price is more volatile in the early 2000 (2001 – 2004). For ALAQAR, it is not significantly correlated with FBMKLCI (r = .2048) at any level of significance but is significant at 0.05 level and 0.01 level with FBMEMAS (r = .2993) and KLPI (r = .3801) respectively because ALAQAR's managed properties are in health care sector such as hospitals. Whereas within the 30 large cap companies in FBMKLCI, there is no any listed health care or medical-related company.

On the other hand, correlation of AMFIRST with FBMEMAS, ATRIUM with FBMKLCI and HEKTAR with FBMEMAS are statistically significant at 0.05 level of significance with low correlation ranging from 0.35 to 0.40. At the same time, correlation of ARREIT is significant at 0.05% level of significance with all the three benchmark indices.

Based on Table 4.8 as well, CMMT and SUNREIT are not significantly correlated with all the three benchmark indices at any level of significance. This may primarily due to they are newest M-REITs being listed on July 2010, under which less than six months of monthly returns are available for analyzing their correlation with the benchmark indices. Thus, results on their Spearman correlation values might be misleading and inconclusive.

Generally, almost all M-REITs shown statistical significance correlation with the three equity benchmarks although with a relatively weak correlation as indicated by their low positive correlation coefficient values. This would tell investors of M-REITs to keep track of the economy or market cycles when choosing the appropriate timing to enter into the M-REIT market as M-REITs have correlated performance with the broader market.

4.5 Correlation Analysis for Regional REIT Indexes

We also similarly tested the Spearman correlation coefficient between the return yielded in M-REIT index with that of its regional peers, namely Hong Kong, Singapore and Taiwan REIT indexes. As shown by Table 4.9 below, M-REIT index shows statistical significant correlation with Singapore REIT index at 0.01 level of significance and with Hong Kong REIT index at 0.1 level of significance. However, according to the SPSS's Spearman correlation result, we found that there is no significant correlation between M-REIT index with Taiwan REIT index at any level of significance.

Generally, among the three regional peers, the M-REIT index displayed highest correlation with Singapore REIT index (r = .3335) because Singapore is closer approximation to our market. Followed by Hong Kong REIT index (r = .2438) while having almost no correlation with Taiwan REIT index (r = .083). Taiwan REIT market can be considered as the newest in the region given it relatively shorter period of existence, thus no definite trend could be observe.

Still, our findings conclude that the correlation between M-REIT index and its regional peers is relatively weak given their low correlation coefficient values. This would imply that although M-REIT market performance is rather identical to other regional REIT markets, foreign investors might still need to be alert of major developments in the REIT markets around this region when assessing performance of M-REIT market.

Table 4.9: Spearman Rank Correlation Coefficient of Regional REITs Indexes

REGIONAL REIT INDEXES	Spearman Correlation with M-REIT Index
HONG KONG REIT	0.2438*
SINGAPORE REIT	0.3335**
TAIWAN REIT	0.0830

** Correlation is significant at the 0.01 (1%) level (2-tailed).

* Correlation is significant at the 0.1 (10%) level (2-tailed).

4.6 M-REITs: Feasibility for Inflation Hedging

Given that REITs are current income-focused securities, it is essential for us to examine the degree of effectiveness of M-REITs being used as a mean to hedge against annual inflation to protect investment values in M-REITs. The current income for M-REITs are calculated based on the ratio of annual dividend payout with average share price for the year in the form of percentage of dividend yield for the particular M-REIT. The dividend yield for each M-REIT is then being compared to the prevailing annual inflation rate.

Based on Table 4.10, we found that the average annual dividend yield for all M-REITs for each year is consistently higher than the prevailing annual inflation rate in that particular year across our sampling period of 10 years from 2001 to 2010. Even when the inflation rate is highest at 5.4% in year

2008 due to surging global crude oil prices, average M-REITs' dividend yield for the year still outpaced at 8.34%.

In terms of the prevalent trend on M-REITs dividend yield, we can see that the trend is improving over the years, especially during the last three years with almost all M-REITs having higher dividend payouts as compared to the years before with year 2009 being the highest dividend yielding year at a notable 9.4%. It should also be noted that the dividend yield for M-REITs remain relatively high even during the subprime mortgage crisis year in 2008 whereby almost all other sectors companies are reducing or eliminating their dividend payouts to shareholders and also, given the fact that the crisis has caused severe meltdown to global property market. In fact, the average dividend yield for M-REITs in 2008 at 8.34% is still higher as compared to their average yields during the pre-crisis years.

According to Table 4.10 as well, AXREIT is the best M-REIT paymaster with its average dividend yield across the years at 10.99% outpacing the rest. HEKTAR with average dividend yield of 8.38% ranks second in terms of dividend payout followed by UOA (7.91%), ATRIUM (7.62%), TWRREIT (7.46%), ARREIT (7.33%), AMFIRST (7.18%) and AHP (7.07%). The delisted AHP2 has had the lowest average dividend yield with 4.61%.

The dividend yields figures for both CMMT and SUNREIT are yet to be conclusive due to the fact that they are new listings back in July 2010 and had yet to declare their full annual dividend to date. However, these two new M-REITs company are expected by market analysts and observers to be potentially promising paymasters due to their holdings of strategic assets in their property or real estate portfolios.

Generally, our results imply that if we consider M-REITs as part of our investment portfolio, we would be able to hedge and protect from the

inflationary pressure with a netting positive dividend-yield return from M-REITs. Given such condition, investors whose main concern is to find lesser-risk but effective alternatives to avoid erosion of their purchasing power, they would find themselves ahead of inflation trap by investing in M-REITs.

4.7 Chapter Summary

This chapter has outlaid the results and findings of this research with both descriptive and inferential statistical analysis techniques. The performance of M-REITs based on annual total return is presented and their total risk or volatility levels are determined based on standard deviation values. The performance of M-REITs had been compared to several equity benchmarks performances on a risk-adjusted performance analysis based on Sharpe's Index. Comparison on risk-adjusted performance has also encompassed several regional REIT markets with the M-REIT market. Then, the correlation between each M-REIT and equity indices are examined and correlation between M-REIT market with its regional peers are also being investigated. Finally, the feasibility of M-REITs as a method and its effectiveness to provide hedging against inflationary pressure is also being illustrated through a comparison between calculated dividend yields and annual inflation rate.

CHAPTER 5: CONCLUSION AND RECOMMENDATION

5.0 Introduction

This is the final chapter of this study whereby the conclusion of overall outcomes would be thoroughly elaborated. First and foremost, a general conclusion on major findings in this study will be provided. Then, the resulting implications from this study as well as the arising limitations in the study will be highlighted in the following section. Finally, some possible areas for future studies or literature expansion as well as recommendations for related policy making would be discussed.

5.1 Conclusion of Findings

Generally, our study found that most M-REITs underperformed the broader market during both the pre-crisis and post-crisis periods, with few exceptions which shown otherwise. However, it is definitive that all M-REITs displayed superior performance relative to the market during the crisis period. These findings are consistent with the findings of study by Tan (2009) and Hamzah, Rozali and Tahir (2010). In addition, we also found that M-REITs possess lower degree of overall risk or volatility as compared to the broader market, especially with the property market as a whole.

Performance-wise, our findings noted that the Malaysian REIT market kicked off the decade with sub-par or lackluster performances but shown emerging performances in the recent years, especially during the last three to five years. By assessing the relationship between M-REITs and the broader market, empirical results proved the presence of a low-to-moderate but definite degree of association between M-REITs and the latter over the period of study.

Furthermore, M-REITs overall have consistent and gradually increasing trend of income payouts to investors with several M-REITs even displayed excellent paymaster traits. At the same time, it is also found that M-REITs have had dividend yields way above the average national inflation rate, with highest dividend yield averaged almost five times of inflation rates over our study period.

5.2 Implications of Study

From our findings, individual or institutional investors could consider investing in M-REITs or include M-REITs into their investment portfolios as to achieve certain degree of portfolio diversification benefits given that M-REITs are not strongly correlated with the broader market. Still, investors need to keep track of market cycles or rotations as there is a definite degree of correlation between M-REITs and the market as a whole, empirically. Aside from providing certain level of protection from major swings in the market and economy, investment in M-REITs is also an effective mean to hedge against the culminating inflationary pressures which would help to safeguard the investment values.

Moreover, investment in M-REITs also served as an alternative option for risk-averse group of investors such as retirees and pensioners and even institutional investors such as the Employees Provident Funds (EPF) whose investment decisions must be associated with lower risk. This is because the level of overall risk is lower and at the same time, M-REITs are more focused on consistent dividend payouts rather than capital gains. Thus, M-REITs are also appropriate choice for investors who seek and have higher emphasis on stable current income as justified by the 'bird-in-the-hand' corporate finance theory being advanced by John Litner in 1962 and Myron Gordon in 1963. Certain investors have higher preferences for receiving certain and immediate current income as opposed to future income gains (capital gains) which they deemed as uncertain to receive. Thus, investment in M-REITs would be

utmost ideal given the fact that M-REITs companies are regulated in a way such that at least 90% of their net income for any financial year must be distributed to their unit holders.

It is hopeful that the empirical findings can help both institutional and retail investors to comprehend the risk-return trade-off and to consider REITs as another viable investment alternative. Our study may provide useful quantitative empirical assessments on the performance of the M-REITs to assist investors in selecting their investment options. However, prudent investors should, by all mean, also evaluate complementing qualitative assertions such as trust management quality, corporate management, asset quality and growth strategy of each M-REIT in order to make better assessment on the performance of M-REITs, both quantitatively and qualitatively, for more precise investment decision-making.

5.3 Limitations of Study

Similar to other existing empirical studies, there are certain limitations or drawbacks in our study that may cause our findings to be insufficient to conclude for future related undertakings. Future studies on this topic or related areas might not be consistent with our findings due to several limitations of this study that we wish to highlight. First and foremost, the sample size drawn is relatively small. Nevertheless, it already reflects and indicates the population of M-REITs as at the time this study is being conducted. For this study, we have chosen 14 M-REITs as our samples which are also the population of public listed REIT companies in Bursa Malaysia over and during the 10 years sampling period, from 2001 to 2010. According to the central limit of theorem, the random variables would only be identically normally distributed with a considerable sample sizes (preferably, larger than 30). As such, the assumption of normal distribution of our data might not hold well. The current population of M-REITs is still relatively small for intensive study on broader areas as compared to other countries such as the United

States, Australia, France, Japan and so on. Besides that, there is limited data availability because most of the recent M-REITs listings occur after 2005 following the revision of guidelines by Security Commission. This might have shortened the sampling period for several of our M-REITs.

Secondly, we not take into consideration of the degree of efficiency of the earnings flows from leasing of property portfolios to shareholders. There might seem to have different management policies among the M-REITs companies in terms of earnings distribution procedures. Furthermore, there are also limited natures of business or operations coverage for M-REITs as current M-REIT operators only have portfolios consisting of commercial properties and land banks only. Thus, evaluation findings might be affected if M-REIT operators have other property related assets such as residential and health-care facilities or hotels in their portfolios due to differential stream of cash flows or earnings with different types of property assets. In addition, there might be performance differentiation even among conventional and Islamic REITs in terms of management costs, management policies and types of property portfolio held. Hitherto, we could not possibly encompass the performance evaluation between Islamic and non-Islamic REITs in our study because there are only two Islamic REITs among the 14 M-REITs. As such, any conclusions derived now would be totally unrepresentative of Islamic REITs' present or future nature.

Thirdly, our study use and focus on Sharpe's Index to measure the abnormal return of a security or portfolio of securities and rank the performance of each M-REITs. This is primarily because we are concerned with the standard deviation of return as a measure of total volatility of individual M-REITs. Several previous studies concerned with the beta of individual M-REITs instead, as a measure of market volatility. Beta does not provide good representation of risk for individual securities as compared to a portfolio of securities. Hence, in order to provide more accurate results in examining a

portfolio of M-REITs performance, Treynor and Jensen Alpha measures which are based on beta of a portfolio instead of individual standard deviation might be more representative. Additionally, the variables we used could not explicitly show the return on investment differences due to individual M-REIT factors such as asset types, growth strategy and capital structure. It would be necessary to identify these factors in the model if the study aims to explore their profitability impact. For future studies, investigation of the operational and management implication of dividend distributions and cash flow dynamism caused by the mandatory income distribution might lead to a more interesting direction.

Our study discussed in this paper indicated that the low return and low volatility of M-REITs may reflect yet another limitation to offshore investment of M-REITs. Such phenomenon could be attributed to the low daily transaction volumes and turnover rates over the years. This factor might affect M-REITs stock price movements over the period. Furthermore, there is also limited information disclosure by M-REITs companies on their historical financial information for deeper level of investigations.

The fifth limitation of our findings is due to features regarding investment limitations and tax laws on REITs and the valuation criteria in the appraisal process in different countries. International investors and appraisers may need to take into account the basic distinctions between valuation of real property markets and REITs to reach a reasonable and objective appraised value for real estate securitization. Hence, evaluation using the regional REITs indexes might not be directly and accurate to determine the return on REIT investment in different country.

5.4 Policies and Recommendation

To conclude our study, we would like to suggest that listings of subsequent M-REITs in Bursa Malaysia should be timed with market conditions which play a vital role in order to obtain favorable sentiments from investors towards M-REITs. By increasing the participants of M-REITs in the domestic capital market, it would provide higher degree of effectiveness and healthier competition among REIT operators yet improving performances to entice investors. At the same time, the government could extensively promote M-REITs as viable investment instrument given the benefits they provide as to increase liquidity and efficiency of domestic capital market. Increasing appeal of M-REITs to domestic and foreign investors could serve to encourage more listings in Bursa Malaysia. As such, it would help to promote and expand the M-REIT market into the global arena so that Malaysia could be one of the key emerging REIT players within the region (i.e. Singaporean government is promoting the S-REIT market by encouraging more foreign listings of REITs in their market).

Apart from that, M-REIT operators should have the efforts to explore different property portfolios types within their asset holdings so that future studies could evaluate on the effects of different property portfolio types towards M-REITs returns. In addition, given the recent government efforts to promote more public listings of Syariah-based REITs in Bursa Malaysia, future study on M-REITs can be expanded to examine performance differentiation among conventional and Islamic REITs in terms of management costs, management policies and types of property portfolio held.

Last but not least, performance analyses should be made with global REIT markets such as between developing and developed markets as to look deeper into the area of excellence in terms of REIT operations in developed markets such as the United States. By doing so, we could learn from their key areas to further develop our domestic REITs to achieve global operation

standards as well as enhance their appealing factors, not only for domestic individual and institutional investors, but foreign investors as well for them to invest into our REIT market. Ultimately, with the vast growth potential for M-REIT market which is further substantiated with continuous efforts from the authority and REIT operators, it is highly possible for Malaysia to develop and emerge into a key global REIT player in the foreseeable future.

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APPENDIXES

Appendix A – Correlation Coefficients between AHP and AHP2 with KLCI, KCPI, and FBMEMAS

			AHP	AHP2	KLCI	KLPI	FBMEMAS
Spearman's rho	**AHP**	Correlation Coefficient	1.000	.277(**)	.357(**)	.422(**)	.333(**)
		Sig. (2-tailed)	.	.006	.000	.000	.000
		N	119	98	119	118	119
	AHP2	Correlation Coefficient	.277(**)	1.000	.152	.254(*)	.156
		Sig. (2-tailed)	.006	.	.136	.012	.126
		N	98	98	98	97	98
	KLCI	Correlation Coefficient	.357(**)	.152	1.000	.774(**)	.910(**)
		Sig. (2-tailed)	.000	.136	.	.000	.000
		N	119	98	119	118	119
	KLPI	Correlation Coefficient	.422(**)	.254(*)	.774(**)	1.000	.811(**)
		Sig. (2-tailed)	.000	.012	.000	.	.000
		N	118	97	118	118	118
	FBMEMAS	Correlation Coefficient	.333(**)	.156	.910(**)	.811(**)	1.000
		Sig. (2-tailed)	.000	.126	.000	.000	.
		N	119	98	119	118	119

** Correlation is significant at the 0.01 level (2-tailed).

* Correlation is significant at the 0.05 level (2-tailed).

Appendix B – Correlation Coefficients between ALAQAR, STAREIT, TWRREIT and UOA with KLCI, KCPI, and FBMEMAS

			ALAQAR	STAREIT	TWRREIT	UOA	KLCI	KLPI	FBMEMAS
Spearman's rho	**ALAQAR**	Correlation Coefficient	1.000	.058	.257	.193	.205	.380(**)	.299(*)
		Sig. (2-tailed)	.	.685	.066	.172	.145	.005	.031
		N	52	52	52	52	52	52	52
	STAREIT	Correlation Coefficient	.058	1.000	.370(**)	.418(**)	.505(**)	.494(**)	.382(**)
		Sig. (2-tailed)	.685	.	.005	.001	.000	.000	.003
		N	52	60	56	60	60	60	60
	TWRREIT	Correlation Coefficient	.257	.370(**)	1.000	.328(*)	.456(**)	.490(**)	.446(**)
		Sig. (2-tailed)	.066	.005	.	.014	.000	.000	.001
		N	52	56	56	56	56	56	56
	UOA	Correlation Coefficient	.193	.418(**)	.328(*)	1.000	.463(**)	.546(**)	.390(**)
		Sig. (2-tailed)	.172	.001	.014	.	.000	.000	.002
		N	52	60	56	60	60	60	60
	KLCI	Correlation Coefficient	.205	.505(**)	.456(**)	.463(**)	1.000	.752(**)	.862(**)
		Sig. (2-tailed)	.145	.000	.000	.000	.	.000	.000
		N	52	60	56	60	60	60	60
	KLPI	Correlation Coefficient	.380(**)	.494(**)	.490(**)	.546(**)	.752(**)	1.000	.747(**)
		Sig. (2-tailed)	.005	.000	.000	.000	.000	.	.000
		N	52	60	56	60	60	60	60
	FBMEMAS	Correlation Coefficient	.299(*)	.382(**)	.446(**)	.390(**)	.862(**)	.747(**)	1.000
		Sig. (2-tailed)	.031	.003	.001	.002	.000	.000	.
		N	52	60	56	60	60	60	60

** Correlation is significant at the 0.01 level (2-tailed).

* Correlation is significant at the 0.05 level (2-tailed).

Appendix C – Correlation Coefficients between AXREIT with KLCI, KCPI, and FBMEMAS

			AXREIT	KLCI	KLPI	FBMEMAS
Spearman's rho	**AXREIT**	Correlation Coefficient	1.000	.360(**)	.398(**)	.421(**)
		Sig. (2-tailed)	.	.003	.001	.001
		N	64	64	64	64
	KLCI	Correlation Coefficient	.360(**)	1.000	.764(**)	.872(**)
		Sig. (2-tailed)	.003	.	.000	.000
		N	64	64	64	64
	KLPI	Correlation Coefficient	.398(**)	.764(**)	1.000	.765(**)
		Sig. (2-tailed)	.001	.000	.	.000
		N	64	64	64	64
	FBMEMAS	Correlation Coefficient	.421(**)	.872(**)	.765(**)	1.000
		Sig. (2-tailed)	.001	.000	.000	.
		N	64	64	64	64

** Correlation is significant at the 0.01 level (2-tailed).

Appendix D – Correlation Coefficients between BSDREIT, AMFIRST, ARREIT, ATRIUM, QCAPITA and Hektar with KLCI, KCPI, and FBMEMAS

			BSDREIT	AMFIRST	ARREIT	ATRIUM	QCAPITA	HEKTAR	KLCI	KLPI	FBMEMAS
Spearman's rho	**BSDREIT**	Correlation Coefficient	1.000	.415(**)	.246	.320(*)	.483(**)	.624(**)	.443(**)	.529(**)	.518(**)
		Sig. (2-tailed)	.	.004	.100	.032	.001	.000	.002	.000	.000
		N	46	46	46	45	46	46	46	46	46
	AMFIRST	Correlation Coefficient	.415(**)	1.000	.152	.366(*)	.338(*)	.506(**)	.443(**)	.585(**)	.301(*)
		Sig. (2-tailed)	.004	.	.312	.013	.020	.000	.002	.000	.037
		N	46	48	46	45	47	48	48	48	48
	ARREIT	Correlation Coefficient	.246	.152	1.000	.274	.064	.301(*)	.346(*)	.326(*)	.325(*)
		Sig. (2-tailed)	.100	.312	.	.068	.672	.042	.018	.027	.028
		N	46	46	46	45	46	46	46	46	46
	ATRIUM	Correlation Coefficient	.320(*)	.366(*)	.274	1.000	.329(*)	.426(**)	.365(*)	.399(**)	.444(**)
		Sig. (2-tailed)	.032	.013	.068	.	.028	.004	.014	.007	.002
		N	45	45	45	45	45	45	45	45	45
	QCAPITA	Correlation Coefficient	.483(**)	.338(*)	.064	.329(*)	1.000	.433(**)	.440(**)	.435(**)	.484(**)
		Sig. (2-tailed)	.001	.020	.672	.028	.	.002	.002	.002	.001
		N	46	47	46	45	47	47	47	47	47
	HEKTAR	Correlation Coefficient	.624(**)	.506(**)	.301(*)	.426(**)	.433(**)	1.000	.447(**)	.415(**)	.355(*)
		Sig. (2-tailed)	.000	.000	.042	.004	.002	.	.001	.003	.013
		N	46	48	46	45	47	48	48	48	48

		BSDREIT	AMFIRST	ARREIT	ATRIUM	QCAPITA	HEKTAR	KLCI	KLPI	FBMEMAS
KLCI	Correlation Coefficient	.443(**)	.443(**)	.346(*)	.365(*)	.440(**)	.447(**)	1.000	.761(**)	.868(**)
	Sig. (2-tailed)	.002	.002	.018	.014	.002	.001	.	.000	.000
	N	46	48	46	45	47	48	48	48	48
KLPI	Correlation Coefficient	.529(**)	.585(**)	.326(*)	.399(**)	.435(**)	.415(**)	.761(**)	1.000	.743(**)
	Sig. (2-tailed)	.000	.000	.027	.007	.002	.003	.000	.	.000
	N	46	48	46	45	47	48	48	48	48
FBMEMAS	Correlation Coefficient	.518(**)	.301(*)	.325(*)	.444(**)	.484(**)	.355(*)	.868(**)	.743(**)	1.000
	Sig. (2-tailed)	.000	.037	.028	.002	.001	.013	.000	.000	.
	N	46	48	46	45	47	48	48	48	48

** Correlation is significant at the 0.01 level (2-tailed).

* Correlation is significant at the 0.05 level (2-tailed).

Appendix E – Correlation Coefficients between CMMT and SUNREIT with KLCI, KCPI, and FBMEMAS

			CMMT	SUNREIT	KLCI	KLPI	FBMEMAS
Spearman's rho	**CMMT**	Correlation Coefficient	1.000	.800	-.700	-.100	-.300
		Sig. (2-tailed)	.	.104	.188	.873	.624
		N	5	5	5	5	5
	SUNREIT	Correlation Coefficient	.800	1.000	-.500	.400	.200
		Sig. (2-tailed)	.104	.	.391	.505	.747
		N	5	5	5	5	5
	KLCI	Correlation Coefficient	-.700	-.500	1.000	.400	.700
		Sig. (2-tailed)	.188	.391	.	.505	.188
		N	5	5	5	5	5
	KLPI	Correlation Coefficient	-.100	.400	.400	1.000	.900(*)
		Sig. (2-tailed)	.873	.505	.505	.	.037
		N	5	5	5	5	5
	FBMEMAS	Correlation Coefficient	-.300	.200	.700	.900(*)	1.000
		Sig. (2-tailed)	.624	.747	.188	.037	.
		N	5	5	5	5	5

* Correlation is significant at the 0.05 level (2-tailed).

Appendix F – Correlation Coefficients between Hong Kong REIT Index with Malaysia REIT Index

			Hong Kong	Malaysia
Spearman's rho	**Hong Kong**	Correlation Coefficient	1.000	.244
		Sig. (2-tailed)	.	.058
		N	61	61
	Malaysia	Correlation Coefficient	.244	1.000
		Sig. (2-tailed)	.058	.
		N	61	70

* Correlation is significant at the 0.05 level (2-tailed).

Appendix G – Correlation Coefficients between Singapore REIT Index with Malaysia REIT Index

			Singapore	Malaysia
Spearman's rho	**Singapore**	Correlation Coefficient	1.000	.334(**)
		Sig. (2-tailed)	.	.005
		N	69	69
	Malaysia	Correlation Coefficient	.334(**)	1.000
		Sig. (2-tailed)	.005	.
		N	69	70

** Correlation is significant at the 0.01 level (2-tailed).

Appendix H – Correlation Coefficients between Taiwan REIT Index with Malaysia REIT Index

			Taiwan	Malaysia
Spearman's rho	**Taiwan**	Correlation Coefficient	1.000	.083
		Sig. (2-tailed)	.	.518
		N	63	63
	Malaysia	Correlation Coefficient	.083	1.000
		Sig. (2-tailed)	.518	.
		N	63	70

Appendix I – Table 4.1: Total Annual Return for M-REITs (%)

M-REITs	Time Categories									
	Pre-Crisis							Crisis	Post-Crisis	
	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
AHP	(3.26)	(5.98)	5.38	(1.08)	11.58	2.18	14.56	(8.83)	16.49	9.72
AHP2*	(18.51)	32.17	11.15	(36.32)	2.46	14.14	11.08	(6.16)	21.65	
AXREIT					5.02	(2.62)	13.24	(47.18)	61.46	19.81
ALAQAR**						0.57	(2.05)	(9.21)	12.77	14.02
BSDREIT**							19.88	(32.23)	27.66	11.02
AMFIRST							(1.32)	(12.32)	28.22	14.59
ARREIT							5.63	(13.46)	4.70	4.38
ATRIUM							0.65	(49.13)	40.84	18.14
QCAPITA							1.78	(33.88)	15.59	7.03
CMMT										7.79
SUNREIT										10.43
HEKTAR							49.06	(68.12)	39.14	21.35
STAREIT						(23.22)	10.48	(22.19)	17.58	3.33
TWREIT						(8.84)	45.80	(48.03)	34.13	9.10
UOA						7.65	22.86	(37.20)	35.72	16.67

NOTE:

** denotes delisted.*

*** denotes Islamic REITs company.*

Appendix J – Table 4.5: Yearly Sharpe's Measure for M-REITs and Equity Indices

M-REITs	TIME CATEGORIES									
	Pre Crisis							Crisis	Post-Crisis	
	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
AHP	(0.69)	(1.70)	0.65	(1.29)	4.68	(0.59)	2.77	(1.71)	3.76	4.27
AHP2	(4.02)	2.91	1.06	(6.04)	(0.01)	3.99	1.81	(2.55)	1.54	
AXREIT					0.29	(2.45)	1.29	(7.70)	6.15	10.41
ALAQAR						(0.76)	(1.88)	(2.80)	2.80	3.46
BSDREIT							3.63	(8.76)	5.50	2.29
AMFIRST							(1.24)	(3.37)	7.00	2.91
ARREIT							1.10	(5.01)	0.48	1.78
ATRIUM							(0.70)	(9.79)	5.43	6.31
QCAPITA							(0.17)	(7.13)	3.13	1.48
CMMT										1.21
SUNREIT										3.15
HEKTAR							5.08	(9.49)	5.54	5.55
STAREIT						(9.89)	1.20	(10.54)	3.67	0.26
TWREIT						(3.15)	5.89	(7.97)	5.25	1.88
UOA						(5.00)	3.96	(7.77)	7.33	3.89
EQUITY INDICES										
KLPI	(0.61)	(1.75)	5.31	(0.59)	(9.22)	6.71	4.18	(11.11)	6.06	5.65
KLCI	(0.46)	(2.00)	3.91	3.48	(1.43)	7.21	5.84	(11.05)	9.45	5.77
EMAS	(0.59)	(1.22)	4.20	2.28	(3.09)	6.70	6.68	(10.64)	8.21	6.54

Appendix K – Table 4.10: Comparison between Yearly M-REITs Dividend Yield and Annual Inflation Rate (%)

Years	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	Average Yield (%)
Inflation Rate (%)	1.40	1.80	1.10	1.40	3.00	3.60	2.00	5.40	0.60	1.70	**2.20**
AHP	8.26	4.17	7.46	7.46	6.67	6.76	6.47	7.65	8.04	7.74	**7.07**
AHP2		3.33	4.82	2.19	5.95	5.60	4.90	5.49			**4.61**
AXREIT						9.88	6.69	19.09	11.75	7.53	**10.99**
ALAQAR						2.78	7.00	4.85	9.03	7.55	**6.24**
BSDREIT							2.95	8.59	9.35	6.97	**6.97**
AMFIRST							5.99	4.27	10.05	8.43	**7.18**
ARREIT							5.63	4.13	8.90	10.66	**7.33**
ATRIUM							4.16	7.93	9.44	8.97	**7.62**
QCAPITA							3.13	5.57	8.44	7.52	**6.17**
CMMT*											**-**
SUNREIT*										1.57	**1.57**
HEKTAR							5.45	9.00	10.52	8.56	**8.38**
TWREIT							0.66	12.03	9.17	7.98	**7.46**
STAREIT						3.67	6.84	8.11	8.44	7.53	**6.92**
UOA						3.55	6.90	11.70	9.72	7.68	**7.91**
Average Yield (%)	**8.26**	**3.75**	**6.14**	**4.83**	**6.31**	**5.37**	**5.14**	**8.34**	**9.40**	**7.59**	

NOTE: ** denotes new listing in July 2010*