PERFORMANCE OF ISLAMIC INDICES: THE OPPORTUNITY FOR NON-MUSLIM COUNTRIES

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ABSTRACT

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Hitherto, comparative study of Islamic finance in both non-Muslim and Muslim countries is scarce. This is including the area of investment in Islamic equity portfolio in non-Muslim countries. Consequently, it is interesting to study performance comparison of investment in Islamic financial products such as Islamic indices created by Muslim and non-Muslim countries. Results obtained from this research will be useful for investors as investment information and for Islamic and non-Islamic countries alike to create investment alternatives such as Islamic financial products or funds.

This research mainly focuses the investigation on performance and characteristics between the conventional country indices and the Islamic indices from MSCI indices as proxy of Islamic funds and equity investments. The scope of the study involves the investigation on the performance and benefit of country indices under Islamic screening criteria using average raw returns and risk-adjusted returns, co-integration approach and variance ratio analysis. The study also examines the effect on the performance of country characteristics and Islamic factor in sample indices by focus to Islamic indices' returns only and test by mean difference test, the post hoc test, and regression analysis.

The results of research show the opportunity in non-Muslim countries for Islamic indices investment in which they gave the higher average return and lower risk than conventional indices. The factors that are related to the difference in average

return are the characteristics of being Muslim or non-Muslim country, level of Islamic financial development and the Shariah law application in country.

The implication of this research is to provide an evidence of Islamic investment, Islamic funds, and other equity investments. Also, this research contributes to the knowledge about performance and the benefit of Islamic equity investment in other environment beside Islamic world. This would help to confirm benefit of Islamic indices and Islamic investment in non-Muslim countries and can understand the characteristic of Islamic investment whether it is more like the country characteristics or distinct from them.

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ABBREVIATIONS AND SYMBOLS

Abbreviations	Equivalence
DJIM	Dow Jones Islamic Index
GCC	Gulf Cooperation Countries
IS	Islamic Index
MSCI	Morgan Stanley Company Index

CHAPTER 1

INTRODUCTION

1.1 Background

"Islam is not only about religious beliefs and rituals, but is also a complete way of life, including involvement in various economic activities" as stated by Haniffa and Hudaib (2010). Muslims are people whose religion and faith is Islam. Muslims normally need to work hard and participate in business and economic activities, focusing on partnership, risk sharing, and profit seeking. Shariah is the law or the principle of living under the Islamic way, not only in the financial market but including all aspects of life.

Under the Shariah principle, Islamic finance has grown significantly during the last two decades. The first investment was from the Islamic Bank in Egypt, and other Shariah-compliant products and services are developed to serve the needs of customers worldwide.

The driver of the growth in the Islamic finance industry stems from three sources. First is the demand for ethical and Shariah-compliant products and services. Second is the encouraging of demographic and strong economic growth in Muslim countries. Third are the government and regulatory agencies that provide an enabling environment for Islamic finance.

There are five popular products related to Islamic finance: the Islamic bank, Islamic funds, Islamic insurance or Takaful, Islamic bonds or Sukuk and services. The demand of Shariah-compliant product and services comes from the Muslim population around the world. Muslims live worldwide. A country in which Muslims are predominant or the majority group of the population and the state of religion is Islam it is called a Muslim country. On the other hand, a country in which the Muslims represent a minority or are not a predominant population or where the state religion is not Islam it is called a non-Muslim country. Thus non-Muslim country in

this research does not mean a country without Muslim population but a country in which the Muslims are minority population, as mentioned.

According to the growth of the Islamic financial industry and the demands of the Muslim population, the Shariah-compliant products and services are needed in both Muslim and non-Muslim countries. Though, there is a demand of Islamic financial products and services in non-Muslim countries, with the difference of economic environments and other infrastructures, the Shariah-compliant product and services might have different characteristics as well as performance. There is a study that states the benefit environment and infrastructure for Shariah-compliant products and services are those environments that related to Islam like in Muslim country (Hoepner, Rammal and Rezec, 2011). Thus it would be interesting to find out what the performance and characteristics of Shariah-compliant services and product's in non-Muslim countries or non- Islamic economies are like.

The lack of study on Shariah-compliant products, especially regarding Islamic funds and equity investment provides an interesting avenue for exploration for this research in terms of the opportunity to study the behavior and characteristics of Shariah-compliant products in non-Islamic environments and to find new markets for Islamic finance for investors. In the Islamic fund industry, the driver of growth comes from the growth range of investible asset classes, the rising in global wealth seeking for alternative forms of investment and diverse product ranges. However, an obstacle rises when there is not enough data on Islamic funds in some of non-Muslim countries. The Islamic indices, the benchmark and universe of Islamic funds under Shariah principle, are used as the representative of Islamic funds and equity investment in this study. Thus, this research is focused on the study of the behavior and performance of the Islamic indices in non-Muslim countries so as to investigate the opportunity for the performance and characteristics of Shariah-compliant products in these countries.

1.2 Principle of Islamic Finance

The principle of Islamic finance was established over 1,400 years ago and has remained until nowadays. The Islamic principle called Shariah (lawful) is an

important ground for all Muslims. The modern age of Islamic finance started in the middle of 1970s when the first Islamic bank was opened in Egypt. Throughout the marketing and system of supply and demand, Shariah-compliant productions developed rapidly in the 1990s.

Islamic finance is the financial transaction and principles that are conducted under Islamic law or Shariah law. Shariah law is the framework or principle of living in the Islamic way in every aspect of life. The Shariah framework comes from four sources. The first one is from the holy Koran which is the word of Allah. The second one is from the actions, behavior, and saying or preaching of Prophet Muhammad called Sunnah. The third is the frameworks from the Islamic scholars during the history of Islam called Ijmah.

1.2.1 Prohibitions in Islamic Finance

The basic information for those that are new to Islamic finance is to know what is allowed (halal) or not allowed (haram) in the Islamic way of life. As mentioned concerning the Shariah law or principles and sources of those principles, the main principles come from the Holy Koran and others. The question has been raised why Muslims have to avoid something. The answer is that all Shariah principle comes from the basic religion that promotes good deeds and prevents evil or bad deeds. In Islam, Muslims believe in Allah and practice as the prophet Muhammad. There are main four things that Muslims should not be involved with since they are considered as "evil."

1.2.1.1 Riba

Riba means interest rates, usury or the predetermined return for lending money in interest-based finance. The reason of the prohibition from Islam is that the rate of return should not be guaranteed in lending money.

Shariah law gives priority to the lender to see the objective of lending into two cases. First, lenders want to lend their money to help other parties with no return. Secondly is that the lender wants profit sharing with borrowers. In the first case, Shariah law requires the lender to deny from claiming any additional amount of the principal amount even if these excess amounts are to compensate for the depreciation in the value of the money. The purpose of helping should not involve

income or being an income generator by requiring those interest payments. Another idea is that Islam sees money as a medium of exchange. Money contains no value in itself and from this point of view it is crystal clear why it should not generate income from lending money to other for sympathetic acts (Ahmad, 2006).

If the main reason is sharing profit, the lender can receive a predetermined proportion of profit provided and share losses or risks with the other party. This is a joint venture type of business, where both parties own a stake and share profit and losses together on a fair basis. This is the idea of fairness that is different from interest- based finance. The fairness and justice of two parties exist in Islamic finance. In case of a borrower in an interest-based system, the lender just waits for the amount of fixed return from the money he or she lends with no need to care about the business of the borrowers as to whether business is going up or down. In this case, the Islamic principle is considered as unfair for borrowers, while on the other hand the business grow fast and success with a huge return, the fix amount of return for lender creates the injustice for lender in this situation.

Thus, the main reason why Shariah law does not allow riba or interest rate is that it creates an unfair situation and injustice for all parties. Second is money is considered as the medium of exchange not the value generator itself. As the riba is embedded in time value of money system in the conventional financial world, we cannot avoid it in many empirical studies; however, in the Islamic world the introduction of Sukuk or Islamic bonds has created a rate of return that can be used as the replacement of interest rate in such a technique of calculation.

1.2.1.2 Time Value of Money

The time value of money in the conventional financial world is that money is viewed as a commodity and it has intrinsic value by itself; then, when lending or giving it, it should not be free of charge. This means that it requires a predetermined rate of return in form of interest to recompense for money's time value (Merdad, Hassan and Hunt-Amed, (2012).

Islamic finance views money as a medium of exchange with no intrinsic value itself. It becomes useful and has value when acquiring real assets or buying goods and services. From this point of view, money itself does imply the time value of money. In the case of borrowing and lending, there should not be any predetermined

return for either side of the transaction. However, when the acquisition of assets and commodities occurs, the time value of money exists in Islamic finance and it is recognized in Shariah law. This trading asset is based on trading goods which then can be recognized by Shariah law. Thus, the time value of money in Shariah Law is recognized because money is based on trading that asset.

1.2.1.3 The Prohibition of Gharar and Maysir

Gharar means a situation that involves risk, uncertainty, ambiguity, and/or deception. Shariah law forbids conditions where there exist excessive amounts of risk and a high level of uncertainty.

Gharar can be seen in derivative transactions for example forwards, futures, options, short selling and conventional insurance activities. Visser (2009) states that there are reasons why these conditions were prohibited. "First, the subject and price must exist and the other party has the ability to deliver it. Next, all amounts of value must be specified. Third, the quantity, quality, and date of future delivery must be defined beforehand."

Overall, it is to create justice, fairness and transparency for all parties and to avoid excessive risk and a high level of uncertainty. Maysir is an Arabic word means gambling or game of chance or lottery or any investing in business related to a game of chance.

1.2.1.4 The Prohibition of Haram Trade

Haram in Arabic means forbidden or impermissible or not allowed. There are many businesses and industries that are haram in Shariah law, as the main idea is that it is believed to be harmful and unfruitful to society and the community. For example, pork production, illegal weapons and drugs, gambling, pornography, tobacco, etc. It is not only Islam that does not allow people to invest in those industries; there are matching industries or businesses in Christianity and Judaism as well.

1.2.2 Islamic Financial Concepts

There are three basic concepts of financial principles under Shariah law. The concepts of the Shariah principle stem from the objective that reduces injustice, creates real value, and increases social welfare for society. Three concepts of Islamic

finance are the profit-loss-sharing financing concept, the trade-based financing concept, and the asset-based financing concept. All of the concepts are divided into many types and their details are provided.

1.2.2.1 Profit-Loss Sharing Financing Concept

Musharakah in Arabic means partnership. This partnership concept can be explained as a normal business transaction in which two or more parties share the profit and loss together and obtain the right to make a decision and run the business together. Capital and funds are raised equally by all parties and profit or loss can be distributed to all of them fairly.

Mudarabah is a partnership that is different from the one cited above. This type of partnership is where all parties get together with different resources and capital. Some invest in capital while other invest according to their expertise and skill in business. Then the profit will be shared according to the proportion of the agreement or what the parties invested in. In this case, there exists a problem when a loss occurs and the only one who has to take care of this loss is the party whom provide the money.

1.2.2.2 Trade-Based Financing Concept

Murabahah is a situation in which a commodity is resold at a markup price. In this process the bank acts as the intermediary between the seller and buyer. The bank buys a commodity from the seller and then sells this commodity to the buyer at an agreed markup price.

Bay'mu'ajjal is the sales on credit where a commodity is delivered in the present and the price is paid sometime later.Salam is the commodity that is paid according to its price in the present and that will be delivered later.Ijarah is a leasing type of business that is allowed by Shariah principle.

1.2.2.3 Asset-Based Financing Concept

Sukuk is a product that is in this type of concept. Sukuk is an Islamic bond and has similar characteristics to the conventional bond except that the sukuk is an asset- backed security. The issuer of a sukuk sells a certificate on a real asset to an investor and the investor rents it back to the issuer and they will get a rental fee on the return. The rental rate is like the interest rate benchmark or LIBOR rate.

The reason why the sukuk is different from a conventional bond is that the sukuk links the cash flow and rate of return to the purchased asset. The sukuk

links the rate of return by the underlying assets, not the cash flow itself, which Shariah law views as the medium of exchange only.

1.3 History of Islamic Finance

Islamic finance is the finance for Muslim investors that want to invest and conduct all of their financial transactions correctly under Islamic values, morals and beliefs without any doubt or outside Islamic principles. Islamic finance has become a common investment for non-Muslim investors as a type of ethical investment or faith-based investment, or non-Muslim investors view Shariah-compliant financial products as belonging to the faith-based investing type.

The introduction of the Islamic finance industry began in 1963 with the Islamic Bank in Egypt called the Mit Ghamr Savings Bank and has grown rapidly in numbers and size throughout 50 countries around the world (Chong and Liu, 2009). In the bigger picture of Islamic finance, it is still at the infant stage compared to the conventional financial system of the world. It has been experiencing an excellent and rapid growth since the mid-1990s.

1.3.1 Shariah-Compliant Financial Products and Services

Under the development of Islamic finance, many products and services have been invented. The most well-established products and services in Islamic finance are banking and Sukuk. Insurance (Takaful) and Islamic funds are at the developing stage. The Shariah-compliant assets grew from 150 billion US dollars to around 781, 847, 1025 and 1219 and 1460 billion USD in 2008, 2009, 2010, 2011, and 2012 respectively or in only 20 years. The updated global Islamic financial assets were USD 1.45 trillion in 2012 (McKensie, 2013). The assets are expected to grow in 10 to 15 percent annually.

Table 1.1 Global Islamic Finance Assets and the Growth Number in 2008-2012.

Type/Year	2008	2009	2010	2011	2012
Bank	720	777	943	1105	1326
Funds	51	54	58	62	74
Takaful	8	13	21	26	31
Other	1	3	3	26	28
Total	781	847	1025	1219	1460

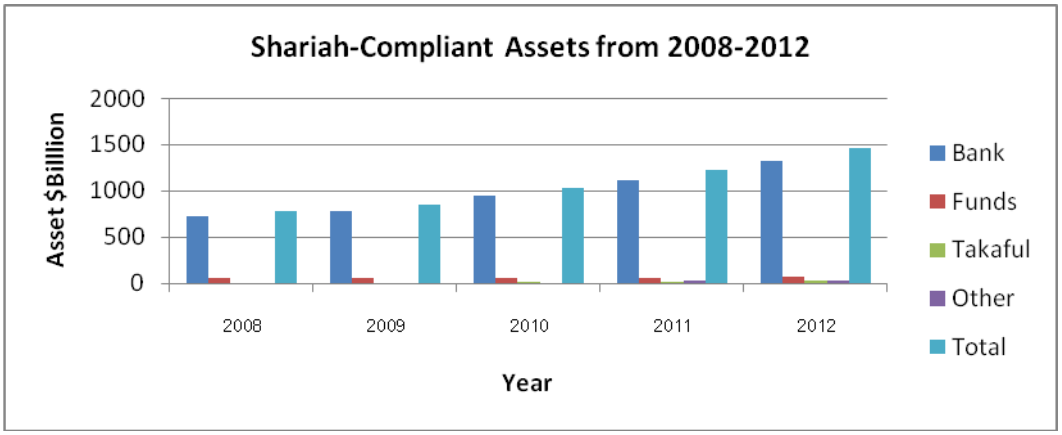


Figure 1.1 Global Islamic Finance Assets by Sector

There are 5 major forms of Shariah-compliant product and services.

1.3.1.1 Islamic Bank

Islamic bank provides services and products under the Islamic principle. This bank is interest free but has other kinds of returns based on the profit-sharing system in which profits and losses are shared with the investor or client.Islamic bank is located both in Muslim countries and non-Muslim countries with a sufficient amount of Muslim population or customers that are willing to be users of the bank. In some non-majority countries, some major banks or financial institutions provide a small section of Shariah-compliant products to Muslim customers and is called the window of Islamic finance. Islamic bank is now looking for opportunity to grow in the core region of Middle East, Asia, and Africa.

1.3.1.2 Sukuk

The Islamic bond now is very popular in many countries such as Malaysia and others; however, some of the Shariah masters do not accept this kind of investment. The sukuk has expand rapidly with a 64% increase in 2012 and in the year 2013 it started at $59 billion of the issuance at the first half of the year. In long term the growth of sukuk is expected to drive Islamic finance and economy since there will be an involvement in government and private sector in domestic or even from other Islamic countries in the world

1.3.1.3 Islamic Funds

The funds can be created by both Muslim and non-Muslim companies to sell to those investors that are interested in products. The market size of Islamic funds increased to $74 billion in 2012 or a 155% increase from year 2004. There are around 900 funds worldwide. There is an interesting report from Ernst and Young (2013) that estimated the pool of Islamic funds at around $500 billion and there is still room to grow in the market.

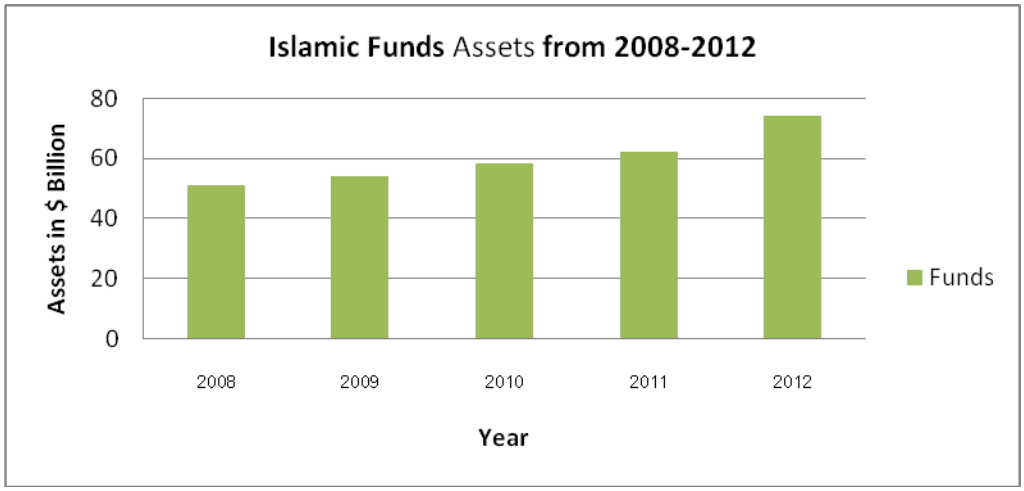


Figure 1.2 Global Islamic Fund Assets

1.3.1.4 Takaful

This is the Islamic insurance company that follows the Shariah principle. Takaful is different from conventional insurance companies in the way that carries the risk by different type. This is like mutual insurance as a risk sharing by a group of individual for the benefit of the customers.

1.3.1.5 Other Products and Services Related to Islamic Finance

Lessons and classes or other types of leasing and cooperative organization are operated in non-majority Muslim countries. Most of them were developed by the Muslim population that are residents of those countries and want to practice the Shariah law type.

1.4 Islamic Funds, Shariah-Compliant Stock and Benchmark

1.4.1 Socially Responsible Funds and Faith-based Funds and Islamic Funds

Mutual funds have become the preferred investment option for investors. Regarding investors' risk tolerance and appetite for returns, these funds can be categorized into many types, such as growth funds, balanced funds, value funds, and specialty funds. Specialty funds are funds that are mainly invested in a specific market, region, industry or a narrow group of assets. Socially Responsible Funds (SRF) and faith-based funds (FBF) are in this category (Francisca and Beer, 2011).

There are numerous studies on Socially Responsible Funds (Mackey, Mackey and Barney, 2007; Hull and Rothenberg, 2008). Most of the studies focus on corporate social responsibility inside the corporation and the effect of policy more than the fund characteristics themselves. However, there is little research that focuses on and looks closer at the faith-based funds or investment in past decade. This is contrast with the significant growth of funds and investors in this type which has grown significantly from many faiths or religious believes especially Islamic funds and Christian Funds for example there is evidence of the number of funds growth significantly in UK under the Church and UK Methodist believers (Kreander, McPhail and Molyneaux, 2004).

Some studies have investigated the screening criterions used by socially responsible funds and investigated the similarity of Christianity fund and Islamic fund characteristics (Sauer, 1997; Statman, 2006; Boasson, Boasson and Cheng, 2006; Ghoul and Karam, 2007).

Nowadays, ethical investors are concern more about social issues concerning for example the environment, and human rights and communities. The screening of socially responsible funds has changed over time due to the social issues and current situations from the avoidance in companies involved with in production of alcohol tobacco and gambling in early 1990's. The screening has expanded to the avoidance of companies involved in wars (Francisca and Beer, 2011). On the other hand, faith-based funds or investment screening criteria have not changed over time due to the fact that the foundation of investment comes from religious beliefs or practices.

The similarities of socially responsible funds and faith- based funds are basically as mentioned above but faith based funds are more stringent in the prohibition of the particular beliefs in each religion, for example, the prohibition of Muslims from investing in a company that is involved with the pork production industry or "Riba" (interest), which are mainly in conventional financial institutions, banks, and insurance companies and any other businesses that are involved in any practices against the Islamic financial concept.

1.4.2 Shariah-Compliant Stock

The work of Merdad et al. (2012) discussed the history of investment in equities in Islam as follows:

> The development of investing in stock market has been start since the Saudi Arabian. Fiqh Academy, the leading authority on religious issues in the Muslim world, issued the decree that investing in equity is permissible under Shariah law...Trading stocks represent trading real assets that have intrinsic values and not just artificial ones. Capital gains and generated dividends from equity trading are comfortable with the Shariah law because they are based on the profit –loss-sharing financing concept.

After this consensus, the Shariah scholars provided screening criteria to select Shariah-compliant stocks, which means stocks that Muslim investors can buy and from which they can gain returns from dividends or capital gains.These Shariah-compliant stocks will be selected in investor's portfolio or Islamic fund after passing the screening criteria under the Shariah principle.

1.4.2.1 Screening Criteria for Shariah-Compliant Stocks

There are two filters for screening stock under the Shariah principle. First is the ethical criterion and second is the financial criterion.

1) Ethical or Business Screening

First, the ethical screening criteria screen out those stock or companies that are involved in haram activities in the Islamic principle. The haram activities are as follows:

(1) Activities that involve riba. All forms of convention financial institutions and banks are screened out.

(2) Activities that involve with gharar; all insurance companies, trading margins, future and derivative markets.

(3) Activities that involve maysir or gambling; lotteries, casinos or games of chance will be screened out.

(4) Activities that are in the impermissible sectors such as pork production, weapons, toxic material, pornography or any kind of unethical businesses.

2) Financial Ratio Screening

Firms must pass the following financial criteria under the concept of Shariah-compliance.

(1) The ratio of impermissible income to total income is less than 5 percent.

(2) The ratio of interest-based debt to total assets is less than 33 percent.

(3) The ratio of account receivables to total assets is less than 45 percent.

(4) The ratio of interest-bearing cash and investments to total assets is less than 33 percent.

Some practitioners prefer to replace the total asset dominator with different forms of market capitalization, such as 12-month market capitalization. As it represent other kinds of element such as firms' management staff and actual intellectual properties. Mostly, firms fail this first criterion since their businesses are involved with interest rate in the conventional world while the firms that pass the first criteria struggle to survive regarding the second one. Industry sectors that pass those criteria are construction, real estate, technology, healthcare, telecommunications, utilities, engineering, steel, and transportation.

However, some of those firms which pass the business ethical activity criteria but fail the financial ratio criteria whose revenue from non-halal activities are less than 5% will most likely engage in the "Portfolio purification" process. This process helps firms to purify themselves by donating an amount of money to Islamic charities or societies (Karam, 2007).

1.4.3 Benchmark for Shariah-Compliant Stocks

Many independent global index companies have launched their own Islamic indices as reference benchmarks for mutual funds or private investments. The Dow Jones Islamic Index series was the first index and was launched at the end of 1998. The first Dow Jones Islamic Market Index (DJIMI) was launched to track the performance of companies whose activities were consistent with Islamic principles. The next companies were S&P and FTSE Indice companies. Morgan Stanley Company is the latest to have launched MSCI Global Islamic indices for 70 developed, emerging and frontier Market countries, including regions such as the Gulf Cooperation Council (GCC) countries, Asian countries, and European countries.

These benchmarks apply very stringent criteria under Shariah which allows investors to invest in halal (allowed) businesses or businesses that are not against Islamic beliefs. The first prohibition is the involvement of interest rate activities and another example is the acquisition of shares in companies involved in alcohol production or distribution and any activity in pork products. Those companies that have passed the first rule must face other financial ratio criteria that are focused on the maintenance of total assets.

Surprisingly, the Islamic Index is the most compliable product under the Shariah criteria. Islamic indices have been very useful for wealth management for individuals and companies. The available benchmark indices have expanded rapidly across regions and geographies. There are four major global Islamic indice providers that cover the Islamic equity market, as follows:

1) Dow Jones Islamic Market Indices: This provider provides country indices, global/regional indices, blue chip indices, and strategy thematic indices.

2) S&P Shariah Indices: S&P provides global/regional indices, market cap indices, and sector indices.

3) MSCI Global Indices: MSCI provides developed market indices, emerging market indices, frontier market indices, GCC, and Arabian market indices.

4) FTSE Global Islamic Indices: the FTSE provides country indices, global/regional indices and industry indices.

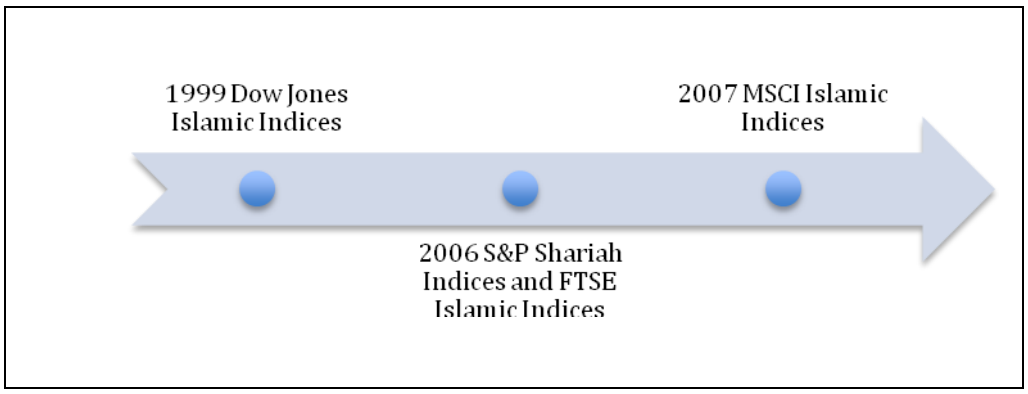


Figure 1.3 The Introduction of a Global Islamic Indices Timeline

Source: Binmahfouz, 2012.

Table 1.2 Business Sectors Screened Out by Islamic Indice Providers

Sector	MSCI	DJIS	FTSE	SP
Alcoholic Beverages	x	x	x	x
Broadcasting & Entertainment	x	x	x	x
Conventional Financial Services	x	x	x	x
Gambling	x	x	x	x
Hotels	x	x	x	x
Insurance	x	x	x	x
Media Agencies (Except Newspapers)		x		x
Pork-related Products	x	x	x	x
Restaurants & Bars	x	x	x	x
Tobacco	x	x	x	x
Trading of Gold & Silver				x
Weapons & Defense		x		x

Source: Binmahfouz, 2012.

Table 1.2 shows the screening criteria for Islamic index providers. The securities of companies which operate businesses under those sectors would be screened out by the providers. The sectors that are not allowed under Shariah are pork-related products, gambling, conventional finance, insurance, tobacco, alcohol, weapons, entertainment and others. Each provider has its own Shariah advisory board to advise on permitted or non-permitted businesses or criteria.

Table 1.3 Financial Screening Details of Islamic Indices from Index Providers

Index Provider	Level of Debt	Cash and interest bearing securities	Liquidity	Impermissible Income
MSCI	Total Debt/ Total Assets less than 33.33%	Cash and interest bearing securities/Total Assets less than 33.33%	Account Receivables and cash/ total assets less than 33.33%	Should not exceed 5% of total revenue
Dow Jones	Total Debt/ Market Cap Average 24 months less than 33.33%	Cash and interest bearing securities/Market Cap Average 24 months less than 33.33%	Account Receivables and cash/ Market Cap Average 24 months less than 33.33%	Should not exceed 5% of total revenue
FTSE	Total Debt / Total Assets less than 33.33%	Cash and interest bearing securities/ Total Assets less than 33.33%	Account Receivables and cash/ total debt less than 50%	Total interest and non-compliant activities income Should not exceed 5% of total revenue
S&P	Total Debt/ Market Cap Average 36 months less than 33.33%	Cash and interest bearing securities/Market Cap Average 36 months less than 33.33%	Account Receivables and cash/ Market Cap Average 36 months less than 33.33%	(Other than interest income) Should not exceed 5% of total revenue

Source: Binmahfouz, 2012.

Table 1.3 shows the financial screening criteria of Islamic indices from each provider. Mostly, they use the same criteria but there are some differences, such as the divisors and the level of ratios. However, there is a tolerance threshold for percentage of ratios and all of them are at an acceptable level.[1]

[1] Levels of tolerance threshold of debt, liquidity, interest-bearing securities and impermissible income range are 33.33%-30, 33%-50%, 33.33%-30%, and 5%-25% respectively.

1.5 The Importance of Muslim Population and Emerging Market

According to the Pew research, the Muslim population in the world is about 1.6 billion and is expected to grow to 2 billion in 2030. The size of the world population was 7 billion approximated in 2010. Muslims are scattered around the world with the number of growth at around 2 percent per year. Not all Muslims live in the Arabian Gulf or Middle East countries. Surprisingly the country that has the highest number of Muslims is Indonesia. Table 1.4 shows the population size of Muslims in 2010 and crystallizes the idea that the size of the Muslim population is not in gulf countries only and that the idea of an Islamic finance system is possible in any country.

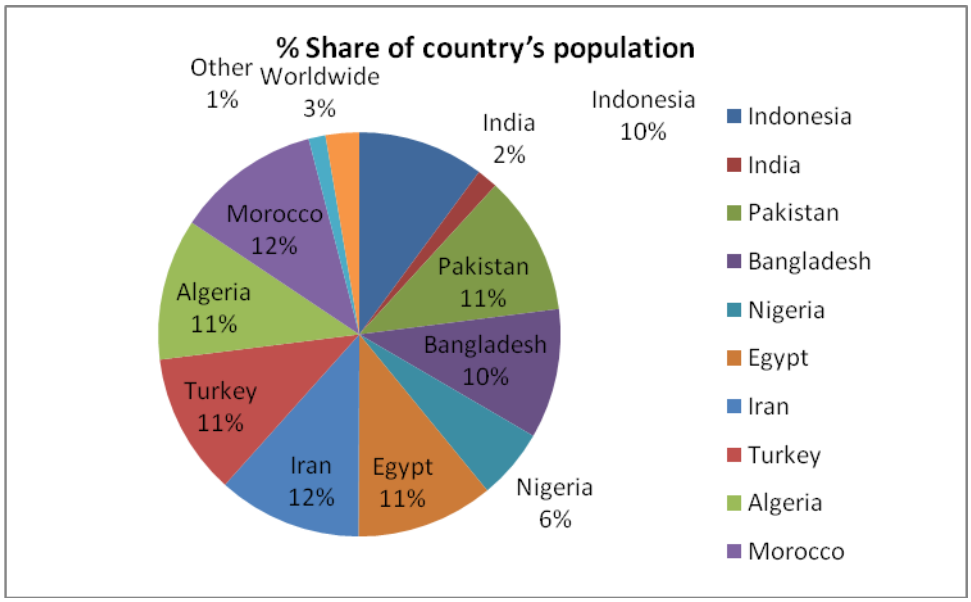
Table 1.4 Muslim Populations by Country

Country	Population in millions	% Share of country's population	% of world Muslim population
Indonesia	209,120,000	87.2	13.1
India	176,190,000	14.4	11
Pakistan	167,410,000	96.4	10.5
Bangladesh	133,540,000	89.8	8.4
Nigeria	77,300,000	48.8	4.8
Egypt	76,990,000	94.9	4.8
Iran	73,570,000	99.5	4.6
Turkey	71,330,000	98	4.5
Algeria	34,730,000	97.9	2.2
Morocco	31,940,000	99.9	2
Others	546,400,000	11.7	34.2
Worldwide	1,598,510,000	23.2	100

Source: Pew Research Organization, 2011.

Note: *% share of world population

Panel A Country Population



Panel B Percentage of Muslim Population

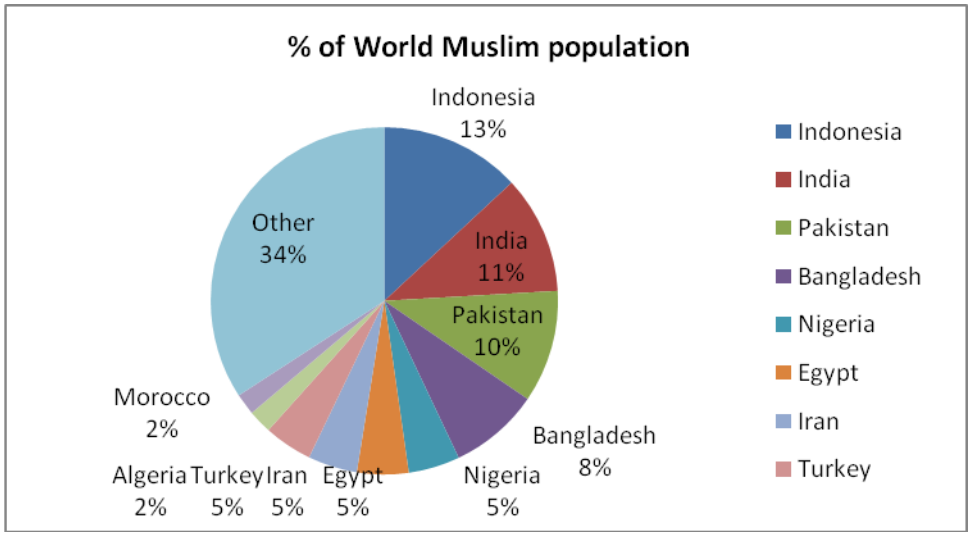


Figure 1.4 Percentage of Share of Muslim in Country's Population and World Muslim Population

Source: Pew Research Organization, 2011.

A report on the size and distribution of the world's Muslim population in October 2009 suggested that nearly one-fifth of the world's population is Muslim. Although Islam is often associated with the Arab world and the Middle East, only 15% or less of Muslims are Arab. The majority of Muslims live in the Asia Pacific region and represent around 61.9% of a total of 1.57 trillion in the world. In Southeast Asia, there are 253 million Muslim or 26% of Muslims in Asia scatted throughout the region. The growth of Islamic finance and Shariah-compliant products in 2013 and the forecasting for 2014 and future shows the potential of Islamic financial product and services to serve those investors and ethnic groups in many countries.

1.6 Islamic Investment in the Emerging Asian Market

Emerging markets can be found in the nations with social or business activities in the process of rapid growth and aim to become the industrial country. They include countries experiencing or having the potential for high economic growth but are facing substantial political, economic, and/or market-specific risks.

There is evidence concerning the emerging market in the Islamic world that indicates that emerging markets have been categorized as alternative Islamic investment places. This reason might attract the attention of western fund management groups or others to invest in companies in Muslim countries with active stock markets (Wilson, 1997).

The emerging Asian market is likely to have potential for Islamic financial products due to the demographics and characteristics of the Muslim population in this region. In Southeast Asia, there are 253 million Muslims or 26% of all Muslims. According to the size of the Muslim population and the estimation of investment capitals, only a small amount of the available funds are invested in Islamic products in the equity market (Hassan, 2002).

1.7 Statement of the Problem

The growth of Islamic finance under Shariah principle leads to many interesting subjects to examine. The equity investment is one type of Islamic financial

products which is related to the conventional product the most. The rise of Islamic funds globally is brought out the interest to the world of finance with the acceptable returns and manageable risk reputation.

Islamic funds are funds that are selected by companies under the screening criteria for Shariah principles, Islamic principles, and financial criteria that mainly focus on keeping a balanced debt level of lower than 33 percent of all assets. As a type of ethical funds or a socially responsible investment group, Islamic funds are categorized as faith-based along with Christianity and other religions. These types of funds are different from others in that they have a screening process under good deed criteria. Islamic funds have both screening rules following the Shariah law, and financial rules according to Islamic finance principles.

Islamic funds or Shariah-compliant funds were initially made available to Muslims in 1963 in Malaysia and 1987 in Saudi Arabia. The purpose of this was for the pilgrimage of Muslims to Hajj in Mecca, a holy place and the house of Allah. Both funds were created for Muslims under the Shariah principle. The first Islamic fund available to international investors was created during the 2000s in the form of global funds in Europe.

Originally, Islamic funds and investments had the main purpose of providing Shariah investment for Muslims for example for their pilgrimage. Currently, Islamic funds are used for many objectives for Muslim and non-Muslim investors such as hedging tools or the socially responsible type of investment for fund managers and investors. Even though fund benefits are disclosed more than in the early era, the purpose of serving Shariah-compliant funds for Muslims is still unchanged. Shariah-compliant funds have been growing through their infancy stage since 2003-2009 with the growth rate of approximately 25 percent. The peak period was in 2007-2008 and started to decline as the economic crisis hit the market.

There are more than 700 Islamic investment funds at the present (2013), managing a total assets of around 60-65 billion US dollars with the annual growth rate of *ca.* 15%. These funds are dominated by equity funds and money market funds. The companies launching these funds are located mainly in the strategic Islamic financial hubs in Saudi Arabia, Malaysia, the UAE, Bahrain, and the United Kingdom. More companies from other countries are emerging to offer these types of funds in accordance with investor appetite and the benefits from the funds themselves.

During the last six years, many countries in Europe, Asia, and the Middle East have been developing Islamic finance across a variety of products in the industry. The effect of the financial crisis in 2008, the Dubai property crisis 2009, and the Arab Spring in 2011 along with the Europe crisis have recently led investors to diversify their risks and assets offshore to global financial centers as well as to invest in the Asia Pacific region to seek higher returns. The global market for the Islamic financial service industry was growing at the rate of 16.04 percent in 2011, and is expected to grow on average at 17 percent annually. The popularity of Islamic funds is growing globally as investors are looking for alternative investment that generates higher return with responsible investment both internationally and domestically.

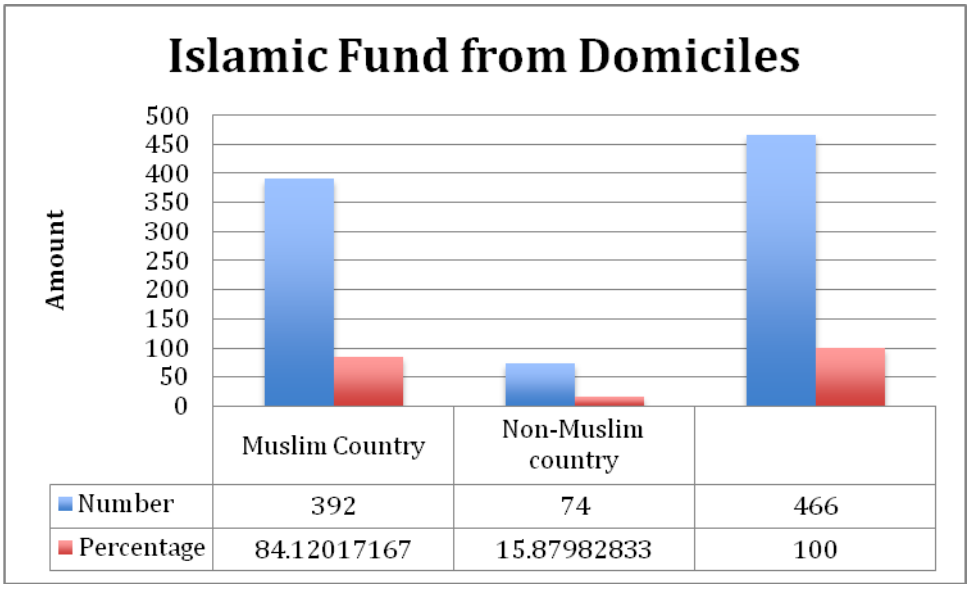


Figure 1.5 Domicile of Islamic Funds 2014.

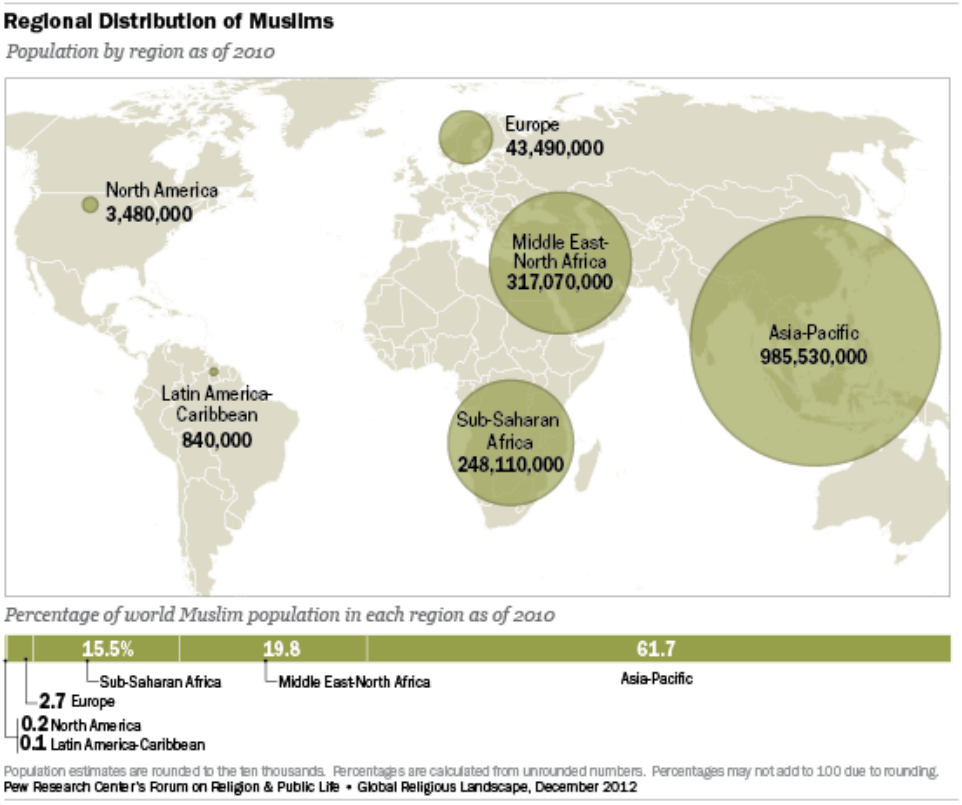


Figure 1.6 Muslim Populations by Region

Source: Pew Research Organization, 2011.

The information on fund amounts and the Muslim population depicts a gap between funds which domicile in Muslim and non-Muslim countries. When looking at the size of the Muslim population around the world, there may be a huge investment demand by Muslims in some non-Muslim countries in the future, especially in the Asia-Pacific region, which contains 61.7 percent of the total Muslim population. Many petrodollars[2] from Middle Eastern fund manager and investors are seeking investment opportunities in the emerging Asian market. In response, many Muslim countries in Asia are developing their own Islamic funds and Shariah-compliant products.

The Muslim countries in the Asia-Pacific region are Malaysia, Indonesia, Pakistan, and Bangladesh. The remainder is non-Muslim countries with some Muslim

[2] Money from the Middle East countries that have made their fortune from fuel, oil, gasoline, and petroleum.

citizens in the countries throughout the region. It thus would be interesting to ascertain the performance of Islamic investment in these non-Muslim countries. The availability of funds which domicile in non-Muslim countries and the size of the Muslim population in those countries are quite contrary. For example, there are only four Islamic funds which domicile in Thailand, while there are around 5-6 million Muslims in the country. Therefore, this research is designed to use Islamic indices as the representative of Islamic equity investment instead of Islamic funds.

The Shariah-compliant index or Islamic index has mostly been investigated within countries, but the characteristics of the countries and performance studies are very few, especially for non-Muslim countries. Many studies of Muslim and non Muslim countries in Islamic finance are focused on the problem of growth and the lack of Shariah scholars' agreements instead of checking for performance and other financial return measurements (Robbins, 2009).

Most studies and research on non-Muslim countries' Islamic indices or funds and Islamic assets are in developed countries such as the USA, the UK, and Singapore. UK and Singapore even declare the goal to be the Islamic financial center in the region by adjusting policy and taxes to pursue more Islamic investor or ethical investors. These countries show good example from concerning the importance of Muslim market to the non Muslim countries world (Shah and Malik, 2012; Khan and Bashar, 2008).

1.8 Research Questions

The research question for this research is related to the limited of understanding of the performance and characteristics of Islamic equity investment in non-Muslim countries and the belief of better performance in environments that related to Islam like in Muslim environment Thus it would be interesting to find out what the performance and characteristics of Shariah-compliant product's in non-Muslim countries or non- Islamic economies are like.

1.9 Research Objectives

The objectives of this study are to investigate the impact of Shariah or ethical screening criteria on the performance of Islamic indices in term of returns, risks, investment styles, efficiency levels, and diversification benefits in non-Muslim countries and to examine how the characteristics of Islamic countries affect the performance of Islamic indices in non-Muslim environment. Moreover, this study aims to be evidence on the Islamic indices performance in non-Muslim countries which might help assist with investment decisions for investors, policy makers and those who are interested in Shariah-compliant products and related fields.

1.10 Research Outline

There are four chapters following this introduction. Chapter two is comprised of a literature review and the hypotheses of the research. The third chapter is data and methodology. The analysis of results of Islamic and conventional indices performance and analysis of results of Islamic indices performance and the country characteristic and factor can be found in chapters 4 and 5, respectively. Lastly, chapter 6 is the conclusion of the research.

CHAPTER 2

LITERATURE REVIEW AND HYPOTHESES

2.1 Theoretical Background

This research bases its theoretical background on the modern portfolio theory (MPT) introduced by Harry Markowitz in a 1952 article and a 1959 book.The theory reveals that diversification leads to risk reduction, and hence the diversification benefit of well-diversified portfolios. MPT further posits that investors will maximize their expected return for a given level of risk in the efficient frontier. Islamic equity or portfolio investment may also be lying under MPT. However, the screening criteria of Shariah might restrict the investment universe or reduce the available set of securities to meet the expected return under the acceptable risk, especially in non-Muslim countries. This is because these countries might have a limited number of investments or securities under the Shariah principle. Another theory is the market efficiency theory from Fama (1970). The theory reveals the character of the market with full information such that no one can judge the value of a firm or stock better than the market itself. The screening criteria for Islamic indices may also inform investors of the efficiency of the market.

2.1.1 Review of the Modern Portfolio Theory

Markowitz (1952) issue the mean variance efficient portfolios as shown where risk is minimized for any given level of expected return or find where the maximized return in any given level of risk. In addition, Markowitz (1952) also indicate that investor always find the investment that is under the efficient portfolio and they cannot go beyond the risk and return basis. Thus the main point of his theory is the diversification benefit of holding the portfolio.

2.1.2 Review of the Market Efficiency Theory

Fama (1970) defines efficiency in terms of the speed and completeness with which capital market incorporate relevant information into security prices, and classifies three degrees of efficiency. First is the weak form efficient market where security prices reflect all of the relevant historical information. Second is the semi-strong form efficient market where security prices reflect all of the relevant publicly-available information. Third is the strong form efficient market where security prices incorporate all of the relevant information. The implication is that nobody can do a better job in judging the firm than the stock market where all information is available

2.2 Review of Studies Related to the Performance of the Islamic Index

The development of the Islamic index leads to many studies regarding the difference of the screening criteria and the effect of the criteria on risks and returns. Most researches studies the benchmark over the socially responsible funds and other faith-based funds or indices by applying the risk adjusted return and Sharpe, Treynor, and Jensen alpha's performance measures and three or four factor analyses of Fama (1970) and Carhart (1997).

Many studies have investigated not only screening concept and criteria but also performance and expense of screen and unscreened funds. Many studies found a significant difference between screened and unscreened funds in the field of expenses, size, and return with the screened fund having higher expenses, smaller size, and lower returns (Gecy, Stambaugh, and Levin, 2003; Barnett, and Salomon, 2006). Their results showed that unscreened funds earn a higher return than screened funds (Mueller, 1991).

The performance of faith-based funds is not only for the Islamic faith but for other faiths such as Christianity. Faith-based funds' performance has mix evidence. Some studies examine the investment from faith-based funds from the biblical perspective and Islamic perspectives such as that of (Boasson, Boasson and Cheng, 2006), Lyn and Zychowicz (2010), and their results are even and outperform the market on a risk adjusted returns measurement and Carhart model. On the other hand, Bauer, Koedijk and Otten (2005) did not find any significant difference in risk-

adjusted returns between faith-based and conventional funds during the 1990-2001 periods.

Normally, investors might think that the performance of Islamic indices or funds would be lower than other types of funds or investment because of the restriction of the Shariah principle and the availability of stocks to choose. However, there is much evidence that shows different results. Mixed evidence occurs as with the screened and unscreened indice performance. Many studies have focus on performance during the sub-periods of economic status; namely, the bull market period, the bear market period, and over-all periods. The performance test was mostly carried out during 2003-2010 and the results showed mix evidence regarding comparative performance (Girard and Hassan, 2005; Ghoul and Karam, 2007; Hussain, 2004; Dharani and Natarajan, 2011).

Some studies have indicated the Shariah-compliant indices outperform their conventional counterparts (Girad and Hassan, 2005; Hussein, 2004; Hussein and Omran, 2005) while some show the significantly result of outperforming only during bull market periods, which also supports the diversification benefits of faith-based investment. There was evidence that the Islamic indices performs better during bull market and underperform during bear market (Hussein, 2004; Hussein and Omran, 2005).

Some results showed that Islamic indices underperformed their counterparts for all periods and some evidences show that Islamic index underperformed its counterparts during bull and bear periods (Hakim and Rashidian, 2004b; Girard and Hassan, 2005).

Many papers have tried to find the cause of performance difference. Some studies such as those of Temper (1991) and Sauer (1997) indicated the reason why unscreened may outperform screened investment. They explained that the outperformance of unscreened investment is due to the screening and monitoring costs that increased in the screened investment. The smaller size of stock choices is another reason and the limited of choices also leads to the less potential for diversification. These reasons cause the underperformance of the screened indices and funds. Even the cost of faith-based investment or ethical investment leads to the underperformance theory when compared with unscreened investment, but the benefit of diversification might counter the cost and should not be overlooking.

Some studies have attempted to show that the diversification benefit from screened benchmarks might be against the argument that criteria eliminates or favors certain industries (Hussein, 2004). It is believed that the Islamic index has less diversification from the small universe investment and the stringent criteria to choose stocks into portfolio. However, Abdullah, Hassan, and Mohamad's (2007) and Hoepner, Rammal and Rezec's (2011) work goes against this claim. Their results support the idea of the hedging benefit of Islamic indices.

According to the mixed evidence from empirical results of the study of performance of screened investment, there are three acceptable hypotheses which are outperformance, underperformance and convergence or no difference. Each of which has hypothesis and empirical evidences supported.

Derwall, Koedijk and Horst (2011) states that "the outperformance hypothesis suggests the positive impact of selecting stronger, more stable, and more profitable companies from ethical screening criteria. As per the "error-in-expectations hypothesis," it is possible that mainstream investors have systematically overlooked this ethical factor. This should make investment less risky and more profitable, because high leveraged companies and gharar (gambling companies) are excluded from the portfolio." This hypothesis supports the idea of outperformance with the reason that there is an elimination of the high risk and leveraged companies out. The elimination of those high risk companies directly means the screening criteria of the screened investment.

The financial ratio screening criteria of Islamic indices had proved the point of outperformance theory from screening criteria when the DJIS screened WorldCom, Enron, and Tyco company out before these companies announced bankruptcy (Hussein and Omran, 2005; Abdullah et al., 2007; Ghoul, Azoury and Karam, 2007). The reason provided from the study of Wilson (2008) also indicates that Shariah-compliant indices outperformed their conventional counterparts largely because the bad debt of many banks during the subprime crisis adversely affected the share prices which the bank excluded in from the indices.

Girard, Rahman and Stone (2007), on the other hand, give reason of outperformance theory to the investment style of screening investment rather than the screening criteria. Abderrezak (2008) states that the Islamic index mostly contains

small cap and growth stock preference due to the selective criteria that restrict some industries or even particular companies. The investment style of screening investment is another point with the belief of having small and growth stocks in the screened investment would help the screened investment to outperform the benchmark.

The underperformance hypothesis predicts that screening criteria have a negative impact on performance and risk, because the criteria have restricted the investment universe causing the portfolio to be less diversified and less efficient. This means that the portfolio of screened investment will produce lower returns and increase the risk. Mueller (1991, 1994) stated that from the cost-of- discipleship hypothesis, there is an opportunity cost incurred when investment is made based on religion standard. These additional costs are, namely, searching, monitoring, and management costs which have an adverse effect on portfolio performance.

The empirical work of Girard, Rahman and Stone (2007), Hoepner, Rammal and Rezec (2011), Statman (2000), Dharani and Nataraj (2011) support underperformance theory. Moreover, Nainggolon, How and Verhoeven (2013) support the idea of the underperformance hypothesis with an average 0.4% per month or 4.8% per year less than the conventional index. Mueller (1994) concludes that investor will sacrifice about one percent of return per year to the comparable portfolio or around 10 percent of return that expected as predicted by the cost-of-discipleship hypothesis. Hussein's (2004), Abdullah, Hassan and Mohamad's (2007), and Ahmed and Ibrahim's (2002) work supports the underperformance hypothesis with the Islamic or screening index underperforming during a bear market. Statman's (2000) work shows that the raw return of the screening index is higher than the conventional ones but not for risk-adjusted returns.

The convergence hypothesis or no difference states that ethical screening may not affect performance if the screens do not contain superior information. This means that any superior return to ethical factors may disappear once additional screening costs are taken into account. The work of Elfakhani, Hassan and Sidani (2005), Albaity and Ahmad (2008), Girard and Hassan (2008), and Kraussl, Hayat (2008), Girard and Hassan (2005) and Hussein (2004) supports this hypothesis.

For the risk level of screened funds, many investors believe that the risk should be lower because the screened funds have already screened out the companies

with bad financial performance. This idea is proper for the screened indices or funds that involve financial screening criteria only. According to risk studies, many research has shown the potential of less risk of the Islamic indices and benefits or decreasing expected bankruptcy costs, as in the work of Al-Zoubi and Maghyereh (2007) and Sundararajan (2007) using value at risk approach and checking the profit and loss sharing principle of Islamic finance. Ahmed and Ibrahim (2002) and Statman (2000) showed the lower risk benefit of Islamic or screened indices.

There was also a study on the efficiency between the Islamic indices and the conventional indices in the same market. It is believed that the more of the screened criteria, the more efficient the market is. Obaidullah (2009) and Hassan (2002) supported the idea that, even containing ethical criterion restrictions, the Islamic stock market is not less efficient than the conventional market. On the other hand, Hassan (2001) found that the Dow Jones Islamic indices were more efficient than their conventional counterparts. Girard and Hassan (2008) revealed that the Islamic indices and conventional indices of the FTSE had the same level of efficiency. Guyot (2011) showed that the Shariah restrictions of the Dow Jones Islamic indices did not affect their efficiency.

2.3 Review of Studies Related to Country Characteristics and Performance of Islamic Index

Generally, people view Islamic investment as investment for Muslim people and the performance of those investments would be better in the countries of Muslims. However, when facing the international environment, Islamic investment might have a problem in adjusting to the financial system, which does not support the idea of the Shariah principles.

The study of Hakim and Rashidian (2004a) points out that the laws in Muslim countries may have many problems in structuring an acceptable trading system in the non-Muslim world. On the other hand, Hoepner et al. (2011) found that, when compared with only one predominantly Muslim country, nations with lesser developed Islamic financial services on average underperformed the benchmark. This implies that improving the trading system in an Islamic economy might benefit the performance of Islamic investment.

It is believed that the economy that is most developed in the Islamic financial market has the most potential to perform better in terms of Shariah-compliant products and services. The level of Islamic financial market development in Muslim countries is different. Most country has both the conventional and Islamic financial system but still be the most developed country of Islamic finance category.

The reason for the outperformance hypothesis of the Islamic economy is that the environment that follows the Shariah principle with more products and services creates a bigger universe of Shariah-compliant stocks and firms. This includes the financial firms with an interest-free system and other financial institutions that are permissible under the Islamic principle. Thus, the Islamic financial market development level might be one factor that plays a part in the performance in different environments.

Hoepner et al. (2011) also explain that the home country religion might have financial value of a stock-compliant or it may be positively related to the influence of Shariah law on consumers in its home economy. This explains that small-cap style stocks in selected portfolios have to pass the criteria in a bigger market.

The countries that are not Muslim or even Muslim countries enforce Shariah laws differently. Otto (2009) divides the legal systems of Muslim countries into three groups. First, mixed systems allow Islamic or Shariah law to play a dominant role in part of national law. This is the most common system in Muslim country that applied this law along with other laws. Second is classical system. This system is mainly focus on the Shariah law to dominate the country. Most of this type of Shariah law applies in few Muslim countries. Third group is the secular system group. This system applied Shariah law to the personal life of Muslim citizen only. Shariah law has no recognition in the nation or state's law. The secular system can be seen in both Muslim and non-Muslim countries.

The demands of the Muslim population, the availability of Shariah law, and the number of Shariah-compliant products and services in those countries are indicators of the growth of the Islamic financial market. Thus, the assumption of this factor is that the greater the level of development in the Islamic financial market, the more effect there will be on the performance of Islamic indices. The demands of the Muslim population are another interesting factor regarding the performance of Islamic

investment. Being one factor that drives the growth of the Islamic finance, it may have a positive effect on the performance of Islamic Indices according to the supply-demand law.

Thus, another focus of this research was to find out the difference of Islamic indices performance in non-Muslim country portfolios compared with the portfolios of Muslim countries. The Islamic countries characteristics and the drivers of the Islamic finance growth also are investigated as factors that might affect the performance of Islamic indices in the sample data. This study investigates whether Islamic indices in non-Muslim countries perform similarly to conventional indices or indices in Muslim countries, and what factors of Islamic characteristics in non-Muslim countries affect the performance of Islamic indices.

2.4 Testable Hypothesis

H1 : Islamic Indices underperform standard indices (unscreened indices).

H2 : The performances of portfolios containing Islamic indices from Muslim countries perform better than the portfolios of Islamic indices from non-Muslim countries.

Table 2.1 Summary of Literature Review

Year	Author	Detail	Tools	Results
2000	Statman	Performance of Domini social index and social responsibility mutual funds against performance of S&P 500 from May 1990 to September 1998.	Annualized mean return, standard deviation, Jensen Alpha, Adjusted return, T-test	Raw return of screening indices was higher than benchmark but the risk adjusted return was lower than its counterpart with no statistically significance. In addition, the screening index has lower risk than the conventional one.

Table 2.1 (Continued)

Year	Author	Detail	Tools	Results
2002	Hassan	Market efficiency test and performance of DJIM 1996-2000	Serial correlation, variance ratio, Dickey-Fuller test	DJIM return is normally distributed and efficient.
2002	Hakim and Rashidian	DJIM, Wilshire 5000, risk free (3-month bill) 1999-2002	Cointegration and causality analysis	No correlations between indices, the screening criteria eliminate non-compliant firms leads to unique risk characteristics.
2002	Ahmed and Ibrahim	Examine performance of Islamic indices and conventional index in Malaysia from 1999 to 2002.	Risk-adjusted measures, Sharpe, Treynor, Jensen and t-test to compare mean difference	Returns of Islamic index are better than conventional ones during the bull market and less during a bear market period. Risk of Islamic index is lower than conventional index with no statistical significant. The risk adjusted return of the Islamic index outperformed only in a bull market period.
2004	Hussein	Performance of FTSE index funds 1996-2003	Sharpe, Treynor, Jensen, CAPM	Overall outperform during Bull market, underperform during bear market.
2005	Hussein	DJIM returns and effect of industry, size and economic condition 1996 -2003		Index gives positive abnormal returns during bull market, underperforms during bear market, abnormal return driven by investment style.

Table 2.1 (Continued)

Year	Author	Detail	Tools	Results
2005	Elfakhani, Hassan and Sidani	Performance of Islamic mutual funds 46 funds	Risk-adjusted return, ANOVA test	Islamic funds don't differ from other conventional funds.
2005	Elfakhani, Hassan and Sidani	Measure security selection ability and market timing ability of Islamic mutual fund managers from American, European, Emerging and Technology, Asian and Global funds	Treynor-Mazury model	Emerging funds has positive selectivity and significant due to the Asian crisis.
2007	Girard and Rahman			A social responsibility mutual fund underperforms benchmark. If it's outperformed, that is due to the style of investment not screening criteria.
2007	Khanthalay and Nisar	Comparison of screening rules of Dow Jones Islamic Indices USA, Securities Exchange Commission (SEC) of Malaysia and Meezan Bank of Pakistan by employing March 2005 Bombay Stock Exchange 500 stocks		DJIM is the most conservative and the Malaysian SEC is the most liberal. They proposed the Shariah rating agency to promote the industry and the total assets are better divisors than market capitalization regarding the financial ratio screening criteria.
2007	Abdullah, Hassan and Mohamad	Examine relative performance of 14 Islamic funds and 51 conventional mutual funds in Malaysian capital market during January 1992 - December 2001	Sharpe index, Adjusted Sharpe index, Jensen Alpha, Modigliani measures, market timing and selectivity ability	Islamic funds performed better than the conventional funds during Bear market and underperform during Bull market. They show the hedge ability of

Table 2.1 (Continued)

Year	Author	Detail	Tools	Results
				Islamic funds in adverse economic conditions and the diversification benefit. However, both Islamic and conventional indice shows poor selectivity and timing performance.
2007	Ghoul	Examine the similarity and difference between Islamic, Christianity and socially responsible indices		
2007	Forte and Miglietta	Comparing the Islamic index with SRI idea, ratio, investment styles using the FTSe Islamic index, FTSE 4Goods and FTSE Europe with Euro bond 3-month bill	Sharpe's analysis, cointegration	The Islamic index has cointegration with interest rates and no cointegration or style with the SRI index.
2008	Abderrezak	Examine 46 Islamic mutual funds and three different benchmarks followed the work of Elfakhani, Hassan and Sidani (2005) during the data of January 1997 to August 2002	Fama's performance measure	Islamic funds perform poorly against the benchmarks. The funds are affected by small cap and growth preference stocks. There is no significant result in the findings.
2008	Kraussl Hayat	Performance test between Islamic and conventional benchmark during normal market condition	CAPM, risk-adjusted ratios, Sharpe ratio, Treynor ratio, Jensen, Alpha, Modiglaini and Modigliani measure, TT measure and Information ratio	There is no significant different between Islamic and conventional benchmarks.

Table 2.1 (Continued)

Year	Author	Detail	Tools	Results
2008	Albaity and Ahmad	Examine performance of Islamic and conventional indices in Malaysia using data from 1999-2005.	Risk-adjusted performance, unit root test, Cointegration and Causality	There is no significant difference in risk-adjusted returns between Islamic indices and conventional ones. There is a short-run causality between the two indices.
2009	Mansor and Bhatti	Analyze performance and growth rate of Malaysian Islamic mutual funds and conventional funds from 1999 to 2009	Non-risk adjusted average return, standard deviation and correlation analysis	There is a strong correlation between Islamic mutual funds and conventional mutual funds. The growth rates of Islamic mutual funds is higher than conventional funds in term of NAVs.
2009	Hoepner, Rammal, Resec	Examine Islamic mutual fund performance of 262 Islamic funds from 20 countries and 4 regions from September 1990 to April 2009	CAPM, Fama and French (1993) 3 factors model, Carhart (1997) model	Islamic funds from eight countries underperformed their international benchmark and only three nations outperformed their counterparts. Small stock has an effect on Islamic funds and Islamic funds have hedging benefit.
2010	Girard and Hassan	Examine performance of seven indices from Dow Jones Islamic Market Indices from 1996 to 2005	Sharpe, Treynor, Jensen, Fama's selectivity and Carhart factor	There is no difference between Islamic and conventional indices in performance.

Table 2.1 (Continued)

Year	Author	Detail	Tools	Results
2010	Hamid, Suleman, Shah, and Akash	Test weak form market efficiency of stock market return in 14 Asian countries from 2004-2009	Autocorrelation, Q-statistics test, unit root test and variance ratio test.	Monthly price does not follow random walk in any countries in Asian.
2011	Dharani and Natarajn	Examine performance of Islamic indices of Indian stock market during 2007-2010	Risk adjusted measure, Sharpe, Treynor, Jensen and T-test	Islamic index underperformed all periods with no significant difference.
2011	Guyout	Examine diversification benefits of Dow jones Islamic indices and conventional indices	Unitroot test, ADF test, cointegration test, variance ratio test	There was no cointegration between Islamic and conventional indices in the sample.
2013	Nainggolan, How, and Verhoeven	Examine the relationship between financial performance and ethical screening of 387 Islamic funds	Risk adjusted performance measure, one factor model, three factor model, regression analysis	Islamic funds underperform conventional funds by 40 basis points per month or 4.8% per year. During the subprime crisis, they performed better. The more stringent screening criteria, the worse the performance.

CHAPTER 3

DATA & METHODOLOGY

3.1 Data Sources

The data were taken mainly from the MSCI faith-based indices, the MSCI Islamic countries indices, which contain countries in the emerging market of the Asian region. This category of MSCI indices contains many of Islamic indices from various regions and of market characteristics as mentioned in the policy of the company and fact sheets.

3.2 Performance of the Test of the Islamic Indices and Conventional Indices

3.2.1 Data

Table 3.1 MSCI Emerging Asian Conventional and Islamic Indices

No.	Conventional Indices	Islamic Indices
1.	MSCI China Index	MSCI China Islamic Index
2.	MSCI India Index	MSCI India Islamic Index
3.	MSCI Indonesia Index	MSCI Indonesia Islamic Index
4.	MSCI Korea Index	MSCI Korea Islamic Index
5.	MSCI Malaysia Index	MSCI Malaysia Islamic Index
6.	MSCI Philippines Index	MSCI Philippines Islamic Index
7.	MSCI Taiwan Index	MSCI Taiwan Islamic Index
8.	MSCI Thailand Index	MSCI Thailand Islamic Index

The MSCI emerging Asian group contains eight countries of the region: China, India, Indonesia, Korea, Malaysia, the Philippines, Taiwan, and Thailand. Each country has two indices: the conventional index and Islamic index.

The Islamic index of each country comes from the screening and selecting process of the MSCI Company. The historical prices of all of the MSCI indices were retrieved from the MSCI website from December 2003-December 2013 on a monthly basis (120 data points). One-month U.S. Treasury bill rates from the U.S. department of treasury official website were used as the risk-free rate to calculate the required rate of returns from the CAPM and other methods. The data for the multifactor analysis were retrieved from the website of Kenneth R. French. The benchmark of the test was the Dow Jones global index.

Table 3.2 Descriptive Statistics of Sample Indices used for Testing the Screened and Unscreened Index Performance

Descriptive Statistics

	N	Minimum	Maximum	Sum	Mean		Std. Deviation	Variance	Skewness		Kurtosis	
	Statistic	Statistic	Statistic	Statistic	Statistic	Std. Error	Statistic	Statistic	Statistic	Std. Error	Statistic	Std. Error
China IS	120	-0.2624	0.1860	0.8131	0.0068	0.0073	0.0804	0.006	-0.722	0.221	1.062	0.438
India IS	120	-0.3609	0.2904	0.7525	0.0063	0.0082	0.0896	0.008	-0.574	0.221	2.117	0.438
Indonesia IS	120	-0.5162	0.2556	1.1399	0.0095	0.0092	0.1003	0.01	-1.378	0.221	6.143	0.438
Korea IS	120	-0.2435	0.2504	0.7564	0.0063	0.0074	0.0813	0.007	-0.252	0.221	0.828	0.438
Malaysia IS	120	-0.2374	0.1357	1.1468	0.0096	0.0050	0.0552	0.003	-0.864	0.221	2.964	0.438
Philippines IS	120	-0.2561	0.2440	1.8809	0.0157	0.0081	0.0890	0.008	-0.084	0.221	0.863	0.438
Taiwan IS	120	-0.1881	0.1547	0.6078	0.0051	0.0061	0.0663	0.004	-0.358	0.221	0.326	0.438
Thailand IS	120	-0.4425	0.1925	0.5625	0.0047	0.0080	0.0876	0.008	-1.266	0.221	5.486	0.438
China	120	-0.2585	0.1766	0.9095	0.0076	0.0074	0.0809	0.007	-0.805	0.221	1.268	0.438
India	120	-0.3363	0.3121	0.8955	0.0075	0.0085	0.0927	0.009	-0.43	0.221	1.574	0.438
Indonesia	120	-0.5091	0.2665	1.4079	0.0117	0.0087	0.0957	0.009	-1.329	0.221	6.82	0.438
Korea	120	-0.3027	0.2336	0.9951	0.0083	0.0076	0.0834	0.007	-0.492	0.221	1.332	0.438
Malaysia	120	-0.1942	0.1477	0.9461	0.0079	0.0046	0.0499	0.002	-0.596	0.221	1.96	0.438
Philippines	120	-0.2788	0.1762	1.4126	0.0118	0.0063	0.0694	0.005	-0.719	0.221	2.012	0.438
Taiwan	120	-0.2122	0.1604	0.2856	0.0024	0.0063	0.0687	0.005	-0.349	0.221	0.523	0.438
Thailand	120	-0.4020	0.1567	0.6829	0.0057	0.0073	0.0801	0.006	-1.167	0.221	4.557	0.438
World Standard	120	-0.0918	0.0450	0.2049	0.0017	0.0019	0.0205	0	-1.221	0.221	3.494	0.438
EM Standard	120	-0.1397	0.0669	0.3550	0.0030	0.0028	0.0306	0.001	-1.07	0.221	3.435	0.438

Table 3.2 shows the descriptive statistics for the returns of the MSCI countries indices, the Islamic indices, and the benchmarks. The monthly returns were negatively skewed in all eight countries and 18 indices from the period 2004 to 2013, which indicated that the large negative returns, were larger than the large positive returns.

The Philippines Islamic index provided the highest return at 2% with a 9% standard deviation. The Philippine conventional index provided around a 1% return with a 7% standard deviation. The Taiwan conventional index provided the lowest return at 0.2% with a 7% standard deviation. The lowest return of the Islamic index was the Thailand Islamic index with a 0.5%return and a 9% standard deviation. All of the countries' conventional indices provided higher returns with the same risk level from the standard deviation than their Islamic indices counterparts, except for Malaysian, Philippine, and Taiwanese markets.

3.2.2 Methodology

The first hypothesis was to test performance difference benefits between the Islamic stock indices and their conventional counterparts. All of the data sets were separated into five testing periods, as follows:

1) All periods from January 2004 to December 2013
2) Bull market period from July 2004 to February 2006
3) Bear market from March 2006 to January 2010
4) Sub-prime financial crisis from September 2008 to January 2010
5) The post crisis from February 2010 to December 2013

All of the time frames were analyzed from the economic conditions during 2004-2013 from the UN database.

First of all, to test the performance of the indices, monthly returns were calculated by taking the natural logarithmic difference of the price index as follows:

$$R_{i,t} = \mathrm{Ln}(P_t / P_{t-1}) \quad (1)$$

where

Ri,t is the raw return for index *i* during time *t*, and

Pi,t and Pi,t-1 refer to the price index *i* of period *t* and *t-1*.

The average return of the index was calculated using the following equation:

$$Avg.R_{i,t} = \frac{\sum_1^T R_{i,t}}{T}, \quad (2)$$

where Avg. Ri,t is the average return of monthly return categories from the raw return of each time period, and T is the time period.

Next was to test the performance by calculating the risk-adjusted return and risk using the following equation.

$$SHARPE_i = \frac{(R_{i,t} - R_{f,t})}{SD_i}, \quad (3)$$

where $SHARPE_i$ is the Sharpe ratio for index i during period t, $R_{f,t}$ is the risk-free rate measured by a short-term, one-month U.S. treasury-bill return, and SD_i is the standard deviation of the monthly return of the index i for period t.

$$TREYNOR_i = \frac{(R_{i,t} - R_{f,t})}{\beta_i}, \quad (4)$$

where $TREYNOR_i$ is the Treynor ratio of index i during period t. , $R_{f,t}$ is the risk-free rate measured by a short-term one-month U.S. treasury-bill return and $\beta_{i,t}$ is the beta of the index.

The Capital Asset Pricing Model was the single factor model used to estimate Jensen's alpha and the beta of the portfolio.

The CAPM model was employed to find the Jensen's alpha and beta of the index.

$$R_{i,t} - R_{f,t} = \alpha_{i,t} + \beta_{i,t}(R_{m,t} - R_{f,t}) + \varepsilon_{i,t}, \quad (5)$$

where $R_{f,t}$ is the risk-free rate measured by a short-term, one-month U.S. treasury-bill return, and Rm,t is the monthly return on the market portfolio or benchmark for period t.

Jensen's alpha was derived from the CAPM equation in the following form:

$$\alpha_{i,t} = \{(R_{i,t} - R_{f,t}) + \beta_{i,t}(R_{m,t} - R_{f,t})\}, \quad (6)$$

where $\alpha_{i,t}$ is the Jensen's alpha return of index i during period t, and $\beta_{i,t}$ is the beta of index i during period t.

The beta of the index was also ascertained from the CAPM model. $\beta_{i,t}$ is the beta coefficient computed using the market model as follows:

$$R_{i,t} - R_{f,t} = \alpha_{i,t} + \beta_{i,t}(R_{m,t} - R_{f,t}) + \varepsilon_{i,t}, \quad (7)$$

where R_{it} represents the return on the Shariah index, $R_{m,t}$ represents the return of the conventional index or the benchmark of the Islamic or Shariah Index , $\alpha_{i,t}$ is the intercept for the portfolio or Jensen Alpha Index, β is the beta or market risk for portfolio, and ε_{it} is the residuals of the regression.

The multifactor model of Fama French was applied to find the investment style of the indices from the sample. The model equation is as follows:

$$R_t = \alpha_o + \beta_m R_{m,t} + \beta v \text{HML}t + \beta s \text{SMB}_t + \varepsilon t \quad (8)$$

where Rt is the excess return on the portfolio, α_0 is Jensen's alpha, R_m is the excess return on the market over risk free portfolio, β_m denotes the systematic risk of the portfolio, HML is the excess return on the mimicking portfolio for the high minus low value (book-to-market) factor, SMB is the excess return on the mimicking portfolio for the small minus big size (market capitalization) factor, and εt is the part of the portfolio's excess return that is not captured by the other terms.

Three factor models were applied as the investment style analysis of this study to see whether the Islamic indices and their counterparts had the same investment style. The excess return was computed using the 1-month US Treasury Bill rate as the proxy for the risk-free rate. The time series data for the HML and SMB factors were obtained from the Kenneth French Data Library.

An efficiency test is the test used under the hypothesis that the index or stock returns are random over the time of the study. This means that the market is efficient.

The variance ratio test was applied by the model of Lo and Mackinlay (1988). If the null hypothesis is rejected for the random walk model, then the market is inefficient.

$$RV_k = Var(Xt+Xt-1+\ldots+Xt-k-1)/ Var(Xt) = \delta^2(k)/ \delta^2 \quad (9)$$

From the null hypothesis of the random walk, meaning efficiency, the variance ratio should be equal to 1 for all variances of k.

Ho: $RV_k = 1$ for $k = 1,2, \ldots, n$

H_1: $RV_k \neq 1$ for any $k = 1,2, \ldots, n$

The null hypothesis rejects the random walk hypothesis when RV is not equal to 1.When RV is greater than 1, this means that the returns have a serial correlation.

The co-integration approach for testing diversification benefits was conducted by using Engle and Granger's (1987) two-step approach based on a stationary test. The testing approach followed the work of Johansen and Juselius (1990).To find the long-run relationship between variables, the vector autoregressive model was used.

The first approach was to run a unit root test for the indices. The lag length for the time series analysis was determined using the minimum Akaike Information Criteria and Schwarz information criteria. The Augmented Dickey-Fuller (ADF) (1979, 1981) test was used the following equation to estimate:

$$\Delta Xt = \alpha_{0 +} \alpha_1 T + \beta X_{t-1} + \sum^{p}_{j=1} \delta_1 \Delta Xt_{-1} + \varepsilon_t \quad (10)$$

where X is the check for the stationary variable, the error term is the residual term, and $\alpha, \beta,$ and δ are the coefficients to be estimated.

After checking that variables were stationary at the same order of integration I(d), then the co-integration approach consisted of a two-step process as follows:

1) Estimate the long-run equilibrium equation:

$$Yt = \delta_0 + \delta_1 Xt_{+} u_t \quad (11)$$

The residual is given by:

$$\hat{u_t} = Y\ t - \hat{\delta}_0 + \hat{\delta}_1 Xt \quad (12)$$

A test of potentially co-integrating relation is a test of whether the residual is stationary or not.

2) Estimate the Error Correction Model (ECM):

$$\Delta Yt = \phi + \sum_{p=1} \phi \Delta Yt\text{-}j + \sum_{h=o} \Theta h \Delta Xt\text{-}h + \alpha\ \hat{u_t}^{+} \varepsilon t \quad (13)$$

The error correction term (ECT) or error term of the equation helps to explain the long-term relationship among the variables. There is a co-integration between variables when coefficient α is negative and significant. The co-integration of the variables indicated that there existed a relationship between the variables and that they tended to move together in the long run.

After calculating the data with all of the methodologies, the analysis of the results was then done by counting the majority of screened and unscreened indices to see the performance in terms of risk and return. The investment style and efficiency as well as the diversification benefit test will help to confirm the Islamic or screened index as to whether it occurs or just disappears to be a conventional index.

3.3 Performance of Islamic Indices and Country Characteristics Test

3.3.1 Data

Table 3.3 MSCI Non-Muslim Country Group Index and Muslim Country Group

No.	Non-Muslim country group	Muslim country group
1	MSCI China Islamic Index	MSCI Bahrain Islamic Index
2	MSCI India Islamic Index	MSCI Kuwait Islamic Index
3	MSCI Korea Islamic Index	MSCI Qatar Islamic Index
4	MSCI Philippines Islamic Index	MSCI UAE Islamic Index
5	MSCI Taiwan Islamic Index	MSCI Malaysia Islamic Index
6	MSCI Thailand Islamic Index	MSCI Indonesia Islamic Index

Table 3.3 (Continued)

No.	Non-Muslim country group	Muslim country group
7	MSCI Hong Kong Islamic Index	MSCI Egypt Islamic Index
8	MSCI Japan Islamic Index	MSCI Morocco Islamic Index
9	MSCI Singapore Islamic Index	MSCI Oman Islamic Index

The sample set for testing the performance of the Islamic indices with different country characteristics consisted of the non-Muslim country index and Muslim country index group. The first group contains the MSCI Islamic indices from non-Islamic economies or the non-Muslim country group. These indices are the MSCI Islamic index from China, India, Korea, the Philippines, Taiwan, Thailand, Hong Kong, Japan, and Singapore. The second group was the MSCI Islamic indices from Islamic economy countries or Muslim countries. These indices are the MSCI Islamic index from Bahrain, Kuwait, Qatar, the United Arab Emirates, Malaysia, Indonesia, Egypt, Morocco, and Oman. These indices are the Islamic indices which come from three different regions and markets separated by the MSCI index company.

The historical prices of all of the MSCI indices were retrieved from the MSCI website from June 2005-December 2013 on a monthly basis (103 data points). One-month U.S. Treasury bill rates from the U.S. department of treasury official website were used as the risk-free rate to calculate the required rate of returns using the CAPM and other methods. The data for the multifactor analysis were retrieved from the website of Kenneth R. French. The benchmark of the test was the Dow Jones global index.

Table 3.4 Descriptive Statistics of the Sample Indices Used for Testing the Islamic Indices and Differences in the Country Characteristics

Descriptive Statistics

	N	Minimum	Maximum	Sum	Mean		Std. Deviation	Variance	Skewness		Kurtosis	
	Statistic	Statistic	Statistic	Statistic	Statistic	Std. Error	Statistic	Statistic	Statistic	Std. Error	Statistic	Std. Error
China IS	103	-0.262	0.186	0.758	0.007	0.008	0.083	0.007	-0.734	0.238	0.997	0.472
India IS	103	-0.361	0.290	0.709	0.007	0.009	0.092	0.009	-0.512	0.238	1.975	0.472
Korea IS	103	-0.244	0.250	0.504	0.005	0.008	0.084	0.007	-0.251	0.238	0.744	0.472
Philippines IS	103	-0.256	0.244	1.630	0.016	0.009	0.087	0.008	-0.272	0.238	1.065	0.472
Taiwan IS	103	-0.188	0.155	0.476	0.005	0.007	0.068	0.005	-0.368	0.238	0.367	0.472
Thailand IS	103	-0.443	0.193	0.557	0.005	0.009	0.093	0.009	-1.237	0.238	4.866	0.472
Hong Kong IS	103	-0.229	0.132	0.330	0.003	0.006	0.057	0.003	-1.099	0.238	2.812	0.472
Japan IS	103	-0.174	0.105	0.152	0.001	0.005	0.048	0.002	-0.961	0.238	2.086	0.472
Singapore IS	103	-0.366	0.182	0.661	0.006	0.007	0.070	0.005	-1.592	0.238	7.287	0.472
Malaysia IS	103	-0.237	0.136	1.058	0.010	0.006	0.057	0.003	-0.870	0.238	2.900	0.472
Indonesia IS	103	-0.516	0.256	0.806	0.008	0.010	0.104	0.011	-1.425	0.238	6.151	0.472
Bahrain IS	103	-0.283	0.198	-2.227	-0.022	0.008	0.080	0.006	-0.572	0.238	2.062	0.472
Kuwait IS	103	-0.201	0.209	-0.516	-0.005	0.007	0.074	0.006	-0.283	0.238	0.648	0.472
Qatar IS	103	-0.317	0.270	0.079	0.001	0.009	0.092	0.008	-0.287	0.238	2.998	0.472
UAE IS	103	-0.588	0.472	-1.078	-0.010	0.013	0.133	0.018	-0.420	0.238	4.207	0.472
Egypt IS	103	-0.421	0.195	-0.240	-0.002	0.009	0.094	0.009	-1.043	0.238	2.983	0.472
Morocco IS	103	-0.177	0.160	0.039	0.000	0.006	0.059	0.003	0.023	0.238	0.621	0.472
Oman IS	103	-0.346	0.259	-0.147	-0.001	0.007	0.071	0.005	-0.249	0.238	6.838	0.472
Muslim country IS	103	-0.305	0.130	-0.247	-0.002	0.006	0.059	0.003	-1.608	0.238	7.021	0.472
Non-Muslim country IS	103	-0.273	0.152	0.642	0.006	0.006	0.063	0.004	-1.046	0.238	3.252	0.472
Difference IS	103	-0.118	0.150	-0.889	-0.009	0.004	0.044	0.002	0.401	0.238	1.107	0.472

Table 3.5 Description of Countries Sample Characteristics with Factors Related to Islamic Environment.

Country	Official legal system	Shariah law system	Level of Islamic financial market development	Religion	Percentage of Muslim population	Market type according to MSCI criteria	Muslim or Non-Muslim country
China	Civil law influenced by Soviet and continental European civil legal systems; legislature retains power to interpret statutes	No role	None	Taoism	3	Emerging Asia	Non -Muslim
India	Common legal system based on the English model; separate personal legal codes apply to Muslims, Christians, and Hindus; judicial review of legislative acts	Secular	None	Hinduism	13.4	Emerging Asia	Non -Muslim
Korea, South	Mixed legal system combining European civil law, Anglo-American law, and Chinese classical thought	No role	None	Christianity	0.04	Emerging Asia	Non -Muslim
Philippines	Mixed legal system of civil, common, Islamic, and customary law	Secular	None	Christianity	5	Emerging Asia	Non -Muslim
Taiwan	Civil legal system	No role	None	Taoism	0.7	Emerging Asia	Non- Muslim
Thailand	Civil legal system with common law influences	No role	None	Buddhism	5	Emerging Asia	Non- Muslim

Table 3.5 (Continued)

Country	Official legal system	Shariah law system	Level of Islamic financial market development	Religion	Percentage of Muslim population	Market type according to MSCI criteria	Muslim or Non-Muslim country
Hong Kong	Mixed legal system of common law based on the English model and Chinese customary law (in matters of family and land tenure)	No role	None	Taoism	3.1	Developed Asia	Non- Muslim
Japan	Civil legal system based on German model; system also reflects Anglo-American influence and Japanese traditions; judicial review of legislative acts in the Supreme Court	No role	None	Shinto	0.2	Developed Asia	Non- Muslim
Singapore	English common law	No role	None	Buddhism	16	Developed Asia	Non -Muslim
Malaysia	Mixed legal system of English common law, Islamic law, and customary law; judicial review of legislative acts in the Supreme Court at request of supreme head of the federation	Mixed	Most	Islamic	60.4	Emerging Asia	Muslim

Table 3.5 (Continued)

Country	Official legal system	Shariah law system	Level of Islamic financial market development	Religion	Percentage of Muslim population	Market type according to MSCI criteria	Muslim or Non-Muslim country
Indonesia	Civil legal system based on the Roman-Dutch model and influenced by customary law	Secular	Less	Islamic	88.22	Emerging Asia	Muslim
Bahrain	Mixed legal system of Islamic law, English common law, Egyptian civil, criminal, and commercial codes; customary law	Mixed	Most	Islamic	85	GCC	Muslim
Qatar	Mixed legal system of civil law and Islamic law (in family and personal matters)	Mixed	Most	Islamic	95	GCC	Muslim
Kuwait	Mixed legal system consisting of English common law, French civil law, and Islamic religious law	Mixed	Most	Islamic	85	GCC	Muslim
United Arab Emirates	Mixed legal system of Islamic law and civil law	Mixed	Most	Islamic	76	GCC	Muslim
Morocco	Mixed legal system of civil law based on French law and Islamic law; judicial review of legislative acts by Supreme Court	Mixed	Less	Islamic	91	GCC	Muslim

Table 3.5 (Continued)

Country	Official legal system	Shariah law system	Level of Islamic financial market development	Religion	Percentage of Muslim population	Market type according to MSCI criteria	Muslim or Non-Muslim country
Oman	Mixed legal system of Anglo-Saxon law and Islamic law	Mixed	Less	Islamic	98.7	GCC	Muslim
Egypt	Mixed legal system based on Napoleonic civil and penal law, Islamic religious law, and vestiges of colonial-era laws; judicial review of the constitutionality of laws by the Supreme Constitutional Court	Mixed	Less	Islamic	99	GCC	Muslim

Sources: Otto, 2009.

Table 3.4 shows the descriptive statistics for the returns of the MSCI Islamic country indices, the Muslim country portfolios, the non-Muslim country portfolios, and differences in the portfolios between Muslim and non-Muslim countries.

Table 3.5 shows the country characteristics from each country in the sample test of hypothesis two. The first column is the country list. The second column is the legal system applied in each country. The Shariah law application is divided according to the use of Shariah law inside the nation and the citizens of each country (Otto, 2009).

The next column is the level of Islamic financial market development from the work of Hoepner et al. (2011). The most developed Islamic financial market refers to Muslim countries that have fully adopted the Shariah in their financial system and where the Shariah-compliant products and services play an important role in their economy. Less-developed markets are divided into two groups; the first is the Muslim countries which have not fully adopted their economy to be a Shariah-compliant nation. The next group is the group of non-Muslim countries which have not developed their financial market according to the Shariah system but these countries have a minority of Muslims in their countries and some may have Islamic financial institutions or Islamic windows in their conventional financial institutions.

Another factor is the percentage of the Muslim population in each country. This percentage represents the demand for Islamic financial products and services in each country. Regarding the market type column, it comes from the separation of the MSCI indices under their market environment criteria for emerging, developed, and gulf economy groups. The last column indicates the category of samples of Muslim and non-Muslim countries.

3.2.2 Methodology

All data sets were separated into five testing periods

1) All periods from June 2005 to December 2013
2) Bull market period from June 2005 to February 2006
3) Bear market from March 2006 to January 2010
4) Sub-prime financial crisis from September 2008 to January 2010
5) The post crisis from February 2010 to December 2013

First of all, to test the performance of the indices, monthly returns were calculated by taking the natural logarithmic difference of the price index as follows:

$$R_{i,t} = \text{Ln}(P_t / P_{t-1}) \quad (1)$$

where

Ri,t is the raw return for index *i* during time *t*, and

Pi,t and Pi,t-1 refer to the price index *i* of period *t* and *t-1*.

The average return of the index was calculated using the following equation:

$$Avg.R_{i,t} = \frac{\sum_1^T R_{i,t}}{T}, \quad (2)$$

where Avg. Ri,t is the average return of monthly return categories from the raw return of each time period, and T is the time period.

Next was to test the performance by calculating the risk-adjusted return and risk using the following equation.

$$SHARPE_i = \frac{(R_{i,t} - R_{f,t})}{SD_i}, \quad (3)$$

where $SHARPE_i$ is the Sharpe ratio for index i during period t, $R_{f,t}$ is the risk-free rate measured by a short-term, one-month U.S. treasury-bill return, and SD_i is the standard deviation of the monthly return of the index i for period t.

$$TREYNOR_i = \frac{(R_{i,t} - R_{f,t})}{\beta_i}, \quad (4)$$

where $TREYNOR_i$ is the Treynor ratio of index i during period t. , $R_{f,t}$ is the risk-free rate measured by a short-term one-month U.S. treasury-bill return and $\beta_{i,t}$ is the beta of the index.

The Capital Asset Pricing Model was the single factor model used to estimate Jensen's alpha and the beta of the portfolio.

The CAPM model was employed to find the Jensen's alpha and beta of the index.

$$R_{i,t} - R_{f,t} = \alpha_{i,t} + \beta_{i,t}(R_{m,t} - R_{f,t}) + \varepsilon_{i,t}, \quad (5)$$

where $R_{f,t}$ is the risk-free rate measured by a short-term, one-month U.S. treasury-bill return, and $R_{m,t}$ is the monthly return on the market portfolio or benchmark for period t.

Jensen's alpha was derived from the CAPM equation in the following form:

$$\alpha_{i,t} = \{(R_{i,t} - R_{f,t}) + \beta_{i,t}(R_{m,t} - R_{f,t})\}, \quad (6)$$

where $\alpha_{i,t}$ is the Jensen's alpha return of index i during period t, and $\beta_{i,t}$ is the beta of index i during period t.

The beta of the index was also ascertained from the CAPM model. $\beta_{i,t}$ is the beta coefficient computed using the market model as follows:

$$R_{i,t} - R_{f,t} = \alpha_{i,t} + \beta_{i,t}(R_{m,t} - R_{f,t}) + \varepsilon_{i,t}, \quad (7)$$

where R_{it} represents the return on the Shariah index, $R_{m,t}$ represents the return of the conventional index or the benchmark of the Islamic or Shariah Index , $\alpha_{i,t}$ is the intercept for the portfolio or Jensen Alpha Index, β is the beta or market risk for portfolio, and ε_{it} is the residuals of the regression.

The multifactor model of Fama French was applied to find the investment style of the indices from the sample. The model equation is as follows:

$$R_t = \alpha_o + \beta_m R_{m,t} + \beta_v HML_t + \beta_s SMB_t + \varepsilon_t \quad (8)$$

where Rt is the excess return on the portfolio, α_0 is Jensen's alpha, R_m is the excess return on the market over risk free portfolio, β_m denotes the systematic risk of the portfolio, HML is the excess return on the mimicking portfolio for the high minus low value (book-to-market) factor, SMB is the excess return on the mimicking portfolio for the small minus big size (market capitalization) factor, and εt is the part of the portfolio's excess return that is not captured by the other terms.

Three factor models were applied as the investment style analysis of this study to see whether the Islamic indices and their counterparts had the same investment style. The excess return was computed using the 1-month US Treasury Bill rate as the proxy for the risk-free rate. The time series data for the HML and SMB factors were obtained from the Kenneth French Data Library.

The Islamic indices of the Muslim countries' portfolios contain all of the Islamic indices from Muslim countries and calculated all the methodology in order to obtain the portfolio's average return. The same process was applied to the non-Muslim country index portfolio. For the difference portfolio is the portfolio that contain all price index that comes from the difference between Muslim countries and non-Muslim countries portfolio for each month and then follow the same process. This study used the mean difference test to test the performance between the non-Muslim country index portfolios and the Muslim country index portfolios in order to see if there were any statistical significant values from the t-test.

To test the country characteristics, this study used statistical tests: the t-test, ANOVA, and post-hoc test for a portfolio performance comparison and country characteristic factor analysis. All four country characteristics were tested for the mean difference of the three portfolios concerning those factors.

Regression Analysis is also applied for testing the affect of those country characteristics to average return of Islamic indices. The regression model has been tested by the separation of timeframe for five periods by follows equation.

$$Ri,t = \alpha i + \beta i,1F1,t + \beta i,1F1,t + \beta i,2F2,t + \ldots + \beta i,kFk,t + \varepsilon i,t \quad (9)$$

where: Ri = average return on Islamic index I, αi = constant term, βi = sensitivity of Islamic index I to a set of countries characteristics factors, ,εi = disturbance term with an expected value of zero.

Arbitrage Pricing Theory (APT) from Ross (1976) introduces more factors that effect to the stock returns than just single factor from risk and return of market however, the theory does not define on what factors or how many factors should be used. After the test of return and risk from CAPM model, the sensitivity test will help to find out the macroeconomic factors that has the effect to the return of Islamic indices in Thailand and Malaysia.

A total of five macroeconomic variables and Islamic indices of sample countries are used in the analysis. Macroeconomics factors are consists of Consumer Price Index (CPI), Industrial Production Index (IPI), country exchange rate against US dollar (EX), money supply (M2), and 1-year interbank rate (IRLT) of each country. The monthly time series of all variables start from December 2003 to December 2013 are used in this study and obtained from Datastream and MSCI website.

The definitions of each variable and time-series transformation are described in following table.

Table 3.6 Variables Definition

No	Variable	Definition of variables
1	Islamic countries Indices (LIS)	Natural Logarithm of Islamic stock market price of each countries
2	Consumer Price Index (LCPI)	Natural Logarithm of Consumer price index as Proxy for the inflation rate in each market
3	Industrial Production Index (LIPI)	Natural Logarithm of IPI as Proxy for Gross Domestic Product
4	Exchange rate against US Dollar(LEX)	Natural Logarithm of month end exchange rate as Proxy of Foreign exchange rate
5	Money supply M2 (LM2)	Natural Logarithm of M2 as proxy for money supply in each country
6	1-year Interbank rate (LIRLT)	Natural Logarithm of 1- year interbank rate or LIRLT as Proxy for the interest rate in the market system

Table 3.7 Time-Series Transformations

No.	Transformations	Definition of Transformations
1	DLISt = LISt - LISt-1	Monthly return on Islamic indices of country sample
2	DLCPI = LCPIt - LCPIt-1	Monthly realized inflation rate
3	DLIPI = LIPIt - LIPIt-1	Growth rate of industrial production
4	DLEX = LEXt-LEXt-1	Growth rate of exchange rate
5	DLM2 = LM2t- LM2t-1	Monthly growth rate of money supply
6	DLIRLT= LIRLTt-LIRLTt-1	Monthly return on 1-year interbank rate (long term)

As the Islamic index return of each countries are dependent variables and change in macroeconomic factors are independent variables which is the average change of the Islamic index return when a particular macroeconomic factor change by 1 percentage point holding other independent variables constant. The test of sensitivity analysis would help to see the impact of external factor or macroeconomic factors from each country and tell the different between the same market types.

CHAPTER 4

ANALYSIS OF RESULTS OF ISLAMIC AND CONVENTIONAL INDICES PERFORMANCE

4.1 Average Raw Return

Table 4.1 Average Return and Standard Deviation of Conventional Country Index, Islamic Index, and Difference between Indices

Periods	**10 Years**	
Country indices	**Average return**	**SD**
China	0.008	0.081
China IS	0.007	0.08
Difference	-0.001	-0.001
India	0.008	0.093
India IS	0.006	0.09
Difference	-0.001	-0.003
Indo	0.012	0.096
Indo IS	0.01	0.1
Difference	-0.002	0.005
Korea	0.008	0.083
Korea IS	0.006	0.081
Difference	-0.002	-0.002
Malay	0.008	0.05
Malay IS	0.01	0.055
Difference	0.002	0.005
Philippines	0.012	0.069
Philippines IS	0.016	0.089

Table 4.1 (Continued)

Periods	**10 Years**	
Country indices	**Average return**	**SD**
Difference	0.004	0.02
Taiwan	0.002	0.069
Taiwan IS	0.005	0.066
Difference	0.003**	-0.002
Thailand	0.006	0.08
Thailand IS	0.005	0.088
Difference	-0.001	0.007

Note: *Significance level of 10%
**Significance level of 5%
***Significance level of 1%

The Islamic indices from Malaysia, the Philippines and Taiwan perform better than their conventional indices. The only country market with a 5% level of significant was the Taiwan market. The rest of the Islamic indices underperformed their conventional counterparts with no significant level.

Table 4.2 Average Return and Standard Deviation of Conventional Country Index, Islamic Index, and the Difference between Indices during the Bull Period

Periods	**Bull**	
Country indices	**Average return**	**SD**
China	0.022	0.055
China IS	0.023	0.056
Difference	0.001	0.001
India	0.038	0.058
India IS	0.035	0.055

Table 4.2 (Continued)

Periods	**Bull**	
Country indices	**Average return**	**SD**
Difference	-0.003	-0.003
Indo	0.031	0.071
Indo IS	0.025	0.074
Difference	-0.005	0.003
Korea	0.033	0.067
Korea IS	0.034	0.068
Difference	0.001	0.001
Malay	0.007	0.03
Malay IS	0.007	0.029
Difference	0	-0.001
Philippines	0.018	0.051
Philippines IS	0.037	0.089
Difference	0.019	0.039
Taiwan	0.008	0.053
Taiwan IS	0.012	0.058
Difference	0.004	0.005
Thailand	0.013	0.059
Thailand IS	0.016	0.061
Difference	0.003	0.003

Note: *Significance level of 10%

**Significance level of 5%

***Significance level of 1%

The Islamic indices outperformed the conventional indices for five countries. The Chinese, Malaysian, Philippine, Taiwanese and Thai Islamic indices performed better during the bull market. The indices of the other three countries, which were India, Indonesia and Korea, underperformed their counterparts.

Table 4.3 Average Return and Standard Deviation of Conventional Country Index, Islamic Index, and the Difference between Indices during the Bear Period

Periods	**Bear**	
Country indices	**Average return**	**SD**
China	0.012	0.105
China IS	0.009	0.103
Difference	-0.003	-0.002
India	0.009	0.116
India IS	0.009	0.113
Difference	-0.001	-0.003
Indo	0.016	0.126
Indo IS	0.013	0.137
Difference	-0.004	0.011
Korea	0	0.104
Korea IS	0.002	0.1
Difference	0.003	-0.004
Malay	0.008	0.062
Malay IS	0.01	0.072
Difference	0.002	0.01
Philippines	0.008	0.082
Philippines IS	0.012	0.097
Difference	0.004	0.015
Taiwan	0	0.088
Taiwan IS	0.002	0.084
Difference	0.001	-0.004
Thailand	0.002	0.098
Thailand IS	0	0.11
Difference	-0.002	0.013

Note: *Significance level of 10%

**Significance level of 5%

***Significance level of 1%

During a bear market period, the average returns for the Islamic indices were greater than for the conventional indices in four countries: Korea, Malaysia, the Philippines, and Taiwan. The rest of the countries' Islamic indices, in China, India, Indonesia and Thailand, underperformed their counterparts. However, there was no statistically-significant level.

Table 4.4 Average Return and Standard Deviation of Conventional Country Index, Islamic Index, and the Difference between Indices during a Crisis Period

Periods	**Crisis**	
Country indices	**Average return**	**SD**
China	0.105	0.118
China IS	0.098	0.116
Difference	-0.006	-0.002
India	0.018	0.15
India IS	0.012	0.147
Difference	-0.006	-0.003
Indo	0.025	0.189
Indo IS	0.013	0.201
Difference	-0.011	0.012
Korea	0.011	0.151
Korea IS	0.016	0.142
Difference	0.006	-0.009
Malay	0.014	0.075
Malay IS	0.011	0.083
Difference	-0.003	0.008
Philippines	0.007	0.095
Philippines IS	0.019	0.108
Difference	0.012	0.013
Taiwan	0.014	0.12
Taiwan IS	0.016	0.113

Table 4.4 (Continued)

Periods	**Crisis**	
Country indices	**Average return**	**SD**
Difference	0.002	-0.007
Thailand	0.01	0.134
Thailand IS	0.005	0.147
Difference	-0.005	0.012

Note: *Significance level of 10%
**Significance level of 5%
***Significance level of 1%

During the crisis, there were only three countries where the Islamic indices outperformed their conventional indices. These countries were Korea, the Philippines, and Taiwan. However, none of pair tests was significant.

Table 4.5 Average Return and Standard Deviation of Conventional Country Index, Islamic Index, and the Difference between Indices during the Post Crisis Period

Periods	**Post crisis**	
Country indices	**Average return**	**SD**
China	0.001	0.06
China IS	0.001	0.061
Difference	-0.0009	0.001
India	-0.002	0.078
India IS	-0.002	0.071
Difference	0.0001	-0.007
Indo	0.001	0.069
Indo IS	0.001	0.061

Table 4.5 (Continued)

Periods	**Post crisis**	
Country indices	**Average return**	**SD**
Difference	0.0004	-0.008
Korea	0.008	0.067
Korea IS	0.001	0.066
Difference	-0.006**	-0.001
Malay	0.009	0.043
Malay IS	0.01	0.043
Difference	0.001	-0.001
Philippines	0.013	0.066
Philippines IS	0.014	0.082
Difference	0.001	0.017
Taiwan	0.003	0.055
Taiwan IS	0.007	0.052
Difference	0.003	-0.003
Thailand	0.011	0.073
Thailand IS	0.007	0.078
Difference	-0.004	0.005

Note: *Significance level of 10%

**Significance level of 5%

***Significance level of 1%

The Islamic indices of five countries performed better than their conventional counterparts. These countries were India, Indonesia, Malaysia, the Philippines, and Taiwan. The only significant country where there was a mean difference was Korea, which is a non-Muslim country.

4.2 Risk Adjusted Performance: Return and Risk

Table 4.6 Risk Adjusted Performance of Islamic Indices and Conventional Indices During the Ten-Year Period

Period 10 years	**Risk Adjusted performance**			
Country indices	**Sharpe ratio**	**Treynor ratio**	**Alpha**	**Beta**
China	-35.0768	-0.007	0.0024	1.11**
China IS	-35.3294	-0.008	0.0013	1.09**
Difference	-0.2525	-0.001	-0.001	-0.024
India	-30.6012	-0.006	0.0039	1.29**
India IS	-31.6937	-0.008	0.0021	1.22**
Difference	-1.0925	-0.001	-0.0018	-0.0654
Indo	-29.6232	-0.003	0.0075	1.21**
Indo IS	-28.2813	-0.005	0.0051	1.20**
Difference	1.342	-0.002	-0.0024	-0.0193**
Korea	-34.0386	-0.006	0.0045	1.26**
Korea IS	-34.902	-0.008	0.0019	1.19**
Difference	-0.8634	-0.002	-0.0026	-0.0711
Malay	-56.8783	-0.011	-0.0014	0.66**
Malay IS	-51.3943	-0.008	0.0006	0.70**
Difference	5.484	0.003	0.002	0.0402
Philippines	-40.8231	-0.005	0.0035	0.78**
Philippines IS	-31.7834	0	0.0071	0.74**
Difference	9.0397	0.005	0.0036	-0.0343
Taiwan	-41.368	-0.013	-0.0037	1.01**
Taiwan IS	-42.8323	-0.011	-0.0016	0.96**
Difference	-1.4643	0.002	0.0022	-0.0542**
Thailand	-35.434	-0.009	0.00015	1.07**
Thailand IS	-32.4139	-0.009	0.00015	1.18**
Difference	3.0201	0	0.000001	0.1089**

Note: *Significance level of 10%

**Significance level of 5%

***Significance level of 1%

Overall, during the ten-year period, the performance of the Sharpe and Treynor ratio indicated that the Islamic indices from Indonesia, Malaysia, the Philippines, and Thailand outperformed their counterparts. The Jensen alpha showed that only Malaysia, the Philippines, Taiwan, and Thailand outperformed the conventional index. Thus, for the risk-adjusted return, only half of the sample performed better during the ten-year period. The systematic risk of the Islamic indices from six countries was lower than their conventional indices. Only in Thailand and Malaysia was there higher systematic risk than their counterparts.

Table 4.7 Risk Adjusted Performance of Islamic Indices and Conventional Indices During the Bull Period

Period: Bull market July 2004 -Feb 2006	**Risk Adjusted performance**			
Country indices	**Sharpe ratio**	**Treynor ratio**	**Alpha**	**Beta**
China	-0.1241	-0.0009	0.0053	1.26**
China IS	-0.0991	0.0007	0.0067	1.28**
Difference	0.025	0.0017	0.0015	0.0241
India	0.1636	0.0179	0.0231**	1.42**
India IS	0.1231	0.0133	0.0192**	1.3
Difference	-0.0405	-0.0046	-0.0039	-0.12
Indo	0.031	0.0062	0.0134	1.17**
Indo IS	-0.0412	-0.0015	0.0071	1.06
Difference	-0.0722	-0.0078	-0.0063	-0.1091
Korea	0.0715	0.016	0.0206**	1.65**
Korea IS	0.0822	0.0182	0.0228**	1.79
Difference	0.0106	0.0022	0.0021	0.1409
Malay	-0.7092	-0.06	-0.0174**	0.42**
Malay IS	-0.7547	-0.0679	-0.0182	0.38**
Difference	-0.0456	-0.0078	-0.0008	-0.0427
Philippines	-0.1998	-0.0298	-0.0044	0.59
Philippines IS	0.0991	-0.0145	0.0141	0.55
Difference	0.2989	0.0153	0.0185	-0.0418
Taiwan	-0.3921	-0.0171	-0.0098	1.15**
Taiwan IS	-0.2938	-0.0122	-0.0055	1.20**

Table 4.7 (Continued)

Period: Bull market July 2004 -Feb 2006	**Risk Adjusted performance**			
Country indices	**Sharpe ratio**	**Treynor ratio**	**Alpha**	**Beta**
Difference	0.0984	0.0049	0.0043	0.0562
Thailand	-0.2632	-0.00731	-0.00206	1.40**
Thailand IS	-0.196	-0.00827	-0.00101	1.15**
Difference	0.0673	-0.001	0.0011**	-0.2514**

Note: *Significance level of 10%
**Significance level of 5%
***Significance level of 1%

During a bull market period, the Sharpe and Treynor ratio of the Islamic indices performed better in five countries (China, India, Korea, the Philippines, Taiwan, and Thailand). The Jensen's alpha showed that the return of the Islamic indices from five countries was greater than their conventional indices also (China, Korea, the Philippines, Taiwan and Thailand). The systematic risk of Islamic indices from the sample countries was lower than the conventional indices for half of them.

Table 4.8 Risk-Adjusted Performance of Islamic Indices and Conventional Indices During the Bear Period

Period: Bear market March 2006 -Jan 2010	**Risk Adjusted performance**			
Country indices	**Sharpe ratio**	**Treynor ratio**	**Alpha**	**Beta**
China	-0.1298	-0.0111	0.016	1.23**
China IS	-0.1563	-0.0136	0.0124	1.19**
Difference	-0.0265	-0.0025	-0.0036	-0.0456
India	-0.139	-0.0107	0.0199**	1.50**
India IS	-0.1481	-0.0115	0.0181**	1.45**
Difference	-0.0091	-0.0008	-0.0018	-0.0473
Indo	-0.0704	-0.0056	0.029**	1.60**

Table 4.8 (Continued)

Period: Bear market March 2006 -Jan 2010	**Risk Adjusted performance**			
Country indices	**Sharpe ratio**	**Treynor ratio**	**Alpha**	**Beta**
Indo IS	-0.0904	-0.0075	0.0272**	1.658*
Difference	-0.02	-0.002	-0.0023	0.0514
Korea	-0.2455	-0.0188	0.0071	1.36**
Korea IS	-0.2292	-0.0183	0.0072	1.26**
Difference	0.0163	0.0005	0.0001	-0.1021
Malay	-0.2758	-0.0245	-0.0004	0.70**
Malay IS	-0.2089	-0.0195	0.0035	0.77**
Difference	0.0668	0.005	0.0038	0.0743
Philippines	-0.2159	-0.0222	0.0015	0.80**
Philippines IS	-0.1388	-0.0198	0.0029	0.68**
Difference	0.0771	0.0024	0.0014**	-0.1175**
Taiwan	-0.2866	-0.023	0.001	1.09**
Taiwan IS	-0.2836	-0.023	0.0011	1.03**
Difference	0.003	0.0001	0	-0.0574**
Thailand	-0.2376	-0.02031	0.00421	1.14**
Thailand IS	-0.2318	-0.02034	0.00459	1.26**
Difference	0.0058	0	0.0004	0.1145**

Note: *Significance level of 10%

**Significance level of 5%

***Significance level of 1%

The bear market period's result showed that the Islamic indices five countries outperformed their counterparts (Korea, Malaysia, the Philippines, Taiwan, and Thailand). The Jensen's alpha showed the same result from the two ratios. This confirmed that the majority of samples outperformed the unscreened indices. The systematic risk of five countries was lower than their counterparts.

Table 4.9 Risk-Adjusted Performance of Islamic Indices and Conventional Indices During a Crisis Period

Period: Subprime crisis Sep 2008 -Jan 2010	**Risk Adjusted performance**			
Country indices	**Sharpe ratio**	**Treynor ratio**	**Alpha**	**Beta**
China	0.8671	0.0976	0.0154	1.05**
China IS	0.8271	0.0952	0.0094	1.01**
Difference	-0.04	-0.0024	-0.006	-0.0409
India	0.1028	0.0109	0.0244	1.41**
India IS	0.0663	0.0072	0.0202	1.35**
Difference	-0.0366	-0.0038	-0.0042	-0.0583
Indo	0.1184	0.0124	0.0354**	1.80**
Indo IS	0.0545	0.0059	0.0215	1.87**
Difference	-0.0638	-0.0065	-0.0138	0.0624
Korea	0.0552	0.0061	0.0224	1.36**
Korea IS	0.0983	0.0112	0.027	1.25**
Difference	0.0431	0.0051	0.0046	-0.1178
Malay	0.1591	0.0175	0.0161**	0.68**
Malay IS	0.1049	0.0117	0.0122	0.74**
Difference	-0.0542	-0.0058	-0.0039	0.0608
Philippines	0.0506	0.0059	0.0132	0.82**
Philippines IS	0.1513	0.0247	0.0233	0.66**
Difference	0.1007	0.0189	0.0101	-0.1580*
Taiwan	0.0948	0.0106	0.0148	1.07**
Taiwan IS	0.1174	0.0134	0.0169	1.00**
Difference	0.0226	0.0028	0.002	-0.0787*
Thailand	0.0581	0.0065	0.0179	1.20*
Thailand IS	0.0213	0.0024	0.0152	1.3
Difference	-0.0369	-0.0041	-0.0027	0.1027**

Note: *Significance level of 10%
**Significance level of 5%
***Significance level of 1%

During a crisis or subprime period, the Islamic indices from five countries underperformed the unscreened indices for the Sharpe, Treynor, and Jensen's alpha. The systematic risk or the beta of the Islamic indices was lower than the beta from their counterparts as well.

Table 4.10 Risk-Adjusted Performance of Islamic Indices and Conventional Indices During The Post Crisis Period

Period: Post crisis 2008 -Jan 2010	**Risk Adjusted performance**			
Country indices	**Sharpe ratio**	**Treynor ratio**	**Alpha**	**Beta**
China	0.0086	0.0006	-0.0042	0.93**
China IS	-0.0063	-0.0004	-0.005	0.92**
Difference	-0.0149	-0.001	-0.0008	-0.0132
India	-0.0339	-0.0025	-0.0081	1.07**
India IS	-0.036	-0.0027	-0.0074	0.95**
Difference	-0.0021	-0.0002	0.0007	-0.1159
Indo	-0.0037	-0.0004	-0.0039	0.72**
Indo IS	0.0031	0.0003	-0.0028	0.58**
Difference	0.0068	0.0007	0.0012	-0.142**
Korea	0.0994	0.0063	0.0013	1.05**
Korea IS	0.0041	0.0003	-0.0049	1.03**
Difference	-0.0953	-0.0061	-0.0063	-0.024**
Malay	0.1787	0.0133	0.0048	0.58**
Malay IS	0.2117	0.0158	0.0062	0.57**
Difference	0.033	0.0025	0.0014	-0.0099**
Philippines	0.1856	0.0159	0.0083	0.77**
Philippines IS	0.1557	0.0139	0.0082	0.92**
Difference	-0.0299	-0.002	-0.0002	0.1573
Taiwan	0.0468	0.0031	-0.0017	0.84**
Taiwan IS	0.1128	0.0076	0.0019	0.77
Difference	0.066	0.0045	0.0036**	-0.0726
Thailand	0.1324	0.0105	0.005	0.92**
Thailand IS	0.0757	0.0053	0.0002	1.12**
Difference	-0.0567	-0.0053	-0.0048	0.2002**

Note: *Significance level of 10%

**Significance level of 5%

***Significance level of 1%

Sharpe, Treynor, and Jensen's alpha ratio for the Islamic indices from five countries underperformed their counterparts. The systematic risks of Islamic indices from six countries were lower than the beta from their counterparts.

4.3 Investment Style

Table 4.11 Investment Style of Countries' Conventional and Islamic Indices According to Fama French's Factors Model

Country	Indices	Intercept	Beta	SMB	HML	Adj R squared	F test
China	Conventional	-0.0088	-0.0006	0.784	0.1211	-0.0044	0.82
		(-1.18)	(-0.01)	(1.51)	(0.25)		
	Islamic	-0.0094	-0.0184	0.8056	0.0856	-0.0036	0.85
		(1.28)	(-0.11)	(1.57)	(0.18)		
India	Conventional	-0.0108	0.077	1.35**	0.6105	0.0362	2.48
		(-1.29)	(0.41)	(2.32)	(1.14)		
	Islamic	-0.0116	0.0648	1.28**	0.4594	0.0301	2.23
		(-1.43)	(0.36)	(2.27)	(.88)		
Indonesia	Conventional	-0.0082	0.1845	1.82***	0.88*	0.0939	5.1
		(-0.97)1	(1.00)	(3.10)	(1.64)		
	Islamic	-0.0101	0.2528	1.44**	0.6045	0.0301	3.38
		(-1.11)	(1.28)	(2.30)	(1.05)		
Korea	Conventional	-0.0117	0.1056	1.68***	1.29***	0.1236	6.59
		(-1.60)	(0.65)	(3.29)	(2.78)		
	Islamic	-0.0136	0.0805	1.56***	1.36***	0.1219	6.5
		(-1.90)	(0.51)	(3.14)	(3.01)		
Malaysia	Conventional	-0.01**	0.1593	0.78**	0.451	0.0818	4.53
		(-2.21)	(1.58)	(2.44)	(1.54)		
	Islamic	-0.0082	0.1597	0.74**	0.3178	0.0535	3.24
		(-1.62)	(1.44)	(2.11)	(0.98)		
Philippines	Conventional	-0.0051	0.0283	0.6847	0.3586	0.0017	1.06
		(-0.79)	(0.19)	(1.51)	(0.86)		
	Islamic	-0.001	-0.036	1.006*	0.2874	0.002	1.08
		(-0.11)	(-0.19)	(1.75)	(0.54)		
Taiwan	Conventional	-0.0156**	0.035	1.23***	0.667*	0.0613	3.58
		(-2.46)	(0.25)	(2.79)	(1.64)		
	Islamic	-0.0131**	0.0967	1.15***	0.5596	0.063	3.66
		(-2.12)	(0.71)	(2.69)	(1.42)		

Table 4.11 (Continued)

Country	Indices	Intercept	Beta	SMB	HML	Adj R squared	F test
Thailand	Conventional	-0.0126*	0.1903	1.62***	0.0618	0.092	5.01
		(-1.74)	(1.20)	(3.22)	(0.13)		
	Islamic	-0.0141*	0.2224	1.85***	0.1159	0.1051	5.65
		(-1.81)	(1.30)	(3.40)	(0.23)		

Note: *Significance level of 10%

**Significance level of 5%

***Significance level of 1%, first row of number is the coefficient value of each factors and the number in parenthesis is the t statistic value

Table 4.11 indicates the investment style of all countries and Islamic indices by applying Fama-French's three factor model. Guideline is, for the SMB factor, a positive and significant coefficient means a net exposure to small cap stocks, whereas a negative and significant coefficient means a net exposure to large cap stocks. The HML factor or high-market-to-book ratio factor, which was positive and significant, means the net exposure to value stocks, whereas a negative and significant factor means the net exposure to growth stocks. All indices were exposed to small cap stocks and value stocks according to the positive sign. For the SMB factor, the Chinese conventional and Islamic indices were not significant at any level. However, for India, both indices were positive and significant at the 5% level as well as for Malaysia.

For the SMB factor of Korea, Taiwan. and Thailand, the indices were positive and significant at the 1% level. Indonesia's SMB factors were significant for conventional and Islamic indices but at different levels, at 1% and 5% respectively, while the Philippines had a 10% significance on the Islamic index only. Thus, most indices tended to be small cap.For the HML factor, all indices were positive, which means the exposure to value stock but not all were significant. The Indonesian conventional index, the Korea conventional and Islamic indices, and the Taiwan conventional index were positive and significant at the 10%, 1%, 1% and 10% level, respectively.

This implies that the Islamic index in Korea market was the only one that exposure to value stocks with the significant result as in theory. However, the rest of the indices were in the range of value stock as well, but this is not conclusive since they were not significant.

4.4 Efficiency Test

Lo and Mackinlay's (1988) variance ratio was applied to test the efficiency of the Islamic and conventional indices of the samples. The test were computed for sampling the interval 2,4,8, and 16 months.

Table 4.12 Variance Ratio of Conventional Index and Islamic Index

Variance ratio of conventional and Islamic indices					
Index	**K**	**Var. Ratio**	**Std. Error**	**z-Statistic**	**Probability**
China	2	0.5	0.127	-3.938***	0
	4	0.271	0.238	-3.061***	0.002
	8	0.156	0.36	-2.346**	0.019
	16	0.091	0.498	-1.823*	0.068
China IS	2	0.489	0.119	-4.302***	0
	4	0.263	0.223	-3.307***	0
	8	0.156	0.339	-2.488**	0.013
	16	0.09	0.476	-1.913*	0.056
India	2	0.609	0.1	-3.916***	0
	4	0.267	0.188	-3.904***	0
	8	0.161	0.297	-2.823***	0.005
	16	0.087	0.437	-2.087**	0.037
India IS	2	0.565	0.101	-4.289***	0
	4	0.257	0.185	-4.013***	0
	8	0.16	0.29	-2.899***	0.004
	16	0.083	0.427	-2.144**	0.032
Indonesia	2	0.644	0.139	-2.569***	0.01
	4	0.291	0.248	-2.859***	0.004

Table 4.12 (Continued)

Variance ratio of conventional and Islamic indices					
Index	**K**	**Var. Ratio**	**Std. Error**	**z-Statistic**	**Probability**
	8	0.177	0.356	-2.309**	0.021
	16	0.101	0.482	-1.866*	0.062
Indonesia IS	2	0.579	0.141	-2.997***	0.003
	4	0.303	0.243	-2.862***	0.004
	8	0.183	0.341	-2.392**	0.017
	16	0.104	0.474	-1.889*	0.059
Korea	2	0.548	0.109	-4.14***	0
	4	0.26	0.214	-3.457***	0
	8	0.149	0.34	-2.506**	0.012
	16	0.09	0.483	-1.884*	0.06
Korea IS	2	0.542	0.101	-4.545***	0
	4	0.267	0.201	-3.65***	0
	8	0.146	0.326	-2.617***	0.009
	16	0.087	0.47	-1.943*	0.052
Malaysia	2	0.558	0.124	-3.561***	0
	4	0.293	0.213	-3.314***	0
	8	0.178	0.305	-2.697***	0.007
	16	0.094	0.427	-2.123**	0.034
Malaysia IS	2	0.58	0.121	-3.477***	0
	4	0.291	0.213	-3.336***	0
	8	0.168	0.305	-2.725***	0.006
	16	0.093	0.428	-2.117**	0.034
Philippines	2	0.481	0.12	-4.327***	0
	4	0.232	0.207	-3.711***	0
	8	0.129	0.301	-2.889***	0.004
	16	0.082	0.42	-2.184**	0.029
Philippines IS	2	0.489	0.126	-4.055***	0
	4	0.242	0.221	-3.427***	0
	8	0.149	0.322	-2.645***	0.008

Table 4.12 (Continued)

Variance ratio of conventional and Islamic indices					
Index	**K**	**Var. Ratio**	**Std. Error**	**z-Statistic**	**Probability**
	16	0.068	0.436	-2.136**	0.033
Taiwan	2	0.539	0.11	-4.198***	0
	4	0.305	0.198	-3.509***	0
	8	0.187	0.304	-2.675***	0.008
	16	0.093	0.445	-2.037**	0.042
Taiwan IS	2	0.521	0.108	-4.432***	0
	4	0.318	0.193	-3.531***	0
	8	0.187	0.293	-2.776***	0.006
	16	0.095	0.428	-2.116**	0.034
Thailand	2	0.636	0.125	-2.904***	0.004
	4	0.274	0.223	-3.258***	0.001
	8	0.169	0.32	-2.597***	0.009
	16	0.093	0.439	-2.065**	0.039
Thailand IS	2	0.577	0.137	-3.088***	0.002
	4	0.25	0.241	-3.117***	0.002
	8	0.155	0.343	-2.465**	0.014
	16	0.085	0.47	-1.946*	0.052

Note: *Significance level of 10%
**Significance level of 5%
***Significance level of 1%

The results indicated that all of the tests rejected the null hypothesis of the random walk (VRk=1).This implies that all of the indices were inefficient since all Z statistics were significant in all intervals. The Chinese and Indonesian conventional and Islamic indices were inefficient at the same level of significance for intervals 2, 4,8,16 at 1%, 1%, 5% and 10%respectively.

The Indian, Malaysian, Philippine and Taiwan both indices provided the same level of significance for 1%,1%,1% and 5% at each interval. On the other hand, the

Korean and Thai conventional and Islamic indices provided different levels of significance when the null hypothesis was rejecting. This finding supports the work of Guyout (2011), who found that the Islamic indices from the Dow Jones family presented the same level of efficiency.

4.5 Co-integration for Diversification Benefit Test

Table 4.13 Summary of Co-integration Test from Different Criteria

Co-intregation test	BIC	AIC
China, China IS	No	No
India, India IS	Yes	Yes
Indonesia, Indonesia IS	No	Yes
Korea, Korea IS	No	Yes
Malaysia ,Malaysia IS	No	No
Philippines ,Philippines IS	No	No
Taiwan, Taiwan IS	No	No
Thailand, Thailand IS	No	Yes

Note: "No" means that there was no co-integration between the Islamic indices and conventional indices, "Yes" means that there was co-integration between the Islamic indices and conventional indices.

Guideline of the table of the co-integration test is the test to identify the long-run association between two variables. In this research, the Islamic index and unscreened index were paired to examine the long-term relationship. The long-term association or long-term relationship between two variables means that neither of the indices was diversified.

According to Akaike Information Criteria (AIC), the pairs of conventional and Islamic country indices from China, Malaysia, Taiwan, and the Philippines had no co-integration between any group. India's conventional and Islamic indices had co-

integration in lag 1. Further, the Islamic and conventional indices from Indonesia, Korea and Thailand had co-integration between any pair at lag 3,4,4, respectively.

According to Schwarz-Bayesian Information Criterion (BIC), none of the countries' conventional and Islamic indices were co-intergrated except for India. The test results showed that there were at least two co-integration equations in this group. This means there were no diversification benefits between India's conventional and Islamic indices. On the other hand, the rest of the countries' indices were not co-integrated, which shows the benefit of diversification from the Islamic indices from those countries' market.

According to both information criteria, there were three co-integration groups. First was the group that has no co-integration result for both criteria, which was China, Malaysia, Taiwan and the Philippines. This group showed no co-integration from any of the criteria. This implies that this group of Islamic indices had diversified from their conventional indices. The second group was the unchanged group with co-integration. The only country in this group was India. This implies that India's Islamic and conventional indices have a long-term relationship and association with no diversification benefits from the screen index. This issue needs to be further investigated but it is out of the scope of this research. The last group was the group that changed their results after the lag criteria changed into longer terms. This group included the Indonesian, Korean, and Thai indices. These countries were not co-integrated in the short length of the lag for one month and became co-integrated in 3- or 4-month lags. This implies that in diversification benefit of Islamic indices toward conventional indices appears in short run and after adjusting for about 3 to 4 months, they turn to be disappeared.

Table 4.14 Summary of Risks and Returns

Period	Average return			Sharpe			Treynor			Jensen Alpha			Beta	
	Higher	**Lower**	**Same**	**Higher**	**Lower**	**Same**	**Higher**	**Lower**	**Same**	**Higher**	**Lower**	**Same**	**Higher**	**Lower**
10 years	Malaysia IS	China IS	Thailand I	Indonesia IS	China IS		Malaysia IS	China IS	Thailand IS	Malaysia IS	China IS	Thailand IS	Malaysia IS	China IS
Jan04-Dec13	Philippines IS	India IS		Malaysia IS	India IS		Philippines IS	India IS		Philippines IS	India IS		Thailand IS	India IS
	Taiwan IS	Indonesia IS		Philippines IS	Taiwan IS		Taiwan IS	Taiwan IS		Taiwan IS	Taiwan IS			Indonesia IS
		Korea IS		Thailand IS	Korea IS						Korea IS			Korea IS
														Philippines IS
	Total = 3	**Total = 4**	**Total = 1**	**Total = 4**	**Total =4**	**Total = 0**	**Total = 3**	**Total = 4**	**Total = 1**	**Total = 3**	**Total = 4**	**Total = 1**	**Total = 2**	**Total = 6**
Bull market	China IS	India IS		China IS	India IS		China IS	India IS		China IS	India IS		China IS	Philippines IS
July04-Feb06	Korea_ S	Indonesia IS		Korea IS	Indonesia IS		Korea IS	Indonesia IS		Korea IS	Indonesia IS		Korea IS	Thailand IS
2.5 years	Philippines IS	Malaysia IS		Philippines IS	Malaysia IS		Philippines IS	Malaysia IS		Philippines IS	Malaysia IS		Taiwan IS	India IS
	Taiwan IS			Taiwan IS			Taiwan IS	Thailand IS		Taiwan IS				Indonesia IS
	Thailand IS			Thailand IS						Thailand IS				Malaysia IS
	Total =5	**Total = 3**	**Total = 0**	**Total =5**	**Total = 3**	**Total = 0**	**Total =5**	**Total = 3**	**Total = 0**	**Total =5**	**Total = 3**	**Total = 0**	**Total = 3**	**Total = 5**
Bear market	Korea IS	China IS		Korea IS	China IS		Korea IS	China IS		Korea IS	China IS		Indonesia IS	China IS
March06-Jan10	Malaysia IS	India IS		Malaysia IS	India IS		Malaysia IS	India IS		Malaysia IS	India IS		Malaysia IS	India IS
3 years	Philippines IS	Indonesia IS		Philippines IS	Indonesia IS		Philippines IS	Indonesia IS		Philippines IS	Indonesia IS		Thailand IS	Korea IS
	Taiwan IS			Taiwan IS			Taiwan IS			Taiwan IS				Taiwan IS
	Thailand IS			Thailand IS			Thailand IS			Thailand IS				
	Total = 5	**Total = 3**	**Total = 0**	**Total = 5**	**Total = 3**	**Total = 0**	**Total = 5**	**Total = 3**	**Total = 0**	**Total = 5**	**Total = 3**	**Total = 0**	**Total =3**	**Total = 5**
Crisis	Korea IS	China IS		Korea IS	China IS		Korea IS	China IS		Korea IS	China IS		Indonesia IS	China IS
Sep08-Jan10	Philippines IS	India IS		Philippines IS	India IS		Philippines IS	India IS		Philippines IS	India IS		Malaysia IS	India IS
1.5 years	Taiwan IS	Indonesia IS		Taiwan IS	Indonesia IS		Taiwan IS	Indonesia IS		Taiwan IS	Indonesia IS		Thailand IS	Korea IS
		Malaysia IS			Malaysia IS			Malaysia IS			Malaysia IS			Philippines IS
		Thailand IS			Thailand IS			Thailand IS			Thailand IS			
	Total =3	**Total = 5**	**Total = 0**	**Total = 3**	**Total = 5**	**Total = 0**	**Total =3**	**Total = 5**	**Total =0**	**Total =3**	**Total = 5**	**Total =0**	**Total = 3**	**Total = 5**
Post crisis	Indonesia IS	China IS		Indonesia IS	China IS		Indonesia IS	China IS		Indonesia IS	China IS		Philippines IS	China IS
Feb10-Dec13	Malaysia IS	India IS		Malaysia IS	India IS		Malaysia IS	India IS		Malaysia IS	India IS		Thailand IS	India IS
3.5 years	Taiwan IS	Philippines IS		Taiwan IS	Philippines IS		Taiwan IS	Philippines IS		Taiwan IS	Philippines IS			Korea IS
		Thailand IS			Thailand IS			Thailand IS			Thailand IS			Indonesia IS
		Korea IS			Korea IS			Korea IS			Korea IS			Malaysia IS
														Taiwan IS
	Total = 3	**Total = 5**	**Total = 0**	**Total = 3**	**Total = 5**	**Total = 0**	**Total = 3**	**Total = 5**	**Total = 0**	**Total = 3**	**Total = 5**	**Total = 0**	**Total = 2**	**Total = 6**

4.6 Discussion

For the 10-year period, the Islamic indices performed higher than the conventional indices for three of eight country samples, or 37.5%. Five Islamic countries' indices showed lower returns than conventional ones, while on the risk side, only two Islamic indices had higher risk than conventional ones. Other Islamic indices showed lower risk as in the hypothesis. During the bull market, the expected results for the Islamic indices underperformed their counterparts. The results from the sample show that five out of eight countries in the sample performed better during the bull market period. However, the risk for the Islamic indices in the sample mostly was lower than for the conventional indices.

During the bear market, the result was in line with a bull market. There were five Islamic country indices that performed better than their counterparts. The risk during this period still was the same as with most of the Islamic indices in the sample with lower risk than with the conventional ones for five out of eight country indices. When investigating during the crisis period, the results were reversed from those during the bull and bear market periods. The performance of the Islamic indices was superior to their counterparts for only three countries. Most of them underperformed regarding the conventional indices during the crisis. Though the crisis period was under the range of the bear market period, the performance was totally converted, but at last it was adjusted to the equilibrium in the long term. The risk exposure is the same as during bear market period since the time period was the subset of bear market, as mentioned.

Finally, the post crisis period from the test showed the same amount for the entire period. The Islamic indices underperformed their counterparts regarding the risk exposure; however, they still showed lower risk than the conventional ones. The overall performance of the Islamic indices performed differently from their counterparts with respect to the time period difference. The first was the long-term periods when most of the Islamic indices underperformed their counterparts with lower risk exposures for the entire period of ten years and post crisis periods, from 2010 to 2013 or around 3 years.

During the bull and bear market periods the same results were shown; Islamic indices mostly outperformed their counterparts with lower risk. The length of the bull and bear market periods was around 5 years. Last, the crisis period is a very special period for all markets as the financial crash of the US market had an impact all over the world. However, most Islamic indices underperformed their conventional indices with lower risk exposures. In addition, there were some indices that could still outperform their conventional indices as well.

Overall, the Islamic indices from Taiwan were very attractive for the being the best performer that outperformed their conventional index. The next market was the Philippines, which outperformed its conventional index four times during the sample periods. The third-ranking attractive market was Malaysia and Korea Islamic indices, which outperformed their counterparts for three periods. The fourth attractive market was Thailand, which showed higher performance during two time periods.

4.7 Summary

In conclusion, the Islamic indices from the sample countries performed differently from the conventional indices. It seems that the outperformance hypothesis could not be rejected during the bull and bear market periods. The underperformance hypothesis covered the crisis and the overall periods. The post-crisis period showed mixed evidence for outperforming and underperforming at the same numbers. This might have been because of the difference of speed of recovering after the crisis for the indices of each country. In terms of the risk level, it can be concluded that the Islamic indices had a lower risk level than the conventional indices for all testing periods. This implies that the characteristics of the lower risk of Islamic indices exist with different environments even in non-Islamic economies.

The market efficiency test of the indices of the screened and unscreened indices of the emerging Asian countries' sample showed inefficient results for all markets. This implies that there was an opportunity to make a profit from informed investors in these markets and that Islamic indice screening criteria do not create more efficiency than the conventional indices. The diversification benefits of the Islamic indices in the sample existed in the sample countries as well. Overall, it can be

concluded that the Islamic indices contained diversification benefits everywhere. The investment style of Islamic indices in the emerging Asian countries' sample mostly was small cap and contain the value stocks.

Thus, all of the investigations of the screened and unscreened indices in the sample of the emerging Asian countries showed the benefit of the Islamic indices in terms of the performance difference from their counterparts and the characteristics of the diversification benefits with manageable risk, which can also create higher profit for investors. The confirmation of the inefficient market in this sample data created an opportunity for the investor to do so, but for the policy maker, more transparency and development of the regulations and rules over the market are needed in these emerging countries' stock market.

In terms of new market opportunities, there also were evident from the results, a new attractive market for Islamic investment was shown in unexpected countries, such as Taiwan, the Philippines, Korea, and Thailand.

CHAPTER 5

ANALYSIS OF RESULTS OF ISLAMIC INDICES PERFORMANCE WITH THE COUNTRY CHARACTERISTICS AND ISLAMIC FACTOR

5.1 Mean Difference Comparison

Test 5.1 Mean Difference Comparison of Average Monthly Return of Islamic Indices

	All period		**Bull market period**		**Bear market period**		**Crisis period**		**Post crisis period**	
	Mean Difference	**t**	**Mean Difference**	**t**	**Mean Difference**	**t**	**Mean Difference**	**t**	**Mean Difference**	**t**
Non-Muslim country-Muslim country	0.0083	2.38**	0.0189	1.99*	0.0094	1.73	0.0319	3.28***	0.0061	1.73

Note: *Significance level 10%, **Significance level 5%, ***Significance level 1%

The non-Muslim countries' portfolio performed better than the Muslim countries' portfolio for all periods. The bull market, crisis periods, and all periods investigated showed a statistical difference between the non-Muslim countries' portfolios and Muslim countries' portfolios.

5.2 Analysis of Return and Risk from Portfolio

Table 5.2 Average Return of Islamic Indices from Different Portfolios

Type of index portfolio	Average return	SD
Muslim country	-0.002	0.059
Non-Muslim country	0.006	0.063
Difference portfolio (Muslim - Non-Muslim country portfolio)	-0.009 (2.38)**	-0.004

Note: *Significance level 10%, **Significance level 5%, ***Significance level 1%

The average return of the non-Muslim country portfolio was greater than Muslim country portfolio at about 1% .The average return of the non-Muslim countries was around 0.6% and for the Muslim countries the average return was -.02%.The statistical significance level of difference portfolios was at 5% for the mean difference.

Table 5.3 Sharpe and Treynor Ratio Index

Type of index portfolio	Sharpe	Treynor
Muslim country	-0.26	-0.022
Non-Muslim country	-0.233	-0.009
Difference portfolio (Muslim - Non-Muslim portfolio)	-0.027	-0.013

Note: *Significance level 10%, **Significance level 5%, ***Significance level 1%

The risk-adjusted returns of both portfolios are shown in table. The performance of non-Muslim country portfolios was greater than the Muslim country portfolios at 2.7% on the Sharpe index and 1.3% on the Treynor index. This shows

that the average returns of the Islamic index from the non-Muslim country portfolios performed better than those of the Muslim country portfolios.

Table 5.4 Single Index Model

Muslim country portfolio				
	Coefficients	**t Stat**	**P-value**	**Adjusted R Square**
Alpha	-0.01	-2.59***	0.01	0.57
Beta	0.77	11.57***	0	

Non-Muslim country portfolio				
	Coefficients	**t Stat**	**P-value**	**Adjusted R Square**
Alpha	0.0007	0.26	0.79	0.82
Beta	1.02	21.9***	0	

Difference portfolio				
	Coefficients	**t Stat**	**P-value**	**Adjusted R Square**
Alpha	-0.025	-5.34***	0	0.028
Beta	-0.16	-1.98**	0.05	

Note: *Significance level 10%, **Significance level 5%, ***Significance level 1%

The single factor gave a Jensen alpha of significance for the Muslim country portfolios of -1% return and a beta of 0.77 at a significance level of 1% for both. The non-Muslim country portfolio gives a Jensen alpha return of 0.07% with a beta or risk of 1.02.

The difference between the two portfolios' return alpha was -2.5% with a statistical significance level of 1%.This implies that the average return of Muslim

portfolio is less than the average return of the non-Muslim portfolio at around 2.7% with a statistical significance level of 5%.

The beta of the model or systematic risk of the Muslim country portfolio was less than the non-Muslim country portfolio. This implied that risk in Muslim country portfolio is less than market benchmark while the risk of the non-Muslim country portfolio was higher than the market benchmark risk at a significant level.

Table 5.5 Multi-Index Model

	Muslim country portfolio				Non-Muslim country portfolio				Difference portfolio			
	Coefficients	t Stat	P-value	Adjusted R Square	Coefficients	t Stat	P-value	Adjusted R Square	Coefficients	t Stat	P-value	Adjusted R Square
Alpha	-0.0107***	-2.75	0.01		0.0013	0.55	0.58		-0.026***	-5.52	0	
Beta	0.7453***	10.77	0	0.58	1.0297***	25.27	0	0.87	-0.202***	-2.39	0.02	0.043
SMB	0.5940**	2.21	0.03		0.6522***	4.13	0		-0.022	-0.06	0.95	
HML	0.116	0.47	0.64		-0.5918***	-4.08	0		0.551*	1.83	0.07	

Note: *Significance level 10%, **Significance level 5%, ***Significance level 1%

Three factors model confirmed that the alpha and beta of the two portfolios in non-Muslim country portfolio was greater than those of the Muslim country portfolios. The result showed that in the Muslim country Islamic index the portfolio had a smaller-cap preference than in the non-Muslim country portfolio. On the other hand, the HML showed a negative sign of the coefficient, which means that the preference of growth stock in the portfolio was shown in the non-Muslim country portfolio to be more than in the Muslim country portfolio.

The difference between portfolios showed fewer alpha returns, and less systematic risk in the Muslim country portfolios. The investment was slightly different in the small and large cap portfolios but it was not significant. The value and growth stock style showed that the Muslim country portfolio had more value stock with a significance level of 1%.

All performance tests showed that the average return of the Islamic Indices from non-Muslim country portfolios outperformed the Muslim country portfolios at a significant level. This led to the investigation of the factors or determinants of the

Islamic index returns for the non-Muslim and Muslim portfolios. To investigate the factors of the Islamic economy and the characteristics of Muslim and non-Muslim country portfolios, this research used the mean difference test, the F-test, and regression analysis.

The application of Shariah law, the level of Islamic financial market development, religion, the percentage of the Muslim population, and being a Muslim or non-Muslim country were the factors that showed the Islamic characteristics of each country. The average return of the Islamic indices was used as the dependent variable and those factors were the independent variables for each model.

5.3 Analysis of Country Characteristics

5.3.1 Market Type and Average Return

Table 5.6 Average Return of Islamic Indices and Market Type

Market Type		Mean Difference	Sig.
Emerging market	Developed Market	0.0042	0.559
Emerging market	GCC	.0130***	0.002
Developed market	GCC	0.0089	0.107

Note: *Significance level 10%, **Significance level 5%, ***Significance level 1%

The F-test statistic gave the p-value of 0.02, which was significant. This means that there was a difference in the average return, influenced by the market type factors.The post hoc test showed that the paired market types had a mean difference significant. The mean difference between the emerging market and developed market was 0.4% but was not significant. The mean difference of the emerging market was significantly different at 1.3% higher than the Gulf country average return. Finally, there was no statistical significance between the mean difference of the Gulf country and the developed market. The highest mean for the Islamic indice return portfolio

was from the emerging country market, followed by the developed market, and the GCC market was the last.

5.3.2 Shariah Legal System and Average Return

The Shariah system of each country was divided into three groups (Otto, 2009a). The group of non-applied any of Shariah law was added to this research to separate the countries that did not apply any of the Shariah laws in their legal system. Most of this group was in the non-predominant Muslim countries. The second group was the group that did not apply Shariah law for the states but Shariah law was applied to the personal status of Muslims. This group is called the secular system group. The third group was a mixed system group. This group applied Shariah law in their legal system mixed with other laws in the country. The mixed system was applied in most of the Muslim countries. The last group was the classical system group which did not exist in the sample. This classical system group applied Shariah law as the state law purely with no other law involved. The small number of Muslim countries used this legal system.

Table 5.7 Average Return of Islamic Indices and Shariah Legal System

Shariah legal system		Mean Difference	Sig.
Non-applicable	Secular system	-0.0054	0.498
Non-applicable	Mixed system	.0080*	0.09
Secular system	Mixed system	.0134**	0.027

Note: *Significance level 10%, **Significance level 5%, ***Significance level 1%

The results showed a significant difference between the groups of Shariah legal applications in countries at a 5% level of significance. The non-applicable group performed differently at a 0.5% average return less than the secular group but this was not statistically significant.

The secular system country group performed better than the mixed system group at 1.3% with a significance level of 5%. The mixed system group performed worse than the non-applicable group of 0.8% at a 10% level of significant. This means that the secular group performed the best for the Islamic indices' average return, followed by the non-applicable group, and the worst group was the mixed system group. The results showed again the opportunity of Islamic indices in an environment of non-Islamic characteristics.

5.3.3 Islamic Financial Market Development and Average Return

Another factor was the level of Islamic financial market development in each country. There were three levels of market development in this study according to the work of Hopener et al. (2011). First was the undeveloped country of the Islamic financial market. This group mainly was comprised of non-Muslim countries where the Islamic products and services were not fully adopted in the system of the economy. The second group was the less-developed market. Most of this group were Muslim countries where the Islamic financial system was in a developing stage. The last group had the most developed Islamic financial market. These countries are fully developed in terms of an Islamic financial economy where the Shariah-compliant products and services play a large role.

Table 5.8 Average Return of Islamic Indices and Islamic Financial Market Development

Islamic financial market development		Mean difference	Sig.
Non-developed market	Less-developed market	0.0043	0.584
Non-developed market	Most developed market	.0114**	0.028
Less-developed market	Most developed market	0.0072	0.313

Note: *Significance level 10%, **Significance level 5%, ***Significance level 1%

The results showed that the average return of the Islamic Indice portfolios of the non-developed market group performed better than the less-developed and most-developed group during the sample periods. The mean difference of the average return from the non-developed group versus the most developed group was 1.1% at 5% significance. The mean difference between the non-developed group and less developed group was 4% and the difference in the average return for the most developed group and less developed group was -0.7%.

Thus, the highest average return of the Islamic indices portfolio was from the non-developed Islamic financial market country, followed by the less-developed Islamic financial market countries. The last one was the most developed market. This factor again showed the opportunity of the non-developed Islamic financial market or non-Muslim countries.

Table 5.9 Summary Table of Average Return Difference of Islamic Indices from Each Characteristic Factor During the Study Period

Characteristics	**Ranking from the highest to the lowest mean return**
Market type	Emerging Asian> developed Asian > GCC
Shariah legal application	Secular > non-applicable > mixed system
Islamic financial market development	Non-developed > less developed > most developed
Muslim or non-Muslim country	Non-Muslim > Muslim country

Overall, the factors tested for the average return for the Islamic indice performance are summarized in the table below. From the testable hypothesis, overall it shows that the Muslim country portfolio performed differently from the non-Muslim country portfolio for the Islamic indices' average return. The factors of the Islamic characteristics and market types played an important role in the average return of the Islamic indices from the data sample.

Table 5.10 Summary of Factors that Related to the Mean Difference Test

Market Type	All periods		Bull market period		Bear market period		Crisis period		Post crisis period	
	Mean Difference	Sig.	Mean Difference	Sig.	Mean Difference	Sig.	Mean Difference	Sig.	Mean Difference	Sig.
Emerging Market - Developed Market	0.0042	0.559	0.012	0.681	0.0063	0.608	0.0066	0.838	0.0008	0.987
Emerging Market - GCC	.013***	0.002	0.021	0.148	.017***	0.009	.041***	0.001	0.0086	0.081
Developed Market - GCC	0.0089	0.107	0.009	0.786	0.011	0.251	.035**	0.024	0.0079	0.276

Shariah law system	All periods		Bull market period		Bear market period		Crisis period		Post crisis period	
	Mean Difference	Sig.	Mean Difference	Sig.	Mean Difference	Sig.	Mean Difference	Sig.	Mean Difference	Sig.
Non-applicable - Secular system	-0.0054	0.498	-0.013	0.628	-0.009	0.461	-0.0044	0.946	-0.0005	0.996
Non-applicable - Mixed system	0.008	0.09	0.0148	0.361	0.01	0.192	.033**	0.016	0.006	0.321
Secular system - Mixed system	.0134**	0.027	0.0278	0.139	.0188**	0.046	.0375**	0.036	0.0065	0.452

Islamic financial market development	All periods		Bull market period		Bear market period		Crisis period		Post crisis period	
	Mean Difference	Sig.	Mean Difference	Sig.	Mean Difference	Sig.	Mean Difference	Sig.	Mean Difference	Sig.
Non-developed market - Less-developed market	0.0043	0.584	0.0116	0.613	-0.0001	1	0.015	0.363	0.009	0.124
Non-developed market - Most developed market	.0114**	0.028	0.0247	0.103	.0170**	0.02	.045***	0.001	0.004	0.675
Less-developed market - Most developed market	0.0072	0.313	0.0132	0.604	0.0172	0.052	0.0305	0.053	-0.006	0.489

Note: *Significance level 10%,**Significance level 5%,***Significance level 1%

The characteristic testing of the sample during different time periods according to table 5.10 was analyzed as follows.

1) Market Type

The emerging Asian market and developed Asian market were not significantly different, though the mean average return from the emerging Asian country group was higher than the developed group at 0.04%. On the other hand, the emerging Asian country was significantly different from the GCC country group for all periods, the bear market, and the crisis and post crisis periods of testing. The emerging Asian country portfolio performed better than the GCC portfolio at 1.3%, 2.1%, 1.7%,4.1%, and 0.08% for all periods, the bull market, the bear market, and the crisis and post-crisis period, respectively. The developed Asian market countries performed differently from Gulf Country during all periods of testing but were only significantly different during the crisis period.

Thus, for the market type factor, the best performer of this group was the Islamic indices' portfolio of the countries from the emerging Asian market, followed by the developed Asian countries and the Gulf cooperative countries.

2) Shariah Legal System

According to the table, the secular system performed better than the non-applicable Shariah system but was not significantly different for any of the periods test. The secular system country portfolio also performed better than the mixed system country with a statistically-significant level of 5% during all periods, and for the bear market and crisis period. The mean difference between the secular and mixed system portfolio that was significant was 1.3%, 1.8% and 3.75% for all periods, and the bear market and crisis periods, respectively. However, the non-applicable of Shariah legal system and secular system were not significantly different.

3) Islamic Financial Market Development

The non-developed market performed better than the less-developed market country portfolios but was not significant for any of the periods tested. On the contrary, the non-developed market country portfolios performed better than the most developed market country portfolios for all periods and for the bear market and crisis periods at a significant level. The less-developed Islamic financial market county portfolios also performed significantly better than the most developed country

portfolios during the bear market and crisis at the 10% level. This implies that the most developed Islamic financial market performed worse than the other groups, especially during the bear market and crisis period.

This shows that the Muslim countries in the GCC market with a stringent Shariah legal system and with the most developed Islamic financial market underperformed the secular system the most during the crisis and bear market period. The reason will be discussed in the next section.

5.4 Regression Analysis

Table 5.11 The Average Return During The Bull Market Period

	Model		
Variables	**1**	**2**	**3**
Constant	-0.02	0.047**	0.041***
	(-0.292)	(2.76)	(3.53)
Muslim country	0.06	-0.013	
	(0.775)	(-0.457)	
Market Type	-0.003	-0.008	-0.009
	(-0.352)	(-1.178)	(-1.298)
Shariah application	0.021	0.018	0.015
	(1.57)	(1.381)	(1.391)
Islamic financial market development	-0.029	-0.017	-0.02*
	(-1.603)	(-1.245)	(-1.87)
Percentage Muslim population	-0.001		
	(-1.012)		
F-test	2.732	1.797	1.986
R Square	0.369	0.379	0.379
Adjusted R Square	0.234	0.188	0.188

Note: *Significance level of 10%,**Significance level of 5%,***Significance level of 1%, first row of number is the coefficient value of each factors and the number in parenthesis is the t statistic value

The average return during the bull market period was the dependent variable for the regression. The model contains all of the independent variables, which were Muslim country or not, market type, Shariah legal application, Islamic financial development, and size of Muslim population. The result showed only two independent variables that were significant: the market type and the Islamic financial market development in model 3. However, the other independent variables were not significant and the R-squared of the model was only 37.9%.

The regression equation for the bull market was:

InIslamic average return = 0.041-0.09Marekt type+0.015Shariah application law system-0.02Islamic financial market development.

Table 5.12 The Average Return During the Bear Market Period

	Model		
Variables	**1**	**2**	**3**
Constant	0.034	0.007	0.016***
	(1.28)	(1.034)	(3.06)
Muslim country	-0.008	0.021*	
	(-0.274)	(1.93)	
Market Type	-0.012***	-0.01***	-0.009**
	(-3.45)	(-3.49)	(-2.96)
Shariah application	0.004	0.005	0.01**
	(0.693)	(0.941)	(2.178)
Islamic financial market development	-0.012	-0.017***	-0.012**
	(-1.743)	(-3.29)	(-2.44)
Percentage Muslim population	0.00		
	(1.055)		
F-test	6.327	7.565	7.401
R Square	0.725	0.699	0.613
Adjusted R Square	0.61	0.607	0.53

Note: *Significance level of 10%,**Significance level of 5%,***Significance level of 1%, first row of number is the coefficient value of each factors and the number in parenthesis is the t statistic value

The regression table for the bear market period showed that the best model was model 3. There were three independent variables that are significant and the R-squared was 61.3%. These variables were market type, the Shariah legal application system, and Islamic financial market development. For the second model, the Muslim country variable was also significant but the Shariah application was not, with an R-squared equal to 69.9%.

The regression equation for the predicting average return of the Islamic indices during the bear market period was as follows:

In Islamic average return = 0.16-0.09Marekt type+0.01Shariah application law system-0.12Islamic financial market development.

Table 5.13 The Average Return During the Crisis Period

	Model		
Variables	**1**	**2**	**3**
Constant	-0.011	0.021	0.031***
	(-0.215)	(1.758)	(3.53)
Muslim country	0.058	0.023	
	(1.018)	(1.122)	
Market Type	-0.014**	-0.016***	-0.016***
	(-2.18)	(-3.26)	(-3.104)
Shariah application	0.009	0.008	0.014
	(0.952)	(0.846)	(1.725)
Islamic financial market development	-0.037**	-0.031***	-0.025***
	(-2.74)	(-3.16)	(-3.04)
Percentage Muslim population	0		
	(-0.663)		
F-test	8.537	11.037	14.038
R Square	0.781	0.773	0.751
Adjusted R Square	0.689	0.703	0.697

Note: *Significance level of 10%,**Significance level of 5%,***Significance level of 1%, first row of number is the coefficient value of each factors and the number in parenthesis is the t statistic value

During crisis periods, the best model was model 3. There were two significant independent variables: market type and Islamic financial market development, with an R-squared of 75.1%.

The regression equation of the best model during this period was:

In Islamic average return = 0.31-0.16Marekt type+0.14Shariah application law system-0.25Islamic financial market development.

Table 5.14 The Average Return During the Post-Crisis Period

	Model		
Variables	**1**	**2**	**3**
Constant	0.012	0.014**	0.01*
	(0.459)	(2.27)	(2.11)
Muslim country	-0.009	-0.011	
	(-0.296)	(-1.073)	
Market Type	-0.004	-0.004	-0.004
	(-1.092)	(-1.475)	(-1.646)
Shariah application	0	0	-0.003
	(0.064)	(0.048)	(-0.6390
Islamic financial market development	0.006	0.006	0.003
	(0.8020	(1.208)	(0.726)
Percentage Muslim population	0		
	(-0.086)		
F-test	1.247	1.685	1.843
R Square	0.342	0.341	0.283
Adjusted R Square	0.068	0.139	0.129

Note: *Significance level of 10%,**Significance level of 5%,***Significance level of 1%, first row of number is the coefficient value of each factors and the number in parenthesis is the t statistic value

The post-crisis period had no significant independent variables in any model. All of the R-squared were around 28% to 34%. This implies that after the financial crisis, all Islamic indices all of the countries adjusted themselves in different ways.

Table 5.15 Average Return for All Period Regressions

	Model						
Variables	**1**	**2**	**3**	**4**	**5**	**6**	**7**
Constant	-0.02	0.01*	0.01**	0.01***	0.02	0.01	0.02***
	(-0.77)	(1.77)	(2.75)	(3.23)	(0.85)	(2.7)	(4.44)
Muslim country	0.03	0.00			0.00	0.00	
	(1.3)	(0.05)			(-0.003)	(0.56)	
Market type					-0.01**	-0.007**	-0.01***
					(-2.71)	(-3.33)	(-3.36)
Shariah application	0.004	0.002	0.002		0.004	0.004	0.005*
	(0.80)	(0.40)	(0.54)		(1.03)	(1.15)	(1.77)
Islamic financial market development	-0.013	-0.008	-0.008*	-0.006***	-0.007	-0.008**	-0.006*
	(-2.1)	(-1.52)	(-1.88)	(-2.96)	(-1.268)	(-1.98)	(-2.06)
Percentage Muslim population	-0.00				0.00		
	(-1.41)				(0.21)		
F-test	2.67	2.7	4.34	8.78	4.65	6.26	8.67
R-Square	0.451	0.367	0.367	0.354	0.66	0.658	0.65
Adjusted R-Square	0.283	0.231	0.283	0.314	0.518	0.553	0.575

Note: *Significance level of 10%,**Significance level of 5%,***Significance level of 1%, first row of number is the coefficient value of each factors and the number in parenthesis is the t statistic value

According to the table analysis, the best model was model 7, with a high R-squared and all significant variables. This model contains independent variables as follows: Muslim or non-Muslim country, market type of indices, Shariah legal application in the country, and level of Islamic financial market development.

The equation from the regression model can be written as follows:

LnAverge return of Islamic indices (predicted) = 0.015- .006Market type+0.005 Shariah application-.006 Islamic financial market development.

All of the independent variables were significant at the 1% and 5% levels. The R-squared was 65% and the adjusted R-squared was 57.5%, which was acceptable. The relationship of market type negatively affected the performance of the Islamic indices return at 6%. The increase in the level of the market from emerging to developed and GCC market had a negative effect on performance, while the Shariah

legal application in country was positively related to the average return. Finally, the Islamic financial market development level affected the average return negatively. The most developed market showed the performance of the Islamic indices as the highest. This result was not consistent with the hypothesis or the belief that Islamic indices or Shariah-compliant products perform the best in Islamic economy systems or environments.

The most important factor from this sample was the market type, which related to the environment or macroeconomic factor of each country that has affected the performance of the Islamic indices. The next important factor was the development of the Islamic financial market and finally was the Shariah legal application in each country.

To summarize, during the entire period, the bear market period and financial crisis period were those that were significant. For all separation periods of testing, the most significant variable was market type. The second was Islamic financial market development. The third was the Shariah application system of the countries. The last was the factor of being a Muslim country or not.

5.5 Discussion

The performance of the Islamic indices with different country characteristics showed that those four factors significantly impacted the average return during the several periods investigated. These countries characteristics were: being Muslim or non-Muslim countries, market type, level of Islamic financial market development, and the Shariah legal application system in each country. To find out the reason behind the performance differences, this research took a closer look into the dependent variable and independent variables.

1) Market Type

When investigating the market type factors, there were several interesting points that could explained the difference in the average return. First, the MSCI separated their market type indices according to three criteria, which were the sustainability of economic development, market accessibility criteria, and the volume

and liquidity of companies. A developed market was a market with high sustainability of economic development, while an emerging market was still volatile from other factors in economic development.

According to the market type difference from the MSCI, the performance of Islamic indices could be different due to the criteria of the market themselves. The other factors such as macroeconomic factors were affecting the Islamic indices as well as other stock prices as usual. Thus, the character of the market itself plays an important role in the Islamic indices' returns in terms of the economic factors as with other stock indices.

2) Islamic Financial Market Development

From this factor, when investigating the screening criteria of the MSCI and the sample countries, it was interesting that the Islamic financial institutions were not screened out from the index.

Islamic financial institutions such as the Islamic bank, Islamic insurance providers, leasing companies that passed the GICS[1] Code from MSCI index provider were located in the most developed Islamic financial market countries, such as the Gulf countries and Malaysia. This is probably one of the reasons for the significant difference in the average return of the factor.

These institutions were the only financial sector that passed the business and financial criteria into the country index and the screening criteria did not include Shariah debt or instrument in the numerator of the ratio of debt to total assets or the ratio of cash and interest-bearing securities to total assets. This implies that most of the Islamic financial institutions passed the second criteria easily.

The worst performance during the bull market period and crisis period represented the weakness of Islamic financial institution as well. This could be because these institutions are still in the infant stage and the financial crisis has affected the Shariah system as much as the conventional sector. However, those indices from the less-developed Islamic financial market were performing better because of the exclusion of the financial sectors. Thus the Islamic indices have strong

[3] The Global Industry Classification Standard (GICS®) came from the development of MSCI index provider and Standard and Poors index provider as the standard to classify industry of companies and stock index.

screening criteria for both business and financial ratio screening, which could help the portfolio perform better than the Islamic indices' returns with the Islamic financial sector. The opportunity of non-Muslim countries also comes from this point.

The other point is that the most developed Islamic financial market has many institutions but with less expertise compared to the conventional financial market. Thus this point leads to poor performance when a crisis in the conventional market has arrived. However, the post-crisis period showed that there was not much difference in performance from the Islamic financial market factors. The reason for this might be the adjusting of the institution themselves that have gained experiences from the last crisis.

Another important point is the dividend purification process. This process is the relaxation of the Shariah criteria from many funds and index providers by allowing firms that obtain part of their income from interest rate or non-permissible activities income to reduce from the dividend paid out to shareholder and given to charity as state in MSCI guidance:

"MSCI will apply a "'dividend adjustment factor" to all reinvested dividends. The "dividend adjustment factor" is defined as:

(Total earnings – (income from prohibited activities + interest income)) / total earnings)

In this formula, total earnings are defined as gross income, and interest income is defined as operating and non-operating interest. The MSCI will review the "dividend adjustment factor" on an annual basis at the May Semi-Annual Index Review."

This dividend adjustment factor reflect the firms where located in less-developed Islamic financial market to have more available stocks or companies to select into Islamic indices and finally the average return of portfolio is affected from the number of stocks included. Accordingly, this apparently creates another opportunity for non-Muslim countries.

3) Islamic legal system application

This factor is the written Shariah application in the legal system of each country. It affects the average return from the most stringent one with the least performance. The best performer was the secular system group, which allowed the Islamic law to be written into the country legal system but effect affected Muslim's

personal life only. The secular system applied to some of the non-Muslim countries as well. The mixed system was the most stringent application of the Islamic law in applied courtiers. This effect could have come from the point that the strict countries courts of law applied Shariah law in judging their cases mainly. These countries select or have their own Islamic stocks or company lists already so these companies are guaranteed by the law of the countries themselves.

A good example of a secular system with the performance of Islamic indices is the Philippines, which is a Christian country but has embedded Islamic law into their official legal system. This is consistent with the return of the Islamic index in the Philippines, which performed the best in the top four countries during all testing periods.

According to the work of Colon (2011), the choice of law principle practices in most countries can be summarized in four principles. The first one is combined laws are mostly applied in civil law and common law countries. The second is that Shariah law is likely to be ineffective in countries that do not have Islamic law as the state law. The third point is that laws of England are the popular choice of law for contracts involving Islamic financial services. The last one is that all deals are permissible unless there is shown to be a conflict with Islamic or Shariah principles. Thus this helps to confirm that in practical, the most beneficial law for Shariah-compliant products and services is the secular law. This is consistent with the average return for the Islamic indices in this research.

Currently, practices of law for Islamic financial products and services in each country are depending on the non-scholars and Shariah scholar to interpret the Islamic law and criteria. There is a non-profit organization called the Accounting and Auditing Organization for Islamic Financial Institutions (AAOIFI), which was established in 1990. This organization has the duty of ensuring that participants conform to the regulations set out in Islamic finance. However, most funds and institution have their own advisory board to monitor and consult for Shariah financial products and services by themselves. Many Muslim countries have formed a group to set the standard together and to set rules to strengthen the Islamic financial market, such as the Asian-African Legal Consultative Organization (AALCO) in 1978 to facilitate commerce between 47 member states. The members are the United Arab

Emirates, Bahrain, Qatar, Saudi Arabia, Malaysia, Brunei, and Nigeria. Another example is the Kuala Lumpur Regional Center for Islamic Banking and Finance Arbitration (KLRCA Rules) which provides a special regulation application to any commercial contract or business arrangement based on Shariah. The purpose of these organizations is to make Shariah law more effective and at the same to set international standards. This is quite contrary from the results from this research, since the more stringent the law is, the less is the average of the returns gained from the Islamic indices.

The difference between legal systems applied in each country plays an important role concerning the availability of Shariah-compliant products and services as well as stocks. Stringent laws help with the performance of the Islamic indices but they must not be too stringent or too complicated for application. The best Shariah legal system of the sample was the secular systems, which reflects the importance of law applied in the country for Muslim citizens in non-Muslim countries. The best example is the Philippines, where its legal system is a combination of civil law, common law, and Islamic law.

5.6 Thailand and Malaysia Case Study

The result from regression analysis suggests that the market type was the important factor for the entire model. However, market type is not the Islamic characteristics, the factor itself represent the environment that is different in term of economic environment and other definition as defined by index provider. From this point, Thailand and Malaysia Islamic indices are studied to represent Muslim and non-Muslim country in the same type of market. To test the mean different, the null hypothesis is mean of Malaysia Islamic index return is greater or equal to mean of Thailand Islamic index return.

Ho: Mean (average return of Malaysia Islamic Index) $\geq$ Mean (average return of Thailand Islamic Index).

The testing periods cover all five time frames which are all periods, bull market period, bear market period, crisis period and post crisis period.

Table 5.16 Test of Mean Difference between Return of Malaysia Islamic Index and Thailand Islamic Index.

	All period		Bull		Bear		Crisis		Post Crisis	
	Malaysia	hailand	alaysia	hailand	alaysia	hailand	alaysia	hailand	alaysia	hailand
Mean	0.0096	.0047	.0078	.0101	.0102	0.0003	.0029	0.0028	.0099	0.0067
Variance	0.0030	.0077	.0016	.0031	.0052	.0121	.0069	.0216	.0018	.0060
Observations	120	120	26	26	47	47	17	17	47	47
t Stat	0.5150		0.1716		.5464		.1392		.2487	
Probability	0.3035		.4323		.2932		.4452		.4022	

The result from table above indicates that the null hypothesis cannot be rejected that mean of Malaysia Islamic index return is greater or equal to mean of Thailand Islamic index return. It can be concluded that the series are quite the same.

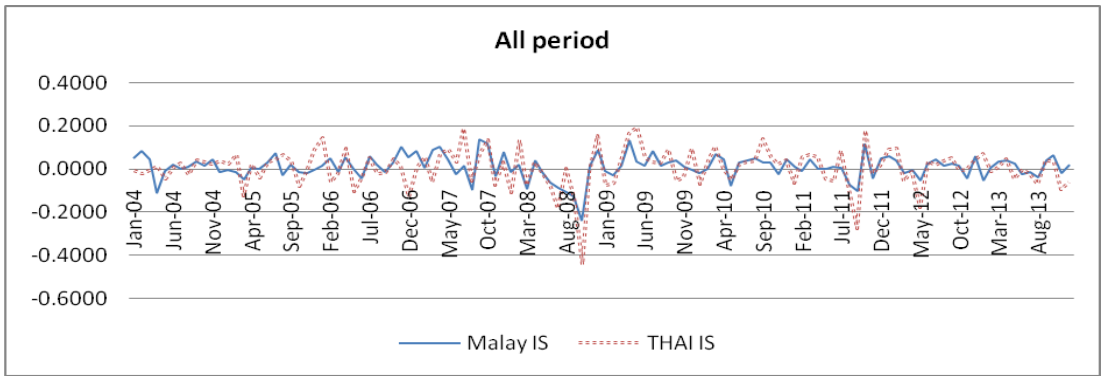


Figure 5.1 Average Return of Islamic Indices between Malaysia and Thailand for all Periods.

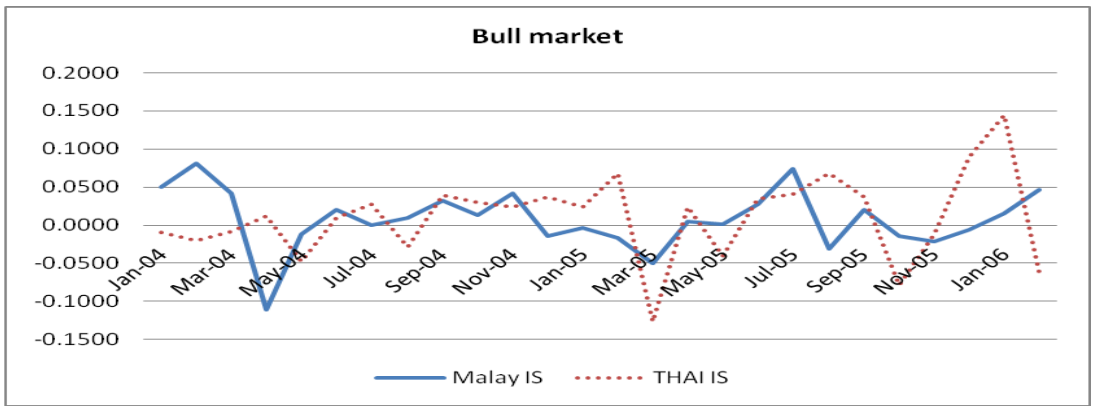


Figure 5.2 Average Return of Islamic Indices between Malaysia and Thailand for Bull Period.

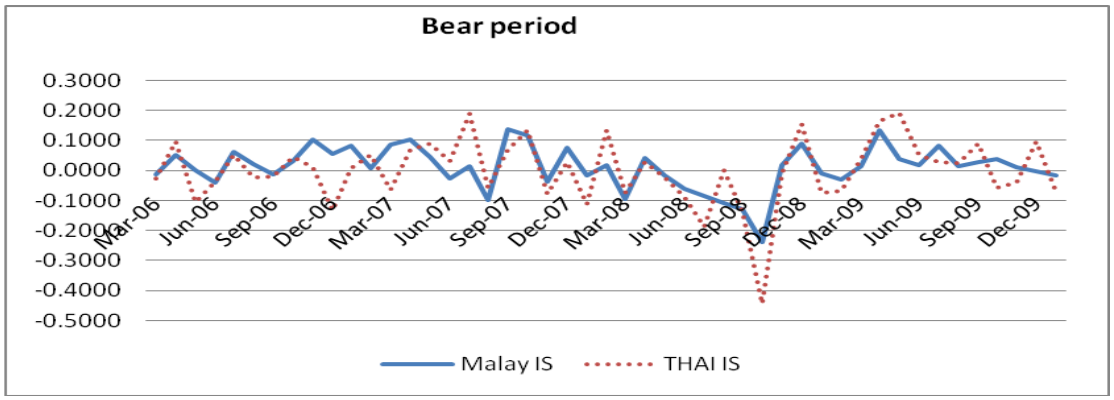


Figure 5.3 Average Return of Islamic Indices between Malaysia and Thailand for Bear Period.

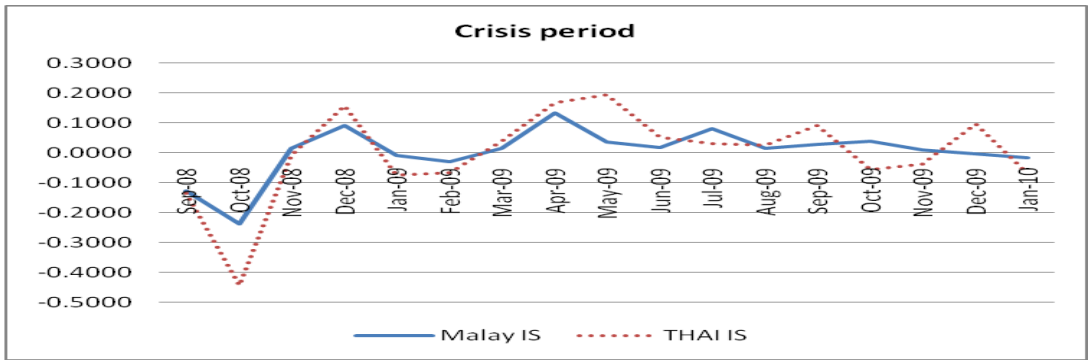


Figure 5.4 Average Return of Islamic Indices between Malaysia and Thailand for all Periods.

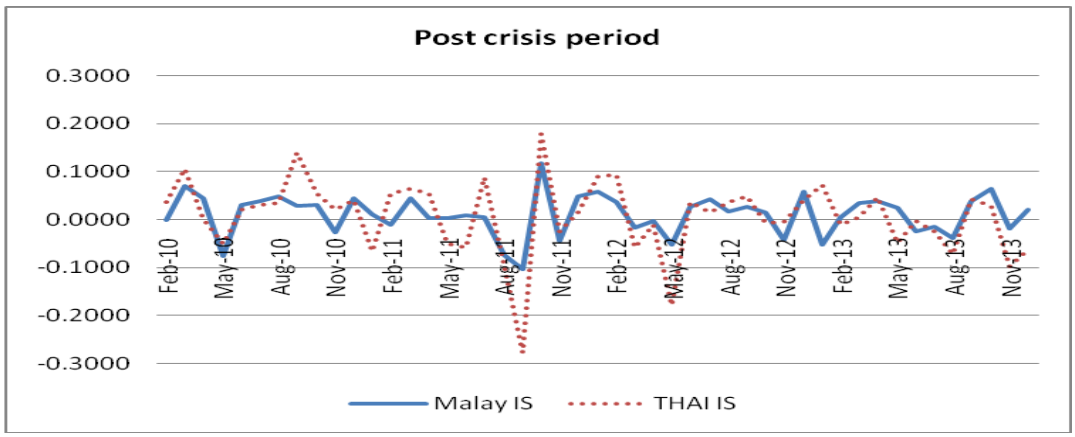


Figure 5.5 Average Return of Islamic Indices between Malaysia and Thailand for all Periods.

The result shows the average return of Islamic index in Malaysia was higher than Thailand Islamic index return during all period, bear period, crisis and post crisis periods. IT indicates(|he bettår performance in Muslim fri%ndly anviron,ent. However, du2ing the bull market, Thailand market has performed better.

These tw/ countries represent the Muslim and non-Muslim country in the same emerginc Asian market type. Thaaland is a non-MuSlym c□untry whici its financI`l system is completely conventimnal ant mostly attached |o the international eqonomics. On the other land, Malaysia is Muslim country with tie most dEveloped of Islamic financkal m!rk%t and also has the conventional vinancIal system parallel with other system. When co}pqring performance of these two countries, the better performance of Malaysia d5ring the bear market and crisis period had shnwn the fenefit of having Islamic`financial system inside(their country. The Islamic financial system hemps the country to peòvorm"bEtter tjan Thailand ex#ept the bull period. Hmwever, there is no statistically siFnificaft iN |he result of these 4wo countries. Dh}s, the Ishamic investment could have a chance to perfkrm better if!other periods as well.

Table 5.17 Risk Adjusted Return Performance in all Sample Periods

Period 10 years	**Risk Adjusted performance**			
Country indices	**Sharpe ratio**	**Treynor ratio**	**Alpha**	**Beta**
Malay IS	-51.3943	-0.008	0.0006	0.70**
Thailand IS	-32.4139	-0.009	0.0002	1.18**

Table 5.18 Risk Adjusted Return Performance in Bull Periods

Period: Bull market July 2004 -Feb 2006	**Risk Adjusted performance**			
Country indices	**Sharpe ratio**	**Treynor ratio**	**Alpha**	**Beta**
Malay IS	-0.7547	-0.0679	-0.0182	0.38**
Thailand IS	-0.196	-0.00827	-0.0010	1.15**

Table 5.19 Risk Adjusted Return Performance in Bear Periods

Period: Bear market March 2006 -Jan 2010	**Risk Adjusted performance**			
Country indices	**Sharpe ratio**	**Treynor ratio**	**Alpha**	**Beta**
Malay IS	-0.2089	-0.0195	0.0035	0.77**
Thailand IS	-0.2318	-0.02034	0.00459	1.26**

Table 5.20 Risk Adjusted Return Performance in Crisis Periods

Period: Subprime crisis Sep 2008 -Jan 2010	**Risk Adjusted performance**			
Country indices	**Sharpe ratio**	**Treynor ratio**	**Alpha**	**Beta**
Malay IS	0.1049	0.0117	0.0122	0.74**
Thailand IS	0.0213	0.0024	0.0152	1.3

Table 5.21 Risk Adjusted Return Performance in Post Crisis Periods

Period: Post crisis Sep 2008 -Jan 2010	**Risk Adjusted performance**			
Country indices	**Sharpe ratio**	**Treynor ratio**	**Alpha**	**Beta**
Malay IS	0.2117	0.0158	0.0062	0.57**

Thailand IS	0.0757	0.0053	0.0002	1.12**

All risk-adjusted return shows the same result as the average return. The interesting point is that Thailand has the higher risk in term of Islamic indices performance than in Malaysia market.

After the test of performance between Thailand and Malaysia Islamic indices, the result shows that the hypothesis of Muslim country and Islamic friendly environment has potential to perform better than non-Muslim country cannot be rejected. The performance of Islamic indices in non-Muslim country could have a chance to perform better in bull market. This leads to the test of other factors besides the characteristics of being Muslim or non-Muslim country in the sensitivity analysis.

Table 5.22 Sensitivity Analysis of Islamic Indices Return to Macroeconomic Factors

Sensitivity of Islamic indices return to macroeconomic factors						
Return of Islamic index from		**Independent variables**				
		DLCPI	DLEX	DLIPI	DLM2	DLNIRLT
Malaysia	Coefficient	0.847	0.266*	-0.010	-0.066	-0.074
	Std. Error	1.293	0.120	0.232	0.253	0.052
	t-Statistic	0.655	2.224	-0.043	-0.260	-1.438
	Prob.	0.515	0.031	0.966	0.796	0.156
		DLCPI	DLEX	DLIPI	DLM2	DLNIRLT
Thailand	Coefficient	-0.609	0.253	0.050	0.247	-0.050*
	Std. Error	0.471	0.224	0.097	0.151	0.029
	t-Statistic	-1.295	1.128	0.515	1.636	-1.769
	Prob.	0.198	0.262	0.607	0.105	0.080

The result shows the different effect from factors toward Islamic index return. For Malaysia, the factor that has significantly positive effect to average return is exchange rate. On the other hand, Thailand Islamic index average return was negatively affected by long term interest rate with a significant result.

When investigate closer to the sign of these factors, for CPI or inflation rate proxy had effected differently between two countries. In Malaysia, the growth or change in inflation has positive relationship to average return while in Thailand has adverse result. IPI level of industrial production ratio also showed different effect between two countries. IPI has negative effect in Malaysia and positive effect in

Thailand. The money supply also shows the different result while Thailand average return of Islamic index has affected on the positive money supply in the system and the Malaysian market has an opposite effect. Long term interest rate factor has negative impact toward the average return of Islamic indices clearly for both countries but only significant in Thailand market. This shows the impact of the conventional system toward the Islamic investment in Thai market or non-Muslim country. Overall result from sensitivity analysis is that there are some affect from the macroeconomic factors that leads to the performance difference in Muslim and non-Muslim countries in the same market type. The difference in the sign of co efficient toward Islamic average return in both country shows opposite impact of macroeconomic factors which affect the return differently and finally caused the difference in the performance of indices.

When comparing the performance of Islamic indices in only single case of Muslim and non-Muslim countries, the potential of better performance of Islamic investment were shown in Muslim country more than in non-Muslim country. This is in line with the work of Hoepner et al. (2011). The reason for the different is according to the macroeconomic factor that effect to the country market itself and the impact of country own risk and characteristics. Thus, it cannot be rejected that the performance of Islamic indices has potential to perform better in Islamic friendly environment or Muslim country as individual country test but there is no statistically different in the sample though.

The difference of performance of Islamic indices return from case study of Thailand and Malaysia can be concluded as the macroeconomic factor of each country had effect directly to the average return or the price index itself. While Muslim country characteristic in Malaysia could help the average return to perform better during the bear market which leads to better performance in overall period. The performance of average return in Thailand as proxy of non-Muslim country is better during bull market period with the characteristic of higher risk in the country and the effect of macroeconomic factor from its long term interest rate.

From this single country result, it is different from the result of the group of country portfolio in Muslim and non-Muslim. The prior result of portfolio between two groups shows the better performance in non-Muslim country portfolio. This is probably due to the diversification properties of portfolio that contain the varieties of

companies in countries with difference of macroeconomic effect together. Another important point is the Islamic countries in GCC group which has the worst performance during the crisis might lead to the decrease in performance of Muslim country portfolio. This is implied to the prior analysis of having the Islamic financial institution that is in infant stage and has the less expertise in management during the crisis periods.

5.7 Emerging Market Case Study

Empirical work regarding country characteristics and Islamic investment returns was seen in the study by Hopener et al. (2011). They investigated Islamic fund returns of countries in many regions by using the Carhart model, and analyses from the results indicate that returns from Islamic funds were different. The important point of their work is that the returns for funds in an Islamic country perform better than others. Most current literature on differences in the performance of Islamic investments due to geographical area and improved performance in developed Islamic financial markets is found in the work of Hayat and Kraeussl (2012), El Khamlichi, Laaradh, Arouri and Teulons (2014), Christoffersen and Sarkissian (2009), Dania and Malhotra (2013), Krasicka and Nowak (2012), and Ajmi, Hammoudeh, Nguyen and Sarafrazi (2014). There is a lack of papers concentrating on specific factors to test Muslim and non-Muslim countries, leaving a certain amount of room for this research to focus on investigating this issue. Thus, this paper further investigates the factors affecting the performance of Islamic index returns based on the work of Hopener et al. (2011) by focusing on the comparison between non-Muslim and Muslim countries to see which group performs better and what factors determine the difference. The factors tested are region, level of Islamic financial market development, and Shariah law implementation within the country. This paper is based on the Arbitrage Pricing Model (APT) to analyse the return of stocks to show that the difference is due to other systematic risk factors besides market risk from the Capital Asset Pricing Model (CAPM), which effect stock returns, to try and find specific risk characteristics relating to Islam within country index returns.

Twenty two MSCI Islamic indices for emerging countries are used in this case (Table 5.23). Emerging countries are of interest depending on the size of the market and opportunity for higher returns on investment due to the instability of the country itself and its willingness to embrace new products. Historical prices of all MSCI indices were retrieved from the MSCI website for January 2004 to December 2013 on a monthly basis per index (2,640 data points). The benchmark is the Dow Jones Global Index. Monthly U.S. Treasury Bill rates from January 2004 to December 2013 are used as the risk free rate. To test the performance of the indices, monthly returns were calculated by taking the natural logarithm difference from the price index. Average log returns and risk adjusted returns using the CAPM method are computed and used as dependent variables. The mean difference t-test and simple linear regression are used to test the hypothesis.

Table 5.23 Descriptive Statistics and Country Characeristics

No	Date	Average log return	SD	Average risk adjusted return	SD	Islamic financial market development	Shariah law	Muslim country	Region
1.	BRAZIL	0.0033	0.0441	-0.1786	0.2252	None	No	No	EAMERICA
2.	CHILE	0.0021	0.0301	-0.0971	0.1286	None	No	No	EAMERICA
3.	CHINA	0.0029	0.0347	-0.1384	0.1770	None	No	No	EASIA
4.	COLOMBIA	0.0073	0.0378	-0.1126	0.1465	None	No	No	EAMERICA
5.	CZECH REPUBLIC	0.0032	0.0392	-0.1500	0.1908	None	No	No	EEUMDAF
6.	EGYPT	0.0064	0.0458	-0.1028	0.1351	Less	mixed	YES	EEUMDAF
7.	HUNGARY	0.0012	0.0440	-0.1802	0.2270	None	No	No	EEUMDAF
8.	INDIA	0.0027	0.0387	-0.1551	0.1969	None	secular	No	EASIA
9.	INDONESIA	0.0041	0.0434	-0.1509	0.1919	Most	secular	YES	EASIA
10.	KOREA	0.0027	0.0352	-0.1462	0.1862	None	No	No	EASIA
11.	MALAYSIA	0.0042	0.0239	-0.0832	0.1126	Most	mixed	YES	EASIA
12.	MEXICO	0.0049	0.0346	-0.1402	0.1791	None	No	No	EAMERICA
13.	PERU	-0.0030	0.0499	-0.1185	0.1535	None	No	No	EAMERICA
14.	PHILIPPINES	0.0068	0.0385	-0.0906	0.1210	Less	secular	No	EASIA
15.	POLAND	0.0017	0.0416	-0.1784	0.2248	None	No	No	EEUMDAF
16.	RUSSIA	0.0015	0.0443	-0.1777	0.2240	None	No	No	EEUMDAF
17.	SOUTH AFRICA	0.0020	0.0348	-0.1424	0.1817	None	No	No	EEUMDAF
18.	TAIWAN	0.0022	0.0287	-0.1113	0.1450	None	No	No	EASIA
19.	THAILAND	0.0020	0.0379	-0.1424	0.1817	Less	No	No	EASIA
20.	TURKEY	0.0019	0.0478	-0.1639	0.2074	Most	No	YES	EEUMDAF
21.	QATAR	0.0003	0.0398	-0.0966	0.1279	Most	mixed	YES	EEUMDAF
22.	UAE	-0.0045	0.0576	-0.1345	0.1723	Most	mixed	YES	EEUMDAF

Notes: Islamic financial market development levels are divided by existing Islamic financial institutions within the country. None: represents countries with no Islamic financial institution. Least: means the country contains at least one Islamic bank. Most: means the country has many types of institutions in the Islamic financial industry. Shariah law applied in the country is divided into three types by Otto (2009a). No: means the country has no involvement with Shariah law. Secular: represents a country with partial law application for minority groups. Mixed: represents a country in which Shariah plays a major role or dominates majority groups. Muslim country: is one where the national religion is Islam or the majority of the population is Muslim. Non-Muslim country: represents a country with other national religions, but contains some Muslims. Finally, regions are grouped by the MSCI index provider under the common characteristics of emerging nations in the world equity market. EAMERICA represents emerging countries in Americas. EASIA are emerging countries in Asia. EEUMDAF are emerging countries in Europe, the Middle East, Africa, and Frontiers.

5.7.1 Results

The mean of Islamic index returns from non-Muslim countries are greater than the Muslim country group ($M_{difference}$ = 0.047%). However, for those characteristic tests, there is no statistical difference between categories. On the other hand, the mean difference in the Islamic index risk adjusted returns (Table 1.2) between non-Muslim and Muslim countries is statistically significant (Mean difference -2%, *p*-value < 0.0099). Average risk adjusted returns for a Muslim country (M = -12%) is significantly higher than the average risk adjusted returns for a non-Muslim country (M = -14%).

Table 5.24 Test of Mean Difference

Group	Raw returns		Risk adjusted returns	
	Mean	**SD**	**Mean**	**SD**
Non-Muslim country	0.0027	0.0388	-0.14	0.1858
Muslim country	0.0022	0.0441	-0.12	0.1644
Combined	0.0026	0.0403	-0.14	0.1804
Difference	0.0004		-0.02***	

Note: ***, **, * indicate statistical significance at the 0.01, 0.05 and 0.10 level, respectively

Risk adjusted returns for the country with a non-developed Islamic finance market has an average return of -14%, which is lower than the least and most developed markets for 2 and 3%, respectively, or -11% for least developed markets and -12% on average for the most developed markets (Table 1.3). The results show that the difference in risk adjusted returns for Islamic indices at the Islamic finance level of market development is highly significant. It shows that the country with the least developed Islamic financial market has the highest return followed by the most developed country and undeveloped countries (Mean difference $_{least\ developed}$ = 3%, *p*-value = 0. 002) (Mean difference $_{most\ developed}$ = 3%, *p*-value = 0.027).

Table 5.25 Categorical Test

Islamic financial market development	Coef.
Least developed	0.03 (3.14)***
Most developed	0.02 (2.21)***
Undeveloped	-0.14 (-32.95)***

Note: ***, **, * indicate statistical significance at the 0.01, 0.05 and 0.10 level, respectively

For a country which applies Shariah law to the risk adjusted return (Table 1.4), the non-applying countries have an average return of -15%, while the countries who adopt a secular and mixed system have an average return of -14% and -11% with highly significant differences between non-applied and mixed systems (*p*-value = 0.000).

Table 5.26 Categorical Test

Shariah implementation	Coef.
Least applied	0.01 (1.25)
Most applied	0.04 (4.43)***
Not applied	-0.15 (-34.25)***

Note: ***, **, * indicate statistical significance at the 0.01, 0.05 and 0.10 level, respectively

For regional differences (Table 1.5), the risk adjusted return for Islamic indices in the emerging American region has an average return of 12.9%. There is a significant difference between the mean of emerging America and that of emerging Europe, Middle East, and Frontier markets of -2% or around -15% returns on average

with *p*-value = 0.05. However, when taking a closer look at emerging Asian countries and America, there is no statistically significant difference between the two country groups.

Table 5.27 Categorical Test

Region	Coef.
Emerging Asian	0.002 (0.23)
Emerging EUMDFR	-0.02 (-1.96)**
Emerging American	-0.13 (-17.59)***

Note: ***, **, * indicate statistical significance at the 0.01, 0.05 and 0.10 level, respectively

Thus Islamic index returns for a Muslim country performs better than a non-Muslim country with the gap in return being 2%. The best performance characteristics are countries where few Islamic financial institutions exist, with strong Shariah law implementation located in European, Middle Eastern, African, and Frontier regions.

The hypothesis that Islamic index returns from Muslim countries perform better than non-Muslim countries cannot be rejected is confirmed by this case. Index returns for Muslim countries are statistically significant, being greater than non-Muslim countries at 2%. Improved index returns are indicated in examples of emerging countries located in European, Middle Eastern, African, and Frontier regions with less Islamic finance development and strong Shariah law application.

5.8 Summary

Overall, the hypothesis that the performance of Islamic indices portfolio in non-Muslim countries outperform Muslim countries' portfolios cannot be rejected. The results showed the outperformance of the average return from the Islamic indices in non-Muslim country portfolios at a statistically-significant level. The factor that

drives the difference is the market type, the level of development of the Islamic financial market, and the Islamic Shariah law applied in each country. The opportunity for non-Muslim countries arises from the fact that the most developed Islamic financial market contains Islamic financial sectors which cannot resist the external financial crisis during overall and crisis periods.

Another point is the availability of the choice of stocks to include in the indices from non-Muslim countries according to the relaxation from the dividend-purification process. The secular legal system and non-applicability of Shariah law applied in countries also benefit non-Muslim countries' Islamic indices. This is probably due to the lack of a center for Shariah board organization at the international level, which has led the national court rule for the law applied and judge to cases. In most of the cases, Islamic law is ineffective in the nation that has not included Shariah law into their state regulation. The gap between the legal systems has led to opportunities in non-Muslim countries. However, this research does not suggest that the development of a harmonized Shariah board or practice for international market is not essential. Rather, the development of Islamic finance in the legal system and financial market needs to be explored in more research for different environments or for the unique characteristics of the country.

After comparison of performance of Islamic indices return in Thailand and Malaysia, the hypothesis of having potential to perform better in Islamic friendly or Muslim environment cannot be rejected. The Islamic indices' performance in non-Muslim countries need to develop for the variety of products that best fit each country's characteristics and still yet represent the cultured of Islam and under Shariah principle for the most benefits for all Muslim and non-Muslim investors and others. The emerging market case study also confirm that the hypothesis of Muslim country index return is better than non-Muslim country's one cannot be rejected.

To be concluded, the stringent screening criterion of Islamic equity investment creates the portfolio with lower risk and acceptable return for overall period. The performance differences between Muslim and non-Muslim country portfolio come from the characteristics of market type and the macroeconomic factors from each country mainly. While the characteristics of Muslim countries such as being non-Muslim or Muslim country, Shariah law application and level of Islamic financial market development plays minor roles in the countries' portfolio performance.

CHAPTER 6

CONCLUSION

6.1 Concluding Remarks

Understanding Islamic finance is very important for the financial world. The growth of Islamic finance and the driver of petrodollar demand from many oil-producing countries have attracted the world to this new financial system. Many studies and much research have been launched to serve the new knowledge and analysis of the new system under Islamic or Shariah principles. Many Institutions and Islamic financial representatives have tried to guide and explain more about Shariah-compliant products and services. Thus, Islamic funds and equity investments are needed to understand by both Muslim and non-Muslim investors.

Many researchers have studies the characteristics and the returns of Islamic funds and equity investment. Most of the studies used sample in Muslim countries for the reason of fund availability and the benefit of the similarity of Islamic countries' characteristics. However, according to the growth of demand of Muslims around the world, the non-Muslim countries' markets are also very attractive with a sizable Muslim population and the openness of nations to the Islamic investment market. These non-Muslim countries, especially in emerging Asian countries, are very attractive and need more understanding of Shariah-compliant product performance.

The study of Islamic indices as a proxy to represent the equity investment in this research was created to benefit both investors and policy developers of the Shariah-compliant products and services in non-Muslim countries. The investor that seeks to have the opportunity to gain more returns with manageable risk would find the information of this study as supportive information for them in choosing to invest in Islamic funds or to manage their own portfolio with Islamic principles. Policy makers and fund managers could apply the information by looking to the new market and the factors that impact the performance of investments. This could also create

opportunity to select more stocks for Shariah-compliant products and services for their portfolio and expand the market of investment into attractive non-Muslim countries in emerging Asian countries with the opportunity to gain more abnormal returns and to diversify the risks in the portfolio.

The study began with the investigation performance and characteristics of Islamic indices, which represent the screening index under Shariah criteria in the sample countries of emerging Asian countries from MSCI indices, compared with the conventional indices, which were unscreened indices. The first hypothesis tested the effect of the Islamic index or screened index as to whether it created a difference in the performance in these countries and whether it could be an opportunity for Islamic investment.

The study divided the testing frame into five periods; namely, all periods for 10 years, the bull market period, the bear market period, the subprime crisis period, and the post-crisis period. The result showed a significant difference between the paired indices within countries. This implies that there is an effect of screened indices or Shariah principle in the market as to generate different returns from their counterparts and to provide opportunities for new markets for investors.

The performance of Islamic indices of the sample countries mostly outperformed their counterparts during bull and bear periods while underperformed during subprime and all ten-year periods with lower systematic risk for all time frames. Moreover, the study found that many of the countries' Islamic indices diversified the benefits from their counterparts with the tendency of small cap and value stocks in each index.

The country markets which were outstanding from finding are Taiwan, Philippines, Malaysia, Korea, and Thailand. Most of these were top performers of all periods and they belonged to the non-Muslim country group, except Malaysia. This implies an opportunity in these countries to hedge or gain higher returns on Islamic indices by investing in stocks from these countries.

The second hypothesis tested the Islamic indices' performance and characteristics of countries that might affect the performance in non-Muslim countries. The test was designed to compare the average return of portfolios from the non-Muslim country group, mainly from the emerging Asian countries, with the

Muslim country group, mainly from the Gulf cooperation country and North Africa. The results showed that the mean difference between the non-Muslim and Muslim country portfolios was significantly different.

Then, to investigate the characteristics and Islamic driver factors of each sample country, the mean difference test and regression were applied. The result confirmed that there were three factors that impacted the average return of the Islamic indices with statistically-significant results. The most important factor was market type, whether it was in the emerging, developed or Gulf countries. This factor represents as the macroeconomic factors affect the return and performance of stock prices and index in each country as normal. The best performer was from the group of emerging Asian countries.

The next was the level of the Islamic financial market development factor. This factor showed an important point: that the most developed countries in Islamic finance had the lowest average return. After the investigation, these Islamic financially-developed countries allowed the financial Institutions into the index by the MSCI providers. This led to a drop in performance of the most developed Islamic financial factors. Another point is that the development of the Islamic financial institutions itself was also affected by the subprime crisis, even in the different types of systems. Most of these countries again were Muslim countries. This implies the opportunity of non-Muslim countries again to have none Islamic financial institutions allowed in the index portfolio. However, this implication does not mean that the Islamic indices that eliminate those Shariah financial institutions will perform worse. This issue is beyond the scope of this research. The result from this might lead to room for study of Islamic financial institutions and their performance.

The last factor is the Islamic legal system applied in the country. The best performer of the average of Islamic indice returns was the group of countries with a secular legal system. The secular legal system applied in the country by recognizes personal right of Muslim that can be enforce under Shariah principle but not in the national legal system. The worst performer was the most stringent of Islamic laws applied in both national law and personal life. The study has tested the effect of the Muslim population on the average return, but there was no significant result for this factor. Thus it can be concluded that this factor or the demands of the Muslim population in non-Muslim countries had no effect on the average return.

The regression analysis revealed a relationship between the average return for the Islamic indices and Islamic factors. The negative relationship from the level of development of the Islamic financial market was in line with the factor analysis results. Thus, to select the stock for the portfolio, the Islamic financial institution stock was the choice to not be included. However, further study on the performance of financial institutions should be explored. The best way to invest in Islamic indices is to stick with the Shariah screening criteria for non-Muslim countries or the less- or non-developed countries in the Islamic financial market.

Another factor showed a positive coefficient in relation to the Islamic indices' return. This factor was the Shariah or Islamic law applied in each country. As a positive sign, it showed that the secular system with the right provision for Muslims was the best-performing group. However, the investigation of a mixed system should be carried out. The mixed system is in the same group with the most developed countries in the Islamic financial system. The effect of the law is the effect of the financial institution also. Thus, adding Islamic financial institutions plays an important role in the drop in the performance of the samples in the study.

After the regression analysis, the study of Thailand and Malaysia Islamic indices in the same market type was applied by mean difference test and sensitivity analysis. The difference of performance of Islamic indices return from case study of Thailand and Malaysia can be concluded as the macroeconomic factor of each country had effect directly to the average return or the price index itself. While Muslim country characteristic in Malaysia could help the average return to perform better during the bear market which leads to better performance in overall period. The performance of average return in Thailand as proxy of non-Muslim country is better during bull market period with the characteristic of higher risk in the country and the effect of macroeconomic factor from its long term interest rate.

The result of Thailand and Malaysia case study could explained the diversification benefit of portfolio of Islamic indices from many country characteristics and macroeconomic factors that had effect to the average return of Islamic indices.

Moreover the case study of Islamic index in the same market type also confirm that the Muslim country has better performance than its counterpart and the hypothesis cannot be rejected.

To conclude, the performance of Islamic indices in non-Muslim countries reveals opportunities in other environments in the Islamic economy. As long as the Shariah principle screening criteria are applied in the selection of stocks for portfolio, the benefits of Islamic investment still occur such as the opportunity to gain abnormal returns with lower risk, hedging opportunities from a diversification of characteristics, opportunity to create a portfolio with lower risk from containing the small cap and value stock. These benefits and opportunities can create wealth for the investor and provide a choice of investment for the fund manager or policy maker in generating portfolios or setting the infrastructure in non-Muslim countries.

The opportunity of being a non-Muslim country in the emerging Asian region arises with the characteristics of, being a non-developed country of Islamic financial market and has the Shariah law applied in secular system. This reason can explain why the country such as Philippines being one of the best performer in sample. Taiwan, Korea and Thailand are also attractive markets for Islamic investment in term of choosing stocks from these Islamic indices investment basket. Another important point is that the macroeconomic factors of each country play important part to Islamic investment also. The macroeconomic factor that can effect to non-Muslim countries conventional system and stock market could also affect to Islamic price index and return, accordingly. Thus the opportunity of invest in non-Muslim country comes from the alternative choices for investor to included Islamic stocks or investment as to diversify their risk and increase opportunity for higher return into their portfolio.

Being a less-developed country in the Islamic financial market does not mean that those non-Muslim countries have no need for development in policy, transparency, legal application or market development themselves. It is implied that more work needs to be done from the Islamic financial world side to adapt or to develop to be more suitable or better fit with the international market. On the other hand, the non-Muslim countries or international world might need more understanding of Shariah principles and of the Islamic financial market, as well as the legal application in each country in order to induce more investors from the Islamic market into that country or international picture. The best way is to have mutual cooperation between two parties, which will create the best benefit from the stringent criteria of Islamic investment under the Shariah principle and policy of the country itself.

6.2 Scope of Research

This research mainly focuses the investigation on performance and characteristics between the conventional country indices and the Islamic indices from MSCI indices as proxy of Islamic funds and equity investments. The scope of the study involves the investigation on the performance and benefit of country indices under Islamic screening criteria using average raw returns and risk-adjusted returns, CAPM model, Fama French model, co-integration approach and variance ratio analysis. The study also examines the effect on the performance of country characteristics and Islamic factor in sample indices by focus to Islamic indices' returns only and test by mean difference test, the post hoc test, and regression analysis.

6.3 Limitations of the Research

This research sample used data from the MSCI countries' indices and Islamic indices group mainly in emerging Asian countries and gulf countries to test the hypotheses. More research should be conducted in terms of different indices from other index providers. This study focused on the MSCI index only because of the availability of the country indices. Further study should find more products that can be tested under the scheme of Islamic investment in more countries and sub-region contexts. The price of Islamic indices as a proxy of Islamic fund and equity investment might be limited in term of the inability to adjust portfolio for example it cannot exclude some particular industry sector. A better proxy for equity investments should be designed and investigated more. Hence, data for study might be not enough to bring the high quality proxy for Islamic funds in each country.

The characteristics of the countries were limited to the type of country market and the Muslim or non-Muslim characteristic and some factors that drive Islamic financial growth. Future study could add more factors conducted more with the Islamic financial institutions with other methodologies in order to explore other consequences.

6.4 Contributions/Significance of the Study

This research enriches the Islamic finance literature by providing additional evidence on the performance of Islamic indices in non-Muslim countries. Understanding Islamic Indices and ethical investments would help investors improve their performance in investing in the capital market under religious constraints. Investors will be able to efficiently decide whether they should invest in Islamic equity portfolios in non-Islamic economies with acceptable returns or not. The study also contributes more evidence of diversification benefits and alternative investment choices for investors in non-Muslim country markets.

This work is important for the Islamic finance world by filling a gap in the literature in this area. Islamic investments could be a tool to replicate portfolio for diversified risk as well as to be the new type of investment to the blue ocean market such as the opportunity to invest in non-Muslim countries. Nevertheless, investors will enjoy the opportunity of alternative investments and other benefits of Islamic investments. All of the evidence would lead to the development of products relating to Shariah-compliant product and services. Furthermore, this could be a model for policy makers in non-Muslim countries if the factors and evidence from this dissertation are applied.

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APPENDICES

APPENDIX A

CO-INTEGRATION BIC TABLE

Co Integration Test from Two Different Criterias : BIC Table

Test for cointegration Period: January2004-December 2013, Obs n=1920 Lags interval : 1 to1 according to information criteria of Schwarz-Bayesian Information Criterion (BIC)					
Cointegrating System: {China conventional, China Islamic Indices}					
Hypothesized		Trace	0.05		
No. of CE(s)	Eigenvalue	Statistic	Critical Value	Prob.**	no
None	0.033571	4.739579	15.49471	0.8358	
At most 1	0.006	0.710128	3.841466	0.3994	
Cointegrating System: {India conventional, India Islamic Indices}					
Hypothesized		Trace	0.05		
No. of CE(s)	Eigenvalue	Statistic	Critical Value	Prob.**	yes
None *	0.085717	15.58152	15.49471	0.0485	
At most 1 *	0.041544	5.0069	3.841466	0.0252	
Cointegrating System: {Indonesia conventional, Indonesia Islamic Indices}					
Hypothesized		Trace	0.05		
No. of CE(s)	Eigenvalue	Statistic	Critical Value	Prob.**	
None	0.080705	11.62084	15.49471	0.176	
At most 1	0.014231	1.691338	3.841466	0.1934	no
Cointegrating System: {Korea conventional, Korea Islamic Indices}					
Hypothesized		Trace	0.05		
No. of CE(s)	Eigenvalue	Statistic	Critical Value	Prob.**	no
None	0.052806	7.189326	15.49471	0.5558	
At most 1	0.006653	0.787681	3.841466	0.3748	
Cointegrating System: {Malay conventional, Malay Islamic Indices}					
Hypothesized		Trace	0.05		
No. of CE(s)	Eigenvalue	Statistic	Critical Value	Prob.**	
None	0.042667	6.420808	15.49471	0.6458	no
At most 1	0.010751	1.275486	3.841466	0.2587	

Cointegrating System: {Philipines conventional, Philipines Islamic Indices}					
Hypothesized		Trace	0.05		
No. of CE(s)	Eigenvalue	Statistic	Critical Value	Prob.**	
					no
None	0.04328	8.746543	15.49471	0.3894	
At most 1	0.029437	3.525678	3.841466	0.0604	
Cointegrating System: {Taiwan conventional, Taiwan Islamic Indices}					
Hypothesized		Trace	0.05		
No. of CE(s)	Eigenvalue	Statistic	Critical Value	Prob.**	
None	0.070021	8.94567	15.49471	0.3704	no
At most 1	0.003212	0.379609	3.841466	0.5378	
Cointegrating System: {Thailand conventional, Thailand Islamic Indices}					
Hypothesized		Trace	0.05		
No. of CE(s)	Eigenvalue	Statistic	Critical Value	Prob.**	
					no
None	0.072217	9.29958	15.49471	0.3384	
At most 1	0.003845	0.454591	3.841466	0.5002	

APPENDIX B

CO-INTEGRATION AIC TABLE

Co integration Test from Two Different Criteria: AIC table

Test for cointegration Period: January2004-December 2013, Obs n=1920 Lags interval : 1 to 4 according to information criteria of Akaike Information Criteria (AIC)					
Cointegrating System: {China conventional, China Islamic Indices}					
Hypothesized		Trace	0.05		
No. of CE(s)	Eigenvalue	Statistic	Critical Value	Prob.**	no
None	0.033571	4.739579	15.49471	0.8358	
At most 1	0.006	0.710128	3.841466	0.3994	
Cointegrating System: {India conventional, India Islamic Indices}					
Hypothesized		Trace	0.05		
No. of CE(s)	Eigenvalue	Statistic	Critical Value	Prob.**	
None *	0.085717	15.58152	15.49471	0.0485	
At most 1 *	0.041544	5.0069	3.841466	0.0252	yes
Cointegrating System: {Indonesia conventional, Indonesia Islamic Indices}(lag 3)					
Hypothesized		Trace	0.05		
No. of CE(s)	Eigenvalue	Statistic	Critical Value	Prob.**	
None *	0.115514	16.74309	15.49471	0.0323	yes
At most 1	0.021357	2.504208	3.841466	0.1135	
Cointegrating System: {Korea conventional, Korea Islamic Indices}lag 4					
Hypothesized		Trace	0.05		
No. of CE(s)	Eigenvalue	Statistic	Critical Value	Prob.**	
None *	0.1396	17.41251	15.49471	0.0254	yes
At most 1	0.001054	0.121305	3.841466	0.7276	
Cointegrating System: {Malay conventional, Malay Islamic Indices}					
Hypothesized		Trace	0.05		
No. of CE(s)	Eigenvalue	Statistic	Critical Value	Prob.**	
None	0.042667	6.420808	15.49471	0.6458	no
At most 1	0.010751	1.275486	3.841466	0.2587	

Cointegrating System: {Philippines conventional, Philippines Islamic Indices}					
Hypothesized		Trace	0.05		
No. of CE(s)	Eigenvalue	Statistic	Critical Value	Prob.**	
None	0.04328	8.746543	15.49471	0.3894	
At most 1	0.029437	3.525678	3.841466	0.0604	no
Cointegrating System: {Taiwan conventional, Taiwan Islamic Indices}					
Hypothesized		Trace	0.05		
No. of CE(s)	Eigenvalue	Statistic	Critical Value	Prob.**	
None	0.070021	8.94567	15.49471	0.3704	
At most 1	0.003212	0.379609	3.841466	0.5378	no
Cointegrating System: {Thaialnd conventional, Thailand Islamic Indices}lag 4					
Hypothesized		Trace	0.05		
No. of CE(s)	Eigenvalue	Statistic	Critical Value	Prob.**	
None *	0.125805	16.03237	15.49471	0.0415	
At most 1	0.004947	0.570345	3.841466	0.4501	yes

BIOGRAPHY

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ACADEMIC BACKGROUND	BBA (Hon.), International Business Management Major, Chulalongkorn University, Thailand, 2007
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PRESENT POSITION	Senior Agency Consultant and District Director at AIA Thailand, 2011- Present
	Committee of Women Society for Success Organization Thailand, 2013-Present
	International Relation and Coordinator, Foundation of Education and Development of Muslim in Northeastern region, 2008-Present
EXPERIENCES	Management Trainee at Berli Jukers Specialty Co. Ltd., 2006
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