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Two Essays in Islamic Finance and Investment

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Two Essays in Islamic Finance and Investment

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Dedication

I would like to dedicate this dissertation to my mother, Eiman Sadiq Fadel, and to my father, Jamil Mahmoud Merdad, for their boundless love and support throughout my entire life. It is because of them, after Allah Almighty, that I became the person I am today. I can never thank them enough and words are never adequate to express my sincere appreciation, gratitude, and respect. But, I will always ask Allah Almighty to reward them for me because I have no doubt in both my heart and mind that he is the best one to do so.

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Abstract

The main purpose of this dissertation is to lessen the gap in the Islamic finance and investment literature by providing new answers to the most vital question raised in that literature: Is the adherence to the Shariah law associated with at any cost?

The first chapter provides a primer on Islamic finance. It discusses several restrictions and necessary adaptations that must be made to have a Shariah-compliant product. The takeaway is that Shariah law mandates is related to fundamentals and, thus has a direct effect on the risk-return profile of all sorts of different products. This is referred to as the "Islamic-effect."

The second chapter investigates that Islamic-effect in a cross-sectional stock return context. This is done in two steps. First, looking at differences in stock returns between Islamic and conventional firms in Saudi Arabia during the period from January 2003 to April 2011. Results indicate that there is a negative relationship between Saudi Islamic firms and average returns. This is referred to as the "negative Islamic-effect." Second, examine whether that negative Islamic-effect is considered a common, systematic, and undiversified risk factor that affects cross-sectional expected stock returns. Time-series regressions results indicate that the Islamic risk factor (CMI) does indeed capture strong common variation in Saudi stock returns regardless what is included in the model. Also, findings suggest that using a four-factor model that controls for the Islamic-effect is more appropriate than using a single- or a three-factor model in Islamic finance applications that require estimates of expected stock returns.

The third chapter investigates the Islamic-effect in a mutual fund context. A unique sample of 143 Saudi mutual funds (96-Islamic and 47-conventional) is used to assess the performance and riskiness of Saudi Islamic funds relative to Saudi conventional funds and relative to different Islamic and conventional indices for the period from July 2004 to January 2010. Findings suggest that there is a benefit (cost) from adhering to the Shariah law when locally-focused (internationally-focused) fund portfolios are investigated. When Arab-focused fund portfolios are investigated, findings suggest that there is neither a cost nor a benefit from adhering to the Shariah law.

Keywords: *Shariah* law, Islamic finance, Islamic risk factor, Islamic-effect, Islamic firms, Islamic mutual funds, conventional firms, conventional mutual funds, asset prices, risk-return profile, Saudi Arabia.
JEL Classification: G01, G11, G12, and G15

Preface

The main purpose of this dissertation is to lessen the gap in the literature of Islamic finance and investment by empirically investigating one of most important issues in that literature. That issue is whether there is any cost associated with the adherence to the *Shariah* law or applying Islamic finance mandates.

The first chapter of this dissertation provides an introduction to Islamic finance. It is worthy to note that the main purpose of this chapter is not to provide a comprehensive survey on Islamic finance, but instead to provide a primer on Islamic finance in order to lay the foundation stone for chapters two and three.

To elaborate, chapter one discusses the several restrictions and necessary adaptations mandated by the *Shariah* law in order to have a *Shariah*-compliant product. These restrictions and adaptations, as will be shown in the chapter, are considered issues directly related and affect fundamentals such as the firm's primary business activities, riskiness, operations, financing sources, profitability, revenues, leverage, etc.

Based on this view, it is expected that applying Islamic finance mandates would have a direct effect on the risk-return profile of all sorts of different products that are characterized as *Shariah*-complaint. In this dissertation, that effect is referred to as the "Islamic-effect."

Now the purpose of chapters two and three of this dissertation is to investigate that Islamic-effect in two different contexts in order to find new answers to the most critical question raised in the Islamic finance and investment literature: Does adhering to the *Shariah* law come at any cost?

That is, chapter two investigates the Islamic-effect in a cross-sectional stock return context and chapter three investigates the issue in a mutual fund context.

It is worth mentioning that both empirical studies discussed in chapters two and three carryout the Islamic-effect investigation to Saudi Arabia because it is considered one of the few countries that strictly adhere to the *Shariah*.

Chapter 1: Islamic Finance

1. Introduction

Islamic finance means that all financial transactions are conducted in accordance with the *Shariah* law, which is the legislative framework that regulates all aspects of life both private and public. That legislative framework depends on four main sources: 1) The Holy *Quraan*: which is the literal words of Allah (may he be glorified and exalted); 2) *sunnah*: which refers to saying, actions, and approvals of the prophet and Allah's messenger Mohammad (peace be upon him); 3) *ijmah*: which refers to the consensus that has been reached by Islamic scholars on a particular issue throughout the history; and 4) *qiyas*: which means analogy and it refers to rulings on issues where there is no explicit guidance in either the *Quraan* or the *sunnah* and, therefore are derived by qualified scholars with preference to rulings related to similar issues.

Islamic finance is considered the only source of finance for Muslim investors that want to preserve their Islamic values and morals. This is because Islamic finance provides these Muslim investors with the opportunity to participate in different capital and financial markets without the fear that such participation is going be at the cost of their Islamic religious identity and values. In addition, Islamic finance started to become a vast global practice and a preferable source of finance for non-Muslim investors as well due to its ethical nature. That is, non-Muslim investors started to view investing in *Shariah*-compliant products as a form of socially responsible investing (SRI).

As a result, the industry of Islamic finance, even though it is still relatively new when compared to the industry of conventional finance, has been experiencing an excellent and a rapid growth. According to McKenzie (2011), *Shariah*-compliant assets grew from USD 150

billion in the mid-1990s to around USD 551, 749, 947, and 1041 billion in 2006, 2007, 2008, and 2009, respectively. Furthermore, McKenzie asserts that these *Shariah*-compliant assets are expected to sustain a growth rate of 10 to 15 percent per annum over a number of upcoming years.

This chapter is considered an introduction to Islamic finance and not a comprehensive survey on Islamic finance. In this chapter, the main opportunities and challenges that face this relatively new field are highlighted. Furthermore, this chapter sheds the light on the several restrictions and the necessary adaptations that must be made to have a *Shariah*-compliant product. It is worth mentioning that these several restrictions and necessary adaptations are considered issues directly related to fundamentals such as the firms' business activities, riskiness, revenues, leverage, etc. Thus, it is expected that applying Islamic finance mandates would have a direct effect on the risk-return profile of *Shariah*-compliant products such as Islamic stocks, Islamic mutual funds, Islamic bonds, etc. In this dissertation, such effect is referred to as the "Islamic-effect."

Also, it is worthy to note that all contracts in Islamic finance are deemed to be permissible unless violations to the *Shariah* law principles are present. Thus, the Islamic finance discussion in this chapter is not going to focus on what should be done to have a *Shariah*-compliant contract, but instead the discussion is going to focus on what should be avoided so contracts are not violating the *Shariah* law mandates (see section 2: Prohibitions in Islamic Finance)

In addition, the following Islamic finance discussion will cover different financing modes that *Shariah* law views as beneficial and fruitful to society and, thus are considered alternatives to prohibited financing modes (see section 3: Permissions in Islamic Finance).

Finally, the Islamic finance discussion in this chapter will cover the issue of how equity investing became permissible and what are the *Shariah* screening filters proposed by *Shariah* scholars in order to identify Islamic firms (see section 4: Equity Investing in Islamic Finance).

2. Prohibitions in Islamic Finance

Every single element in the religion of Islam is based on one basic concept, which is to promote that which is good and prevent that which is evil. Based on this view, *Shariah* law specifies four main things that it believes are classified as "evil", and thus need to be prevented. These four things are discussed in the following three subsections: the prohibition of *riba* (section 2.1), the prohibition of *gharar* and *maysir* (section 2.2), and the prohibition of "*haram*" trade (section 2.3).

2.1. The Prohibition of *Riba*

Riba is the Arabic term for interest rates or usury, and it is refers to a situation where a predetermined return is guaranteed for just lending money (interest-based financing). An example for *riba* is when a lender receives payments in excess of the principal. Thus, under the concept of *riba*, the rate of return is considered a function of money itself. In the religion of Islam, such practice is prohibited and condemned because the rate of return should not be guaranteed for just lending money. It is also worth mentioning that it is not only the religion of Islam that condemns and prohibits practices that deals with *riba* or usury. According to Cornell (2006), original versions of Christianity and Judaism also condemn and prohibit such practices. Apparently, the social welfare decline that results from usury is the primary motive behind these condemnation and prohibitions.

Based on this view, it is legitimate for people not familiar with the *Shariah* law to argue that such law prevents profiting from lending money and transfers banks and financial institutions from commercial entities to a more charitable ones because they will just be offering financial services without being able to profit from them. However, such argument can be refuted once the *Shariah* law perception of interest-based financing is understood.

Shariah law requires lenders to decide beforehand on the reasons for lending their money. In other words, lenders should decide whether they want to lend their money because they want to 1) help other parties that need that money (lending money as a sympathetic act) or 2) share profits with borrowers. If the former is the case, *Shariah* law requires lenders to refrain from claiming any additional amounts in excess of the principal amount even if these additional amounts are to compensate lenders for an expected depreciation in the value of money or other factors such as inflation. This is because under *Shariah* law, money is considered a medium of exchange and has no value in itself. Thus, lending money on the basis of helping others should not be recognized as an income-generating transaction by requiring interest payments, see Ahmad & Hassan (2006).

However, if the main reason for lending money is to share profits with the borrower, then according to the *Shariah* law, lenders can claim a predetermined proportion of the profit provided that these lenders also share losses or risks with the other party. That is, the lender and the borrower should come together to form a joint venture whereby both of them have a joint stake in the business and share its outcome (whether it was a profit or a loss) on a fair and proportional basis. The main idea of sharing risk and return is to prevent

all forms of injustices that could face both borrowers and lenders when they resort to an interest-based financing system.

For example, the interest-based financing system do the borrower no justice in situations where the lender wants to just guarantee his/her return while leaving the borrower's return at the mercy of the actual business outcome. So if the borrower's business goes down, then he/she will bear the total loss as well as be responsible for the interest payments. Also, the interest-based financing system do the lender no justice in situations where the borrower makes massive return from their businesses, while the lender is only restricted to a fixed rate of return that could be far less than what is deserved if the lender was sharing profits and losses with the borrower. It is worthy to note that such fixed rate of return that the lender receives is related to the market supply and demand for money and some other factors, but not to the actual business outcome. Under *Shariah* law, guaranteeing a lender a positive rate of return that is irrespective of the actual business outcome is not permitted and is considered one form of *riba*.

Overall, reasons why *Shariah* law prohibits *riba* (interest-based financing) can be summarized in the following three points. First, *riba* as one way to create unbalanced atmosphere and a main reason that could bring injustice to either party: lenders and/or borrowers. Second *riba* implies improper appropriation of other people's property. Khan & Mirakhor (1987) said that "interest on money is regarded as representing unjustified creation of instantaneous property rights: unjustified, because interest is a property right claimed outside the legitimate framework of recognized property rights; instantaneous, because as soon as the contract for lending upon interest is concluded, a right to the

borrower's property is created for the lender." Third, *riba* leads to both society corruption and social welfare decline which, in turn, diminishes human personality and wealth.

Finally, it is worth mentioning that the prohibition of *riba* has a major implication on Islamic finance empirical studies. That is, techniques of cash-flow analysis, cost of capital estimation, and asset valuation models that are very well established in modern conventional finance have some form of interest rate component embedded in them. So does this mean that it is inappropriate to use such techniques in Islamic finance empirical studies? The answer is no, because the interest rate component in all these techniques could be replaced by a rate of return that is not in the context of interest-based debt. That is, replace the interest rate component with a rate of return on one of the permissible alternative financing sources such as Islamic bonds (*sukuk*).[1]

2.1.1. Time Value of Money in Islamic Finance

Conventional finance views money as a commodity, and therefore it can be freely traded (sold, bought, and speculated on). This implies that money has an intrinsic value and given it up for lending should not be free of charge. Thus, under conventional finance, lenders require a predetermined return in the form of interest rates to compensate them for the money's time value. On the other hand, Islamic finance views money differently. Money is not considered a commodity, but instead it is considered a mean of exchange, and therefore does not have any value in itself because it cannot be utilized to directly fulfill human needs. Money only becomes useful and has an intrinsic value when it is used to acquire real assets or to buy goods and services.

[1] Please see section 3.3: Asset-Based Financing Concept for more information on *sukuk*.

This implies two main issues. The first issue is that if money is traded for money, then time value of money does not exist in Islamic finance or it is not recognized by the *Shariah* law. This is because *Shariah* law views money as a medium of exchange and, thus has no value in itself. Thus, if money is exchanged for money, such as the case in borrowing or lending, the payment on both sides must be equal and no predetermined return in the form of interest (as a compensation for the money's time value) is permissible. In other words, *Shariah* law does not recognize the time value of money when it is based on the exchange of monetary values, loans, and/or debt.

The second issue is that if money takes another form other than money itself, such as when money is used to trade assets and commodities, then time value of money does exist in Islamic finance and it is recognized by the *Shariah* law. To elaborate, if money is used to buy an asset today at a certain price, then that same asset in the future is more likely to be worth more or less than the price at which it was originally bought for; leading to either a profit or a loss. Since that profit or loss is based on trading goods and not on trading money itself, it is recognized by the *Shariah* law. This implicitly assumes that *Shariah* law does recognize the time value of money, but it only does so when money is in another form other than money itself. Based on this view, *Shariah* law has no problem with, for example, buying on credit contracts (asset is delivered now and the price is paid some time later in the future). In these contracts, the agreed upon price that is paid in the future is usually higher than the asset's spot price when the contract is made. That difference between the asset's spot and future prices can be considered as compensation to the seller for the money's time value. In *Shariah* law, time value of money in that form is permissible

and recognized because it is not based on money itself, but instead is based on trading that asset.[2]

2.2. The Prohibition of *Gharar* and *Maysir*

Gharar is the Arabic translation for a situation that involves risk, uncertainty, ambiguity, and/or deception. For example, selling something that is not owned or that cannot be described in accurate detail in terms of type, size, and amount, see El-Gamal (2000). However, because it is impossible to entirely avoid risk and uncertainty, Obaidullah (2005) argue that *Shariah* law allows for some (i.e. at the minimal) risk and uncertainty to be presented. What the *Shariah* law forbids and thus needs to be avoided are conditions where there exist excessive amount of risk and high level of uncertainty.

Gharar, for example, can be observed in derivative transactions (such as forwards, futures, and options), short-selling, and conventional insurance activities (life insurance for example). Visser (2009) points out three main conditions that must be met in any financial contract in order to avoid engaging in *gharar*. First, both the subject and the price must exist and the other party has the ability to deliver it. Second, all characteristics and amounts of the counter-value must be specified. Third, quantity, quality, and date of future delivery must be defined beforehand. The main motives behind banning *gharar* can be summarized in the following three points: to promote transparency and fairness, prevent situations where potential injustice or deception to any party might occur, and avoid excessive risk and high level uncertainty.

[2] Please see Obaidullah (2005) and Ahmad & Hassan (2006) for more discussion on the existence of the time value of money in Islamic finance.

Maysir is the Arabic translation for gambling or game of chance (lottery) and both are forbidden according to the *Shariah* law. Furthermore, *Shariah* law forbids investing in any business that is related to either gambling and/or game of chance.

2.3. The Prohibition of "*Haram*" Trade

Haram is the Arabic translation of impermissible or forbidden. There are some businesses and industries that *Shariah* law condemn and prohibit producing, consuming, distributing, and investing in because it believes that they are harmful and unfruitful to society. Examples for businesses and industries are, but not limited to, non-medical alcohol, pork production, illegal and intoxicating drugs, gambling, adult entertainment, tobacco and all other unethical businesses.

3. Permissions in Islamic Finance

Shariah law does not permit interest-based financing (*riba*), but it permits other financing modes because they apply one or more of the following three financing concepts that *Shariah* law believes would create and add real value to the economy, increase social welfare, minimize potential injustice, and enhance public good.

The first concept is the profit-loss-sharing financing concept which can be represented by two financing modes: *musharakah* and *mudarabah*. The second concept is the trade-based financing concept which can be represented by four financing modes: *murabahah*, *bay'mu'ajjal*, *salam*, and *ijarah*. The third concept is the asset-based financing concept which can be represented by *sukuk*.

3.1. Profit-Loss-Sharing Financing Concept

Musharakah is the Arabic translation of partnership. It refers to a situation where capital is raised by all parties of a contract. Thus, profits and losses are pro rata distributed and each partner has the right to participate in the decision making of the enterprise.

Mudarabah is a special kind of *musharakah* where the party that has the investment capital and the party that has the expertise and management skills get together to undertake an investment project or to form a business venture. The generated profits are shared between parities according to a predetermined ratio that is agreed upon beforehand.

However, unlike in *musharakah*, in *mudarabah* losses are only borne by the financier, i.e. the capital provider. As a result, the agency problem between the capital provider (as the principal) and the manager (as the agent) is more aggravated in *mudarabah* than in *musharakah*. One way to lessen the effect of this problem is to make managers fully liable when negligence, deliberate mismanagement, and/or clear violations are committed. Another way is to provide managers with more incentives to encourage positive behavior when they achieve specified targets or meet predefined performance criteria.

Finally, there is one more condition that must be satisfied in order for both financing modes (*musharakah* and *mudarabah*) be Islamically acceptable. This condition is that the financier party cannot be guaranteed by the party being financed a positive return that is irrespective of the actual outcome of the project or business venture. Under *Shariah* law, guaranteeing a positive rate of return that is irrespective of the actual outcome is not

permitted and is considered one form of *riba*. Based on this view, preferred stocks are not permitted under Islamic finance because they guarantee the amount of dividends.

3.2. Trade-Based Financing Concept

Murabahah is referred to a situation where a commodity is resold with a markup on the original purchased price. So the way *murabahah* works is that a customer goes to an Islamic bank and specifies a commodity that he/she wants the bank to purchase. The bank purchases that commodity and then sells it to the customer at a markup price agreed upon beforehand. Note that for a *murabahah* contract to Islamically acceptable, there should not be any binding agreements between the bank and the customer.

Looking closely at the process of *murabahah*, the situation can be described, to some extent, as a debt that arises from a credit purchase. A legitimate question could be raised here: Since both *murabahah* and interest-based financing are considered financing methods that creates debt, what makes *murabahah* and not interest-based financing Islamically acceptable?

Note that the similarity between the two is only on the conceptual level where both are considered financing methods that creates debt. Technically, they are considered two different financing modes and they operate in a very dissimilar way. The main differences between the two financing methods can be summarized are as follows:

First, unlike in interest-based financing, in *murabahah* the financier is financing an acquisition of an asset with acknowledged utility and known price and not a venture of uncertain results. Second, *murabahah* is based on real assets or real commodities, whereas, interest-based financing is based on money itself. Third, unlike in interest-based financing, in *murabahah* no further increases in the contracted price are allowed when payments are

delayed. Fourth, there are several risks that are associated with *murabahah* but not with interest-based financing, such as bearing all the risks of owning a real asset. Take for example a bank that engages in a *murabahah* contract with a customer to buy a car. Once the contract is made, that bank is responsible for anything that happens to the car, to the extent that the bank is obligated to replace it if damaged, as long as the ownership of that car is yet to be transferred to the customer.

Bay'mu'ajjal refers to sale on credit where a commodity is delivered now and the price is paid some time later in the future. *Salam* is the opposite of *bay'mu'ajjal* where price is paid now and the commodity purchased is delivered later in the future. Payments in both cases may be at the time the contract is made or in installments. Finally, *ijarah* is referred to leasing.

Finally, it is worthy to mention that in order to be Islamically acceptable, contracts of all discussed financing modes must not contain any of the discussed prohibited elements such as *gharar* (selling something that is not owned or cannot be described in accurate detail in terms of type, size, and amount) and/or guaranteeing the financier a positive rate of return that is irrespective of the actual outcome (*riba*).

3.3. Asset-Based Financing Concept

Sukuk are Islamic financial certificates that have characteristics that are similar to those of conventional bonds but a key difference is that they are asset backed. The way *sukuk* works is the issuer of a *sukk* sells a certificate on a real asset to an investor, who then rents it back to the issuer for a predetermined rental fee.[3] Such fee is usually equivalent to

[3] *Sukk* is the singular of *sukuk*.

an interest rate benchmark like LIBOR. The issuer also makes a contractual promise to buy back that certificate at a future date at the par value.

Two main reasons that make *sukuk* and not conventional bonds Islamically acceptable. First, *sukuk* link their cash flows and rate of return to the purchased asset. This, in turn, creates a proportionate beneficial ownership in the underlying asset. This is not the case in conventional bonds where they link their cash flows and rate of return to money itself. Second, *sukuk* are issued on identifiable real assets that have intrinsic values, whereas, conventional bonds, are issued on money, which *Shariah* law views as a medium of exchange, and thus has no intrinsic value.

4. Equity Investing in Islamic Finance

According to Siddiqi (2002), since the mid 1980s, there were serious doubts that investing in the stock market is not "Islamically" acceptable. However, in the early 1990s, the Saudi Arabian *Fiqh* Academy, the leading authority on religious issues in the Muslim world, issued a decree ruling that within certain conditions, investing in equity is permissible under the *Shariah* law.[4] Equity investing became permitted because *Shariah* scholars reached a consensus that, under certain conditions, trading stocks fulfill two important conditions in Islamic finance. First, trading stocks represent trading real assets that have intrinsic values and not just artificial ones. Second, 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.

In order for a firm to be considered *Shariah*-compliant, and thus its stock becomes permissible, it must abide by all Islamic finance principles discussed earlier. To pinpoint

[4] *Fiqh* refers to the Islamic jurisprudence.

these firms and to distinguish them from conventional ones or to define the non-compliant financial practices and business activities in an Islamic firm, *Shariah* scholars proposed several rules or guidelines that can be summed up in the following two filters: the ethical filter and the financial filter.

4.1. Screening for *Shariah*-Compliant Stocks

In the light of the previous discussion, two *Shariah* screening filters (ethical and financial) are proposed in order to pinpoint firms that are compliant with the Islamic principles. The ethical filter evaluates the firm's overall activities and main businesses in order to ensure that the firm is not engaging in any of the following prohibited (*haram*) activities:[5]

1. Activities that involve any form of *riba* (usury or interest rates). For example, borrowing and/or investing in interest-based instruments. Accordingly, this automatically excludes all interest-based financial institutions, such as conventional banks and conventional brokerage firms, from the *Shariah*-compliant firm category.
2. Activities that are characterized with *gharar*. For example, activities that involve selling something that is not owned or cannot be described in specific detail in terms of size, shape, and amount. Such as trading on margin, engaging in short-selling, and using the future and option markets to engage in any sorts of trade. Also, some insurance policies, such as life insurance, are considered impermissible because they contain *gharar* elements.
3. Activities that are related by any means to *maysir* or game of chance.

[5] Please see section 2: Prohibitions in Islamic Finance.

4. Activities that are related to impermissible sectors such as businesses that deal with non-medical alcohol, tobacco, pork, adult entertainment, and all other unethical businesses.

However, many firms find it quite difficult to devise, mange, and implement all these prohibitions, especially when it comes to avoiding interest rates (*riba*) because all financial systems are integrated, related, and inseparable. As a result, it is not uncommon to observe many firms fail to pass the ethical filter because they have a small portion of their revenues generated from impermissible activities (henceforth, these firms are referred to as partially contaminated firms).

Taking into consideration that the majority of firms are partially contaminated firms, *Shariah* scholars eased the adherence to the *Shariah* law from strict adherence to conformity with some exceptions. This means that although they did not pass the ethical filter, partially contaminated firms can still be deemed *Shariah*-compliant if they meet two additional requirements and pass the financial filter. The first requirement is that these partially contaminated firms must be perceived by the public as exemplary firms and their main businesses or rendered services must be of public interest. The second requirement is that the permissible (*halal*) activities must represent the core activities of these firms, and the prohibited (*haram*) activities must be very negligible. Once these two requirements are met, partially contaminated firms must worry about passing the financial filter if they are interested in earning a *Shariah*-compliant title.

The financial filter determines the level of mixed contribution from both prohibited and permissible activities towards the firm's revenue and profit. According to this filter, partially contaminated firms must maintain the following ratios to be considered as

Shariah-compliant: 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 (or 30 percent in some cases); 3) the ratio of account receivables to total assets is less than 45 percent (or 33 percent in some cases); and 4) the ratio of interest-bearing cash and investments to total assets is less than 33 percent (or 30 percent in some cases).

Note that some practitioners prefer replacing the total asset denominator with different forms of market capitalization such as market capitalization itself, 12-month market capitalization average, 24-month market capitalization average, or 36-month market capitalization average in order to value a company. Practitioners that prefer the market capitalization divisor argue that the total asset divisor is a pure accounting perspective that does not account for elements such as the firm's management, staff, and acquired intellectual property. Practitioners that use the 12-month market capitalization average argue that such divisor smooth out irregular price movements. But, during the recent 2008 financial crisis period, it was found that such divisor undervalues firms. That undervaluation is not due to changes in the firm's intrinsic value, but instead it is due to the bad market conditions. Thus, some practitioners suggest the use of the 24-month or the 36-month market capitalization average instead of the 12-month market capitalization average; see Hassan & Mahlknecht (2011).

5. Conclusion

This chapter lays the foundation stone for the following two chapters where it provides a primer, and not a comprehensive survey, on Islamic finance. The takeaway from this chapter is that Islamic finance has many other implications other than identifying products that fit the religious preference of Muslim investors. One of these implications is

that Islamic finance or applying Islamic finance mandates is directly related to and affects fundamentals. For example, firms cannot earn an Islamic title unless they abide by all *Shariah* law restrictions and make the necessary adaptations to their regulatory, fiscal, and fundamental frameworks such as their business activities, operations, financing sources, profitability, revenues, riskiness, leverage, etc. In other words, firms cannot become Islamic until they successfully pass both ethical and financial filters.

Since applying Islamic finance mandates is considered directly related to and affects fundaments, it is expected that the risk-return profile of all sorts of different *Shariah*-compliant products would also be affected as well. In this dissertation, that effect is called the "Islamic-effect" and the main purpose of the following two chapters is to empirically investigate that Islamic-effect. Chapter two empirically investigates the issue in the cross-sectional stock return context and chapter three empirically investigates the issue in a mutual fund context.

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Chapter 2: The Islamic Risk Factor
An Empirical Study in Saudi Arabia

1. Introduction

The increasing capital of Muslim investors and their strong demand to invest that capital in products that are only comfortable with the *Shariah* law stimulate the development of different *Shariah*-compliant products.[6] As a result, there are now Islamic stocks, Islamic mutual funds, Islamic market indices, and Islamic bonds (*sukuk*). This opens the door wide for Muslim investors to participate in different capital and financial markets without the fear that such participation would destroy their Islamic identity or be at the cost of their Islamic values and morals. This also raises a legitimate question: Is the adherence to the *Shariah* law associated with at any cost?

Several empirical studies investigate that issue by examining the Islamic-effect, which is the effect of applying Islamic finance mandates on the risk-return profile of different products, in different contexts. For example there are empirical studies that investigate the Islamic-effect in: 1) a mutual fund context [Kräussl & Hayat (2008), Hoepner, Rammal, & Rezec (2009), and Merdad, Hassan, & Alhenawi (2010)]; 2) a stock market index context [Hakim & Rashidian (2002, 2004), Hussein (2004, 2005), and Girard & Hassan (2008)]; and 3) a portfolio performance context [Derigs & Marzban (2009) and Donia & Marzban (2010)]. Unfortunately, the literature that discusses the impact of the Islamic-effect is still not adequate to draw a clear conclusion regarding the direction of that effect.

[6] *Shariah* is an Arabic word. And *Shariah* law is the legislative framework that regulates all aspects of life, both private and public.

That is, some studies find that there is a cost from adhering to the *Shariah* law, while other studies find that there is no cost from doing so. Studies, which conclude that there is a cost from adhering to the *Shariah* law, argue that *Shariah*-compliant products have less risk exposure, and thus reward investors with less return than conventional products. On the other hand, studies, which conclude that there is no cost from adhering to the *Shariah* law, argue that *Shariah*-compliant products are competitive to conventional products and that Islamic screens do not adversely affect the risk-return profile of these *Shariah*-compliant products. Additionally, there is another line of studies that argue that *Shariah*-compliant products could offer good hedging opportunities against adverse market trends. This is because *Shariah* law is based on principles that are conducive to enhancing public good, increasing social welfare, adding real value to the economy, minimizing potential injustice, and avoiding environmental and social crisis. For example, *Shariah* law prevents investing in instruments such as toxic assets and derivatives that have adversely affected conventional products and triggered the recent 2008 global financial crisis.

In sum, results regarding the Islamic-effect are inconclusive. One main reason for such inconclusive results is that the Islamic finance and investment industry is still relatively new compared to its conventional counterpart and the literature in that field is still at its infancy.

This paper contributes and lessens the gap in the existing Islamic finance and investment literature by investigating the impact of the Islamic-effect in a context that is different from that of previous studies. That is, this paper examines the Islamic-effect in the cross-sectional stock return context. To elaborate, this paper starts from the premise that adhering to the *Shariah* law is associated with a cost where Islamic firm stocks compensate

investors with lower return than conventional firm stocks. This is because Islamic firms are exposed to less overall risk than conventional firms due to the several restrictions and necessary adaptations to which these Islamic firms must commit in order for them to earn a *Shariah*-compliant title. Thus, it is expected to observe a negative relationship between Islamic firms and average return. In this paper, that negative relationship is referred to as the "negative Islamic-effect." The main objective of this paper is to examine whether that negative Islamic-effect is considered a common, systematic, and undiversified risk factor that affects the cross-sectional expected stock returns. To my knowledge, this is the first paper that examines the Islamic-effect issue in such context.

What motivates the choice of the 'negative Islamic-effect' to examine whether it is a priced risk that affects stock returns is the fact that such effect is directly related to firm fundamentals. To elaborate, the several restrictions and the necessary adaptations to which Islamic firms must commit in order for them to earn a *Shariah*-compliant title are considered issues directly related to and affect fundamentals (such as the firm's primary business activities, riskiness, operations, financing sources, profitability, revenues, leverage, etc). Once firm fundamentals are affected, asset prices will also be affected as well and they will react accordingly. Thus, when examining the cross-sectional stock returns, it is expected to find that the negative Islamic-effect is, indeed, a risk factor that is systematic and cannot be diversified. In order to critically investigate this issue, this paper carries out the investigation to Saudi Arabia because it is one of the few countries that are known for their strict adherence to the *Shariah* law.

Examining the Islamic-effect in stock returns is developed in two steps. The first step is to *examine the existence of a negative Islamic-effect* by investigating differences in

stock returns between Islamic and conventional firms in Saudi Arabia. This is done using two statistical methods: 1) a panel model and 2) a portfolio performance analysis. The second step is to *examine the existence of an Islamic risk factor*. That is, to test whether that negative Islamic-effect is considered a common (shared and undiversified) risk factor that affects the cross-sectional expected returns of common stocks in the Saudi Arabian market. This is done using time-series regressions similar to those developed by Fama & French (1993). The sample period covers the period from January 2003 to April 2011.

The panel data regression analysis reveal that after controlling for the systematic risk, Islamic firms, on average, earn 0.0055 less monthly returns than conventional firms (Table 2). Even though that effect is economically small, it is statistically significant at 5 percent. Furthermore, the portfolio performance analysis shows that the Islamic portfolio underperforms the conventional portfolio using all risk-adjusted performance measures (Table 3). Also, when stock return portfolios are formed based on sorts of stocks on size and book-to-market equity, the results, in general, show that Islamic portfolios have lower averages of monthly excess returns than their respective conventional portfolios (Table 4 panels B and C). All these results support the negative Islamic-effect hypothesis (negative relationship between Saudi Islamic firms and average returns), at least during the period from January 2003 to April 2011.

Given that the negative Islamic-effect does indeed exist, an Islamic risk factor (CMI) is formed to test whether it could capture common variation is Saudi stock returns. CMI (conventional minus Islamic) is a portfolio meant to mimic the risk factor in returns related to the negative Islamic-effect and it is formed in a way where it focuses on the differences in return between conventional and Islamic firms and at the same time free, as much as

possible, from both size and book-to-market equity effects. The Islamic risk factor CMI is then augmented to a three-factor model that includes the excess market return portfolio (RM-RF) and both size (SMB) and book-to-market equity (HML) risk factors in order to perform asset pricing tests using time-series regressions.

The results indicate that CMI does indeed capture strong common variation in Saudi stock returns not captured by the excess market return portfolio (RM-RF) and mimicking portfolios related to size (SMB) and book-to-market equity (HML) during the period from January 2003 to April 2011 (Table 7).

Furthermore, the results from the time-series regressions indicate that the four-factor model that includes the Islamic risk factor is considered superior to both the single-factor model and the three-factor model in explaining common variation in Saudi stock returns.

The rest of the paper unfolds as follows: section 2 discusses the previous literature. Section 3 discusses Saudi Arabia's economy and stock market. Section 4 provides the hypotheses. Section 5 covers the data for the empirical study. Section 6 discusses the methodology. Section 7 provides the empirical results and discussion. And finally section 8 is the conclusion.

2. Previous Literature

This section is divided into two subsections: previous literature on *Shariah*-compliant investments (section 2.1) and previous literature on the cross-sectional stock returns (section 2.2).

2.1. Previous Literature on *Shariah*-Compliant Investments

There are several studies that discuss the Islamic-effect issue in different contexts. The following lists previous studies that discuss the Islamic-effect in a mutual fund context (section 2.1.1), stock market index context (section 2.1.2), and portfolio performance context (section 2.1.3).

2.1.1. The Islamic-Effect in a Mutual Fund Context

Elfakhani & Hassan (2005) use a sample of 46 Islamic mutual funds from January 1, 1997 to August 31, 2002 to examine the performance of Islamic mutual funds relative to Islamic and conventional market benchmarks. They employ different risk-adjusted performance measures such as Sharpe, Treynor, and Jensen alpha. Moreover, they employ an ANOVA statistical test. Overall, their findings suggest that there is no statistical evidence that there exist any performance differences between Islamic funds and the employed market benchmarks. However, their findings suggest that Islamic mutual funds do offer a good hedging opportunity against market downturns.

Abdullah, Hassan, & Mohamad (2007) compare the performance of 14 Islamic funds relative to 51 conventional funds in Malaysia during the period from 1992 to 2001. They employ different measures such as the adjusted Sharpe, Treynor, adjusted Jensen alpha, Modigliani and Modigliani (MM) measure, and the information ratio. They find that conventional funds perform better than Islamic funds during bullish trends; but during bearish trends, Islamic funds perform better. They conclude that Islamic funds offer hedging opportunities against adverse market trends. They also find that conventional funds have diversification levels that are marginally better than Islamic funds, but both funds are unable to achieve at least 50 percent of the market diversification level.

Kräussl & Hayat (2008) use a sample of 59 Islamic equity funds (IEFs) to examine the performance of these funds relative to Islamic and conventional market benchmarks during the period from 2001 to 2006. They employ a set of measures such as the Jensen alpha, Sharpe, Treynor, Modigliani and Modigliani (MM), TT, and the information ratio. They find that, on average, there are no significant performance differences between IEFs and the employed market benchmarks (both Islamic and conventional). However, a closer look at the bear market of 2002, they document that IEFs significantly outperform the Islamic and conventional market indices using conditional CAPM. Analyzing the risk-return characteristics of IEFs, they find that IEFs possess superior systematic risk-to-return ratios. Therefore, they argue that these IEFs "seem most attractive as part of a larger fully diversified portfolio like a fund of funds."

Abderrezak (2008) examines the performance of 46 Islamic equity funds (IEFs) relative to conventional funds, ethical funds, and Islamic and conventional market indices during the period from January 1997 to August 2002. He employs several methodologies such as the Sharpe ratio, single-factor model, and Fama and French three-factor model. He finds that IEFs are 40 basis points more expensive than their conventional peers. Furthermore, he finds that IEFs consistently underperform their respective Islamic and conventional market benchmarks. Finally, he finds that there are no performance differences between IEFs and ethical funds.

Muhammad & Mokhtar (2008) use weekly net asset values (NAVs) of nine Islamic equity funds in Malaysia in order to examine their performance relative to the Islamic market index, Kuala Lumpur Syariah Index (KLSI), for the period from 2002 to 2006. To assess the performance of these funds, they employ the Sharpe and Treynor ratios. They

find that eight of these funds underperform the KLSI. However, they find a bag of mixed results when they employ the standard deviation, coefficient of variation, and the systematic risk (beta) to assess the riskiness of these funds.

Hoepner, Rammal, & Rezec (2009) use a unique dataset of 262 Islamic equity funds from 20 countries and four regions in order to examine the performance of these funds relative to constructed portfolios that have exposure to national, regional, and global markets. Furthermore, they control for different investment styles by employing a conditional three level Carhart model. The results show that Islamic funds from eight nations (mostly from the western regions) significantly underperform their respective equity market benchmarks and Islamic funds from only three nations outperform their respective market benchmarks and that Islamic funds are biased towards small stocks. Furthermore, they find that Islamic funds from the Gulf Cooperation Council (GCC) and Malaysia do not significantly underperform their respective market benchmarks nor they are biased towards small stocks. Finally, they argue that Islamic equity funds can offer hedging opportunities because their investment universe is limited to low debt-to-equity ratio stocks.

Merdad, Hassan, & Alhenawi (2010) use a sample of 28 Saudi mutual funds managed by HSBC in order to examine the performance of 12 Islamic funds relative to 16 conventional funds during the period from January 2003 to January 2010. They use several performance measures such as the Sharpe, Treynor, Modigliani and Modigliani (MM), TT, and Jensen alpha. Furthermore, they employ the Treynor and Mazuy model to examine the Saudi funds' selectivity and market timing abilities. They find that Islamic funds underperform conventional funds during both full and bullish periods, but outperform

during bearish and financial crisis periods. Furthermore, they find that HSBC managers are good at showing timing and selectivity skills for Islamic funds during the bearish period, and for conventional funds during the bullish period. They also assert that Islamic mutual funds do offer hedging opportunities during economic downturns.

2.1.2. The Islamic-Effect in a Stock Market Index Context

Hassan (2001) employs several statistical tests such as serial correlation, variance ratio, and Dickey-Fuller tests in order to examine the market efficiency issue for the Dow Jones Islamic Market Index (DJIMI). He also examines the volatility of the DJIMI returns using a GARCH econometric framework. The sample covers the period from 1996 to 2000. The results show that the DJIMI is efficient and its return is normally distributed, but it suffers from operational inefficiencies that need to be corrected to make the risk behavior of the DJIMI stable overtime.

Hakim & Rashidian (2002) use daily data from October 12, 1999 to September 4, 2002 and find that the Dow Jones Islamic Market Index (DJIMI) outperforms the Wilshire 5000 using the Sharpe ratio. Furthermore, a co-integration and a causality analyses reveal that the two indices are not integrated and that the DJIMI is also not integrated with the three-month Treasury bill. They conclude that Muslim investors are not penalized by investing in an Islamic index. And there are diversification benefits that investors could reap by investing in the DJIMI because it moves independently from the broad market index (Wilshire 5000) and the three-month Treasury bill.

Hakim & Rashidian (2004) use the Treynor ratio and the conditional CAPM on a weekly data from January 2000 to August 2004 to analyze the Dow Jones Islamic Market Index (DJIMI) behavior and its risk characteristics relative to a broader market index [Dow

Jones World (DJW) Index] and an ethical index [Dow Jones Sustainability (DJS) World Index]. The results indicate that the total fluctuations in the DJIMI have been in line with both the DJW and the DJS during the studied period. Also, the results indicate that investors tracking the DJIMI are exposed to no more risk than investors tracking the DJW. However, when the performance of the DJIMI is compared to that of the DJS, they find that the DJIMI underperforms the DJS.

Hussein (2004) uses risk-adjusted performance measures such as the Jensen alpha, Sharpe, and Treynor in order to examine whether there are any performance differences between the FTSE Global Islamic Index and both the FTSE All-World Index and the FTSE4Good (a socially responsible index). He also examines the long-run performance differences using cumulative returns (CRs) and the buy-and-hold returns (BHRs). The sample covers the period from July 1996 to August 2003. The results show that the FTSE Islamic Index performs as well as the FTSE All-World Index during the overall period. However, breaking the sample period into bull and bear periods, the results indicate that the FTSE Islamic Index outperforms (underperforms) the FTSE All-world Index during the bull (bear) period. The outperformance of the FTSE Islamic Index during the bull period is attributed to the fact that the index tracks large number of firms with low leverage ratios. However, the underperformance of the index during the bear period is attributed to the exclusion of liquor firms, which are considered best performers during bear periods.

Hussein (2005) finds that the application of the *Shariah* screens does not adversely affect the performance of two Islamic indices [FTSE Global Islamic Index and Dow Jones Islamic Market Index (DJIMI)]. The results indicate that the short and long-term performance measures of these indices are no different from that of non-Islamic Indices

(FTSE All World Index and Dow Jones World Index). The sample period is from December 1993 for Dow Jones indices and from January 1996 for FTSE indices to December 2004.

Yusof & Abd. Majid (2007) use GARCH (1,1) and VAR models to investigate the effect of different monetary variables (narrow money supply, broad money supply, interest rates, exchange rates, and the industrial production index) on the conditional volatility of both Islamic and conventional stock market indices in Malaysia for the period from January 1992 to December 2000. The employed Islamic and conventional stock market indices are the Rashid Hussain Berhad Islamic Index (RHBII) and the Kuala Lumpur composite Index (KLCI), respectively. They find that due to the application of *Shariah* screens, the RHBII is less vulnerable to volatilities in monetary policy variables (i.e. interest rates) than the KLCI.

Girard & Hassan (2008) examine the performance of five FTSE Islamic indices and their corresponding non-Islamic indices during the period from December 1998 to December 2006. A set of different measures are used such as Sharpe, Treynor, Jensen alpha, and Fama (selectivity, net selectivity, and diversification) measures. Also, they examine the performance persistence of these indices using Carhart (1997) four-factor model. They find that there are no significant performance differences between Islamic and non-Islamic indices. They also find that Islamic indices are growth and small cap oriented, whereas conventional indices are more value and mid cap oriented. The co-integration analysis reveal that both types of indices are integrated for the overall period and the behavior of Islamic indices do not differ from that of conventional indices.

Hashim (2008) utilize the CAPM to examine the application of *Shariah* screens on the FTSE Global Islamic Index during the period from January 1999 to May 2007. The

results indicate that the Islamic index outperforms the socially responsible index (FTSE4Good) and operates in line with the broader market index (FTSE All-World Index).

2.1.3. The Islamic-Effect in a Portfolio Performance Context

Derigs & Marzban (2009) use a Markowitz mean-variance model to examine the performance of *Shariah*-compliant portfolios relative to unconstrained conventional portfolios. When constructing the *Shariah*-compliant portfolios, they applied the *Shariah* screens on the portfolio level instead of on the asset level. The results show that the reduced investment universe adversely affects the overall risk and return of *Shariah*-compliant portfolios when compared to conventional portfolios.

Donia & Marzban (2010) compare the performance of Islamic and conventional portfolios during the recent 2009 financial crisis period using a mean-variance optimization model in order to construct a set of efficient portfolios. They find that Islamic portfolios are able to outperform conventional portfolios because Islamic portfolios benefit from the lower leverage feature that is documented to have a negative relationship with performance. They also find that *Shariah*-compliant portfolios outperform conventional portfolios of small-cap and large-cap US firms.

2.2. Previous Literature on the Cross-Sectional Stock Return

Sharpe (1964), Lintner (1965), Mossin (1966), and Black (1972) provide a turning point in the stock return behavior literature by independently developing what came to be recognized as the Capital Asset Pricing Model (CAPM). Such model implies that the market excess return portfolio is sufficient to explain the differences in the cross-sectional average returns (beta is all that matters). Since then, sizeable empirical studies came out and received much attention because they find contradicting evidence to the CAPM predictions.

One of the early empirical studies that find contradicting evidence to the CAPM is Basu (1977). He finds that there is significant evidence that stocks of firms with high earnings-to-price (E/P) ratios earn higher average returns than stocks of firms with low earnings-to-price ratios. His findings imply that differences in return could not be attributed to just differences in beta.

Banz (1981) shows another contradiction to the CAPM. He finds that stocks of firms with low market capitalization have higher average returns than stocks of firms with large market capitalization. Furthermore, Basu (1983) finds that small firms continue to have higher average returns even after the earnings-to-price effect is controlled.

Rosenberg, Reid, & Lanstein (1985) show a third contradiction to the CAPM by finding that stocks of firms with high book-to-market (B/M) equity ratios have higher average returns than stocks of firms with low B/M ratios. Chan, Hamao, & Lakonishok (1991) find similar results when studying the Japanese market.

Bhandari (1988) shows a fourth contradiction to the CAPM. He finds that even when size and beta are controlled, there is a positive relationship between leverage and average returns.

Jegadeesh (1990) and Jegadeesh & Titman (1993) provide a fifth contradiction to the CAPM by documenting the momentum effect. They show that short-tem winners (stocks that do well over the previous few months) will continue their momentum over the next month. However, short-term losers (stocks that have low returns in the previous few months) will continue their poor performance for another month.

Fama & French (1992) examine beta, E/P, size, B/M, and leverage all together in a single cross-sectional study from 1963 to 1990. They find that the effect of beta disappears

when beta is allowed to vary in a manner unrelated to size. This result is a shot in the CAPM heart. Further, they find that size and B/M absorb the explanatory power of all other variables. Thus, they conclude that the cross-sectional average stock returns in the US can be nicely explained by these two variables.

Fama & French (1993) introduce a three-factor model where they augment the single-factor model with two additional risk factors related to size (SMB) and book-to-market equity (HML). They find that the factor loadings on all three risk factors (RM-RF), SMB, and HML are significant and the R-squared values for most portfolios are close to one. This means that SMB and HML capture independent sources of systematic risk not captured by (RM-RF). They conclude that the three-factor model very well explains the variation in the cross-sectional average returns of US common stocks during the period from 1963 to 1991. They also conclude that their results indicate that there is a risk story behind the dispersion in average returns, and not as several empirical studies argue that the market is inefficient.

3. Saudi Arabia's Economy and Stock Market

Saudi Arabia is an oil-based economy and its economy is considered the largest in the Middle Eastern region. According to Jadaw Investment 2010 annual report, Saudi Arabia's nominal gross domestic product (GDP) was around USD 435.8 billion and is expected to reach USD 507.3 billion in 2012.[7] Furthermore, Saudi Arabia is considered the largest oil producer, oil exporter, and oil proven reserves possessor worldwide.[8] It has almost 20 percent of the world's proven reserves and has a leading role in OPEC. The

[7] Source is Jadaw Investment, a pioneer in the field of *Shariah*-compliant investment services: http://jadwa.com/about/pages/annualreports.aspx.
[8] Oil proven reserves are the stock of proved reserves of crude oil in barrels (bbl). Source is CIA world fact book: https://www.cia.gov/library/publications/the-world-factbook/geos/sa.html.

official currency is the Saudi Arabian riyal (SAR) and since 1986 it has been effectively pegged to the US dollar where USD 1 = 3.75 SAR.

The Saudi stock market is also considered by far the largest in the Middle Eastern region. The total equity market capitalization at the end of April 2011 reached SAR 1,346 billion (around USD 358.93 billion).[9] Furthermore, there are 146 firms listed on the exchange as of April 30, 2011. Table 1 provides descriptive statistics of all listed firms. In the table, the average, standard deviation, maximum, and minimum monthly returns are reported for the period from January 2003 to April 2011.

Table 1: Descriptive Statistics of All 146 Listed Firms from January 2003 to April 2011

This table reports the descriptive statistics of all 146 firms listed on the Saudi Stock Exchange (Tadawul) as of April 30, 2011. Also, this table reports the descriptive statistics for the market index, Tadawul All Share Index (TASI), and the Saudi Interbank Offering Rate (SIBOR) with one-month maturity. In the table, the average, standard deviation, maximum, and minimum monthly returns are reported for the period from January 2003 to April 2011. Also reported are the Standard Industrial Classification (SIC) for each firm and the firm's ticker. Finally, the last column "Islamic Dates" shows which of the listed firms are Islamic and which are non-Islamic during the studied period. Furthermore, that column shows the dates when each of these listed firms was able to make it to the *Shariah*-compliant firm list issued by Dr. Muhammad bin Saud Al-Osaimi.

SIC	Ticker	Avg Ret	St. Dev	Max	Min	Islamic Dates
			1. Insurance Sector			
8010	TAWUNIYA	0.30%	15.25%	57.94%	-44.23%	Not Islamic
8020	MALATH	-3.75%	16.24%	25.30%	-39.83%	Not Islamic
8030	MEDGULF	-0.90%	13.25%	29.59%	-25.08%	Not Islamic
8040	ALLIANZ SF	-2.28%	17.78%	44.48%	-46.67%	Not Islamic
8050	SALAMA	0.00%	21.75%	71.05%	-50.00%	Not Islamic
8060	WALAA INSURANCE	-1.96%	16.38%	45.05%	-36.36%	Not Islamic
8070	ARABIAN SHIELD	-1.44%	17.07%	57.24%	-36.00%	Not Islamic
8080	SABB TAKAFUL	0.14%	22.59%	69.10%	-42.92%	Not Islamic
8090	SANAD	-0.08%	30.18%	168.82%	-33.91%	Not Islamic
8100	SAICO	-1.97%	18.74%	50.89%	-43.47%	Not Islamic
8110	SAUDI INDIAN	-0.11%	21.78%	89.69%	-38.78%	Not Islamic
8120	GULF UNION	-1.75%	17.13%	47.30%	-36.16%	Not Islamic
8130	ALAHLI TAKAFUL	0.75%	22.94%	81.71%	-40.11%	Not Islamic
8140	AL-AHLIA	-0.20%	24.73%	70.14%	-44.65%	Not Islamic
8150	ACIG	0.41%	24.05%	88.60%	-46.19%	Not Islamic
8160	AICC	2.09%	17.10%	53.73%	-22.35%	Not Islamic
8170	TRADE UNION	2.99%	17.04%	56.80%	-16.05%	Not Islamic
8180	SAGR INSURANCE	3.30%	24.11%	90.19%	-45.19%	Not Islamic
8190	UCA	0.48%	14.72%	41.00%	-23.13%	Not Islamic

[9] Information is based on the April-2011 monthly Statistical Report issued by the Saudi Stock Exchange (Tadawul).

(table continued)

8200	SAUDI RE	1.13%	9.72%	25.00%	-9.42%	Not Islamic
8210	BUPA ARABIA	3.16%	15.95%	52.78%	-20.16%	Not Islamic
8220	WEQAYA TAKAFUL	-3.21%	13.20%	24.74%	-24.22%	Not Islamic
8230	AL RAJHI TAKAFUL	-0.17%	15.46%	38.30%	-21.89%	Not Islamic
8240	ACE	-1.77%	12.44%	32.51%	-16.57%	Not Islamic
8250	AXA-COOPERATIVE	1.85%	17.99%	53.47%	-16.33%	Not Islamic
8260	GULF GENERAL	-2.62%	9.43%	9.39%	-12.69%	Not Islamic
8270	BURUJ	5.13%	17.55%	23.47%	-17.14%	Not Islamic
8280	AL ALAMIYA	-0.19%	12.19%	33.67%	-18.96%	Not Islamic
8290	SOLIDARITY	6.45%	17.36%	24.92%	-10.21%	Not Islamic
8300	WATANIYA	5.00%	19.08%	22.34%	-13.14%	Not Islamic
8310	AMANA INSURANCE	25.96%	30.76%	61.69%	-12.89%	Not Islamic
	2. Agriculture & Food Industries Sector					
2050	SAVOLA	1.81%	12.84%	47.01%	-47.41%	Not Islamic
2100	FPCO	3.24%	24.67%	133.71%	-60.03%	200301-201104
2270	SADAFCO	0.21%	18.53%	81.18%	-48.30%	200807-201104
2280	ALMARAI	1.21%	12.71%	52.50%	-34.74%	200407-200906
4061	ANAAM HOLDING	3.89%	29.59%	132.03%	-60.83%	200508-201104
6001	HB	3.19%	14.35%	57.92%	-14.72%	Not Islamic
6002	HERFY FOODS	1.18%	3.68%	5.59%	-3.33%	200907-201104
6010	NADEC	2.54%	15.25%	66.28%	-45.19%	200301-201104
6020	QAACO	3.51%	20.55%	73.79%	-57.36%	200301-201104
6040	TAACO	2.37%	18.47%	66.28%	-51.39%	200301-201104
6050	SFICO	5.53%	28.50%	177.30%	-60.00%	200706-200806
6060	SHARQIYA DEV CO	3.91%	21.83%	91.76%	-62.27%	200612-201104
6070	JADCO	3.01%	18.76%	75.25%	-56.21%	200301-201104
6080	BISACO	6.41%	25.76%	126.84%	-58.82%	Not Islamic
6090	GIZACO	3.10%	18.52%	56.41%	-54.31%	Not Islamic
	3. Building & Construction Sector					
1310	MMG	-0.80%	11.00%	25.17%	-18.12%	200706-201104
1320	SSP	-1.26%	9.18%	21.11%	-11.48%	200907-201104
1330	ALKHODARI	8.07%	23.39%	42.78%	-7.83%	Not Islamic
2040	SCERCO	3.24%	14.41%	55.83%	-44.20%	200301-201104
2090	NGCO	0.65%	12.44%	70.60%	-29.38%	200301-201104
2110	SCACO	2.60%	19.48%	86.48%	-51.40%	Not Islamic
2130	SIDC	3.39%	19.76%	64.74%	-56.75%	200706-200806
2160	SAAC	0.96%	15.53%	46.28%	-42.86%	Not Islamic
2200	APCO	2.17%	18.23%	59.57%	-43.44%	Not Islamic
2240	ZIIC	1.07%	13.18%	48.02%	-35.21%	Not Islamic
2320	AL BABTAIN	-0.11%	11.53%	28.19%	-26.40%	Not Islamic
2360	SVCP	-0.77%	12.57%	22.22%	-34.64%	Not Islamic
2370	MESC	-1.75%	13.49%	28.89%	-32.01%	Not Islamic
4230	RED SEA HOUSING	0.42%	12.85%	40.64%	-36.53%	Not Islamic
	4. Petrochemical Industries Sector					
2001	CHEMANOL	1.23%	8.85%	21.30%	-18.26%	Not Islamic
2002	PETROCHEM	3.67%	12.45%	35.67%	-15.63%	Not Islamic
2010	SABIC	2.53%	12.89%	40.16%	-35.90%	Not Islamic
2020	SAFCO	2.49%	12.75%	37.87%	-46.48%	Not Islamic
2060	NIC	3.32%	15.85%	48.14%	-39.00%	Not Islamic
2170	ALCO	4.55%	23.88%	109.55%	-53.82%	200407-200603
2210	NAMA	3.03%	18.61%	66.16%	-57.94%	Not Islamic
2250	SIIG	0.75%	15.87%	53.49%	-46.43%	Not Islamic
2260	SPC	0.00%	17.94%	55.25%	-40.06%	200301-200611

(table continued)

2290	YANSAB	2.18%	14.12%	27.11%	-36.27%	Not Islamic
2310	SIPCHEM	0.29%	11.31%	34.08%	-25.60%	Not Islamic
2330	ADVANCED	0.55%	14.88%	40.29%	-34.50%	200807-201104
2350	KAYAN	0.12%	11.64%	26.32%	-27.48%	Not Islamic
2380	PETRO RABIGH	2.33%	10.64%	21.73%	-26.35%	Not Islamic
	5. Industrial Investment Sector					
1210	BCI	2.54%	9.62%	31.29%	-11.63%	Not Islamic
1211	MA'ADEN	3.42%	8.84%	25.29%	-17.11%	Not Islamic
1212	ASTRA	2.28%	10.55%	39.09%	-15.43%	200807-201104
1213	ALSORAYAI	2.97%	7.79%	13.70%	-3.22%	200907-201104
1214	SHAKER	1.69%	9.21%	11.28%	-9.47%	200907-201104
2070	SPIMACO	1.93%	16.60%	71.33%	-46.35%	Not Islamic
2150	ZOUJAJ	2.14%	14.85%	49.82%	-38.02%	Not Islamic
2180	FIPCO	1.99%	18.41%	59.39%	-61.84%	200301-201104
2220	NMMCC	3.99%	21.29%	103.00%	-51.55%	200706-201104
2230	SCCO	1.89%	14.82%	41.71%	-42.14%	Not Islamic
2300	SPM	0.13%	9.67%	24.14%	-21.07%	200604-201104
2340	ALABDULLATIF	-0.99%	9.35%	29.06%	-26.22%	200612-201104
4140	SIECO	2.40%	19.67%	63.66%	-51.00%	200807-201104
	6. Banks and Financial Services Sector					
1010	RIBL	0.90%	9.35%	28.88%	-17.91%	Not Islamic
1020	BJAZ	1.78%	12.37%	40.01%	-37.25%	200807-201104
1030	SAIB	0.61%	10.91%	34.32%	-23.37%	Not Islamic
1040	AAAL	0.69%	10.73%	36.34%	-30.31%	Not Islamic
1050	BSFR	1.21%	9.12%	25.52%	-23.44%	Not Islamic
1060	SABB	1.64%	9.17%	29.99%	-23.62%	Not Islamic
1080	ARNB	1.28%	10.47%	33.46%	-23.13%	Not Islamic
1090	SAMBA	1.57%	11.02%	39.67%	-27.53%	Not Islamic
1120	RJHI	1.98%	11.65%	36.54%	-33.16%	200301-201104
1140	ALBI	-2.63%	12.64%	23.81%	-32.72%	200407-201104
1150	ALINMA	-0.10%	6.24%	17.77%	-11.69%	200706-201104
	7. Cement Sector					
3010	ARCCO	0.87%	11.26%	41.55%	-29.32%	200301-201104
3020	YACCO	1.13%	10.74%	52.91%	-35.73%	Not Islamic
3030	SACCO	0.84%	10.01%	27.98%	-45.06%	200706-201104
3040	QACCO	1.32%	11.73%	62.89%	-33.65%	200508-201104
3050	SOCCO	0.63%	8.09%	27.45%	-27.20%	200706-201104
3060	YNCCO	0.39%	9.16%	27.45%	-22.56%	200301-200406 & 200706-200806
3080	EACCO	0.44%	9.05%	30.14%	-24.45%	200612-201104
3090	TACCO	0.54%	10.27%	41.95%	-31.36%	200706-201104
3091	JOUF CEMENT	3.47%	12.30%	19.70%	-8.16%	Not Islamic
	8. Retail Sector					
4001	A.OTHAIM MARKET	3.47%	8.61%	26.34%	-15.79%	200807-201104
4002	MOUWASAT	2.76%	7.66%	17.52%	-8.19%	200907-201104
4050	SASCO	2.56%	20.11%	127.27%	-38.71%	200508-201104
4160	THIMAR	3.85%	23.95%	81.92%	-51.09%	200807-201104
4180	AHFCO	1.48%	18.23%	73.83%	-48.85%	Not Islamic
4190	JARIR	1.68%	7.85%	41.91%	-12.19%	Not Islamic
4200	ALDREES	0.08%	10.97%	29.31%	-25.00%	200508-201104
4240	ALHOKAIR	0.89%	10.58%	28.43%	-26.56%	200706-201104
4290	ALKHALEEJ TRNG	-0.57%	11.60%	36.45%	-31.60%	Not Islamic

(table continued)

9. Real Estate Development Sector						
4020	SRECO	1.12%	14.77%	45.60%	-45.15%	Not Islamic
4090	TIRECO	1.86%	14.65%	71.09%	-39.94%	200301-201104
4100	MCDCO	0.82%	15.58%	92.01%	-46.65%	200301-201104
4150	ADCO	1.79%	17.00%	73.66%	-47.93%	200301-201104
4220	EMAAR EC	-1.36%	9.92%	23.61%	-28.74%	200706-201104
4250	JABAL OMAR	-0.81%	5.04%	10.39%	-9.64%	200706-201104
4300	DAR AL ARKAN	-2.88%	8.48%	21.91%	-29.89%	200706-201104
4310	KEC	3.21%	13.18%	18.90%	-8.55%	200907-201104
10. Multi-Investment Sector						
2030	SARCO	3.56%	21.60%	134.26%	-44.49%	Not Islamic
2120	SAICO	4.29%	23.19%	83.52%	-58.56%	200807-201104
2140	AADC	2.75%	23.35%	149.40%	-57.09%	Not Islamic
2190	SISCO	2.97%	21.19%	103.82%	-49.48%	200807-201104
4080	ATTMCO	2.12%	16.86%	70.39%	-41.30%	Not Islamic
4130	ABDICO	4.70%	28.20%	90.10%	-73.98%	200706-201104
4280	KINGDOM	0.38%	17.11%	58.95%	-22.31%	Not Islamic
11. Telecommunication & Information Technology Sector						
7010	STC	-0.12%	9.07%	25.39%	-23.23%	Not Islamic
7020	EEC	-1.03%	12.32%	41.94%	-29.95%	200301-201104
7030	ZAIN KSA	-1.02%	7.14%	21.05%	-16.67%	200706-200906
7040	ATHEEB TELECOM	-4.01%	9.49%	4.11%	-24.69%	200807-201104
12. Transport Sector						
4030	NSCSA	1.01%	13.50%	41.49%	-35.34%	Not Islamic
4040	SAPTCO	1.02%	14.30%	53.11%	-43.73%	200301-201104
4110	SLTCO	1.93%	18.44%	73.66%	-49.30%	200301-201104
4260	BUDGET SAUDI	-1.32%	13.61%	45.63%	-31.17%	200706-201104
13. Media and Publishing Sector						
4070	TAPRCO	3.75%	21.39%	79.81%	-56.99%	Not Islamic
4210	RESEARCH	-2.00%	8.04%	16.13%	-23.03%	Not Islamic
4270	SPPC	-1.96%	10.06%	34.15%	-21.85%	Not Islamic
14. Energy & Utilities Retail Sector						
2080	NGIC	0.59%	12.61%	48.01%	-46.32%	200407-201104
5110	SECO	1.03%	10.99%	46.24%	-33.49%	Not Islamic
15. Hotel & Tourism Sector						
4010	SHARCO	2.24%	19.22%	124.83%	-56.17%	200807-201104
4170	TECO	3.90%	23.98%	86.55%	-55.38%	200612-201104
Market Index and Risk-Free rate						
	TASI	1.28%	8.55%	19.25%	-21.58%	
	SIBOR 1Month	0.21%	0.15%	0.43%	0.03%	

Table 1 shows that the Amana Insurance Company has the highest average monthly returns for the entire studied period with around 25.96 percent, and the Atheeb Telecommunication Company has the lowest average monthly returns with a loss of around 4.01 percent. The table also shows that all the 146 firms fall under 15 different sectors. The insurance sector has the largest number of firms (31 firms) and both sectors

(the energy and utilities retail sector and the hotel and tourism sector) have the least number of firms (2 firms in each sector). Table 1 also reports the descriptive statistics for the market index: Tadawul All Share Index (TASI) and the Saudi Interbank Offering Rate (SIBOR) with one-month maturity. TASI and SIBOR have average monthly returns of around 1.28 and 0.21 percent, respectively.

Table 1 also reports a column named "Islamic Dates" that provides the dates when each of the 146 listed firms was able to make it to the *Shariah*-compliant firm list that is issued by Dr. Muhammad bin Saud Al-Osaimi.[10] Dr. Al-Osaimi thoroughly studies all listed firms on a regular basis in order to determine which of these firms are considered *Shariah*-compliant. Dr. Al-Osaimi is a very well respected scholar in the Islamic finance field, thus his list of Islamic firms is considered an essential guide for Muslim investors to identify Islamic firms in Saudi Arabia.

4. Hypotheses

4.1. Hypothesis I

Islamic firms must abide by all *Shariah* law restrictions and make the necessary adaptations to their regulatory and fiscal frameworks before they can be considered Islamic. An example of these restrictions and adaptations is that Islamic firms must avoid all interest-based financing sources (*riba*) or, in some specific situations, must maintain a very low interest-based debt ratio (no more than 33 or 30 percent). Thus, Islamic firms are believed to be inherently less susceptible to financial risk and changes in interest rates than

[10] Dr. Muhammad bin Saud Al-Osaimi is an Associate Professor in the College of Economics and Administrative Science at Al Emam Mohamed bin Saud Islamic University. Also, Dr. Al-Osaimi is the general manager of the "*Shariah* Group" unit at Albilad Bank and a member of the bank's *Shariah* board. He was also the ex-manager of the department of *Shariah* audit at Al-Rajhi Bank. The main website for Dr. Al-Osaimi can be found at the following link: www.halal2.com.

are conventional firms. Another example is that Islamic firms cannot utilize risky instruments such as toxic assets and derivatives that have adversely affected conventional firms and triggered the recent 2008 global financial crisis. A third example is that Islamic firms must avoid all *gharar* (uncertainty, ambiguity, and excessive risk) elements in all financial transactions and contracts, whereas, conventional firm are not obligated to do so.

All these restrictions and necessary adaptations to which Islamic firms must commit in order to earn a *Shariah*-compliant title make these firms have some unique business characteristics and a distinguished risk-return profile when compared to conventional firms. And this is what will be examined under this hypothesis.

Hypothesis I states that it is expected that Islamic firms are less vulnerable to instability and have less risk exposure when compared to conventional firms due to the application of Islamic finance mandates. Consequently, according to the risk-return tradeoff theory which suggests that low risk is associated with low return and high risk is associated with high return, it is expected that Islamic firm stocks provide investors with lower return than conventional firm stocks because of the lower level of risk assumed when Islamic stocks are held. In other words, it is expected that there is a negative relationship between Islamic firms and average returns (negative Islamic-effect).

4.2. Hypothesis II

Adhering to the *Shariah* law is considered an issue that could affect stock prices since it is directly related to and affects firm fundamentals. That is, applying Islamic finance mandates does, in one way or another, affect firms' primary business activities, riskiness, operations, financing sources, profitability, revenues, leverage, etc. Since this is the case, this hypothesis tests whether that negative Islamic-effect (from hypothesis I) is considered

a common, systematic, and undiversified risk factor that affects cross-sectional stock returns.

To do so, a portfolio that mimics the risk factor in returns related to the negative Islamic-effect is constructed. That portfolio is called CMI (conventional minus Islamic) or the "Islamic risk factor" and it represents risk premiums for holding conventional stocks over Islamic stocks. CMI is then augmented to a three-factor model that includes the excess market return portfolio (RM-RF) and both size (SMB) and book-to-market equity (HML) risk factors in order to perform asset pricing tests using time-series regressions.

If that negative Islamic-effect indeed proxy for a common risk factor in returns, then CMI should capture common variation in stock returns not captured by (RM-RF), SMB, and HML risk factors. That is, loadings on CMI should be *significant* and *negative* (*positive*) when the Islamic (conventional) portfolio is used as the dependent variable in the time-series regressions, regardless of the size and book-to-market equity orientation of that Islamic (conventional) portfolio. This implies that even if the market, size, and book-to-market equity effects are controlled, investors holding Islamic stocks require lower rate of return than investors holding conventional stocks because firms that adhere to the *Shariah* law are less risky than firms that do not adhere to such law.

Furthermore, if CMI captures common variation in stock returns, the following should be observed when CMI is augmented to the three-factor model: 1) an increase in the adjusted R-squared values and 2) a decrease in the standard error of regression s(e) values because s(e) represents the firm-specific unsystematic and thus diversifiable risk.

5. The Data

5.1. Data Sources

From the main website of the Saudi Stock Exchange (Tadawul), the following has been collected: the daily stock prices for the entire 146 listed firms from January 1, 2002 to April 30, 2011; the book value of equity for all 146 firms at December 31 for each year from 2002 to 2010; and the daily number of shares outstanding for all 146 firms from January 1, 2002 to April 30, 2011.[11] Also collected are the daily values of the market index: Tadawul All Share Index (TASI) for the period from January 1, 2003 to April 30, 2011. It is worthy to note that the selected sample is free from the survivorship bias.[12] As mentioned earlier, the list of *Shariah*-compliant Saudi firms used in this empirical study is based on the list provided by Dr. Muhammad bin Saud Al-Osaimi.

From Bloomberg, the end-of-month Saudi Interbank Offering Rate (SIBOR) with one-month maturity is collected for the period from January 2003 to April 2011. In this empirical study, SIBOR with one-month maturity serves as a proxy for the monthly risk-free rate. As discussed earlier, it would be more appropriate to use the rate of return on *sukuk* instead of the rate of the risk-free asset since *Shariah* law forbids any return that is in the context of debt. But the problem is that data on *sukuk* rates are still not fully available to be used in Islamic finance empirical studies.

[11] The main website of the Saudi Stock Exchange (Tadawul) can be found at the following link: http://www.tadawul.com.sa.

[12] Bishah Agriculture Development Company (SIC=6080) is the only firm that was suspended from trading. It has been suspended since January 10, 2007. Even though it is suspended, Bishah is included in the firm sample for this empirical study.

5.2. Preparing the Monthly Time-Series Data

The sample period covers the period from January 2003 to April 2011 (monthly data). The computed monthly variables used in this empirical study are: the monthly stock and TASI returns, the firm's monthly market value (size), and the firms' monthly book-to-market equity that is based on the year ending in December 31 of (t-1). They are calculated as follows:

- The monthly stock and TASI returns are calculated as follows:

$$(1) \qquad R_{Mi} = \left(\frac{Price\ on\ Last\ Day\ of\ Month\ (M)}{Price\ on\ First\ Day\ of\ Month\ (M)} - 1\right)$$

where R_{Mi} is the monthly return at month (M) for either firm (i) or TASI.

- The firm's monthly market value (size) is calculated as follows:

$$(2) \qquad Size_{Mi} = Price\ on\ Last\ Day\ of\ Month\ (M) \times Shares\ Outstanding\ on\ Last\ Day\ of\ Month\ (M)$$

where $Size_{Mi}$ is the monthly size at month (M) for firm (i).

- The firm's monthly book-to-market equity is computed using values of the year ending in December 31 of (t-1) in order to make sure that the book value of equity is already known. It is calculated as follows:

$$(3) \qquad BM_{Mit} = \frac{BV_{i\ Dec\ t-1}}{MV_{i\ Dec\ t-1}}$$

where:

BM_{Mit} : Book-to-market equity at month (M) for firm (i) of the year (t)
$BV_{i\ Dec\ t-1}$: Book value of equity for firm (i) on the last day of December of year (t-1)
$MV_{i\ Dec\ t-1}$: Market value for firm (i) on the last day of December of the year (t-1) and it is calculated as follows: $[Price\ on\ Last\ Day\ of\ December\ of\ Year\ (t-1)] \times [Shares\ Outstanding\ in\ Last\ Day\ of\ Decemeber\ of\ Year\ (t-1)]$

It is worthy to note that it is considered a common practice in finance to exclude firms from both financial and utility sectors when performing standard asset pricing tests

due to their unique financial structure. These firms use leverage or borrowed funds extensively and therefore are more sensitive to financial risks and changes in interest rates than firms in other sectors. When interest rates increase, share prices of these firms normally decrease. This could be a serious issue when performing standard asset pricing tests. For example, a study by Foerster & Sapp (2005) show that including firms in the financial sector does, indeed, affect the significance results of the explanatory power of different risk factors in these tests.

In this empirical study, however, including firms in both financial and utility sectors is believed to be necessary and a must. To elaborate, firms that are classified as *Shariah*-compliant are expected to adhere to all *Shariah* law principles regardless of their sector. Therefore, the issue that firms are more or less sensitive to financial risks and changes in interest rates is irrelevant when assessing the firms' strict adherence to the *Shariah* law. Firms have only two choices: either they are *Shariah*-compliant or not. Thus, for this empirical study, it is necessary to include all firms, including those in both financial and utility sectors, since the main objective is to examine the Islamic-effect and whether that effect is considered a systematic risk factor that affects cross-sectional stock returns.

6. Methodology

The role of the Islamic-effect in stock returns for the period from January 2003 to April 2011 is developed in two steps. The first step is to e*xamine the existence of a negative Islamic-effect* (section 6.1). The second step is to *examine the existence of an Islamic risk factor* (section 6.2).

6.1. Examining the Existence of a Negative Islamic-Effect

A negative Islamic-effect exists if there is statistical evidence that Islamic firms in Saudi Arabia underperform conventional firms. Two statistical methods are used to investigate this issue: a panel model (section 6.1.1) and a portfolio performance analysis (section 6.1.2).

6.1.1. The Panel Model

The main reason for using a panel model is to control for any significant firm effects. Usually when estimating a panel model, a choice between three different models [a pooled regression model (OLS), a fixed effect model (FEM), or a random effect model (REM)] must be made. That choice depends on which model best fits the sample data in hand.

OLS is used when all constant terms are equal. That is, there are no significant firm effects. In such cases, data are pooled and an ordinary least squares (OLS) regression is preformed. Under the assumption of equality constant terms, the OLS estimator is considered efficient and consistent. OLS is estimated as follows:

(4) $$R_{it} - RF_t = \alpha + \beta\ (RM_t - RF_t) + D\ Islamic_{it} + \ \varepsilon_{it}$$

where:

R_{it}	:	Return for firm (i) at month (t)
RF_t	:	Risk-free rate measured by SIBOR with one-month maturity at month (t)
α	:	The intercept of the model
β	:	The systematic or market risk
RM_t	:	The return on the market index (TASI) at month (t)
D	:	Coefficient on the Islamic dummy variable. It represents the difference in stock returns between Islamic and conventional firms. Thus, this coefficient represents the *Islamic-effect*
$Islamic_{it}$	:	Dummy variable that give 1 when firm (i) is considered Islamic during month (t) and zero otherwise
ε_{it}	:	The error term with zero mean for firm (i)

FEM is used when there are significant firm effects. That is, constant terms are not equal. If so, OLS estimator is biased and inconsistent due to the variable omission problem.

In order test the significance of the firm effects, an F-test is performed to test the null hypothesis that constant terms are all equal (Ho: $\alpha = \alpha_i$). Failing to reject the null hypothesis indicates that OLS should be used because it is efficient and FEM is not. However, rejecting the null hypothesis indicates that FEM should be used because it is consistent and OLS is not. The FEM is estimated as follows:

(5) $$R_{it} - RF_t = \alpha_1 firm1 + \cdots + \alpha_{146} firm146 + \beta\,(RM_t - RF_t) + D\,Islamic_{it} + \varepsilon_{it}$$

where α_1-α_{146} are firm-specific constant terms, $firm1$-$firm146$ are firm dummy variables to designate a particular firm, and the rest is defined as in equation (4).

REM is used when there are significant firm effects but omitting such effects from the model will not affect the consistency of the model because it is assumed that they are not correlated with the independent variables. That is, the REM treats firm-specific constant terms as randomly distributed variables across cross-sectional units. The advantage of the REM is that it uses far less estimated parameters, and therefore is more efficient than the FEM if there is no correlation between the omitted firm-specific effects and the independent variables. The disadvantage of this model is that it could be inconsistent if there is correlation between the unobserved firm effects and the independent variables.

To test which model to use, FEM or REM, a Hausman's specification test is preformed. Under the null hypothesis of no correlation; both models (FEM and REM) are consistent, but the FEM is inefficient. Under the alternative hypothesis; the FEM is consistent, but the REM is not. Thus, failing to reject the null hypothesis supports the use of the REM, whereas, the rejection of the null hypothesis supports the use of the FEM. REM is estimated as follows:

(6) $$R_{it} - RF_t = \alpha + \beta\ (RM_t - RF_t) + D\ Islamic_{it} + \varepsilon_{it} + u_i$$

where u_i is the firm-specific random element and the rest is defined as in equation (4).

Regardless what model is used, a statistically significant and negative coefficient on the "Islamic" dummy variable (i.e. the D coefficient) indicates that there is statistical evidence that Islamic firms in Saudi Arabia produce average returns that are lower than conventional firms. That is, there is a negative Islamic-effect and such effect is attributed to the fact that Saudi Islamic firms are strictly adhering to the *Shariah* law.

6.1.2. Portfolio Performance Analysis

One advantage of this method is that the idiosyncratic risk (firm-specific risk) will be diversified away when stocks are held in a portfolio. Based on this view, two value-weighted return portfolios (Islamic and conventional) are formed and three common risk-adjusted performance measures (Sharpe, Treynor, and Jensen alpha) are computed for each portfolio in order to test the existence of the negative Islamic-effect. The market benchmark used to assess the performance of both Islamic and conventional portfolios is the created market return portfolio (RM) as shown in equation (11). The three risk-adjusted performance measures are:

6.1.2.1. Sharpe Ratio

The Sharpe ratio is derived by Sharpe (1966) as an absolute risk-adjusted performance measure. Thus, no market benchmark is needed to calculate the Sharpe ratio. The idea of this ratio is to see how much additional return is received for the additional volatility of holding the risky asset over the risk-free asset. The risk in the Sharpe ratio is measured by the portfolio's standard deviation, which represents the total risk (diversified and undiversified risks). This ratio is useful in ranking portfolios because a higher ratio is

only warranted if return is higher with the same level of risk or if the risk is lower with the same level of return. The Sharpe ratio is calculated as follows:

$$(7) \qquad S_p = \frac{\overline{R_p} - \overline{RF}}{\sigma_p}$$

where:

S_p : Sharpe ratio for portfolio (p)
$\overline{R_p}$: The average rate of return for portfolio (p)
$\overline{RF}$: The average risk-free rate measured by SIBOR with one-month maturity
σ_p : Standard deviation of portfolio (p)

6.1.2.2. Treynor Ratio

Treynor ratio is considered a relative risk-adjusted measure. Thus, a market benchmark is needed to calculate it. This ratio measures the excess returns over the riskless asset that could be earned per unit of market risk. Market risk or systematic risk is measured by the portfolio's beta, which measures the co-movement of the portfolio with the market. It is calculated as follows:

$$(8) \qquad TR_p = \frac{\overline{R_p} - \overline{RF}}{\beta_p}$$

where $\overline{R_p}$ and $\overline{RF}$ are defined as in equation (7) and:

TR_p : Treynor ratio for portfolio (p)
β_p : Beta for Portfolio (p). Estimated using CAPM as shown in the following equation:

$$(9) \qquad R_{pt} - RF_t = \alpha_p + \beta_p\,(RM_t - RF_t) + \varepsilon_{pt}$$

where:

R_{pt} : Rate of return for portfolio (p) at month (t)
RF_t : Risk-free rate measured by SIBOR with one-month maturity at month (t)
α_p : The intercept and it is also called the Jensen alpha index
β_p : Portfolio's beta or the market risk
RM_t : The return on the created market return portfolio at month (t) as shown in equation (11)
ε_{pt} : The error term with zero mean

6.1.2.3. Jensen Alpha Index

The Jensen alpha index is a relative risk-adjusted performance measure that was first introduced by Jensen (1967) to determine the abnormal return of a portfolio over the theoretical expected return using a capital asset pricing model (CAPM). Thus, the Jensen alpha index is the constant term in the single-factor model presented in equation (9). A portfolio is considered outperforming the market index if the Jensen alpha is positive and statistically significant.

In addition to the created Islamic and conventional value-weighted return portfolios, an Islamic and a conventional value-weighted size and book-to-market equity portfolios are formed. The Islamic and conventional value-weighted return, size, and book-to-market equity portfolios are calculated as follows:

$$(10) \qquad Portfolio_{PM} = \sum_{i_p=1}^{N_p} \left(\frac{Size_{Mi_p}}{\sum_{i_p=1}^{N_p} Size_{Mi_p}} \times V_{Mi_p} \right)$$

where:

$Portfolio_{PM}$: Represents the following variables: the value-weighted return (R_{PM}), size ($Size_{PM}$), and book-to-market equity (BM_{PM}) for portfolio (p = Islamic or conventional) at month (M)

$Size_{Mi_p}$: $Size_{Mi}$ is defined as in equation (2) for month (M) and firm (i). The subscript (p) refers to the portfolio (Islamic or conventional)

$\sum_{i_p=1}^{N_p} Size_{Mi_p}$: Is the sum of sizes for all (N) firms in portfolio (p = Islamic or conventional) at month (M)

V_{Mi_p} : Represents the following variables: the monthly return (R_{Mi}), size ($Size_{Mi}$), and book-to-market equity (BM_{Mit}) as defined, respectively, in equations (1), (2), and (3) for firm (i) in portfolio (p = Islamic or conventional) at month (M)

The averages of the monthly value-weighted portfolios of return (R_{PM}), size ($Size_{PM}$), and book-to-market equity (BM_{PM}) are calculated by just taking the simple average values of these portfolios (see Table 3).

6.2. Examining the Existence of an Islamic Risk Factor

This section discusses the methodology used to test if the negative Islamic-effect is considered a common (shared and undiversified) risk factor that affects the cross-sectional expected returns of common stocks in the Saudi Arabian market. The methodology used is the time-series regressions similar to those developed by Fama & French (1993).

6.2.1. The Dependent Variables

The dependent variables are eight value-weighted excess return portfolios formed on size (small and big), book-to-market equity (low and high), and *Shariah* compliancy (Islamic and conventional). The dependent variables' monthly return, size, and book-to-market equity are calculated as shown in equations (1), (2), and (3), respectively.

In each month (M), stocks are split into two groups: Islamic (I) and conventional (C). Then for each of these two groups, the following is performed. Stocks are ranked on size and then the median size is used to split stocks into two groups: small (S) and big (B). Then stocks are ranked again but this time the ranking is based on the book-to-market equity and then the median book-to-market equity is used to split stocks into two groups: Low (L) and High (H). It is worthy to note that because there are relatively few listed firms (only 146 firms) on the Saudi Stock Exchange (Tadawul), it is better and more appropriate to split each of the size and book-to-market equity stocks into maximum two groups in order to avoid a skewed distribution.

Then eight stock portfolios are formed based on the intersection of the two *Shariah* compliancy groups (I and C), two size groups (S and B), and two book-to-market equity groups (L and H). The eight portfolios are as follows: (ISL, ISH, IBL, IBH, CSL, CSH, CBL, and CBH). For example, the ISL portfolio contains stocks in the Islamic group that are also in the

small size and low book-to-market equity groups. The CBH portfolio contains stocks in the conventional group that are also in the big size and high book-to-market equity groups.

Finally, the monthly value-weighted return, size, and book-to-market equity for the eight portfolios are calculated. The calculation of these value-weighted portfolios is as shown in equation (10). Then the averages of the monthly value-weighted return, size, and book-to-market equity portfolios are calculated by just taking the simple average value of these portfolios (see Table 4 panels B and C).

6.2.2. The Explanatory Variables

The independent variables are the excess market return portfolio (RM-RF) and portfolios meant to mimic the underlying risk factors in returns related to size (SMB), book-to-market equity (HML), and the negative Islamic-effect (CMI). The time-series of the (RM-RF), SMB, HML, and CMI are also called monthly risk premiums for risk factors related to the market, size, book-to-market equity, and the negative Islamic-effect, respectively.

The market return portfolio RM is calculated as shown below and then the excess market return portfolio (RM-RF) is calculated by subtracting the risk-free rate (SIBOR with one-month maturity) from RM.

$$RM = \frac{1}{8}\,(CSL + CSH + CBL + CBH + ISL + ISH + IBL + IBH) \tag{11}$$

As discussed in the literature review, it is very well documented that there is a negative relationship between size and average returns. Thus, SMB (small minus big) is calculated by taking, in each month, the average return on the two small Islamic and the two small conventional portfolios minus the average return on the two big Islamic and the two big conventional portfolios. This difference is expected to make the created portfolio that mimics the risk factor that is related to size free, as much as possible, from both the

book-to-market equity and the Islamic-effect influences and more focused on the differences in return between small and big stocks. SMB is calculated as follows:

(12) $$SMB = \frac{1}{4}\left((ISL + ISH + CSL + CSH) - (IBL + IBH + CBL + CBH)\right)$$

Also as discussed in the literature review, it is very well documented that there is a positive relationship between book-to-market equity and average returns. Thus, HML (high minus low) is calculated by taking, in each month, the average return on the two high Islamic and the two high conventional portfolios minus the average return on the two low Islamic and the two low conventional portfolios. This difference is expected to make the created portfolio that mimics the risk factor that is related to the book-to-market equity free, as much as possible, from both the size and the Islamic-effect influences and more focused on the differences in return between value (high book-to-market equity) and growth (low book-to-market equity) stocks. HML is calculated as follows:

(13) $$HML = \frac{1}{4}\left((ISH + IBH + CSH + CBH) - (ISL + IBL + CSL + CBL)\right)$$

Based on hypothesis I, it is expected that there is a negative relationship between Saudi Islamic firms and average returns (negative Islamic-effect). Thus, a portfolio meant to mimic the risk factor in returns that is related to the negative Islamic-effect is created and in this paper that portfolio is referred to as CMI (conventional minus Islamic) or the "Islamic risk factor." It is calculated by taking, in each month, the average return on the four conventional portfolios minus the average return on the four Islamic portfolios. Forming CMI in that manner makes the created portfolio that mimics the risk factor that is related to the negative Islamic-effect more focused on differences in return between conventional

and Islamic firms and at the same time free, as much as possible, from both size and book-to-market equity effects. CMI is calculated as follows:

$$CMI = \frac{1}{4}\left((CSL + CSH + CBL + CBH) - (ISL + ISH + IBL + IBH)\right) \quad (14)$$

Finally, averages of all independent variables (averages of monthly risk premiums for the market, size, book-to-market equity, and Islamic risk factors) are just the simple average values of these variables (see Table 4 panel A).

6.2.3. The Four-Factor Model

The time-series regressions are estimated as follows:

$$R_{pt} - RF_t = \alpha_p + \beta_p\,(RM_t - RF_t) + s_p\ SMB_t + h_p\ HML_t + i_p\ CMI_t + \varepsilon_{pt} \quad (15)$$

where:

R_{pt} : Rate of return for the portfolio (p) at month (t)
RF_t : Risk-free rate measured by SIBOR with one-month maturity at month (t)
α_p : The intercept of the model
β_p : Portfolio's beta or the market risk
RM_t : Return on the created market portfolio at month (t) as shown in equation (11)
s_p : Loadings on the size risk factor for portfolio (p)
SMB_t : (Small minus big) size risk factor
h_p : Loadings on the book-to-market equity risk factor for portfolio (p)
HML_t : (High minus low) book-to-market equity risk factor
i_p : Loadings on the Islamic risk factor for portfolio (p)
CMI_t : (Conventional minus Islamic) Islamic risk factor.
ε_{pt} : The error term with zero mean

It is worthy to note that it is essential to test the null hypothesis of zero intercepts in order to assess how well the cross-sectional average returns are sufficiently explained by averages of risk premiums of common risk factors related to the market (RM-RF), size (SMB), book-to-market equity (HML), and the negative Islamic-effect (CMI).

If this four-factor model is very well specified, then intercepts should be indistinguishable from zero (insignificant and close to zero). This is because averages of

SMB, HML, and CMI are expected to explain the differences in average returns across stocks, and the average excess market return portfolio (RM-RF) is expected to explain why stock returns are, on average, above the risk-free rate (SIBOR with one-month maturity).

7. Empirical Results and Discussion

The following empirical results discussion is divided into two main sections. The first section (section 7.1) discusses the results from examining the existence of a negative Islamic-effect. In this section, the results from utilizing a panel model (section 7.1.1) as well as the results from employing a portfolio performance analysis (section 7.1.2) is presented. The second section (section 7.2) discusses the results from examining the existence of an Islamic risk factor using time-series regressions similar to those developed by Fama & French (1993). In this section, the descriptive statistics results for both independent and dependent variables (section 7.2.1) as well as the results from the time-series regressions (section 7.2.2) are presented.

7.1. Results from Examining the Existence of a Negative Islamic-Effect

7.1.1. The Panel Model Results

Table 2 presents the results from testing the existence of a negative Islamic-effect using a panel model. As shown from the table, the null hypothesis that all constant terms are equal cannot be rejected. That is, the F-statistics is around 0.7693 and it is insignificant at all conventional levels (p-value is 0.9815). This supports the use of the OLS over the FEM because no significant firm effects are present (OLS is efficient, but FEM is not).

Looking at the OLS results, the coefficient on the Islamic dummy variable is approximately -0.0055 and it is significant at 5 percent (t-statistics is -2.162). This supports the existence of a negative Islamic-effect where Islamic firms earn, on average, 0.0055 less

monthly returns than conventional firms. Even though the return difference between Islamic and conventional firms is economically small, the significance of such difference cannot be disregarded.

Table 2: Testing the Negative Islamic-Effect Using a Panel Model

The sample period is from January 2003 to April 2011. The proxy for the risk-free rate is the monthly Saudi Interbank Offering Rate (SIBOR) with one-month maturity. The proxy for the market index is the Tadawul All Share Index (TASI). The dependent variable is the excess monthly stock returns over the monthly risk-free rate for all 146 firms listed on the Saudi Stock Exchange (Tadawul). The independent variables are the monthly excess market returns over the monthly risk-free rate and the Islamic dummy variable, which gives 1 if the firm (i) is Islamic during month (t) and zero otherwise. There are three models reported: ordinary least squares (OLS), fixed effect model (FEM), and random effect model (REM). The adjusted R-squared from each model is also reported. Also, reported are the F-statistics and the p-value for testing the hypothesis that all constant terms are equal (Ho: $\alpha = \alpha_i$). Failing to reject the null hypothesis supports the use of OLS, however, rejecting the null supports the use of the FEM. Also, reported are the Hausman test and the p-value for testing the hypothesis of choosing the REM over the FEM. Failing to reject the null hypothesis supports the use of the REM, whereas, rejecting the null supports the use of the FEM. Finally, all standard errors are corrected for heteroscedasticity problems using White's (1980) correction test.

OLS : $R_{it} - RF_t = \alpha + \beta\ (RM_t - RF_t) + D\ Islamic_{it} + \varepsilon_{it}$

FEM: $R_{it} - RF_t = \alpha_1 firm1 + \cdots + \alpha_{146} firm146\ + \beta\ (RM_t - RF_t)\ + D\ Islamic_{it} + \varepsilon_{it}$

REM: $R_{it} - RF_t = \alpha + \beta\ (RM_t - RF_t) + D\ Islamic_{it} + \varepsilon_{it} + u_i$

	OLS	**FEM**	**REM**
Intercept	0.0085		0.0084
T-stat	4.902***		3.569***
(RM-RF)	1.0690	1.0640	1.0670
T-stat	42.29***	42.66***	63.56***
Islamic	-0.0055	-0.0157	-0.0077
T-stat	-2.162**	-2.564**	-2.061**
Adjusted R-Squared	29.96%	29.71%	29.96%
Number of Firms		146	
Number of Observations (Unbalanced Data)		9404	
F (145, 9256) of Ho: OLS, Ha: FEM		0.7693	
P-value		0.9815	
Hausman test, Chi Square (2) of Ho: REM, Ha: FEM		3.9501	
P-value		13.88%	

*, **, *** significant at 10%, 5%, 1%, respectively

7.1.2. The Portfolio Performance Analysis Results

Table 3 presents the results of the created value-weighted Islamic and conventional portfolios. The results show that averages of the monthly value-weighted Islamic and conventional return portfolios (non risk-adjusted average returns) are 2.16 and 1.82

percent per month and they are significantly different from zero at 10 and 5 percent, respectively. Furthermore, the results show that the non risk-adjusted average return for the Islamic portfolio is only marginally 0.34 percent higher than that of the conventional portfolio [t-statistics is only (0.229)].

Table 3: Testing the Negative Islamic-Effect Using a Portfolio Performance Analysis

Two value-weighted return portfolios (Islamic and conventional) are formed and three common risk-adjusted performance measures (Sharpe, Treynor, and Jensen alpha) are calculated for each portfolio in order to test for the negative Islamic-effect existence. In addition to the Islamic and conventional value-weighted return portfolios, an Islamic and a conventional value-weighted size and book-to-market equity portfolios are formed. The sample period is from January 2003 to April 2011. The proxy for the risk-free rate is the monthly Saudi Interbank Offering Rate (SIBOR) with one-month maturity. The market benchmark used is the created market return portfolio as shown in equation (11). The mean, size, and BM refer to the averages of the value-weighted monthly return, size, and book-to-market equity portfolios, respectively. SAR refers to the Saudi Arabian riyal. Firms refers to the average of monthly number of firms in the portfolio. The t(mean) refers to the t-statistics of a zero-mean test. Difference and t(difference) refer to the difference in average returns between Islamic and conventional portfolios and the t-statistics for testing the hypothesis of zero mean-difference, respectively. The Jensen alpha index and the beta, which is used in the Treynor ratio calculation, are estimated using a standard single-factor model and all standard errors are corrected for heteroscedasticity problems using White's (1980) correction test.

Portfolio	Islamic	Conventional
Mean	2.160%	1.820%
t(mean)	1.846*	2.053**
Difference	0.34%	
t(difference)	0.2290	
Sharpe	16.60%	18.10%
Treynor	1.960%	2.390%
Jensen Alpha	-0.0014	0.0019
Size (Thousands of SAR)	32,045,383.46	80,586,674.91
BM	1.347	1.508
Firms	32.34	61.70

*, **, *** significant at 10%, 5%, 1%, respectively

However, when risk is adjusted, the results indicate that the Islamic portfolio slightly underperforms its counterpart the conventional portfolio using both the Sharpe and Treynor ratios. The Sharpe ratios for both Islamic and conventional portfolios are around 16.60 and 18.10 percent per month, respectively. The Treynor ratios for both Islamic and conventional portfolios are around 1.960 and 2.390 percent per month, respectively. Looking at the Jensen alpha index, the results indicate that the Islamic

portfolio slightly underperforms the market benchmark by 0.0014 per month, whereas, the conventional portfolio slightly outperforms the market benchmark by 0.0019 per month. However, that under- and out-performance is only marginal.

Furthermore, the results show that the average of the Islamic size-portfolio is SAR 32 billion (approximately USD 8.5 billion) and it is considerably lower than the average of the conventional size-portfolio of SAR 80.6 billion (approximately USD 21.5 billion). Also the average of the Islamic book-to-market-equity-portfolio is 1.347 and it is somewhat lower than the average of the conventional book-to-market-equity-portfolio of 1.508. Additionally, the average number of firms in the Islamic portfolio (32.34) is considered almost one-half of the average number of firms in the conventional portfolio (61.7).

7.1.3. Interpretation

The results from both methods (panel model and portfolio performance analysis) are very much consistent and indicate, as hypothesized, that there is a negative relationship between Saudi Islamic firms and average returns. That negative relationship is referred to as the "negative Islamic-effect." In other words, investors holding Saudi Islamic firm stocks are rewarded with lower return than investors holding Saudi conventional firm stocks, at least during the period from January 2003 to April 2011. This could be attributed to the fact that Saudi Islamic firms are more conservative, less vulnerable to instability, and have less risk exposure when compared to Saudi conventional firms. This is not surprising given the several restrictions and the necessary adaptations to which Islamic firms must commit to earn a *Shariah*-compliant title.

However, it is worthy to note that although Saudi Islamic firms underperform Saudi conventional firms, that underperformance is considered somewhat economically small.

This is considered good news for Muslim investors because for them it is a relief to know that there is not a great cost for preserving their Islamic values, morals, and identity.

These findings lead to the second part of this paper which is to examine if that negative Islamic-effect is associated with a common risk factor that might explain the negative relationship between Saudi Islamic firms and average returns.

7.2. Results from Examining the Existence of an Islamic Risk Factor

7.2.1. Descriptive Statistics Results

This section reports the descriptive statistics for both the independent (section 7.2.1.1) and the dependent (section 7.2.1.2) variables used in the time-series regressions.

7.2.1.1. Descriptive Statistics for the Independent Variables

Table 4 panel A reports the mean, standard deviation, and t-statistics for testing the hypothesis of zero-mean for the market return portfolio (RM), excess market return portfolio (RM-RF), size risk factor (SMB), book-to-market equity risk factor (HML), and the Islamic risk factor (CMI). Also, panel A reports the correlation coefficients between (RM-RF), (SMB), (HML), and (CMI) which are considered the independent variables in the time-series regressions. As discussed earlier, (RM-RF), (SMB), (HML), and (CMI) are also called risk premiums for risk factors related to the market, size, book-to-market equity, and negative Islamic-effect, respectively.

The results indicate that the average risk premium for the market risk factor (RM-RF) during the entire sample period (January 2003 to April 2011) is around 2.10 percent per month and it is significantly, at 10 percent, different from zero (t-statistics is 1.913). This is quite large from and investment perspective (around 25.2 percent per year).

In order to understand why it is quite large, (RM-RF) is investigated during two different Saudi stock market trends: bull (from January 2003 to February 2006) and bear (from March 2006 to April 2011). The results (not tabled) indicate that during the bull (bear) period, the average risk premium for (RM-RF) is approximately 7.14 (-0.64) percent per month or 85.68 (-7.68) percent per year. This means that the observed large average risk premium for (RM-RF) during the entire sample period can be attributed to the aggressive bullish market activities that took place during the period from January 2003 to February 2006.

On the other hand, averages of risk premiums for risk factors related to size (SMB), book-to-market equity (HML), and the negative Islamic-effect (CMI) are all less than one percent per month (0.747, 0.344, and 0.042 percent per month, respectively). Furthermore, they are all insignificantly different from zero at all conventional levels due to their high standard deviations (8.10, 4.14, and 4.24 percent per month for SMB, HML and CMI, respectively). Nevertheless, the results from (Table 7) show that the effect of these independent variables (SMB, HML, and CMI) on the estimated spread in monthly stock returns is quite significant. Not only that, but also the estimated spread in returns due to both size and book-to-market equity risk factors is considered quite large.

For example, the significant slopes on SMB cover a range from 0.424 to 0.564 (when slopes are positive) and from -0.433 to -0.556 (when slopes are negative). This means that the estimated spread in monthly returns due to the size risk factor is very large and significant where it ranges from 31.67 percent (0.747 x 0.424) to 42.13 percent (0.747 x 0.564) when slopes are positive and from -32.35 percent (0.747 x -0.433) to -41.53 percent (0.747 x -0.556) when slopes are negative.

Similarly, the significant slopes on HML cover a range from 0.214 to 0.857 (when slopes are positive) and from -0.520 to -0.883 (when slopes are negative).[13] This means that the estimated spread in monthly returns due to the book-to-market equity risk factor is also very large and significant where it ranges from 7.36 percent (0.344 x 0.214) to 29.48 percent (0.344 x 0.857) when slopes are positive and from -17.89 percent (0.344 x -0.520) to -30.38 percent (0.344 x -0.883) when slopes are negative.

Finally, the significant slopes on CMI cover a range from 0.345 to 0.785 (when slopes are positive) and from -0.316 to -0.814 (when slopes are negative). This makes the significant estimated spread in the monthly returns due to the Islamic risk factor ranges from 1.45 percent (0.042 x 0.345) to 3.30 percent (0.042 x 0.785) when slopes are positive and from -1.33 percent (0.042 x -0.316) to -3.42 percent (0.042 x -0.814) when slopes are negative. It is worthy to note that the estimated spread in the monthly returns due CMI is considered small and not as large as that due to either SMB or HML. That small spread is very much consistent with the results obtained from examining the negative Islamic-effect existence (section 7.1) where results show that there is a negative Islamic-effect, but that effect is somewhat small.

Panel A also reports the correlation coefficients between the independent variables used in the time-series regressions: (RM-RF), SMB, HML, and CMI. The results provide clear evidence that the way SMB, HML, and CMI are calculated does, in fact, separate, as much as possible, the effects of the size, book-to-market equity, and negative Islamic-effect from each other. This minimizes the multicollinearity problem in the four-factor model. The

[13] Note that excluded from that range is the slope of 0.123 when the CBL portfolio is used as the dependent variable in the time-series regressions. This is because results from (Table 7: Four-Factor Model) show that such slope is insignificantly different from zero at all conventional levels.

correlation coefficient between SMB and both HML and CMI is -0.0282 and -0.147, respectively. And the correlation between HML and CMI is only 0.0751.

Table 4: Descriptive Statistics for Independent and Dependent Variables in the Time-Series Regressions

The dependent variables are eight value-weighted excess return portfolios formed on size (small and big), book-to-market equity (low and high), and *Shariah* compliancy (Islamic and conventional). The independent variables are the excess market return portfolio (RM-RF) and portfolios meant to mimic the underlying risk factors in return related to size (SMB), book-to-market equity (HML), and the negative Islamic-effect (CMI). The sample period is from January 2003 to April 2011 (monthly data). The proxy for the risk-free rate is the monthly Saudi Interbank Offering Rate (SIBOR) with one-month maturity. The market benchmark used (RM) is the created market return portfolio as shown in equation (11). Panel A reports the mean and standard deviation for the explanatory variables along with the t-statistics for testing the hypothesis of zero means. Also reported in panel A is the correlation coefficients between all explanatory variables used in the time-series regressions. Panels B and C report the descriptive statistics for the Islamic and conventional portfolios (dependent variables), respectively. In each panel, averages of monthly value-weighed excess return, size, and book-to-market equity portfolios are reported along with averages of monthly number of firms in each portfolio. Also reported are the t-statistics for testing the hypothesis of zero means for each of the eight excess return portfolios. SAR refers to the Saudi Arabian riyal.

Panel A: Explanatory Variables

Variable	Mean	Std.	t(mean)	Correlation			
RM	2.310%	11.000%	2.108**	**RM-RF**	**SMB**	**HML**	**CMI**
RM-RF	2.100%	11.000%	1.913*	1			
SMB	0.747%	8.100%	0.922	0.568	1		
HML	0.344%	4.140%	0.831	-0.194	-0.0282	1	
CMI	0.042%	4.240%	0.0981	-0.189	-0.147	0.0751	1

*, **, *** significant at 10%, 5%, 1%, respectively

7.2.1.2. Descriptive Statistics for the Dependent Variables

Table 4 panels B and C report the descriptive statistics results for all Islamic and conventional portfolios (dependent variables), respectively. In each panel, averages of monthly value-weighed excess return, size, and book-to-market equity portfolios are reported along with averages of monthly number of firms in each portfolio. The average excess return results for both portfolios, Islamic (left-hand side of panel B) and conventional (left-hand side of panel C), are considered the range of cross-sectional average returns that risk premiums for common risk factors in returns (independent variables) are attempting to explain in the time-series regressions.

Table 4 Continued

Dependent variables: portfolios sorted based on *Shariah* compliance (Islamic and conventional), size (small and big), and book-to-market equity (high and low)

Panel B: Islamic Portfolios

Averages of monthly value-weighted excess return portfolios							Averages of monthly value-weighted size and book-to-market (BM) portfolios and averages of monthly number of firms in each portfolio						
	Book-to-Market Equity Quintiles							Book-to-Market Equity Quintiles					
Size Quintile	Low	High	Low	High	Low	High	Size Quintile	Low	High	Low	High	Low	High
	Means		Std		t(mean)			Size (Thousands of SAR)		BM		Firms	
Small	2.160%	2.290%	13.30%	14.20%	1.621	1.613	**Small**	889,224.7	887,740.6	1.0360	3.3540	8.410	7.850
Big	2.110%	1.770%	14.20%	9.990%	1.489	1.768*	**Big**	41,572,233.1	13,216,526.8	0.7260	2.3370	8.270	7.810

*, **, *** significant at 10%, 5%, 1%, respectively

Panel C: Conventional Portfolios

Averages of monthly value-weighted excess return portfolios							Averages of monthly value-weighted size and book-to-market (BM) portfolios and averages of monthly number of firms in each portfolio						
	Book-to-Market Equity Quintiles							Book-to-Market Equity Quintiles					
Size Quintile	Low	High	Low	High	Low	High	Size Quintile	Low	High	Low	High	Low	High
	Means		Std		t(mean)			Size (Thousands of SAR)		BM		Firms	
Small	2.210%	3.240%	15.40%	14.80%	1.435	2.186**	**Small**	851,981.4	916,841.7	1.3010	2.9870	15.30	15.150
Big	1.240%	1.80%	9.210%	8.990%	1.351	1.998**	**Big**	118,092,960.6	22,343,710.7	1.0640	2.1740	14.740	16.510

*, **, *** significant at 10%, 5%, 1%, respectively

The results confirm findings of previous studies that there is a negative relationship between size and average return. That is, the results indicate that average excess return decreases with size in both book-to-market equity quintiles for both Islamic and conventional portfolios. For example, when moving from the small to the big quintile under the low quintile, average excess return decreases from 2.16 to 2.11 percent per month for Islamic portfolios (panel B) and from 2.21 to 1.24 percent per month for conventional portfolios (panel C). Also, when moving from the small to the big quintile under the high quintile, average excess return decreases from 2.29 to 1.77 percent per month for Islamic portfolios (panel B) and from 3.24 to 1.8 percent per month for conventional portfolios (panel C).

The results, in general, also confirm findings of previous studies that there is a positive relationship between book-to-market equity and average returns. That is, the results indicate that average excess return increases with book-to-market equity in both size quintiles for both Islamic and conventional portfolios except for the big-Islamic portfolio. For example, when moving from the low to the high book-to-market equity quintile under the small quintile, average excess return increases from 2.16 to 2.29 percent per month for Islamic portfolios (panel B) and from 2.21 to 3.24 percent per month for conventional portfolios (panel C). Also, when moving from the low to the high book-to-market equity quintile under the big quintile, average excess return increases from 1.24 to 1.80 percent per month for conventional portfolios (panel C); but decreases from 2.11 to 1.77 percent per month for Islamic portfolios (panel B).

Looking at the left-hand side of both panels B and C, the results show that the average excess return decreases when moving from conventional (panel C) to Islamic

(panel B) stock portfolios, regardless of the size and book-to-market equity orientations of these portfolios. The results indicate that the monthly average excess return decreases from: 1) 2.21 to 2.16 percent when moving from CSL to ISL; 2) 3.24 to 2.29 percent when moving from CSH to ISH; and 3) 1.80 to 1.77 percent when moving from CBH to IBH. These results are very much consistent with other previously obtained results and provide additional evidence that supports the hypothesis of a negative Islamic-effect in Saudi Stock returns, at least during the period from January 2003 to April 2011. However, there is one exception to the above results. That is, the average excess return increases from 1.24 to 2.11 when moving from the CBL to IBL.

Note that the hypothesis of zero-means cannot be rejected for five out of eight portfolios (ISL, ISH, IBL, CSL, and CBL). These results are not surprising given that stock returns are very volatile (high standard deviations that are around 14 percent per month). The good news is that such results will not have an adverse affect on the power of the asset-pricing tests. This is because, as shown in (Table 7), the created common risk factors in returns are going to absorb most of the variation in stock returns, and therefore the asset-pricing tests on the intercepts in the time-series regressions are going to show that all intercepts are indistinguishable from zero. In other words, the model is well specified.

Looking at the right-hand side of panels B and C in (Table 4), the results show that averages for size-portfolios range from SAR 887.7 million (around USD 236.7 million) to SAR 41.6 billion (around USD 11.1 billion) for Islamic portfolios (panel B); and from SAR 852 million (around USD 227.2 million) to SAR 118.1 billion (around USD 31.5 billion) for conventional portfolios (panel C). Furthermore, the results show that averages for book-to-market equity portfolios range from 0.726 to 3.354 for Islamic portfolios (panel B); and

from 1.064 to 2.987 for conventional portfolios (panel C). Finally, results show that averages of monthly number of firms in the Islamic portfolios (panel B) range from 7.81 to 8.41, whereas, that range is around 14.74 to 16.51 in the conventional portfolios (panel C).

7.2.2. Time-Series Regressions Results

Examining the existence of a common Islamic risk factor in Saudi stock returns is developed in three steps. First, utilize a single-factor model. Regressions based on the single-factor model employ only the excess market return portfolio (RM-RF) to explain the excess return on eight stock return portfolios. Second, utilize a three-factor model. Regressions based on the three-factor model employ the excess market return portfolio (RM-RF) and mimicking return portfolios for factors related to size (SMB) and book-to-market equity (HML) to explain the excess return on eight stock return portfolios. Third, utilize a four-factor model. Regressions based on the four-factor model employ the excess market return portfolio (RM-RF) and mimicking return portfolios for factors related to size (SMB), book-to-market equity (HML), and the negative Islamic-effect (CMI) to explain the excess return on eight stock return portfolios.

Note that results from the four-factor model show that the model works very well, but the single-factor and three-factor models help explain why.

Table 5 shows the results from the single-factor model. The results show that the excess return on the market portfolio (RM-RF) do indeed, as expected, capture significant amount of variation in stock returns. The β coefficients from all regressions are positive and highly significant at 1 percent. Furthermore, the results show that both Islamic-small portfolios (ISL and ISH) are less sensitive to market movements than their corresponding conventional-small portfolios (CSL and CSH). The βs for ISL and ISH portfolios are 1.117

and 1.152, whereas the βs for CSL and CSH portfolios are 1.311 and 1.257, respectively. The opposite is true when looking at the big-size quintiles. That is, Islamic-big portfolios are more sensitive to market movements than conventional-big portfolios. The βs for IBL and IBH portfolios are 1.104 and 0.772, whereas the βs for CBL and CBH portfolios are 0.614 and 0.672, respectively.

Table 5: Single-Factor Model

This table reports the results from the single-factor model. The dependent variables are eight value-weighted excess return portfolios formed on size (small and big), book-to-market equity (low and high), and *Shariah* compliancy (Islamic and conventional). The independent variable is only the excess market return portfolio (RM-RF). The sample period is from January 2003 to April 2011 (monthly data). The proxy for the risk-free rate is the monthly Saudi Interbank Offering Rate (SIBOR) with one-month maturity. All standard errors are corrected for heteroscedasticity problems using White's (1980) correction test. s(e) is standard error of regression.

$$R_{pt} - RF_t = \alpha_p + \beta_p\,(RM_t - RF_t) + \varepsilon_{pt}$$

	Size Quintile		Book to Market (BM) Quintiles			
			Islamic		Conventional	
			Low	High	Low	High
α	Small	Coef	-0.002	-0.001	-0.005	0.006
		T-stat	-0.403	-0.210	-0.967	1.133
	Big	Coef	-0.002	0.001	0.000	0.004
		T-stat	-0.368	0.255	-0.071	0.768
β	Small	Coef	1.117	1.152	1.311	1.257
		T-stat	20.231***	18.013***	22.486***	22.503***
	Big	Coef	1.104	0.772	0.614	0.672
		T-stat	9.071***	13.269***	7.096***	11.794***
s(e)	Small		5.18%	6.51%	5.46%	5.44%
	Big		7.34%	5.30%	6.30%	5.16%
Adj. R-Squared	Small		84.90%	79.00%	87.40%	86.60%
	Big		73.10%	71.90%	53.20%	67.10%

*, **, *** significant at 10%, 5%, 1%, respectively

Even though the excess market return portfolio (RM-RF) seems to capture significant amount of common variation in stock returns, the adjusted R-squared results indicate that there is plenty of room for other factors to also capture common variation in stock returns. For example, the highest (lowest) adjusted R-squared value among Islamic

portfolios is only 84.90 (71.90) percent for the ISL (IBH) portfolio. And the highest (lowest) adjusted R-squared value among conventional portfolios is only 87.40 (53.20) percent for the CSL (CBL) portfolio.

Finally, testing the hypothesis of zero intercepts is one way to test how well the average risk premium for the market risk factor can explain the cross-sectional average returns of all eight portfolios. The results from (Table 5) indicate that all intercepts are economically low (indistinguishable from zero) and insignificant.

Table 6 shows the results from the three-factor model after adding the SMB and HML to the excess market return portfolio (RM-RF). The results indicate that still the excess market return portfolio (RM-RF) captures significant amount of common variation in stock returns. All βs are positive and highly significant at 1 percent. Also, the results show that still small-Islamic portfolios are less sensitive to the market than small-conventional portfolios, and big-Islamic portfolios are more sensitive to the market than big-conventional portfolios.

The results of all SMB coefficients (s) reveal that they are all highly significant at 1 percent which means that SMB clearly captures common variation in stock returns that is missed by both: the excess market portfolio (RM-RF) and HML. Furthermore, the results confirm the negative relationship between average return and size. In both book-to-market equity quintiles (low and high) for both Islamic and conventional portfolios, SMB coefficients decrease by around 200 percent when moving from the small- to the big-size quintile.

Similarly, the results of all HML coefficients (h) reveal that they are all highly significant, except for the coefficient of the conventional-big-low (CBL) portfolio. This

means that HML, in general, captures common variation in stock returns that is missed by both: the excess market return portfolio (RM-RF) and SMB. Furthermore, the results confirm the positive relationship between average return and book-to-market equity. In both size quintiles (small and big) for both Islamic and conventional portfolios, HML coefficients increase when moving from the low to the high book-to-market equity quintile.

Table 6: Three-Factor Model

This table reports the results from the three-factor model. The dependent variables are eight value-weighted excess return portfolios formed on size (small and big), book-to-market equity (low and high), and *Shariah* compliancy (Islamic and conventional). The independent variables are the excess market return portfolio (RM-RF) and portfolios meant to mimic the underlying risk factors in returns related to size (SMB) and book-to-market equity (HML). The sample period is from January 2003 to April 2011 (monthly data). The proxy for the risk-free rate is the monthly Saudi Interbank Offering Rate (SIBOR) with one-month maturity. All standard errors are corrected for heteroscedasticity problems using White's (1980) correction test. s(e) is standard error of regression.

$$R_{pt} - RF_t = \alpha_p + \beta_p\,(RM_t - RF_t) + s_p\ SMB_t + h_p\ HML_t + \varepsilon_{pt}$$

	Size Quintile		Book to Market (BM) Quintiles			
			Islamic		Conventional	
			Low	High	Low	High
α	Small	Coef	0.001	-0.005	-0.001	0.005
		T-stat	0.369	-1.213	-0.389	1.358
	Big	Coef	0.002	-0.002	-0.002	0.002
		T-stat	0.330	-0.425	-0.393	0.518
β	Small	Coef	0.896	1.011	1.028	1.065
		T-stat	18.348***	18.693***	27.588***	20.460***
	Big	Coef	1.206	0.998	0.869	0.927
		T-stat	14.859***	14.901***	11.408***	16.193***
s	Small	Coef	0.435	0.483	0.553	0.530
		T-stat	5.133***	6.840***	9.948***	6.214***
	Big	Coef	-0.405	-0.445	-0.582	-0.568
		T-stat	-4.446***	-3.816***	-7.094***	-6.608***
h	Small	Coef	-0.535	0.833	-0.704	0.406
		T-stat	-4.089***	4.502***	-10.133***	3.250***
	Big	Coef	-0.921	0.530	0.160	0.231
		T-stat	-2.645***	4.116***	0.611	2.335**
s(e)	Small		3.90%	4.30%	3.20%	3.64%
	Big		5.56%	4.02%	5.01%	3.49%
Adj. R-Squared	Small		91.40%	90.90%	95.70%	94.00%
	Big		84.60%	83.80%	70.40%	84.90%

*, **, *** significant at 10%, 5%, 1%, respectively

Overall, the significant loadings on all three risk factors indicate that they capture strong common variation in stock returns. Thus, it is not surprising to observe a large increase in the adjusted R-squared when moving from the single-factor model to the three-factor model. The results, indeed, indicate that the three-factor model is a better fit than the single-factor model in explaining the excess return of all eight portfolios because all adjusted R-squared values from the three-factor model are higher than that from the single-factor model.

For example, results from regressing the Islamic portfolios indicate that the highest (lowest) adjusted R-squared value belongs to the ISL (IBH) portfolio and it increased from 84.90 (71.90) percent in the single-factor model to 91.40 (83.80) percent in the three-factor model. Also, results from regressing the conventional portfolios indicate that the highest (lowest) adjusted R-squared value belongs to the CSL (CBL) portfolio and it increased from 87.40 (53.20) percent in the single-factor model to 95.70 (70.40) percent in the three-factor model.

Also, the standard error s(e) of regression results, which are considered a proxy for the diversifiable risk, indicate that the three-factor model is superior to the single-factor model in capturing common variation in stock returns. Results indicate that all s(e) values of all eight portfolios are lower than those from the single-factor model. For example, results from regressing the Islamic (conventional) portfolios indicate that the highest s(e) value belongs to the IBL (CBL) portfolio and it decreased from 7.34 (6.30) percent in the single-factor model to 5.56 (5.01) percent in the three-factor model. Finally, the results from testing the hypothesis of zero intercepts indicate that all intercepts are economically low (indistinguishable from zero) and insignificant.

Table 7: Four-Factor Model

This table reports the results from the four-factor model. The dependent variables are eight value-weighted excess return portfolios formed on size (small and big), book-to-market equity (low and high), and *Shariah* compliancy (Islamic and conventional). The independent variables are the excess market return portfolio (RM-RF) and portfolios meant to mimic the underlying risk factors in returns related to size (SMB), book-to-market equity (HML), and the negative Islamic-effect (CMI). The sample period is from January 2003 to April 2011 (monthly data). The proxy for the risk-free rate is the monthly Saudi Interbank Offering Rate (SIBOR) with one-month maturity. All standard errors are corrected for heteroscedasticity problems using White's (1980) correction test. s(e) is standard error of regression.

$$R_{pt} - RF_t = \alpha_p + \beta_p\,(RM_t - RF_t) + s_p\,SMB_t + h_p\,HML_t + i_p\,CMI_t + \varepsilon_{pt}$$

	Size Quintile		Book to Market (BM) Quintiles			
			Islamic		Conventional	
			Low	High	Low	High
α	Small	Coef	0.002	-0.004	-0.002	0.004
		T-stat	0.516	-1.097	-0.623	1.284
	Big	Coef	0.003	-0.001	-0.003	0.001
		T-stat	0.696	-0.31	-0.84	0.401
β	Small	Coef	0.879	0.982	1.047	1.092
		T-stat	20.723***	23.054***	29.791***	29.631***
	Big	Coef	1.161	0.978	0.913	0.947
		T-stat	19.188***	18.516***	17.442***	21.308***
s	Small	Coef	0.424	0.465	0.564	0.547
		T-stat	5.744***	7.887***	10.233***	9.806***
	Big	Coef	-0.433	-0.456	-0.556	-0.555
		T-stat	-3.708***	-4.746***	-6.795***	-8.413***
h	Small	Coef	-0.52	0.857	-0.720	0.383
		T-stat	-2.999***	7.141***	-7.484***	3.998***
	Big	Coef	-0.883	0.546	0.123	0.214
		T-stat	-3.819***	3.536***	0.854	2.592**
i	Small	Coef	-0.316	-0.524	0.345	0.495
		T-stat	-2.036**	-3.875***	3.486***	4.781***
	Big	Coef	-0.814	-0.347	0.785	0.376
		T-stat	-4.397***	-2.626**	5.543***	3.778***
s(e)	Small		3.68%	3.71%	2.86%	3.00%
	Big		4.40%	3.76%	3.78%	3.13%
Adj. R-Squared	Small		92.30%	93.20%	96.50%	95.90%
	Big		90.40%	85.80%	83.20%	87.90%

*, **, *** significant at 10%, 5%, 1%, respectively

Table 7 shows the results from the four-factor model after augmenting CMI, which is a portfolio mimicking the risk factor in returns related to the negative Islamic-effect, to the three-factor model. The results of β, s, and h coefficients are very much similar to those

obtained from the three-factor model (Table 6). However, the new issue in (Table 7) is the results of the (i) coefficients, which are loadings on the Islamic risk factor (CMI). As hypothesized, the loadings on CMI for all Islamic portfolios: ISL (-0.316), ISH (-0.524), IBL (-0.814), and IBH (-0.347) are negative and highly significant at 5, 1, 1, and 5 percent, respectively. Also, loadings on CMI for all conventional portfolios: CSL (0.345), CSH (0.495), CBL (0.785), and CBH (0.376) are positive and highly significant at 1 percent.

These results indicate that there is a significant negative relationship between Saudi Islamic firms and average returns, and a significant positive relationship between Saudi conventional firms and average returns. These results are also considered clear evidence that CMI captures common variation in stock returns that are not captured by the (RM-RF), SMB, and HML.

Furthermore, the adjusted R-squared results show that the four-factor model that includes CMI is considered a better fit than the single-factor and the three-factor models in explaining the excess return of all eight stock portfolios. That is, when CMI is added in the four-factor model, all adjusted R-squared values increase and are considered the highest relative to the adjusted R-squared values obtained from both the single-factor model and the three-factor model.

Furthermore, all standard error of regression s(e) values obtained from the four-factor model are considered lower than those obtained from either the single-factor or the three-factor models. This supports the notion that the four-factor model is superior to both the single-factor and the three-factor models in capturing common variation in stock returns. The highest s(e) value when Islamic portfolios are regressed is only 4.40 percent and it belongs to the IBL portfolio. It is lower than the 5.56 percent obtained from the

three-factor model. Also, the highest s(e) value when conventional portfolios are regressed is only 3.78 percent and it belongs to CBL portfolio. It is lower than the 5.01 percent obtained from the three-factor model.

Finally, the results from testing the hypothesis of zero intercepts indicate that all intercepts are economically low (indistinguishable from zero) and insignificant. Such results suggest that a model that uses (RM-RF), SMB, HML, and CMI does, indeed, a good job in explaining the cross-sectional average returns of Saudi common stocks; at least during the period from January 2003 to April 2011.

8. Conclusion

This paper attempts to lessen the gap in the Islamic finance and investment literature by providing new insights to whether the adherence to the *Shariah* law is associated with any costs. This is done by investigating the Islamic-effect issue in the cross-sectional stock return context. To my knowledge, this is the first paper that investigates the Islamic-effect issue in such context.

The paper starts from the assessment that there is a negative relationship between Islamic firms and average return due to the application of Islamic finance mandates or *Shariah* screens. This assessment is investigated by looking at dispersion in stock return between Islamic and conventional firms in Saudi Arabia during the period from January 2003 to April 2011. The results do confirm that negative relationship and show that there is a small cost from adhering to the *Shariah* law. That is, Saudi Islamic stocks, on average, compensate investors with slightly less return than Saudi conventional stocks. In this paper, that negative relationship between Islamic firms in Saudi Arabia and average return is referred to as the "negative Islamic-effect."

Then this paper examines if that negative Islamic-effect is associated with a common (shared and undiversified) risk factor in returns that might explain the negative relationship between Saudi Islamic firms and average returns. This is done using time-series regressions similar to those developed by Fama & French (1993). The results indicate that the portfolio that is constructed to mimic the risk factor related to the negative Islamic-effect (CMI), which can also be referred to as the "Islamic risk factor", do capture strong common variation in stock returns even in the presence of the excess market return portfolio (RM-RF) and portfolios meant to mimic the risk factors related to size (SMB) and book-to-market equity (HML).

This indicates that the dispersion in average return of Saudi common stocks can be explained by a new risk story other than the market, size, and book-to-market equity risk stories. In other words, even when the market, size, and book-to-market equity are controlled, Saudi firms that apply Islamic finance mandates are considered less risky than Saudi firms that do not apply such mandates (adhering to the *Shariah* law makes Saudi firms have less risk exposure). As a result, investors holding Saudi Islamic stocks should require lower rate of return than investors holding Saudi conventional stocks because investors holding Saudi Islamic stocks assume less risk.

The main reason for existence of the Islamic risk factor is the fact that adhering to the *Shariah* law represents more than just a preference of Muslim investors. That is, adhering to the *Shariah* law is an issue that is related to firm fundamentals such as the firm's profitability, riskiness, earnings, revenues, leverage, and all other fundamental issues. And as long as firm fundamentals are affected, it follows that asset prices (stock prices) would also be affected as well.

Furthermore, results show that the four-factor model that controls for the Islamic risk factor (CMI) does a better job than both the single-factor and the three-factor models in explaining dispersion in average return of Saudi common stocks. Such findings suggest that using a model that controls for the Islamic-effect issue, like the proposed four-factor model, is more appropriate in all Islamic finance applications that require estimates of expected stock returns than using any other model that does not control for such effect. This is because the Islamic-effect issue is considered common, systematic, and undiversified risk that affects asset prices and therefore must be controlled in all these applications.

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Chapter 3: Islamic Mutual Funds
A Case Study in Saudi Arabia

1. Introduction

The number of Islamic mutual funds and the market value of these funds have experienced an excellent growth since the early period of the 1990s. This, as a result, gave birth to several empirical studies that want to investigate the performance and riskiness of these funds relative to conventional mutual funds such as [Abdullah, Hassan, & Mohamad (2007), Abderrezak (2008), and Merdad, Hassan, & Alhenawi (2010)] as well as relative to both Islamic and conventional market indices such as [Elfakhani & Hassan (2005), Kräussl & Hayat (2008), and Hoepner, Rammal, & Rezec (2009)].

However, given that the Islamic finance and investment industry is relatively new compared to its conventional counterpart and the literature on Islamic mutual funds is still at its infancy, findings across these empirical studies still do not provide a definite answer to the most important question raised in that literature: Is investing in Islamic mutual funds associated with any cost? That is, some of these studies conclude that investing in Islamic mutual funds comes at no cost where their findings indicate that there is no evidence that there exist any performance differences between Islamic and conventional funds as well as between Islamic mutual funds and both Islamic and conventional market indices. On the other hand, there are other studies that conclude that there is a cost associated with investing in Islamic mutual funds where such funds provide investors with lower return than conventional mutual funds.

Now, to critically investigate whether investing in Islamic mutual funds is associated with any cost, this paper carries out the investigation to Saudi Arabia. It is worthy to note

that there are two main reasons that make Saudi Arabia an ideal experiential environment to conduct this empirical study. First, Saudi Arabia alone possesses the largest amount of *Shariah*-compliant fund assets worldwide (it possesses around 52 percent of the total *Shariah*-compliant fund assets worldwide).[14] Second, Saudi Arabia is considered one of the few countries that strictly adhere to the *Shariah* law. Thus, studying Islamic mutual funds located in Saudi Arabia is a good place to start investigating the Islamic-effect issue in mutual funds.

Overall, the main objective of this paper is to investigate if there is any cost from investing in Islamic mutual funds by assessing the performance and riskiness of Saudi Islamic mutual funds relative to Saudi conventional mutual funds as well as relative to different Islamic and conventional market benchmarks. This investigation covers the period from July 2004 to January 2010. It is worthy to note that Merdad, Hassan, & Alhenawi (2010) address the same issue, but their paper is only a case study that focuses on mutual funds managed by HSBC Saudi Arabia Limited. To my knowledge, this is the first paper that comprehensively examines the Islamic mutual fund issue in the context of Saudi Arabia.

The contribution of this paper to the Islamic mutual fund literature is fivefold. First, this study uses a very unique sample of Saudi mutual funds: out of a total of 234 mutual funds available in Saudi Arabia as of April 1, 2010, this paper uses a sample of 143 Saudi mutual funds (96 funds are Islamic and 47 funds are conventional) from July 2004 to

[14] See "GCC Mutual Fund Industry Survey 2010." Dr. Gıyas Gökkent is the Group Chief Economist in the National Bank of Abu Dhabi and he is the editor and author of the "GCC Mutual Fund Industry Survey 2010" which was released on Feb 9, 2011. The study can be found in the following link: http://www.nbad.com/economic/countries/gcc_mf_industry_survey2010.php.
Note that *Shariah* is an Arabic word that refers to the legislative framework that regulates all aspects of life, both private and public.

January 2010. That sample very much represents the Saudi mutual fund industry in terms of geographical focuses, diversity, investment objectives, *Shariah* compliancy, and institutional management. This is an important aspect, especially when discussing Saudi Islamic mutual funds.

That is, the sample of Saudi Islamic mutual funds used in this empirical study is superior to any other sample of Saudi Islamic mutual funds used in any other study of Islamic mutual funds. This is because studies that examine the Islamic mutual fund issue like Abderrezak (2008), Kräussl & Hayat (2008), and Hoepner, Rammal, & Rezec (2009) have relatively a small number of Saudi Islamic mutual funds in their entire sample set compared to that used in this sample set. This is very much understandable given that their objective is to examine Islamic mutual funds in general not Saudi Islamic mutual funds in particular. As a result, findings of these studies better fit Islamic mutual funds than Saudi Islamic mutual funds.

On the other hand, since this study uses a sample of only Saudi mutual funds and the fact that such sample fairly represents the entire industry of Saudi mutual funds, including Islamic mutual funds, then findings from this study are going to be more relevant to Saudi Islamic mutual funds. Nevertheless, it is worthy to note that assessing Saudi Islamic mutual funds is a key factor in assessing Islamic mutual funds in general. This is because, as mentioned earlier, the largest amount of *Shariah*-compliant fund assets worldwide is located in Saudi Arabia.

Second, studies like Ahmed (2001) and Dabbeeru (2006a, 2006b, and 2006c) are considered among the first to provide a primer analysis on the performance of Saudi Arabia mutual funds. However, their findings very much lack statistical sophistication. This paper,

however, overcomes this issue by employing very commonly known methods, statistical tests, and models including a constructed multifactor model in the spirit of Carhart (1997) four-factor model to control for different equity investment styles when assessing the risk-return profile of Saudi mutual funds.

Third, one way to enhance comparability is to control for different geographical or regional focuses of mutual funds. In Saudi Arabia, mutual funds have six different regional focuses: local, international, Arab, Asia, US, and Europe. To facilitate comparison, all mutual funds that are US-, Asia-, Europe-, and internationally-focused are grouped together under one regional focus called "internationally-focused funds." As a result, the sample of Saudi mutual funds used in this empirical study has only three main geographical focuses: local, Arab, and international. Locally-focused funds are funds that invest in assets located only in Saudi Arabia. Arab-focused funds are funds that invest in assets located only in countries that are members in the Arab league, excluding Saudi Arabia. Internationally-focused funds are funds that invest in assets located in all countries, excluding Saudi Arabia and those that belong in the above Arab group.

Fourth, to enhance reliability and robustness of results, this paper not only explores the Saudi Islamic mutual fund issue during the overall sample period (July 2004 to January 2010), but also during three other periods that are based on trends in the Saudi Arabian stock market. These periods are: bull period (July 2004 to February 2006), bear period (March 2006 to January 2010), and the recent 2008-financial crisis period (September 2008 to January 2010).

Fifth, the methodology used to assess the risk-return profile of funds is not based on using individual funds, but instead it is based on using a portfolio approach in order to

diversify away fund-specific risks. Thus, Saudi mutual funds in the selected sample are grouped into portfolios based on the following characteristics: the funds' geographical focuses (local, Arab, and international), the funds' *Shariah* compliancy (Islamic and conventional), and four different Saudi stock market trends (overall, bull, bear, and the recent 2008 financial crisis periods).

Findings suggest that there is a benefit from adhering to the *Shariah* law when locally-focused fund portfolios are investigated. On the other hand, there is a cost from adhering to the *Shariah* law when internationally-focused fund portfolios are investigated. Finally, when Arab-focused fund portfolios are investigated, findings suggest that there is neither a cost nor a benefit from adhering to the *Shariah* law. All these results hold regardless of the sample period under examination (overall, bull, bear, and financial crisis). Also, all these results are robust regardless of different appropriate market benchmarks used to adjust for risk.

The rest of the paper unfolds as follows: section 2 discusses Islamic mutual funds. Section 3 discusses the previous literature. Section 4 discusses Saudi Arabia's economy and stock market. Section 5 discusses Saudi Arabia's mutual funds. Section 6 provides the hypothesis. Section 7 covers the data for the empirical study. Section 8 discusses the methodology. Section 9 provides the empirical results. Section 10 discusses the empirical results. And finally section 11 is the conclusion.

2. Islamic Mutual Funds

Many money managers and financial institutions, whether they are from the Arab or western world, start to offer different *Shariah*-compliant assets that fit Muslim religious

preferences. One important and highly demanded asset among these *Shariah*-compliant assets is the Islamic mutual fund.

2.1. History of Islamic Mutual Funds

According to Kräussl & Hayat (2008), the first Islamic equity fund (IEF) was founded in 1986 by the North American Islamic Trust to manage the funding of mosques in the US. Since then and until 1992, the number of Islamic funds and the value of assets invested in them were growing at a decreasing rate. However, after 1992, Islamic funds experienced an excellent growth mainly due to the consensus that *Shariah* scholars reached during the early period of the 1990s regarding the permissibility of equity investing. For example, according to Elfakhani & Hassan (2005), the number of Islamic funds increased from eight funds prior to 1992 to 95 funds with a total market value of USD 5 billion in 2000. Furthermore, McKenzie (2010, 2011) documents that the number of Islamic funds grew from 200 funds in 2003 (with a total market value of USD 20 billion) to 760 funds by the end of the first quarter of 2010 (with a total market value of USD 52.3 billion). Equity funds had the lion's share with almost 35 percent of these Islamic funds.

All these statistics show how popular these Islamic mutual funds became in a short period of time. It is worthy to note that this popularity of Islamic mutual funds is not only among Muslim Investors, but also among non-Muslim investors as well. There are two factors that could explain the reasons why these funds are gaining tremendous popularity among both Muslim and non-Muslim investors.

The first factor is very intuitive and does not distinguish whether the investor is Muslim or non-Muslim. That is, both Muslim and non-Muslim investors are attracted to Islamic mutual funds because of the already existing appealing features that are embedded

in mutual funds in general regardless if these funds are Islamic or conventional. That is, mutual funds, in general, are considered an ideal choice for investors seeking liquidity, portfolio diversification, and investment expertise. Also, mutual funds provide investors with more flexibility in the sense that they provide investors with a wide range of funds that have different asset allocations, various objectives, and a number of investment styles so that investors can choose what best fit their investment goals, risk tolerance, liquidity needs, as well as religious and ethical preferences.

The second factor, however, distinguishes between the two types of investors. To elaborate, Muslim investors, like all other investors, want to benefit and prosper from the developments in both capital and financial markets. However, Muslim investors want to do so while preserving their Islamic values and morals. Fortunately, the birth of Islamic mutual funds provides them with opportunity to participate in these capital and financial markets without the fear that doing so will come at the cost of their Islamic identity and values. And this is the main reason why these Islamic funds are gaining a lot of attention and popularity among Muslim investors.

On the other hand, the popularity of Islamic mutual funds among non-Muslim investors does not come from the fact that these funds are comfortable with the *Shariah* law. In fact, non-Muslim investors are not even concerned whether these funds are adhering to the *Shariah* law or not. Instead, the popularity of these Islamic funds comes from the fact that these funds possess an ethical nature. This ethical nature is a result of the restrictions that *Shariah* law imposes on these funds. For example, Islamic funds are not allowed to invest in firms that deal with tobacco, adult entertainment, non-medical and toxic drugs, gambling, etc. This ethical-nature feature is the main reason why some non-

Muslim investors are attracted to such funds because they view investing in these Islamic funds as a form of Social Responsibility Investing (SRI).

Due to this unprecedented popularity and growth in Islamic mutual funds, several proper benchmarks were launch by the late 1990s in order to help benchmark the performance of these Islamic funds. For example, there is the Dow Jones Islamic market index (DJIMI) which was launched in 1999, FTSE Global Islamic Index Series (GIIS) which was launched at the end of 1998, MSCI global Islamic indices, and the Global Gulf Cooperation Council (GCC) Islamic index which was launched in 2006.

2.2. The *Shariah* Law Effect on Islamic Mutual Funds

Because of their adherence to the *Shariah* law, Islamic mutual funds differ in many aspects from conventional mutual fund. The following discusses two of these aspects:

The first aspect is the asset allocation aspect. Managers of Islamic mutual funds must only invest in assets that are in accordance with the *Shariah* law. That is, fund managers are restricted to invest in only securities that pass both the ethical and the financial filters.[15] This causes the asset allocation of Islamic mutual funds to be completely different from that of conventional mutual funds. In other words, the investment universe of Islamic funds is considerably smaller than that of conventional funds.

The second aspect is the income purification aspect. *Shariah* law is a law that is concerned about increasing social welfare, enhancing public good, implementing economic justice, and providing sustenance to the economically unfortunate. Thus, *Shariah* law, under certain conditions, requires all Muslims to pay a form of charity called *zakat* to those in need and those that are economically unfortunate to purify both wealth and earned

[15] Please see Chapter 1: Islamic Finance, section 4.1: Screening for *Shariah-Compliant* Stocks for more details on the ethical and financial filters.

income. *Zakat* is paid on Muslim's personal wealth if such wealth is held idle for one lunar year, is considered over what is necessary to satisfy basic needs, and exceeds a minimum amount (called *nisab* in Arabic).

It is worthy to note that different types of assets have different *zakat* rates. The *zakat* rate for most forms of monetary wealth and earned income is 2.5 percent. This implies that if all *zakat* conditions are met, a 2.5 percent on any generated income from mutual funds, even if these funds are Islamic, must be paid by Muslim investors as a form of purification.

Another form of income purification is purifying "impure" earnings. Note that partially contaminated Islamic firms (firms that are Islamic but have a small portion of their earnings generated from impermissible activities) can still keep their Islamic title as long as they pass the financial filter. This implies that there is no problem for Islamic mutual funds to extend their investment universe to include such firms.

If managers of Islamic mutual funds decide to include these partially contaminated firms, then *Shariah* scholars argue that the portion of earnings that is generated from impermissible activities (impure earnings) should be cleansed or purified by donating such earnings to charity. For example if a firm has a three percent interest-based income, then three percent of every dividend payment must be donated to charities as a form of purification.

The purification of impure earnings is usually executed in two ways. The first way is done by Islamic fund managers before distributing any income. The second way is by reporting to investors the necessary financial ratios so that they can purify earnings themselves.

While all *Shariah* scholars agree on purifying dividends and believe that it is a must, purifying capital gains is still debatable, see Obaidullah (2005). That is, some *Shariah* scholars argue that there is no need to purify capital gains while others see otherwise. As for those that argue that there is no need to purify capital gains, they assert that the stock price of a partially contaminated Islamic firm represents the price of only the permissible (*halal*) assets. This is because the small portion of assets created from impure activities is considered negligible and to some extend unknown when compared to the firm's bulk of *halal* assets. As for those that argue that capital gains must be purified, they assert that what is prohibited still remains prohibited and needs to be avoided even if it was negligible. Based on this view, the stock price of a partially contaminated Islamic firm represents the price of both permissible (*halal*) and impure (*haram*) assets. Therefore, capital gains need to be cleanses or purified.

3. Previous Literature

This section contains two subsections: previous literature on conventional mutual funds (section 3.1) and previous literature on Islamic mutual funds (section 3.2).

3.1. Previous Literature on Conventional Mutual Funds

There are tremendous studies that have been addressing the mutual funds' performance issue and some of these studies go back to the 1960s. For example, based on the capital asset pricing model (CAPM) developed by Sharpe (1964) and Lintner (1965), Jensen (1967) derived a risk-adjusted performance measure (known as the 'Jensen alpha') in order to estimate the fund manager's ability to earn an abnormal return. He uses this measure to examine the ability of 115 mutual fund managers to earn abnormal returns during the period from 1945 to 1964. Jensen document that, on average, these funds are

not able to outperform the market benchmark of the Standard and Poor Composite 500 Price Index (S&P500).

Using a sample of 123 mutual funds during the period from 1960 to 1969, McDonald (1974) also finds that the majority of funds did not outperform the New York Stock Exchange (NYSE).

Also Kon & Jen (1979) use a sample of 49 mutual funds from January 1960 to December 1971 to examine the non-stationary of the market-related risk for mutual funds over time. They divide their sample into different risk regimes and then run regular OLS regressions for each regime. They find that there are multiple levels of beta that exists for 37 funds. They conclude that many funds are engaging in market timing activities.

Kon (1983) examines the existence of both the selectivity and market timing skills using 37 mutual funds from January 1960 to June 1976. He finds that six funds have positive performance in both timing and selectivity and 22 funds exhibit a trade-off between the two activities. However, Chen, Cheng, Rahman, & Chan (1992) find that there exist no market timing skills using 93 mutual funds from January 1977 to March 1984.

Using 279 mutual funds from December 31, 1974 to December 31, 1984; Grinblantt & Titman (1992) find that there are performance differences between funds and they attribute these differences to the fund manager's ability to earn abnormal returns.

Using the Treynor and Mazuy (1966) model; Annuar, Shamsher, & Ngu (1997) examine the existence of both selectivity and market timing skills of 31 Malaysian funds from July 1990 to August 1995. Their findings show that there is statistical evidence that these funds possess selectivity skills, but not market timing skills. Furthermore, they find that these funds did not achieve their expected level of diversification.

Shamsher, Annuar, & Taufiq (2000) examine 41 actively- and passively-managed Malaysian funds during the period from 1995 to 1999. They find no statistical significance when examining the performance of both actively- and passively-managed funds using measures such as Sharpe, Treynor, and Jensen alpha. Furthermore, they find no differences in the selection skills between actively- and passively-managed funds. Also, they find that both types of funds possess no market timing abilities.

Finally, Dabbeeru provides three simple studies as a primer analysis on the performance of mutual funds in Saudi Arabia. Unfortunately, all three studies lack statistical sophistication. In his first paper, Dabbeeru (2006a) discusses mutual funds in Saudi Arabia during the period from January 1, 2006 to June 15, 2006. He employs only the standard deviation, risk per return, and non risk-adjusted returns to assess the performance and riskiness of Saudi mutual funds. In his second paper, Dabbeeru (2006b) examines the performance of 97 Saudi equity mutual funds during the period from February 2005 to October 2006. In this study, Dabbeeru examines the past performance of these funds where he reports the year-to-date (YTD) returns for both funds and the Saudi market index (Tadawul).[16] Finally, in his final paper, Dabbeeru (2006c) examines balanced, debt, and liquid funds instead of equity funds.

3.2. Previous Literature on Islamic Mutual Funds

Ahmed (2001) provides a primer on the performance of 13 Islamic equity funds in Saudi Arabia. These funds are managed by only two institutional managers: the National Commercial Bank (NCB) and Al-Baraka Group. However, no statistical tests are reported in his study.

[16] Tadawul is now called Tadawul All Share Index (TASI).

Elfakhani & Hassan (2005) use a sample of 46 Islamic mutual funds from January 1, 1997 to August 31, 2002 to examine the performance of Islamic mutual funds relative to Islamic and conventional market benchmarks. They employ different risk-adjusted performance measures such as Sharpe, Treynor, and Jensen alpha. Moreover, they employ an ANOVA statistical test. Overall, their findings suggest that there is no statistical evidence that there exist any performance differences between Islamic funds and the employed market benchmarks. However, their findings suggest that Islamic mutual funds do offer a good hedging opportunity against market downturns.

Abdullah, Hassan, & Mohamad (2007) compare the performance of 14 Islamic funds relative to 51 conventional funds in Malaysia during the period from 1992 to 2001. They employ different measures such as the adjusted Sharpe, Treynor, adjusted Jensen alpha, Modigliani and Modigliani (MM) measure, and the information ratio. They find that conventional funds perform better than Islamic funds during bullish trends; but during bearish trends, Islamic funds perform better. They conclude that Islamic funds offer hedging opportunities against adverse market trends. They also find that conventional funds have diversification levels that are marginally better than Islamic funds, but both funds are unable to achieve at least 50 percent of the market diversification level.

Kräussl & Hayat (2008) use a sample of 59 Islamic equity funds (IEFs) to examine the performance of these funds relative to Islamic and conventional market benchmarks during the period from 2001 to 2006. They employ a set of measures such as the Jensen alpha, Sharpe, Treynor, Modigliani and Modigliani (MM), TT, and the information ratio. They find that, on average, there are no significant performance differences between IEFs and the employed market benchmarks (both Islamic and conventional). However, a closer

look at the bear market of 2002, they document that IEFs significantly outperform the Islamic and conventional market indices using conditional CAPM. Analyzing the risk-return characteristics of IEFs, they find that IEFs possess superior systematic risk-to-return ratios. Therefore, they argue that these IEFs "seem most attractive as part of a larger fully diversified portfolio like a fund of funds."

Abderrezak (2008) examines the performance of 46 Islamic equity funds (IEFs) relative to conventional funds, ethical funds, and Islamic and conventional market indices during the period from January 1997 to August 2002. He employs several methodologies such as the Sharpe ratio, single-factor model, and Fama and French three-factor model. He finds that IEFs are 40 basis points more expensive than their conventional peers. Furthermore, he finds that IEFs consistently underperform their respective Islamic and conventional market benchmarks. Finally, he finds that there are no performance differences between IEFs and ethical funds.

Muhammad & Mokhtar (2008) use weekly net asset values (NAVs) of nine Islamic equity funds in Malaysia in order to examine their performance relative to the Islamic market index, Kuala Lumpur Syariah Index (KLSI), for the period from 2002 to 2006. To assess the performance of these funds, they employ the Sharpe and Treynor ratios. They find that eight of these funds underperform the KLSI. However, they find a bag of mixed results when they employ the standard deviation, coefficient of variation, and the systematic risk (beta) to assess the riskiness of these funds.

Hoepner, Rammal, & Rezec (2009) use a unique dataset of 262 Islamic equity funds from 20 countries and four regions in order to examine the performance of these funds relative to constructed portfolios that have exposure to national, regional, and global

markets. Furthermore, they control for different investment styles by employing a conditional three level Carhart model. The results show that Islamic funds from eight nations (mostly from the western regions) significantly underperform their respective equity market benchmarks and funds from only three nations outperform their respective market benchmarks and that Islamic funds are biased towards small stocks. Furthermore, they find that Islamic funds from the Gulf Cooperation Council (GCC) and Malaysia do not significantly underperform their respective market benchmarks nor they are biased towards small stocks. Finally, they argue that Islamic equity funds can offer hedging opportunities because their investment universe is limited to low debt-to-equity ratio stocks.

Merdad, Hassan, & Alhenawi (2010) use a sample of 28 Saudi mutual funds managed by HSBC in order to examine the performance of 12 Islamic funds relative to 16 conventional funds during the period from January 2003 to January 2010. They use several performance measures such as the Sharpe, Treynor, Modigliani and Modigliani (MM), TT, and Jensen alpha. Furthermore, they employ the Treynor and Mazuy model to examine the Saudi funds' selectivity and market timing abilities. They find that Islamic funds underperform conventional funds during both full and bullish periods, but outperform during bearish and financial crisis periods. Furthermore, they find that HSBC managers are good at showing timing and selectivity skills for Islamic funds during the bearish period, and for conventional funds during the bullish period. They also assert that Islamic mutual funds do offer hedging opportunities during economic downturns.

4. Saudi Arabia's Economy and Stock Market

Saudi Arabia is an oil-based economy and its economy is considered the largest in the Middle Eastern region. According to Jadaw Investment 2010 Annual Report, Saudi Arabia's nominal gross domestic product (GDP) is around USD 435.8 billion and is expected to reach USD 507.3 billion in 2012.[17] Furthermore, Saudi Arabia is considered the largest oil producer, oil exporter, and oil proven reserves possessor worldwide.[18] It has almost 20 percent of the world's proven reserves, and has a leading role in OPEC.

The official currency is the Saudi Arabian riyal (SAR) and since 1986 it has been effectively pegged to the US dollar where USD 1 = 3.75 SAR. Furthermore, the Saudi stock market is also considered by far the largest in the Middle Eastern region. As of January 31, 2010, there are 135 firms listed on the exchange and the total equity market capitalization reached SAR 1,242.09 billion (around USD 331.22 billion).[19]

The market index is called Tadawul All Share Index (TASI) and it reached a market high of 20,634.86 points at the end of February 2006 before it declined to 8,757.04 points at the end of August 2008. Starting from September 2008, the effect of the recent 2008 financial crisis started to become acute. As a result, TASI started to decline until it reached its all time low of 4,130.01 points at the beginning of March 2009.

Overall, the period before March 2006 has all the characteristics of a bullish market in terms of price and trading volume increases. The period from March 2006 until January 2010 is marked by bearish market activities. Finally, the period from September 2008 until

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[17] Source is Jadaw Investment, a pioneer in the field of *Shariah*-compliant investment services: http://jadwa.com/about/pages/annualreports.aspx.

[18] Oil proven reserves are the stock of proved reserves of crude oil in barrels (bbl). Source is CIA world fact book: https://www.cia.gov/library/publications/the-world-factbook/geos/sa.html.

[19] Information is based on the January-2010 monthly Statistical Report issued by the Saudi Stock Exchange (Tadawul).

January 2010 represents the period where the recent financial crisis started to negatively affect economies and financial markets worldwide including Saudi Arabia's economy and stock market.

5. Saudi Arabia's Mutual Funds

Table 1: All Mutual Funds in Saudi Arabia Based on Institutional Managers

The following table presents all 234 mutual funds in Saudi Arabia as of April 1, 2010. Funds are categorized based on institutional managers that manage these funds. The second column shows the name of the institutional manager, the third column shows the number of funds under their management, and the last column is the percentage of funds each manager manages in a descending order.

No	Fund Manager	No. of MFs	%
1	RIYADH CAPITAL	31	**13.25**
2	NCB CAPITAL	27	**11.54**
3	SAMBA CAPITAL & INVESTMENT MANAGEMENT	25	**10.68**
4	HSBC SAUDI ARABIA LIMITED	21	**8.97**
5	ANB INVEST	18	**7.69**
6	SAUDI HOLLANDI CAPITAL	15	**6.41**
7	AL RAJHI CAPITAL	14	**5.98**
8	JADWA INVESTMENT	14	**5.98**
9	CAAM SAUDI FRANSI	12	**5.13**
10	SAIB BNP PARIBAS ASSET MANAGEMENT	10	**4.27**
11	FALCOM FINANCIAL SERVICES	6	**2.56**
12	ALBILAD INVESTMENT	5	**2.14**
13	ALJAZIRA CAPITAL	5	**2.14**
14	KSB CAPITAL GROUP	5	**2.14**
15	AL TAWFEEK FINANCIAL GROUP	3	**1.28**
16	AUDI CAPITAL	3	**1.28**
17	SHUAA CAPITAL SAUDI ARABIA	3	**1.28**
18	ALAWWAL FINANCIAL SERVICES CO	2	**0.85**
19	BAKHEET INVESTMENT GROUP	2	**0.85**
20	GLOBAL INVESTMENT HOUSE SAUDI	2	**0.85**
21	KHALIJIA INVEST	2	**0.85**
22	RASMALA INVESTMENTS SAUDI	2	**0.85**
23	THE INVESTOR FOR SECURITIES	2	**0.85**
24	EFG-HERMES KSA	1	**0.43**
25	MIDDLE EAST FINANCIAL INVESTMENT	1	**0.43**
26	MORGAN STANLEY SAUDI ARABIA	1	**0.43**
27	RANA INVESTMENT	1	**0.43**
28	WATAN INVESTMENT & SECURITIES	1	**0.43**
Total		**234**	**100**

As of April 1, 2010, there are 234 mutual funds in Saudi Arabia managed by 28 financial institutions (Table 1). The results from this table show that Riyadh Capital

manages the largest number of funds with 31 funds (13.25 percent). Following Riyadh Capital are NCB Capital, Samba Capital and Investment Management, and then HSBC Saudi Arabia Limited with 27, 25, and 21 funds (11.54, 10.68, and 8.97 percent), respectively.

The results from (Table 1) also show that there are five financial institutional managers that manage only one fund. This means that these five financial institutional managers manage only 0.43 percent of the total number of mutual funds available in Saudi Arabia. These financial institutional managers are: EFG-Hermes KSA, Middle East Financial Investment, Morgan Stanley Saudi Arabia, Rana Investment, and Watan Investment & Securities.

Table 2: All Mutual Funds in Saudi Arabia Based on Security Type, Geographical Focus, and Investment Goal

The following table presents all 234 mutual funds in Saudi Arabia as of April 1, 2010. Funds are divided based on their security type (stocks, bonds, money markets, trade finance, balanced, real estate, and guar & secure), geographic focus (local, international, US, Europe, Asia, and Arab), and investment goal [growth (G), income (I), income & growth (I&G), and capital preservation (CP)]. The final column presents the percentage of funds in both the security type and geographical focus categories (in a descending order). The final row presents the percentage of funds in each investment goal classification.

No	Security Type and Geographical Focus Categories	Investment Goal Classification				Total No. of MFs	%
		G	I	I&G	CP		
1	**Local stocks**	51	1	5	0	**57**	**24.36**
2	**International stocks**	30	0	3	0	**33**	**14.10**
3	**Balanced international**	17	1	9	3	**30**	**12.82**
4	**Arab stock**	20	0	0	0	**20**	**8.55**
5	**Trade finance Local**	4	8	0	8	**20**	**8.55**
7	**Trade finance International**	2	9	1	2	**14**	**5.98**
8	**Money market local**	1	4	0	6	**11**	**4.70**
9	**Asia stock**	10	0	0	0	**10**	**4.27**
10	**Money market international**	2	3	2	3	**10**	**4.27**
11	**Bond international**	1	2	5	0	**8**	**3.42**
12	**EURO stock**	7	0	0	0	**7**	**2.99**
13	**US stocks**	6	0	0	0	**6**	**2.56**
14	**Balanced local**	3	0	2	0	**5**	**2.14**
15	**Real estate local**	2	0	0	0	**2**	**0.85**
16	**Guar & secure local**	0	0	0	1	**1**	**0.43**
Total		**156**	**28**	**27**	**23**	**234**	**100**
%		**66.67**	**11.97**	**11.54**	**9.83**		

Table 2 presents all mutual funds in Saudi Arabia based on their security type (stocks, bonds, money markets, trade finance, balanced, real estate, and guar & secure), geographic focus (local, international, US, Europe, Asia, and Arab), and investment goal (growth, income, income & growth, and capital preservation,).

There are 16 categories of mutual funds based on their security type and geographical focus. Most funds are locally-focused and invest in equity: 57 out of 234 funds (24.36 percent). There is only one fund that is locally-focused and invests in Guar & secure. Furthermore, funds also vary by investment goals. There are four investment goals under which all funds in Saudi Arabia fall: growth (156 funds, 66.67 percent), income (28 funds, 11.97 percent), income & growth (27 funds, 11.54 percent), and capital preservation (23 funds, 9.83 percent).

Table 3: All Mutual Funds in Saudi Arabia Based on *Shariah* Compliancy and Investment Goal

The following table presents all 234 mutual funds in Saudi Arabia as of April 1, 2010. Funds are broken down based on their *Shariah* compliancy subcategory (Islamic and conventional) and investment goal classification [growth (G), income (I), income & growth (I&G), and capital preservation (CP)]. The percentage of funds is reported for each subcategory and classification.

Subcategory	Investment Goal Classification								Total No. of MFs	%
	G	%	I	%	I&G	%	CP	%		
Islamic Funds	98	**41.88**	19	**8.12**	12	**5.13**	17	**7.26**	**146**	**62.39**
Conventional Funds	58	**24.79**	9	**3.85**	15	**6.41**	6	**2.56**	**88**	**37.61**
Total	**156**		**28**		**27**		**23**		**234**	**100**
%	**66.67**		**11.97**		**11.54**		**9.83**			

Table 3 presents all mutual funds in Saudi Arabia based on their *Shariah* compliancy and investment goal. The new issue in this table is that it shows that Saudi Arabia possesses 146 out of 234 (62.39 percent) Islamic funds, and 88 out 234 (37.61 percent) conventional funds. Furthermore, this table shows that almost 41.88 percent (98 funds) of the total 234 funds are Islamic funds with a growth investment goal, whereas, conventional funds with the same goal are only 24.79 percent (58 funds). Also, Islamic funds are the least

when funds have an Income & growth objective (12 funds, 5.13 percent), whereas, conventional funds are the least when funds have a capital preservation objective (6 funds, 2.56 percent).

6. The hypothesis

There are several restrictions and necessary adaptations to which Islamic mutual funds must commit before they can earn an Islamic title. Due to the nature of these restrictions and necessary adaptations, the following is hypothesized: first, an Islamic mutual fund exposes investors to less risk than a conventional mutual fund. Second, an Islamic mutual fund rewards investors with less return than its conventional mutual fund counterpart.

To understand the development of this hypothesis, consider the following four examples. First, because *Shariah* law prohibits interest (*riba*); Islamic mutual funds can neither invest in securities of firms that finance their assets with interest-based debt nor they can invest in fixed-income instruments. This implies that securities of all interest-based financial institutions (like conventional banks and conventional brokerage firms) as well as all fixed-income instruments (like conventional bonds both corporate and treasury, certificates of deposit (CDs), preferred stocks, and warrants) are excluded from the investment universe of Islamic funds. On the other hand, conventional funds are not restricted from investing in securities of firms that utilize interest-based debt nor they are restricted from investing in fixed-income instruments. As a result, Islamic funds are believed to be inherently less susceptible to financial risk and changes in interest rates than conventional funds.

Second, Islamic mutual funds cannot invest in risky instruments such as toxic assets and derivatives that have adversely affected conventional funds and triggered the recent 2008 global financial crisis.

Third, Islamic funds are restricted from investing in securities of companies whose major portion of revenues are generated from alcohol, life insurance, tobacco, gambling, adult entertainment, pork, and all other unethical related products. However, conventional funds can freely invest in securities across the spectrum of all industries and sectors, including those securities with high risks exposure.

Fourth, Islamic funds cannot utilize many investment trading practices such as trading on margin, financing investments with interest-based debt, engaging in short-selling, speculating, and/or resorting to the future and option markets. This is because most of these practices have elements of *gharar*. On the other hand, conventional funds are not restricted from utilizing any of the available investment trading practices.

Overall, all these restrictions and necessary adaptations to earn an Islamic title make Islamic mutual funds enjoy a considerably smaller investment universe compared to that of conventional mutual funds. Not only that, but also these restrictions and necessary adaptations make Islamic mutual funds less vulnerable to instability and have less risk exposure when compared to conventional mutual funds. This, according to the risk-return tradeoff theory that suggests a positive relationship between risk and return (low risk is associated with low return and high risk is associated with high return), implies that Islamic funds should compensate investors with less return than conventional funds due to the lower level of risk assumed.

7. The Data

This section discusses the data and its sources and it is divided into two subsections: the Saudi mutual fund data (section 7.1) and the multifactor model data (section 7.2).

7.1. Saudi Mutual Fund Data

Table 4: Mutual Fund Sample Based on Institutional Managers

The following table presents the selected sample of 143 mutual funds in Saudi Arabia for the period from July 2004 to January 2010. Funds are categorized based on institutional managers that manage these funds. The second column shows the name of the institutional manager, the third column shows the total number of funds under their management, the fourth column shows the percentage of funds each manager manages, and the fifth column shows the number of funds each institutional manager manages in the selected sample. The last column shows the percentage of funds each manager manages in the selected sample.

No	Fund Manager Based on the Selected Sample	No. of all MFs	%	No. of MFs in the Sample	%
1	HSBC SAUDI ARABIA LIMITED	21	**9.25**	21	**14.69**
2	SAUDI HOLLANDI CAPITAL	15	**6.61**	13	**9.09**
3	RIYADH CAPITAL	31	**13.66**	12	**8.39**
4	NCB CAPITAL	27	**11.89**	11	**7.69**
5	JADWA INVESTMENT	14	**6.17**	11	**7.69**
6	AL RAJHI CAPITAL	14	**6.17**	10	**6.99**
7	ANB INVEST	18	**7.93**	9	**6.29**
8	SAIB BNP PARIBAS ASSET MANAGEMENT	10	**4.41**	9	**6.29**
9	CAAM SAUDI FRANSI	12	**5.29**	8	**5.59**
10	SAMBA CAPITAL & INVESTMENT MANAGEMENT	25	**11.01**	6	**4.20**
11	FALCOM FINANCIAL SERVICES	6	**2.64**	6	**4.20**
12	ALBILAD INVESTMENT	5	**2.20**	4	**2.80**
13	KSB CAPITAL GROUP	5	**2.20**	3	**2.10**
14	AUDI CAPITAL	3	**1.32**	3	**2.10**
15	ALJAZIRA CAPITAL	5	**2.20**	2	**1.40**
16	AL TAWFEEK FINANCIAL GROUP	3	**1.32**	2	**1.40**
17	ALAWWAL FINANCIAL SERVICES CO	2	**0.88**	2	**1.40**
18	BAKHEET INVESTMENT GROUP	2	**0.88**	2	**1.40**
19	GLOBAL INVESTMENT HOUSE SAUDI	2	**0.88**	2	**1.40**
20	RASMALA INVESTMENTS SAUDI	2	**0.88**	2	**1.40**
21	THE INVESTOR FOR SECURITIES	2	**0.88**	2	**1.40**
22	EFG-HERMES KSA	1	**0.44**	1	**0.70**
23	MORGAN STANLEY SAUDI ARABIA	1	**0.44**	1	**0.70**
24	WATAN INVESTMENT & SECURITIES	1	**0.44**	1	**0.70**
Total		**227**	**100**	**143**	**100**

It is worthy to note that the mutual fund sample very much represents the Saudi mutual fund industry in terms of geographical focuses, diversity, investment objectives, *Shariah* compliancy, and institutional management. The selected sample data consists of

daily net asset values (NAVs) of 143 out of 234 mutual funds available in Saudi Arabia during the period from July 2004 to January 2010. Information on these funds is obtained from three main sources: 1) the official site of the Saudi Stock Exchange (Tadawul).[20] 2) The official site of HSBC Saudi Arabia Limited.[21] And 3) Zawya database.[22]

Table 4 shows that funds in the selected sample are managed by 24 out of 28 Institutional managers. HSBC Saudi Arabia Limited manages the largest number of funds with 21 funds (14.69 percent). Following HSBC is the Saudi Hollandi Capital, Riyadh Capital, and then NCB Capital with 13, 12, and 11 funds (9.09, 8.39, and 7.69 percent), respectively.

Table 5: Mutual Fund Sample Based on *Shariah* Compliancy and Investment Goals

This table presents the selected sample of 143 funds in Saudi Arabia for the period from July 2004 to January 2010. Funds are broken down based on their *Shariah* compliancy subcategory (Islamic and conventional) and investment goal classification [growth (G), income (I), capital preservation (CP), and income & growth (I&G)]. The percentage of funds is reported for each subcategory and classification.

Subcategory	Investment Goal Classification								Total No. of MFs	%
	G	%	I	%	CP	%	I&G	%		
Islamic Funds	61	**42.66**	16	**11.19**	13	**9.09**	6	**4.20**	**96**	**67.13**
Conventional Funds	28	**19.58**	8	**5.59**	6	**4.20**	5	**3.50**	**47**	**32.87**
Total	**89**		**24**		**19**		**11**		**143**	**100**
%	**62.24**		**16.78**		**13.29**		**7.69**			

Table 5 shows that the selected fund sample very well represents the entire Saudi mutual fund population in terms of the fund's investment goal objectives and *Shariah* compliancy. There are 67.13 percent (96 out 143) Islamic mutual funds and 32.87 percent (47 out of 143) conventional mutual funds. These percentages are quite similar to those reported for the entire Saudi mutual fund population presented in (Table 3), where there are 62.39 percent Islamic mutual funds and 37.61 percent conventional mutual funds.

[20] Source is: http://www.tadawul.com.sa.
[21] Source is: http://www.hsbcsaudi.com.
[22] Zawya is one of leading Middle Eastern business information firms. Their main website is: http://www.zawya.com. I would like to express my deep appreciation to Mr. James Randall, the international business manager, for providing me a trial excess to the database.

Table 5 also indicates that when mutual funds in the sample are broken down based on their investment goal classifications; mutual funds that have a growth investment objective dominate the fund sample with 89 out of 143 funds (62.24 percent). This percentage is quite similar to that reported for the entire Saudi mutual fund population presented in (Table 3), where 66.67 percent of all funds available in Saudi Arabia are growth oriented. Funds that have other investment objectives such as income, capital preservation, and income & growth objectives represent 16.78, 13.29, and 7.69 percent of the fund sample that consists of 143 Saudi mutual funds, respectively. These percentages are also close to the percentages reported for the entire Saudi mutual fund population shown in (Table 3), where 11.97, 11.54, and 9.83 percent of all available funds in Saudi Arabia have an income, capital preservation, and income & growth objectives, respectively.

Table 5 also indicates that Islamic funds that are growth oriented dominate the fund sample with 61 out of 143 funds (42.66 percent). On the other hand, conventional funds that are income & growth oriented are considered the least in the fund sample with only 5 out of 143 funds (3.50 percent).

It is worthy to note that (Table 2) shows that Saudi mutual funds have six regional focuses: local, international, Arab, Asia, US, and Europe. To enhance comparability, this empirical study gathers all mutual funds in the sample that are US-, Asia-, Europe-, and internationally-focused and groups them together under one regional focus called "internationally-focused funds." As a result, Saudi mutual funds that make up the sample used in this empirical study will have only three main geographical focuses (local, Arab, and international). As mentioned in the introduction, locally-focused funds are funds that invest in assets located only in Saudi Arabia. Arab-focused funds are funds that invest in

assets located only in countries that are members in the Arab league, excluding Saudi Arabia. Finally, internationally-focused funds are funds that invest in assets located in all countries, excluding Saudi Arabia and those that belong in the above Arab group.

Table 6 breaks down the sample based on: the three main geographical focuses (local, Arab, and international), investment goal classifications (growth, income, capital preservation, and income & growth), and *Shariah* compliancy subcategories (Islamic and conventional). Results show that out of 143 funds in sample, there are 82 (57.34 percent), 19 (13.29 percent), and 42 (29.37 percent) funds that are locally-, Arab-, and internationally-focused, respectively. Furthermore, results show that locally-focused Islamic funds that are growth orientated dominate the sample with 33 out of 143 funds (23.08 percent). However, both (Islamic and conventional) funds that are internationally-focused and have an income & growth investment objective are considered the least in the fund sample where there are only 2 out of 143 funds (1.40 percent) of each type. Also, results show that all the 19 Arab-focused funds in the fund sample are only growth oriented and only invest in equity. This is very much similar to results observed when looking at the entire 20 available Arab-focused funds in Saudi Arabia (Table 2).

From Bloomberg, the end-of-month Saudi Interbank Offering Rate (SIBOR) with one-month maturity is collected for the period from July 2004 to January 2010. In this empirical study, SIBOR with one-month maturity serves as a proxy for the monthly risk-free rate. Note that it would be more appropriate to use the rate of return on *sukuk* instead of the rate of the risk-free asset since *Shariah* law forbids any return that is in the context of debt. But the problem is that data on *sukuk* rates are still not fully available to be used in Islamic finance empirical studies.

Table 6: Mutual Fund Sample Based on Geographical Focus, Investment Goal, and *Shariah* Compliancy

The following table presents the selected sample of 143 mutual funds in Saudi Arabia for the period from July 2004 to January 2010. Funds are categorized based on three main geographic focus categories (local, Arab, and international), *Shariah* compliancy subcategories [Islamic (Is.) and conventional (Cn.)], and investment goal classifications [growth (G), income (I), capital preservation (CP), and income & growth (I&G)]. The final column presents the percentage of funds under each geographic focus category. The final row presents the percentage of funds under each investment goal classification and *Shariah* compliancy subcategory.

Category	Investment Goal Classifications and *Shariah* Compliancy subcategories																Total	%
	G				I				CP				I&G					
	Is.	%	Cn.	%	Is.	%	Cn.	%	Is.	%	Cn.	%	Is.	%	Cn.	%		
Local	33	**23.08**	20	**13.99**	8	**5.59**	4	**2.8**	7	**4.9**	3	**2.10**	4	**2.80**	3	**2.10**	**82**	**57.34**
Arab	14	**9.79**	5	**3.50**	0	**0**	0	**0**	0	**0**	0	**0**	0	**0**	0	**0**	**19**	**13.29**
International	14	**9.79**	3	**2.10**	8	**5.59**	4	**2.80**	6	**4.20**	3	**2.10**	2	**1.40**	2	**1.40**	**42**	**29.37**
Total	**61**		**28**		**16**		**8**		**13**		**6**		**6**		**5**			
%	**42.66**		**19.58**		**11.19**		**5.59**		**9.09**		**4.2**		**4.2**		**3.5**			
Total Funds Based on Investment Goal Classification	**89**				**24**				**19**				**11**				**143**	**100**
%	**62.24**				**16.78**				**13.29**				**7.69**					

There are six different market indices used to benchmark the performance of Saudi funds and they fall under two main groups: Islamic and conventional indices. The Islamic indices group includes: 1) Global Index of the GCC Islamic (to mainly benchmark locally-focused Islamic funds).[23] 2) MSCI Arab Markets Domestic Islamic Index excluding Saudi Arabia (to mainly benchmark Arab-focused Islamic funds). And 3) MSCI World Islamic Index (to mainly benchmark internationally-focused Islamic funds). The conventional indices group includes: 1) Tadawul All Share Index: TASI (to mainly benchmark locally-focused conventional funds). 2) MSCI Arabian Markets Domestic Index excluding Saudi Arabia (to mainly benchmark Arab-focused conventional funds). And 3) MSCI World Index IMI (to mainly benchmark internationally-focused conventional funds).

The monthly historical prices of both Islamic and conventional indices from July 2004 to January 2010 are obtained from three main sources: 1) the official website of the Saudi Stock Exchange (Tadawul).[24] 2) The official website of the Global Investment House.[25] And 3) the MSCI Barra.[26]

Finally, to enhance comparability, the sample period in this empirical study is divided into four different periods depending on different stock market trends in Saudi Arabia. Such division will hold throughout the entire study. These periods are: the overall sample period (from July 2004 to January 2010), the bullish period (from July 2004 to

[23] GCC refers to the Gulf Cooperation Council, which is represented by six countries: Saudi Arabia, United Arab Emirates, Kuwait, Qatar, Bahrain, and Oman. This index is used to benchmark locally-focused Islamic funds instead of the Saudi Arabia Islamic index. This is because the Saudi Arabia Islamic index is considered relatively new and do not have data that goes all the way back to July 2004.
[24] Source is: http://www.tadawul.com.sa/.
[25] Source is: http://www.globalinv.net.
[26] Source is: www.msci.com. The MSCI data contained herein is the property of MSCI Inc. (MSCI). MSCI, its affiliates and any other party involved in, or related to, making or compiling any MSCI data; make no warranties with respect to any such data. The MSCI data contained herein is used under license and may not be further used, distributed or disseminated without the express written consent of MSCI.

February 2006), the bearish period (from March 2006 to January 2010), and the recent 2008 financial crisis period (from September 2008 to January 2010).

7.2. Multifactor Model Data

To further enhance comparability between Islamic and conventional funds, a multifactor model in the spirit of Carhart (1997) four-factor model is used to control for common investment styles. Such model is constructed using all 135 stocks listed on the Saudi stock exchange (Tadawul) as of January 31, 2010. To be included in the test, all listed firms must have available data on stock prices, book values of equity, and total shares outstanding from July 2003 to January 2010.

8. Methodology

The methodology discussion is divided into three sections: Section (8.1) is the non risk-adjusted returns. Section (8.2) is the simple risk-adjusted performance measures. It discusses the Sharpe and modified Sharpe ratios, Modigliani and Modigliani index (MM), Treynor ratio, and TT index. Section (8.3) is the regression approach. It discusses three models: the single-factor model (CAPM) in order to estimate the Jensen alpha Index as well as the systematic risk (beta), the Treynor and Mazuy (1966) model in order to assess the selection and market timing abilities, and a multifactor model in the spirit of Carhart (1997) four-factor model in order to control for common investment styles when assessing the risk-return profile of funds.

8.1. Non Risk-Adjusted Returns

From the daily net asset values (NAVs), the monthly NAVs for all funds are calculated as follows:

(1) $$R_{it} = \left(\frac{NAV\ on\ Last\ Day\ of\ Month\ (t)}{NAV\ on\ First\ Day\ of\ Month\ (t)} - 1\right)$$

where R_{it} is the monthly return for fund (i) at month (t).[27]

It is worthy to note that the methodology used to assess the risk-return profile of Saudi funds is not based on using individual funds. Instead, the methodology used is based on using a portfolio approach in order to diversify away fund-specific risks and to facilitate comparison between the entire Islamic and conventional Saudi mutual funds industries.

Thus, Saudi mutual funds in the selected sample are grouped into portfolios based on the following characteristics: the funds' three main geographical focuses (local, Arab, and international), the funds' *Shariah* compliancy (Islamic and conventional), and four different stock market trends in Saudi Arabia (overall, bull, bear, and the recent 2008 financial crisis periods).

Forming portfolios in that manner will create 24 (12 Islamic and 12 conventional) different types of portfolios (see Appendix A). Note that all formed portfolios are equally-weighted and formed on monthly basis.[28]

Fund portfolios are calculated as follows:

(2) $$R_{pt} = \frac{\sum_{i=1}^{n_t} R_{it}}{n_t}$$

where R_{pt} is the monthly return for portfolio (p) during month (t), n_t is the total number of individual funds during month (t), and R_{it} is defined as in equation (1).

[27] Conventionally, mutual fund returns are calculated as capital gains plus income (dividends). However, because obtaining data on dividends was very difficult, dividends are not accounted for in this study.

[28] According to Hoepner, Rammal, & Rezec (2009), "It is common practice to analyze portfolios of assets with religious of ethical characteristics based on equal weighted rather than value weighted portfolios. This practice ensures a focus on the assets religious or ethical characteristics and substantially reduces the risk of bias due to idiosyncratic return characteristics of a specific asset." This is why in this empirical study all formed portfolios are equally-weighted portfolios.

8.2. Simple Risk-Adjusted Performance Measures

8.2.1. Sharpe and Modified Sharpe Ratios

The Sharpe ratio is derived by Sharpe (1966) as an absolute risk-adjusted performance measure. Thus, no market benchmark is needed to calculate the Sharpe ratio. The idea of this ratio is to see how much additional return is received for additional volatility of holding the risky asset over the risk-free asset. Thus, this ratio measures how well a portfolio compensates investors for the additional risk taken. The risk in the Sharpe ratio is measured by the portfolio's standard deviation, which represents the total risk (diversified and undiversified risks). This ratio is useful in ranking portfolios because a higher ratio is only warranted if return is higher with the same level of risk or if the risk is lower with the same level of return. The Sharpe ratio is calculated as follows:

$$S_p = \frac{\overline{R_p} - \overline{RF}}{\sigma(R_p)} \quad (3)$$

where:

S_p : Sharpe ratio for portfolio (p)
$\overline{R_p}$: Average of monthly return for portfolio (p)
$\overline{RF}$: The average risk-free rate measured by SIBOR one-month maturity
$\sigma(R_p)$: Standard deviation of the portfolio (p)

However, the Sharpe ratio is very difficult to interpret and could lead to spurious portfolio ranking when the excess return is negative. In other words, it is not always true that the portfolio with the higher ratio is the best portfolio. For example, if two portfolios, A and B, have excess average returns of -5 percent and standard deviation of 20 and 25 percent, respectively. Then the Sharpe ratio is -0.25 and -0.20 for A and B, respectively. According to the Sharpe ratio, portfolio B has a superior risk-return profile when compared to portfolio A. However, that is not true because B is considered more volatile than A.

As a result, Israelsen (2005) propose a modification to the Sharpe ratio to overcome the spurious portfolio ranking when excess return is negative. He introduces an exponent to the denominator of the Sharpe ratio that is equal to the portfolio excess return divided by its absolute value. It is worthy to note that the modified Sharpe ratio coincides with the original ratio when the excess return is positive, and is superior to the original ratio when the excess return is negative. Therefore, only the modified Sharpe ratio results are reported in this study and it is calculated as:

$$(4) \qquad Modified\ S_p = \frac{\overline{R_p} - \overline{RF}}{\sigma(R_p)^{\frac{\overline{R_p} - \overline{RF}}{|\overline{R_p} - \overline{RF}|}}}$$

where $Modified\ S_p$ is the modified Sharpe ratio for portfolio (p) and the reset is defined as in equation (3).

8.2.2. MM Measure

Modigliani & Modigliani (1997) propose this measure as a relative risk-adjusted performance measure. It is very intuitive and easy to interpret and it is also considered an extension to the Sharpe ratio. This measure shows the return the portfolio would have gained if it had the same risk as the market benchmark. The risk is measured using the total risk: the standard deviation. According to this measure, the most appealing portfolios are those with the highest MM values. MM is calculated as follows:

$$(5) \qquad MM_p = \left(\overline{R_p} - \overline{RF}\right)\frac{\sigma(RM)}{\sigma(R_p)} + \overline{RF}$$

where MM_p is the Modigliani and Modigliani measure for portfolio (p), $\sigma(RM)$ is the standard deviation of the market index, and the rest is defined as in equation (3).

8.2.3. Treynor Ratio

Treynor ratio measures the excess returns over the riskless asset that could be earned per unit of market risk. Market risk or systematic risk is measured by the portfolio's beta, which measures the co-movement of the portfolio with the market. Since, the Treynor ratio normalizes excess return by the portfolio's beta instead of the portfolio's standard deviation, then the Treynor ratio is superior to the Sharpe ratio in assessing the risk-return profile if the fund is a part of a larger fully diversified portfolio. This is because the relevant risk is such circumstance is the market risk (beta). It is calculated as follows:

$$(6) \qquad TR_p = \frac{\overline{R_p} - \overline{RF}}{\beta_p}$$

where $\overline{R_p}$ and $\overline{RF}$ are defined as in equation (3) and

TR_p : Is the Treynor ratio for portfolio (p)
β_p : Portfolio's beta. Estimated using a single-factor model (CAPM) as is shown in following equation:

$$(7) \qquad R_{pt} - RF_t = \alpha_p + \beta_p\,(RM_t - RF_t) + \varepsilon_{pt}$$

where:

R_{pt} : Returns for portfolio (p) at months (t)
RF_t : Risk-free rate measured by SIBOR with one-month maturity at months (t)
α_p : The intercept for portfolio (p). In this model it is called the Jensen alpha index
β_p : Beta or the market risk for portfolio (p)
RM_t : Return on the market index at months (t)
ε_{pt} : The error term with zero mean

8.2.4. TT Index

The TT index is an extension to the Treynor ratio. The TT measure is proposed by Bodie, Kane, & Marcus (2005) and it measures the excess return of a portfolio per unit of systematic risk (beta) above the excess return on the market, which by definition has a beta

of one. Thus, one can look at the TT measure as the difference between the portfolio and the market Treynor ratio. It is calculated as follows:

(8) $$TT_p = TR_p - (\overline{RM} - \overline{RF})$$

where TT_p is the TT index for portfolio (p), $\overline{RM}$ is the average monthly return for the market index, TR_p is defined as in equation (6), and $\overline{RF}$ is defined as in equation (3).

8.3. The Regression Approach

8.3.1. The Single-Factor Model (CAPM)

The single-factor model is used to estimate the Jensen alpha index as well as the systematic risk (beta). The Jensen alpha index is a relative risk-adjusted performance measure that was first introduced by Jensen (1967) to determine the abnormal return of a portfolio over the theoretical expected return using a capital asset pricing model (CAPM). Thus, the Jensen alpha index is the constant term in the single-factor model presented in equation (7). A portfolio is considered outperforming the market if the Jensen alpha is positive and statistically significant.

The systematic risk (beta), which is also called the market risk, measures the portfolio's co-movement with the employed market index. Thus, beta is considered superior to the standard deviation when assessing the risk of a very well diversified portfolio. A beta above (below) one indicates that the portfolio' return is more (less) volatile than the return of the employed market index. A positive (negative) beta indicates that the portfolio's return is positively (negatively) correlated with the return of the employed market index. However, a zero beta indicates that the portfolio's return moves independently from the return of the employed market index. Beta is the coefficient on the excess market return portfolio (RM-RF) presented in equation (7).

8.3.2. The Treynor & Mazuy Model

The Treynor & Mazuy (1966) model is used to assess both the selectivity and market timing skills. It extends the Jensen alpha model by adding a quadratic term.

It is estimated as follows:

(9) $$R_{pt} - RF_t = \alpha_p + \beta_p\,(RM_t - RF_t) + \gamma_p\,(RM_t - RF_t)^2 + \varepsilon_{pt}$$

where α_p and γ_p represent the selectivity and market timing skills for portfolio (p), respectively. $R_{pt}, RF_t, \beta_p, RM_t$, and ε_{pt} are defined as in equation (7).

A statistical significant positive alpha (α_p) [gamma (γ_p)] indicates that managers possess selectivity [market timing] skills. Selectivity skills mean that managers are able to pick good performing assets. Market timing skills mean that managers increase their funds' exposure to the market when they believe that the market is going to do well and reduce their funds' exposure to the market when they believe that the market will do badly.

8.3.3. Multifactor Model

Fama & French (1993) illustrate the CAPM insufficiency in explaining the cross-sectional US stock returns and introduce a three-factor model that includes a risk factor related to size (SMB) and a risk factor related to book-to-market equity (HML) in addition to the market excess returns portfolio (RM-RF). The findings of Fama and French imply that the three-factor model is incrementally useful in explaining mutual fund returns if fund managers are significantly engaging in different investment strategies such as investing in small vs. large cap stocks or value (high book-to-market equity) vs. growth (low book-to-market equity) stocks.

Nevertheless, there is a growing literature that indicates that the three-factor model could further be improved. That is, the three-factor model is still insufficiently capable in

explaining the Jegadeesh & Titman (1993) momentum strategy of buying the past 12-month winners and selling the past 12-month losers. To overcome this issue, Carhart (1997) proposes a four-factor model where a risk factor related to momentum is added to the existing Fama and French three-factor model.

As a result, in this study a multifactor model in the spirit of Carhart (1997) four-factor model is employed to investigate the persistence in performance of Saudi mutual funds. Another reason for employing the four-factor model is that there is growing evidence that the performance of Islamic funds is indeed attributed to style tilts which cannot be accounted for using a single-factor model. For example, Hoepner, Rammal, & Rezec (2009) find that Islamic funds are biased towards small stocks. Also, Abderrezak (2008) finds that Islamic equity funds (IEFs) are biased towards both small cap firms and growth stocks.

8.3.3.1. The Construction of the Four-Factor Model

Eight value-weighted return portfolios are formed based on the intersection of two size groups, two book-to-market equity groups, and two momentum groups. The two size groups are [small (S) and big (B)] and they are split using the median size. The two book-to-market equity groups are [low (L) and High (H)] and they are split using the median of book-to-market equity. And the momentum groups are [winners (W) and Losers (Z)] and they are split based on winners (good performers in the past 12-months) and losers (bad performers in the past 12-months).

The eight return portfolios are as follows: (SLW, SHW, BLW, BHW, SLZ, SHZ, BLZ, and BHZ). For example, the SLW portfolio contains returns of stocks in the small size, low book-to-market equity, and winners groups. The BHZ portfolio contains returns of stocks in

the big size, high book-to-market equity, and losers groups. From these eight value-weighted return portfolios, three risk factors are created. These risk factors are considered portfolios meant to mimic the risk factor in returns related to size (SMB), book-to-market equity (HML), and momentum (MOM). The construction of these factors is as follows:

It is very well documented that there is a negative relationship between size and average returns. Thus, SMB (small minus big) is calculated by taking, in each month, the average return on the two small-winners and the two small-losers portfolios minus the average return on the two big-winners and the two big-losers portfolios. This difference is expected to make the created portfolio mimicking the risk factor that is related to size free, as much as possible, from both the book-to-market equity and momentum effects and more focused on the differences in return between small and big stocks. It is calculated as follows:

$$SMB = \frac{1}{4}\left((SLW + SHW + SLZ + SHZ) - (BLW + BHW + BLZ + BHZ)\right) \quad (10)$$

Also, it is very well documented that there is a positive relationship between book-to-market equity and average returns. Thus, HML (high minus low) is calculated by taking, in each month, the average return on the two high-winners and the two high-losers portfolios minus the average return on the two low-winners and the two low-losers portfolios. This difference is expected to make the created portfolio mimicking the risk factor that is related to the book-to-market equity free, as much as possible, from both the size and momentum effects and more focused on the differences in return between value (high book-to-market equity) and growth (low book-to-market equity) stocks. It is calculated as follows:

(11) $$HML = \frac{1}{4}\left((SHW + BHW + SHZ + BHZ) - (SLW + BLW + SLZ + BLZ)\right)$$

MOM is calculated by taking, in each month, the average return on the four-winner portfolios minus the average return on the four-loser portfolios. This difference is expected to make the created portfolio mimicking the risk factor related to momentum free, as much as possible, from the size and book-to-market equity effects and more focused on the differences in return between momentum (buying past 12-month winners) and contrarian (selling past 12-month losers) stocks. It is calculated as follows:

(12) $$MOM = \frac{1}{4}\left((SLW + SHW + BLW + BHW) - (SLZ + SHZ + BLZ + BHZ)\right)$$

The four-factor model is estimated as follows:

(13) $$R_{pt} - RF_t = \alpha_p + \beta_p\,(RM_t - RF_t) + s_p\,SMB_t + h_p\,HML_t + m_p\,MOM_t + \varepsilon_{pt}$$

where

R_{pt} : Returns of portfolio (p) at month (t)
RF_t : Risk-free rate measured by SIBOR one-month maturity at month (t)
α_p : The intercept of the model. It is the selectivity skill coefficient for portfolio (p)
β_p : Beta or the market risk for portfolio (p)
RM_t : The return on the market index at month (t)
s_p : Loadings on the size risk factor for portfolio (p)
SMB_t : (Small minus big) size risk factor
h_p : Loadings on the book-to-market equity risk factor for portfolio (p)
HML_t : (High minus low) book-to-market equity risk factor
m_p : Loadings on the momentum risk factor for portfolio (p)
MOM_t : (Winner minus losers) momentum risk factor
ε_{pt} : The error term with zero mean

9. Empirical Results

The following empirical results discussion is going to be presented based on the three main geographical focuses of the created fund portfolios. That is, section 9.1 discusses the empirical results for the locally-focused fund portfolios. Section 9.2 discusses

the empirical results for the Arab-focused fund portfolios. And section 9.3 discusses the empirical results for the internationally-focused fund portfolios.

In each section there is one main table that contains five different panels (A to E). Panel A reports the non risk-adjusted returns. Panel B reports the results from the simple risk-adjusted performance measures, which are the modified Sharpe ratio, MM index, Treynor ratio, and the TT index. Panels C to E report the results from the regression approach. That is, panel C reports the results from the single-factor model. Panel D reports the results from the Treynor and Mazuy model. And panel E reports the results from the four-factor model.

9.1. Empirical Results for Locally-Focused Portfolios

Table 7 reports the results for only the locally-focused fund portfolios. The market indices used to benchmark the performance of these locally-focused portfolios are also locally-focused and they are: **1) GCC Islamic:** Global Index of the GCC Islamic and **2) TASI:** Tadawul All Share Index. To enhance comparability, each of the Islamic and conventional locally-focused portfolios are benchmarked against the locally-focused Islamic market index (GCC Islamic) and then against the locally-focused conventional market index (TASI).

Table 7-panel A- reports the non risk-adjusted return mean and variance results for the locally-focused: fund portfolios and market benchmarks. The results indicate that the locally-focused Islamic portfolio during the entire studied period is 0.17 percent less risky (using the variance) than its peer the locally-focused conventional portfolio and that difference in the total risk is considered statistically significant at 1 percent. Even though the locally-focused Islamic portfolio has less total risk exposure than its peer, the results during the entire studied period indicate that there is no statistical evidence that shows

any differences in the performance (non risk-adjusted return) between the Islamic and the conventional locally-focused fund portfolios.

Table 7: Results for the Locally-Focused Portfolios

The total sample consists of 143 mutual funds (96 Islamic and 47 conventional) in Saudi Arabia for the period from July 2004 to January 2010. From these funds, equally-weighted monthly-return portfolios are formed based on the funds': 1) geographical focus (local, Arab, and international), 2) *Shariah* compliancy (Islamic and conventional), and 3) different market trends (overall period: July 2004 to January 2010, bull period: July 2004 to February 2006, bear period: March 2006 to January 2010, and financial crisis period: September 2008 to January 2010). The SIBOR with one-month maturity serves as a proxy for the risk-free rate. All panels in this table report the results for only the locally-focused portfolios. The market indices used to benchmark the performance of these locally-focused portfolios are also locally-focused and they are: 1) GCC Islamic: Global Index of the GCC Islamic and 2) TASI: Tadawul All Share Index. Panel A reports the non risk-adjusted return mean and variance results. Panel B reports the results from the simple risk-adjusted performance measures (modified Sharpe, MM, Treynor, and TT). Panel C repots the results from the single-factor model (CAPM). Panel D repots the results from the Treynor and Mazuy model. And finally Panel E reports the results from the four-factor model. All standard errors from all regressions are corrected for heteroscedasticity problems using White's (1980) correction test.

Table 7-Panel A: Non Risk-Adjusted Returns (Locally-Focused Portfolios)

	Overall period		**Bull**		**Bear**		**Financial Crisis**	
	Mean	**Variance**	**Mean**	**Variance**	**Mean**	**Variance**	**Mean**	**Variance**
Islamic portfolio	0.31%	0.17%	2.27%	0.04%	-0.52%	0.21%	-0.77%	0.20%
Conventional portfolio	0.38%	0.34%	3.66%	0.08%	-1.02%	0.39%	-1.40%	0.48%
The difference	***-0.07%***	***-0.17%******	***-1.38%****	***-0.04%****	***0.49%***	***-0.18%****	***0.63%***	***-0.28%****
GCC Islamic	0.94%	0.96%	7.70%	0.29%	-1.94%	0.97%	-3.36%	0.98%
TASI	0.46%	0.91%	5.89%	0.24%	-1.85%	1.03%	-1.61%	1.00%

*, **, *** significant at 10%, 5%, 1%, respectively

Breaking the sample period to the bull, bear and financial crisis periods, the results indicate that the locally-focused Islamic portfolio is also considered significantly less risky (using the variance) than its peer the locally-focused conventional portfolio. That is, the locally-focused Islamic portfolio is considered 0.04, 0.18, and 0.28 percent less risky than its peer during the bull, bear, and financial crisis periods and that difference in the total risk is statistically significant at 10, 5, and 5 percent, respectively.

Looking at the performance (non risk-adjusted return) of these portfolios during these three market trends (bull, bear and financial crisis periods), the results during the bull period reveal that the locally-focused Islamic portfolio significantly at 10 percent

underperforms the locally-focused conventional portfolio and that underperformance is around 1.38 percent per month. However, during the bear and financial crisis periods, the non risk-adjusted return results reveal that there is no statistical evidence that shows any differences in the performance between the Islamic and the conventional locally-focused portfolios.

Table 7-Panel B: Simple Risk-Adjusted Performance Measures (Locally-Focused Portfolios)

Index		Overall period		Bull		Bear		Financial Crisis	
		Islamic	Conv.	Islamic	Conv.	Islamic	Conv.	Islamic	Conv.
Modified Sharpe Ratio		0.96%	1.82%	96.23%	116.06%	-0.04%	-0.08%	-0.04%	-0.10%
MM	GCC Islamic	0.37%	0.45%	5.48%	6.55%	-1.44%	-1.75%	-1.84%	-2.05%
	TASI	0.36%	0.45%	5.00%	5.97%	-1.49%	-1.82%	-1.86%	-2.07%
Treynor	GCC Islamic	0.11%	0.21%	8.71%	9.85%	-1.95%	-2.34%	-2.13%	-2.43%
	TASI	0.09%	0.18%	5.11%	6.03%	-1.81%	-2.14%	-1.99%	-2.20%
TT	GCC Islamic	-0.55%	-0.46%	1.29%	2.43%	0.26%	-0.13%	1.33%	1.03%
	TASI	-0.09%	-0.01%	-0.49%	0.43%	0.31%	-0.02%	-0.28%	-0.50%

Table 7-panel B- reports the simple risk-adjusted performance measures for the locally-focused fund portfolios. The results indicate that the locally-focused Islamic portfolio underperforms its peer the locally-focused conventional portfolio during both the overall and bull periods, but performs less badly than its peer during the bear and financial crisis periods. This is true regardless of the simple risk-adjusted performance measure used and regardless of the locally-focused market benchmark employed to adjust for risk.

Table 7-panel C- reports the results from the single-factor model (CAPM). During the overall studied period, the results indicate that all betas are positive, less than 1, and highly significant at 1 percent regardless what locally-focused market benchmark (GCC Islamic or TASI) is used to adjust for risk. Similar results are observed when the entire sample period is broken down to bull, bear, and financial crisis periods. This means that

both locally-focused portfolios (Islamic and conventional) are considered less volatile than both locally-focused market benchmarks.

Table 7-Panel C: Single-Factor Model (CAPM) (Locally-Focused Portfolios)

	Index	Overall period		Bull		Bear		Financial Crisis	
		Islamic	Conv.	Islamic	Conv.	Islamic	Conv.	Islamic	Conv.
α	GCC Islamic	-0.002	-0.0024	0.0029	0.0083	0.001	-0.0007	0.0054	0.0064
	Diff	***0.0003***		***-0.0054***		***0.0018***		***-0.0009***	
	TASI	-0.0004	0.0000	-0.0019	0.0024	0.0014	-0.0001	-0.0012	-0.0034
	Diff	***-0.0004***		***-0.0043***		***0.0015***		***0.0022***	
β	GCC Islamic	0.3654***	0.5165***	0.2285**	0.3423**	0.4047***	0.5476***	0.4069***	0.6166***
	Diff	***-0.1511*****		***-0.1139***		***-0.1430*****		***-0.2097*****	
	TASI	0.4225***	0.5968***	0.3896***	0.5592***	0.4366***	0.5994***	0.4356***	0.6792***
	Diff	***-0.1744*****		***-0.1696*****		***-0.1628*****		***-0.2436*****	
Adj. R^2	GCC Islamic	72.70%	73.65%	32.12%	36.69%	75.28%	73.41%	79.62%	75.93%
	TASI	93.61%	94.73%	85.19%	87.82%	94.00%	94.42%	94.21%	95.56%

*, **, *** significant at 10%, 5%, 1%, respectively

Looking at differences in the systematic risk (beta) during the overall studied period, the results indicate that the locally-focused Islamic portfolio is considered significantly less risky than the locally-focused conventional portfolio; regardless what locally-focused market benchmark is used to adjust for risk. In other words, at 5 (1) percent level of significance, the locally-focused Islamic portfolio is considered 0.1511 (0.1744) less risky than the locally-focused conventional portfolio when the GCC Islamic (TASI) is used as the locally-focused market benchmark. Similar results are observed if the sample period is broken down to bull, bear, and financial crisis periods.

However, there is one meaningless exception when the GCC Islamic index is used to adjust for risk during the bull period where the results indicate that still the locally-focused Islamic portfolio is less risky, but that beta-difference is statistically insignificant. This exception is meaningless because the adjusted R-squared results show that the locally-focused conventional market index (TASI) is considered a better fit than the locally-focused

Islamic index (GCC Islamic) in explaining returns of both Islamic and conventional locally-focused portfolios. To illustrate, when TASI is used, the adjusted R-squared values for the locally-focused Islamic (conventional) portfolio is 93.61 (94.73), 85.19 (87.82), 94.00 (94.42), and 94.21 (95.56) percent versus 72.70 (73.65), 32.12 (36.69), 75.28 (73.41), and 79.62 (75.93) percent when the GCC Islamic index is used during the overall, bull, bear, and financial crisis periods, respectively.

Looking at the Jensen alpha index to assess performance, the results during the overall period reveal that both locally-focused portfolios (Islamic and conventional) do not outperform both locally-focused market benchmarks. Similar results are observed during the bull, bear, and financial crisis periods. That is, alphas are either negative or insignificantly positive.

Looking at the alpha-difference portfolio between the Islamic and the conventional locally-focused portfolios, the results indicate that there is no statistical evidence that shows any differences in the performance between these two portfolios. These results hold regardless of the sample period under examination and regardless of the locally-focused market benchmark used.

Table 7-panel D- reports the results from the Treynor and Mazuy model. Consistent with the adjusted R-squared results obtained from the single-factor model (panel C), the adjusted R-squared results from this model still indicate that TASI is considered a better fit than the GCC Islamic index in explaining returns of both Islamic and conventional locally-focused fund portfolios. Thus, results that are based on using TASI provide a better picture when discussing the selectivity and market time skills than the results that are based on using the GCC Islamic index.

Table 7-Panel D: Treynor and Mazuy Model (Locally-Focused Portfolios)

Measure	Index	Overall period		Bull		Bear		Financial Crisis	
		Islamic	Conv.	Islamic	Conv.	Islamic	Conv.	Islamic	Conv.
α	GCC Islamic	-0.0021	-0.0046	0.0028	0.0022	-0.0016	-0.0063	0.0069	0.0045
	Diff	***0.0025***		***0.0006***		***0.0047***		***0.0024***	
	TASI	0.0033**	0.0026	-0.002	0.0028	0.0060***	0.0029	0.004	0.0004
	Diff	***0.0007***		***-0.0047***		***0.0031***		***0.0036***	
γ	GCC Islamic	0.005	0.2286	-0.0507	-1.822	0.3299	0.6932	-0.1949	0.2358
	Diff	***-0.2237***		***1.7713***		***-0.3632***		***-0.4307***	
	TASI	-0.4036***	-0.294	-0.0149	0.1962	-0.4761***	-0.3133	-0.5657***	-0.4158
	Diff	***-0.1096***		***-0.2112***		***-0.1627***		***-0.1499***	
Adj. R^2	GCC Islamic	72.27%	73.51%	28.14%	36.37%	75.65%	75.00%	78.54%	74.44%
	TASI	94.64%	94.95%	84.31%	87.12%	95.44%	94.66%	97.03%	95.98%

*, **, *** significant at 10%, 5%, 1%, respectively

As for the selectivity skills (alphas), the results when the GCC Islamic index is used as the locally-focused market index indicate that both locally-focused fund portfolios (Islamic and conventional) do not possess any selectivity skills; regardless of the sample period under examination. However, when TASI is used as the locally-focused market index, the results indicate that only the locally-focused Islamic portfolio possesses some selectivity skills of 0.0033 (significant at 5 percent) and 0.0060 (significant at 1 percent) during only the overall and bear periods, respectively. The results during the bull and financial crisis periods indicate that both locally-focused portfolios (Islamic and conventional) possess no selectivity skills.

As for the market timing skills (gammas), results reveal that both locally-focused fund portfolios (Islamic and conventional) do not possess any market timing skills; regardless of the sample period under examination and regardless of the locally-focused market benchmark used.

Finally, the results reveal that there is no statistical evidence that shows any differences in both the selectivity and market timing skills between the Islamic and the

conventional locally-focused portfolios. This is true regardless of the sample period under examination and regardless of the locally-focused market benchmark used to adjust for risk.

Table 7-panel E- reports the results from the four-factor model. Again, the adjusted R-squared result from this model indicate that TASI is considered by far a better fit than the GCC Islamic index in explaining returns of both Islamic and conventional locally-focused portfolios. Thus, results that are based on using TASI are more reliable than the results that are based on using the GCC Islamic index.

The systematic risk (beta) results indicate that all betas are positive, less than 1, and highly significant; regardless of the sample period under examination and regardless of the locally-focused market index used to adjust for risk. This supports the notion that both locally-focused portfolios (Islamic and conventional) are less volatile than both locally-focused market indices (GCC Islamic and TASI). Furthermore, the beta-difference results show that there is statistical evidence that the locally-focused Islamic portfolio is considered less risky than the locally-focused conventional portfolio. However, there is one exception when the GCC Islamic index is employed during the bull period where the beta-difference results still show that the locally-focused Islamic portfolio is less risky than its respective peer, but that risk difference is statistically insignificant.

Assessing the portfolios' performance relative to locally-focused market indices, the alpha results when the locally-focused Islamic index (GCC Islamic) is used reveal that neither locally-focused portfolios (Islamic and conventional) reward investors with abnormal return. However, when the locally-focused conventional index (TASI) is used, the alpha results indicate that only the locally-focused Islamic portfolio provides investors with

a small abnormal return during only the overall and bear periods. That is, the locally-focused Islamic portfolio outperforms TASI by only 0.0025 (significant at 10 percent) during the overall period and by 0.0042 (significant at 5 percent) during the bear period.

Table 7-Panel E: Four-Factor Model (Locally-Focused Portfolios)

	Index	Overall period		Bull		Bear		Financial Crisis	
		Islamic	Conv.	Islamic	Conv.	Islamic	Conv.	Islamic	Conv.
α	GCC Islamic	0.0014	0.0005	-0.0020	0.0005	0.0057	0.0055	0.0051	0.0033
	Diff	***0.0009***		***-0.0024***		***0.0002***		***0.0018***	
	TASI	0.0025*	0.0021	-0.0033**	-0.0004	0.0042**	0.0034	0.0020	-0.0030
	Diff	***0.0004***		***-0.0029***		***0.0008***		***0.0049***	
β	GCC Islamic	0.3640***	0.5241***	0.2234**	0.3222***	0.3901***	0.5374***	0.4034***	0.6358***
	Diff	***-0.1601*****		***-0.0988***		***-0.1473****		***-0.2324*****	
	TASI	0.4177***	0.6003***	0.3968***	0.5410***	0.4303***	0.5998***	0.4149***	0.6817***
	Diff	***-0.1826*****		***-0.1443*****		***-0.1695*****		***-0.2668*****	
s	GCC Islamic	0.0084	-0.0503	0.0036	-0.0682	0.0173	-0.0235	0.0492	-0.0371
	Diff	***0.0586***		***0.0718***		***0.0408***		***0.0863***	
	TASI	0.0356***	-0.0109	0.0611***	0.0109	0.0237	-0.0165	0.0342	-0.0767
	Diff	***0.0465****		***0.0502***		***0.0402***		***0.1109****	
h	GCC Islamic	-0.1851***	-0.2072*	-0.2311**	-0.2380*	-0.1974*	-0.2633*	-0.1709	-0.2872
	Diff	***0.0221***		***0.0069***		***0.0660***		***0.1163***	
	TASI	-0.0380	0.0041	-0.0728**	-0.0215	-0.0301	-0.0277	-0.0926	-0.1606***
	Diff	***-0.0422***		***-0.0513***		***-0.0024***		***0.0680***	
m	GCC Islamic	-0.0608	-0.0435	0.1073	0.1911	-0.1009	-0.1268	-0.0158	0.1008
	Diff	***-0.0173***		***-0.0838***		***0.0260***		***-0.1166***	
	TASI	-0.0562**	-0.0368	0.0077	0.0608	-0.0582*	-0.0655*	-0.0958	0.0223
	Diff	***-0.0193***		***-0.0531***		***0.0073***		***-0.1181***	
Adj. R^2	GCC Islamic	75.52%	75.47%	43.04%	43.30%	76.94%	75.30%	79.93%	74.44%
	TASI	94.19%	94.71%	94.44%	86.80%	94.00%	94.64%	94.37%	96.54%

*, **, *** significant at 10%, 5%, 1%, respectively

Consistent with the results obtained from the single-factor model (panel C), the alpha-difference results from the four-factor model indicate that there is no statistical evidence that shows any differences in the performance between the Islamic and conventional locally-focused portfolios. These results are observed regardless of the

sample period under examination and regardless of the locally-focused market benchmark used to adjust for risk.

The results from the SMB risk factor when the GCC Islamic index is used indicate that both locally-focused portfolios (Islamic and conventional) are not sensitive to the SMB risk factor and that both portfolios exhibit identical sensitivities to the SMB risk factor. These results hold regardless of the sample period under examination. However, when TASI is used, the results from the SMB risk factor indicate that only the locally-focused Islamic portfolio is biased towards small capitalization stocks during only the overall and bull periods. That is, loading on the SMB risk factor during the overall (bull) period is 0.0356 (0.0611) and it is statistically significant at 1 percent. Looking at the SMB-difference portfolio, the results indicate that the locally-focused Islamic portfolio is significantly at 10 percent considered more sensitive to the SMB risk factor (more biased towards small capitalization stocks) than is the locally-focused conventional portfolio. This is observed during only the overall and the financial crisis periods.

The results from the HML risk factor when the GCC Islamic index is used indicate that both locally-focused portfolios (Islamic and conventional) are more biased towards growth (low book-to-market equity) stocks. This is observed during all periods, but the financial crisis period. However, when TASI is used, the results from the HML risk factor indicate that during the overall and bear periods; there is no statistical evidence that both locally-focused portfolios (Islamic and conventional) are biased towards either value (high book-to-market equity) or growth stocks. However, during the bull (financial crisis) period, the results indicate that the locally-focused Islamic (conventional) portfolio is biased

towards growth stocks where the loading on the HML risk factor is -0.0728 (-0.1606) and it is statistically significant at 5 (1) percent.

The results from the MOM risk factor when the GCC Islamic index is used indicate that both locally-focused portfolios (Islamic and conventional) are not sensitive to the MOM risk factor, regardless of the sample period under examination. However, when TASI is employed, results from the MOM risk factor during the overall sample period indicate that only the locally-focused Islamic portfolio is biased towards a contrarian investment strategy. Loading on the MOM risk factor is -0.0562 and it is statically significantly at 5 percent. Furthermore, the results during the bear period indicate that both locally-focused portfolios (Islamic and conventional) are also biased towards a contrarian investment strategy. Loading on the MOM risk factor for the locally-focused Islamic (conventional) portfolio is -0.0582 (-0.0655) and it is considered statistically significant at 10 percent. However, results during both the bull and financial crisis periods indicate that both locally-focused portfolios (Islamic and conventional) are not sensitive to the MOM risk factor.

Finally, the HML- and MOM-difference portfolio results show that both Islamic and conventional locally-focused portfolios exhibit virtually identical sensitivities to both HML and MOM risk factors. This is true regardless of the sample period under examination and regardless of the locally-focused market benchmark used to adjust for risk.

9.2. Empirical Results for Arab-Focused Portfolios

Table 8 reports the results for only the Arab-focused fund portfolios. The market indices used to benchmark the performance of these Arab-focused portfolios are also Arab-focused and they are: **1) MSCI Arab Mrk Islamic:** MSCI Arab Markets Domestic Islamic Index excluding Saudi Arabia and **2) MSCI Arab Mrk Index:** MSCI Arabian Markets

Domestic Index excluding Saudi Arabia. To enhance comparability, each of the Islamic and the conventional Arab-focused portfolios are benchmarked against the Arab-focused Islamic market index (MSCI Arab Mrk Islamic Index) and then against the Arab-focused conventional market index (MSCI Arab Mrk Index).

Table 8: Results for the Arab-Focused Portfolios

The total sample consists of 143 mutual funds (96 Islamic and 47 conventional) in Saudi Arabia for the period from July 2004 to January 2010. From these funds, equally-weighted monthly-return portfolios are formed based on the funds': 1) geographical focus (local, Arab, and international), 2) *Shariah* compliancy (Islamic and conventional), and 3) different market trends (overall period: July 2004 to January 2010, bull period: July 2004 to February 2006, bear period: March 2006 to January 2010, and financial crisis period: September 2008 to January 2010). The SIBOR with one-month maturity serves as a proxy for the risk-free rate. All panels in this table report the results for only the Arab-focused portfolios. The market indices used to benchmark the performance of these Arab-focused portfolios are also Arab-focused and they are: 1) MSCI Arab Mrk Islamic: MSCI Arab Markets Domestic Islamic Index excluding Saudi Arabia and 2) MSCI Arab Mrk Index: MSCI Arabian Markets Domestic Index excluding Saudi Arabia. Panel A reports the non risk-adjusted return mean and variance results. Panel B reports the results from the simple risk-adjusted performance measures (modified Sharpe, MM, Treynor, and TT). Panel C repots the results from the single-factor model (CAPM). Panel D repots the results from the Treynor and Mazuy model. And finally Panel E reports the results from the four-factor model. All standard errors from all regressions are corrected for heteroscedasticity problems using White's (1980) correction test.

Table 8-Panel A: Non Risk-Adjusted Returns (Arab-Focused Portfolios)

	Overall period		**Bull**		**Bear**		**Financial Crisis**	
	Mean	**Variance**	**Mean**	**Variance**	**Mean**	**Variance**	**Mean**	**Variance**
Islamic portfolio	-0.03%	0.45%	2.54%	0.26%	-1.12%	0.49%	-2.43%	0.67%
Conventional portfolio	0.70%	0.31%	3.67%	0.19%	-0.56%	0.31%	-1.69%	0.50%
The difference	***-0.73%***	***0.14%****	***-1.13%***	***0.06%***	***-0.56%***	***0.19%****	***-0.74%***	***0.17%***
MSCI Arab Mrk Islamic	0.98%	0.95%	6.33%	1.23%	-1.29%	0.67%	-3.64%	1.14%
MSCI Arab Mrk Index	0.77%	0.61%	4.63%	0.58%	-0.87%	0.55%	-3.05%	0.99%

*, **, *** significant at 10%, 5%, 1%, respectively

Table 8 -panel A- reports the non risk-adjusted return mean and variance results for the Arab-focused: fund portfolios and market benchmarks. The results indicate that the Arab-focused Islamic portfolio during the entire studied period is 0.14 percent more risky (using the variance) than its peer the Arab-focused conventional portfolio and that difference in the total risk is considered statistically significant at 10 percent. Even though the Arab-focused Islamic portfolio is more risky than its peer, the results during the entire studied period indicate that there is no statistical evidence that there exist any differences

in the performance (non risk-adjusted return) between the Islamic and the conventional Arab-focused fund portfolios.

Breaking the sample period to the bull, bear and financial crisis periods; the results show that during the bull and financial crisis periods, there is no statistical evidence that there exist any risk differences between the Islamic and conventional Arab-focused fund portfolios. However, the results during the bear period indicate that the Arab-focused Islamic fund portfolio is considered 0.19 percent more risky than its peer the Arab-focused conventional fund portfolio and that total risk difference is statistically significant at 10 percent.

Looking at the performance of these Arab-focused portfolios during these three periods (bull, bear, and financial crisis periods), the non risk-adjusted return results indicate that there is no statistical evidence that there exist any differences in the performance between the Islamic and the conventional Arab-focused fund portfolios.

Table 8-Panel B: Simple Risk-Adjusted Performance Measures (Arab-Focused Portfolios)

Index		Overall period		Bull		Bear		Financial Crisis	
		Islamic	Conv.	Islamic	Conv.	Islamic	Conv.	Islamic	Conv.
Modified Sharpe Ratio		-0.02%	7.79%	44.48%	77.24%	-0.10%	-0.05%	-0.21%	-0.13%
MM	MSCI Arab Mrk Islamic	-0.16%	1.03%	5.21%	8.84%	-1.35%	-0.95%	-3.18%	-2.58%
	MSCI Arab Mrk Index	-0.08%	0.88%	3.68%	6.18%	-1.19%	-0.84%	-2.97%	-2.41%
Treynor	MSCI Arab Mrk Islamic	-0.61%	0.94%	12.34%	12.54%	-1.92%	-1.43%	-3.57%	-3.04%
	MSCI Arab Mrk Index	-0.47%	0.74%	6.83%	8.86%	-1.79%	-1.30%	-3.45%	-2.90%
TT	MSCI Arab Mrk Islamic	-1.33%	0.23%	6.30%	6.49%	-0.37%	0.12%	0.17%	0.69%
	MSCI Arab Mrk Index	-0.97%	0.24%	2.48%	4.51%	-0.65%	-0.16%	-0.30%	0.25%

Table 8 -panel B- reports the results from the simple risk-adjusted performance measures for the Arab-focused fund portfolios. The results indicate that the Arab-focused Islamic portfolio underperforms its peer the Arab-focused conventional portfolio during

both the overall and bull periods. However, contrary to what is observed when analyzing locally-focused portfolios (Table 7- panel B), the results from this panel reveal that the Arab-focused Islamic portfolio performs worse than the Arab-focused conventional portfolio during both the bear and financial crisis periods. These results hold regardless of the simple risk-adjusted performance measure used and regardless of the Arab-focused market benchmark employed to adjust for risk.

Table 8-Panel C: Single-Factor Model (CAPM) (Arab-Focused Portfolios)

	Index	Overall period		Bull		Bear		Financial Crisis	
		Islamic	**Conv.**	**Islamic**	**Conv.**	**Islamic**	**Conv.**	**Islamic**	**Conv.**
α	MSCI Arab Mrk Islamic	-0.0065	0.0011	0.0115	0.0175**	-0.0026	0.0007	0.0012	0.0041
	Diff	***-0.0075***		***-0.006***		***-0.0034***		***-0.0029***	
	MSCI Arab Mrk Index	-0.0062	0.0014	0.0082	0.0173*	-0.005	-0.001	-0.0022	0.0015
	Diff	***-0.0076***		***-0.0091***		***-0.004***		***-0.0037***	
β	MSCI Arab Mrk Islamic	0.4865***	0.4582***	0.1825*	0.2701***	0.7192***	0.5758***	0.7061***	0.5865***
	Diff	***0.0283***		***-0.0877***		***0.1434***		***0.1196***	
	MSCI Arab Mrk Index	0.6405***	0.5800***	0.3299**	0.3822***	0.7735***	0.6357***	0.7312***	0.6157***
	Diff	***0.0605***		***-0.0523***		***0.1377***		***0.1155***	
Adj. R^2	MSCI Arab Mrk Islamic	49.27%	63.84%	11.39%	43.32%	69.39%	71.63%	82.73%	75.54%
	MSCI Arab Mrk Index	55.76%	66.61%	20.74%	40.91%	65.53%	71.43%	77.08%	72.48%

*, **, *** significant at 10%, 5%, 1%, respectively

Table 8 -panel C- reports the results from the single-factor model (CAPM). During the overall sample period, the results indicate that all betas are positive, less than 1, and highly significant at 1 percent. This suggests that during the entire sample period, both Arab-focused portfolios (Islamic and conventional) are considered less volatile than both Arab-focused market benchmarks (MSCI Arab Mrk Islamic Index and MSCI Arab Mrk Index). Furthermore, the beta-difference portfolio results during the overall period indicate that there is no statistical evidence that shows any systematic risk differences between the Islamic and the conventional Arab-focused fund portfolios; regardless of Arab-focused

market benchmark used to adjust for risk. Similar results are observed during the bull, bear and financial crisis periods.

Looking at the Jensen alpha index to assess performance, the results indicate that there is no statistical evidence that both Islamic and conventional Arab-focused fund portfolios outperform both Arab-focused market indices. Similar results are observed during the bull, bear and financial crisis periods, but there is one exception during the bull period. That is, the results during the bull period indicate that only the Arab-focused conventional portfolio slightly outperforms both Arab-focused market benchmarks. In other words, the results show that the Arab-focused conventional portfolio outperforms both the MSCI Arab Mrk Islamic Index by 0.0175 (statistically significant at 5 percent) and the MSCI Arab Mrk Index by 0.0173 (statistically significant at 10 percent).

Looking at the alpha-difference portfolio between the Islamic and the conventional Arab-focused portfolios, the results indicate that there is no statistical evidence that shows any differences in the performance between these two portfolios. These results hold regardless of the sample period under examination and regardless of the Arab-focused market benchmark used.

Table 8 -panel D- reports the results from the Treynor and Mazuy model. The results show that there is no statistical evidence that both Arab-focused fund portfolios (Islamic and conventional) possess any selectivity and/or market timing skills during all four sample periods; regardless of the Arab-focused market benchmark used to adjust for risk. However, there is only one exception when looking at the selectivity skills of the Arab-focused conventional fund portfolio during the bull period. That is, the results show that the Arab-focused conventional fund portfolio do possess some selectivity skills of 0.0183 -

significant at 5 percent- (0.0166 -significant at 10 percent-) when the MSCI Arab Mrk Islamic Index (MSCI Arab Mrk Index) is employed as the Arab-focused market benchmark. Note that the selectivity skills results from this panel are very much consistent with the Jensen alpha index results observed above in (panel C).

Table 8-Panel D: Treynor and Mazuy Model (Arab-Focused Portfolios)

	Index	Overall period		Bull		Bear		Financial Crisis	
		Islamic	**Conv.**	**Islamic**	**Conv.**	**Islamic**	**Conv.**	**Islamic**	**Conv.**
α	MSCI Arab Mrk Islamic	0.0029	0.0064	0.0095	0.0183**	-0.0022	0.0006	0.0045	0.0033
	Diff	***-0.0035***		***-0.0088***		***-0.0028***		***0.0012***	
	MSCI Arab Mrk Index	-0.0025	0.0028	0.0035	0.0166*	-0.0068	-0.0034	-0.0003	-0.0009
	Diff	***-0.0054***		***-0.0132***		***-0.0033***		***0.0006***	
γ	MSCI Arab Mrk Islamic	-1.0172**	-0.5842*	0.3346	-0.1409	-0.0709	0.0248	-0.4385	0.0945
	Diff	***-0.433***		***0.4754***		***-0.0957***		***-0.533***	
	MSCI Arab Mrk Index	-0.5939	-0.2307	1.6775	0.2138	0.3681	0.523	-0.2658	0.3298
	Diff	***-0.3632***		***1.4636***		***-0.1548***		***-0.5956***	
Adj. R^2	MSCI Arab Mrk Islamic	54.46%	66.14%	7.06%	40.19%	68.70%	70.98%	82.01%	73.82%
	MSCI Arab Mrk Index	55.86%	66.26%	21.44%	37.55%	64.92%	71.36%	75.57%	70.77%

*, **, *** significant at 10%, 5%, 1%, respectively

Furthermore, the results from this panel indicate that there is no statistical evidence that shows any differences in both the selectivity and market time skills between the Islamic and the conventional Arab-focused portfolios during all four studied periods; regardless what Arab-focused market benchmark is used to adjust for risk.

Table 8 -panel E- reports the results from the four-factor model. The systematic risk (beta) results indicate that both Arab-focused fund portfolios (Islamic and conventional) are less volatile than both Arab-focused market indices (Islamic and conventional). This is true regardless of the sample period under examination and regardless of Arab-focused market benchmark used to adjust for risk. However, there is one exception when looking at the beta results for the Arab-focused Islamic portfolio during the bull period where results indicate that there is no statistical evidence of any co-movement between such fund

portfolio and the Arab-focused Islamic index: MSCI Arab Mrk Islamic Index. Furthermore, the beta-difference results indicate that there is no statistical evidence that shows any systematic risk differences between the Islamic and the conventional Arab-focused portfolios; regardless of sample period under examination and regardless of the Arab-focused market benchmark used to adjust for risk.

The alpha results show that there is no statistical evidence that both Arab-focused portfolios (Islamic and conventional) reward investors with abnormal returns. Furthermore, the alpha-difference portfolio results indicate that there is no statistical evidence that shows any differences in the performance between the Islamic and the conventional Arab-focused fund portfolios. These results hold regardless of the sample period under examination and regardless of Arab-focused market benchmark used to adjust for risk.

The results from the SMB and MOM risk factors indicate that there is no statistical evidence that both Arab-focused portfolios (Islamic and conventional) are sensitive to either the SMB and/or MOM risk factors; regardless of sample period under examination and regardless of the Arab-focused index used. However, results from the HML risk factor indicate that only the Arab-focused Islamic portfolio is biased toward growth stocks during only the overall and bear periods; regardless of the Arab-focused market benchmark used. Loading on the HML risk factor is -0.2252 (-0.1968) during the overall period and -0.2613 (-0.2938) during the bear period when the MSCI Arab Mrk Islamic Index (MSCI Arab Mrk Index) is used. All loadings are significantly at 10 percent.

Finally, the SMB-, HML-, and MOM-difference portfolio results indicate that both Islamic and conventional Arab-focused portfolios exhibit virtually identical sensitivities to

all these risk factors. These results hold regardless of the sample period under examination and regardless of the Arab-focused market benchmark used to adjust for risk.

Table 8-Panel E: Four-Factor Model (Arab-Focused Portfolios)

	Index	Overall period		Bull		Bear		Financial Crisis	
		Islamic	Conv.	Islamic	Conv.	Islamic	Conv.	Islamic	Conv.
α	MSCI Arab Mrk Islamic	-0.0043	0.0029	-0.0069	0.0076	-0.0005	0.0032	0.0090	0.0068
	Diff	***-0.0072***		***-0.0145***		***-0.0036***		***0.0022***	
	MSCI Arab Mrk Index	-0.0057	0.0018	-0.0066	0.0097	-0.0020	0.0018	0.0089	0.0061
	Diff	***-0.0076***		***-0.0163***		***-0.0038***		***0.0028***	
β	MSCI Arab Mrk Islamic	0.4857***	0.4594***	0.1552	0.2569***	0.7153***	0.5750***	0.6567***	0.5749***
	Diff	***0.0263***		***-0.1017***		***0.1403***		***0.0817***	
	MSCI Arab Mrk Index	0.6380***	0.5814***	0.2630*	0.3626**	0.7675***	0.6311***	0.6617***	0.5941***
	Diff	***0.0566***		***-0.0997***		***0.1364***		***0.0676***	
s	MSCI Arab Mrk Islamic	0.0371	-0.0098	0.0797	0.0143	-0.0027	-0.0309	0.0509	-0.0690
	Diff	***0.0469***		***0.0654***		***0.0282***		***0.1200***	
	MSCI Arab Mrk Index	0.0306	-0.0132	0.0694	0.0022	0.0268	-0.0095	0.0881	-0.0430
	Diff	***0.0438***		***0.0672***		***0.0363***		***0.1312***	
h	MSCI Arab Mrk Islamic	-0.2252*	-0.0505	-0.3996	-0.1536	-0.2613*	-0.0823	-0.1684	-0.0474
	Diff	***-0.1748***		***-0.2460***		***-0.1790***		***-0.1210***	
	MSCI Arab Mrk Index	-0.1968*	-0.0231	-0.3172	-0.0481	-0.2938*	-0.1072	-0.1284	-0.0088
	Diff	***-0.1736***		***-0.2690***		***-0.1866***		***-0.1196***	
m	MSCI Arab Mrk Islamic	-0.0412	-0.0312	0.3451	0.1863	-0.0506	-0.0457	-0.2447	-0.0459
	Diff	***-0.0100***		***0.1587***		***-0.0049***		***-0.1987***	
	MSCI Arab Mrk Index	-0.0104	-0.0052	0.3012	0.1408	-0.0701	-0.0566	-0.3423	-0.1044
	Diff	***-0.0052***		***0.1604***		***-0.0136***		***-0.2378***	
Adj. R^2	MSCI Arab Mrk Islamic	49.38%	62.38%	15.33%	37.64%	69.73%	70.52%	80.23%	70.73%
	MSCI Arab Mrk Index	55.65%	65.08%	19.39%	32.00%	66.33%	70.23%	73.41%	66.73%

*, **, *** significant at 10%, 5%, 1%, respectively

9.3. Empirical Results for Internationally-Focused Portfolios

Table 9 reports the results for only the internationally-focused fund portfolios. The market indices used to benchmark the performance of these internationally-focused portfolios are also internationally-focused and they are: **1) MSCI World Islamic:** MSCI World Islamic Index and **2) MSCI World Index:** MSCI World Index IMI. To enhance comparability, each of the Islamic and the conventional internationally-focused portfolios

are benchmarked against the internationally-focused Islamic market index (MSCI World Islamic Index) and then against the internationally-focused conventional market index (MSCI World Index).

Table 9: Results for the Internationally-Focused Portfolios

The total sample consists of 143 mutual funds (96 Islamic and 47 conventional) in Saudi Arabia for the period from July 2004 to January 2010. From these funds, equally-weighted monthly-return portfolios are formed based on the funds': 1) geographical focus (local, Arab, and international), 2) *Shariah* compliancy (Islamic and conventional), and 3) different market trends (overall period: July 2004 to January 2010, bull period: July 2004 to February 2006, bear period: March 2006 to January 2010, and financial crisis period: September 2008 to January 2010). The SIBOR with one-month maturity serves as a proxy for the risk-free rate. All panels in this table report the results for only the internationally-focused portfolios. The market indices used to benchmark the performance of these internationally-focused portfolios are also internationally-focused and they are: 1) MSCI World Islamic: MSCI World Islamic Index and 2) MSCI World Index: MSCI World Index IMI. Panel A reports the non risk-adjusted return mean and variance results. Panel B reports the results from the simple risk-adjusted performance measures (modified Sharpe, MM, Treynor, and TT). Panel C repots the results from the single-factor model (CAPM). Panel D repots the results from the Treynor and Mazuy model. And finally Panel E reports the results from the four-factor model. All standard errors from all regressions are corrected for heteroscedasticity problems using White's (1980) correction test.

Table 9-Panel A: Non Risk-Adjusted Returns (Internationally-Focused Portfolios)

	Overall period		**Bull**		**Bear**		**Financial Crisis**	
	Mean	**Variance**	**Mean**	**Variance**	**Mean**	**Variance**	**Mean**	**Variance**
Islamic portfolio	0.21%	0.02%	0.62%	0.004%	0.04%	0.03%	-0.13%	0.06%
Conventional portfolio	0.29%	0.01%	0.45%	0.001%	0.21%	0.02%	0.06%	0.03%
The difference	***-0.08%***	***0.01%****	***0.17%***	***0.003%****	***-0.18%***	***0.01%****	***-0.19%***	***0.04%****
MSCI World Islamic	0.41%	0.21%	1.04%	0.08%	0.14%	0.26%	-0.62%	0.57%
MSCI World Index	0.24%	0.25%	1.15%	0.07%	-0.15%	0.32%	-0.66%	0.73%

*, **, *** significant at 10%, 5%, 1%, respectively

Table 9 -panel A- reports the non risk-adjusted return mean and variance results for the internationally-focused: fund portfolios and market benchmarks. The results indicate that the internationally-focused Islamic portfolio during the entire sample period is 0.01 percent more risky (using the variance) than its peer the internationally-focused conventional portfolio and that difference in the total risk is considered statistically significant at 1 percent. Even though the internationally-focused Islamic portfolio has more total risk exposure than its peer, the results during the entire studied period indicate that there is no statistical evidence that shows any differences in the performance (non risk-

adjusted return) between the Islamic and the conventional internationally-focused fund portfolios.

Breaking the sample period to the bull, bear and financial crisis periods, the results indicate that the internationally-focused Islamic portfolio is also considered significantly more risky (using the variance) than its peer the internationally-focused conventional portfolio. That is, the internationally-focused Islamic portfolio is considered 0.003, 0.01, and 0.04 percent more risky than its peer during the bull, bear, and financial crisis periods and that total risk difference is statistically significant at 1, 5, and 10 percent, respectively. Although the internationally-focused Islamic portfolio is considered more risky than its peer, there is no statistical evidence that shows any differences in the performance (non risk-adjusted return) between the Islamic and the conventional internationally-focused portfolios during these three periods.

Table 9-Panel B: Simple Risk-Adjusted Performance Measures (Internationally-Focused Portfolios)

Index		Overall period		Bull		Bear		Financial Crisis	
		Islamic	Conv.	Islamic	Conv.	Islamic	Conv.	Islamic	Conv.
Modified Sharpe Ratio		-0.001%	1.17%	51.97%	53.19%	-0.004%	-0.001%	-0.01%	-0.001%
MM	MSCI World Islamic	0.08%	0.33%	1.73%	1.77%	-0.43%	0.04%	-0.58%	-0.05%
	MSCI World Index	0.06%	0.33%	1.65%	1.68%	-0.50%	0.02%	-0.67%	-0.07%
Treynor	MSCI World Islamic	-0.22%	0.07%	2.12%	3.73%	-0.79%	-0.26%	-0.71%	-0.15%
	MSCI World Index	-0.25%	0.07%	2.06%	3.79%	-0.89%	-0.29%	-0.81%	-0.17%
TT	MSCI World Islamic	-0.36%	-0.07%	1.36%	2.98%	-0.66%	-0.13%	0.01%	0.57%
	MSCI World Index	-0.21%	0.11%	1.19%	2.92%	-0.47%	0.13%	-0.05%	0.58%

Table 9 -panel B- reports the results from the simple risk-adjusted performance measures for the internationally-focused fund portfolios. The results from this panel are very much similar to the results reported in (Table 8 –panel B) when the Arab-focused portfolios are discussed. The results indicate that the internationally-focused Islamic fund

portfolio underperforms its peer the internationally-focused conventional fund portfolio. This is true using all measures, regardless of the sample period under examination and regardless of the internationally-focused market benchmark employed to adjust for risk.

Table 9-Panel C: Single-Factor Model (CAPM) (Internationally-Focused Portfolios)

	Index	Overall period		Bull		Bear		Financial Crisis	
		Islamic	**Conv.**	**Islamic**	**Conv.**	**Islamic**	**Conv.**	**Islamic**	**Conv.**
α	MSCI World Islamic	-0.001	-0.0001	0.0021**	0.0013**	-0.0019	-0.0003	0.0000	0.0011
	Diff	***-0.0009***		***0.0008***		***-0.0017***		***-0.0011***	
	MSCI World Index	-0.0005	0.0002	0.0019*	0.0013*	-0.0012	0.0002	-0.0001	0.001
	Diff	***-0.0007***		***0.0006***		***-0.0015***		***-0.0012***	
β	MSCI World Islamic	0.2813***	0.1879***	0.1576***	0.0448*	0.2930***	0.2045***	0.3109***	0.2014***
	Diff	***0.0934*****		***0.1127*****		***0.0885*****		***0.1095*****	
	MSCI World Index	0.2556***	0.1727***	0.1623***	0.0442	0.2609***	0.1840***	0.2743***	0.1772***
	Diff	***0.0829*****		***0.1181*****		***0.0769*****		***0.0972*****	
Adj. R^2	MSCI World Islamic	73.00%	66.04%	46.89%	13.24%	76.07%	71.52%	84.40%	79.72%
	MSCI World Index	71.60%	66.35%	43.78%	10.65%	73.32%	70.40%	83.93%	78.77%

*, **, *** significant at 10%, 5%, 1%, respectively

Table 9 -panel C- reports the results from the single-factor model (CAPM). During the overall sample period, the results indicate that all betas are positive, less than 1, and highly significant at 1 percent; regardless what internationally-focused market benchmark (MSCI World Islamic Index or MSCI World Index) is used to adjust for risk. This means that during the entire sample period, both internationally-focused portfolios (Islamic and conventional) are considered less volatile than both internationally-focused market benchmarks. Similar results are observed when the entire sample period is broken down to bull, bear, and financial crisis periods. However, there is one exception where the results during the bull period indicate that there is no statistical evidence of any co-movement between the internationally-focused conventional portfolio and the internationally-focused conventional market index: MSCI World Index.

Looking at differences in beta, the beta-difference portfolio results suggest that the internationally-focused Islamic portfolio is, indeed, considered more risky than the internationally-focused conventional portfolio and these results are statistically significant of at least 5 percent. These findings are observed regardless of the sample period under examination and regardless of the internationally-focused market benchmark used to adjust for risk.

Looking at the Jensen alpha index to assess performance, the results during the overall, bear, and financial crisis periods reveal that both internationally-focused portfolios (Islamic and conventional) do not outperform both internationally-focused market benchmarks (Islamic and conventional). That is, alphas are either negative or insignificantly positive. On the other hand, the results during the bull period indicate that there is statistical evidence that both internationally-focused portfolios (Islamic and conventional) slightly outperform both internationally-focused market benchmarks. That outperformance ranges from 0.0013 to only 0.0021.

Looking at the alpha-difference portfolio between the Islamic and the conventional internationally-focused portfolios, the results indicate that there is no statistical evidence that shows any differences in the performance between these two portfolios. These results hold regardless of the sample period under examination and regardless of the internationally-focused market benchmark used to adjust for risk.

Table 9 -panel D- reports the results from the Treynor and Mazuy model. The results show that there is no statistical evidence that both internationally-focused portfolios (Islamic and conventional) possess any selectivity and/or market timing skills during all four sample periods; regardless of the internationally-focused market benchmark used to

adjust for risk. However, there are two exceptions when the MSCI World Islamic Index is used to adjust for risk: 1) during the bull period, the internationally-focused Islamic portfolio possesses some selectivity skills of around 0.0030 and it is statistically significant at 10 percent; and 2) during the bear period, the internationally-focused conventional portfolio possesses market timing abilities of around 0.4290 and it is statistically significant at 1 percent.

Table 9-Panel D: Treynor and Mazuy Model (Internationally-Focused Portfolios)

	Index	Overall period		Bull		Bear		Financial Crisis	
		Islamic	**Conv.**	**Islamic**	**Conv.**	**Islamic**	**Conv.**	**Islamic**	**Conv.**
α	MSCI World Islamic	-0.0012	-0.0006	0.0030*	0.0012	-0.0027*	-0.0014	-0.0019	-0.0012
	Diff	***-0.0006***		***0.0018***		***-0.0014***		***-0.0006***	
	MSCI World Index	-0.0004	-0.0001	0.0023	0.0009	-0.0013	-0.0004	0.0001	-0.0001
	Diff	***-0.0003***		***0.0013***		***-0.001***		***0.0002***	
γ	MSCI World Islamic	0.0665	0.2071	-1.2298	0.1936	0.3182	0.4290***	0.3719	0.474
	Diff	***-0.1406***		***-1.4234***		***-0.1108***		***-0.1022***	
	MSCI World Index	-0.0607	0.1136	-0.535	0.5307	0.0393	0.2051	-0.0367	0.176
	Diff	***-0.1743***		***-1.0657***		***-0.1658***		***-0.2127***	
Adj. R^2	MSCI World Islamic	72.61%	66.07%	45.98%	8.38%	76.17%	73.12%	84.11%	81.28%
	MSCI World Index	71.20%	66.10%	40.80%	6.79%	72.73%	70.58%	82.79%	77.97%

*, **, *** significant at 10%, 5%, 1%, respectively

Results from this panel also shows that there is no statistical evidence that shows any differences in both the selectivity and market timing skills between the Islamic and the conventional internationally-focused portfolios during all four studied periods; regardless what internationally-focused market benchmark is used to adjust for risk.

Table 9 -panel E- reports the results from the four-factor model. The beta results indicate that both internationally-focused portfolios (Islamic and conventional) are less volatile than both internationally-focused market indices (Islamic and conventional). That is, all betas are positive, less than 1, and highly significant. Furthermore, the beta-difference results indicate that the internationally-focused Islamic portfolio is considered more risky

than the internationally-focused conventional portfolio. All these results hold regardless of the sample period under examination and regardless of internationally-focused market benchmark used to adjust for risk.

Table 9-Panel E: Four-Factor Model (Internationally-Focused Portfolios)

	Index	Overall period		Bull		Bear		Financial Crisis	
		Islamic	**Conv.**	**Islamic**	**Conv.**	**Islamic**	**Conv.**	**Islamic**	**Conv.**
α	MSCI World Islamic	-0.0004	0.0006	0.0010	-0.00003	0.0001	0.0019*	-0.0010	0.0029
	Diff	***-0.0010***		***0.0010***		***-0.0018***		***-0.0039***	
	MSCI World Index	-0.00002	0.0009	-0.0002	-0.0005	0.0008	0.0024**	0.0018	0.0044
	Diff	***-0.0009***		***0.0003***		***-0.0016***		***-0.0026***	
β	MSCI World Islamic	0.2771***	0.1851***	0.1579***	0.0535**	0.2829***	0.1949***	0.3308***	0.1794***
	Diff	***0.0920*****		***0.1044****		***0.0880*****		***0.1514****	
	MSCI World Index	0.2522***	0.1710***	0.1733***	0.0607**	0.2511***	0.1756***	0.2650***	0.1444***
	Diff	***0.0813*****		***0.1127****		***0.0755*****		***0.1206****	
s	MSCI World Islamic	0.0148	0.0076	0.0155	0.0025	0.0204	0.0163	-0.0621	0.0085
	Diff	***0.0072***		***0.0131***		***0.0041***		***-0.0705***	
	MSCI World Index	0.0153	0.0078	0.0162	0.0027	0.0210	0.0165	-0.0246	0.0283
	Diff	***0.0075***		***0.0135***		***0.0045***		***-0.0529***	
h	MSCI World Islamic	-0.0147	0.0071	-0.0059	0.0036	-0.0542*	-0.0254	-0.0513	-0.0576
	Diff	***-0.0218***		***-0.0095***		***-0.0288***		***0.0063***	
	MSCI World Index	-0.0072	0.0125	-0.0150	0.0009	-0.0382	-0.0138	-0.0333	-0.0476
	Diff	***-0.0197***		***-0.0158***		***-0.0244***		***0.0143***	
m	MSCI World Islamic	-0.0123	-0.0145	0.0158	0.0202	-0.0423**	-0.0433**	0.0510	-0.0484
	Diff	***0.0022***		***-0.0044***		***0.0010***		***0.0994***	
	MSCI World Index	-0.0112	-0.0133	0.0306	0.0254*	-0.0418*	-0.0423**	-0.0372	-0.0947
	Diff	***0.0021***		***0.0052***		***0.0004***		***0.0575***	
Adj. R^2	MSCI World Islamic	72.62%	65.21%	45.39%	15.64%	76.99%	72.61%	84.43%	77.61%
	MSCI World Index	71.04%	65.70%	48.14%	19.00%	73.38%	71.28%	82.11%	76.33%

*, **, *** significant at 10%, 5%, 1%, respectively

The alpha results show that there is no statistical evidence that both internationally-focused portfolios (Islamic and conventional) reward investors with abnormal returns; regardless of the sample period under examination and regardless of the internationally-focused market benchmark used to adjust for risk. However, there is one exception during the bear period where the results show that the internationally-focused conventional

portfolio slightly outperforms both internationally-focused market benchmarks. In other words, the results during the bear period indicate that the internationally-focused conventional portfolio outperforms: 1) the MSCI World Islamic Index by 0.0019 (significant at 10 percent), and 2) the MSCI World Index by 0.0024 (significant at 5 percent).

The alpha-difference results indicate that there is no statistical evidence that shows any performance differences between the Islamic and the conventional internationally-focused portfolios. These results holds regardless of the sample period under examination and regardless of internationally-focused market benchmark used to adjust for risk. These results are also very much consistent with the results obtained from the single-factor model (panel C).

The results from the SMB and HML risk factors indicate that there is no statistical evidence that both internationally-focused portfolios (Islamic and conventional) are sensitive to either the SMB and/or HML risk factors; regardless of sample period under examination and regardless of the internationally-focused market benchmark used to adjust for risk. However, there is one exception where the results during the bear period indicate that the internationally-focused Islamic portfolio is biased toward growth stocks when it is benchmarked against the internationally-focused Islamic index (MSCI World Islamic Index). Loading on the HML risk factor is -0.0542 and it is statistically significant at 10 percent.

The results from the MOM risk factor indicate that during the overall, bull, and financial crisis periods, there is no statistical evidence that both portfolios (Islamic and conventional) are sensitive to the MOM risk factor; regardless of the internationally-focused market benchmark used to adjust for risk. However, there is one exception during

the bull period where the results indicate that the internationally-focused conventional portfolio is biased towards a momentum investment strategy when the internationally-focused conventional index (MSCI World Index) is used to adjust for risk (loading on the MOM risk factor is 0.0254 and it is statistically significant at 10 percent). On the other hand, results during the bear period indicate that there is statistical evidence that both internationally-focused portfolios (Islamic and conventional) are biased towards a contrarian investment strategy; regardless what internationally-focused market benchmark is used to adjust for risk. That is, results show that loadings on the MOM risk factor during the bear period ranges from -0.0418 to -0.0433.

Finally, the SMB-, HML-, and MOM-difference portfolio results indicate that both Islamic and conventional internationally-focused portfolios exhibit virtually identical sensitivities to all these risk factors. These results hold regardless of the sample period under examination and regardless of the internationally-focused market benchmark used to adjust for risk.

10. Discussing the Empirical Results

Before discussing the empirical results, it is essential to reiterate what is meant by locally-, Arab-, and internationally-focused fund portfolios. A locally-focused fund portfolio is a portfolio that contains Saudi mutual funds that invest in assets located only in Saudi Arabia. An Arab-focused fund portfolio is a portfolio that contains Saudi mutual funds that invest in assets located only in countries that are members of the Arab league, excluding Saudi Arabia. An internationally-focused fund portfolio is a portfolio that contains Saudi mutual funds that invest in assets located in all other countries, excluding Saudi Arabia and countries that belong in the previous Arab group.

10.1. Locally-Focused Fund Portfolios

Assessing the locally-focused fund portfolios, the total risk (variance) results indicate, as hypothesized, that there is statistical evidence that the Islamic fund portfolio is, indeed, less risky than the conventional fund portfolio. This is true regardless of the period under examination. Even though the Islamic fund portfolio is less risky, there is no statistical evidence that the performance (using non risk-adjusted returns) of such portfolio is different from that of the conventional fund portfolio (fail to reject the null hypothesis). This is true during all periods, but the bull period.

However, when risk is adjusted, results provide a different story. As hypothesized, all simple risk-adjusted performance measures show that the locally-focused Islamic fund portfolio underperforms its peer the locally-focused conventional fund portfolio during both the overall and bull periods. That underperformance could mainly be attributed to the lower level of risk assumed. Furthermore, all risk-adjusted performance measures show that the locally-focused Islamic fund portfolio performs less badly than its peer the locally-focused conventional fund portfolio during both the bear and financial crisis periods. Such finding is not surprising given that the Islamic fund portfolio has less risk exposure, and therefore is not going to perform worse than the conventional fund portfolio in adverse market trends. However, it worthy to note that these differences in performance between the Islamic and the conventional locally-focused fund portfolios are very small using all these simple risk-adjusted performance measures during all studied periods, except when using the modified Sharpe ratio during the bull period.

For example, during the overall period, the underperformance of the Islamic fund portfolio ranges from 0.08 to only 0.86 percent. Also, during the bull period, the

underperformance of the Islamic fund portfolio ranges from 0.92 to only 1.14 percent (excluding the results from the modified Sharpe ratio where the underperformance is around 19.83 percent). Lastly, during both the bear and financial crisis periods, the outperformance of the Islamic fund portfolio ranges from 0.04 to only 0.39 percent.

In order to further examine the persistence of these small performance and risk differences between the Islamic and the conventional locally-focused fund portfolios, a regression approach is employed.

Looking at the risk differences (differences in beta), the results from both the single-factor and four-factor models confirm the earlier finding that the locally-focused Islamic fund portfolio is, indeed, less risky than the locally-focused conventional fund portfolio (reject the null hypothesis of no risk differences between Islamic and conventional funds). This is true regardless of the sample period under examination and regardless of the locally-focused market benchmark used to adjust for risk. However, there is one exception when the locally-focused Islamic index (GCC Islamic) is employed during the bull period where the beta-difference results from both models still indicate that the Islamic fund portfolio is less risky than its peer, but that risk difference is statistically insignificant. Nevertheless, it is worthy to note that such exception does not carry any importance because the locally-focused Islamic market benchmark (GCC Islamic) is considered by far inferior to the locally-focused conventional market index (TASI) in explaining returns of both Islamic and conventional locally-focused portfolios.

Looking at the performance differences (differences in alpha), the results from all three models (single-factor, Treynor & Mazuy, and the four-factor models) indicate that there is no statistical evidence that shows any performance differences between the Islamic

and the conventional locally-focused fund portfolios (fail to reject the null hypothesis of no performance differences between Islamic and conventional funds). These findings are observed regardless of the sample period under examination and regardless of the locally-focused market benchmark used to adjust for risk.

It is worthy to note that all findings from examining locally-focused fund portfolios suggest that the risk-return profile of the Islamic fund portfolio is considered superior to that of the conventional fund portfolio. This is considered good news for investors interested in investing in a portfolio of locally-focused Islamic funds because these investors are exposed to lower risk, but at the same time they are not penalized by less return. In other words, investors interested in locally-focused portfolios are better off investing in an Islamic fund portfolio than in a conventional fund portfolio because the Islamic fund portfolio exposes investors to less risk for a return that is statistically no different from that earned when investing in the conventional fund portfolio.

Furthermore, the results from the Treynor & Mazuy model indicate that there is no evidence that there exist any differences in the market timing skills between the Islamic and the conventional locally-focused portfolios. This is true regardless of the sample period under examination and regardless of the locally-focused market benchmark used to adjust for risk.

Finally, the results from the four-factor model indicate that when the locally-focused Islamic index (GCC Islamic) is employed, both locally-focused fund portfolios (Islamic and conventional) exhibit virtually identical sensitivities to all risk factors: SMB, HML, and MOM. This is true regardless of the sample period under examination. However, as indicated earlier, the locally-focused conventional index (TASI) is much superior to the GCC

Islamic index in explaining returns of both Islamic and conventional locally-focused fund portfolios. Thus, the results that are based on using TASI shed more light on the behavior of locally-focused fund portfolios when common equity investment strategies are introduced into the picture.

When TASI is used, results from the four-factor model indicate that the locally-focused Islamic fund portfolio during only the overall and financial crisis periods is more sensitive to the SMB risk factor where such fund portfolio is more biased towards small capitalization stocks than is its peer the locally-focused conventional fund portfolio. Such findings are consistent with findings of Abderrezak (2008) and Hoepner, Rammal, & Rezec (2009) where they find that Islamic funds, in general, are biased towards small capitalization stocks. However, results from both HML and MOM risk factors indicate that both locally-focused fund portfolios (Islamic and conventional) exhibit virtually identical sensitivities to these risk factors, regardless of sample period under examination.

10.2. Arab-Focused Fund Portfolios

Results from analyzing the Arab-focused fund portfolios suggest the following. Contrary to what is hypothesized; the variance results indicate that during only the overall and bear periods, there is statistical evidence that the Islamic fund portfolio is more risky than the conventional fund portfolio. However, during the bull and financial crisis periods, there no evidence that there exist any differences in the variance. Nonetheless, the performance results (using non risk-adjusted returns) show that there is no statistical evidence, regardless of the sample period under examination, that there exist any differences in the performance between the Islamic and the conventional fund portfolios. However, when risk is adjusted, all simple risk-adjusted performance measures show that

the Islamic fund portfolio underperforms its peer the conventional fund portfolio. This is true regardless of the sample period under examination and regardless of the Arab-focused market benchmark used to adjust for risk.

To further examine the risk-return profile of these Arab-focused fund portfolios, a regression approach is used. Assessing the riskiness of these fund portfolios, the beta-difference results from both the single-factor and four-factor models indicate that the null hypothesis of no risk differences between the Islamic and the conventional fund portfolios cannot be rejected at all conventional levels. Assessing the performance of these Arab-focused fund portfolios, the alpha-difference results from all three models (single-factor, Treynor & Mazuy, and the four-factor models) also indicate that the null hypothesis of no return differences between the Islamic and the conventional fund portfolios cannot be rejected at all conventional levels. All these results are observed regardless of the sample period under examination and regardless of the Arab-focused market benchmark used to adjust for risk. All these findings support the assertion that there is neither a cost nor a benefit from adhering to the *Shariah* law when investing in Arab-focused fund portfolios.

Furthermore, the results from the Treynor & Mazuy model indicate that there is no statistical evidence that there exist any differences in the market timing skills between the Islamic and the conventional Arab-focused fund portfolios. Also, the results from the four-factor model indicate that both Arab-focused fund portfolios (Islamic and conventional) exhibit virtually identical sensitivities to all risk factors: SMB, HML, and MOM. Again, all findings from both models (Treynor & Mazuy and the four-factor models) are observed regardless of the sample period under examination and regardless of the Arab-focused market benchmark used to adjust for risk.

10.3. Internationally-Focused Fund Portfolios

Results from analyzing the internationally-focused fund portfolios suggest the following. Contrary to what is hypothesized, the variance results indicate that there is strong evidence that the Islamic fund portfolio is slightly more risky than the conventional fund portfolio. This is true regardless of the period under examination. Nonetheless, the performance results (using non risk-adjusted returns) show that there is no statistical evidence that there exist any differences in the performance between the Islamic and the conventional fund portfolios; regardless of the sample period under examination.

Consistent with the results from analyzing the Arab-focused fund portfolios; the results from analyzing the internationally-focused fund portfolios show that when risk is adjusted, all simple risk-adjusted performance measures indicate that the Islamic fund portfolio underperforms its peer the conventional fund portfolio. All these results hold regardless of the sample period under examination and regardless of the internationally-focused market benchmark used to adjust for risk.

In order to further examine and compare the risk-return profile between Islamic and conventional internationally-focused fund portfolios, a regression approach is employed. Consist with the variance results, the systematic risk (beta) results from both the single-factor and four-factor models indicate that the Islamic fund portfolio is, indeed, more risky than the conventional fund portfolio. Assessing the performance, the results from all three models (single-factor, Treynor & Mazuy, and the four-factor models) indicate that there is no statistical evidence that shows any performance differences between the Islamic and the conventional fund portfolios. All these findings are observed regardless of

the period under examination and regardless of the internationally-focused market benchmark used to adjust for risk.

Furthermore, the results from the Treynor & Mazuy model indicate that there is no evidence that there exist any differences in the market timing skills between the Islamic and the conventional internationally-focused fund portfolios. Also, the results from the four-factor model indicate that both internationally-focused fund portfolios (Islamic and conventional) exhibit virtually identical sensitivities to all risk factors: SMB, HML, and MOM. All findings from both models (Treynor & Mazuy and the four-factor models) are observed regardless of the sample period under examination and regardless of the internationally-focused market index employed.

It is worthy to note that when the locally-focused fund portfolios are analyzed, findings suggest that investors that invest in a locally-focused Islamic fund portfolio are better off than those who invest in a locally-focused conventional fund portfolio. However, the opposite is true when analyzing the internationally-focused fund portfolios. That is, investors are better off investing in an internationally-focused conventional fund portfolio than in an internationally-focused Islamic fund portfolio. This is because the internationally-focused Islamic fund portfolio exposes investors to more risk for a return that is statistically no different from that earned when investing in an internationally-focused conventional fund portfolio.

10.4. Final Note

Analyzing portfolios of Saudi mutual funds indicates that the risk-return profile of the Islamic and the conventional fund portfolios changes depending on the portfolio's geographical focus. A locally-focused Islamic fund portfolio has a superior risk-return

profile than a locally-focused conventional fund portfolio, whereas, the opposite is observed when investigating the internationally-focused fund portfolios. On the other hand, there is no statistical evidence that the risk-return profile of an Arab-focused Islamic fund portfolio is different from that of the Arab-focused conventional fund portfolio. All these findings are observed regardless of the sample period under examination (overall, bull, bear, and financial crisis periods). Also, all these findings are observed regardless of different appropriate market benchmarks used to adjust for risk.

A possible explanation for the different risk-return profile between locally- and both Arab- and internationally-focused Islamic fund portfolios is that *Shariah*-compliant assets that are located outside of Saudi Arabia could not be as *strict* and *consistent* in adhering to the *Shariah* law as those located in Saudi Arabia.

To elaborate, Saudi Arabia is considered one of the few countries that have a law that is strictly based on *Shariah*. Furthermore, the majority of the population embraces the Islamic religion and believes that such religion is not just a ritual practice, but instead it is a way of life where all Islamic rules and regulations must be implemented in all aspects of life including those aspects related to finance and investment. Thus, *Shariah*-compliant assets that are designed and marketed to attract strict Muslim investors are going to be under more scrutiny to ensure their *strict* adherence to the *Shariah* law when they are located in Saudi Arabia. This is because these assets are surrounded with two monitoring mechanisms: the Saudi law and strict Muslim investors in Saudi Arabia. Therefore, it is not surprising to know that Islamic mutual funds that are locally-focused (funds invest in *Shariah*-compliant assets located only in Saudi Arabia) are adhering to the *Shariah* law in a very *strict* and *consistent* manner.

However, the case is more likely to be different when *Shariah*-compliant assets are examined in different countries or regions, especially in non-Muslim countries. That is, each country or region has its own way in complying with the *Shariah* law which results in a lack of standardization in *Shariah* screenings. For example, some countries require the ratio of 'account receivables to total assets', 'interest-bearing debt to total assets', and 'interest-bearing cash and investments to total assets' to be less than 45, 30, and 30 percent, respectively; while other countries require these ratios to be less than 33 percent. Another example is that some countries use total assets as the denominator when evaluating these financial filter ratios, while other countries use different variations of market capitalization (such as market capitalization itself, 12-, 24-, and 36-month market capitalization average). All these dissimilarities in setting the Islamic norms between countries will most likely affect the overall *Shariah* adherence decision from one country to another.[29]

In other words, because there are some inconsistencies in setting the Islamic norms from one country to another, it is not unlikely for a firm to be classified as Islamic in one country, but as non-Islamic in another country. And this is the main reason why it is expected that *Shariah*-compliant assets that are located in countries other than Saudi Arabia are not as *strict* and *consistent* in adhering to the *Shariah* law as those assets that are located in Saudi Arabia.

As a result, Islamic mutual funds that are locally-focused are expected to better represent mutual funds that are not just comfortable with the *Shariah* law, but instead mutual funds that are *consistently* and *strictly* adhering to the *Shariah* law than Islamic

[29] See Chapter 1: Islamic Finance, section 4.1: Screening for *Shariah-Compliant* Stocks for more details.

mutual funds that are either Arab- or internationally-focused (funds invest in *Shariah*-compliant assets located in all counties, but Saudi Arabia). If this is the case, then this could explain why there are differences in the risk-return profile between the locally- and both Arab- and internationally-focused portfolios of Saudi Islamic mutual funds. However, the investigation of such issue is out of the scope of this paper and is left for future research.

11. Conclusion

This paper investigates one of the most important issues raised in the Islamic mutual fund literature. That issue is whether investing in Islamic mutual funds comes at any cost. To my knowledge, this is the first paper that comprehensively investigates this issue in the context of Saudi Arabia.

To investigate whether Islamic mutual funds are associated with any costs, this paper employs a unique sample of 143 Saudi mutual funds (96 Islamic and 47 conventional) during the period from July 2004 to January 2010. That Saudi mutual fund sample very much represents the Saudi mutual fund industry in terms of geographical focuses, diversity, investment objectives, *Shariah* compliancy, and institutional management.

Furthermore, this paper utilizes a portfolio approach in order to help diversify away fund-specific risks. Thus, all Saudi mutual funds in the selected sample are grouped into portfolios based on the following characteristics: three main geographical focuses (local, Arab, and international), *Shariah* compliancy (Islamic and conventional), and four different Saudi stock market trends (overall, bull, bear, and the recent 2008 financial crisis periods). Grouping funds into portfolios in this manner facilitates comparability of the data and enhances reliability of results.

Then this paper employs very well known performance measures (such as the modified Sharpe ratio, MM index, Treynor ratio, and TT index) as well as very well known regression models (such as the single-factor model, the Treynor and Mazuy model, and a multifactor model that is in the spirit of Carhart (1997) four-factor model) in order to assess the risk-return profile of these Saudi mutual fund portfolios.

Findings from this paper suggest that using portfolios of Saudi mutual funds to investigate the issue of whether investing in Islamic mutual funds is associated with any cost heavily depends on the geographical focuses of these fund portfolios.

That is, investors are better off investing in the locally-focused Islamic fund portfolio due to its superior risk-return profile than in the locally-focused conventional fund portfolio. That is, the locally-focused Islamic fund portfolio exposes investors to less risk for the same level of return provided by its conventional peer: the locally-focused conventional fund portfolio.

The opposite is true when internationally-focused fund portfolios are analyzed. That is, investors are better off investing in the internationally-focused conventional fund portfolio than in the internationally-focused Islamic fund portfolio. This is because the internationally-focused Islamic fund portfolio exposes investors to more risk for the same level of return provided by the internationally-focused conventional fund portfolio.

However, when Arab-focused fund portfolios are analyzed, findings indicate that there is neither a cost nor a benefit from adhering to the *Shariah* law. That is, results indicate that there is no statistical evidence that the risk-return profile of the Arab-focused Islamic fund portfolio is different from that of the Arab-focused conventional fund portfolio.

It is worthy to note that all these findings are observed regardless of the sample period under examination (overall, bull, bear, and financial crisis). Also, all these findings are robust regardless of different appropriate market benchmarks used to adjust for risk.

Finally, findings from this paper raise an important question: Are Saudi Islamic mutual funds that are Arab- and/or internationally-focused adhere to the *Shariah* law in a manner that is different from Saudi Islamic mutual funds that are locally-focused? However, this issue is left for future research because investigating such issue is beyond the scope of this paper.

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Appendices

Appendix A: The Created 24 Different Types of Portfolios

Panel A: Overall Sample Period (July 2004-Janurary 2010)	Panel B: The Bull Period (July 2004-Feberuary 2006)
Local	**Local**
Islamic portfolio 1	*Islamic portfolio 4*
non- Islamic portfolio1	*non- Islamic portfolio4*
Arab	**Arab**
Islamic portfolio 2	*Islamic portfolio 5*
non-Islamic portfolio 2	*non-Islamic portfolio 5*
International	**International**
Islamic portfolio 3	*Islamic portfolio 6*
non-Islamic portfolio 3	*non-Islamic portfolio 6*
Panel C: The Bear Period (March 2006-January2010)	**Panel D: The Financial Crisis Period (September 2008-January2010)**
Local	**Local**
Islamic portfolio 7	*Islamic portfolio 10*
non- Islamic portfolio7	*non- Islamic portfolio10*
Arab	**Arab**
Islamic portfolio 8	*Islamic portfolio 11*
non-Islamic portfolio 8	*non-Islamic portfolio 11*
International	**International**
Islamic portfolio 9	*Islamic portfolio 12*
non-Islamic portfolio 9	*non-Islamic portfolio 12*

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