Essays on Shariah Compliant Stocks

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Essays on *Shariah* Compliant Stocks

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VRIJE UNIVERSITEIT

Essays on *Shariah* Compliant Stocks

ACADEMISCH PROEFSCHRIFT

ter verkrijging van de graad Doctor aan
de Vrije Universiteit Amsterdam,
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Prof. dr. Bert Scholtens
Prof. dr. Hans Visser

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Raphie Hayat
Amsterdam, 2015

Contents

Chapter 1. Introduction and Summary[1]

Islam restricts the ability of Muslims to invest in stocks. They can only invest in so-called *Shariah* compliant stocks. These stocks have to pass certain financial and non-financial screens to be considered Islamic. In a way, these stocks are given an Islamic label. This dissertation is about this Islamic label. Specifically, the main question I want to answer is whether an Islamic label for listed companies indicates that they are different from listed companies without such a label.

This question is interesting because Islamic finance (of which *Shariah* compliant stocks are a subset) has been growing double digits for the past 10 years and proponents of this industry argue that it is a better alternative for the current financial system. The argument goes that because Islam preaches avoiding debt and taking excessive risk, the recent financial crisis would have been prevented (or at least mitigated) if it were based on Islamic principles. This might very well be true, but in practice, Islamic finance tends to look very similar to conventional finance.

In this dissertation, I show that this similarity is even stronger for *Shariah* compliant stocks. In other words, an Islamic label for stocks is meaningless, at least financially. This does not mean the label is without value. Muslims might very much value investing in accordance with their faith as other ethically inclined investors value investing in socially responsible companies. What I argue is that Muslims should not expect additional financial benefits (nor penalties!) from investing in *Shariah* compliant stocks.

[1] This dissertation is a collection of separate essays. Thus, there is inevitably some repetition, mostly with regard to explaining the basics of Islamic finance. However, I leave these repetitive passages in the text for two reasons. First, I want the reader to be able to read the separate essays on a stand-alone basis without having to necessarily consult other sections of the dissertation. Second, it helps the readability of the separate essays. Despite being separate essays, the reader will notice a clear unifying theme, namely, the effect of an Islamic label on various characteristics of listed companies. I try to sort the essays such that the next essay follows naturally from the previous one.
Some other relevant notes: (i) The Arabic terms used in this dissertation are based on classical Arabic, which is conventional in research on Islamic finance. (ii) Throughout this dissertation, the following words are used interchangeably: "stocks", "equities", and "shares"; "debt" and "leverage"; "firm" and "company"; "essay" and "study"; "*halal*", "Islamic", and "*Shariah* compliant"; "certification" and "certificate". (iii) I use "we" for self-reference in chapters based on papers authored with others and "I" for papers authored only by myself. (iv) When I refer to rows and columns in the tables, the first row (column) is the one that contains data.

This argument is based on the findings of several studies, which are included in this dissertation as chapters.[2] In Chapter 2, I briefly describe the Islamic finance industry and show that Islamic finance in general and *Shariah* compliant stock investing in particular have indeed shown stellar growth, the latter 28% per year in the past 17 years. The literature indicates that for Islamic finance in general, growth has been driven mainly by the size, growth, wealth, and purchasing power of the Muslim population. For *Shariah* compliant stock investing in particular, there is much less literature, but I argue that literature on Socially Responsible Investing (SRI) might provide some insight.

To do this, I first show that SRI and *Shariah* compliant stock investing are related. Namely, if SRI is defined using the definition of Eurosif (2014), *Shariah* compliant stock investing can be seen as a subset of SRI. Specifically, SRI that excludes certain companies/sectors from its investment universe based on ethical/moral grounds. *Shariah* compliant stock investing does exactly this, although what is morally unacceptable is sometimes different from SRI (for example, companies that produce or sell pork).

Given their relatedness, I review the literature on the growth of both SRI and *Shariah* compliant stock investing. This growth is usually measured by the growth of SRI funds and funds that invest in *Shariah* compliant stocks. From the literature, I gather that the factors that explain this growth can be classified in micro factors and macro factors.

Regarding the micro factors, the growth of SRI seems to be driven by these funds' returns, age, size, riskiness, and management fees (Renneboog et al., 2011) and this does not seem to differ for Islamic funds (Marzuki and Worthington, 2011). Overall, both types of funds that have higher past returns and are younger seem to attract more money. Fees, size, and riskiness also affect growth of both type of funds, but it is less clear whether the effect is in the same direction.

[2] More specifically, Chapters 4, 5, 6, and 7 are separate studies, Chapters 2 and 3 are introductory background chapters, and Chapter 1 summarizes and concludes. Chapters 4 and 7 have been published as Hayat and Kraeussl (2011) and Hayat et al. (2013) in *Emerging Markets Review* and *Journal of Business Ethics*, respectively. Chapter 5 is a VU University Amsterdam and Saudi Spanish Center for Islamic Economics and Finance (SCIEF) working paper and is joint work with Celia de Anca. Finally, Chapter 6 is a VU University Amsterdam working paper.

Regarding macro factors, the growth of SRI seems to be driven by differences between countries in culture, the size of the pension fund sector, economic openness, and the tax environment (Scholtens, 2005; Scholtens and Dam, 2007; and Scholtens and Sievänen, 2013). Specifically, countries with (i) a culture of low masculinity and high uncertainty avoidance (see Hofstede, 1980 and 1991), (ii) a large pension fund sector, and (iii) an open economy (in terms of trade) tend to engage more in SRI than countries without these characteristics. This might also hold for *Shariah* compliant stock investing. As a very rough indication, the three countries where most Islamic funds are domiciled do seem to have these characteristics. However, more data and proper statistical analysis is needed to conclude that these factors have actually influenced the growth of *Shariah* compliant stock investing in these countries. This is an interesting topic for further research.

Chapter 3 compares risk and returns of the *Shariah* compliant stock market to the conventional stock market. Specifically, it analyzes the return distributions of Islamic and conventional stock indices and shows that they are similar. Broadly speaking, *Shariah* compliant stocks outperform conventional stocks during a bear market and underperform during a bull market, but do not perform significantly differently in the long run, nor do they appear less risky than conventional stocks. This is still good news for Muslims because it means that they do not have to give up return or incur extra risk for investing in accordance with their own faith.

Unfortunately, the same cannot be said of funds that actually invest in *Shariah* compliant stocks (so called Islamic Equity Funds). Namely, Chapter 4 analyzes the performance of these Islamic Equity Funds (IEFs) and shows that they do not outperform either conventional or *Shariah* compliant stock indices (alternatively called Islamic indices). During the 2008/2009 financial crisis, these IEFs even significantly underperform the Islamic as well as conventional stock market. The reason for this underperformance seems to be that IEF managers try to time the market, but as a consequence reduce their returns because they fail. This is unfortunate because mutual funds typically charge fees (on average 2% of the assets under management) for managing their clients' funds and justify these fees by offering a higher return than a broad market index. That mutual funds in general cannot beat the market is well established empirically. I find that this is no different for Islamic equity funds.

Despite the fact that neither Islamic indices nor IEFs outperform conventional indices, Muslims may still put a monetary on value investing in accordance with their faith. One way to test this is to analyze how stocks react when they get an Islamic label and when this label is removed. If Muslims actually value an Islamic label, stocks that get such a label can be expected to appreciate in value since there is extra demand for these stocks and vice versa when this Islamic label is removed.

That is what I analyze in Chapter 5. However, I find that stocks do not react when they get an Islamic label or when this label is removed. Specifically, I analyze additions to and deletions from an Islamic index, namely the FTSE *Shariah* Global Equity Index (FTSE Islamic). It appears that, after correcting for other factors that explain stock returns (such as the market return, a value factor, a size factor, and a momentum factor), stocks that are added to (deleted from) the FTSE Islamic do not experience abnormally high (low) returns on that day, nor over the long term. Thus, investors do not seem to value an Islamic label, at least not enough to make stock prices move.[3]

Chapter 5 also shows that it is not strange that investors do not price an Islamic label. Namely, it shows that there are no significant differences in risk, profitability, or investor awareness of stocks in the period before and after they get (or lose) an Islamic label. If there were significant differences in risk, profitability, or investor awareness, this might indicate the Islamic label signals information about these characteristics.

But perhaps an Islamic label indicates other positive properties that are not directly apparent. An important one is good corporate governance, because recent research directly links governance to leverage (e.g., Arping and Sautner, 2010). Specifically, this research argues that leverage and governance act as substitutes in mitigating agency problems. In this view, firms with low governance quality take on debt to mitigate agency problems (such as excessive perks of CEOs

[3] Alternatively, the absence of a reaction to an Islamic label means that there are not enough funds investing in this Islamic index to make its constituent stocks react.

and unnecessary but empire-building acquisitions). If this is the case, the opposite should also hold, i.e., firms with lower debt can be expected to have better quality governance.

Since the Islamic label indicates low debt, it might indirectly also indicate good governance. Indeed, the Islamic label is sometimes marketed by its sellers (such as FTSE and Dow Jones) as SRI. However, as explained before, *Shariah* compliant stock investing only resembles SRI in a narrow sense. Both exclude certain sectors and companies based on ethical/moral grounds. However, where SRI usually includes Environmental, Social, and Governance (ESG) criteria, the Islamic label does not explicitly consider these ESG criteria in its screening process. Still, the marketing of the Islamic label as SRI might be partially justified, at least in terms of governance (the G in ESG).

However, Chapter 6 shows that this is not the case. Chapter 6 analyzes the effect of an Islamic label on corporate governance. It shows that, after controlling for other determinants, the Islamic label does not significantly affect overall governance quality. Thus, an Islamic label does not indicate good governance.[4]

Although an Islamic label does not seem to signal anything financially meaningful, nor say anything about good governance, Chapter 7 shows that it is costly to get this label (which I call a *halal* certification in this chapter). For a common Islamic financial product (an Islamic equity fund), I estimate that these costs are comparable to getting a credit rating for bonds. Chapter 7 also shows that the market for these *halal* certifications is dominated by just a few Islamic scholars. The elite scholars of this group earn substantial fees (estimated at USD 4.5 million per year) for giving these certifications and thus have a clear incentive to be excessively lenient in giving them.

Chapter 7 discusses some possible solutions to this problem. The best of these solutions is that a neutral nonprofit organization takes on the provision of all *halal* certifications, pays its *Shariah*

[4] The Islamic label does, however, positively affect governance quality as measured by the Bloomberg Corporate Governance Disclosure score. This relationship is quite robust to different specifications. However, I do not derive strong conclusions from this finding because the same Islamic label is insignificant in explaining my other three proxies for governance quality.

scholars fixed fees, and is funded collectively by the international Islamic finance community. Ideally, this organization should be domiciled in a country that is neutral, has excellent institutional quality, a well-developed financial sector, and an open culture.

The overall conclusion of this dissertation is that there is nothing really special about investing in *Shariah* compliant stocks. This is in contrast to previous research, which tends to be overly positive towards investing in these stocks. For example, it finds that *Shariah* compliant stocks are more resilient during crises (Bhatt and Sultan, 2012), are suitable for risk averse investors (Ho et al., 2014), and, in some cases, might even might be considered as a separate asset class (Dewandaru et al., 2014). The findings in this dissertation suggest these claims should be interpreted with caution.

Furthermore, my research has five important implications that can improve the current situation for Muslim investors. First, investing in *Shariah* compliant stocks can increase the welfare of Muslims. Namely, it offers them a chance to invest in accordance with their faith without having to give up return or incur additional risk. A specific way to do this, for example, is by giving Muslims the opportunity to invest their pensions in a *Shariah* compliant way.

Second, potential Muslim investors should be explicitly made aware of the exposures inherent to *Shariah* compliant stock investing, for example, the high exposures Islamic portfolios have to the Healthcare, Technology, and Oil and gas sectors, but also, more subtly, exposures to growth stocks.

Third, if Muslims choose to invest in *Shariah* compliant stocks, they are better off investing in passive investments such as an Islamic ETF, rather than investing in Islamic Equity Funds. This is because the latter do not outperform the overall index, while they charge higher management fees than passive funds.

Fourth, a neutral non-profit organization should take over the current practice of *halal* certifications. This is because Muslim investors currently face an additional source of uncertainty not borne by conventional investors, namely, *Shariah* scholar uncertainty (the chance that

Shariah scholars change their mind on what exactly is considered *halal*). Such an organization should preferably be based in a neutral country with good institutional quality, a well-developed financial sector, and an open culture. Based on institutional quality and financial sector development, Switzerland, Sweden, or the Netherlands seem good candidates since they score high on both these measures.

Finally, the Islamic label should explicitly incorporate ESG criteria into its screening process because the principles of Islam do explicitly call for business to be conducted in a way that considers environmental, social, and governance issues. Without inclusion of these criteria, the Islamic label runs the risk of becoming a marketing gimmick rather than an indication of ethical quality.

Chapter 2. Islamic Finance and Investing: Growth and Relation With SRI[5]

Islamic finance is a catchall term used to describe financial transactions or products that are permissible according to Islamic law (*Shariah*). It can be viewed (at least in its current form) as a subset of conventional finance. Accordingly, it consists broadly of three main components: banking (Islamic banks), insurance (*Takaful*), and capital markets (*Shariah* compliant stocks and the Islamic equivalent of bonds, called *Sukuk*).[6]

All three of these components are comparable to their conventional counterparts. Islamic banks (which, measured by the size of their balance sheets, represent more than 70% of total Islamic finance assets, according to Thomson Reuters, 2013), for example, provide services such as trade financing, credit cards, mortgages, savings, and investment accounts.[7] However, all these products are based on Islamic contracts and are thus considered permissible (*halal*).[8]

[5] I do not discuss the history of Islamic finance, Islamic banks, Islamic insurance (*Takaful*) and Islamic bonds (*Sukuk*) here because my focus is on the equity capital market and because these subjects are already excellently covered by, for example, Zaheer (2013), Askari et al. (2012), Visser (2009), Shanmugam and Zahari (2009) and El Gamal (2006).

[6] Leaving aside regulators, brokers and other intermediaries.

[7] To be a bit more specific, an Islamic bank's balance sheet typically consists of profit and loss sharing deposits, demand deposits (cash that can be withdrawn at any time, similar to conventional deposits) and equity on the liabilities side (Zaheer, 2013). On the asset side, there are financial products (such as mortgages, credit cards, and trade financing) based on Islamic contracts such as *Murabahah* and *Ijarah* (debt-based) and *Musharakah* and *Mudarabah* (equity-based).

[8] There are several terms that are used to indicate this permissibility, namely "Islamic", "*halal*", and "*Shariah* compliant". Strictly speaking, these three terms should mean the same thing since they all refer to activities that are permissible in Islam (Rehman and Askari, 2010; Khan, 2010). The term Islamic finance is most often used as an all-encompassing term, but for specific segments, other terms are more common. For example, permissible stocks are often called *Shariah* compliant stocks (e.g., Derigs and Marzban, 2008; Bhatt and Sultan, 2012), permissible mutual funds are often called Islamic funds (e.g., Abdelsalam et al., 2014a; Renneboog, Ter Horst and Zhang, 2011), the management of a portfolio of *Shariah* compliant assets (stocks and or *Sukuk*) is called Islamic asset management (Lipper and Thomson Reuters, 2014), permissible stock investing is called *Shariah* compliant stock investing (e.g., Walkshäusl and Lobe, 2012), permissible stock indices are called Islamic indices (e.g., Hassan and Girard, 2011), permissible banking is called Islamic banking (e.g., Khan, 2010), and the certification of a product's permissibility is called *halal* certification (e.g., Van Waarden and Van Dalen, 2010). In this dissertation, I follow such conventions and thus use the terms "Islamic", "*halal*", and "*Shariah* compliant" interchangeably depending on the relevant segment of Islamic finance.

Islamic finance proponents heavily disagree with this way of characterizing Islamic finance, though. There are roughly two views in this debate, namely (i) that Islamic finance is an inherently different system than conventional finance and (ii) that it is conventional finance with an Islamic label.

Regarding the first view, earlier work argues that an interest-based economy inherently has more problems regarding stability, efficiency and growth (e.g., Siddiqi, 1983). Furthermore, Ahmad (1993) argues that the apparent similarities between Islamic and conventional finance are merely transitory and will disappear as Islamic finance evolves. Yousef (2004) argues that even if parts of Islamic finance are similar to conventional finance, this does not invalidate the whole of Islamic finance.

The second view is more critical. El Gamal (2006) argues that Islamic finance is just conventional finance with Arabic words replacing words like "debt" and "interest". Kuran (2004) argues that Islamic finance is mostly a means for Muslims to express an Islamic identity rather than an actually different financial system. More recently, Khan (2010) argues that Islamic banking is still quite similar to conventional finance. Specifically, Khan argues that a large part of Islamic financial products is based on Islamic contracts such as *Murabaha* or *Ijarah*, which closely resemble a conventional loan.[9] Zaheer (2013) corroborates this with the finding that 83% of the assets of Pakistani Islamic banks are based on either *Murabahah* or *Ijarah* contracts.

[9] *Murabahah* is an Islamic financial contract that resembles a sale of merchandise on a credit basis. This contract can be used to buy goods on credit. Often, it is used by Islamic banks to give mortgages. This works as follows.
A client approaches an Islamic bank for a residential mortgage (i.e., a loan to buy a house). The bank obliges by entering into a *Murabahah* contract with the client. This entails that the bank purchases the house on behalf of the client for USD 100.000. Then the bank sells the house to the client for a higher price, for example, USD 105.000. Since the clients cannot pay this amount at once, the banks allows for deferred payment over a number of years, for example, 20 years (thus, the client pays USD 5250 [105.000 / 20] to the bank each year). Meanwhile, the bank makes a 5% profit on this transaction. This 5% profit is what much of the debate regarding *Murabahah* is about, namely, it can be viewed as an implicit interest rate. Moreover, in practice this rate is often based on interbank interest rates (El Gamal, 2006; Zaheer, 2013). Importantly, this contract is not specific to houses; it can in principle be used for any good as long as that good is *halal*.

Ijarah is an Islamic financial contract that resembles an operating lease contract. In this case, the client who needs funding for an asset (for example, a car) approaches an Islamic bank for a lease. The Islamic bank obliges by entering into an *Ijarah* contract with the client. This entails that the Islamic bank buys the car and leases it to the client. The bank thus retains legal ownership of the car, but sells the usufruct of the car to the client, again for a specified amount of time (the lease period). At the end of the lease period, the bank gifts the car to the client. Alternatively, at the beginning of the lease period, the bank sells the client an option to buy the car at the end of the lease period (this is called *Ijarah Muntahia Bittamleek*). The bank earns a profit because the value of the usufruct is

Regardless of whether Islamic finance is inherently different or conventional finance with a label, it is here to stay. Namely, although Islamic finance is currently a niche market, it has become a quite sizable niche. Figure 2.1 illustrates this point. The figure (Panel A) shows the size of total Islamic finance assets in 2013 (USD 1,354 billion) compared to the world's total banking assets in 2013 (123,700 billion). Indeed, the Islamic finance is only a fraction (1.1%) of the overall finance industry.

However, Panel B shows that compared to another niche in finance, namely hedge funds, Islamic finance is of a comparable size. Thus, the Islamic finance industry is indeed a niche, but it has already reached a size that is comparable to another accepted niche in the financial industry.

Within Islamic finance, *Shariah* compliant stock investing has been growing even faster. This growth can be gauged, for example, by looking at the growth of Islamic investment funds (funds that invest in *Shariah* compliant stocks and or *Sukuk*). Figure 2.2 shows that the growth of these funds has indeed been stellar.

As Panel A of Figure 2.2 shows, in 1996, there were only 29 Islamic investment funds in the world. In 2013, this number has grown to 1065, implying an annual average growth rate of 24%. Perhaps more informative is the growth of Assets Under Management (AUM) in these funds. Panel B shows that AUM of these Islamic funds have grown even faster, from USD 0.8 billion in 1996 to USD 56 billion in 2013, implying an average annual growth rate of 28%.[10]

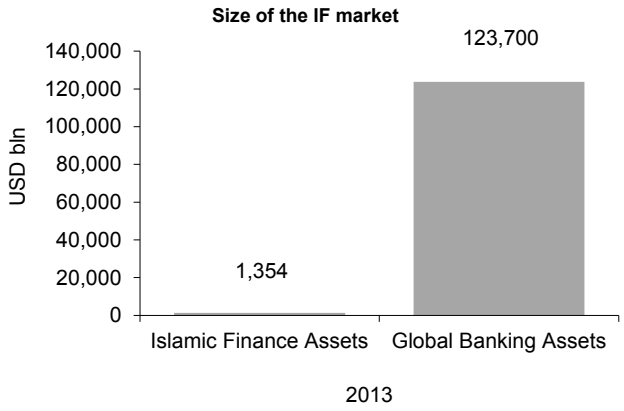
equal to the value of the car, plus a mark-up, which is also often based on interbank rates. *Ijarah* is often used as the basis of structuring Islamic bonds, called *Sukuk*, where the holder of the *Sukuk* is entitled to the lease payments from the contract.

[10] In recent years, AUM growth has reduced somewhat, but is still in the double digits (12%), as Figure A1 in the Appendix shows.

Figure 2.1: The size of Islamic finance

This figure shows the size of total Islamic finance assets (assets of banks, *Sukuk*, investment funds and *Takaful*) as of the beginning of 2013. Data is from Thomson Reuters (2013) and www.hedgefundresearch.com.

Panel A



Panel B

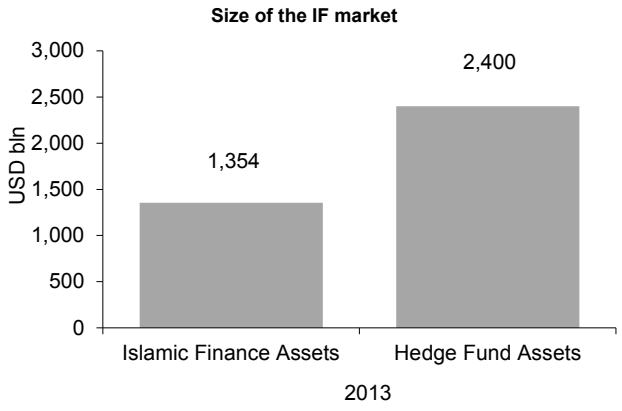
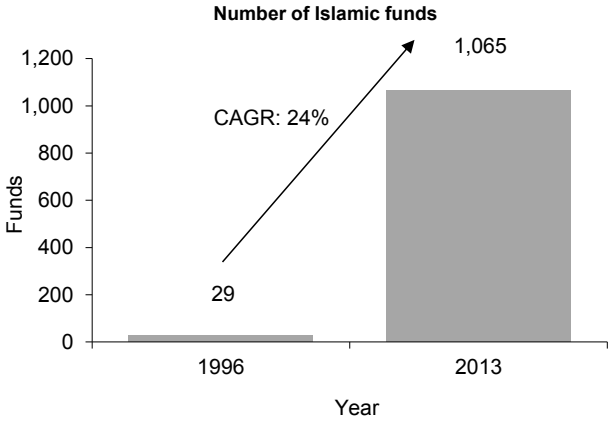


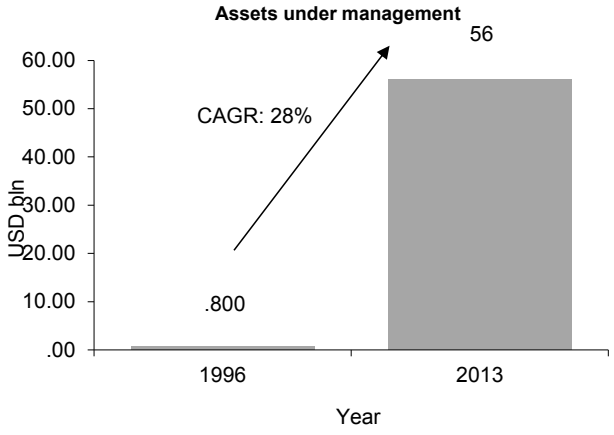
Figure 2.2: The growth of Islamic investment funds

This figure shows the number and Assets Under Management (AUM) of Islamic investment funds in 1996 and 2013. Data is from Thomson Reuters (2013) and www.failaka.com.

Panel A



Panel B



2.1. Drivers of Islamic finance growth

Why is Islamic finance growing so fast? Unfortunately, there is no clear answer to this question. There is very limited research on exactly which factors have led to the fast growth of Islamic finance in general and what the contribution of each factor has been. To the best of my knowledge, Imam and Kpodar (2010) are the only ones to empirically analyze these factors.

Specifically, Imam and Kpodar analyze the determinants of the size of Islamic banking (measured by the number of Islamic banks in a given country and the share of Islamic banking assets to total banking assets). They find that GDP per capita, the share of the Muslim population, and a dummy variable that indicates whether a country is a net oil exporter (which is a proxy for oil related wealth) are linked to the increasing size of Islamic banking.[11] In the base case regression of Imam and Kpodar, these three factors explain 46% of the variation in the number of Islamic banks (based on their pseudo R^2).[12] This implies that about half of the variation in the number of Islamic banks in countries can be explained by these three factors.

Reports by PWC (2013), Thomson Reuters (2013), and Lipper and Thomson Reuters (2014) broadly corroborate these findings. Although they do not provide an econometric analysis of the determinants of Islamic finance growth, some of the factors they mention as driving this growth are:

- *The size and growth of the Muslim population:* The Muslim population is about 1.6 billion (as of 2010) and is growing about twice as fast as the non-Muslim population (1.5% versus 0.7% per year) and this trend is expected to continue for the next 20 years, according to Pew Research.[13]
- *The wealth of the Muslim population:* There are about 600.000 High Net Worth Individuals (HNWIs) in the Middle East, with an estimated wealth of about 2.1 trillion

[11] Specifically, in their base case model, where Imam and Kpodar regress Islamic banking size on several variables, they find coefficients of 0.49, 0.03, and 0.5 for the log of GDP per capita, the share of Muslims and being a net oil exporter, respectively.
[12] Adding other variables increases this explanatory power in some cases. For example, adding a dummy variable, indicating whether a country has a British legal origin, increases the (pseudo) R^2 to 57%.
[13] See: http://www.pewforum.org/2011/01/27/the-future-of-the-global-muslim-population/.

USD (Capgemini and RBC Wealth Management, 2014). Moreover, the wealth of these Middle Eastern (predominantly Muslim) HNWIs is growing faster than the overall HNWI wealth (16.7% in 2013 versus an average of 9.9% over the years 2008 - 2013).

- *The growth of Muslim purchasing power:* Muslims predominantly live in countries with relatively high GDP per capita growth. For example, 62% of the Muslim population lives in the Asia-Pacific region and within this region most live in Indonesia, Pakistan, and India. All these three countries are projected to see GDP per capita grow at above average levels, which over the long term will create a sizable middle class.[14]

Apart from these factors that might affect the growth of Islamic finance in general, there are also factors that affect the growth of *Shariah* compliant stock investing specifically, which is the focus of this dissertation. Thus, a natural question is why specifically *Shariah* compliant stock investing has grown so fast. There is again unfortunately very little empirical literature on this question. However, research on related investments, namely Socially Responsible Investments (SRI) might provide some insights. First though, a definition is needed of *Shariah* compliant stock investing, as well as an explanation of what makes it related to SRI.

2.2. *Shariah* compliant stock investing and SRI

In this dissertation, I define *Shariah* compliant stock investing as investing in stocks that are part of an Islamic index (for example, the Dow Jones Islamic Market World Index [DJIM] or the FTSE *Shariah* Global Equity Index [FTSE Islamic]), either directly or indirectly via investment funds or Exchange Traded Funds (ETFs). Thus, my focus is specifically on stocks and excludes, for example, Islamic bonds (*Sukuk*), Islamic private equity, Islamic banking, and Islamic derivatives.

To be clear, my definition of *Shariah* compliant stocks does not mean that (i) these are stocks of companies that engage in businesses that specifically sell products/services for the Muslim market (for example, selling *halal* food) or that (ii) the investors in these stocks are necessarily

[14] The IMF projects average GDP per capita growth of 6%, 4%, and 7% for Indonesia, Pakistan, and India, respectively (IMF World Economic Outlook 2014, accessible via http://www.imf.org/external/pubs/ft/weo/2014/01/pdf/text.pdf).

Muslims. Apple and Johnson & Johnson, for example, are both considered *Shariah* compliant since they are both part of DJIM and FTSE Islamic (as of May 2014). These companies are considered *Shariah* compliant irrespective of the product they sell (as long the product or service is not directly forbidden in Islam) and irrespective of whether the people that buy their products or invest in their shares are Muslims. Instead, they are considered *Shariah* compliant because they pass certain non-financial and financial screening criteria, such as having low debt on their balance sheets (Sections 4.2, 5.2, and 6.2 explain this in more detail). In fact, these screening criteria are what relates *Shariah* compliant stock investing to SRI.

SRI itself is difficult to define and there is currently no consensus on what it exactly entails (Eurosif, 2014). For this dissertation, I follow the definition of Eurosif (2014). Eurosif (2014) defines SRI as "any type of investment process that combines investors' financial objectives with their concerns about Environmental, Social and Governance (ESG) issues" (Eurosif, 2014, p. 8).[15] Note that this definition does not distinguish the type of investment. It, for example, does not specify whether an investment is in equity, debt, or a derivative. For the purpose of this dissertation, however, when I mention SRI, I only mean the equity capital markets segment of SRI (i.e., stocks). Eurosif (2014) classifies seven different strategies through which investors can achieve their goals of investing in a profitable, yet socially responsible way, namely: Exclusions, Norms-based screening, Best-in-Class selection, Sustainability themed, ESG integration, Engagement and voting, and Impact investing:

- *Exclusion* is the most common strategy of SRI, representing 41% of the total SRI assets under management in Europe. It entails excluding certain companies from the investment universe based on ethical/moral grounds. The most common example is excluding

[15] In its previous reports, Eurosif divided SRI into Core SRI and Broad SRI (Eurosif, 2010 and Scholtens and Sievänen, 2013). Scholtens and Sievänen explain that Core SRI entails investments that take into account at least three negative (exclusions) and positive (best-in-class and themes) criteria as well as norms-based screening. Broad SRI entails exclusions, active dialogue with management of the investee companies, and ESG integration in financial analysis. However, as of 2012, Eurosif states that this distinction is no longer relevant in the current complex environment, where multiple SRI strategies are used simultaneously and where what can be considered SRI in a certain country depends very much on its cultural and historical context (Eurosif, 2012). Nevertheless, if this older definition would still be used, *Shariah* compliant stocks would only fall under Broad SRI, rather than Core SRI.

companies that make (or provide services directly related to) cluster munitions and land mines, but also, for example, tobacco and alcohol companies.

- *Norms-based screening* entails screening companies based on their compliance with international (ESG) norms and standards, set, for example, by the United Nations Global Compact and the OECD Guidelines for Multinational Corporations and International Treaties.
- *Best-in-Class* selection involves selecting only the top performing companies in a certain sector based on ESG criteria. For example, investing in only the top 50% of consumer goods companies based on their ESG rating.
- *Sustainability themed* investment entails investing in themes or assets linked to the development of sustainability. For example, investing in sustainable energy companies.
- *ESG integration* involves integrating ESG criteria in the financial analysis of companies. For example, using ESG to adjust the discount rate of a company.
- *Engagement and voting* (sometimes called active ownership) is using voting power to actively engage portfolio companies into incorporating ESG issues in their business. For example, voting against bad corporate governance practices.
- *Impact investing* entails "social investments". These are investments in organizations and companies that specifically have the goal of improving social welfare. For example, investing in a microfinance company that aims to improve access to affordable housing, healthcare, education, etcetera, in developing countries.

The description of these SRI strategies shows that *Shariah* compliant stock investing can be seen as a part of SRI. Specifically, *Shariah* compliant stock investing can be seen as an SRI strategy based on Exclusion (at least when adhering to the SRI definition of Eurosif). This is because *Shariah* compliant stock investing entails excluding certain companies/sectors from its investment universe based on ethical/moral/ grounds, just as SRI. Both Islamic and SRI, for example, screen out the tobacco, alcohol, gambling, and defense sector (Renneboog, Ter Horst, and Zhang, 2011).

But that is where the overlap ends. SRI also involves, for example, screening investments based on environmental issues, engaging with companies in improving governance, or investing in

companies that aim to improve social welfare. *Shariah* compliant stock investing, on the other hand, typically does not use these strategies.

Thus, *Shariah* compliant stock investing is related to SRI, although only in the sense that both exclude some companies/sectors from their investment universe. However, exclusion-based SRI based is the most common type of SRI (Eurosif, 2014), so it is not unreasonable to view *Shariah* compliant stock investing as related to SRI.

2.3. Growth drivers of *Shariah* compliant stock investing

The discussion above shows that *Shariah* compliant stock investing can be seen as part of SRI, namely, exclusion-based SRI. Thus, research on SRI might also give insights into *Shariah* compliant stock investing. This research should be interpreted with great care, though, given the diversity of SRI strategies and given that *Shariah* compliant stock investing typically only uses exclusion and not the other six SRI strategies.[16] However, to answer the question why *Shariah* compliant stock investing has grown so fast in the recent past, the SRI literature might still help.

Renneboog et al. (2011), answer this question for SRI equity funds (which they call ethical funds) and part of their sample consists of Islamic funds. Renneboog et al. (2011) analyze the fund flows to SRI equity funds. They define fund flows as the net change in fund assets beyond asset appreciation (which can be interpreted as the money that is put in or taken out of these investment funds). Renneboog et al. find that, like conventional funds, SRI fund flows are driven by their past returns (although to a lesser extent than conventional funds), age, size, riskiness and management fees. Specifically, funds with better returns and funds that are younger, smaller, safer, and have lower management fees tend to attract more money from investors. The higher inflows of money increase the assets under management of these funds and the funds grow. If Islamic Equity Funds (IEFs) can be seen as a form of SRI (which Renneboog et al. do), these factors might also influence their growth. Thus, using IEFs as a proxy for *Shariah* compliant

[16] To be fair, a part of Islamic finance is related to some of these six SRI strategies. For example, Islamic microfinance would fall under the Impact investing SRI strategy. But Islamic microfinance assets are estimated to be only USD 628 million (Lipper and Thomson Reuters, 2014), which is less than 0.05% of total Islamic finance assets.

stock investing, the growth of this industry might (at least partially) be explained by IEF returns, age, size, riskiness and management fees.

This seems plausible when looking at fund age, size, and riskiness, since IEFs tends to be young, small and less risky (e.g., Lipper and Thomson Reuters, 2014; Marzuki and Worthington, 2011; BinMahfouz and Hassan, 2012). However, Renneboog et al. also mention that Islamic equity funds tend to have higher fees than conventional SRI equity funds. But higher fees could also be related to more fund flows because they indicate more marketing effort (e.g., Renneboog et al., 2011; Barber, Odean, and Zheng, 2005) or signal talent of the asset manager and better service (Ivkovic and Weisbener, 2009).

The only research, as far as I know, that analyzes Islamic fund flows explicitly is Marzuki and Worthington (2011). Marzuki and Worthington analyze the fund flows of 127 Malaysian equity funds, of which 35 are IEFs. They find that fund flows into IEFs are driven by the same factors as conventional funds, namely a fund's past performance, age, size, riskiness, and management fees. Together, these factors together explain about 30% (adjusted R^2) of the variation in Malaysian fund flows. Marzuki and Worthington find that investors put more money in better performing, younger, larger, riskier, and more costly funds. Moreover, they do not find a significant difference in these factors between conventional funds and IEFs.

Overall, SRI and *Shariah* compliant stock investing seem to be driven by roughly the same (micro) factors. However, whether all these factors affect the growth of *Shariah* compliant stock investing in the same direction as they affect SRI growth is not clear yet since the literature shows opposing results for some factors (size, riskiness, and management fees). This is an interesting topic for further research.

Part of the fund flows in these studies might be related to other (macro) factors, for example, tax regulations that favor SRI, differences in culture, and economic differences. Regarding the former, Scholtens (2005), for example, argues that tax regulations account for more than 50% of the growth of SRI in the Netherlands.

In addition, Scholtens and Dam (2007) find that business ethics differ significantly between countries, driven by differences in culture. They measure these cultural differences using data from Hofstede (1980, 1991), who uses four indicators to define a culture: Power distance, Individualism, Masculinity, and Uncertainty avoidance.[17] Scholtens and Dam find that firms in countries that score high on the Individualism and Uncertainty avoidance indicators also score higher on ethical policies, while the opposite holds for Power distance and Masculinity. Although a higher score on ethical policies does not mean these firms actually act more ethically, it does give an indication that this might be the case. Thus, culture seems to influence ethical behavior.

Scholtens and Sievänen (2013) develop this notion of cultural influence on ethical behavior further. They analyze the determinants and size of SRI in a case study of four Nordic countries (Denmark, Finland, Norway, and Sweden). They find that economic openness, the size of the pension fund industry, low Masculinity (femininity), and high Uncertainty avoidance positively influence the size of SRI in a given country. Thus, countries that are highly open, with a large pension fund sector and that are characterized by a culture of low Masculinity and high Uncertainty avoidance have a higher chance of engaging in SRI.

What do these findings say about the growth of *Shariah* compliant stock investing? They imply that, if these factors also influence *Shariah* compliant stock investing, this industry should be concentrated in countries with low Masculinity and high Uncertainty avoidance and countries that are economically open and have a big pension fund sector. At first sight, this does seem to be the case. *Shariah* compliant stock investing is mostly concentrated in three countries; 71% of IEFs are domiciled in Saudi Arabia, Malaysia, and Luxembourg (Lipper and Thomson Reuters, 2014). Table A1 in the Appendix contains data on the cultural indicators, size of the pension fund sector, and economic openness of these three countries. It shows that Malaysia and Saudi

[17] Power distance (PDI) refers to the extent to which a society accepts that power is divided unequally. Societies that score high on this measure are characterized by high social inequality. Individualism (IDV) refers to the extent to which individuals "take care of themselves" or strongly feel part of a group (collectivism). Societies that score high on this measure are more individualistic. Masculinity (MAS) refers to masculine versus feminine behavior. Societies that score high on this measure have more assertive and competitive individuals. These masculine societies also tend to see large differences between the roles of men and women. Uncertainty avoidance (UAI) refers to the extent to which societies feel comfortable with uncertainty and ambiguity. Societies that score high on this measure tend be more risk averse (although uncertainty avoidance is more general than risk aversion).

Arabia indeed have a big or decent-sized pension fund sector and all three countries are open in an economic sense.[18] However, they are not necessarily characterized by low Masculinity or high Uncertainty avoidance. Saudi Arabia is for example scores high on Masculinity and Malaysia scores low on Uncertainty avoidance. Moreover, the pension fund sector in Luxembourg is quite small. However, IEF concentration in Luxemburg might be driven by its favorable tax environment for investment funds in general (most notably its many tax treaties with other countries).

Overall, this is very anecdotal evidence and should be interpreted with great care. However, it does seem to hint that growth in *Shariah* compliant stock investing might be driven by the same macro factors that also drive SRI investing, namely culture, the size of the pension fund sector, economic openness, and possibly the tax treatment of Islamic funds.

What is puzzling, however, is that *Shariah* compliant stock investing has grown slower than SRI. Islamic assets under management have grown about 12% per year between 2007 and 2013 (Figure A1 in the Appendix), while exclusion-based SRI has grown an average of 28% per year during the same period.[19] Thus, SRI has grown more than twice as fast as *Shariah* compliant stock investing over the same period. This is in line with the finding of Renneboog et al. (2011) that IEFs receive comparatively less fund flows than other SRI equity funds. Why *Shariah* compliant stock investing growth has been lower than SRI growth is an interesting topic for further research.

Concluding this chapter, it seems that Islamic finance in general, as well as *Shariah* compliant stock investing specifically, have grown fast. Furthermore, *Shariah* compliant stock investing shares a similarity with a specific type of SRI. Both exclude certain sectors/companies from their

[18] Regarding the size of the pension fund sector, OECD (2013) considers it big if pension fund assets to GDP are larger than 20% of GDP.

[19] SRI grew from assets under management of USD 2,100 billion in 2007 to USD 9,100 billion in 2017 based on data from Eurosif (2014), which implies a growth rate of 28%. These numbers are calculated as follows: Exclusion-based SRI assets in Europe are EUR 1533 billion in 2007 and EUR 6854 in 2013 (Eurosif, 2014). I convert these assets to USD using the average USD/EUR exchange rate in 2007 (1.37) and 2013 (1.33) Then I use the resulting figures to calculate the compound annual growth rate between 2007 and 2013, which is 28%. This data is only for European SRI. However, almost two thirds of all SRI assets are owned by European institutions, according to the Global Sustainable Investment Alliance (GSIA, 2013).

investment universe based on ethical/moral grounds. In this sense, perhaps the same micro factors that explain the growth of SRI (for example, as past returns, fees, size, and age) may also explain the growth of *Shariah* compliant stock investing. There is tentative evidence that indeed points in that direction (Marzuki and Worthington, 2011). However, macro factors such as cultural values also play an important role in explaining SRI growth, and whether such factors have affected the growth of *Shariah* compliant stock investing is an interesting topic for further research.

Chapter 3. How Has the Islamic Equity Market Performed?

Muslims can only invest in stocks that are deemed permissible according to Islamic law. In practice, this means they can only invest in stocks of companies that pass certain financial and sector screens. Most notably, they cannot have a lot of debt on their balance sheet because Islam prohibits either receiving or paying interest (see Chapters 4 and 5 for more details).

This creates a very interesting set of stocks with specific characteristics, for example, low leverage and the exclusion of stocks of conventional financial institutions. Several recent papers argue that these stocks have better returns than conventional stocks, especially during crisis periods.[20] Moreover, some of these studies argue that the protection these *Shariah* compliant stocks provided during crisis periods is due to their low leverage (e.g., Bhatt and Sultan, 2012) and that *Shariah* compliant stocks are suitable for risk averse investors (e.g., Ho et al., 2014; Adamsson, Bouslah, and Hoepner, 2014). Dewandaru et al. (2014) even argue that *Shariah* compliant stocks, due partially to their low leverage, can in some cases be considered a separate asset class.

This chapter evaluates whether these claims are warranted by comparing the return and risk characteristics of the overall Islamic equity market with the overall conventional equity market. The Dow Jones Islamic Market World Index (DJIM) is used to proxy the overall Islamic equity market, which is the most widely used index for this purpose. The Dow Jones Global Index (DJG) is used to proxy the conventional overall equity market. DJIM is a subset of DJG, thus all stocks in DJIM are also in DJG, but not vice versa.[21]

[20] For example, Hussein and Omran (2005), Bhatt and Sultan (2012), Jouaber-Snoussi et al. (2012), Ho et al. (2014), Al-Khazali et al. (2014) and Adamsson et al .(2014).

[21] The Dow Jones Islamic Market World Index (DJIM) is a market capitalization adjusted index that started in 1999 and consists of (as of July 2014) 2389 stocks, with an average market capitalization of USD 7.8 billion, allocated over 58 countries. The bulk (57%) of this allocation is towards the USA. This data is from: http://www.djindexes.com/islamicmarket/. Section 6.3.1 provides some more details on the US constituents of DJIM.

Figure 3.1 shows the return of 1 USD invested in the DJIM and DJG between 1 January 1999 and 28 February 2014. These returns are sobering for Islamic market enthusiasts. Figure 3.1 shows that, over the long run, 1 USD invested in the Islamic equity market grows to about the same amount as the conventional equity market (USD 1.69 versus USD 1.64). However, Figure 3.2 shows that the picture is different during a crisis period. Namely, 1 USD invested on 1 January 2007 grows to USD 1.07 on 31 December 2010 if it is invested in the Islamic equity market, while the same 1 USD becomes only USD 0.91 if invested in the conventional equity market.[22]

[22] I define the financial crisis period as between 2007-2010, but the conclusion remains the same (the Islamic market outperforms the conventional market) if the crisis period is defined as 2007 and 2008. In this case, 1 USD invested in the Islamic market becomes 0.82, while it becomes 0.75 if invested in the conventional market.

Figure 3.1: The conventional versus *Shariah* compliant stock market (1999-2014)

This figure shows the values of 1 USD invested in the Dow Jones Global Index (DJG) and in the Dow Jones Islamic Market World Index (DJIM) in the period from January 1999 to February 2014. Data is from Bloomberg.

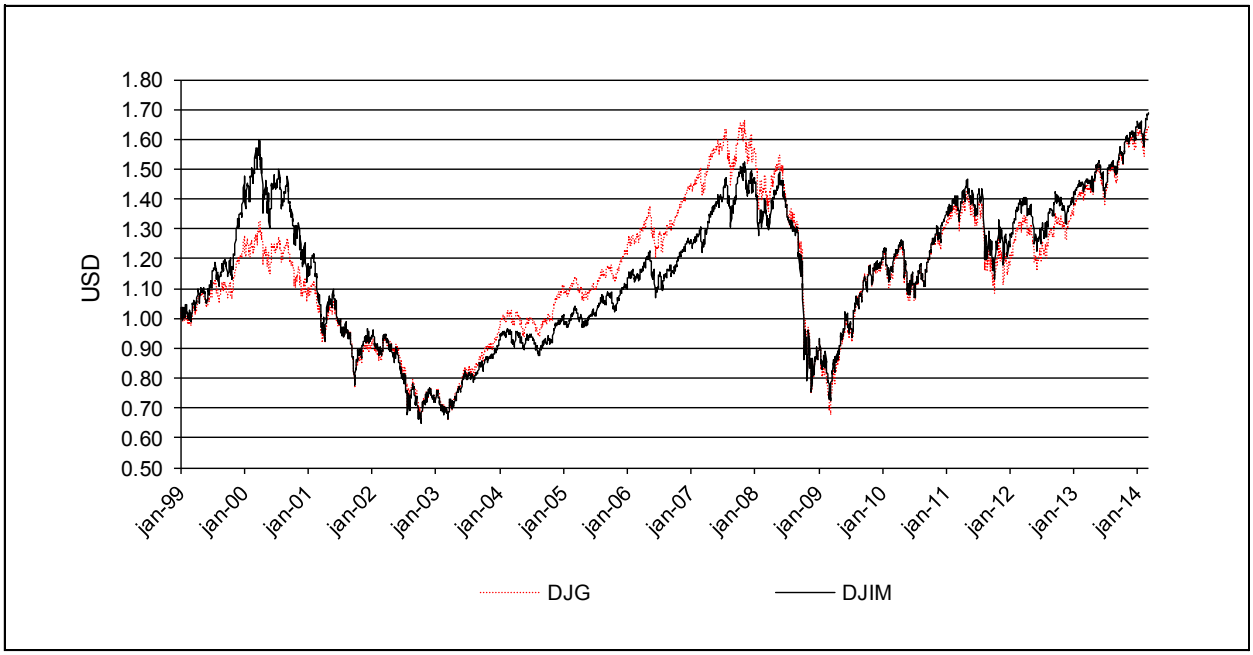


Figure 3.2: The conventional versus *Shariah* compliant stock market (2007-2010)

This figure shows the values of 1 USD invested in the Dow Jones Global Index (DJG) and in the Dow Jones Islamic Market World Index (DJIM) in the period from January 2007 to December 2010. Data is from Bloomberg.

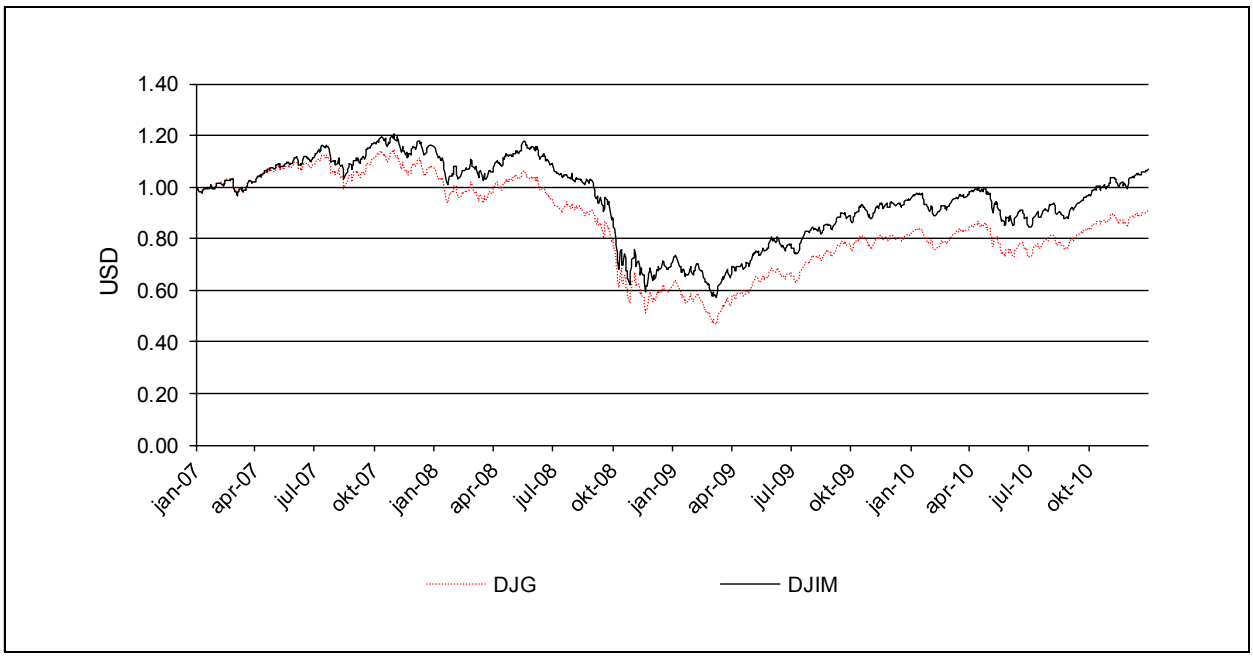


Table 3.1 shows why Figure 3.1 and 3.2 are different. It is because the Islamic market outperforms during bear markets (Panel B) but underperforms during bull markets (Panel A), resulting in an overall performance that is very similar to the conventional market (Panel C). Moreover, the correlations between the Islamic and conventional market are very high in all three time periods (larger than 0.96).

Table 3.1 also shows some other interesting characteristics of Islamic versus conventional returns. Namely, the standard deviation of these returns (volatility) is approximately the same for the Islamic (16%) and conventional market (15%), even slightly higher for the former. This is curious because one of the defining characteristics of *Shariah* compliant stocks is that they have low leverage, and standard financial theory states that stocks with lower leverage should have lower risk (e.g., Damodaran, 2006).[23]

Interestingly, this volatility is itself quite volatile. It jumps from less than 10% during a bull market to more than twice as high (21%) during a bear market and averages to about 15%. Surprisingly, this happens for both Islamic as well as conventional returns.

Given the similar risk and returns of the Islamic and conventional market, their return to risk ratios are understandably also quite similar. For the overall period, the return to risk ratio is 0.17 for both markets.

[23] One possible reason for this relatively high volatility is that *Shariah* compliant stocks might be active in sectors that are inherently more risky compared to conventional stocks. For example, Islamic indices have high exposures to the Technology and Oil and gas sector (see Table 5.1 in Section 5.3.3). Another reason might be that *Shariah* compliant stocks have higher operating leverage (high fixed costs). Operating leverage has similar effects on risk as financial leverage (Damodaran, 2006). For *Shariah* compliant stocks, low financial leverage might be (partially) offset by high operating leverage. This would be an interesting topic for further research.

Table 3.1: Risk and return statistics

This table gives some descriptive statistics of returns of the Dow Jones Global Index (Conventional) and the Dow Jones Islamic Market World Index (Islamic) for three periods between 1st January 1999 and 28th February 2014. Returns are calculated as changes in the natural log of daily index values (in USD) multiplied by 100. Returns and standard deviations are annualized using 250 working days. Statistical significance of difference in returns (last column) is determined using a standard *t*-test for difference in means, where ***, ** and * indicate significance at the 1%, 5% and 10%, respectively.

Panel A: Bull market (2003-2006)

	Conventional	Islamic	Difference
Average annual return (%)	12.24	9.91	-2.32**
Standard deviation (%)	8.98	9.36	
Return to standard deviation	1.36	1.06	
Correlation (%)	96.77	96.77	
Skewness	-0.16	-0.03	
Kurtosis	2.41	2.27	
Min (%)	-2.64	-2.82	
Max (%)	2.57	2.68	

Panel B: Bear market (2007-2010)

	Conventional	Islamic	Difference
Average annual return (%)	-2.00	1.61	3.61*
Standard deviation (%)	21.49	21.11	
Return to standard deviation	-0.09	0.08	
Correlation (%)	98.25	98.25	
Skewness	-0.39	-0.37	
Kurtosis	6.52	8.32	
Min (%)	-7.16	-8.19	
Max (%)	8.66	9.77	

Panel C: Overall (1999-2014)

	Conventional	Islamic	Difference
Average annual return (%)	2.58	2.72	0.14
Standard deviation (%)	14.93	15.64	
Return to standard deviation	0.17	0.17	
Correlation (%)	97.46	97.46	
Skewness	-0.39	-0.32	
Kurtosis	9.00	8.66	
Min (%)	-7.16	-8.19	
Max (%)	8.66	9.77	

Regarding risk, it is not just the volatility of the Islamic and conventional stock markets that is similar, also the extremes. Jouaber-Snoussi, Ben Salah, and Rigobert (2012) argue that *Shariah* compliant stocks behave differently than conventional stocks during extreme market movements. However, the last two rows of Panel C show that the minimum and maximum returns of both the Islamic and conventional market are about the same. Furthermore, between 1999 and 2014, there are 10 "extreme" daily returns in the sample period and they happen on the same date for both

the Islamic and conventional index in all 10 cases and are approximately the same size.[24] Thus, Islamic indices are not exempt from extreme movements.

In line with this finding, the overall skewness and kurtosis indicate that both markets have a similar distribution, namely leptokurtic and with fat tails. A Kolmogorov-Smirnov test (K-S test) corroborates that the return distributions of the two markets are not significantly different.[25]

The overall picture seems to clearly indicate that the Islamic and conventional stock market are very similar in many important dimensions. With regard to returns, these findings are in stark contrast to Hussein and Omran (2005), who find that the *Shariah* compliant stock market outperforms the conventional market. The findings are somewhat in line with the view that *Shariah* compliant stocks tend to perform better during market downturns, as argued for example by Al-Khazali, Lean, and Samet (2014) and Ho et al. (2014). I do not find enough evidence to strongly conclude this though; the difference between Islamic and conventional returns during the latest bear market is only significant at the 10% level.

I also find that *Shariah* compliant stocks are as risky as conventional stocks, especially during extreme movements, which is in contrast with Jouaber-Snoussi et al. (2012). It is also in contrast with the view that *Shariah* compliant stocks are particularly suitable for risk-averse investors (e.g., Ho et al., 2014; Adamsson et al., 2014). Stocks are very risky investments, irrespective of being Islamic or not.

These results are most consistent with Walkshäusl and Lobe (2012) and Hassan and Girard (2011), who do not find significant outperformance of Islamic indices compared to conventional

[24] I define extreme here as a return that is 6 standard deviations away from the average daily return over the whole period. In the dataset, this means daily returns that have an absolute value larger than 5.66%. There are 3 returns that are above 5.66% and 7 that are below -5.66%, both for the Islamic as well as conventional market. These extreme returns share the same date in all 10 cases. For example, the highest return is on 13 October 2008 and the lowest return is on 15 October 2008 for both markets. These extreme returns are also approximately the same size for both the Islamic and conventional market. Namely, the average absolute difference between them is only 0.41 percentage points.

[25] Specifically, a K-S test is performed on the daily returns (calculated as the daily changes in the natural log of the index values) of the DJIM and the DJG between 1 Jan 1999 and 28 Feb 2014 (which gives 4831 data points). I find a value of 0.01, which is less than the critical value of 0.02 ($1.36/\sqrt{4831}$) needed to reject the null hypothesis that these two distributions are the same.

indices over long periods of time. Moreover, Walkshäusl and Lobe (2012) argue that outperformance of Islamic indices during bear periods is mostly due to the exclusion of stocks of conventional financial institutions.[26]

3.1. Four factor analysis

In this section, the returns of the Islamic equity market are analyzed using the four factor Carhart model (Carhart, 1997; Fama and French, 1993), which is commonly used to assess performance of equity portfolios (Cremers, Petajisto, and Zitzewitz, 2012) and gives more information than a simple comparison of returns. The basic idea of this model is that stock returns are functions of several risk exposures, called factor premiums. That is its main advantage. Namely, it decomposes portfolio returns as premiums to risk factors such as the market, value, size, growth, and momentum factor. Thus, if returns of a portfolio are regressed against these factors and the resulting model has a significant intercept, this can be interpreted as outperformance because it constitutes a return that is not explained by these risk factors. Specifically, the model is:

$$R_{p,t} - R_{f,t} = \alpha_p + \beta_{p,1}(R_{m,t} - R_{f,t}) + \beta_{p,2}(HML_t) + \beta_{p,3}(SMB_t) + \beta_{p,4}(MOM_t) + \varepsilon_{p,t} \quad (3.1)$$

In which, α_p is portfolio p's return (in this case the DJIM) when all the other factor returns are zero, $R_{p,t} - R_{f,t}$ is the realized excess return of portfolio p, $R_{m,t}$ is the market return (the return on the CRSP value weighted index), R_f is the risk free rate (in this case the one month Treasury Bill rate), $\beta_{p,1}$ is the sensitivity of portfolio p's return to the market excess return, $\beta_{p,2}$ is the sensitivity of portfolio p's return to the value factor, $\beta_{p,3}$ is the sensitivity of portfolio p's return to the size factor, $\beta_{p,4}$ is the sensitivity of portfolio p' return to the momentum factor, HML_t is the value premium (the return of a portfolio of stocks with high book to market values minus the return of a portfolio of stocks with low book to market values), SMB_t is the size premium (the return of a portfolio of stocks with low market capitalization values minus the return of a portfolio of stocks with high market capitalization), MOM_t is the momentum premium (the return of a portfolio of

[26] Adamsson et al. (2014) also find that outperformance of the Islamic market is mainly due to the exclusion of stocks of conventional financial institutions.

previous period high return stocks minus the return of a portfolio of previous period low return stocks), and $\varepsilon_{p,t}$ is the error term.

I regress the returns of the DJIM (and also DJG for comparison) on the above-mentioned factors for the period January 1999 to December 2014 and obtain the results shown in Table 3.2.

Table 3.2: Four factor performance analysis

This table shows the results of the Carhart four factor model, where excess returns of the DJIM (Islamic) and DJG (Conventional) are regressed on a market factor (the CRSP value weighted index) and a value, size and momentum factor for the period January 1999 to December 2012. Data is from Thomson Reuters Datastream and Kenneth French's website (see Section 5.3.1 for the link). Standard errors are in parentheses and are corrected for heteroscedasticity and autocorrelation using the Newey-West (1987) estimator. The asterisks, ***, ** and * indicate significance at the 1%, 5%, and 10% level, respectively.

	Islamic	**Conventional**
Alpha (α_p)	-0.0087	-0.0112
	(0.0083)	(0.0089)
Beta ($\beta_{p,1}$)	0.7685***	0.7113***
	(0.0102)	(0.0114)
Value ($\beta_{p,2}$)	-0.1466***	0.0558***
	(0.0193)	(0.0206)
Size ($\beta_{p,3}$)	-0.0076	-0.0155
	(0.0242)	(0.0264)
Momentum ($\beta_{p,4}$)	0.0156	-0.0163
	(0.0122)	(0.0126)
Observations	3520	3520
R^2	81.8%	76.7%

Table 3.2 shows that, similar to the results of Table 3.1, the *Shariah* compliant stock market does not outperform the conventional stock market. Namely, the intercept (Alpha) is insignificantly different from zero, even slightly below zero. This alpha implies a slight annualized underperformance of 2.2% (0.0087 * 250). However, also similar to Table 3.1, this performance is better than of the DJG, which has an annualized underperformance of -2.8% (-0.0112 * 250). Again, the difference between the two measures is small, namely 0.6%.

Moreover, Table 3.2 shows that *Shariah* compliant stocks are low beta stocks (although their beta is higher than the DJG) and growth rather than value stocks, and these two factors explain

the bulk of their variations in return (the R^2 is 82%). This growth tilt is perhaps the biggest difference with the DJG, which seems to have a value tilt since its value coefficient is significant and positive. The difference might be because of the restriction in Islamic finance on investing in firms with high leverage, which might favor growth stocks (since they tend to have less leverage). These results are in line with Adamsson et al. (2014), Walkshäusl and Lobe (2012), and Hassan and Girard (2011), who also find that *Shariah* compliant stocks have a growth tilt.

Regarding size, neither of the markets seem to have significant exposure to the size factor, although the coefficient on the size factor is negative, implying that the constituent firms are large. There is also no significant exposure to the momentum factor, although tentatively it seems that *Shariah* compliant stocks have positive momentum, while conventional stocks have negative momentum.

The overall conclusion here is that, over the long period, the Islamic equity market does not seem to perform significantly differently than the conventional equity market. This is good news because it indicates that Muslims do not have to sacrifice return or incur additional risk in order to invest in accordance with their faith. These Muslim investors may still find *Shariah* compliant stocks worth investing in for financial reasons and derive further utility from investing in accordance with their faith. However, they should not expect additional financial benefits from investing in these *Shariah* compliant stocks (i.e., on top of those already derived from conventional stocks). In addition, it is better for such investors to invest passively because, as the next chapter shows, the funds specialized in actively investing in *Shariah* compliant stocks do not perform as well as the overall Islamic market.

Chapter 4. Risk and Return Characteristics of Islamic Equity Funds[27]

Islamic equity funds (IEFs) differ from conventional equity funds since Muslims are prohibited from investing in certain companies/sectors and paying or receiving interest. This chapter analyzes the risk and return characteristics of a sample of 145 IEFs and determines their risk-adjusted performance over the period 2000 to 2009. Our results show that IEFs are underperformers compared to Islamic as well as to conventional equity benchmarks. This underperformance seems to have increased during the recent financial crisis. We also find that IEF managers are bad market timers. They try to time the market, but in doing so reduce the return rather than increasing it. An important implication of our results is that Muslim investors might be better off by investing in index tracking funds or ETFs rather than investing in individual IEFs.

4.1. Introduction

Shariah compliant stock investing differs from conventional investing because Muslims are prohibited from receiving and paying interest, investing in "unethical" companies such as alcohol producers, and speculating. Muslims can, however, invest in the stock market via so-called Islamic equity funds (IEFs). These are the Islamic counterpart to conventional mutual funds, which are investment vehicles that allow people who lack the knowledge, skill, or time to manage their own wealth and prosper from the returns of international equity markets. IEFs were almost non-existent before the year 1990, when Muslim scholars reached consensus regarding the permissibility of equity investing (Visser, 2009, pp. 114-115). Since then, IEFs have gained considerable interest among Muslim investors, along with the increased wealth in the Middle East. Despite this interest, research on the risk and return characteristics of IEFs is very scarce.[28]

[27] This chapter is based on Hayat and Kraeussl (2011).

[28] This study is from 2011. Since its publication, there has been some new research on Islamic investment funds. Some examples are Kamil et al. (2014), Abdelsalam et al. (2014a and 2014b), Hoepner et al. (2011), Ferruz et al. (2012), and BinMahfouz and Hassan (2012). Their overall conclusion is, however, similar to this study, namely that Islamic funds are unable to outperform the overall Islamic equity market.

Annuar, Mohamed, and Ngu (1997) examine the performance of 31 Malaysian mutual funds over the period 1990 to 1995. Many of these funds are Islamic and thus provide a rough proxy for Islamic fund performance. They find empirical evidence that these Malaysian funds do outperform the Kuala Lumpur Composite Index (KLCI) benchmark, but that the fund managers are rather poor at timing the market.

Ahmad (2001) presents a very rough guide to IEF performance by evaluating 13 IEFs individually. Although the author states that some Islamic funds outperform benchmarks like the MSCI, his analysis lacks a thorough statistical analysis.

Zaher and Hassan (2001) given an overview of the returns of 37 IEFs for the period 1997-1999 and infer that ethical investments provide a good return compared to conventional mutual funds. However, they also do not back up their claims with any statistical analysis.

Abdullah, Mohammed, and Hassan (2007) analyze 65 Malaysian unit trusts, including 14 Islamic and 51 conventional funds, and conclude that both types of funds slightly underperform the KLCI benchmark. When taking risk into account, they find that their sample of IEFs performs better than conventional funds during bear markets, while during bull markets it is the other way around. However, the major challenge of all this previous research on the performance of IEFs is that it either entails only Malaysian funds or does not analyze the risk-return characteristics in a rigorous manner.

This chapter contributes to the literature on Islamic finance in two ways. First, we give a concise overview on the nature of *Shariah* compliant stock investing by discussing the main opportunities and challenges. Second, we empirically analyze the performance and risk-return characteristics of 145 IEFs over the period January 2000 to February 2009. As such, we are also able to investigate the impact of the financial crisis of 2008/09 on the systematic risk of IEFs during down markets. We hypothesize that loss-averse investors prefer stocks that have lower systematic risk during downswings and thus require less return. As such, we follow the seminal work by Ang, Chen, and Xing (2006) and explicitly specify a downside risk component.

We divide our sample of IEFs into five categories based on their geographical focus, namely (i) funds invested globally, (ii) funds invested only in the Malaysian market, (iii) funds invested in Asia Pacific, (iv) funds invested in Europe and the Middle East,[29] and (v) funds invested in North America. To analyze the risk and return characteristics of IEFs, we use different benchmarks per region (Bauer, Koedijk, and Otten, 2005) and evaluate their performance against Islamic as well as conventional equity indices.

In a first step, we estimate the risk-adjusted performance (alpha) and systematic risk (beta) for each IEF, using Jensen's (1968) version of the Capital Asset Pricing Model (CAPM). We find that IEFs on average have underperformed their Islamic and conventional benchmarks over the sample period of 2000-2009. After controlling for fund size, heteroscedasticity, and autocorrelation robust (HAC) standard errors in our CAPM analysis with weighted alphas and betas, our findings remain robust.

In order to analyze the market timing ability of IEF's fund managers, we employ the Treynor and Mazuy (1966) standard regression approach as well as the non-parametric method by Jiang (2003). We find that IEFs do engage in market timing and that IEF managers significantly miss-time the market.

IEFs have been characterized in the Islamic finance literature as outperformers during bear market conditions (e.g., Abdullah et al., 2007). We test this proposition during the recent financial market crash of 2008/2009 and find that, on the contrary, IEFs significantly underperformed their Islamic as well as conventional benchmarks during these turbulent times. Moreover, the underperformance is larger during this bear market than during the whole sample period. In a final step, we also investigate the downside risk characteristics of IEFs (Ang et al., 2006). As such, we estimate the sensitivity of IEFs to the market while conditioning for negative market excess returns. Our results indicate that IEFs have a slightly larger exposure to the market during downswings, although not significantly so.

[29] We group together Europe and Middle East because separately they have very few observations.

As a final robustness test, we analyze the performance of IEFs using the four factor Carhart model instead of the CAPM model. To do this, we first form four equally weighted portfolios of (i) our overall sample, (ii) IEFs that invest globally, (iii) IEFs that invest in Malaysian equities, and (iv) IEFs that invest in other regions. We regress the returns of the market and size, value, and momentum factors on these portfolios. Again, we find that the alpha of this model is negative for each portfolio, although it is only significant for the portfolio of globally invested IEFs. Thus, IEFs appear to be underperformers when using the CAPM as well as Carhart model to analyze performance.

The remainder of this chapter is organized as follows. Section 4.2 describes the basic principles of Islamic finance and provides a short overview on the IEF industry. Section 4.3 presents our sample of IEFs and some descriptive statistics. Section 4.4 discusses our empirical findings. First, we present the CAPM regression results. Second, we analyze the market timing ability of IEF managers. Third, we explicitly investigate the performance during financial markets turmoil and the role downside risk might play in explaining the overall weak performance of IEFs. Finally, we analyze the performance of IEFs using the Carhart four factor model. Section 4.5 provides our conclusions.

4.2. Islamic equity funds

Islamic finance is a financial system with the aim of fulfilling the teachings of the *Quran* as opposed to earning maximum returns on financial assets (Zaher and Hassan, 2001). It is based on five main principles, which include the prohibition of interest (*riba*), excessive uncertainty (*gharar*), speculation (*maysir*), risk and return sharing, and the prohibition of investing in 'unethical' industries (Shanmugam and Zahari, 2009). These principles have far-reaching consequences for Muslim investors. For example, they imply that Muslims are not allowed to invest in conventional futures, options, and speculation-based derivatives and that Muslims do not have access to conventional credit. These principles also limit the scope for many other structured financial products.

Notwithstanding the restrictions of Islamic finance, taking entrepreneurial risk and profiting from it is allowed. This means that investing in mutual funds is allowed, provided that they adhere to the five main Islamic finance principles. Since the principle of not receiving or paying any interest is too restrictive for most otherwise eligible companies, some leniency has been applied here. According to Visser (2009, pp. 114-115), the criteria set up by the Dow Jones's *Shariah* Supervisory Board seems to be the standard in the investment industry.[30] It entails the following financial criteria firms must adhere to in order to be classified as *halal* (permissible according to Islamic law):

- Total debt divided by the trailing 12-month average market capitalization has to be less than 33%.
- Cash plus interest-bearing securities divided by the trailing 12-month average market capitalization has to be less than 33%.
- Accounts receivable divided by the 12-month average market capitalization has to be less than 33%.

This 1/3 rule seems to be somewhat arbitrary. Derigs and Marzban (2008) argue that it is most probably based on the *hadith* (sayings of the Prophet Mohammed) that one should not donate more than a third of his wealth to charity. The authors, however, do not explain the connection between this rule and the existing financial screening criteria. It is very likely that the *hadith* has been used out of context to justify a ratio when none was available in the sacred texts.

IEFs, are a relatively new phenomenon: there were just nine of them before 1994. After the Islamic *Fiqh* Academy (the leading authority on Islamic belongings) issued a decree stating that Muslims are allowed to invest in equities within certain parameters, the number grew rapidly to around 280 IEFs in 2008. Assets under management grew from USD 800 million to approximately USD 20 billion during the same period (Shanmugam and Zahari, 2009).[31] During

[30] There is no real consensus regarding the exact criteria that are used to classify equities. Derigs and Marzban (2008) find major differences between the different criteria used by various Islamic indices such as that the devisor can be total assets or market capitalization. Dow Jones has recently modified its criteria, using market capitalization for its Islamic indices, while the FTSE still uses total assets.

[31] As Chapter 2 shows, the number of Islamic investment funds has risen to 1065 in 2013, with assets under management of USD 56 billion (Lipper and Thomson Reuters, 2014).

the 1990s, many IEFs had investments in information technology stocks since it was both an attractive sector to invest in and included companies that passed the Islamic screening criteria easily. The bursting of the Internet bubble in 2000 and the financial crisis of 2008, however, shifted the focus in recent years to more defensive sectors like healthcare.

Nowadays, most IEFs are standard open-ended mutual funds, offering medium to long-term growth based on capital appreciation rather than dividend income. IEFs are mainly offered by local players but also by some large investment banks like UBS, Citigroup and Merrill Lynch. HSBC even has a daughter HSBC Amanah Finance that specifically targets a Muslim clientele. The potential market for IEFs is substantial since there are approximately 1.6 billion Muslims, which have a growing middle class and ceteris paribus more liquid assets to invest in international equity markets (see also Chapter 2). Another potential clientele consists of high net worth individuals (HNWIs) in the Middle East. These HNWIs are already targeted by some IEFs, which have a minimum investment threshold ranging from USD 1 to USD 5 million. Even non-Muslims might be an interesting customer base as *Shariah* compliant stock investing is in a certain way comparable to SRI. Namely, if SRI is broadly defined to include investment strategies that exclude certain sectors/companies for ethical/moral reasons (Eurosif, 2014, calls this Exclusion-based SRI) than *Shariah* compliant stock investing is also a type of SRI (see Chapter 2).

Nonetheless, IEFs are still not at their full potential, as numerous severe caveats obstruct further growth. For instance, the lack of standardization and limited risk management instruments (Jobst et al., 2008), the lack of liquidity and slow innovation (Zaher and Hassan, 2001), and the poor awareness among potential clients (Rammal and Zurbruegg, 2007) all hinder the growth prospects of Islamic finance, particularly IEFs.

Another obstacle IEFs face is that there is no real consensus regarding the financial criteria used to screen *Shariah* compliant stocks. Changes to these criteria would have major implications for the equities included in Islamic portfolios and implies an additional risk to Islamic investors. There is no guarantee that Muslim scholars would not condemn a debt to total asset ratio of 33% in the near future to adapt a ratio of 45%. For example, Derigs and Marzban (2008) find that the

Shariah Board of Standard & Poor's allows a receivables to market cap ratio of 49%, which is more than the 1/3 rule of the Dow Jones. Chapter 7 discusses these issues in more detail.

Since IEFs are not allowed to invest in companies with high debt to total asset ratios, they might be prone to investing in sub-optimally leveraged companies. Investing in low debt companies may also mean a high exposure to companies that have difficulty in debt financing, such as start-up companies. Since start-up companies are typically small, IEFs might have a high exposure to small growth stocks. Moreover, during financial market crises some stocks will have debt ratios that will increase beyond what is permissible, so that IEFs are forced to sell stocks with a loss and are less able to rely on a buy-and-hold strategy. The prohibition to invest in companies that have receivables of more than 33% of their market capitalization lets IEFs run the risk of investing in companies with liquidity issues since low receivables might imply insufficient working capital.

4.3. Sample

For our performance analysis of IEFs, we obtain pricing data at weekly frequency from Bloomberg. Each IEF with less than 30 weekly observations and/or more than 15 missing data points is excluded from our final sample. In addition, funds with missing data for a continuous period of 10 weeks are omitted from our sample. We mitigate missing data points within the sample period by replacing the missing data point with the average price of the previous and next period. We adjust the pricing data for dividends, convert the local currencies into USD, and calculate continuously compounded returns. Our final sample consists of 145 IEFs over the period from January 2000 to February 2009, leaving us with a maximum of 475 weekly returns. The Bloomberg tickers (Bloomberg's identifier codes) of these 145 IEFs are in Table A2 of the Appendix.

Our sample has a number of unique advantages. First, our data set covers a large time period (2000 to 2009), thus including the bear market of 2002 and the recent financial crisis of 2008/09. Second, our sample contains almost all existing IEFs and not, as in previous studies, just sub-

samples such as solely Malaysian funds. Third, our sample does not suffer from survivorship bias as we also include liquidated funds.[32]

Table 4.1 displays the summary statistics of our final sample. Panel A indicates that the majority of IEFs have their geographic focus on Asia, particularly on Malaysia. This comes as no surprise since Malaysia has a very well developed Islamic financial market. There are also some IEFs with a global asset allocation and some focusing specifically on Europe and the U.S. For our empirical analysis, we divide our sample into five categories based on their regional focus, i.e., IEFs investing (i) globally, (ii) only in the Malaysian market, (iii) Asia-Pacific, (iv) Europe and the Middle East, and (v) North America.

We evaluate the IEFs performance against both an Islamic and a conventional benchmark. IEFs investing globally are benchmarked against the Dow Jones Islamic Market World Index (DJIM) and the Dow Jones Global Index (DJG). For geographic focused funds, we follow Bauer et al. (2005) by using a specific benchmark for each different region. The authors argue that using a global index to proxy the market when evaluating regionally focused funds results in biased outcomes and leads to misinterpretations. For instance, for our sample of 51 IEFs invested solely in Malaysia, we use the Kuala Lumpur Composite Index (KLCI) as the conventional benchmark and the Kuala Lumpur Syariah Index (KLSI) as the Islamic benchmark. Panel A indicates the specific conventional and Islamic benchmarks used for each region. Panel B shows that IEFs are relatively young investment vehicles with just 24 being incepted before 2000. In total, 13 funds of our sample of 145 IEFs have been liquidated over the sample period 2000 to 2009. Panel A displays the regional focus of these liquidated IEFs, while Panel B shows the year of inception.

[32] Survivorship bias is a severe problem for most empirical asset pricing research. It is the upward bias in fund performance studies due to the exclusion of dead funds. Since funds that are no longer existent are likely to have had inferior returns (otherwise, they would most likely have survived), their exclusion leads to an upward bias in returns (Brown and Goetzmann, 1995).

Table 4.1: Summary Statistics

This table shows the descriptive statistics of our sample of 145 Islamic equity funds (IEFs) over the period 2000 to 2009. Panel A indicates the regional focus of the IEFs and the Islamic and conventional benchmarks used to analyze them. Panel B shows the age distribution of the IEFs for the whole sample and for the liquidated funds.

Panel A: Regional focus and benchmarks

	Number of funds		Benchmarks	
Region	*Whole sample*	*Liquidated funds*	*Islamic*	*Conventional*
Malaysia	51	4	Kuala Lumpur Syariah Index	Kuala Lumpur Composite Index
Global	50	2	Dow Jones Islamic Market World Index	Dow Jones Global Index
Asia-Pacific	14	2	Dow Jones Islamic Markets Asia Pacific Index	Dow Jones Asian Titans Index
Indonesia	11	2	Jakarta Stock Exchange Islamic Index	Jakarta Composite Index
U.S.	6	-	Dow Jones Islamic US Index	S&P 500 Index
Europe	4	2	Dow Jones Islamic Europe Index	FTSE 100 Index
China	3	-	MSCI Islamic China Index	Hang Seng Index
Middle East	3	-	Dow Jones Islamic Market Index	Tadawul All Share Index
Canada	2	1	Dow Jones Islamic Market Canada Index	Dow Jones Canada USD Stock Index
Thailand	1	-	MSCI Islamic Thailand Index	Bangkok SET Index
Total	**145**	**13**		

Panel B: Age distribution

	Number of funds	
Inception year	*Whole sample*	*Liquidated funds*
Inception year < 1990	3	-
≥ 1990 inception year < 1995	4	1
≥ 1995 inception year < 2000	17	-
≥ 2000 inception year < 2005	40	3
≥ 2005 inception year < 2008	37	6
2008	8	1
NA	36	2
Total	**145**	**13**

4.4. Results

4.4.1. CAPM performance analysis

We investigate the risk and return characteristics and evaluate the performance of our final sample of 145 IEFs via standard CAPM regressions. Specifically, we perform 145 OLS regressions, regressing weekly excess returns of each IEF over the period January 2000 to February 2009:

$$R_{p,t} - R_{f,t} = \alpha_p + \beta_p\left(R_{m,t} - R_{f,t}\right) + \varepsilon_{p,t} \quad (4.1)$$

Where $R_{p,t}$ - $R_{f,t}$ is the excess return of fund *p* at time *t* over the risk free rate (USD ten-year swap rate),[33] $R_{m,t}$ - $R_{f,t}$ is the excess return of the market portfolio at time *t*, and α_p and β_p are coefficients indicating outperformance (alpha) and systematic risk (beta), respectively. The Carhart four factor model is better at explaining fund returns than the CAPM (e.g., Bauer, Koedijk, and Otten, 2005). However, we use the CAPM in this analysis because to use the Carhart model requires representative factor returns, which we do not have. In this case, representative means having the same geographic focus as the relevant investment fund and being based on *Shariah* compliant stocks. Unfortunately, this data is not widely available. Data on all four factor returns is only widely available (from Kenneth French's website) for global or US portfolios. Moreover, data from French's website is strictly based on conventional portfolios and not on Islamic portfolios. Thus, we use the CAPM in this analysis since (i) it allows the benchmarks to match the geographic focus of the funds and since (ii) it allows Islamic as well as conventional benchmarks.[34]

We follow the suggested procedure by Abdullah et al. (2007) and run 145 individual OLS regressions with Newey-West heteroscedasticity and autocorrelation robust standard errors (HAC standard errors) and obtain estimated alpha and beta coefficients. From this cross-section

[33] Usually, the risk free rate is measured by the USD T-bill. Outside academia, the 10-year USD swap rate is also often used, because it is more liquid than the T-bill. However, the differences between these two rates are very small.

[34] As a robustness check, we also perform the CAPM analysis of Table 4.2 using the Carhart model based on conventional global factor returns and get similar results (see Section 4.4.5).

of alphas and betas we then infer whether they are significantly different from zero using a simple *t*-test by dividing the mean of the cross-sectional regression coefficients by their standard errors. We choose this method of individual regression to get data on the beta and alpha of each individual IEF. This allows for example a graphical representation of how the alphas are distributed, which in our opinion is more informative than an overall alpha with a significance level. Nevertheless, the results are broadly similar if we pool all the funds into a single portfolio (see Section 4.4.5).

Table 4.2 displays the CAPM regression results separately for our five regions against both their Islamic and conventional benchmarks. For the overall sample of 145 IEFs, we find a significant negative alpha, which indicates that on average the IEFs underperformed their Islamic benchmark 1.71% per year over the period 2000-2009.[35] Looking separately at the five IEF categories, we see that this underperformance is mainly due to the low performance of the 50 globally invested IEFs, which significantly underperform the Dow Jones Islamic Market World Index by 3.73% per year. The four other regional categories, Malaysia, Asia-Pacific, North America, and Europe and Middle East, do not generate any significant results and perform a bit better, though with an annual performance of -0.71%, -0.94%, -1.04%, and 1.53%, respectively, most of the groups generate lower returns than their Islamic benchmark. When evaluating systematic risk, we note that the average beta of the 145 IEFs is 0.77, which implies that the funds in our sample are on average significantly less risky than their corresponding Islamic benchmarks.

IEFs may as well be an interesting investment even for non-Muslims, especially for those who see IEFs as a type of SRI. The columns on the right of Table 4.2 display the results of the CAPM performance analysis with respect to their conventional benchmarks. The average alpha for all 145 funds equals -0.28% per year, which implies that IEF managers also underperform their conventional benchmarks, although this result is statistically not significant. Our finding that IEF managers do not outperform their conventional benchmarks holds for almost all five subcategories as well. In sum, our initial results indicate that during the period 2000-2009, IEFs on average have underperformed both their Islamic and conventional benchmarks. Moreover,

[35] We calculate annualized return figures by multiplying the weekly returns by 52, thus -1.71% = -0.0328*52.

IEFs seem to be low beta funds, with average betas just below 0.8. These empirical findings hold for the whole sample of 145 IEFs as well as for most of the 5 regional subcategories.

As a robustness check, we investigate in the following whether our initial results are biased by insignificant coefficients or small funds. Therefore, we weight the estimated alphas and betas of Table 4.2 using (i) the heteroscedasticity and autocorrelation robust (HAC) standard errors of the estimated coefficients and (ii) the market capitalization of the funds. With regard to the standard errors, we use the inverse of the HAC standard errors of each IEF regression to weight the accompanying alpha and beta. Thus, we overweight (underweight) funds with low (high) standard errors (Jiang, 2003). Panel A in Table 4.3 presents the outcome of this first robustness analysis. We find that after correcting for standard errors, the results are quite similar to the original, unweighted ones presented in Table 4.2. We still find that our sample of 145 IEFs, on average, significantly underperform their Islamic benchmarks (-0.68% per year). This underperformance is mainly due to the subsample of 50 globally invested funds, while the 51 Malaysian IEFs on average slightly but insignificantly outperform their KLSI benchmark.

Table 4.2: CAPM performance analysis

This table shows the results of CAPM regression (using OLS) for 145 IEFs over the period January 2000 to February 2009. We divide the IEFs into five categories based on their regional focus, i.e., IEFs investing globally and those investing solely in Malaysia, Asia-Pacific, North America and Europe and the Middle East. To proxy the market portfolio, we use a representative Islamic and conventional benchmark separately for each regional category. The alpha and beta coefficients are equally weighted averages. Standard errors (in parentheses) are based on the cross-section of the estimated coefficients; asterisks ***, ** and * indicate significance at the 1%, 5% and 10%, respectively.

	Model: OLS				**Model: OLS**			
	Islamic benchmark				**Conventional benchmark**			
	Alpha	Beta	R^2	Observations	Alpha	Beta	R^2	Observations
Overall	-0.0328***	0.7700***	0.7102	145	-0.0054	0.7651***	0.7010	145
	(0.0124)	(0.0188)			(0.0131)	(0.0182)		
Global	-0.0717***	0.7850***	0.6595	50	-0.0022	0.7741***	0.6533	50
	(0.0263)	(0.0367)			(0.0276)	(0.0348)		
Local: Malaysian	-0.0137	0.7470***	0.7422	51	-0.0138	0.7280***	0.7143	51
	(0.0146)	(0.0238)			(0.0145)	(0.0233)		
Local: Asia-Pacific	-0.0180	0.7883***	0.7574	29	-0.0065	0.8241***	0.7768	29
	(0.0275)	(0.0465)			(0.0272)	(0.0485)		
Local: North America	-0.0199	0.7743***	0.7592	8	0.0402	0.8042***	0.7577	8
	(0.0589)	(0.0933)			(0.0581)	(0.0692)		
Local: Europe and Middle East	0.0294	0.7493***	0.5882	7	-0.0690	0.6827***	0.5647	7
	(0.0365)	(0.0897)			(0.0929)	(0.0584)		

Panel B in Table 4.3 presents the results of our second robustness check, where we weight the IEFs based on market capitalization in USD as of February 2009. We have data on market capitalization available for 79 IEFs. Summary statistics (not presented here) indicate that this subsample is very similar with respect to size, geographic focus, and year of inception to the overall sample of 145 IEFs. For the Islamic benchmark, we see that size weighting leads to similar alpha and beta coefficients as we estimated for the original (Table 4.2), and for the standard error weighting (Panel A of Table 4.3) regressions. Our overall sample of 79 IEFs still underperforms its Islamic benchmarks, although no longer significantly so, while the 30 globally invested IEFs perform worse with an average alpha of approximately -5% per year.

When looking at the conventional benchmark results, we see that almost all alphas are positive, though not significant. More careful scrutiny shows that the average alpha of the subsample of 79 IEFs for which we have size data available is higher than the average alpha of the whole sample of 145 IEFs, which is likely to be the reason for the relatively higher observed alphas in Panel B. In sum, we can conclude that our second robustness checks confirms our initial results: in general, IEFs underperform their Islamic benchmarks and do not significantly outperform their conventional benchmarks, while Malaysian IEFs slightly but insignificantly outperform both their benchmarks. We note here that this underperformance is even before taking any kind of management fees into account. Also, in almost all specifications we find a significant beta that is substantially lower than the market beta of one.

Considering the conventional benchmarks, we see that, after correcting for standard errors, our sample of 145 IEFs still slightly but insignificantly underperforms. The globally invested IEFs are once again significantly the worst performers, while the Malaysian IEFs slightly but insignificantly outperform the KLCI. Our first robustness check lets us conclude that IEFs indeed underperformed both their Islamic and conventional benchmarks over the period 2000-2009.

Table 4.3: CAPM performance analysis with weighted coefficients

This table presents the results of weighted CAPM regressions (using OLS to calculate the coefficients) over the period 2000 to 2009. Panel A weights the alpha and beta coefficients by using the inverse of their Newey-West autocorrelation and heteroscedasticity robust standard errors (HAC standard errors) from the regressions. Panel B weights the coefficients by the IEF's market capitalization in USD as of February 2009. Standard error of the cross-sectional alphas and betas are reported in parentheses; asterisks ***, ** and * indicate significance at the 1%, 5% and 10%, respectively.

Panel A: SE weighted

	Model: OLS Islamic benchmark				Model: OLS Conventional benchmark			
	Alpha	Beta	R^2	Observations	Alpha	Beta	R^2	Observations
Overall	-0.0132**	0.7609***	0.7102	145	-0.0034	0.7461***	0.7010	145
	(0.0064)	(0.0602)			(0.0056)	(0.0317)		
Global	-0.0511***	0.7599***	0.6595	50	-0.0265*	0.7487***	0.6533	50
	(0.0105)	(0.0933)			(0.0148)	(0.0631)		
Local: Malaysian	0.0140	0.7496***	0.7422	51	0.0110	0.7221***	0.7143	51
	(0.0105)	(0.0440)			(0.0107)	(0.0376)		
Local: Asia-Pacific	-0.0082	0.7525***	0.7574	29	-0.0050	0.7878***	0.7768	29
	(0.0194)	(0.0787)			(0.0211)	(0.0718)		
Local: North America	-0.0105	0.8438	0.7592	8	0.0228	0.7585***	0.7577	8
	(0.0361)	(0.4871)			(0.0404)	(0.1236)		
Local: Europe and Middle East	-0.0171	0.7090***	0.5882	7	-0.0289	0.7159***	0.5647	7
	(0.0331)	(0.0849)			(0.0423)	(0.1748)		

Panel B: Size weighted

	Alpha	Beta	R^2	Observations	Alpha	Beta	R^2	Observations
Overall	-0.0072	0.7265***	0.7102	79	0.0274	0.7113***	0.7010	79
	(0.0128)	(0.1155)			(0.0274)	(0.1164)		
Global	-0.0965	0.8132***	0.6595	30	0.0213	0.7839***	0.6533	30
	(0.0784)	(0.1789)			(0.0663)	(0.1718)		
Local: Malaysian	0.0244	0.6955***	0.7422	29	0.0298	0.6847***	0.7143	29
	(0.0273)	(0.2064)			(0.0299)	(0.2043)		
Local: Asia-Pacific	0.0100	0.6301**	0.7574	12	0.0188	0.6515*	0.7768	12
	(0.0287)	(0.3014)			(0.0276)	(0.3193)		
Local: North America	0.0458	1.0141*	0.7592	4	0.1769	0.9436*	0.7577	4
	(0.0903)	(0.4554)			(0.1311)	(0.4034)		
Local: Europe and Middle East	0.0701	0.7358***	0.5882	4	-0.0862	0.6473***	0.5647	4
	(0.0444)	(0.0662)			(0.1340)	(0.0517)		

4.4.2. Market timing ability

By testing the market timing ability of IEFs, we test whether our previous conclusions drawn regarding performance (alpha) and systematic risk (beta) still hold when allowing for varying systematic risk. We apply the multivariate regression model of Treynor and Mazuy (1966) and run the following OLS regression for each fund:

$$R_{p,t} - R_{f,t} = \alpha_p + \beta_p\left(R_{m,t} - R_{f,t}\right) + \gamma_p\left(R_{m,t} - R_{f,t}\right)^2 + \varepsilon_{p,t} \quad (4.2)$$

where $R_{p,t}$ - $R_{f,t}$ is the excess return of fund *p* at time *t* over the risk free rate (USD ten-year swap rate), $R_{m,t}$ - $R_{f,t}$ is the excess return of the market portfolio at time *t*, and α_p, β_p and γ_p are coefficients indicating outperformance, systematic risk, and market timing ability, respectively. Panel A of Table 4.4 presents the results of our sample of 145 IEFs over the period 2000 to 2009, using Islamic benchmarks.[36]

Panel A shows that the average annualized alpha for globally invested IEFs is -4.48%, which is comparable to the originally estimated CAPM model in Table 4.2 (-3.37% per year). The average market timing ability equals -0.0005, indicating that IEF managers on average are not able to outguess the Islamic equity market. Individually though, IEF managers do seem to engage in market timing activities.

[36] Here, we only present the performance results against Islamic benchmarks because if IEF managers try to time the market, they are much more likely to target the Islamic rather than the conventional market.

Table 4.4: Market timing ability of IEF managers

This table shows the results of estimating the market timing ability of IEF managers over the period 2000 to 2009. We use two different market timing models and benchmark against Islamic equity indices. Panel A displays the results of the Treynor and Mazuy (1966) model, where alpha, beta, and gamma are estimated with an OLS regression (see Section 4.4.2) and where these coefficients indicate outperformance, systematic risk, and market timing ability, respectively. The shown coefficients are equally weighted averages. Standard errors (in parentheses) are based on the cross-section of the estimated coefficients. Panel B presents the results of the non-parametric procedure for testing market timing as proposed by Jiang (2003). Theta indicates the probability that a fund manager takes on relatively more risk in a higher than in a lower return period. The standard error of each individual theta is used to weight the originally estimated thetas. The standard error of the cross-section of IEF thetas is calculated by dividing the cross-sectional average of thetas by their cross-sectional standard error and is given in parentheses. Column three shows the weighted average of the thetas using the inverse of their standard errors. Then we repeat the same procedure as with the unweighted thetas by performing a *t*-ratio test on the cross-sectional thetas. Column five shows the weighted average of the thetas using the IEFs' market capitalization in USD as of February 2009. Here, we again follow the procedure, as with the unweighted thetas, to calculate the standard errors. Asterisks ***, ** and * indicate significance at the 1%, 5% and 10%, respectively.

Panel A: Treynor-Mazuy model

	Model: OLS				
	Alpha	Beta	Gamma	R^2	Observations
Overall	-0.0158	0.7676***	-0.0005	0.7151	145
	(0.0150)	(0.0200)	(0.0010)		
Global	-0.0861***	0.7951***	0.0009	0.6668	50
	(0.0238)	(0.0406)	(0.0019)		
Local: Malaysian	-0.0172	0.7476***	0.0006	0.7421	51
	(0.0159)	(0.0232)	(0.0013)		
Local: Asia-Pacific	0.0752	0.7690***	-0.0038	0.7667	29
	(0.0468)	(0.0458)	(0.0024)		
Local: North America	0.0525	0.7540***	-0.0037	0.7633	8
	(0.0543)	(0.0885)	(0.0019)		
Local: Europe and Middle East	0.0400	0.7277***	-0.0006	0.5950	7
	(0.0625)	(0.1281)	(0.0032)		

Panel B: Non-parametric model

	Theta	Observations	SE weighted theta	Observations	Size weighted theta	Observations
Overall	-0.0088***	145	-0.0220***	145	-0.0085	79
	(0.0031)		(0.0064)		(0.0159)	
Global	-0.0149***	50	-0.0100**	50	- 0.0097	30
	(0.0051)		(0.0042)		(0.0126)	
Local: Malaysian	-0.0014	51	-0.0003	51	0.0011	29
	(0.0051)		(0.0029)		(0.0073)	
Local: Asia-Pacific	-0.0053	29	-0.0064	29	0.0092	12
	(0.0084)		(0.0051)		(0.0077)	
Local: North America	-0.0169**	8	-0.0173**	8	-0.0224	4
	(0.0056)		(0.0062)		(0.0118)	
Local: Europe and Middle East	-0.0232**	7	-0.0216**	7	-0.0265	4
	(0.0069)		(0.0066)		(0.0161)	

Figure 4.1: Distribution of gamma *t*-statistics

This figure shows the overall distribution of the *t*-statistics of the market timing coefficient gamma, obtained from estimating the Traynor and Mazuy (1966) model as presented in Panel A of Table 4.4. It indicates in which range the *t*-stats of gamma for each of the 145 IEFs over the sample period 2000-2009 falls.

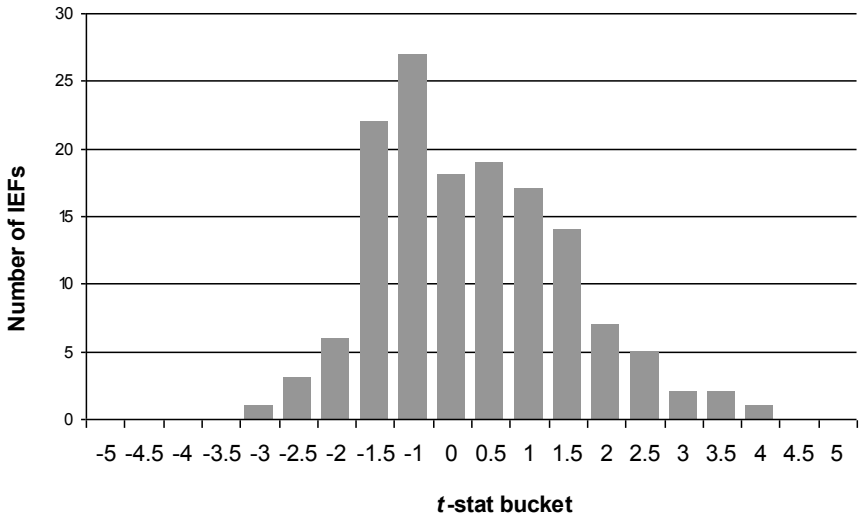


Figure 4.1 shows the distribution of *t*-statistics on the market timing ability coefficient γ_p (gamma), as indicated in Panel A.

This figure indicates a clear skew to the left, which implies that many IEF managers try to beat the market, but are unsuccessful in doing so. In fact, the skew being negative indicates that the fund managers' attempts to beat the market negatively affects their returns since they overweight exposure to the market when the market goes down and vice versa when the market goes up. These results are in line with the findings of Annuar, Mohamed, and Ngu (1997), who also find negative market timing for Malaysian funds, but differs in terms of alpha, which they report to be positive and significant.

The Treynor and Mazuy (1966) model has been criticized for a number of shortcomings. First, it does not separate between the quality of a fund manager's timing information and the aggressiveness of his response (Cuthbertson, Nitzsche, and O'Sullivan, 2010). Second, it does not separate fund performance in its market timing and security selection components (Admati,

Bhattacharya, and Pfleiderer, 1986; Grinblatt and Titman, 1989). Finally, it has been found to have low power when actual fund timing frequencies differ from data sampling frequencies (Goetzmann, Ingersoll, and Ivkovich, 2000; Bollen and Busse, 2001).

To address these issues, we follow Jiang (2003) and run a second test for the market timing ability of IEF managers by using a non-parametric procedure, which is not affected by a fund manager's risk aversion, different timing frequencies, or the underlying distribution of the data.

For each IEF benchmark (representing the excess market return), we form all possible combinations of three returns (triplets)[37] under the constraint that the first part of the triplet ($r_{m,t1}$) is smaller than the second part ($r_{m,t2}$) which is smaller than the third part ($r_{m,t3}$), i.e., $r_{m,t1} < r_{m,t2} < r_{m,t3}$ holds. We match each triplet of the market return with the accompanying return of the relevant IEF ($r_{p,t1}$, $r_{p,t2}$ and $r_{p,t3}$) and calculate the following statistic:

$$\hat{\theta}_n = \binom{n}{3}^{-1} \sum_{r_{m,t1} < r_{m,t2} < r_{m,t3}} sign\left(\frac{r_{p,t3} - r_{p,t2}}{r_{m,t3} - r_{m,t2}} > \frac{r_{p,t2} - r_{p,t1}}{r_{m,t2} - r_{m,t1}} \right) \tag{4.3}$$

Where n is the sample size (number of return observations), $r_{m,t1}$, $r_{m,t2}$, and $r_{m,t3}$ are the returns of the market at t_1, t_2, and t_3 and $r_{p,t1}$, $r_{p,t2}$, and $r_{p,t3}$ are the accompanying fund returns, and $sign(\cdot)$ assumes 1 (-1) if the argument is positive (negative) and otherwise 0. This statistic gives the average sign of all market return triplets and their accompanying fund returns and can be interpreted as the probability that a fund manager takes on relatively more risk in a higher than in a lower return period, i.e., that he correctly times the market. In case he exhibits superior (inferior) skills in timing the market, his *sign* function becomes positive (negative), while it is zero if he is as often wrong as he is right.[38]

[37] The returns are treated as independent and identically distributed, thus, they do not have to be in a consecutive order. This means that a fund with, for example, 100 return observations, will have a maximum of 100*99*98=970.200 possible triplets.

[38] Note that as the *sign* function only takes values of 1, -1, and 0, it disregards the aggressiveness of the fund manager's market timing and only takes into account how often the manager is right or wrong.

The null hypothesis here is that fund managers exhibit no market timing ability, i.e., θ is 0. Abrevaya and Jiang (2001) show that $\hat{\theta}_n$ is a $\sqrt{n}$-consistent and asymptotically normal estimator of θ_n with variance

$$\hat{\sigma}^2_{\hat{\theta}_n} = \frac{9}{n} \sum_{t=1}^{n} \left(\binom{n}{2}^{-1} \sum_{t_2<t_3} h(z_{t1}, z_{t2}, z_{t3}) - \hat{\theta}_n \right)^2 \tag{4.4}$$

where h is defined as:

$$h(z_{t1}, z_{t2}, z_{t3}) = sign\left(\frac{r_{p,t3} - r_{p,t2}}{r_{m,t3} - r_{m,t2}} > \frac{r_{p,t2} - r_{p,t1}}{r_{m,t2} - r_{m,t1}} \,\middle|\, r_{m,t1} < r_{m,t2} < r_{m,t3} \right) \tag{4.5}$$

and where z_{tj} is the triplet of market returns and their accompanying fund returns. The null hypothesis for each individual IEF is evaluated with the *t*-statistic of $\hat{\theta}_n$ given as:

$$t_\theta = \frac{\hat{\theta}_n}{\sigma_{\hat{\theta}_n} / \sqrt{n}} \tag{4.6}$$

The null hypothesis for the cross-section of IEF thetas is evaluated by dividing the average theta of the IEFs by its standard error.[39] In a second step, we again weight the thetas using the inverse of their standard errors and their market caps and redo the cross-sectional *t*-test.

Panel B of Table 4.4 presents the results of this non-parametric procedure. The first column shows a surprising result: IEFs in all categories mistime their Islamic benchmarks as indicated by the negative average thetas. The overall average theta is -0.88% (significant at 1%), which means that the probability that IEF managers wrongly time the market is almost 1% higher than the

[39] We assume here that the thetas are approximately normally distributed.

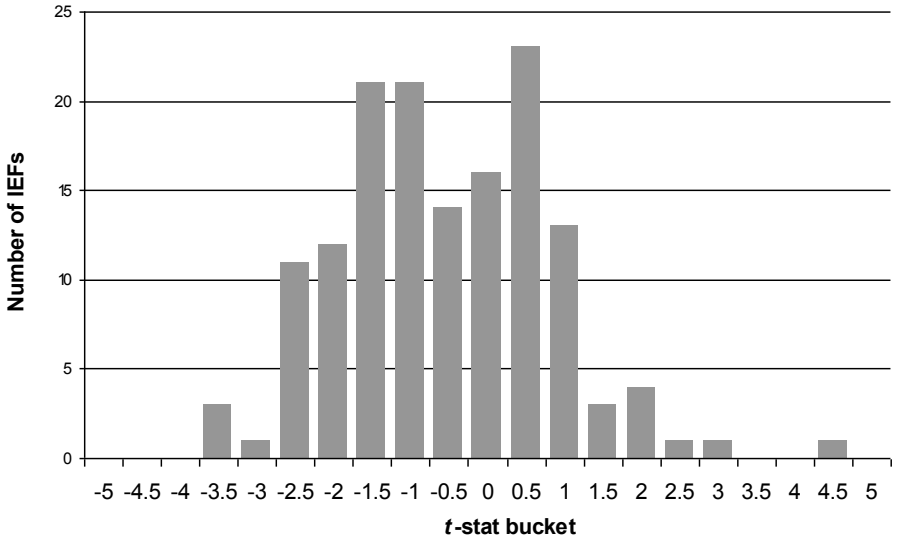
probability of correctly timing it. This negative market timing ability is similar to the findings of Jiang (2003), who finds an average theta of 1.33% for still existing funds and 2.62% for dead funds. We note that the globally invested IEFs perform worst at market timing (theta of -1.5%, significant at 1%), while the Treynor-Mazuy model estimates showed a positive (albeit insignificant) timing ability.[40] The non-parametric results for the Malaysian funds are still insignificant, but indicate that they seem to be the least bad at market timing. The third column shows the weighted average thetas of the IEFs, using the inverse of their standard errors as a weight. The results are similar to the results of the first column. Overall, IEF managers have significantly mistimed the market; this also holds for all regional categories except for IEFs invested in Malaysia and the Asia-Pacific region. The fifth column presents our estimates of the size-weighted thetas. The size and sign of the overall theta is still roughly the same, although no longer significant. However, the disappearing of significance is not necessarily an indication that the previous conclusions do not hold. First, we find an overall theta that is approximately the same as in the previous estimates. Second, there are a number of large funds in the subsample of 79 IEFs, which have an obvious effect on the results.

Figure 4.2 presents the distribution of the *t*-values as defined in Equation 4.6 for the individual IEFs. It corroborates the findings of Table 4.4. Most *t*-values lie between -1.5 and 1. A handful of IEFs have significant positive *t*-values, but they are overcompensated by the number of adverse market timers. We observe a substantial negative skew in Figure 4.2, indicating that once again IEF managers on average to mistime the market as proxied by the Islamic benchmarks.

[40] Higher market timing coefficients in the Treynor-Mazuy model have also been found by Cuthbertson et al. (2010), who attribute this higher prevalence to the fact that it also incorporates response aggressiveness.

Figure 4.2: Distribution of theta *t*-statistics

This figure shows the overall distribution of the *t*-statistics of the non-parametric market statistic proposed by Jiang (2003). For each of the 145 IEFs, we calculated the theta as described in Equation (4.3) and calculated its *t*-statistic as described in Equation 4.6. The table indicates in which range the *t*-stats of theta for each of the 145 IEFs falls.



4.4.3. IEF performance during financial markets turmoil

Our empirical analyses so far have shown that IEFs are low risk investments (betas significantly smaller than 1) and do substantially underperform both Islamic and conventional benchmarks (indicated by significant negative alphas). These results, however, might not be robust for different market conditions, for example, during downswings. To test for this, we run the standard OLS based CAPM regression (1) for the period January 2008 to February 2009, so that we can analyze the effect of the recent financial crisis on the performance of our sample of 139 IEFs. The results are presented in Table 4.5.

We find that the systematic risk component of our IEF sample is stable against different market conditions. The overall beta of IEFs for the Islamic market, as well as for the conventional market, equals 0.77, meaning that, on average, the low sensitivity of IEFs is also maintained during bear markets.

Table 4.5: IEF returns during the financial crisis of 2008/2009

This table shows the results of CAPM regression (based on OLS) for 139 IEFs over the period January 2008 to February 2009. Similar to Table 4.2, we divide the IEFs into five regional categories based on their geographic investment focus. The alpha and beta coefficients are equally weighted averages. Standard errors (in parentheses) are based on the cross-section of the estimated coefficients; asterisks ***, ** and * indicate significance at the 1%, 5% and 10%, respectively.

	Model: OLS				**Model: OLS**			
	Islamic benchmark				**Conventional benchmark**			
	Alpha	Beta	R^2	Observations	Alpha	Beta	R^2	Observations
Overall	-0.1394***	0.7737***	0.7609	139	-0.0818***	0.7659***	0.7513	139
	(0.0171)	(0.0202)			(0.0176)	(0.0198)		
Global	-0.1825***	0.7857***	0.6990	50	-0.0616	0.7558***	0.6922	50
	(0.0354)	(0.0397)			(0.0378)	(0.0376)		
Local: Malaysian	-0.1170***	-0.7405***	0.7944	49	-0.1170***	-0.7405***	0.7944	49
	(0.0172)	(0.0254)			(0.0172)	(0.0254)		
Local: Asia-Pacific	-0.1066**	0.8078***	0.8212	26	-0.0848*	0.8484***	0.7947	26
	(0.0448)	(0.0485)			(0.0433)	(0.0520)		
Local: North America	-0.0919	0.8232***	0.8466	8	0.0357	0.7892***	0.8302	8
	(0.0645)	(0.0923)			(0.0608)	(0.0767)		
Local: Europe and Middle East	-0.1686*	0.7316***	0.6287	6	-0.1070	0.6683***	0.5985	6
	(0.0768)	(0.1058)			(0.0669)	(0.0742)		

The alphas of the IEFs indicate that underperformance has increased sharply during the financial markets turmoil of 2008/2009. Compared to Islamic benchmarks, IEFs significantly underperform on average by 7% per year, while they do slightly better against their conventional benchmarks with an average annual performance of -4%. We find this substantial underperformance as well for all regional subcategories and both Islamic and conventional benchmarks, aside from IEFs focusing on North America, which slightly outperform their conventional benchmarks.

As in the previous section, we also check for the robustness of our results and redo this analysis by using both weighted coefficients with standard errors and fund size as weights. The CAPM regression results presented in Table 4.6 indicate that our findings are overall very robust. Panel A shows that IEFs remain significant underperformers with betas that do not change much. For our sample of 139 IEFs, average alphas indicate (over the period January 2008 to February 2009) significant underperformance of -6% per year and 4% per year compared to Islamic and conventional benchmarks, respectively. The results in Panel B further corroborate the robustness of our results with an overall negative alpha for both Islamic and conventional benchmarks of roughly the same size as in Panel A.

We suspect that the heavy underperformance of IEFs during the financial crisis of 2008/2009 has several reasons. First, IEF managers seem to be overall poor stock pickers, but they especially chose the wrong securities during the financial market turmoil. The reason for these poor security selection skills might lie in the relatively young age of the funds. Previous research has found some evidence that stock picking abilities increase with experience (e.g., Mikhail, Walther, and Willis, 1997). Second, IEF managers might be forced to sell stocks with a loss. Since the financial criteria to screen stocks are based on market capitalization, the debt to market cap ratio will increase when stock value goes down, pushing the stock out of the eligible investment universe. Third, IEF managers seem to be bad market timers, as our results have shown.

Table 4.6: IEF returns during the recent financial crisis (2008/2009) with weighted coefficients

This table shows the weighted outcome of the CAPM regressions as described in Table 4.5. Here the alphas and betas are weighted using the inverse of their standard error (Panel A) and their market capitalization as of February 2009. The standard errors used to weight the alpha's are Newey-West autocorrelation and heteroscedasticity robust standard errors (HAC standard errors) from the original CAPM regressions. The market caps are a proxy for size and are measured in USD. Standard errors of the cross-sectional alphas and betas are reported in parentheses; asterisks ***, ** and * indicate significance at the 1%, 5% and 10%, respectively.

Panel A: SE weighted

	Islamic benchmark				Conventional benchmark			
	Alpha	Beta	R^2	Observations	Alpha	Beta	R^2	Observations
Overall	-0.1120***	0.7491***	0.7609	139	-0.0783***	0.7329***	0.7513	139
	(0.0124)	(0.0603)			(0.0164)	(0.0315)		
Global	-0.1517***	0.7362***	0.6990	50	-0.0603*	0.6972***	0.6922	50
	(0.0243)	(0.0863)			(0.0305)	(0.0528)		
Local: Malaysian	-0.1042***	0.7261***	0.7944	49	-0.1042***	0.7261***	0.7944	49
	(0.0131)	(0.0414)			(0.0131)	(0.0414)		
Local: Asia-Pacific	-0.0811**	0.7491***	0.8078	26	-0.0720*	0.8099***	0.7947	26
	(0.0342)	(0.0586)			(0.0372)	(0.0702)		
Local: North America	-0.0546	0.8668	0.8466	8	0.0362	0.7525***	0.8302	8
	(0.0400)	(0.4563)			(0.0562)	(0.1399)		
Local: Europe and Middle East	-0.1452	0.7343**	0.6287	6	-0.0860***	0.7060*	0.5985	6
	(0.0703)	(0.1578)			(0.0596)	(0.2147)		

Panel B: Size weighted

	Alpha	Beta	R^2	Observations	Alpha	Beta	R^2	Observations
Overall	-0.1228*	0.7298***	0.7609	79	-0.0829	0.7208***	0.7513	79
	(0.0669)	(0.1113)			(0.0704)	(0.1128)		
Global	-0.2237	0.7833***	0.6990	30	-0.1019	0.7522***	0.6922	30
	(0.1548)	(0.1640)			(0.1408)	(0.1576)		
Local: Malaysian	-0.0638***	0.7171***	0.7944	29	-0.0638***	0.7171***	0.7944	29
	(0.0185)	(0.2178)			(0.0185)	(0.2178)		
Local: Asia-Pacific	-0.0008	0.5850**	0.8078	12	-0.0007	0.6028*	0.7947	12
	(0.0006)	(0.2554)			(0.0004)	(0.2710)		
Local: North America	0.0016	1.0321	0.8466	4	0.0044	0.9503	0.8302	4
	(0.0025)	(0.4463)			(0.0032)	(0.3991)		
Local: Europe and Middle East	-0.0042	0.7464***	0.6287	4	-0.0018	0.6689***	0.5985	4
	(0.0019)	(0.0565)			(0.0013)	(0.0309)		

4.4.4. Downside risk

We have found so far that IEFs underperform both their Islamic and conventional benchmarks and even more so during financial market turbulences. However, these results are inconsistent with the findings of Abdullah et al. (2007), who conclude that Malaysian IEFs are overall not showing superior returns, but perform significantly better during bear than bull markets. We note that it might well be the case that the lower returns are due to IEFs investing in stocks that are perceived as having less downside risk and thus having lower required returns for the period as a whole. To test this notion, we apply the approach of Ang et al. (2006) and define downside risk as the covariance of a security's excess return to that of the market in cases where the market excess return is negative, formally:

$$\beta_p^- = \frac{\operatorname{cov}(r_p, r_m) \mid r_m < 0}{\operatorname{var}(r_m) \mid r_m < 0} \tag{4.7}$$

Where r_m and r_p represent the excess returns of the Islamic market and fund p, respectively, and β_p^- is the sensitivity of a fund's excess return to the market's excess return, conditioned that the latter is negative.

To calculate this downside risk measure, the benchmark returns are sorted in descending order and all negative returns of the benchmarks are identified. All positive excess returns of the benchmarks are removed, leaving only the negative returns. Then, for each fund, the excess returns of that fund corresponding with the negative returns of the benchmark are identified. These excess returns are then regressed against the negative excess returns of the benchmark, giving the estimated β^- of the fund. This β^- is, however, contaminated with the effect of the normal unconditional beta. For instance, if one finds that a certain fund has a low sensitivity to the market return in bear markets, this could be just because the fund has a low unconditional beta. To extract this effect, the standard betas (estimated in the previous section as in Equation 4.1) are subtracted from the β^-, leaving the relative beta.

We follow Ang et al. (2006) and formally define this relative beta as:

$$\beta_p^r = \beta_p^- - \beta_p \quad . \tag{4.8}$$

The relative beta thus gives the pure downside risk of a fund, controlling for its unconditional beta. If the average relative beta is found to be significant, this implies that the systematic risk of the IEFs is different in bear markets, which would be a good characteristic if the average relative beta is negative and a bad attribute if it is positive. The former would imply that the systematic risk of IEFs is lower during bear markets, while the latter implies the opposite. Table 4.7 displays the results of our downside risk analysis of our sample of 145 IEFs over the period 2000 to 2009.

Table 4.7 shows that the average relative beta of IEFs is 0.0061, which means that IEFs on average co-vary more with the market when it declines, though this result is not statistically significant. When looking separately at the relative betas of the five regional categories, we find that none has a beta that is significantly different during down movements of the market. The relative betas in almost all groups are positive, though, which might reflect some adverse market timing, as indicated earlier. It seems like IEF managers increase their exposure to the market in times they actually should not. By doing so, they slightly raise the betas of the funds and generate even lower returns during bear markets.

Table 4.7: Downside risk

This table presents the results of the CAPM regressions of IEF excess returns on Islamic benchmark excess returns over the period 2000-2009, conditioning for negative movements of the latter. We estimate the downside betas (Beta minus), i.e., the sensitivities of IEFs to the Islamic benchmark during down movements of the market. The unconditional beta is subtracted from the downside beta, giving the pure downside risk measure, controlling for unconditional sensitivity to the market (Relative beta). Standard errors are based on the cross-section of the coefficients and are given in parentheses; asterisks ***, ** and * indicate significance of 1%, 5% and 10%, respectively.

	Beta minus	Relative beta	R^2	Observations
Overall	0.7761***	0.0061	0.6392	145
	(0.0207)	(0.0072)		
Global	0.7877***	0.0027	0.5979	50
	(0.0378)	(0.0128)		
Local: Malaysian	0.7511***	0.0041	0.6473	51
	(0.0275)	(0.0087)		
Local: Asia-Pacific	0.8019***	0.0136	0.7033	29
	(0.0564)	(0.0230)		
Local: North America	0.7944***	0.0201	0.6814	8
	(0.1129)	(0.0252)		
Local: Europe and	0.7476***	-0.0017	0.5616	7
Middle East	(0.0765)	(0.0223)		

4.4.5. Four factor analysis

As a final robustness test, we perform our main analysis of Table 4.2 using the Carhart four factor model instead of the CAPM. There are two main caveats to using the Carhart model for this analysis. First, data on the four factor returns of the Carhart model is based on globally invested portfolio returns rather than geographically focused returns (at least, data that is widely available, namely from Kenneth French's website).[41] Second, this data does not distinguish between factor returns based on conventional and Islamic portfolios. However, we use the weekly conventional factor returns from French's website as a rough proxy and run a performance analysis on our sample of IEFs,[42] similar to our CAPM analysis in Section 4.4.1.

For this analysis, we split our IEF sample into four groups. Namely, (i) our entire sample of 145 IEFs, (ii) IEFs that invest globally, (iii) IEFs that invest in Malaysia, and (iv) the rest of our IEF

[41] French's website does contain factor returns for broad local regions (e.g., Asia Pacific, excluding Japan), but only the three Fama and French (1993) factors, and with a monthly rather than weekly frequency.

[42] Note that the momentum factor is not available in a weekly frequency on French's website. However, it is available in a daily frequency. To calculate a weekly momentum return, we chain link the daily momentum factors. With chain linking, we mean adding 1 to the daily return, calculating the sum product of that number over the 5 working days of that week and finally subtract the 1 (the returns 0.10%, 0.08%, 0.07%, -0.03%, 0.05%, thus represent a weekly return of 27% [1.001*1.008*1.0007*0.9997*1.0005] - 1 = 0.0027). We do this, following, for example, Marzuki and Worthington (2011), who use this method to convert monthly returns to annual returns.

sample.[43] We thus form four IEF portfolios. Each portfolio contains the equally weighted returns of its component IEFs. For example, the globally invested portfolio contains the average weekly return of each of its 50 individual IEFs. Then we run four separate OLS regressions. In each regression, we regress the returns of the IEF portfolio on the Carhart four factor returns. This is different from in our previous CAPM analyses, where we follow Abdullah et al. (2007) and run a separate regression for each IEF. We do this because it provides an additional robustness check. Namely, whether it matters for the coefficients if they are calculated by pooling the separate IEFs into one portfolio or whether they are calculated individually and averaged.

For each of the four IEF portfolios, we run the following OLS regression:

$$R_{p,t} - R_{f,t} = \alpha_p + \beta_{p,1}(R_{m,t} - R_{f,t}) + \beta_{p,2}(HML_t) + \beta_{p,3}(SMB_t) + \beta_{p,4}(MOM_t) + \varepsilon_{p,t} \quad (4.9)$$

In which α_p is portfolio p's return when all the other factor returns are zero, $R_{p,t}$ - $R_{f,t}$ is the realized excess return of portfolio p, $R_{m,t}$ is the market return (the return on the CRSP value weighted index), R_f is the risk-free rate (in this case, the one month Treasury Bill rate), $\beta_{p,1}$ is the sensitivity of portfolio p's return to the market excess return, $\beta_{p,2}$ is the sensitivity of portfolio p's return to the value factor, $\beta_{p,3}$ is the sensitivity of portfolio p's return to the size factor, $\beta_{p,4}$ is the sensitivity of portfolio p's return to the momentum factor, HML_t is the value premium (the return of a portfolio of stocks with high book to market values minus the return of a portfolio of stocks with low book to market values), SMB_t is the size premium (the return of a portfolio of stocks with low market capitalization values minus the return of a portfolio of stocks with high market capitalization), MOM_t is the momentum premium (the return of a portfolio of previous period high return stocks minus the return of a portfolio of previous period low return stocks), $\varepsilon_{p,t}$ is the error term, and all returns are on a weekly basis.

The results of this analysis are in Table 4.8. The table shows that these results are broadly similar to Table 4.2. Namely, IEFs overall underperform conventional benchmarks, although not

[43] Table A2 in the Appendix shows which IEFs are in each of these groups.

significantly. The size of the underperformance is larger than in Table 4.2, though. Table 4.8 shows that the overall portfolio has a negative alpha (against the conventional benchmark) of -0.0990, which indicates an underperformance of 5.15% per year (0.0990*52). The Global, Malaysian, and Other portfolios also underperform by 7.21%, 1.93%, and 7.90%, respectively. As a comparison, in the CAPM analysis of Table 4.2, the underperformance of IEFs invested Globally and in Malaysia against a conventional benchmark is only 0.11% and 0.07%, respectively. The underperformance of the Global portfolio is significant (at the 1% level). This is different from Table 4.2, which shows a significant underperformance of the globally invested IEFs against an Islamic benchmark rather than a conventional benchmark. Thus, whether Globally-invested IEFs truly underperform conventional or Islamic benchmarks is ambiguous since the results are not significant in all the models.

Table 4.8 also shows that (overall), IEFs do not seem to have exposure to either the size, value, or momentum factor (since neither of the coefficients on these factors is significant). This is different from the findings of Chapter 3 and, for example, Adamsson et al. (2014) and Hassan and Girard (2011), who find that *Shariah* compliant stocks have a growth tilt. But this may also be related to using an improper benchmark. These results are in line with Kamil et al. (2014), who find that size, value, and momentum are on average not significant in explaining IEF returns.

The Global portfolio does seem to have tilt towards small stocks, since the coefficient on this factor is positive (0.15) and significant (at the 5% level). In terms of the size of the coefficient, this is similar to BinMahfouz and Hassan (2012). BinMahfouz and Hassan find a size coefficient of 0.11 when assessing the performance of globally invested IEFs using conventional indices as a benchmark (although in their case, this coefficient is insignificant). Thus, it seems that the globally invested IEFs in our sample are tilted towards stocks of smaller companies.

Table 4.8: Four factor performance analysis

This table shows Carhart model regression results for 145 IEFs over the period January 2000 to February 2009. We create four portfolios out of our sample of 145 IEFs and regress the weekly excess returns of each portfolio on the four factors of the Carhart model (namely the market excess return and value, size, and momentum factors; see Section 4.4.5). First, we create an overall equally weighted portfolio of the entire sample of 145 IEFs by averaging the returns of each IEF for each week (Overall). Second, we divide our sample into three groups based on their geographic focus, namely, (i) IEFs that invest in global equities (Global), (ii) IEFs that invest in Malaysian equities (Local: Malaysian), and (iii) IEFs with a different geographic focus (Local: Other). Then we use OLS to regress the returns of these four portfolios on the four Carhart factor returns (which we download from Kenneth French's website). Standard errors are in parentheses and are corrected for heteroscedasticity and autocorrelation using the Newey-West (1987) estimator. The asterisks, ***, ** and * indicate significance at the 1%, 5%, and 10% level, respectively.

	Alpha	Beta	Value	Size	Momentum	Model	R^2	Observations
Overall	-0.0990	0.3334***	-0.0168	0.0492	-0.0296	OLS	0.4015	475
	(0.0730)	(0.0327)	(0.0495)	(0.0436)	(0.0232)			
Global	-0.1387***	0.6299***	0.0123	0.1508**	-0.0572	OLS	0.6940	475
	(0.0523)	(0.0439)	(0.0527)	(0.0655)	(0.0429)			
Local: Malaysian	-0.0372	0.1209***	-0.0045	0.0230	-0.0297	OLS	0.0335	475
	(0.0962)	(0.0400)	(0.0701)	(0.0612)	(0.0390)			
Local: Other	-0.1519	0.2178***	-0.0246	-0.0487	0.0174	OLS	0.0785	475
	(0.1075)	(0.0580)	(0.0817)	(0.0752)	(0.0330)			

These results should be interpreted with caution, since a proper performance analysis should incorporate the geographic focus of the IEFs and since a comparison should also be made with an Islamic rather than just a conventional benchmark. But the results of the Global portfolio are in line with our previous findings in terms of model fit and beta. Namely, the beta of the Global portfolio is 0.63 and the adjusted R^2 is 69%. This is broadly similar to Table 4.2, where the beta and R^2 for globally invested IEFs are 0.77 and 70%, respectively. The results of the overall sample are different (beta and adjusted R^2 of 0.33 and 44%), but this is again related to the use of an improper benchmark.

4.5. Conclusions

Islamic equity funds (IEFs) are a rather special type of investment vehicles. They stocks in which they invest have to pass a number of ethical and financial criteria before being *halal* (eligible according to Islamic law). The IEF industry has shown stellar growth in past decade, but has not been adequately analyzed in the academic literature. In this chapter, we answer the question of how well IEFs have performed over the last couple of years. We use a variety of techniques to attain a cross-section of estimated coefficients for systematic risk (beta), risk-adjusted return

(alpha), market timing (gamma and theta), and downside risk (relative beta) using excess returns of 145 open-ended IEFs over the period 2000 to 2009. We also use the four factor Carhart model (Fama and French, 1993; Carhart, 1997) to analyze the performance of IEFs, using equally weighted portfolios. For this, we form equally weighted portfolios of our overall sample and sub-portfolios of IEFs that invest globally, in Malaysia, and other geographic regions.

Our results indicate that, on average, IEFs substantially underperform both their Islamic and conventional benchmarks. This is even before considering any kind of management fees. We find that globally invested IEFs have the worst performance, while IEFs invested locally do slightly better. During the recent financial crisis of 2008/2009, this underperformance has further increased. This finding is in sharp contrast with previous research, indicating that IEFs perform better during bear than bull markets (Abdullah et al., 2007). We also use a parametric (OLS) as well as a non-parametric (sign test) approach to test for market timing, and find that IEFs are poor market timers. We subject our results to numerous robustness tests and find that our conclusions hold when weighting our coefficients with standard errors and fund size. We also explicitly analyze downside risk as a potential explanation for the inferior performance, but find that IEFs do not possess any significant downside risk. In addition, we use a four factor analysis on our sample and also find that IEFs underperform, although this is only significant for IEFs invested globally.

Moreover, we note that next to being relative underperformers, IEFs possess some specific risks that are usually not present in conventional investments. These risks include: changing *Shariah* (Islamic law) rules, the lack of a sufficient track record, high exposure to companies that might be sub-optimally leveraged, and companies with low working capital. These risks should be taken into account when assessing IEFs as an investment alternative.

Overall, it seems that IEF managers have a long way to go before offering Muslims an investment proposition that is attractive in terms of risk and return. Even though previous research (see Chapter 2) indicates that Islamic indices do not significantly underperform conventional indices, we find that IEFs in fact do so in many cases. A major implication here is

that Muslim investors might be better off buying Islamic index trackers or Islamic exchange traded funds (ETFs) rather than invest through IEFs.

Chapter 5. Do Stock Returns React to an Islamic Label?[44]

In this chapter, we study the effects of an Islamic label on US stock returns. We measure the effect of this label by analyzing abnormal returns of US stocks when they get added to or removed from an Islamic index. Unlike in previous research, we find that neither addition to nor deletion from an Islamic index leads to abnormal returns. This holds for short-term periods (announcement and actual inclusion date) as well as for over longer periods. Furthermore, we do not find convincing evidence that addition to an Islamic index signals higher liquidity, profitability, investor awareness, or lower risk. We conclude that an Islamic label for stocks does not convey any additional financial information to investors.

5.1. Introduction

When stocks get added to a well-known index like the S&P500 index, they tend to appreciate in value and have abnormally higher returns on that day. This effect is often called the "index effect" and has been well documented.[45] What makes this effect interesting is not so much *if* it is there, but *why*. This is an area in which there is still considerable debate. There are broadly two views in this debate. The first view is that addition to an index does not contain information about the added stocks. Within this first view, there is also debate on whether a possible price effect is permanent (Shleifer, 1986) or temporary (Harris and Gurel, 1986). Shleifer argues that demand curves for stocks are downward sloping, rather than horizontal as implied by classical finance theory. Addition of a stock to a major index makes them scarce because they have no perfect substitutes. Thus, index addition creates upward pressure on the added stocks and they increase in price; moreover, this price increase does not reverse itself. Harris and Gurel (1986), however, argue that when a stock gets added to a major index, its price increases because of temporary excess demand on the addition date, after which the price goes back to its pre-addition

[44] This chapter is based on Hayat and de Anca (2014).
[45] See Elliott et al. (2006) for an overview of some of this literature. Recently, this effect has also been studied for a number of local indices, for example, Australia (Qiu and Pinfold, 2008), Turkey (Bildik and Gulay, 2006), and Korea (Yun and Kim, 2010), with broadly similar findings.

level. The index effect is thus caused by temporary excess demand, for example, from investing funds tracking the index.

The second view is that index addition does indicate new information about the added stock. It signals some (favorable) characteristics of the stock, such as having higher liquidity (Amihud and Mendelson, 1986; Hegde and McDermott, 2003), profitability (Denis et al., 2003; Kappou, Brooks, and Ward, 2008), being well known by the investment community (Chen, Noronha, and Singal, 2004; Elliott et al., 2006), having lower volatility (Yun and Kim, 2010; Liu, 2010), or having higher beta (Claesens and Yafeh, 2011).

More recently, the index effect has also been studied in the context of Socially Responsible Investing (SRI).[46] Consolandi et al. (2009), for example, find that stocks added to the Dow Jones Sustainability Stoxx Index have abnormal returns of 0.06%, while deleted stocks lose 0.08% (in the period from 10 days before to 10 days after the event). Cheung (2010) also finds that stocks added to and deleted from the Dow Jones Sustainability World Index experience small, short-lived abnormal returns, but finds no increase in liquidity or beta. Both Cheung and Consolandi et al. conclude that although the effects are small, investors do seem to care about social responsibility. Kappou and Oikonomou (2014) find an asymmetric return response when examining the Calvert Social Index and the MSCI KLD 400 index. They find that added stocks do not experience significantly abnormal returns, but deleted stocks do lose 1.5% in the short-term and even 14% in the long-term.[47] They relate this asymmetric response mainly to loss aversion (Tversky and Kahneman, 1991).[48]

Unfortunately, research in the closely related field of *Shariah* compliant stock investing is much scarcer. This scarcity might seem strange because the Islamic finance market has been growing very fast (about 15%) for the past 15 years, even throughout the recent financial crisis. However, it is understandable because data on which stocks get added to or deleted from an Islamic index

[46] There is no consensus on what exactly constitutes SRI (Cheung, 2010). We follow the broad definition of Eurosif (2014), namely, "any type of investment process that combines investors' financial objectives with their concerns about Environmental, Social and Governance (ESG) issues" (Eurosif, 2014, p. 8).
[47] Becchetti, Ciciretti, and Hasan (2009) also study the MSCI KLD 400 index and find similar results.
[48] The asymmetric effect could also be related to litigation risk, namely the risk that companies ignoring social responsibility may get sued over ESG related issues (Renneboog, Ter Horst, and Zhang, 2008).

is very hard to come by. Major index providers such as the Dow Jones and FTSE are understandably not willing to disclose this information, because in a way this information is what they are selling. However, we exploit new information that has recently become available through the website of the FTSE, namely the names, stock identifier codes, and dates of companies that are added to the FTSE *Shariah* Global Equity Index (FTSE Islamic). To the best of our knowledge, there are only three studies that specifically study Islamic index effects.

Bacha and Abdullah (2001), and more recently Sadeghi (2008), study the impact of an Islamic label on returns and liquidity of stocks listed on the Malaysian stock exchange. Bacha and Abdullah analyze additions (and deletions) from the Malaysian Syariah Council Advisory Council's (SAC) list of *Shariah* compliant stocks,[49] while Sadeghi (2008) analyzes additions to the more recent Bursa Malaysia Sayariah Index. Both find that added stocks have significantly higher abnormal returns (about 14%, 60 days after addition) and volumes. However, Sadeghi finds that bid ask spreads of added firms also increase, which he attributes to market makers anticipating and taking advantage of higher volumes rather than lower liquidity.

Sadeghi (2011) extends the previous analyses to the Dow Jones Islamic Market World Index and studies additions and deletions to this index of Egyptian and Jordanian firms. He finds that Egyptian and Jordanian firms gain 3% and 4%, respectively, on the addition date and that both also have higher trade volumes.

Overall, these studies indicate that index effects are also present for *Shariah* compliant stocks. However, we are cautious about this conclusion because these studies face some methodological challenges. We address these challenges and contribute to the existing literature in five important ways.

First, we use a new dataset and extend the previous analyses to the US stock market, which in terms of market capitalization is much larger and represents around half of the global equity market. Second, we use a large sample size and analyze additions and deletions that span almost

[49] The SAC makes this list from stocks listed on the Kuala Lumpur Stock Exchange (KLSE) and the Malaysia Exchange of Securities and Dealing & Automated Quotation (MESDAQ).

a decade (2002-2012). With this, we overcome some potential problems of Sadeghi (small sample size) and Abduallah and Bacha (a relatively short time frame of three years). Third, we use the Carhart four factor model (Carhart, 1997; Fama and French, 1993) to calculate abnormal returns, which has higher explanatory power than the commonly used Capital Asset Pricing Model (CAPM) in most event studies. Fourth, we analyze the effects of an Islamic label not only on returns and liquidity, but also on profitability, investor awareness, and risk. This addition is important because it enables us to assess the reason behind a possible Islamic label effect. Fifth, we analyze additions to and deletions from a relatively unknown index (FTSE Islamic), which reduces the chance that a possible effect is actually a "popular index" effect rather than a pure Islamic index effect. The Islamic investment fund industry is relatively small (see Chapter 2) and within this industry, the Dow Jones Islamic Market World Index (DJIM) seems to be more popular. Furthermore, stocks are added to FTSE Islamic after first being added to the general FTSE Global Equity Index.[50] Thus, this is a clean way to test whether there is a pure Islamic index effect not induced by the popularity of the general index itself.

We find that US stocks do not react to an Islamic label. Stocks that get added to or removed from the Islamic index (i.e., people become aware that the stock is *halal* or not) do not have significantly abnormal returns on the day the addition or deletion is announced nor over the long term. We also find no major differences in liquidity, investor awareness, profitability, and risk between added and deleted stocks.

We put these findings in a wider context and argue that the reason behind index effects in general depends very much on the type index being analyzed. An Islamic index is a good example of the type of index that does not necessarily signal that the stock added to it has better liquidity or profitability etcetera. This is quite different from addition to the S&P500 or even an SRI index. Previous studies have heavily debated why the S&P500 index effect exists, and rightly so, but these studies cannot simply be extrapolated to addition to an SRI or Islamic index. Addition effects for these indices are likely driven by different reasons. Stock reactions to getting an SRI label could be driven, for example, by lower discount rates because of lower litigation

[50] The review frequency of the FTSE Global Equity Index is lower (semi-annual) than of the FTSE Islamic (quarterly). When the review of both indices occurs in the same quarter, index changes of the FTSE Islamic are announced at least one week later than of the FTSE Global Equity Index.

risk related to ESG criteria (Renneboog et al., 2008). But an Islamic label does not say anything explicit about ESG criteria. Thus, it seems that an Islamic label, although very important to Muslims, is financially a meaningless label.

This view fits well with recent research that investors react to financially meaningless labels, even for stocks. Boyer (2011), for example, finds that when stocks get arbitrarily assigned as growth or value, investors react to these labels by treating these stocks as such and allocate capital accordingly. Consequently, these stocks co-vary more with their new group and less with their old group. Ang, Chua, and Jiang (2010) find that investors also react to meaningless labels such as A or B. Namely, Ang et al. study dual class shares (shares of the same company but with differing voting rights) and find that shares that are labeled class A have higher valuations than the ones labeled class B, even though class A shares have lower voting rights (and are thus inferior to class B shares).

In this sense, *halal* can also be viewed as a financially meaningless label, which investors nevertheless might value, perhaps because they derive utility from investing within the restrictions of their faith. Renneboog, Ter Horst, and Zhang (2011), for example, find evidence suggesting that investors in SRI equity funds (including Islamic equity funds) derive non-financial utility from investing ethically. However, our findings show that if such an effect exists, it is too small to show up in the actual prices of *Shariah* compliant stocks.

The rest of this chapter is organized as follows. Section 5.2 briefly describes Islamic finance and the FTSE Islamic index. Section 5.3 describes the data and methodology, namely an event study with a four factor model to calculate abnormal returns. Section 5.4 shows that an Islamic label does not affect US stock returns nor other important stock characteristics. This section also provides some robustness tests. Section 5.5 concludes.

5.2. Islamic finance and the FTSE Islamic index

Islamic Finance is the general term used to describe the part of conventional finance that is in compliance with Islamic law. Commonly known principles of Islamic finance are the prohibition

of *riba* (interest), *gharar* (excessive risk taking), and *maysir* (gambling). But equally important are the principles of risk sharing (risk should be shared rather than shifted), connection to the real economy (financial transactions should be based on real economic activity), and avoidance of unethical industries (alcohol, pork, pornography, etcetera).

Muslims are not allowed to speculate, but they are allowed to take entrepreneurial risk, which includes buying shares in a company. For shares of a company to be considered Islamic, these companies may not have high debt levels, high cash levels, and high receivables levels. The thresholds for these are usually around 33% (Derigs and Marzipan, 2008). For the FTSE Islamic, they are:[51]

- Debt is less than 33.33% of assets;
- Cash and interest bearing items are less than a third 33.33% of assets;
- Accounts receivable and cash are less than 50% of assets;
- Total interest and non-compliant activities income are less than 5% of revenue.

The FTSE Islamic is a subset of the general FTSE Global Equity Index. It was introduced in 1998, but data is available only from 2002. As of May 2012, it contains a total of 1403 stocks across 50 countries, with a total market capitalization of USD 14 trillion, which is about the half of the general FTSE Global Equity Index (2877 stocks, with a market cap of USD 27 trillion). The FTSE uses a team of external *Shariah* scholars (experts in Islamic law) that periodically (each quarter) review stocks of the general FTSE Global Equity Index and determine whether they are Islamic or not. These external *Shariah* scholars are provided by a separate company, Year Limited. After the review, the *Shariah* compliant stocks become part of the FTSE Islamic index, while the non-*Shariah* compliant stocks get deleted.

[51] Based on FTSE Islamic's factsheet, downloaded from: http://www.ftse.com/Analytics/FactSheets/Home/FactSheet/Regions/MCAPSH/1/WRLD/1?fromftse=true.

5.3. Data and methodology

5.3.1. Data

Our sample consists of the stocks of 372 US companies that were added (229) or deleted (143) from the FTSE *Shariah* Global Equity Index between 13 September 2002 and 21 March 2011.[52] We download the dates, names, and stock identifier codes (SEDOL codes) of the added and deleted companies from the website of FTSE.[53] The names of these 372 companies are in Table A3 of the Appendix. The FTSE announces additions and deletions every quarter in March, June, September, and December. We call this the announcement date (AD). At the same time, it is also announced which dates the stocks will actually be added or deleted from the index. We call this the effective date (ED). The effective date is at least one week (five working days) after the announcement date.

We download data for the added and deleted stocks on prices (ask, bid, and closing price), volumes, earnings per share (EPS), and number of analyst recommendations from Bloomberg. Returns of the Fama and French (1993) factors and the Carhart (1997) momentum factor are downloaded from Kenneth French's website.[54] The risk free rate is also from French's website, namely the one month Treasury Bill rate. Our main proxy for the overall US market is the S&P500, for which price and volume data is downloaded from Bloomberg, except for calculating beta in the Fama French regression. For that, we use excess returns of the Center for Research in Security Prices (CRSP) value weighted index, which we also take from French's website.[55]

[52] Strictly speaking, the data set contains 202 added and 135 deleted companies, since some companies are added or deleted more than once. This happens for 27 added and 8 deleted companies. I include the additions and deletions of these companies (leading to 229 additions and 143 deletions), but the results are similar if they are excluded.
[53] FTSE website: http://www.ftse.com/Indices/FTSE_*Shariah*_Global_Equity_Index_Series/Index_Reviews.jsp. FTSE uses SEDOL codes to identify the company stocks. For our analysis, we first convert the SEDOL codes to Bloomberg tickers because they are easier to work with in the Bloomberg Excell add-in, which we use to download the data.
[54] French's website: http://mba.tuck.dartmouth.edu/pages/faculty/ken.french/data_library.html.
[55] As French explains on his website, this is the value weighted return of all CRSP firms located in the US and listed on the NYSE, AMEX, or NASDAQ.

From the initial sample of 355 added and 211 deleted US stocks from the FTSE, we exclude 25 added stocks and 15 deleted stocks with missing or spurious data (for example, data only containing "#N/A"). We exclude 86 added and 43 deleted stocks that have an important corporate event 10 days before the announcement date and 10 days after the inclusion date. We use Bureau Van Dijk's Zephyr database to find these corporate events. We define a corporate event as any event that comes up in the Zephyr search that is likely to have a strong impact on the stock's return. This includes companies that are involved in a merger or acquisition, issue extra stocks, or make a big investment.[56] We also exclude 22 added and 13 deleted stocks that have no price data during the period used for calculating the coefficients of the Carhart model.[57]

5.3.2. Methodology

Our basic approach is a simple event study, which is the standard tool for assessing this type of question (Ahern, 2009). We test whether stocks that get added to or deleted from the FTSE Islamic experience abnormal returns during and around the announcement date and actual in/exclusion date.[58] This period is called the event window.

The event window runs from five days before the announcement date (AD) to 60 days after the effective date (ED). This includes a short-term window ranging from five days before AD to five days after ED and a long-term window that ranges from five days before AD to 60 days after ED. We follow Kappou et al. (2008) in choosing a long-term event window that runs to 60 days after ED to capture possible long term effects of the addition and deletion.

To calculate abnormal returns, we use the four factor asset pricing model proposed by Carhart, (1997), namely the Fama French three factor model (Fama and French, 1993) with an added

[56] A detailed list of these deleted stocks and accompanying reasons for deletion is available on request.
[57] Note that for added stocks, the difference between 229 and 355 - 25 - 86 - 22 is 7; this is because 7 stocks have multiple reasons for deleting them from the sample (for example, they have a corporate event as well as missing data for the Fama French regressions). For deleted stocks, the difference between 143 and 211 - 15 - 43 - 13 is 3, which is because of 3 stocks with multiple reasons for deleting them from the sample.
[58] We calculate returns as the daily change in the natural log of prices, i.e., $R_{i,t} = LN(P_{i,t}/P_{i,t-1})$, in which $R_{i,t}$ is the logarithmic return of stock i at day t. LN represents the natural logarithm, $P_{i,t}$ is the closing price of stock i at day t. $P_{i,t-1}$ is thus the closing price of stock i on the previous day.

factor that controls for the momentum effect found by Jegadeesh and Titman (1993).[59] This four factor model is widely used for performance evaluation (Cremers, Petajisto, and Zitzewitz, 2012), but recently also in event studies (e.g., Savor, 2012) because of its high explanatory power.[60] Formally, the model is:

$$R_{i,t} - R_{f,t} = \alpha_i + \beta_{i,1}(R_{m,t} - R_{f,t}) + \beta_{i,2}(HML_t) + \beta_{i,3}(SMB_t) + \beta_{i,4}(MOM_t) + \varepsilon_{i,t} \qquad (5.1)$$

In which α_i is stock i's return when all the other factor returns are zero, $R_{i,t} - R_{f,t}$ is the realized excess return of stock i, $R_{m,t}$ is the market return (the return on the CRSP value weighted index), R_f is the risk free rate (in this case the one month Treasury Bill rate), $\beta_{i,1}$ is the sensitivity of stock i's return to the market excess return, $\beta_{i,2}$ is the sensitivity of stock i's return to the value factor, $\beta_{i,3}$ is the sensitivity of stock i's return to the size factor, $\beta_{i,4}$ is the sensitivity of stock i's return to the momentum factor, HML_t is the value premium (the return of a portfolio of stocks with high book to market values minus the return of a portfolio of stocks with low book to market values), SMB_t is the size premium (the return of a portfolio of stocks with low market capitalization values minus the return of a portfolio of stocks with high market capitalization), MOM_t is the momentum premium (the return of a portfolio of previous period high return stocks minus the return of a portfolio of previous period low return stocks), and $\varepsilon_{i,t}$ is the error term.

Thus, the abnormal return of a stock is defined as is its return above or below the return predicted by the four factor model. For each stock, we first calculate its coefficients of the Carhart model. Then these coefficients and the returns of the various factors are used to calculate the stock's expected return on each day. Finally, for each day, the expected return is subtracted from the actual return. More formally:

$$AR_{i,t} = (R_{i,t} - R_{f,t}) - [\hat{\alpha}_i + \hat{\beta}_{i,1}(R_{m,t} - R_{f,t}) + \hat{\beta}_{i,2}(HML_t) + \hat{\beta}_{i,3}(SMB_t) + \hat{\beta}_{i,4}(MOM_t)] \qquad (5.2)$$

[59] To estimate the coefficients of this model, we use an estimation period of 250 days after the event window following Kappou et al. (2008). However, the results are similar when using an estimation period using 250 days before the event window.

[60] Regarding explanatory power, the Carhart model can account for around 85% of the variation in portfolio returns (see, for example, Bauer, Koedijk, and Otten, 2005).

In which $AR_{i,t}$ is the abnormal return of stock i on day t and the other variables are as defined in Equation 5.1.

We then average the abnormal returns across the sample stocks for each day, thus:

$$AAR_t = \frac{1}{N}\sum_{i=1}^{N} AR_{i,t} \tag{5.3}$$

In which N is the number of added or deleted stocks and $AR_{i,t}$ is as described above. Thus, AAR_t is the average abnormal return of added or deleted stocks on day t of the event window.

Finally, we calculate a cumulative average abnormal return ($CAAR_{I,T}$) by summing AAR_t over various short and long term event windows:

$$CAAR_{I,T} = \sum_{t=I}^{T} AAR_t \tag{5.4}$$

In which I to T is the number of days over AAR_t is summed. We sum over four periods, a pre-event window (five days), a short-term window (11 days), an intermediate window (32 days), and a long-term window (72 days).

Liquidity is measured as a stock's volume ratio, following Harris and Gurel (1986) and calculated as:

$$VR_{i,t} = \frac{V_{i,t} \diagup V_{m,t}}{\bar{V}_i \diagup \bar{V}_m} \tag{5.5}$$

In which $V_{i,t}$ is the trade volume (i.e., stock price times number of traded stocks) of stock i on day t, $V_{m,t}$ is the trade volume of the S&P500 on day t, V_i is the average daily trade volume of stock i, and V_m is the average daily trade volume of the S&P500. We follow Kappou et al. (2008)

and calculate the averages of these stock and market volumes using 60 days before the event window.

Thus, $VR_{i,t}$ is simply a stock's trade volume relative to the market trade volume, which is compared to what that ratio is normally (when based on averages). The advantage of this volume ratio is that it corrects a stock's volume for market trends and is easy to interpret. Theoretically, the volume ratio should be 1 since a stock's trading volume relative to the market on any random day should be approximately equal to what it is on average. So a volume ratio of for example 1.1 indicates that the volume of that stock is 10% above normal.

In the same way as abnormal returns, we calculate an average volume ratio (similar to Equation 5.3) for each day t of the event window (AVR_t) as well as a cumulative average volume ratio for the longer event windows (similar to Equation 5.4).

To test the null hypothesis that abnormal returns are zero, we use Brown and Warner's (1985) t-test (two tailed) and the non-parametric binomial sign test (z-test). The Brown and Warner t-statistic is commonly used in event studies because it takes possible cross-sectional dependence of the event stocks into account (Kothari and Warner, 2007). This t-statistic is calculated as follows:

$$t-stat = \frac{AAR_t}{\hat{S}(AAR_t)} \tag{5.6}$$

In which:

$$\hat{S}(AAR_t) = \sqrt{\frac{1}{249}\sum_{t=-6}^{-255}(AAR_t - \overline{AAR})^2} \tag{5.7}$$

So *t-stat* is just the average abnormal return on day t divided by its standard deviation based on 250 days before the event window. For $CAAR_{I,T}$, the *t-stat* is:

$$t - stat = \frac{CAAR_{I,T}}{\hat{S}(AAR_t)\sqrt{n}} \tag{5.8}$$

In which n is the number of days between I and T, i.e., the number of days in the relevant event window.[61]

The z-statistic is calculated as:

$$z - stat = \frac{A - E}{\sqrt{Np(1-p)}} \tag{5.9}$$

In which A is the number of actual positive abnormal returns on day t while E is the expected number of positive abnormal returns, N is the number of stocks in the sample, and p is the expected percentage of positive abnormal returns. The null hypothesis in this test is that the actual number of positive abnormal returns is equal to the expected number. For p, we use a value of 50%.[62]

The main advantage of the z-test is that it only evaluates the sign of the outcome (positive return or not). Because it only evaluates the sign rather than the size of outcomes, it makes very few assumptions about the distributions of the tested variables. They do not, for example, have to be normally distributed. That is why we evaluate our results using the t-test (t-stat) as well as the z-test (z-stat).

There are more elaborate methods available for calculating standard errors of abnormal returns in event studies (for examples, see Cheung, 2010). However, instead we choose two simple and well-understood tests and regard as significant only those results that are significant according to both the t-test as well as the z-test and at least at the 5% level.

[61] For example, for the event window running from five days before the announcement date to one day before the announcement date, the number of days in the event window (n) is 5.

[62] Kappou et al. (2008) estimate the value of p using 250 days after the event window and find this value to be 49%. However, we do not follow Kappou et al. (2008) here because the direction of stock returns is generally unpredictable. Thus, we see no clear reason for setting the chance of a positive return on any given day other than 50%. In any case, the difference between the two estimates is very small; it is unlikely to affect the results much.

For the volume analysis, we use the same two tests for significance and calculate them in a similar way as in Equations 5.8 and 5.9. However, the null hypothesis in this case is that the average volume ratio on any particular day is one. For the longer event windows, the null hypotheses are that the cumulated volume ratios are equal to the number of days in each event window (namely 5, 11, 32, and 72). For calculating the *z*-statistic, we use a *p* value of 0.37 and 0.33 for added and deleted stocks, respectively. This *p* value is based on the average number of volume ratios above 1 (for added stocks) and below 1 (for deleted stocks), 250 days before the event window (following Kappou et al., 2008).

5.3.3. Descriptive statistics

Table 5.1 contains some descriptive statistics of the sample. Panel A shows the sector distribution of the added and deleted stocks and the FTSE Islamic in general. Panel B shows how many stocks were added and deleted in each year of the sample period. Panel C shows some risk, return, and size characteristics.

The sector distribution of the sample is similar to the FTSE Islamic as a whole (Panel A). The top four sectors in which *Shariah* compliant stocks are active are Oil and gas (18%), Technology (14%), Healthcare (13%), and Industrial goods and services (11%). Together, these top four sectors represent more than half (56%) of the market capitalization of the FTSE Islamic. The same holds for the sample of added stocks and the largest difference between sector distributions is less than 7% points.

Panel B shows that 97 (42%) of the added stocks were added to FTSE Islamic in 2003 and 2004, while most stocks were deleted after 2007. This might be related to the effects of the financial crisis of 2007/2008. As mentioned in Section 5.2, *Shariah* compliant stocks are filtered (among others) on debt to asset ratio. This ratio is likely to go up during a crisis when the value of equity on companies' balance sheet falls. Consequently, some stocks break through the financial screen

barrier of 33% and are deleted from the Islamic index.[63] The concentration of added stocks before and deleted stocks after 2007 might be troublesome if the effect of addition and deletion are markedly different before and after the financial crisis.

[63] Chapter 4 also mentions this effect of declining equity values. Namely, that it presents an additional risk to Islamic equity fund managers because they are forced to sell in a declining market.

Table 5.1: Descriptive statistics

This table shows some descriptive statistics between our sample of added and deleted stocks and the FTSE *Shariah* Global Equity Index (FTSE Islamic). Panel A shows the weight of each sector based on market capitalization as of 2012. Sectors are as defined by the Industry Classification Benchmark (ICB). Panel B shows the number of stocks that were added or deleted in each year. Panel C shows some risk, return, and size-related statistics calculated for our sample portfolios and the FTSE Islamic for the period September 2003 to June 2012. To calculate these statistics, we form two equally weighted portfolios, one for the added stocks and one for the deleted stocks. Thus (for example), the return in column three row one of Panel C is the annualized average excess return for the portfolio of added stocks. The (excess) returns are calculated as described in Section 5.3.2. Both returns and volatility are annualized based on 250 trading days. Market capitalization is in USD millions. Data on the FTSE Islamic sector distribution is from www.ftse.com.

Panel A: Sector distribution

	FTSE Islamic (%) (A)	Sample (%)			
Sector		Added (B)	Difference (A-B)	Deleted (C)	Difference (A-C)
Oil & gas	18.1	11.8	-6.3	2.1	-16.0
Chemicals	5.3	2.1	-3.2	5.6	0.3
Basic resources	7.4	2.1	-5.3	1.5	-5.9
Construction & materials	2.2	1.3	-0.9	1.4	-0.9
Industrial goods & services	11.2	10.5	-0.7	10.1	-1.1
Automobiles & parts	1.8	2.2	0.4	0.7	-1.2
Food & beverage	4.3	3.7	-0.6	1.5	-2.9
Personal & household goods	5.9	7.3	1.4	2.1	-3.8
Health care	13.1	13.2	0.1	14.9	1.8
Retail	4.3	7.2	2.9	26.6	22.2
Media	0.6	0.2	-0.4	0.3	-0.3
Travel & leisure	0.4	1.6	1.3	5.7	5.3
Telecommunications	6.1	10.3	4.2	0.0	-6.1
Utilities	3.8	3.9	0.0	5.7	1.9
Banks	0.0	0.0	0.0	0.9	0.9
Insurance	0.0	0.0	0.0	0.0	0.0
Real estate	1.4	1.7	0.3	0.1	-1.3
Financial services	0.2	0.3	0.1	2.2	2.0
Investment instruments	0.0	0.0	0.0	0.0	0.0
Technology	13.8	20.7	6.9	18.8	5.1

Panel B: Distribution over time

Year	# added	# deleted
2002	0	4
2003	71	1
2004	26	3
2005	0	1
2006	3	2
2007	18	27
2008	30	50
2009	24	41
2010	30	7
2011	27	7
Total	**229**	**143**

Panel C: Risk. return, and size characteristics

	FTSE Islamic	S&P 500	Added	Deleted
Return (%)	2.77	0.70	3.08	-3.93
Volatility (%)	17.75	21.34	24.22	24.65
Sharp ratio	0.16	0.03	0.13	-0.16
Excess kurtosis	8.67	10.32	7.37	6.41
Skewness	-0.41	-0.30	-0.45	-0.49
Average market cap	9,868	23,678	11,101	10,770
Correlations				
FTSE Islamic	1.00	0.82	0.84	0.81
S&P500	0.82	1.00	0.96	0.95

Panel C compares some relevant statistics between the Islamic equity market (FTSE Islamic), the S&P500, and our samples of added and deleted stocks for the period September 2003 to June 2012.[64] It shows that, in general, the added and deleted sample are similar in many respects to the overall Islamic equity market. The first row of Panel C shows that added stocks have an average annual excess return of 3.1%, which is only slightly higher than the FTSE Islamic return of 2.8%. Both outperform the S&P500, which has a return of only 0.7% during the sample period. Deleted stocks, however, have a much lower return of -3.9%, a first, though very tentative, indication that added stocks have outperformed deleted stocks over the sample period.

Annualized volatilities are approximately the same for added (24%) and deleted (25%) stocks. Both volatilities are a little higher than the S&P500 (21%) and higher than FTSE Islamic (18%). The differences are most likely due to diversification effects. The S&P500 contains many more stocks than the sample (so there is a slight diversification effect) and the FTSE Islamic contains even more stocks and is diversified across countries and sectors (so the diversification effect is higher).

The third row shows volatility-adjusted returns (Sharp Ratio). It shows that the FTSE Islamic performs best during the sample period (0.16), while added stocks perform slightly less (0.13), followed by substantially worse performance by the S&P500 (0.03) and the deleted stocks (-0.16).[65]

On the face of it, the FTSE Islamic seems to be a much better investment than the S&P500. However, over longer periods of time, the Islamic and conventional equity markets are very similar in terms of volatility and return, as also mentioned in Chapter 3. Islamic markets tend to do relatively well during crises, but underperform during bull markets.

[64] We make a comparison with the S&P500 because our conclusions are based on a sample of US stocks. Thus, it is important to know if our sample is materially different from the conventional US equity market. The reason for starting in September 2003 instead of 2002 is that we could not find data for the FTSE Islamic before this period.

[65] Note that negative Sharp Ratios are meaningless for comparing portfolio performance. However, in this case it is clear that the portfolio of deleted stocks has the worst performance on a volatility-adjusted base. It has the highest volatility and lowest return of the four groups.

Rows four and five show that all four portfolios have approximately similar return distributions; namely, they are leptokurtic and have a slight negative skew. This is a common finding for stock returns. Excess kurtosis is highest for the S&P500 (10.3), although it is only slightly higher than the FTSE Islamic (8.7). This implies that conventional as well as *Shariah* compliant stocks have fat tails.

Added and deleted stocks have a somewhat lower kurtosis, but it is still well above kurtosis of the normal distribution (3). The negative skew is also approximately similar (between -0.3 and -0.5) between the four portfolios. Indeed, our Jarque-Bera tests reject the null hypothesis of normally distributed returns for all four portfolios (at the 1% level). So inferences from standard *t*-tests could be biased. This is why we also employ a non-parametric test to assess significantly abnormal returns, namely the *z*-test.

Row six shows that the average size of FTSE Islamic, and added and deleted stocks are also about the same. The average market capitalization (market cap) of the FTSE Islamic as of June 2012 is USD 10 billion, which is about the same as the added and deleted stocks portfolio (USD 11 billion). However, the average market cap of the S&P500 is substantially higher (USD 24 billion) than our sample.

The last two rows show that the portfolios of added and deleted stocks follow the FTSE quite well, with correlations of 0.84 and 0.81, respectively. They also follow the S&P500 quite well, with correlations of 0.96 (added stocks) and 0.95 (deleted stocks). Furthermore, the FTSE Islamic is highly correlated with the S&P500 (0.82), which makes sense because the FTSE Islamic has a high country allocation (48%) to US stocks. These high correlations indicate that the S&P500 is a decent proxy against which to benchmark the added and deleted stocks.

Overall, we conclude that the S&P500 is a reasonable benchmark for our sample portfolios and that our results are not likely driven by material differences between our sample portfolios and the FTSE Islamic or S&P500.

5.4. Results

5.4.1. Abnormal returns

Table 5.2 shows that an Islamic label for US stocks does not seem to affect their returns. The table shows the average abnormal returns (AAR) of added and deleted stocks from the FTSE Islamic during each day of the short-term event window and cumulative average abnormal returns for longer-term windows.

Panel A of Table 5.2 shows that on the announcement date of index addition (AD), the added stocks have abnormal returns of 0.11% on average, but this effect is not significant according to either the *t*-test or the *z*-test. There are some minor effects during the week before announcement, on days -1 and -5, but they are only marginally significant (at the 10% level) and only according to the *z*-test. Panel A also shows that there are no significant effects on the actual day of inclusion (ED) nor during longer-term windows. On average, stocks lose -0.31% on ED and -0.78% 20 working days after ED, but gain 0.14% on the longer term (60 working days after ED).

Similarly, Panel B shows no significant effect of stocks losing an Islamic label. Panel B shows that stocks deleted from the FTSE Islamic index lose 0.02% on average on AD and 0.20% on ED, but gain 0.23% 20 days after ED and 0.82% 60 days after ED. However, all these results are insignificant.

Table 5.2: Abnormal returns

This table shows the average abnormal return (AAR) and cumulative average abnormal return (CAARs) of stocks added to (Panel A) and deleted from (Panel B) the FTSE Islamic *Shariah* Global Equity Index between September 2002 and March 2012. To calculate abnormal returns, we use the Carhart (1997) and Fama and French (1993) four factor model. Section 5.3.2 explains this model, the method, and sources of the data in more detail. The short-term event window is five days before announcement of addition/deletion (AD-5) to five days after actual addition to/deletion from the index (ED+5). The long term event windows are from five days before announcement of addition/deletion (AD-5) to 20 and 60 days after actual addition to/deletion from the index (ED+20 and ED+60). The null hypotheses are that AAR and CAAR are zero. Statistical significance is determined using Brown and Warner's (1985) *t*-test and the non-parametric *z*-test. Column four shows the percentage of positive returns in the sample of added stocks. The last column shows the percentage of negative returns in the sample of deleted stocks. The asterisks, ***, ** and * indicate significance at the 1%, 5%, and 10% level, respectively.

Days	AAR (%)	*t*-stat	*z*-stat	AAR>0 (%)	AAR (%)	*t*-stat	*z*-stat	AAR<0 (%)
	Panel A: Added stocks				Panel B: Deleted stocks			
AD-5	-0.07	-0.33	-1.78*	44	-0.13	-0.40	-0.25	49
AD-4	-0.15	-0.72	-1.26	46	-0.44	-1.39	1.25	55
AD-3	-0.16	-0.75	0.07	50	0.20	0.62	-1.59	43
AD-2	-0.05	-0.23	0.33	51	0.36	1.13	-1.59	43
AD-1	-0.11	-0.50	-1.92*	44	0.19	0.61	1.09	55
AD	0.11	0.51	1.12	54	-0.02	-0.06	0.25	51
AD+1	0.04	0.17	1.65	55	-0.40	-1.27	2.09	59
AD+2	0.13	0.62	0.99	53	0.35	1.12	1.09	55
AD+3	0.04	0.21	1.65	55	0.08	0.26	-0.59	48
AD+4	0.22	1.02	-0.59	48	-0.31	-0.97	0.92	54
AD+5	-0.32	-1.49	-1.52	45	0.28	0.90	0.75	53
ED	-0.31	-1.44	-1.78*	44	-0.20	-0.65	1.42	56
ED+1	0.02	0.11	-1.78*	44	-0.34	-1.08	0.75	53
ED+2	0.22	1.04	0.73	52	0.13	0.42	-1.25	45
ED+3	0.05	0.22	0.20	51	0.31	0.98	-0.92	46
ED+4	-0.01	-0.05	0.33	51	-0.48	-1.52	0.92	54
ED+5	-0.16	-0.73	-1.52	45	0.00	0.00	0.25	51
Cumulative Average Abnormal Returns (CAARs)								
AD-5-AD-1	-0.54	-1.13	-2.31**	42	0.18	0.26	-0.08	50
AD-5-ED+5	-0.50	-0.57	-1.26	46	-0.41	-0.31	1.09	55
AD-5-ED+20	-0.78	-0.65	-1.12	46	0.23	0.13	-1.09	45
AD-5-ED+60	0.14	0.08	0.86	53	0.82	0.31	-0.42	48

Figure 5.1 gives a visual representation of these results. If stocks truly react positively to an Islamic label (and thus negatively to removing this label), Figure 5.1 would show a divergence in returns between the added and deleted stocks. However, Figure 5.1 shows that these returns do not diverge at all. The lines indicating cumulative average abnormal returns of added and deleted stocks cross 8 times and do not differ much over the long term (60 days after ED). This difference is only 0.68% and it is not significantly different from zero.[66]

Overall, these results are in stark contrast to previous studies on Islamic index effects. The study closest to ours, namely Sadeghi (2011), finds significant and much larger effects (3%) on the announcement date for stocks added to the Dow Jones Islamic Market World Index, but these results are based on a very short time period (2008), are specific to Egypt and Jordan, and have a small sample size (34). Moreover, these index effects may be because of addition to a well-known benchmark index rather than the pure effect of an Islamic label. Such general index effects are much larger. Index effects for the S&P500, for example, are typically around 4%.[67]

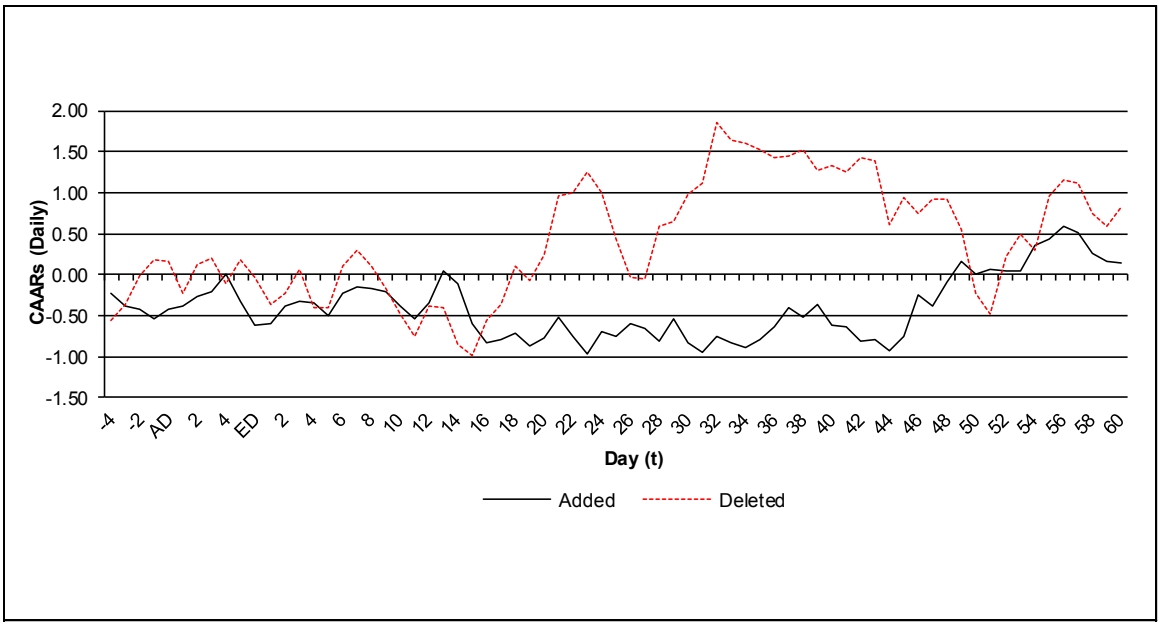
In this respect, addition to an Islamic index is more like to an SRI index than the S&P500 (Chapter 2 already showed that *Shariah* compliant stock investing is related to SRI). When taking this into account, the results are a bit more in line with previous findings. Cheung (2010), for example, finds a temporary index addition effect during the announcement period of less than 0.5% for stocks added to the Dow Jones Sustainability World Index. Consolandi et al. (2009) also find a small effect (0.04%) for addition to the Dow Jones Sustainability Stoxx Index. However, the results of both Cheung (2010) and Consolandi et al. (2009) are significant and they conclude that investors do value an SRI label for stocks, while we do not find evidence that investors value an Islamic label.

[66] We conduct a standard *t*-test to test whether the difference between added and deleted stock returns is significantly different from zero during the entire event window from and cannot reject this hypothesis.

[67] Kappou et al. (2008), for example, find an announcement effect of 4% for addition to the S&P500. Cai (2007) finds that firms with similar sizes and within the same industry as the added firms also have abnormal return of 4% on the announcement date. Becker-Blease and Paul (2010) find an effect of 5% for stocks added to the S&P1000 Small and Midcap index. Petajisto (2011) finds even larger effects for addition to the S&P500 during 1990 and 2005, namely 9%.

Figure 5.1: Cumulative Average Abnormal Returns (CAARs)

This figure contains the cumulative average abnormal returns of added and deleted stocks and the FTSE *Shariah* Global Equity Index during a long-term event window that runs from five days before announcement of addition/deletion (AD-5) to 60 days after the actual addition/deletion (ED+60).



There might be several reasons for this. First, Islamic indices might not be as heavily tracked as SRI indices. The number of funds tracking an index is an important determinant of whether addition to that index exhibits abnormal returns (Petajisto, 2011). Unfortunately, we do not have data on how many funds track Islamic indices, but they are not likely to be much, given the relatively small size of the Islamic investment fund industry (see Chapter 2).

Second, there are important differences between benchmark indices, SRI indices, and faith-based indices. Where addition to the S&P500 might signal liquidity (Hegde and McDermott, 2003), higher investor awareness (Elliott et al., 2006), and addition to an SRI index might signal reduced litigation risk (Renneboog et al., 2008), it remains to be seen what, if anything, an Islamic index signals. This does not mean an Islamic index is not valuable because it provides important information to Muslim investors, namely, the stocks it contains are *halal*. Investors value labels, even if they are financially meaningless (e.g., Ang et al., 2010; Boyer, 2011).

Because faith-based indices cannot be studied in the same way as well-known indices such as the S&P500, our results cannot be interpreted as being in line with classical finance theory that stocks do not react to index addition. Our preliminary results do not indicate that an Islamic label signals information, but we remain neutral regarding this hypothesis for general index additions.

Third, it might also be that an Islamic label does contain information about important stock characteristics such as liquidity, risk, visibility, or profitability, but the signal might be positive for some characteristics and negative for others and cancel out on average. This notion is investigated in Sections 5.4.2 and 5.4.3.

5.4.2. Volume

Table 5.3 contains results of analyzing the trade volumes of stocks added to and deleted from the FTSE Islamic index. The last row of the table shows that trade volumes are significantly higher for both added as well as deleted stocks, 60 days after ED. Over the long term, added and deleted stocks have volumes that are on average 7.1% and 7.8% higher per day, respectively.[68] This is not the result expected from the view of Amihud and Mendelson (1986) and Hegde and McDermott (2003) that index addition signals liquidity. If addition to an index signals higher liquidity, deleted firms should experience lower liquidity.

Panel A of Table 5.3 shows that the average volume ratio of added stocks is slightly higher (5%) on the announcement date, but not significantly. On the inclusion date the volume ratio is not higher; neither is it significantly higher according to both the *t*-test and *z*-test on the other short event window days.

[68] These figures are calculated as the cumulative average volume ratio divided by the number of days between AD-5 and ED+60 (72 days). Thus, (77.10 / 72) - 1 = 7.1% for added stocks and (77.65 / 72) - 1 = 7.8% for deleted stocks.

Table 5.3: Abnormal volumes

This table shows the average volume ratio (AVR) and cumulative average volume ratio of stocks added to (Panel A) and deleted from (Panel B) the FTSE *Shariah* Global Equity Index between September 2002 and March 2012. To calculate AVR, we follow Harris and Gurel (1986); see Section 5.3.2 for more details. The short-term event window is five days before announcement of addition/deletion (AD-5) to five days after actual addition to/deletion from the index (ED+5). The long-term event windows are from five days before announcement of addition/deletion (AD-5) to 20 and 60 days after actual addition to/deletion from the index (ED+20 and ED+60). The null hypothesis is that AVR is 1 (or equal to the number of days in the event window in the case of cumulative AVR). Statistical significance is determined using Brown and Warner's (1985) *t*-test and the non-parametric *z*-test. The value of *p* in the *z*-test is 0.37 for added stocks and 0.33 for deleted stocks. Column four shows the percentage of AVRs above 1 in the sample of added stocks. The last column shows the percentage of AVRs above 1 in the sample of deleted stocks. The asterisks, ***, ** and * indicate significance at the 1%, 5%, and 10% level, respectively.

Days	AVR (%)	*t*-stat	*z*-stat	AVR>1 (%)	AVR (%)	*t*-stat	*z*-stat	AVR>1 (%)
	Panel A: Added stocks				Panel B: Deleted stocks			
AD-5	1.04	0.51	0.08	41	1.07	0.86	2.47**	50
AD-4	1.09	1.24	-0.13	40	1.05	0.60	1.79*	47
AD-3	0.98	-0.22	0.00	40	1.06	0.70	1.27	45
AD-2	1.00	0.00	-0.40	39	1.07	0.81	1.27	45
AD-1	1.15	2.05**	0.28	41	1.02	0.22	0.25	41
AD	1.05	0.67	-0.27	40	1.01	0.16	0.76	43
AD+1	1.03	0.42	-0.08	40	0.96	-0.48	0.25	41
AD+2	0.98	-0.22	-1.22	36	0.99	-0.14	0.42	41
AD+3	1.05	0.65	-0.68	38	1.13	1.63	1.27	45
AD+4	1.01	0.13	-0.81	38	1.00	-0.03	-0.94	36
AD+5	0.92	-1.05	-3.07***	30	0.94	-0.78	-3.33***	26
ED	1.00	0.05	0.95	44	1.10	1.19	1.27	45
ED+1	1.05	0.74	0.88	43	1.20	2.39**	4.51***	58
ED+2	1.01	0.07	0.00	40	1.14	1.75*	2.64**	50
ED+3	1.06	0.85	0.90	43	1.10	1.19	0.93	43
ED+4	1.01	0.19	-1.25	36	1.10	1.27	0.76	43
ED+5	1.02	0.23	-0.89	38	1.10	1.16	2.64**	50
Cumulative Average Volume Ratios								
AD-5-AD-1	5.26	1.60	0.06	41	5.26	1.43	2.64**	50
AD-5-ED+5	17.46	1.53	0.73	43	18.02	3.03***	2.98***	52
AD-5-ED+20	33.21	2.96***	1.81*	46	34.25	4.87***	4.68***	59
AD-5-ED+60	77.10	8.33***	3.96***	53	77.65	8.13***	6.39***	66

Overall, these volume increases are small compared to the surge in volumes reported for addition to the S&P500.[69] However, they are again more in line with studies on SRI indices.[70]

Panel B shows that deleted stocks have even higher volumes. On announcement date, volumes are close to normal (1) and they increase 10% on inclusion day (although insignificantly). But over the overall short term window (ED - 5 to ED + 5), they are 63.8% higher (significant at 1% according to both the *t*-test and z-test) than normal. As mentioned before, they are also 7.8% higher than normal over the long term (AD - 5 to ED + 60).

Why are volumes for deleted stocks higher than for added stocks? We provide two possible explanations. First, stocks deleted from the FTSE Islamic are not necessarily deleted from the FTSE Global Equity Index. Given that the number of Islamic investment funds is comparatively small, stocks that are deleted from the FTSE Islamic need not have lower trading volumes. Trading volumes could even be higher because stocks deleted from the FTSE Islamic could be added to another FTSE sub index. Second, deleted stocks *have to* be sold by Islamic investment funds, while added stocks *can* be sold because not all Islamic investment funds are index trackers.[71] Thus, an addition does not always create a response to buy, while a deletion always creates a response to sell. This creates an asymmetry between volumes of added and deleted stocks.

Overall, these results do not provide evidence for the liquidity hypothesis of, for example, Hegde and McDermott (2003). However, they are in line with our argument that addition to an Islamic index is not like addition to the S&P500. The latter might mean the added stocks have higher visibility and liquidity, but the former merely reflects a label to attract a certain type of investor. The likely reason that either the added or deleted stocks have higher liquidity, then, is that they are part of the general FTSE Global Equity Index. As explained in Section 5.2, the FTSE Islamic is a subset of this index. When stocks get added to the general index, it might have effects similar

[69] Kappou et al. (2008), for example, find volume ratios on the effective date of 16, meaning that they are almost 16 times higher than normal.
[70] Cheung (2010), for example, finds 16% higher volumes for added and deleted stocks on the inclusion date. Consolandi et al. (2009) find 13% and 8% higher volume for added and deleted stocks, respectively.
[71] See Chapter 4, which shows that at least some Islamic equity funds are not passive because they try to time the market.

to addition to the S&P500 (although they are likely to be smaller since the FTSE Global Equity Index is less well known). However, when they get added again to the FTSE Islamic, the initial short-term reaction is not related to FTSE Global Equity Index addition since that has already happened. The long-term reaction, however, could be related to addition to the FTSE Global Equity Index, namely, the effect of addition to a major equity benchmark index.

5.4.3. Profitability, investor awareness, and risk

So far, it seems that stocks of US companies do not react to an Islamic label nor when this label is removed. As mentioned in Section 5.4.1, perhaps this is because an Islamic label signals positive attributes about a company in one dimension (for example, higher investor awareness) and negative attributes in another (for example, lower profitability), which cancel each other out.

In this section, we test this notion. We follow several authors and analyze four important variables that have been known to change after addition to an index. Specifically, we test whether profitability, investor awareness, and risk change after addition/deletion. Below is a short description of each variable.

A number of studies find that index addition signals that the added firm has higher profitability (e.g., Dhillon and Johnson, 1991; Denis et al., 2003; Cai, 2007). For *Shariah* compliant stocks, this might especially be true, although more likely in the opposite direction. Since the Islamic label indicates low leverage, we expect *Shariah* compliant stocks to have lower rather than higher profitability because according to standard financial theory, leverage increases return on equity. Our proxy for profitability is realized earnings per share (EPS), following Denis et al. (2003).

Investor awareness is how well known a stock is to the investor community. When stocks get added to an index, more investors might become aware of them (Chen et al., 2004). Elliott et al. (2006) argue that this higher investor awareness is one of the main causes of abnormal returns after index addition. We follow Elliott et al. and proxy investor awareness for a stock by the number of equity research analysts following it.

Addition of a stock to an index has also been found to increase co-movement (beta) of that stock with the index to which it is added (e.g., Claesens and Yafeh, 2011). Even when stocks get arbitrarily assigned to a group (for example, growth or value stocks), their co-movement with that group increases (Boyer, 2011). For *Shariah* compliant stocks, the effect of addition is not clear beforehand. Beta could be higher after addition because of increased co-movement with the market, but it could also be lower because it indicates low debt (thus a lower levered beta).[72]

The effect of index addition on volatility (nonsystematic risk) is also not clear beforehand. Cooper and Woglom (2003), for example, argue that volatility should be higher after addition if the index effect is induced by traders. Kappou et al. (2008), however, find no evidence of increased volatility (for S&P500 additions) after accounting for market-wide volatility. Yun and Kim (2010) study index additions and deletions for the Korean KOSPI200 index and find that volatility decreases (increases) for added (deleted) stocks. Again, for *Shariah* compliant stocks, the effect on volatility is not clear beforehand. These stocks might have lower volatility due to their lower debt, but volatility might also be higher due to more trading.

We analyze the changes in these variables by testing whether they are different before and after addition or deletion. Specifically, we calculate the average of each variable using 250 days before the event window and the average using 250 days after the event window, following Kappou et al. (2008).

Table 5.4 contains the results from this analysis. The first column of the table shows that market adjusted EPS growth is higher after the event than for both added and deleted stocks.

[72] The beta of a stock as usually measured (by regressing the market excess return on the stock's excess returns) is the levered beta of the company, i.e., including the effect on beta of the company's debt (Damodaran, 2006).

Table 5.4: Before and after changes in EPS , analyst following, volatility, and beta

This table shows the before and after values of earnings per share (EPS), analyst following, volatility, and CAPM beta of stocks added to (Panel A) and deleted from (Panel B) the FTSE *Shariah* Global Equity Index. EPS is the average net profit per share using 250 days before and after the event window to calculate the average (following Kappou et al., 2008). Analyst following is average number of equity analysts following the stocks 250 days before and after the event window. Volatility is the daily standard deviation of returns using 250 days before and after the event window. Volatility is annualized by multiplying it with the square root of 250. Beta is based on a CAPM regression between each stock's return and the return on the CRSP value-weighted index using 250 days before and after the event window. To account for a possible trend in volatility, we subtract the change in volatility of the S&P500 from the change in volatility of the sample stocks (de-trended difference). In the case of EPS and analyst following, we use the total of the sample stocks as proxy for the overall market and subtract the growth in this total from the growth in the EPS and analyst following of each stock. Statistical significance is determined using a standard *t*-test and the non-parametric *z*-test, both of which test the null hypothesis that the difference in before and after values is zero. The value of *p* in the *z*-test is 0.5 for both added and deleted stocks. The asterisks, ***, ** and * indicate significance at the 1%, 5%, and 10% level, respectively.

	EPS (USD)	Analyst following	Volatility (%)	Beta
Panel A: Added stocks				
Pre-event	0.61	15.32	41.13	1.11
Post-event	0.71	16.65	39.89	1.13
Difference (%)	16.99	8.69	-3.02	2.16
T-statistic	2.50**	7.67***	-0.85	2.15**
Z-statistic	6.09***	4.62***	-2.84***	1.60
% of firms with Post > Pre	72.11	65.47	40.61	55.36
De-trended difference (%)	33.14	8.45	-1.97	n.a.
T-statistic	4.00***	4.30***	-0.38	n.a.
Z-statistic	1.60	1.94*	-0.20	n.a.
% of firms with Post > Pre	55.79	56.50	49.34	n.a.
Observations	190	223	229	224
Panel B: Deleted stocks				
Pre-event	0.75	14.79	51.38	1.14
Post-event	0.61	15.55	55.59	1.15
Difference (%)	-19.27	5.17	8.20	1.72
T-statistic	-1.05	2.92***	1.48	0.84
Z-statistic	0.54	2.95***	0.59	0.86
% of firms with Post > Pre	52.87	62.41	52.45	53.73
De-trended difference (%)	44.48	4.50	9.37	n.a.
T-statistic	1.66	1.79*	0.87	n.a.
Z-statistic	2.25**	0.59	-0.42	n.a.
% of firms with Post > Pre	62.07	52.48	48.25	n.a.
Observations	87	141	143	134

Panel A (column one, rows one and two) shows that pre- and post-event EPS is USD 0.61 and USD 0.71 on average, respectively, a change of 16.99% (significant at 5% and 1%, according to the *t*-test and *z*-test, respectively).[73] To account for general EPS growth of the market, we subtract the market EPS growth from each sample company's EPS growth.[74] The average difference between these two growth rates is 33% (significant at 1%, *t*-test), meaning that added stocks outperform the overall market in terms of EPS growth. Thus, even after taking the market trend into account, EPS seems to be higher after addition to the FTSE Islamic than before. But Panel B shows the same is also true for deleted stocks. Although deleted stocks have lower EPS (USD 0.61) after deletion than before (USD 0.75), they have performed better than the market EPS growth. Namely, in the period before and after deletion, deleted stocks have EPS growth that is 44% higher than the market (significant at 5% according to the *z*-test).[75]

Column two shows that analyst following increases for added (Panel A, row three) as well as deleted (Panel B, row three) stocks. Added stocks get followed on average by two more analysts after addition, while deleted stocks get followed by one more analyst after deletion (both significant at 1% according to the *z*- as well as *t*-test). These results stay about the same even after taking the growth of the market's analyst following into account.[76] Added stocks have about 8% more analyst following than the market after addition (significant at 1% and 10% according to the *t*-test and *z*-test, respectively). But deleted stocks also have a higher analyst following than the market (5%), although this is only marginally significant (at 10% according to the *z*-test). If addition to FTSE Islamic actually leads to higher investor awareness, the opposite should be true for deleted stocks, which we do not find.

Columns three and four show that the risk profile of added as well as deleted stocks stays about the same after the event. Column three (Panel A) shows that the annual volatility of added stocks is 41% before addition and 40% after addition. However, the difference is only significant according to the *z*-test (at 1%). Panel B shows that deleted stocks have much higher volatility

[73] We only use firms with positive EPS data, since otherwise we cannot infer any meaningful growth statistics.
[74] We use the 12 month trailing S&P500 EPS (from Bloomberg) as a proxy for market wide EPS.
[75] Note that market-wide EPS growth is not the same for added and deleted stocks since the distribution of added and deleted stocks over time is not the same (see Panel B of Table 5.1).
[76] Since we do not have data on analyst following for the S&P500 as a whole, we approximate it by the average of analyst followings per stock for 250 days before and 250 days after the event window. Market growth of analyst following is the percentage change in this average.

before deletion (51%), which increases after deletion to 56%. But again, the difference is not significant. Moreover, when taking market volatility into account, both added and deleted stocks do not have significantly different volatilities after addition and deletion, respectively.

Column four shows that the same holds for systematic risk (beta). Added stocks (Panel A) have a beta of 1.11 before addition, which becomes only slightly higher (1.13) after addition (significant according to the *t*-test at 5%). Deleted stocks (Panel B) also have slightly higher betas after deletion (1.15) than before (1.14), although insignificantly. The level of these betas is comparable to Girard and Hassan (2008), who find a beta of 1.07 between the FTSE Islamic and the conventional FTSE Global Equity Index. This relatively high level of beta is a bit puzzling because (as mentioned in Section 5.2) one of the defining characteristics of *Shariah* compliant stocks is that their underlying companies have low leverage. Standard financial theory states that companies with lower leverage should have lower betas (Damodaran, 2006). However, we find that systematic (beta) as well as non-systematic (volatility) of *Shariah* compliant stocks is similar to non-*Shariah* compliant stocks. It is not lower as expected.

Overall, the results of Table 5.4 indicate that added as well as deleted stocks are similar in many important respects. We do not find evidence that *Shariah* compliant stocks are inherently different after it becomes known that they are Islamic. For EPS, analyst following, and beta, both Islamic and non-*Shariah* compliant stocks experience changes in the same direction (although mostly insignificantly so) and in the one case where added stocks experience changes in the opposite direction (lower volatility) as deleted stocks (higher volatility), the results are also insignificant.

These results also contradict the view that index addition contains information about the added stocks. However, we cannot reject this information content hypothesis for general index additions. One of our major arguments is that index addition cannot be evaluated without taking into consideration the nature of the evaluated index. In this case, an Islamic label does not seem to indicate any difference with non-*Shariah* compliant stocks, but we remain neutral towards the information content hypothesis in general.

5.4.4. Robustness

We perform three robustness tests to check if our conclusion about the insignificance of the Islamic label holds for different ways of calculating abnormal returns, depends on a specific proxy for liquidity, or is driven by a specific time period.

First, we use a more common model to calculate abnormal returns, namely the capital asset pricing model (CAPM) as well as a less common but conveniently non-parametric model (see, for example, Petajisto, 2011). The latter simply subtracts the return of the market (S&P500) from the stock return to get the abnormal return. The CAPM is the same as the four factor model, except with only one factor, namely the return of the market.

The results are in Table 5.5. They show that, overall, abnormal returns are not significantly higher for added stocks nor significantly negative for deleted stocks for both models and neither on AD, ED, short-term, or long-term periods. There is, however, a negative pre-announcement effect (between one and five days before AD) for added stocks of -0.46% (CAPM) and -0.71% (non-parametric model). But this effect is only significant (at the 1% level) according to the *z*-test.

Second, we test whether our abnormal returns are driven by a specific time period. We do this by dividing our sample in two periods, namely 2002-2006 (Period 1) and 2007 to 2011 (Period 2), which roughly represents the period before and during/after the recent financial crisis. Our results remain robust against this division (Table 5.5).

We again find that added stocks do not gain significantly on AD or ED, nor do deleted stocks lose significantly on these days. Both results hold for the long term, although again there is a negative effect for added stocks in Period 1, which is significant according to the *z*-test (at the 1% level). This negative effect, however, is no longer significant in Period 2, which indicates that the negative effect for added stocks using the CAPM and the non-parametric model only holds for the pre-crisis period.

Table 5.5: Robustness tests

This table contains several robustness tests on abnormal returns around additions to and deletions from the FTSE Islamic. CAPM refers to calculating abnormal returns using only market factors (defined as in Section 5.3.2). $R_{i,t}$-$R_{m,t}$ refers to subtracting the S&P500 return from the return of stock *i* a time *t* (see Section 5.4.4). Period 1 and Period 2 refer to calculating abnormal returns over the period 2002-2006 (Period 1) and 2007-2011 (Period 2) using the Carhart (1997) and Fama and French (1993) four factor model to calculate abnormal returns. As in the previous tables, the null hypotheses are that AAR and CAAR are zero. Statistical significance is determined using Brown and Warner's (1985) *t*-test and the non-parametric *z*-test (where the value of *p* in the *z*-test is 0.50). Column four shows the percentage of positive returns in the sample of added stocks. The last column shows the percentage of negative returns in the sample of deleted stocks. The asterisks, ***, ** and * indicate significance at the 1%, 5%, and 10% level, respectively.

Days	AAR (%)	*t*-stat	*z*-stat	AAR>0 (%)	AAR (%)	*t*-stat	*z*-stat	AAR>0 (%)
	Panel A: Added stocks				Panel B: Deleted stocks			
CAPM								
AD	0.05	0.25	0.46	52	0.12	0.38	0.42	52
ED	-0.18	-0.88	-1.78*	44	-0.33	-1.02	1.92*	58
$R_{i,t}$-$R_{m,t}$								
AD	0.09	0.39	0.46	52	0.12	0.36	0.59	52
ED	-0.25	-1.13	-0.99	47	-0.59	-1.79*	1.59	57
Period 1								
AD	0.28	0.68	1.60	58	-1.53	-1.24	1.51	73
ED	-0.39	-0.95	-1.20	44	-1.22	-0.99	0.90	64
Period 2								
AD	-0.02	-0.08	-0.09	50	0.11	0.33	-0.17	49
ED	-0.25	-0.95	-1.32	44	-0.12	-0.37	1.22	55
Cumulative Average Abnormal Returns CAPM								
AD-5-AD-1	-0.46	-0.99	-3.11***	40	-0.51	-0.72	0.75	53
AD-5-ED+5	-0.48	-0.57	-0.73	48	-0.88	-0.67	0.75	53
AD-5-ED+20	-0.54	-0.46	-0.33	49	-0.94	-0.52	-0.92	46
AD-5-ED+60	0.28	0.16	0.86	53	-1.46	-0.54	-0.08	50
Cumulative Average Abnormal Returns $R_{i,t}$-$R_{m,t}$								
AD-5-AD-1	-0.71	-1.41	-3.11***	40	-0.46	-0.63	0.59	52
AD-5-ED+5	-0.91	-0.98	-0.99	47	-1.00	-0.74	0.75	53
AD-5-ED+20	-1.20	-0.94	-0.99	47	-1.25	-0.67	0.92	54
AD-5-ED+60	-0.42	-0.22	1.12	54	-1.49	-0.54	0.08	50
Cumulative Average Abnormal Returns Period 1								
AD-5-AD-1	-1.23	-1.35	-3.00***	35	-2.07	-0.75	2.11**	82
AD-5-ED+5	-0.70	-0.42	-1.80*	41	-13.74	-2.69**	0.90	64
AD-5-ED+20	-0.84	-0.36	-0.60	47	-13.27	-1.90*	0.90	64
AD-5-ED+60	-0.66	-0.19	0.20	51	-9.31	-0.89	-0.30	45
Cumulative Average Abnormal Returns Period 2								
AD-5-AD-1	0.00	-0.01	-0.44	48	0.37	0.52	-0.70	47
AD-5-ED+5	-0.35	-0.33	-0.09	50	0.70	0.53	0.87	54
AD-5-ED+20	-0.74	-0.50	-0.97	46	1.36	0.75	-1.39	44
AD-5-ED+60	0.77	0.35	0.97	54	1.66	0.61	-0.35	48

Third, we use an alternative proxy to test the effect of addition and deletion on liquidity, namely the bid ask spread of a stock, following Cheung (2010). We calculate this bid ask spread as a stock's ask price minus its bid price as a percentage of the bid ask midpoint:

$$S_{i,t} = \frac{(AP_{i,t} - BP_{i,t})}{\left((AP_{i,t} + BP_{i,t})/2\right)} \tag{5.10}$$

In which $AP_{i,t}$ and $BP_{i,t}$ are the ask price and bid price of stock i at day t, respectively. Following Cheung (2010), we scale this spread with its own average using 60 days before the event window:[77]

$$AS_{i,t} = \frac{S_{i,t}}{\overline{S_i}} \tag{5.11}$$

In which S_i is the average spread of stock i calculated using 60 days before the event window and $S_{i,t}$ is as described above. Similar to the volume ratio, $AS_{i.t}$ is a ratio that can easily be interpreted as the percentage of spread that is above or below normal. A value of one indicates that the spread is normal, while a value significantly higher or lower than one indicates that liquidity is lower or higher, respectively.

Also similar to the volumes analysis, we calculate the average of this abnormal spread (AAS_t) for each day t of the event window as well as the cumulative average abnormal spread and analyze if it is abnormally high during the event window. If addition does lead to higher liquidity, this will show in significantly lower spreads for added stocks and significantly higher spreads for deleted stocks.

[77] We do this because there is no readily available proxy for the market wide bid ask spread. Cheung uses 40 days before the event window to calculate the average spread. However, we use 60 days to be consistent with the calculation of AVR.

Table 5.6: Robustness: Abnormal bid ask spreads

This table shows the average abnormal spread (AAS) and cumulative average abnormal spread (last four rows) of stocks added to (Panel A) and deleted from (Panel B) the FTSE *Shariah* Global Equity Index between September 2002 and March 2012. To calculate AAS, we follow Cheung (2010), see Section 5.4.4 for more details. The long-term event windows are from five days before announcement of addition/deletion (AD-5) to 20 and 60 days after actual addition to/deletion from the index (ED+20 and ED+60). The null hypothesis is that AAS is 1 (or equal to the number of days in the event window in the case of cumulative AAS). Statistical significance is determined using Brown and Warner's (1985) *t*-test and the non-parametric *z*-test. The value of *p* in the *z*-test is 0.34 for added stocks and 0.40 for deleted stocks. Column four shows the percentage of ASs above 1 in the sample of added stocks. The last column shows the percentage of ASs above 1 in the sample of deleted stocks. The asterisks, ***, ** and * indicate significance at the 1%, 5%, and 10% level, respectively.

Days	AAS (%)	*t*-stat	*z*-stat	AS>1 (%)	AAS (%)	*t*-stat	*z*-stat	AS>1 (%)
	Panel A: Added stocks				Panel B: Deleted stocks			
AD	1.01	0.08	0.80	40	0.88	-0.58	-0.55	38
ED	0.97	-0.37	-0.09	37	1.05	0.23	0.98	44
Cumulative average abnormal spread								
AD-5-AD-1	4.77	-1.14	-2.65**	29	4.82	-0.38	-1.77*	33
AD-5-ED+5	16.73	-0.72	-2.65**	29	17.37	0.42	0.45	42
AD-5-ED+20	32.40	0.79	-2.51**	29	33.84	1.54	0.45	42
AD-5-ED+60	75.11	4.05***	-3.49***	26	74.92	1.63	0.11	41

However, the results (Table 5.6) show that this is not the case. Rows one and two show that the average abnormal spread (AAS) is not significantly different from one on either AD or ED for both added and deleted stocks. Moreover, the results are ambiguous over the long term. The cumulative average abnormal spread is significantly (at the 1% level) higher than 1, according to the *t*-test, while it is significantly lower than one, according to the *z*-test (at the 1% level). For deleted stocks (Panel B), the cumulative average abnormal spread is not significantly different from 1 during the long term event window.

Overall, we conclude that our results are robust to different specifications, time periods, and a different proxy for liquidity.

5.5. Conclusions

This chapter studies the effects on US stocks of addition to and deletion from an Islamic index (the FTSE *Shariah* Global Equity Index). Previous research on the S&P500 finds strong effects of such additions. The very scarce literature on such effects for Islamic indices also indicates that they are present (Sadeghi, 2011, 2008; Bacha and Abdullah, 2001), but this research has some limitations.

Namely, it is specific to certain developing countries (e.g., Sadeghi, 2011), conducted over a relatively short time frame (Sadeghi, 2011), and uses models to calculate expected returns that have since then been improved. Moreover, previous research (e.g., Bacha and Abdullah, 2001) does not disentangle whether such an Islamic index effect is due to the popularity of the index itself (i.e., being part of a well-known index) or because (Muslim) investors value an Islamic label.

Fortunately, we overcome all these problems by analyzing 372 additions and deletions to the FTSE Islamic over a period of 10 years, using a model that controls for a market, value and growth as well as a momentum factor (Carhart, 1997; Fama and French, 1993) to calculate expected returns. In addition, the FTSE *Shariah* Global Equity Index (FTSE Islamic) is not as well-known as the S&P500 and stocks added to this index are first added to the general FTSE Global Equity Index. Thus, addition to the FTSE Islamic gives a relatively clean way to test a true Islamic label effect.

However, we do not find such an effect. When stocks get added to or deleted from this Islamic index, their daily returns are not significantly different than the return expected by the four factor model (Carhart, 1997; Fama and French, 1993). This holds for the date the addition or deletion is announced and the days the stocks actually get added or deleted as well as during an intermediate and long-term window (60 working days after the addition or deletion).

We also study the effect of addition/deletion on a number of variables that have previously been able to explain the index effect for the S&P500. We analyze whether liquidity (traded volume),

profitability (earnings per share), investor recognition (analyst following), or risk (beta and volatility) is different in the periods before and after index addition or deletion. We argue that two things should hold if an Islamic label signals information about these important characteristics. First, there should be a significant difference in these variables in the period before and after addition/deletion. Second, this effect should be of the opposite sign between addition and deletion. The effect on liquidity, for example, should be positive for addition and negative for deletion.

However, neither of these two conditions holds. We find no major differences between firms that get added to or deleted from an Islamic index in terms of liquidity, profitability, risk, or investor recognition, and in many cases the differences between before and after deletion are in the same direction.

Based on these findings, we argue that an Islamic label for stocks does not convey new or favorable information. This is in contrast with the recent and often proposed view in Islamic finance research that *Shariah* compliant stocks are inherently different from conventional stocks and safer (e.g., Bhatt and Sultan, 2012; Jouaber-Snoussi et al., 2012).

In a broader context, we argue that index effects occur for very different reasons, depending on the type of index. Addition to an SRI or Islamic index is different, and driven by other factors, than addition to the S&P500. This point is not explicitly made in studies that try to explain index effect for SRI indices in the same way as the S&P500. Also, addition to an Islamic index is again different from an SRI index because Islamic indices usually do not take ESG criteria into account (see Chapter 2). All three labels indicate different things. Where an S&P500 label might indicate higher investor awareness and liquidity and an SRI label might indicate reduced litigation risk, an Islamic label does not seem to indicate anything financially meaningful.

A major limitation of our analysis is that we only study US stocks and not all stocks that are added to the FTSE Islamic. However, since US stocks are about 50% of the world's market capitalization, it seems fair to say something about the overall Islamic market. Our results are robust for different models for calculating abnormal returns, not driven by a specific time period,

not dependent on a specific measure for liquidity, and are robust to using parametric as well as non-parametric tests.

Finally, an interesting topic for future research is if an Islamic index effect might arise in the future even if it is not present now. As Petajisto (2011) mentions, the effect of addition to the S&P500 has grown from about 3% as found by Shleifer (1986) to 9% in the period 1990-2005 (Petajisto, 2011), mainly driven by a higher number of index funds tracking the S&P500. A similar situation could occur for *Shariah* compliant stocks given the fast growth of the Islamic investment fund industry (see Chapter 2). Using data on funds tracking, Islamic indices would be particularly interesting in this respect.

Chapter 6. Does an Islamic Label Indicate Good Corporate Governance?[78]

This chapter analyzes the effect of an Islamic label on corporate governance. Listed firms with an Islamic label (Islamic firms) are characterized by low leverage, and recent evidence indicates that leverage can act as a substitute for good governance. Consequently, these Islamic firms can be expected to have better governance. However, I find no significant difference in overall governance between the Islamic and non-Islamic constituents of the S&P500. Also, after controlling for other determinants of governance, I find no significant effect of an Islamic label. I do find that it adds about 2 percentage points of governance quality as measured by the Bloomberg Governance Disclosure score. However, this effect is not related to leverage.

6.1. Introduction

An interesting debate that has been getting a growing amount of attention recently is whether debt acts as a disciplinary mechanism for managers (e.g., Admati et al., 2013). According to the traditional view (e.g., Grossman and Hart, 1982; Jensen, 1986), debt disciplines managers from wasting excess company cash and thus mitigates agency problems between shareholders and managers. Recent evidence, however, indicates that good corporate governance can substitute debt as a mechanism to mitigate these agency problems (e.g., Arping and Sautner, 2010; Jiraporn et al., 2012). According to this view, firms with low debt might be well governed. This chapter analyzes whether this is true for a peculiar set of such low debt firms, namely so-called *Shariah* compliant stocks.

Shariah compliant stocks are listed shares of firms that are not active in unethical industries and have to pass certain financial screens. Most notably, they can only have a limited amount of debt on their balance sheet (less than 33%). These financial screens create a subset of low debt firms with perhaps different characteristics than their conventional counterparts (e.g., Bhatt and Sultan, 2012; Adamsson et al., 2014).

[78] This chapter is based on Hayat (2014).

If corporate governance quality and debt are in fact related and an Islamic label for stocks indicates low debt, the label might indirectly also indicate better corporate governance. Analyzing this premise is the main contribution of this chapter.

This premise is interesting because, if true, it means that *Shariah* compliant stock investing resembles Socially Responsible Investing (SRI) in more than just one dimension. In Chapter 2, I argue that *Shariah* compliant stock investing can indeed be seen as a form of SRI, at least when using the Eurosif (2014) definition of SRI. Namely, both forms of investing screen out stocks based on ethical/moral criteria. However, SRI typically uses more strategies than just excluding certain stocks/sectors (see Chapter 2) and also uses screening criteria based on Environmental, Social, and Governance (ESG). *Shariah* compliant stock investing typically does not directly screen out investments based on ESG criteria, but it might do this indirectly, at least regarding governance (the G in ESG).

Providers of Islamic indices (such as FTSE and Dow Jones) and Islamic investment funds sometimes market the Islamic label as SRI. If an Islamic label indicates good governance, this marketing might be (partially) justified. Thus, there might be indirect benefits of investing in *Shariah* compliant stocks, namely, investing in firms with good governance. Investors and clients of the USD 1.3 trillion Islamic finance industry are likely to want to know about this indirect benefit.

Surprisingly, though, I find no evidence that an Islamic label says anything about the corporate governance of listed firms. I compare the current Islamic and non-Islamic constituents of the S&P500 and find that they indeed have lower debt (10% points lower), but I find no significant differences in their average corporate governance quality. I measure this overall governance quality using four proxies, two that are widely used (the Corporate Governance Quotient of ISS and the percentage of independent board directors) and two that are relatively unknown (the Bloomberg Corporate Governance Disclosure score and the Asset4 Corporate Governance score).

Also, when trying to explain overall corporate governance quality using commonly used control variables and an Islamic dummy, I find that this dummy does not stay significantly positive across different regression specifications. Although the Islamic dummy is significant and positive for the Bloomberg Corporate Governance Disclosure score (BBG), it is not so for the other proxies and is even negative for the percentage of independent directors (IND). Thus, the evidence of an Islamic label effect on corporate governance is mixed at best. Depending on which proxy is used to measure corporate governance, an Islamic label says either: (i) nothing about corporate governance (CGQ and A4CG), (ii) that Islamic firms have worse corporate governance (IND), or (iii) that Islamic firms have better corporate governance (BBG).

Interestingly, the positive effect of an Islamic label on BBG is not driven by leverage. In specifications where I control for leverage and for the other criteria used to screen *Shariah* compliant stocks, the Islamic dummy remains positive and significant. In these specifications, I control for almost all of the variables that have previously been found to influence governance quality and also correct for state, industry, and time fixed effects. So it is unclear what exactly is behind this Islamic label effect on BBG.

Even though I do not find evidence that leverage affects corporate governance quality, I do find that corporate governance quality (negatively) affects leverage, as argued by Jiraporn et al. (2012), Arping and Saunter (2010), and John and Litov (2009). Firms with better governance tend to have lower leverage. But the coefficients on governance quality are not significant across all four governance measures and where they are significant, they are not large (smaller than 0.3).

That most of these results are not consistent across all four governance proxies highlights an important challenge in governance-related research. Namely, the various commercially available measures of overall governance quality are surprisingly different (Daines et al., 2010). I find that the four measures have very low correlations, are explained by different variables, and vary substantially in how much of their variation can be explained by my models.

I put my findings in a broader context and argue that an Islamic label should also include other ethical criteria such as ESG criteria. There is a growing discussion in the investment community about why current providers of Islamic indices (such as Dow Jones and FTSE) do not include these criteria,[79] because the principles of Islam do specify that all economic activity should include consideration of environmental, social, and governance issues (Williams and Zinkin, 2010; Farook, Hassan, and Lanis, 2011; Grais and Pellegrini, 2006, 2007). Without inclusion of these criteria, the Islamic label runs the risk of becoming a marketing label rather than a quality certification.

The rest of this chapter is organized as follows. Section 6.2 briefly describes Islamic finance and reviews previous research. Section 6.3 describes the data and methodology, namely a difference in means analysis and an OLS regression explaining governance quality of current S&P500 firms using control variables, fixed effects, and an Islamic dummy. Section 6.4 shows results and discusses the effects of this Islamic dummy. Section 6.5 contains alternative regression specifications as robustness tests. Finally, Section 6.6 concludes and contains suggestions for further research.

6.2. Islamic finance and previous research

Islamic finance is a catch all term for financial transactions that are considered permissible (*halal*) by Islamic law (*Shariah*). Islam prohibits several activities for Muslims that translate in restrictions on which type of investments they are allowed to make. More specifically, Islam prohibits the use of excessive risk taking (*gharar*), gambling (*maysir*), shifting rather than sharing risk, investing in "unethical" businesses (for example, the ones related to alcohol and pornography), investing in something that does not have a real underlying economic asset or activity, and either receiving or paying interest (*riba*). Together, these rules form the main principles of Islamic finance.

[79] See, for example: http://blogs.cfainstitute.org/investor/2013/10/07/why-isnt-there-more-collaboration-between-islamic-finance-and-sri/.

In practice, these principles mean that Muslims cannot invest in certain sectors (e.g., banking), shift risk or speculate through derivatives (e.g., Credit Default Swaps), and either give or receive conventional credit (e.g., conventional bonds and loans).

The rules may seem strict, but taking entrepreneurial risk and profiting from it is allowed and even encouraged. An example of this is investing in shares of listed companies. However, a strict interpretation of Islamic principles would severely limit the investment universe of Muslims. Receiving or paying interest, for example, is not allowed, and most listed companies engage in at least some form of paying or receiving interest, rendering them non-permissible (*haram*) for investing.

To mitigate this problem, *Shariah* scholars (experts in Islamic law) have allowed investing in stocks with some relaxed constraints. Criteria vary (Derigs and Marzban, 2008), but in most cases, investing in stocks is allowed if they pass all the following criteria:

- The firm may not be involved in unethical business activities (less than 5% of revenue).
- Debt to market value of equity (24-month average) is less than 33%.
- Accounts receivables to market value of equity (24-month average) is less than 49%.
- Cash to market value of equity (24-month average) is less than 33%.

These are the criteria currently followed by Dow Jones to screen stocks for being *halal*.[80] Such *halal* certifications are provided by (usually external) *Shariah* scholars for a fee, in a comparable way to getting a credit rating (see Chapter 7). Dow Jones provides one of the most widely used indices of the Islamic equity market, namely the Dow Jones Islamic Market World Index (DJIM). It also provides the Islamic version of the S&P500, namely the S&P500 *Shariah* index. The S&P500 *Shariah* is a subset of the conventional S&P500 index and consists of a little less than half of its 500 constituent firms. The analysis in this chapter focuses on the S&P500 because it represents a very big part of the total equity market (about half of the world's total

[80] Data taken from: http://www.djindexes.com/mdsidx/downloads/meth_info/Dow_Jones_Islamic_Market_Indices_Methodology.pdf. Note that Dow Jones has changed its name to S&P Dow Jones after the start of a joint venture between the parent companies of Dow Jones and S&P in 2012.

market capitalization) and because corporate governance-related data is widely available for US firms.

I use data on these firms to find out whether being Islamic says anything about corporate governance. There is virtually no literature on this premise, despite the fact that research on Islamic finance in general has been growing. This increasing interest is understandable because the Islamic finance industry has been growing very fast in recent years (see Chapter 2) and has now reached a size of USD 1.4 trillion (Thomson Reuters, 2013). However, much of this research tends to be very (maybe a little too) positive towards Islamic finance. It indicates, for example, that: (i) Islamic index returns are better than conventional returns during crises (Ho et al., 2014; Bhatt and Sultan, 2012; Jouaber-Snoussi et al., 2012), (ii) Islamic banks are more resilient during crises although also less cost efficient (e.g., Beck et al., 2013), (iii) Islamic loans tend to have lower default rates than conventional loans (Baele, Farooq, and Ongena, 2014), and (iv) Islamic banking contributes positively to the development of the overall banking sector in Muslim countries (Gheeraert, 2014).[81]

Research that specifically links leverage, governance, and Islamic finance, however, is almost non-existent. The scarcity of this research is unfortunate because it is very relevant in the aftermath of the 2007/2008 financial crisis and the 2011/2012 European debt crisis. Debt has recently come under attack as a disciplining mechanism and as a financing mode in general (e.g., Admati et al., 2013, 2012). As Admati et al. (2013) argue, it is not at all obvious that debt should be the only mechanism to mitigate agency problems between shareholders and managers.

Indeed, better corporate governance practices seem to also be able to fulfill this role. Jiraporn and Gleason (2007) for example find that firms with weaker shareholder rights (measured by the Governance Index of Gompers, Ishii and Metrick, 2003) have higher leverage, even after controlling for other variables and endogeneity. Endogeneity is a major problem in this type of

[81] This list is by no means exhaustive. For an overview of recent empirical work on Islamic finance, see Ibrahim and Mirakhor (2014), and for a slightly broader perspective, see Cattelan (2013). For Islamic banking specifically, see Baele, Farooq, and Ongena (2014) and Zaheer (2013). Examples of a much more critical stance towards Islamic finance are El Gamal (2006) and Kuran (2004).

research because, next to omitting relevant variables, causality between leverage and governance might run both ways.

John and Litov (2009) also use Gomper, Ishii, and Metrick's (2003) Governance Index (GIM Index) and find that firms incorporated in states with stronger anti-takeover laws (i.e., weaker shareholder rights) have higher leverage. They deal with endogeneity in a number of ways. One of these ways is by analyzing an exogenous shock to governance quality that was adopted by some states but not by others. They find that an exogenous negative shock to governance quality leads to higher leverage. However, John and Litov do not interpret this as evidence of substitution between governance and leverage. Rather, they argue that entrenched managers can get better credit terms because they become less risky from the debt holders' view. Namely, debt holders view firms that are vulnerable to takeovers and have high manager turnover as risky and they view the trait that entrenched managers tend to adopt conservative investment policies as positive (John, Litov, and Yeung, 2008).

Arping and Sautner (2010) find similar evidence from Dutch companies. They use a difference in difference approach to analyze leverage of Dutch listed firms after a reform of the Dutch Corporate Governance Code in 2004 (Tabaksblat code). Similar to the Sarbanes-Oxley Act for US listed firms, the aim of this code is to improve corporate governance standards of Dutch listed firms. This reform provides a nice natural experiment since one group (Dutch firms) gets treated with better corporate governance standards and another otherwise similar group (European firms) does not. Arping and Sautner find that after the reform, Dutch firms significantly reduce leverage compared to similar European firms, even after controlling for other determinants. They conclude that an increase in governance quality leads to a reduction in debt because it reduces the value of debt as a mechanism to resolve shareholder manager conflicts.

More recently, Jiraporn et al. (2012) expand on Jiraporn and Gleason (2007) by using a more comprehensive measure of corporate governance, namely the Corporate Governance Quotient score (CGQ) of the Institutional Shareholder Services (ISS). They also find that an increase in governance quality leads to lower leverage and conclude that debt substitutes good corporate

governance. In addition, they argue that the causality runs from governance to leverage. A change in corporate governance quality causes change in leverage, not just reflects it.

Overall, the recent evidence suggests that debt indeed seems to substitute corporate governance. But the negative association between the two is not clear cut. Berger, Ofek, and Yermack (1997), for example, find that good corporate governance is accompanied by higher, not lower, debt. Similarly, Jiraporn and Liu (2008) find that firms with weaker governance (as measured by staggered boards) adopt lower debt levels.[82] Both studies interpret their findings as evidence that entrenched managers avoid debt because of its disciplinary characteristics.

For the purpose of this study, however, it does not matter so much whether the relationship between debt and leverage is positive or negative or even which way the causality runs. If the relationship is positive (i.e., low leverage and bad governance go hand-in-hand), then the Islamic label indicates a trade-off between investing in accordance with faith and investing in well governed companies. Whatever the case may be, investors would like to know what the Islamic label indicates, explicitly as well as implicitly. In my view, the more recent evidence is suggestive enough to make the assumption that leverage and debt are substitutes.

Using this assumption, this study adds to the previous research by bridging a gap between Islamic finance and the relationship between leverage and corporate governance. First, this study contributes to the scarce literature on what an Islamic label for stocks really means.[83] I find that the Islamic label says very little about governance quality. This is line with Chapter 5, where I argue that such a label does not contain information that investors do not already have. Second, this study contributes to the general corporate governance and leverage debate, with the finding that causality indeed seems to run from governance to leverage and not vice versa. However, this effect is not large. Governance does seem to substitute leverage, but the elasticity of substitution is smaller than 1. Third, this study contributes to corporate governance literature by finding evidence in line with Daines et al. (2010) that measuring overall governance quality is not nearly as clear-cut as assumed in prior studies.

[82] Strebulaev and Yang (2013) find similar evidence, namely that lower quality governance (longer CEO tenure and less independent directors) increases the chance of having no leverage at all.
[83] See, for example, Adamsson et al. (2014), Chapter 7, and Bhatt and Sultan (2012).

6.3. Data and methodology

6.3.1. Data

As a first step in the data collection, I match the constituent firms of the S&P500 with the constituent firms of the Dow Jones Islamic Market World Index, both as of September 2013 (see Table A4 of the Appendix for the full list). This portfolio of firms that are part of both the Dow Jones Islamic Market World Index (DJIM) and the S&P500 is what I call the Islamic S&P500. The Islamic S&P500 is my proxy for the official S&P500 *Shariah*. I use the Islamic S&P500 as a proxy because data on the actual constituent firms of the S&P500 *Shariah* is not publicly available.

However, Table 6.1 shows that this proxy is quite satisfactory. Panel A and B of the table show that the Islamic S&P500 is similar to the S&P500 *Shariah* in terms of the number of stocks (209 versus 224), average market capitalization (both USD 38 billion), and sector distribution (max absolute difference less than 2% points). In addition, Panel C shows that the Islamic S&P500 has an almost perfect correlation (0.99) with the S&P500 *Shariah* and approximately the same distribution of returns.[84]

The returns of the Islamic S&P500 are lower (2% per year) than the S&P500 *Shariah* (4% per year) and are slightly positively skewed (0.03) while the S&P500 *Shariah* returns are slightly negatively skewed (-0.02). However, they both have a standard deviation of about 20% and kurtosis of about 8. I also conduct a Kolmogorov-Smirnov test between the returns of the Islamic S&P500 and the S&P500 *Shariah* and cannot reject the null hypothesis that these two distributions are the same.[85]

[84] These returns are based on the natural log of daily price changes and are market capitalization weighted.
[85] More specifically, I perform a K-S test using the returns of the past 3.5 years (901 data points) and find a value of 0.01. This value is less than the critical value of 0.05 ($1.36/\sqrt{901}$) needed to reject the null hypothesis that the two distributions are the same.

Table 6.1: Comparing the Islamic sample portfolio with the S&P500 *Shariah*

This table contains a comparison of the sample portfolio of 209 Islamic and 291 non-*Shariah* compliant stocks with the actual S&P500 *Shariah*. Data on both is as of September 2013. Returns are the differences in the natural log of daily prices, calculated over the period 1 January 2001 to 1 August 2013, and are market capitalization weighted (all return based statistics are also calculated over this period). The daily returns and volatilities are annualized using 250 working days. The sector distribution is also market capitalization weighted (using the average market cap of 2013). Average market capitalization is in USD billions and is as of August 2013.

Panel A: Sector distribution (%)

	Islamic S&P500 (A)	S&P500 *Shariah* (B)	Non-Islamic S&P500 (C)	Difference (A-B)	Difference (A-C)
Sector					
Oil & gas	16.2	16.2	4.0	0.0	12.1
Basic material	4.1	4.2	1.5	-0.1	2.6
Industrials	11.6	11.7	11.1	-0.1	0.5
Consumer goods	10.3	10.9	12.1	-0.6	-1.7
Health care	18.6	18.1	4.3	0.5	14.3
Consumer services	10.9	9.4	16.9	1.5	-6.0
Telecommunications	0.0	0.0	5.3	0.0	-5.3
Utilities	0.0	0.0	6.8	0.0	-6.8
Financials	1.0	0.6	34.7	0.4	-33.7
Technology	27.2	28.8	3.4	-1.6	23.8
Total	**100.0**	**100.0**	**100.0**	**0.0**	**0.0**

Panel B: Risk, return and size characteristics

	Islamic portfolio (A)	S&P500 *Shariah* (B)	Non-Islamic S&P500 (C)
Number of stocks	209	224	291
Return	1.98	4.18	-1.49
Volatility	20.80	19.94	24.50
Sharp ratio	0.01	0.12	-0.13
Skewness	0.03	-0.02	-0.27
Kurtosis	7.74	8.14	9.42
Average market cap	38.4	37.9	27.9

Panel C: Return correlations

	A	B	C
A	1		
B	0.99	1	
C	0.92	0.92	1

There are, however, some large differences between the Islamic and non-Islamic parts of the S&P500. As column five of Table 6.1 (Panel A) shows, the Islamic portfolio is much less geared towards Financials (as expected), but also underweighted in Utilities and Consumer services.

In addition, the Islamic portfolio is over-weighted in Technology, Healthcare, and Oil & gas, compared to the non-Islamic portfolio. This underweighting of Financials and overweighting of

Technology is in line with the findings in Chapter 5. Moreover, the non-Islamic portfolio has a lower return than the Islamic portfolio (-1.5%), higher standard deviation (25%), higher skewness (-0.3), higher kurtosis (9.4), and smaller market capitalization (USD 27.9 billion). Thus, a portfolio of *Shariah* compliant stocks does seem to differ with a portfolio of only non-*Shariah* compliant stocks in important aspects. This is somewhat in line with Bhatt and Sultan (2012) and Jouaber-Snoussi et al. (2012), although Bhatt and Sultan and Jouaber-Snoussi et al. compare Islamic portfolios with conventional portfolios and the latter include Islamic as well as non-*Shariah* compliant stocks.

In the next step, data is collected for each S&P500 firm (for the years 2010, 2011, and 2012) on several corporate governance related variables (the control variables).[86] In choosing these variables, I follow previous literature, namely studies in which the dependent variable is (some proxy of) overall corporate governance quality. For details on this previous literature, variable definitions, dates, and sources, see Table A5 in the Appendix.

I also collect data on four proxies of overall corporate governance quality, namely the Corporate Governance Quotient (CGQ) of the Institutional Shareholder Services (ISS), the Bloomberg Governance Disclosure score (BBG), the percentage of independent board directors (IND), and the Asset4 Corporate Governance score (A4CG). Below is a short description of these measures and a justification for their use.

CGQ is arguably the most visible governance quality measure (Daines et al., 2010). As Daines et al. mention, ISS claims it is used by more than 1700 clients managing USD 26 trillion in assets. I follow Hugill and Siegel (2013) and Jiraporn et al. (2012) in using CGQ. Jiraporn et al. argue that it is a better indicator of overall corporate governance than the other widely used Gompers, Ishii, and Metrick (2003) entrenchment index (GIM Index) because it covers more dimensions. In addition, it is available for recent years (until the end of 2011), while the GIM Index is only available until 2006.

[86] Since there are 500 firms in the sample and 3 years of data, there is theoretically a maximum of 1500 data points. However, because some firms have missing data and because the control variables are lagged one period, in the actual sample, the maximum number of data points is 874.

BBG is a governance score developed in-house by Bloomberg. It is based on the extent of a company's governance disclosure, with a 0.1 indicating minimal disclosure and 100 indicating full disclosure of all governance related data collected by Bloomberg. However, it is unclear how exactly this governance score is measured. As far as I know, this is the first study to use BBG as a measure of overall corporate governance quality.

IND is the percentage of independent members of a firm's board of directors. Independent here means having no material ties to the firm or its management. IND is arguably one of the most important parts of good governance. Defining good governance is tricky, but there is a broad consensus among academics as well as practitioners that the independence of the board of directors is an important part of it. I use IND as a proxy for overall governance quality, following Fisman et al. (2013).

A4CG is Thomson Reuters' corporate governance score and measures overall corporate governance quality across a wide range of aspects such as board structure, compensation policy, and shareholder rights. I use this measure following Cheng et al. (2014) and Mackenzie, Rees, and Rodionova (2013).

All of these measures (except IND) are based on a percentile score. Thus, if a firm has a score of 90, it means that this firm scores in the top 10% compared to its peer group. Whether this peer group is sector-based or not depends on which measure is used. The CGQ and A4CG scores do not use sector-based peer groups, while the BBG score does.

6.3.2. Methodology

The methodology consists of 2 steps. First, I simply test whether there is a significant difference between the average corporate governance quality of Islamic and non-Islamic constituents of the S&P500. Here, a simple parametric *t*-test is used (assuming unequal variances) to test for statistically significant differences in overall corporate governance quality. The used control variables are also tested for significant differences.

Second, I regress corporate governance quality on an Islamic dummy and some control variables. The benefit of the second approach is that it controls for other variables that might affect corporate governance quality. Specifically, I control for firm size, firm age, the percentage of women in the board of directors, the percentage of total outstanding shares held by the top shareholder, Tobin's Q, profit margin, dividend payout, return volatility, R&D expenditure, free cash flows, the percentage of independent board directors, board duration, board size, CEO stock ownership, CEO incentive based compensation, CEO tenure, CEO turnover, and CEO duality. These control variables are all based on previous literature.

The base specification of this study is a panel-based OLS regression in which the dependent variable is the corporate governance quality of S&P500 firms from 2010 to 2012 and the independent variables are an Islamic dummy, 18 control variables, and state, industry, and time dummies.[87] The regression equation is:

$$CG_{i,t} = \alpha + \beta_1 Islamic_i + \beta_2 Controls_{i,t-1} + \beta_3 State_i + \beta_4 Industry_i + \beta_5 Time_t + \varepsilon_{i,t} \quad (6.1)$$

In this equation, $CG_{i,t}$ is the overall corporate governance quality of firm i at time t measured by CGQ, BBG, IND and A4CG, t runs from 2010 to 2012, α is the intercept, β_1 is the average difference in corporate governance quality between Islamic and non-Islamic firms after controlling for the other variables (i.e., the effect of an Islamic label on corporate governance), $Islamic_i$ is a dummy variable that is 1 if a firm is Islamic and 0 otherwise, β_2 is a vector of 18 coefficients that represents the sensitivity of corporate governance quality to a unit change in the 18 control variables. These control variables are indicated by $Controls_{i,t-1}$ and described in Table A5 of the Appendix.

The control variables are lagged by one year (following, for example, Jiraporn and Liu, 2008 and Harford, Mansi, and Maxwell, 2008) to mitigate possible reverse causality between these variables and corporate governance quality.[88] Reverse causality might also be a problem for the Islamic dummy since it is a proxy for leverage and causality might run both ways between

[87] Data for the Islamic dummy, CEO duality, top shareholder, CEO Duality, CEO stock ownership, and the state and industry dummies is from 2013 since I do not have historical data on these variables.
[88] All regressions are also performed without using lags and give very similar results (see Section 6.5.4).

leverage and corporate governance.[89] Unfortunately, I have no historical data on the Islamic dummy. However, I do control for leverage and the other Islamic financial criteria in Section 6.5. In that case, causality from corporate governance to the Islamic dummy is unlikely because corporate governance quality is currently not taken into account to determine whether a stock is Islamic or not.

State (β_3), industry (β_4), and time (β_5) fixed effects are controlled for by adding dummies for each of these variables. So I control for unobserved effects that vary over states and industries but not over time and effects that vary over time but not over industries and states. Specifically, I use 29 state dummies, 18 sector dummies, and a time dummy for the year 2011.

State effects might influence corporate governance because anti-takeover laws differ across states in the US. Anti-takeover laws reduce shareholder rights because they make hostile takeovers more difficult and thus indicate weaker governance (Wald and Long, 2007; Qi and Wald, 2008). These effects might vary over states, but they are unlikely to vary over time, at least over short periods.

Industry effects might also influence corporate governance, for example, because corporate culture differs between sectors. I control for sector effects, following, for example, Jiraporn et al. (2012) and Linck et al. (2008) and use two digit ICB sector classifications to identify the sector a firm is in, following, for example, Coles, Daniel, and Naveen (2008).[90]

The time dummy captures possible trends in governance quality that affect all firms in the sample. I only use a dummy for the year 2011 because the control variables are lagged one year. Thus, 2012 is not used and 2010 is omitted to avoid perfect multicollinearity.

[89] From the debt as a substitute for governance perspective, an improvement in governance might lead to lower leverage because there is less need for debt's disciplining mechanism, but a reduction in leverage might also lead to improved governance to substitute the lack of debt's discipline.

[90] Results are similar if one digit industry classifications are used (see Section 6.5.4), but the two digit classifications have higher explanatory power. Data on these classifications if from Bloomberg and ICB (http://www.icbenchmark.com/Site/ICB_Structure).

An important assumption in this study is that most of the firms that are Islamic in 2013 were also Islamic in the past three years. So the assumption implies that the Islamic dummy does not vary over time, at least not over relatively short periods such as two or three years. I have to make this assumption because I have no data on which of the S&P500 firms are Islamic historically. However, this is a very reasonable assumption. As shown in Chapter 5 (Table 5.1), over short periods of time, the US index constituents of the FTSE *Shariah* Global Equity Index (which is comparable to the DJIM) stay approximately the same. In the sample of Chapter 5, about 89% of the US stocks in the FTSE *Shariah* Global Equity Index stay the same over the years 2010 and 2011.[91] Additionally, I check the constituent changes of the Islamic S&P500 between September 2013 and May 2014 and indeed find that 90% of the constituents are the same.[92]

6.4. Results

Table 6.2 contains a correlation matrix of the variables used in this chapter. It shows that the four different measures of overall governance quality have surprisingly low correlations. The highest correlation among these governance quality measures is between IND and CGG (0.24), while most correlations are less than 0.12 (which corresponds with a significance level of 5%). The table also shows a low (albeit positive) correlation between the Islamic dummy and BBG, CGC, and A4CG. The correlation with IND is negative (-0.06), but also low. Interestingly, leverage is also not highly correlated with governance and where it is (as in the case of IND), it is positive (0.16) rather than negative. Leverage, at least in this sample, does not seem to have a strong relationship with governance, and where this seems the case, higher leverage is correlated with better rather than worse governance. This positive relationship is in line with Berger et al. (1997) and Jiraporn and Liu (2008). These simple correlations should be interpreted with a lot of caution, but they give a first hint that an Islamic label does not convey information about a firm's overall governance.

[91] Specifically, Table 5.1 shows that in 2011 and 2010, the FTSE *Shariah* Global Equity Index experiences 71 US constituent changes (stocks that are either added or deleted). This is about 11% of the 643 US stocks in the FTSE *Shariah* Global Equity Index in 2012.

[92] I use the same procedure as Section 6.3.1 (Data) to determine the constituents of the S&P Islamic, namely matching the constituents of the DJIM and S&P500 on the same date.

Table 6.2: Correlations between variables

This table contains the correlations between the variables used in this chapter (as of 2012). All correlations that are higher than 0.12 or lower than -0.12 (corresponding to a significance of at least 5%) are in bold. For details on definition, sources, and calculation of the variables, see Table A5 in the Appendix.

Variable	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26
1 CGQ	**1.00**																									
2 BBG	0.09	**1.00**																								
3 IND	**0.24**	**0.17**	**1.00**																							
4 A4CG	0.10	0.06	0.06	**1.00**																						
5 Size	**0.19**	**0.28**	**0.14**	0.05	**1.00**																					
6 Age	0.12	**0.16**	**0.15**	0.01	**0.23**	**1.00**																				
7 Women on board	**0.14**	**0.17**	**0.19**	0.04	**0.24**	**0.26**	**1.00**																			
8 Top shareholder	**-0.12**	-0.05	**-0.19**	-0.01	**-0.14**	-0.11	-0.08	**1.00**																		
9 Tobin's Q	**-0.20**	-0.07	**-0.18**	-0.02	**-0.25**	**-0.18**	-0.01	0.09	**1.00**																	
10 Profit margin	**-0.13**	0.02	-0.03	0.08	**-0.24**	-0.07	-0.09	-0.01	**0.27**	**1.00**																
11 Dividend payout	0.00	-0.03	-0.11	0.06	-0.09	-0.06	-0.01	0.04	-0.05	-0.02	**1.00**															
12 Volatility	-0.08	**-0.17**	-0.08	-0.05	**-0.20**	-0.11	**-0.14**	0.01	-0.08	**-0.13**	-0.03	**1.00**														
13 R&D	-0.04	-0.01	-0.01	0.06	**-0.15**	**-0.20**	-0.06	0.07	**0.28**	0.09	-0.05	**0.16**	**1.00**													
14 Free cash flow	-0.03	-0.03	-0.10	0.06	-0.02	-0.08	0.06	0.01	**0.55**	**0.30**	-0.07	**-0.18**	**0.22**	**1.00**												
15 Stock ownership	**-0.21**	-0.10	**-0.19**	-0.02	-0.05	**-0.17**	-0.11	**0.22**	**0.12**	0.01	-0.01	0.06	0.06	0.02	**1.00**											
16 Incentive based comp	0.06	-0.04	0.11	0.01	-0.09	**-0.19**	-0.02	0.06	0.06	0.04	0.00	**0.13**	**0.19**	-0.01	**-0.16**	**1.00**										
17 Tenure	**-0.17**	-0.07	**-0.18**	**-0.12**	-0.08	-0.12	**-0.15**	0.07	0.11	0.07	0.06	0.07	0.09	0.01	**0.22**	-0.05	**1.00**									
18 Turnover	0.08	0.00	0.08	0.00	-0.01	0.05	0.05	0.06	-0.11	-0.01	-0.05	0.00	-0.03	-0.08	-0.06	0.02	**-0.49**	**1.00**								
19 Duality	-0.02	**0.12**	**0.21**	0.01	**0.12**	**0.20**	0.07	-0.06	-0.06	-0.01	0.00	-0.09	-0.07	-0.09	0.02	**-0.16**	**0.24**	**-0.21**	**1.00**							
20 Board duration	**-0.22**	**-0.16**	-0.05	-0.02	**-0.22**	-0.08	**-0.14**	0.06	0.07	-0.06	0.00	**0.16**	0.06	-0.04	0.07	0.07	0.01	-0.07	-0.03	**1.00**						
21 Board size	0.07	**0.21**	0.08	-0.01	**0.33**	**0.23**	**0.15**	-0.02	**-0.25**	0.01	-0.05	**-0.18**	**-0.16**	**-0.16**	**-0.14**	-0.07	**-0.14**	**0.13**	-0.01	**-0.15**	**1.00**					
22 Islamic	0.01	0.05	-0.06	0.04	-0.11	**-0.12**	**-0.13**	0.07	**0.38**	**0.18**	-0.05	0.02	**0.30**	**0.37**	0.05	**0.14**	0.08	-0.09	-0.02	0.10	**-0.21**	**1.00**				
23 Leverage	0.10	0.01	**0.16**	-0.06	0.10	**0.19**	**0.12**	-0.09	**-0.53**	**-0.26**	**0.13**	0.12	**-0.32**	**-0.47**	**-0.12**	-0.05	**-0.12**	0.12	0.07	-0.10	**0.21**	**-0.59**	**1.00**			
24 Receivables	0.05	-0.04	0.04	-0.07	0.10	0.11	0.01	-0.08	**0.16**	**-0.17**	-0.08	0.09	**0.15**	**0.18**	-0.05	-0.07	0.00	-0.07	0.02	0.06	-0.01	**0.21**	**-0.23**	**1.00**		
25 Interest income	0.00	-0.02	0.06	-0.03	-0.01	**0.23**	0.07	-0.09	**-0.19**	0.09	-0.04	**0.18**	-0.12	**-0.13**	-0.01	-0.07	-0.01	**0.13**	0.07	-0.03	**0.16**	**-0.21**	**0.47**	**-0.13**	**1.00**	
26 Cash	-0.11	-0.03	-0.12	0.02	**-0.16**	**-0.17**	-0.07	0.04	**0.49**	**0.19**	-0.09	**0.18**	**0.36**	**0.48**	0.06	**0.15**	0.08	-0.01	-0.07	0.05	**-0.20**	**0.32**	**-0.45**	**0.20**	**-0.16**	**1.00**

Table 6.3 contains descriptive statistics and the results of a differences in means analysis between Islamic and non-Islamic firms. Panel A (rows one to four) shows that the average governance quality of S&P500 firms is surprisingly low, varies considerably, and that the four different measures are not at all in agreement. CGQ for example has an average of 51.2, a standard deviation of 25.1, and ranges from 1.3 (lowest) to 100 (highest). Average BBG is also relatively low (55.5), but has a lower standard deviation (6.7) and a slightly shorter range (from 3.6 to 85.7). IND has a much higher average (84.3), lower standard deviation (9.5), and a shorter range (33.3 to 100). A4CG also has a relatively high score (80.0), and an in between standard deviation (13.5) and range (6.0 to 96.2). These results are a bit puzzling since these are all companies that are highly publicized, big, well known, and based in a well-developed country. The results are also not in line with Doidge, Karolyi, and Stulz (2007), who argue that governance matters more at a country rather than firm level. If governance is indeed mostly determined by country level characteristics, there should be little variation in governance within a country. However, for CGQ these results may be because its database consists mainly of firms in well developed countries, which means the quality of the peer group may already be high. So even high absolute scores can result in low percentile scores.

Panel B (last column) shows that the corporate governance quality of Islamic firms is quite similar to non-Islamic firms. For all four measures of overall corporate governance, the differences are not significant. Thus, an Islamic label does not seem to indicate better governance. Islamic firms tend to score slightly higher than non-Islamic firms for CGQ, BBG, and the A4CG, but they have about 1% point less independent directors.

Despite the similar overall governance quality, Islamic firms are markedly different from their non-Islamic counterparts in other dimensions. As rows 5-14 (firm characteristics) of Panel B show, Islamic firms tend to be younger (12.2 years), have fewer women on their boards (2.4% points less), higher growth prospects (0.9 higher Tobin's Q), higher net profit margins (3.6% points higher), and higher R&D and free cash flows to total assets (2.8% and 6.0% points higher, respectively).

Table 6.3: Differences between Islamic and non-*Shariah* compliant stocks

This table contains descriptive statistics and a difference in means test (assuming unequal variances) between the Islamic and non-Islamic constituents of the S&P500. The variables are as of 2012, except for the Islamic dummy, Top shareholder, CEO duality, CEO stock ownership, and the state and industry dummies. These variables are from 2013 since I do not have historical data on them. For details on definition, sources, and calculation of all these variables, see Table A5 in the Appendix. The asterisks, ***, ** and * indicate significance at the 1%, 5%, and 10% level, respectively.

	Panel A:						**Panel B:**				
	Overall sample						**Islamic (A)**		**non-Islamic (B)**		**Difference**
	Unit	**Obs**	**Mean**	**Stdev**	**Min**	**Max**	**Obs**	**Mean**	**Obs**	**Mean**	**(A-B), *t*-test**
Overall governance											
CGQ	%	413	51.2	25.1	1.3	100.0	164	51.5	249	51.1	0.5
BBG	%	473	55.5	6.7	3.6	85.7	194	55.9	279	55.2	0.6
IND	%	497	84.3	9.5	33.3	100.0	208	83.7	289	84.8	-1.2
A4CG	%	350	80.0	13.5	6.0	96.2	156	80.6	194	79.5	1.1
Firm characteristics											
Size	USD bln	500	20.5	39.5	0.0	463.2	209	20.3	291	20.6	1.0
Age	Yrs	497	71.5	49.2	1.0	252.0	208	64.4	289	76.6	-12.2***
Women on board	%	498	16.3	9.0	0.0	46.7	209	15.0	289	17.3	-2.4***
Top shareholder	%	500	10.0	5.3	0.0	50.4	209	10.4	291	9.7	0.7
Tobin's Q	ratio	497	1.9	1.2	0.8	9.0	207	2.4	290	1.5	0.9***
Profit margin	%	498	10.7	10.1	-55.6	79.5	208	12.9	290	9.2	3.6***
Dividend payout	%	497	69.8	317.4	0.0	6121.2	208	51.1	289	83.2	-32.2
Volatility	%	494	34.4	10.5	12.9	76.8	205	34.7	289	34.2	0.5
R&D	%	500	2.2	4.6	0.0	39.6	209	3.8	291	1.0	2.8***
Free cash flow	%	498	6.2	8.0	-26.6	60.4	208	9.6	290	3.7	6.0***
Board and CEO related											
Board duration	Yrs	496	1.5	0.9	1.0	3.0	207	1.6	289	1.4	0.2**
Board size	#	498	11.0	2.2	5.0	30.0	209	10.4	289	11.4	-1.0***
CEO stock ownership	%	457	0.8	2.6	0.0	24.4	194	0.9	263	0.6	0.3
CEO incentive based comp	%	491	54.0	19.7	0.0	96.2	203	57.2	288	51.7	5.5***
CEO tenure	Yrs	490	6.6	5.8	0.0	42.9	203	7.2	287	6.2	1.0*
CEO turnover	#	500	0.6	0.8	0.0	6.0	209	0.5	291	0.7	-0.1**
CEO duality	1 or 0	499	0.6	0.5	0.0	1.0	209	0.5	290	0.6	0.0
Islamic criteria											
Leverage	%	495	23.8	18.1	0.0	95.9	206	11.2	289	32.7	-21.6***
Receivables	%	479	9.5	7.5	0.0	59.2	208	11.3	271	8.1	3.2***
Interest income	%	427	3.6	13.7	0.0	93.1	187	0.4	240	6.2	-5.8***
Cash	%	498	8.7	8.6	0.1	70.2	208	11.9	290	6.4	5.6***

Rows 15-21 furthermore show that Islamic firms tend to have slightly higher board durations (0.2 years higher), smaller boards (1 director less), a higher share of compensation that is incentive based (5.5 % points higher), and a slightly lower CEO turnover (0.1 lower CEO changes per five years). There is no clear direction to whether Islamic firms do better or worse on these sub components of governance. The higher incentive-based compensation arguably indicates better governance since CEO and shareholder interests are more aligned, but the higher duration and lower turnover indicate worse governance.

Finally, rows 22-25 show that Islamic firms are substantially less leveraged than non-Islamic firms (21.6% points) and have lower interest income to sales (5.8% points). Unexpectedly, though, Islamic firms also have higher receivables to total assets (3.2% points) and more cash to total assets (5.6% points). This is unexpected because Islamic firms are screened for these two criteria to be low. However, Panel A shows that receivables and cash in the overall sample are already lower than the Islamic cut off of 33% (namely 9.5% and 8.7%, respectively). It seems the Islamic selection mainly affects firms through leverage and the sector screens.[93]

Overall, the evidence in Table 6.3 is ambiguous. Islamic firms do not seem to differ much from non-Islamic firms in terms of overall corporate governance quality, although there are differences in subcomponents. But in many cases these differences are negative, suggesting that if anything, an Islamic label indicates lower rather than higher corporate governance quality.

However, simply comparing the overall governance quality of Islamic and non-Islamic firms is inaccurate because it may average out opposing effects on governance quality. Suppose, for example, that an Islamic label does indeed indicate better corporate governance, but that these Islamic firms tend to be less complex (have less business segments, operate in less foreign countries, etcetera), perhaps because they are younger. Now also suppose that complexity is positively related to corporate governance quality (as argued, for example, by Coles et al., 2008), i.e., more complex firms tend to have better corporate governance. Then, comparing Islamic firms with non-Islamic firms will inaccurately show no differences because the positive effect of

[93] Interest income does not seem to play a major role here; only 30 firms in the sample have interest income to sales of larger than 5%.

the Islamic label is countered by the negative effect of less complexity. Thus, to give a more accurate picture, differences in governance quality between Islamic and non-Islamic firms should be analyzed while controlling for other factors such as complexity, size, and industry effects.

That is done in Table 6.4, which gives the results of a regression in which corporate governance quality is the dependent variable and the independent variables are an Islamic dummy, some control variables from previous literature, and fixed effect dummies.[94]

Table 6.4 shows that after controlling for other variables, there is no strong evidence of an Islamic label effect. Namely, the coefficients of the Islamic dummy for CGQ, A4CG, and IND are not significant. However, there does seem to be an Islamic label effect for BBG. Islamic firms score almost 2 points higher on this measure, even after controlling for other variables and state, industry, and time fixed effects. This effect is economically and statistically significant (at the 1% level). Furthermore, although the Islamic dummy coefficients for CGQ and A4CG are statistically insignificant, they are positive and surprisingly large (4 and 2 points, respectively). On the other hand, the coefficient for IND is negative. It seems that Islamic firms tend to have 0.8% point less independent directors compared to non-Islamic firms, which is approximately the same as in Table 6.3.

[94] I use fixed effects because Hausman tests indicate that in my dataset, a fixed effects model is preferable over the random effects model. Specifically, Hausman tests conducted on the four models of Table 6.4 give *H* values of 26.5, 116.02, 27.12, and 42.59 for BBG, CGQ, A4CG, and IND, respectively. These are all significant at the 5% level at least, thus rejecting the null hypothesis that the random effects model is consistent.

Table 6.4: The effect of an Islamic label on corporate governance

This table contains the results of regressing corporate governance quality (the dependent variable) of S&P500 firms (as of September 2013) on an Islamic dummy and several firm based control variables (the independent variables). Corporate governance quality is measured by CGQ, BBG, IND, and the A4CG. The main variable (Islamic) is a dummy that is 1 when a firm is Islamic and 0 otherwise. The control variables are firm and CEO characteristics and time, industry, and state dummies. All control variables (except for the Islamic dummy, Top shareholder, CEO stock ownership, CEO duality, and the fixed effect dummies) are lagged one period (one year) to mitigate reverse causality. The data set runs from 2010 to 2012. However, data for the Islamic dummy, Top shareholder, CEO stock ownership, CEO duality, and the state and industry dummies is from 2013 since I do not have historical data on these variables. For more details on the source, description, and calculation of all these variables, see Table A5 in the Appendix. Standard errors are corrected for heteroscedasticity and autocorrelation using the Newey-West (1987) estimator. The asterisks, ***, ** and * indicate significance at the 1%, 5%, and 10% level, respectively.

Independent variable	**Dependent variable**			
	CGQ	BBG	IND	A4CG
Intercept	-9.13	35.87***	82.29***	76.52***
	(20.40)	(4.01)	(5.64)	(10.09)
Islamic	3.96	1.82***	-0.78	1.65
	(2.95)	(0.65)	(1.00)	(1.53)
Size	4.91	3.48***	1.12	2.45*
	(3.21)	(0.70)	(0.97)	(1.45)
Age	0.02	0.02***	0.01	0.01
	(0.03)	(0.01)	(0.01)	(0.01)
Women on board	0.26*	0.07***	0.14***	0.01
	(0.14)	(0.03)	(0.05)	(0.07)
Top shareholder	-0.26	0.01	-0.29***	0.00
	(0.18)	(0.05)	(0.08)	(0.11)
Tobin's Q	-4.84***	-0.43*	-0.77	-1.17
	(1.35)	(0.25)	(0.47)	(0.73)
Profit margin	-0.30**	0.02	0.01	0.10*
	(0.12)	(0.02)	(0.04)	(0.06)
Dividend payout	0.64***	-0.01	0.09	0.28***
	(0.21)	(0.03)	(0.07)	(0.08)
Volatility	-0.08	0.00	-0.04	-0.10
	(0.15)	(0.03)	(0.05)	(0.08)
R&D	0.03	0.12*	0.05	0.04
	(0.27)	(0.07)	(0.09)	(0.18)
Free cash flow	0.25	-0.04	-0.02	0.09
	(0.18)	(0.04)	(0.07)	(0.11)

Table 6.4: The effect of an Islamic label on corporate governance (continued)				
Independent variable	**Dependent variable**			
	CGQ	BBG	IND	A4CG
IND	0.92***	0.05*		-0.04
	(0.13)	(0.03)		(0.07)
Board duration	-4.79***	-0.23	0.11	0.05
	(1.32)	(0.28)	(0.49)	(0.68)
Board size	-0.89*	0.04	0.01	-0.15
	(0.49)	(0.12)	(0.24)	(0.31)
CEO stock ownership	-0.61	-0.03	-0.52***	0.23
	(0.41)	(0.08)	(0.15)	(0.18)
CEO incentive based comp	0.03	0.00	0.04**	0.03
	(0.06)	(0.01)	(0.02)	(0.03)
CEO tenure	-0.15	-0.04	-0.22**	-0.20
	(0.21)	(0.04)	(0.09)	(0.16)
CEO turnover	-0.99	-0.26	-0.56	-0.37
	(1.76)	(0.41)	(0.68)	(1.00)
CEO duality	-1.11	0.71	3.62***	1.87
	(2.61)	(0.57)	(0.91)	(1.39)
Model	OLS	OLS	OLS	OLS
Industry and state fixed effects	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes
Observations	845	828	874	854
Adjusted R^2	30.4%	27.7%	27.5%	7.1%

Table 6.4 also shows that these models have relatively high explanatory power, except for A4CG. Excluding the latter, the average adjusted R^2 is almost 30%. This is high because corporate governance quality has been found to be mainly determined by country rather than firm characteristics (Doidge et al., 2007). If this is true, corporate governance quality within a country should not vary much. However, it does in my sample, and firm characteristics and fixed effects explain almost a third of this variation. For comparison, previous studies that explain overall governance quality using only firm characteristics have an adjusted R^2 that is typically less than 20%.[95]

Since the main goal of this study is to assess the effect of an Islamic label on corporate governance, I will refrain from a detailed discussion of the control variables. However, Table 6.4

[95] Some recent examples are Hugill and Siegel (2013), Linck, Netter, and Yang (2008), Dahya, Dimitrov, and McConnell (2008) and Li and Harrison (2008) that report an adjusted R^2 of 15%, 17%, 11%, and 9%, respectively. These R^2s are for regressions comparable to mine. Namely, ones that explain corporate governance quality either by including country fixed effects or by looking at governance across firms but within a country.

does show that no single variable is consistently significant across all four measures of governance. Apparently, all four measures are influenced by different variables. This fits well with the view of Daines et al. (2010), who describe some important problems with commercial suppliers of governance quality measures. One of these problems is that the various commercial corporate governance measures that are around have surprisingly low correlations. Daines et al. (2010) argue this might be because the different measures evaluate different characteristics or have high measurement errors. This study also finds low correlations among these measures (Table 6.2). And, indeed, the results indicate that the different corporate governance measures seem to measure different qualities. In addition, A4CG is a bit of a puzzle. Where the same variables explain a relatively high portion of CGQ, BBG, and IND, they do a poor job of explaining A4CG (adjusted R^2 ~7%). These findings pose a serious challenge for empirical corporate governance research. If various measures for overall governance quality differ so much, results for one measure might not hold for the others.

6.5. Robustness

In this section, I perform a number of robustness tests. First, I add the financial screens used to determine whether a stock is Islamic or not as control variables. This importantly includes leverage, which allows me to control for a possible effect of leverage on governance. Second, I run the regressions of Table 6.4 while dropping the insignificant variables and test whether my results are sensitive to these changes. Third, I run the regressions using a cross-section rather than a panel. Fourth, I use alternative proxies for some of the control variables. Overall, the results and conclusion stays the same. There is no strong evidence that an Islamic label signals good governance as measured by CGQ, IND, and A4CG. However, the Islamic dummy is consistently positive, approximately the same size and significant for corporate governance as measured by BBG.

6.5.1. Including Islamic screening criteria

The results of Table 6.4 might be biased because the Islamic label is a proxy for leverage and there might be reverse causality between governance and leverage. Also, for BBG, it is not clear exactly which of the Islamic screening criteria determine the Islamic label effect. That is why I add these criteria to the base case regression.[96] I thus run the following regression:

$$CG_{i,t} = \alpha + \beta_1 Islamic_i + \beta_2 Controls_{i,t-1} + \beta_3 State_i + \beta_4 Industry_i + \beta_5 Time_t + \beta_6 Islamic\ Criteria_{i,t-1} + \varepsilon_{i,t} \quad (6.2)$$

Here, β_6 is a vector of four coefficients that represent the sensitivity of corporate governance quality to a unit change in the four Islamic financial screening criteria. These criteria are leverage, receivables, interest income, and cash, and are indicated by *Islamic Criteria*$_{i,t-1}$. All other variables are as in Equation 6.1

Table 6.5 contains the results of running this regression.[97] The table shows that the results are not driven by leverage at all. The coefficient on leverage is not significant in any of the specifications; it remains small and is negative for CGQ and A4CG, but positive for BBG and IND.[98] This result is in line with Jiraporn et al. (2012) and Arping and Saunter (2010), who argue that causality is likely to run from corporate governance to leverage instead of vice versa.

To check this, I regress corporate governance quality on leverage using the same four proxies for governance quality as in Table 6.5 and use the control variables in Jiraporn et al. (2012), Arping and Saunter (2010), and Adams and Ferreira (2009), while also controlling for time and industry effects. The results are in Table A6 of the Appendix. These results indicate that governance quality indeed seems to negatively affect leverage. Firms with better governance seem to

[96] Interest income to sales is added because some index providers use it as an additional criterion to screen *Shariah* compliant stocks (Derigs and Marzban, 2008).

[97] Results of the control variables are not shown to conserve space. But the sign and size of the significant coefficients is similar to Table 6.4 in most cases. These results are available on request.

[98] There might be a multicollinearity problem between leverage and the Islamic dummy since they are highly correlated (-0.59; see Table 6.2). But I run all the regressions of Table 6.5 while excluding the Islamic dummy and the results are very similar, namely the coefficient on leverage stays insignificant and about the same size. These results are omitted to conserve space, but they are available on request.

decrease leverage. The coefficients of all four governance measures are consistently negative. However, they are only significant for BBG and A4CG (1% level), while Jiraporn et al. (2012) find a significantly negative relationship between CGQ and leverage. Also, the coefficients on BBG (-0.22) and A4CG (-0.09) are not large. They indicate that an improvement in governance quality of 1 percentage point leads to a reduction in leverage of only 0.22 or 0.09 percentage points.

Table 6.5 also shows that the other three Islamic financial criteria are also mostly insignificant in explaining governance quality. Only Receivables and Cash are significant at conventional levels (5% level). But the effect is small (-0.08 and 0.16, respectively) and does not have the same sign across all four measures.

The Islamic dummy coefficients, however, are very similar to Table 6.4. They do not change sign and stay about the same size for all four variables. For BBG, the Islamic dummy also stays significant (1%). However, what exactly is causing this effect is not clear. It is not driven by leverage as I hypothesized, nor by the other Islamic financial criteria individually. But the combination of these four variables does seem to affect BBG significantly. Alternatively, this might be the effect of excluding "unethical" industries. But if such an effect is real, it should be significant for the other three measures as well.

Table 6.5: The effect of an Islamic label, controlling for Islamic financial screens

This table contains the results of regressing corporate governance quality (the dependent variable) of S&P500 firms (as of September 2013) on an Islamic dummy, 4 Islamic financial criteria, and several firm-based control variables (the independent variables). Corporate governance quality is measured by CGQ, BBG, IND, and A4CG. The main variable (Islamic) is a dummy that is 1 when a firm is Islamic and 0 otherwise. The Islamic criteria are based on the criteria used by Dow Jones to determine whether a firm is Islamic or not (namely Leverage, Receivables, Interest income, and Cash). Leverage, Receivables, and Cash are scaled by total assets and Interest income is scaled by total sales. Other control variables are as in Table 6.4, namely firm and CEO characteristics and time, industry, and state dummies. All control variables (except for the Islamic dummy, Top shareholder, CEO Stock ownership, CEO duality, and the fixed effect dummies) are lagged one period (one year) to mitigate reverse causality. The data set runs from 2010 to 2012. However, data for the Islamic dummy, Top shareholder, CEO stock ownership , CEO duality, and the state and industry dummies is from 2013 since I do not have historical data on these variables. For details on the source, description, and calculation of all these variables, see Table A5 in the Appendix. Standard errors are corrected for heteroscedasticity and autocorrelation using the Newey-West (1987) estimator. The asterisks, ***, ** and * indicate significance at the 1%, 5%, and 10% level, respectively.

Independent variable	**Dependent variable**			
	CGQ	BBG	IND	A4CG
Intercept	-4.07	36.03***	79.80***	87.66***
	(23.04)	(4.75)	(7.12)	(12.11)
Islamic	3.88	1.91***	-0.18	1.52
	(3.27)	(0.71)	(1.26)	(1.82)
Leverage	-0.07	0.01	0.00	-0.05
	(0.13)	(0.02)	(0.06)	(0.07)
Receivables	0.25	-0.08**	0.10	-0.08
	(0.22)	(0.03)	(0.06)	(0.09)
Interest income	0.09	-0.05	0.09	0.04
	(0.14)	(0.03)	(0.06)	(0.09)
Cash	-0.02	-0.04	-0.11*	0.16**
	(0.20)	(0.03)	(0.05)	(0.07)
Model	OLS	OLS	OLS	OLS
Control variables included	Yes	Yes	Yes	Yes
Industry and state fixed effects	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes
Observations	690	671	712	693
Adjusted R^2	30.59%	28.86%	31.27%	8.21%

6.5.2. Fewer explanatory variables

The regressions in Table 6.4 and 6.5 have a lot of explanatory variables. This can lead to problems if some of the explanatory variables are highly correlated (multicollinearity) and if there are a lot of variables that are not related to governance quality. My results show that the latter is indeed the case and the former to some extent (see Table 6.2). Both issues reduce the efficiency of my model. Also, the results might be driven by the specific combination of these explanatory variables. If the model is weak, they might change a lot if some variables are

removed. To mitigate these problems, I estimate a much simpler model than in Table 6.4 and 6.5. Specifically, I look at the (expanded) results of Table 6.5 and for each corporate governance proxy (CGQ, BBG, IND, and A4CG) exclude all the explanatory variables that do not a have significance level of at least the 5%.[99] This procedure leads to a maximum of seven explanatory variables (including the intercept). However, I keep the state, industry, and time fixed effects, since they add explanatory power.[100] The results of these regressions are in Table 6.6.

They show that the results do not change much after removing the insignificant variables. Again, the coefficient on the Islamic dummy stays positive (although still insignificant) and large (3 and 2 for CGQ and A4CG, respectively) and large, positive, and significant for BBG (2). However, the coefficient becomes large, negative, and weakly significant (-2, significant at 5%) for IND.

[99] I look at Table 6.5 because it controls for more variables, but the significant variables in Table 6.4 and 6.5 are the same in most cases.

[100] I also run these regressions without using state, industry, and time fixed effects. I omit these results here to conserve space, but they are available on request. These results show that without the fixed effect dummies, the explanatory power of the models reduces on average by 17%, but also that the Islamic dummy coefficient for BBG stays very close to Table 6.5 (1.9) and equally significant (1% level). For CGQ, this coefficient increases to 5.6 and becomes significant (5% level). For IND, the coefficient stays negative (-0.5), but becomes insignificant. For A4CG, the coefficient stays positive (1.2) and insignificant. Thus, the inclusion or exclusion of unobserved fixed effects does not change my results much. The only big change is in the coefficient for CGQ, which becomes significant. But this corroborates that if an Islamic label effect on CGQ is found without correcting for unobserved fixed effects, it is likely to be spurious.

6.5.3. Cross-sectional regressions

As discussed in Section 6.3.2 (Methodology), I have to assume that the Islamic dummy is time invariant. The accuracy of this dummy in indicating whether a firm is Islamic deteriorates for the more distant past. I have argued though, that this accuracy does not deteriorate much over short periods of time. Still, as a comparison with the panel data results, I run the regression of Table 6.5 using cross-sectional data, rather than panel data. Since the cross-section uses the most recent data, it suffers less from this deterioration. The results are in Table A7 of the Appendix. This table shows that the results are similar to Table 6.5. Namely, the Islamic dummy coefficient is not significant for CGQ and A4CG, although it is positive (3 and 2, respectively) and approximately the same size as in Table 6.5. For IND, the coefficient remains negative and insignificant (-0.1). Finally, the coefficient stays positive, significant (5% level), and the same size (2) for BBG.

Table 6.6: Parsimonious model

This table contains the results of regressing corporate governance quality (the dependent variable) of S&P500 firms (as of September 2013) on an Islamic dummy and a maximum of 5 firm-based control variables (the independent variables). Corporate governance quality is measured by CGQ, BBG, IND, and the A4CG. The main variable (Islamic) is a dummy that is 1 when a firm is Islamic and 0 otherwise. The control variables are firm and CEO characteristics and time, industry, and state dummies. All control variables (except for the Islamic dummy, Top shareholder, CEO Stock ownership, CEO duality, and the fixed effect dummies) are lagged one period (one year) to mitigate reverse causality. The data set runs from 2010 to 2012. However, data for the Islamic dummy, Top shareholder, CEO stock ownership, CEO duality, and the state and industry dummies is from 2013 since I do not have historical data on these variables. For details on the source, description, and calculation of all these variables, see Table A5 in the Appendix. Standard errors are corrected for heteroscedasticity and autocorrelation using the Newey-West (1987) estimator. The asterisks, ***, ** and * indicate significance at the 1%, 5%, and 10% level, respectively.

Independent variable	**Dependent variable**			
	CGQ	BBG	IND	A4CG
Intercept	-18.99	39.42***	85.24***	80.32***
	(12.08)	(2.61)	(2.30)	(3.09)
Islamic	2.76	1.88***	-1.92**	1.90
	(2.81)	(0.62)	(0.95)	(1.54)
Receivables		-0.05*		
		(0.03)		
Cash				0.10
				(0.07)
Size		3.55***		
		(0.58)		
Age		0.02***		
		(0.01)		
Women on board	0.41***	0.10***	0.18***	
	(0.13)	(0.03)	(0.05)	
Top shareholder			-0.27***	
			(0.07)	
Tobin's Q	-4.14***			-1.29**
	(1.24)			(0.64)
Dividend payout	0.62**			0.26***
	(0.26)			(0.08)
IND	1.02***			
	(0.11)			
Board duration	-5.58***			
	(1.21)			
CEO stock ownership			-0.60***	
			(0.14)	
CEO duality			3.70***	
			(0.86)	
Model	OLS	OLS	OLS	OLS
Industry and state fixed effects	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes
Observations	943	888	898	962
Adjusted R^2	28.4%	28.4%	24.2%	4.2%

6.5.4. Other minor robustness tests

I conduct several additional minor robustness tests. I (i) redo all the regressions of Table 6.5 and 6.6 without lagging the control variables, (ii) use a different proxy for leverage (leverage based on book value, following Jiraporn et al., 2012), (iii) use a different proxy for size (log of assets, following Jiraporn et al., 2012 and Harford et al., 2008), (iv) use a different proxy for profitability (Ebitda to total assets, following Jiraporn et. al., 2012 and Arping and Sautner, 2010), (v) use a different proxy for age (log of firm age, following Linck et al., 2008), and (vi) control for industry fixed effects using one digit instead of two digit ICB classifications. The results are in Table A8 of the Appendix.

Again, the coefficients of the Islamic dummy stay close to their values in Tables 6.4, 6.5, and 6.6. Moreover, the Islamic dummy coefficients for BBG stay about the same size and significant at the 5% level at least in all specifications.

6.6. Conclusions

This study analyzes whether an Islamic label for listed firms also indicates good corporate governance. This might be the case because Islamic firms are screened for low leverage and recent evidence suggests that governance can substitute leverage as a mechanism for disciplining managers (e.g., Jiraporn et al., 2012; Arping Sautner, 2010). From this view, firms with low leverage should have better governance.

However, I find no significant differences in corporate governance quality between Islamic and non-Islamic S&P500 firms. Also, when I regress governance quality on an Islamic dummy and control variables (while accounting for fixed effects), I do not find strong evidence that this dummy is significant. I use four proxies for overall governance quality and the Islamic dummy is only significantly positive for one of them, namely BBG.

This finding is in contrast with the more common view that an Islamic label for financial products signals positives attributes, for example, lower risk (Adamsson et al., 2014; Bhatt and

Sultan, 2012). Instead, my findings are more in line with the findings in Chapter 5 that such a label does not signify anything financially meaningful, although it still might be valuable to certain investors.

I also add to the more general debate on whether debt is a substitute for governance. I indeed find some evidence that governance negatively affects leverage and not vice versa, as in Jiraporn et al. (2012) and Arping and Saunter (2010), but this effect is not large and not consistently significant across all four governance quality measures.

Surprisingly, these four measures are not as good a proxy for overall governance as is often assumed. I find that these measures have (i) low correlations, (ii) are explained by different variables, and (iii) vary quite a bit in how much of their variation can be explained by my models (adjusted R^2 ranges from 4% to 30%). This problem has also been highlighted by Daines et al. (2010). It presents a challenge for research on the determinants of good governance because it implies that results found for one measure might not hold for another.

Likewise, my results should be also interpreted with caution because this study: (i) focusses only on large US firms, (ii) uses the current rather than the historical constituents of the S&P500 and DJIM, (iii) replicates the official S&P500 *Shariah* and assumes this replication is a close enough approximation, and (iv) assumes that Islamic firms tend to stay Islamic over short periods of time. Natural extensions to this study would be to address these issues. It would also be interesting to find out how the Islamic label is related to the other ESG criteria.

Finally, I argue that providers of the Islamic label should explicitly include ESG criteria in their screening process. Incorporating these criteria is more in line the principles of Islam and without them, "Islamic" resembles a marketing label more than a quality certification.

Chapter 7. *Halal* Certification for Financial Products: A Transaction Cost Perspective[101]

The previous chapters have shown that an Islamic label does not give Muslim investors any financially meaningful information. Nonetheless, getting such an Islamic label (i.e., a *halal* certification) is expensive, both in terms of actual costs and the time and effort spent on getting it. That is what we argue in this chapter.

Specifically, we argue that although *halal* certification could potentially reduce the high transaction costs related to buying Islamic financial products, in practice these costs are just replaced by transaction costs relating to the certification itself. It takes considerable time (2-3 months) and money (USD 122,000) to obtain a *halal* certification. Partially, this is because the market is highly concentrated and non-contestable. About 20 individual *Shariah* scholars control more than half the market, with the top three earning an estimated USD 4.5 million in fees per year. Moreover, this market seems plagued with problems, most notably a strong incentive for excessively lenient certification, lack of consensus on what is considered *halal*, and sub-standard governance practices. We discuss solutions to these problems and conclude that a neutral non-profit government entity should assume the role of *halal* certifiers.

7.1. Introduction

Standardization and certification are well known methods to reduce transaction costs. From that perspective, we look at the economics of certifying financial products as Islamic. Islamic law (*Shariah*) obligates Muslims to only invest in assets that are *halal* (permissible according to Islam). However, specific knowledge is needed to assess whether a financial product is in fact *halal*. There is a market that fulfills this need, the market for *halal* certification of financial products. This market has some very interesting features with respect to value creation by providing a quality standard. As the demand for Islamic financial products increases, research in

[101] This chapter is based on Hayat, Den Butter, and Kock (2013). See also Den Butter and Hayat (2011).

this area is also on the rise, most notably in banking (see Baele, Farooq, and Ongena, 2014 for a recent overview), mutual fund investing (e.g., Hoepner, Rammal, and Rezec, 2011), and the relationship between Islam and corporate social responsibility (e.g., Williams and Zinkin, 2010; Beekun and Badawi, 2005). *Halal* certification, however, has received limited attention, despite the large role it plays in Islamic finance.

We aim to fill this gap in two ways. First, we describe the market for (financial) *halal* certificates and the process of obtaining certification. Here, we rely heavily on the work of (i) Ünal (2011) for Tables 7.2 and 7.3 and (ii) Grais and Pellegrini (2007) for Table 7.4 and Shamugam and Zahari (2011) for Table 7.1. Second, we identify inefficiencies in this process using transaction cost theory, which we underpin with empirical evidence. Thus, we bring together data and insights from previous research and add the transaction cost view with some empirical evidence. Our main findings are that buying a *halal* financial product entails high transaction costs and these costs are not yet reduced by certification.

The remainder of this chapter is structured as follows: Section 7.2 introduces Islamic finance. Section 7.3 describes the agents that certify financial products as *halal*, namely *Shariah* scholars. Section 7.4 describes a typical certification process. Section 7.5 analyzes how (*halal*) standardization and certification can reduce transaction costs. That analysis is used in Section 7.6 to derive policy implications and recommendations to improve the *halal* certification process. Section 7.7 concludes.

7.2. Islamic finance and the basics of *halal* certification

Islamic finance is a broad term for all financial transactions that are permissible by Islamic law (*Shariah*).[102] Financial products that comply with *Shariah* law are *halal*; products that do not comply are *haram*. The main characteristics of Islamic finance are risk sharing, the prohibition of *riba* (interest), *gharar* (excessive risk), *maysir* (gambling), and products and services that are considered unethical by Islam, such as alcohol and pornography. These restrictions imply that

[102] For a more detailed introduction to Islamic finance, see the references in note 5 of Chapter 2.

Muslims cannot receive or pay interest, they should exactly know the counter value that is offered in a transaction, they may not speculate, and they may not invest in companies that sell unethical products and services. Consequently, buying conventional bonds as well as many derivatives and structured products is prohibited under Islamic law.

There are similarities between Islamic finance and socially responsible/ethical investing. Islamic finance promotes prudence and transparency in investing, sharing risks rather than shifting them, and avoiding products and services that would harm society from an Islamic perspective. Furthermore, in Islamic finance, transactions have to be based on some underlying asset or economic activity. Gambling, for example, is considered *haram* because it involves (potentially) making profit without the actual production of any goods or services. Taking entrepreneurial risk to earn profit, however, is allowed, for example, providing equity capital to a farmer to plant wheat.

According to Kuran (2004), Islamic finance in its current form began at the time of partitioning of India and Pakistan as an attempt to strengthen the Muslim identity of Pakistan. It was most notably advocated by the Pakistani scholar Abul Ala Maududi (1903-1979). Arguably, the first Islamic bank was incepted in Egypt in 1963 (the Mit Ghamr Islamic Bank). Although initially focused on banking, the industry has branched out to capital markets and insurance as well.

Nowadays, there are over 400 Islamic financial institutions operating in 58 countries offering products and services such as banking, equities, mutual funds, insurance, and bonds (so called *Sukuks*).[103] The size of the market is relatively modest, but it has been growing double digits percent per year for a number of years (see Chapter 2). Total Islamic finance assets have already reached a size of USD 1.3 trillion in 2013 (see Chapter 2) and with a potential market of more than 1.6 billion Muslims worldwide, these assets are expected to continue growing.

In order for a financial product to be considered *halal*, it must be certified as such by experts in Islamic law, called *Shariah* scholars. Specifically, these scholars should be experts in *Fiqh Al*

[103] Data taken from: http://econ.worldbank.org/WBSITE/EXTERNAL/EXTDEC/EXTGLOBALFINREPORT/0,,contentMDK:23492074~pagePK:64168182~piPK:64168060~theSitePK:8816097,00.html.

Muamalat, which is Islamic commercial law. Williams and Zenkin (2010) contend that Islam is clear on what is *halal* or not.

However, there are in fact quite different views on what is considered *halal* or not, depending on which school of thought is followed. To understand these differences, we must first introduce the sources of Islamic law. Shanmugam and Zahari (2009) give a good overview and indicate that there are major and minor sources of Islamic law. The main two sources are the *Quran*, which is the holy book for Muslims, and *Hadith*, which are the reported sayings and actions of the Prophet Mohammed. Whatever is explicitly mentioned in the *Quran* or *Hadith* is considered Islamic law.

On the topics not explicitly discussed herein, Islamic scholars can debate, and if they reach consensus, that consensus becomes law (*Ijma*). Furthermore, there is *Qiyas*, the method of deducting law from analogy. Essentially, it is using a preceding ruling from Islamic law and applying it to similar cases. Other (minor) ways to derive Islamic law are *Ijtihad* (personal interpretation of a *Shariah* scholar), *Istislah* (taking the public interest into account), *Istihsan* (juristic preference, exceptions to Islamic law to avoid unfairness), and *Urf* (local or regional practice).

Schools of thought on Islamic law differ mainly in their acceptance of the various sources of law. The liberal views accept more sources, while the stricter views accept fewer sources. Shanmugam and Zahari (2009) and Visser (2009) give concise overviews of the four most widely accepted schools of thought.[104] From most to least liberal, they are: *Hanafi*, *Maliki*, *Shafi'i*, and *Hanbali*.

The *Hanafi* view is most popular (Hoepner et al., 2011). It is based on the writings of Abu Hanifa in 767 and allows personal interpretation (*Ijtihad*), reasoning by analogy (*Qiyas*), consensus among Islamic scholars (*Ijma*), juristic preference (*Istihsan*), and custom (*Urf*).

[104] Islam can (arguably) be divided in two main groups, *Sunni* and *Shia*. Here, we describe the law schools of *Sunni* Islam, to which the largest part (about 85%) of Muslims belong and which are most widely followed. *Shia* Muslims mainly follow the *Jafari* school of thought (Askari et al., 2012).

The Maliki view (founded by Malik Ibn Anas in 795) strongly relies on *Hadith*, but also allows *Ijma*, *Qiyas*, and arguably *Urf*. The Shafi'i view (founded by Muhammad Ibn Idris Al-Shafi'i in 819) relies mostly on *Hadith*. It does not allow *Ijtihad* and *Istihsan*, but does allow *Ijma* and *Qiyas*.

The *Hanbali* school is strictest. It was founded by Ahmad Hanbal in 855 and follows a literal interpretation of the *Quran*. According to this view, the *Quran* and *Hadith* are the sole sources of law. For example, it ranks weaker *Hadith* over valid analogies (El Gamal, 2006).[105]

In practice, the different schools of thought lead to financial products being accepted as *halal* by some schools, but not by others. The distinction between the strictness of the schools is not always sharp, though. In some cases, a more strict school allows a financial product even though it requires flexibility in interpretation, and vice versa. Specific examples are *Urbun* and *Tawarruq*.

Urbun is a contract that resembles a call option.[106] This type of contract was not allowed by the more liberal schools *Hanafi*, *Shafi'i*, and *Maliki*, which argued that it involved *gharar*. The stricter *Hanbali* school, however, permitted it based on certain *hadith*.

Tawarruq is a contract that involves an intermediary (usually a bank) buying a commodity from a dealer and then selling that commodity to its client (the party that needs capital) for a higher price. However, the client is allowed to defer the payment. The client then engages the intermediary to sell the commodity on the spot market on his or her behalf and receives the proceeds of the sale. In a way, this contract resembles a conventional loan, with the difference between the price paid by the intermediary and the price paid by the client being the interest rate of the loan. This contract is also not allowed by the *Hanafi*, *Shafi'i*, and *Maliki* schools, but is allowed by the *Hanbali* school.

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[105] *Hadith* are categorized as strong or weak based on their authenticity, which is determined by their chain of narrators. The most authoritative collection of *hadith* are those by the Islamic scholars Muhammad ibn Ismail al-Bukhari (816-870) and Abul Husain Muslim bin al-Hajjaj al-Nisaburi (824-883), commonly known as Bukhari and Muslim.

[106] This is a contract in which the buyer makes a down payment for an asset to be bought in the future for a pre-specified price. However, the buyer has the right to cancel the contract, in which case the seller keeps the down payment. Otherwise, the buyer pays the remainder of the price for the asset and gains ownership.

The important countries for Islamic finance differ in the schools of thought they follow (Visser, 2009). Malaysia, for example, follows the *Shafi'i* view, while Bahrain and Saudi Arabia follow the *Maliki* and *Hanbali* view, respectively. This might be one of the reasons there are no widely accepted standards for Islamic finance. It may also be a reason that in this case the market for certification and standardization will not evolve to a "winner takes all" market, but that in the end there will be a few competing *halal* certifiers, which reflect the different schools of thought.

Partly because countries adhere to different schools of thought, there is, as yet, no widely accepted authority that oversees and legally enforces the quality of *halal* certification for financial products. Apparently because of these different schools of thought the network externalities of standardization, which may bring about a "winner takes all" market (see, e.g., Schilling, 2002), are not (yet) large enough generate one or a few uniform standards of *halal* certification.

There are, however, a number of important standard setting bodies (Table 7.1). The most well-known and influential are the Bahrain-based Accounting and Auditing Organization for Islamic Financial Institutions (AAOIFI) and the Malaysian Islamic Financial Services Board (IFSB).

Both organizations issue standards on interpretation of Islamic law, with the AAOIFI focusing more on accounting and auditing and the IFSB focusing on risk management and corporate governance. Others are the Malaysian Accounting Standards Boards (MASB), the International Islamic Financial Market (IIFM), and the Liquidity Management Centre (LMC).

The MASB is similar to (and works closely with) the AAOIFI, but has a focus on Malaysia. The IIFM's main focus is on standardization of Islamic financial products and documentation, for example, by providing standardized Islamic swap contracts. The LMC helps Islamic banks and financial institutions invest their surplus funds in short- and medium-term Islamic financial products (mostly *Sukuk* bonds).

Table 7.1: Standard setting bodies in Islamic finance

This table contains the names, descriptions, websites, and domiciles of some important standard-setting bodies in Islamic finance. The data is based on Shanmugam and Zahari (2009), Visser (2009), and the websites listed in the table.

Name	Description	Website	Country
AAOIFI	The Accounting and Auditing Organization for Islamic Financial Institutions (AAOIFI) is an international organization that prepares accounting, auditing, governance, ethics, and *Shariah* standards for Islamic financial institutions and the industry. It also provides professional designations such as the Certified Islamic Professional Accountant (CIPA) and Certified *Shariah* Adviser and Auditor (CSAA). The AAOIFI was established on 26 February 1990 in Algiers.	www.aaoifi.com	Bahrain
IFSB	The Islamic Financial Services Board (IFSB) is an international organization that issues standards for the supervision and regulation of Islamic financial institutions. Its areas include corporate governance, risk management, capital adequacy, supervisory review processes, transparency, market discipline, recognition of ratings on *Shariah* compliant financial instruments, and the development of money markets. It also arranges summits, conferences, and workshops on issues relating to Islamic banking.	www.ifsb.org	Malaysia
MASB	The Malaysian Accounting Standards Board's (MASB) primary role is to develop accounting and financial reporting standards. Its financial reporting standards are developed in harmony with the AAOIFI. The standards are developed specifically to meet the needs of Islamic financial practices as well as the needs of the regulatory and economic structure in Malaysia.	www.masb.org.my	Malaysia
IIFM	The International Islamic Financial Market (IIFM) is an organization dedicated to enhance cooperation among Islamic countries and their financial institutions, specifically in promoting trading in the secondary market for *Shariah* compliant financial instruments. It does this, for example, by standardizing Islamic financial instruments.	www.iif.net	Bahrain
IIRA	The Islamic International Rating Agency (IIRA) is similar to a credit rating agency, but next to creditworthiness, it also provides ratings for *Shariah* compliance and corporate governance ratings to financial institutions.	www.iirating.com	Bahrain
LMC	The Liquidity Management Centre (LMC) was established to facilitate investment of the surplus funds of Islamic financial institutions into quality short- and medium-term financial instruments structured in accordance with the *Shariah* principles. It seeks to develop an active secondary market for short-term *Shariah* compliant treasury products.	www.lmcbahrain.com	Bahrain

In addition, the International Islamic Rating Agency (IIRA) provides credit and *Shariah* compliance ratings for financial institutions. Interestingly, while in most cases *Shariah* compliance is binary (either *halal* or *haram*), the IIRA provides *Shariah* ratings ranging from AAA to B. Here AAA indicates the highest level of *Shariah* compliance, while B indicates that the entity/instrument is *Shariah* compliant, but has weaknesses in some areas of *Shariah* quality. A rating below B would thus be considered non-*Shariah* compliant.

This is another example of difficulties for common consumers to evaluate Islamic financial products. It is not quite clear whether financial products can in fact be considered just *halal* or not or whether a certification should indicate the level of *Shariah* compliance as with the IIRA ratings. Table 7.1 also underscores the influence of Bahrain, as most of the important standard-setting bodies in Islamic finance are based there. Malaysia is the second most influential country. It may foreshadow that on the further road to a "winner takes all" market, in the end there will be two competing world standards for *halal* certification, namely that of Bahrain and that of Malaysia.

7.3. *Shariah* scholars

Shariah scholars are crucial for the Islamic Finance industry. El Gamal (2008) even proposes that the major source behind the industry's growth is due to *Shariah* scholars selling their expertise. According to El Gamal, they have convinced the Muslim public that conventional investing is *haram*, consequently creating demand for *halal* investments. Conveniently, the eligibility of these investments just happens to be determined by the same people that indicated it was *haram* in the first place.

According to Zawya.com, a Middle East-focused online business intelligence platform, there are 391 *Shariah* scholars in the World[107] as of November 2011, and their number seems to be growing fast. Zawya.com obtains data from Funds@Work, a consultancy firm specializing in Islamic finance. According to Funds@Work, there were only 221 *Shariah* scholars in 2010.[108]

[107] Data taken from: http://www.zawya.com/*Shariah*scholars/sch_results.cfm.
[108] Taken from: www.financeislamiquefrance.fr/useruploads/files/*Sharia*-Network_by_Funds_at_Work_AG.pdf.pdf.

The difference between the 391 and 221 scholars may be partially accounted for by better coverage and data collection rather than an actual increase in the number of scholars.

There are also *Shariah* advisory firms. It is difficult to obtain reliable information on how many of these firms there are.[109] However, the advisory firms are less important than the scholars. The industry is driven by the scholars, who often sit together on the same *Shariah* boards. The difference between *Shariah* advisory firms and *Shariah* boards is that the advisory firms act as the advisor to parties looking for a certification and intermediate between these parties and *Shariah* scholars. The advisory firms assist their clients in the process of applying for a certification. They often have a pool of (well-known) *Shariah* scholars that they use to form a *Shariah* board for each certification. In addition, they provide consulting and training on how to retain a certification.

So who are these scholars? Table 7.2 (based on Ünal, 2011) shows some descriptive statistics and the names (first column) of the top 20 *Shariah* scholars, based on the number of board positions they hold.

Table 7.2 reveals that the market for financial *halal* certificates is highly concentrated. Since each financial product is certified by a separate *Shariah* board incepted for that very purpose, the number of board positions can be interpreted as the number of financial *halal* certificates given per year. The total number of board positions is 1141 (as of July 2010). The top 20 scholars hold more than 54 percent of the entire market, while the top three scholars hold 21 percent of the market. Data collected by Ünal (2011) shows that the top 20 percent of the scholars (80 out of 391 scholars) control 80 percent of the market, which is a typical Pareto distribution found in many other economic phenomena (Mizuno et al., 2008).[110]

The last two columns of Table 7.2 show the ranking of the top scholars, based on the number of board positions (column five) and on positions in standard setting bodies (column six). There is

[109] Our search suggests that their number is limited, though.
[110] Phenomena characterized by Pareto distributions are those in which approximately 80 percent of the phenomenon is caused by 20 percent of the cause. Mizuno et al. (2008), for example, find that 80 percent of revenues of a Japanese convenience store chain are attributable to only 20 percent of its customers.

significant overlap between the two rankings. Nearly all the top 10 scholars based on the board position ranking are in the top 20 of the standard setting body ranking. Thus, the very people that control the market are the ones responsible for governing it. From a corporate governance perspective, too much power is concentrated in the hands of a small number of people. There is a strong conflict of interest here. The monitors are, in fact, monitoring themselves.

In addition, Table 7.2 indicates that most of the top *Shariah* scholars are from the Middle East (mostly from Kuwait or Saudi Arabia), although Malaysia, Pakistan, and Sudan are also represented. The only scholar from a non-Muslim country is Yusuf Talal de Lorenzo from the United States.

Table 7.2: Top 20 *Shariah* scholars

This table contains the names, country of origin, and ranks of *Shariah* scholars. Ranks are based on the number of board positions in *Shariah* boards and on the number of positions in standard setting bodies. Data is from Ünal (2011).

Name	From	# Board positions	% (cumulative)	Rank # board positions	Rank # positions in standard setting bodies
Nizam Mohammed Yacoubi	Bahrain	85	7	1	6
Abdul Satar Abdul Karim Abu Ghuddah	Syria	85	15	2	1
Mohammed Ali Elgari	Saudi Arabia	71	21	3	3
Abdul Aziz Khalifa Al-Qassar	Kuwait	39	25	4	not available
Abdullah Sulaiman Al Manee'a	Saudi Arabia	36	28	5	7
Hussein Hamid Hassan	Egypt	31	30	6	4
Mohammed Daud Bakar	Malaysia	27	33	7	2
Essa Zaki Essa	Kuwait	27	35	8	not available
Ali Mohuddin Al'Qurra Daghi	Qatar	25	37	9	5
Ajeel Jasem Al-Nashmi	Kuwait	24	39	10	18
Esam Khalaf Al-Enezi	Kuwait	21	41	11	not available
Esam Mohammed Ishaq	Bahrain	21	43	12	not available
Khaled Mathkour Al Mathkour	Kuwait	21	45	13	not available
Mohammed Imran Ashraf Usmani	Pakistan	20	47	14	13
Mohammed Taqi Usmani	Pakistan	16	48	15	8
Mohammed Abdul Razaq Al-Tabtabae	not available	16	50	16	not available
Yusuf Bin Abdullah Al-Shubaili	not available	14	51	17	9
Abdullah Bin Mohammed Al Mutlaq	Saudi Arabia	14	52	18	not available
Ahmad Bazie Al-Yaseen	Kuwait	14	53	19	not available
Mohammed Abdulhakim Zoeir	United Arab Emirates	14	54	20	not available
Rest		520	100		
Total		*1141*			

Table 7.3 (based on Ünal, 2011) shows data on the education of the *Shariah* scholars. Almost all top scholars have a PhD in *Fiqh Al Muamalat*. However, only about a third of the top scholars have a degree in Economics or Finance,[111] while Legal Studies and Arts dominate (Panel A). This raises the question whether the scholars are competent enough to evaluate increasingly complex financial products. An interesting recent development is that more and more Western universities and private companies now offer Master's-level programs and "certificates" in Islamic finance. Some examples are Durham University (UK), IE Business School (Spain), RSM Erasmus Business School (The Netherlands), and the International Centre for Education in Islamic Finance (INCEIF, Malaysia). It remains to be seen, however, how much merit these programs have in the industry.

Egypt is dominant when it comes to universities attended by *Shariah* scholars (Panel B). Sixty-one of 320 scholars that we identified obtained his degree from an Egyptian university, with Saudi Arabia second (53 scholars) and Malaysia third (44 scholars). The dominance of Egypt is due to Al Azhar University, which is widely regarded as one of the most prestigious Islamic universities in the world. Saudi Arabia's dominance is also understandable as it is the birthplace of Islam. The popularity of Malaysian universities is interesting given that only 3 of the top 20 scholars are Malaysian. However, it is understandable because Malaysia arguably has the most sophisticated Islamic finance industry of all Muslim countries, mainly due to strong government support (Jobst et al., 2008).

[111] Panel A is based on the top 20 scholars. Data is also available for the top 100 scholars, but we omit it since it is very similar to the top 20.

Table 7.3: Education of *Shariah* scholars

This table contains data on the additional education attained by *Shariah* scholars and their respective universities. Data is from Ünal (2011).

Panel A: Education of *Shariah* scholars

Education besides Shariah	*(%) of scholars*
Legal studies	28
Arts	23
Economics	23
Finance	11
Business administration	6
Education	6
Other	5
Total	*100*

Panel B: Universities attended by *Shariah* scholars

University	*Country*	*Scholars*
Al Azhar University	Egypt	44
Imam Muhammed Ibn Saud Islamic University	Saudi Arabia	25
International Islamic University Malaysia	Malaysia	19
University of Malaya	Malaysia	16
Islamic University of Medina	Saudi Arabia	15
Umm Al Qura University	Saudi Arabia	13
University of Damascus	Syria	9
University of Cairo	Egypt	9
University of Jordan	Jordan	8
Karachi University	Pakistan	8
Ain Shams University	Egypt	8
University of Kuwait	Kuwait	7
Edinburgh University	Scotland	7
University of London	England	6
National University of Malaysia	Malaysia	6
Harvard University	USA	6
Qatar University	Qatar	5
International Islamic University Islamabad	Pakistan	5
Darul Uloom Karachi	Pakistan	5
University of Chicago	USA	4
United Arab Emirates University	UAE	4
University of Wales	Wales	3
University of Khartoum	Sudan	3
Omdurman Islamic University	Sudan	3
McGill University	Canada	3
Islamic Science University of Malaysia	Malaysia	3
Darul Uloom Deoband	India	3
Boston University	USA	3
Birmingham University	England	3

Furthermore, Ünal (2011) states that the top *Shariah* scholars tend to sit on the same boards together. For example, scholars that sit on the AAOIFI have an average probability of more than 70 percent of sharing a board with another AAOIFI member. This indicates that the suppliers of *halal* certification form a rather closed network.

There are no widely accepted criteria for what actually constitutes a *Shariah* scholar, or which of these scholars are allowed to give a *halal* certification for financial products. In only a few countries has the government identified specific criteria.

Table 7.4 (based on Grais and Pellegrini, 2007) shows these criteria to determine eligibility of *Shariah* scholars for a number of countries. In these cases, being an eligible *Shariah* scholar means that such a person is allowed to certify financial products as *halal*. As mentioned before, in most cases, it is not just one scholar that gives the certification, but a *Shariah* board, often consisting of three members. To the best of our knowledge, Malaysia and Pakistan are the only countries that have specific requirements for people wanting to become *halal* certifiers of financial products.

In Malaysia, these certifiers (also called *Shariah* advisors) have to be registered with the Malaysian Securities Commission. They have to apply for a registration and meet "fit and proper criteria", which, for example, include a Bachelor's degree or higher in *Fiqh Al Muamalat* and at least two years of experience in Islamic finance. This list of registered *Shariah* advisors is publicly available.[112] Interestingly, the list shows only 45 names. Comparing these names to the first column of Table 7.2 reveals that only five of the top 20 scholars are registered *Shariah* advisors, suggesting that such registration is not yet taken seriously by the industry.

In Pakistan, a minimum level of education and experience as well as minimum grades are required. In most other countries, the criteria for assessing *Shariah* scholar eligibility are undeveloped. Many countries do not specify any criteria, while others only vaguely require that "members must have the proper experience" and "show honesty and integrity".

[112] http://www.sc.com.my/list-of-registered-*Shariah*-advisers/.

Table 7.4: Fit & proper criteria for *Shariah* scholars

This table contains the criteria used in various Islamic countries to assess whether a person can call himself a *Shariah* scholar. Data is from Grais and Pellegrini (2007) and country websites.

Country	Fit & proper criteria	Criteria based on	Restrictions on board positions	Required board members
Bahrain	General integrity, reputation, competence, experience, and conflict of interest clauses.	Bahrain Monetary Agency (BMA) Rule Book, Volume 2, LR-1A.2	Unspecified	Minimum three
DIFC	Competence (based on previous experience and qualifications), conflict of interest (may not be directors or controllers of the institution they are reviewing).	DFSA Rulebook: Islamic Financial Business Module	Unspecified	Minimum three
Indonesia	Integrity (not on Disqualified List of Bank Indonesia), competence (have knowledge of and experience in *Fiqh Muamalat*, and knowledge of banking/finance), financial reputation (no history of bankruptcy).	Bank Indonesia Regulation Number: 11/3/PBI/2009	Max four	Minimum two; maximum 50% of number of Board of Directors
Jordan	Unspecified	Jordan Banking Law of 2000, Law No. 28 of 2000, as amended by temporary Law No.46 of 2003	Unspecified	Unspecified
Kuwait	Unspecified	Kuwait Law No.30 of 2003		Minimum three
Lebanon	Unspecified (background must be in Islamic law and finance/banking).	Lebanon Law No. 575	Unspecified	Three
Malaysia	Several criteria, among others: Must be a Muslim, must be a registered with the Malaysia Securities Commission, minimum bachelor's degree from a recognized institution in *Fiqh Muamalat*, minimum of two years' experience in Islamic finance, proficiency in Arabic and English, must attend at least 75% of *Shariah* Committee meetings, and integrity and conflict of interest clauses.	Amendment of Central Bank of Malaysia Act 1958, Guidelines on the Governance of *Shariah* Committee for the Islamic Financial Institutions, BNM/GPS1	Max one per industry	Unspecified
Pakistan	Minimum four years of experience in religious rulings, at least a *Shahadat ul Aalmia* degree (a standardized *Shariah*-based educational program) from any recognized Board of *Madaris* with minimum 70% marks and Bachelor's Degree with a minimum of 2nd Class, sufficient understanding of banking and finance, integrity and conflict of interest clauses.	State Bank of Pakistan, IBD Circular No. 02 of 2004, Annexure-IV, Revised vide IBD Circular 2 of 2007	Max one	Minimum one
Philippines	Unspecified, members must be Islamic scholars and jurists of comparative law.	Manual of Regulations for Banks, Implementing Rules and Regulations of Republic Act No. 6848	Unspecified	Minimum two; maximum five
Thailand	Financial integrity, competence, honesty, and conflicts of interest.	Islamic Bank of Thailand Act B.E2545.	Unspecified	Maximum four
UAE	Unspecified	Federal Law No. 6 of 1985	Unspecified	Minimum three

The fourth column of Table 7.4 shows that only three countries have limited the number of *Shariah* board positions a scholar can have. Malaysia and Pakistan allow only one, while Indonesia allows four. Malaysia stands out, since the top two *Shariah* scholars (Nizam Mohammed Yacoubi and Abdul Satar Adbul Karim Abu Ghuddah) both have 85 board positions and are clearly violating this rule. Still, they are both on the registered *Shariah* advisor list of Malaysia's Securities Commission.

7.4. The *halal* certification process

The *halal* certification process for financial products is costly and lengthy. The scheme presented in Figure 7.1 is based on a Request For Proposal (RFP) that we sent to a number of *Shariah* advisory firms for the certification of an Islamic Equity Fund (IEF).[113]

IEFs are very similar to conventional mutual funds, except they exclude firms from industries that are considered unethical, such as alcohol and pornography and firms with high leverage; usually a leverage ratio of no more than 33 percent is allowed.[114] IEFs have become very popular among Muslim investors in recent years, even though many of them have been found to underperform the Islamic market (e.g., Hoepner et al., 2011; also see Chapter 4).[115]

In the RFP, we requested an overview of the certification process and the costs. We received a reply from eight companies out of 14 RFPs submitted, of which six provided an overview of the certification process. From this, we constructed a typical *halal* certification process for a common Islamic financial product.

[113] We sent the same email (available on request) to all the companies. In this email, we described some very basic characteristics of the fund, namely that it has an approximate size of EUR 200 million, invests in listed equities, is targeted mostly for institutional investors, and has a geographical focus. For confidentiality reasons, we do not report the company names.

[114] There is no consensus on what the threshold value for the screens should be. One of the screens is a liquidity ratio with current assets in the nominator and either total assets or market capitalization in the denominator. The eligibility threshold for this ratio ranges from 33% to 80% (Derigs and Marzban, 2008).

[115] El Gamal (2006) mentions another problem with Islamic mutual funds, namely that the Islamic jurists that declared mutual fund investing *halal* characterized ownership in the fund as being the same as ownership of the underlying stocks. This is usually not the case for these funds.

Figure 7.1: The *halal* certification process

This figure contains an overview of the *halal* certification process of a typical Islamic financial product (in this case, an Islamic investment fund). The overview is based on a sample of six replies to a Request For Proposal (as described in Section 7.4) sent to several *Shariah* advisory companies.

Finding and contracting a certification party	Pre certification	Certification	Post certification
• The party wishing to receive a *halal* certification for a security finds a party offering these services. • The client explains the scope of the project and requests a proposal for the offered services. • The certification party replies to the Request for Proposal and describes its exact services. • Both parties agree to a contract describing their rights and obligations. • The certification party mobilises a team, consisting of *Shariah* scholars and other employees.	• Detailed review of the security's legal documents. • Compilation of Pre and Interim *Shariah* Examination Reports (PSER and ISER respectively). • Amendments to the security's structure are proposed. • Post amendment review of legal documents and structure of security. • Final *Shariah* Examination Report (FSER).	• The *Shariah* Advisory Board reviews the FSER and issues a *fatwa* declaring the security *halal*.	• Periodic monitoring of *Shariah* compliance. • Review frequency: quarterly or annually depending on the type of product.
3 - 4 weeks	8 -10 weeks	2 - 3 days	Continuous

As Figure 7.1 shows, the first part of the process is finding and contracting a party that is able and willing to provide a certification. Based on our sample, this process takes approximately 3-4 weeks. In this stage, the panel of *Shariah* scholars (the *Shariah* board) that will certify the product is assembled. The party looking for certification has to choose between developing the legal structure of the product itself, with a risk of complete rejection, or developing it in cooperation with the certifier and incurring higher costs.

In the second stage, the main legal documents are drafted and subjected to a preliminary review. A Pre- and Interim *Shariah* report is written, containing proposed changes in the product's (legal) structure. The client incorporates these changes and re-submits the legal documents to the certifier. Based on the revised documents, a final *Shariah* report is written, which is sent for review to the *Shariah* board.

The third stage is the actual certification. Here, the *Shariah* board reviews the final *Shariah* report and accepts or rejects the product as being *halal*. This process takes approximately two to three days. It results in a document provided to the client with a signed statement by the *Shariah* board that the relevant financial product is deemed *halal*.

The final stage is an ongoing process in which the *Shariah* board regularly re-assesses the product and retains or withdraws the certification. Depending on the product, this takes place quarterly or annually.

The conclusion from our RFP and the answers we obtained is that the process requires involvement from the certifier throughout. The certification itself requires a relatively small amount of time (two to three days), but the pre-certification process is quite lengthy. A large part of the pre-certification process is identifying and contracting a certifier.

Finally, retaining the certification requires continuous monitoring. The fact that it takes a considerable amount of time to have a financial product certified as *halal* could hinder the industry's growth. Benaissa, Jopart, and Tanrikulu (2007) give the example of an Islamic bank in

the Gulf region that developed a new financial product in two months, and then had to wait three months to obtain *halal* certification.

Although there is only anecdotal evidence on the actual costs of obtaining a *halal* certification for financial products, the costs appear to be significant (e.g., Morais, 2007; Devi, 2008). In order to obtain a fair estimate, we explicitly asked for a description of the costs in our RFPs. Of the eight companies that replied, seven gave an indication of these costs.

There are two cost components, a fixed payment for the initial certification and a periodic payment for re-certification, which must be paid throughout the life of the product. Based on the responses to our RFPs, Table 7.2, and data from Ünal (2011), we make an estimate of the market size for financial *halal* certificates (Table 7.5).

Table 7.5 shows that the fixed costs range from USD 25,000 to USD 125,000 and the annual costs range from USD 6,000 to 60,000,[116] with averages of USD 88,000 and 34,000 for fixed and annual costs, respectively. Note the wide range of costs between different parties, which indicates lack of competition and inefficiencies.

Table 7.5 also shows that obtaining a *halal* certificate for a common financial product costs, on average, around USD 122,000 the first year and USD 34,000 in the years thereafter. To assess whether these costs are high, a benchmark is needed. A natural benchmark might be the cost of obtaining another ethical rating from a third party, namely an ESG rating (see Chapter 2 for a description of ESG). Such parties do exist (see Novethic, 2013 for an overview). Unfortunately, we could not find data on how much these firms charge for providing these ESG ratings.

[116] The ranges are based on overall minima and maxima. They cannot be interpreted to say that the cheapest certification is USD 32,000 (6,000 +25,000). The cheapest overall costs for certification we find are USD 85,000.

Table 7.5: Financial characteristics of *halal* certification

This table contains data on costs of getting a *halal* certification, an estimate of the market size of halal certifications, and the fees collected by *Shariah* scholars. All figures are in USD 1000s. Data is from Ünal (2011), received replies to the Request For Proposals described in Section 7.4, and authors' estimations.

	Minimum	Maximum	Average	
Fixed cost per board	25	125	88	
Annual cost per board	6	60	34	
Total cost per board	*31*	*185*	*122*	
Average cost per board				122
Total number of board positions				1,141
Market Size average				*138,795*
Maximum cost per board				185
Total Number of board positions held by top three scholars				241
Average members per board				3.3
Estimated average annual salary per scholar				*4,504*

However, a credit rating might serve this purpose as well since it is also a certification provided by a third party, paid for by the client who requests it and serving a similar purpose, namely providing certain information about the relevant financial product. The major difference between the two is the type of information that the certifier provides. Where an Islamic certification indicates whether a financial products is *halal*, a credit rating indicates the probability that a bond issuer might default on its obligation to pay interest and redeem the bond.

The costs of getting a *halal* certification are similar to getting a credit rating. Namely, the fees charged by Moody's, one of the two major credit rating agencies (the other one being S&P) are as follows.[117] For rating corporate bonds, Moody's charges a fee of 0.06% of the issue size with a minimum fee of USD 90,000 and 0.055% of the issue size for rating a sovereign bond, with a minimum fee of USD 50,000. With an issue size of USD 200 million, this translates to about 120,000 USD, assuming 0.06%, or 110,000 USD, assuming 0.055%.[118] Furthermore, periodic review of these ratings is estimated to be around USD 25,000 per year (Langohr and Langohr, 2009).

[117] Based on Moody's fee schedule as of January 2013, retrieved from: ftp://ftp.leesburgflorida.gov/Finance/Holland%20&%20Knight/Holland%20&%20Knight%20Request%202-7-13/Moody%60s%20signed.pdf.

[118] This is about the size of the investment fund we described in the RFP we sent to the several *halal* certification providers.

Thus, if credit rating ratings can be seen as a benchmark for the costs of financial product certification, the initial costs of a *halal* certification are slightly higher and the period costs are slightly lower than this benchmark, but overall comparable. This should be interpreted with caution, though, since it can be argued that a credit rating is too different from a *halal* certification to be a considered a benchmark.

Table 7.5 also shows that the market for *halal* certificates is small when set against the total size of the Islamic Finance industry. Given the number of current *Shariah* board positions (1,141) and the average costs per board (USD 122,000), we estimate the total value of the market for *halal* certification to be USD 139 million. Moreover, if we assume that the high-end costs are typical for at least the top three *Shariah* scholars, we can estimate their annual income to be around USD 4.5 million per scholar.[119] Such generous compensation makes the scholars prone to opportunistic behavior and gives them a strong incentive to be lenient in granting *halal* certifications.

[119] Calculated as the product of the total costs per certification (USD 185,000) and the total number of board positions of the top three scholars (241), divided by the average size per board (3.3) and the sample size (3). This should be seen as a gross income figure, i.e., without taking into account other (fixed) costs of the *Shariah* advisory firm. However, we assume these to be relatively small compared to the total costs.

7.5. *Halal* certification as a standard

In this section, we use transaction cost theory to detail why transaction costs are especially high for Islamic financial products and how *halal* certification can, in principle, reduce them.

The main characteristic of transaction cost economics (TCE) is that it departs from the assumption that transactions are free (Coase, 1937, 2005; Williamson, 1985). Broadly defined, transaction costs are all costs involved in entering into, implementing, and complying with a transaction (Den Butter, 2012). This entails direct transaction costs such as transportation costs and tariffs as well as indirect costs such as search, contracting, and monitoring, which can sometimes outweigh the direct costs.

Den Butter and Mosch (2003) describe how such costs can arise during various stages of a transaction. In the first stage, buyers and sellers of a certain product/service must meet each other. In this stage, the buyer is looking for a reliable party that is selling the product he needs for his preferred price to quality ratio. The seller, on the other hand, is trying to find a reliable party to sell his product or service to for the preferred price. Since the information that both parties need is neither free nor easily accessible or complete, both parties must incur search costs.

The second stage consists of negotiating the terms of the transaction. Transaction costs arise here because time and money have to be spent to specify and negotiate the rights and obligations of both parties and lay out the consequences of default (contracting costs).

In the third stage, costs are incurred to ensure that both parties abide by the terms of the agreement. These costs include monitoring costs and, if necessary, enforcement costs.

In the case of Islamic financial products, some of these transaction costs are much higher than for regular financial products for two reasons. First, Islamic financial products are credence goods, which are goods of which the quality cannot be verified even after purchase (Dranove and

Jin, 2010).[120] The buyer of an Islamic financial product cannot accurately verify the quality (in the sense of being *halal* or not). Even if the buyer of the financial product has some knowledge to evaluate whether it is *halal*, he cannot truly verify this since what is acceptable to one school of thought may not be so for another school. This exacerbates information asymmetries between buyers and sellers and creates a stronger demand for information on quality (Dranove and Jin, 2010).

Second, Islamic financial products are highly asset specific. Williamson (1985) mentions asset specificity as one of the main reasons for the existence of transaction costs. It is defined as the extent to which an investment supporting a transaction has more value in that specific transaction than for any other purpose.[121] Asset specificity determines the scope of the continuing interest of both contracting parties in each other (Williamson, 1985). In the absence of asset specificity, markets are perfectly contestable, and individuals will be unwilling to invest in continuing a specific economic relationship.

Asset specificity relates to goods or services that are bound to certain specifications. When the first transaction has been defined and approved with respect to these specifications, the following transactions can take advantage of the fact that the specifications are known and thereby fewer transaction costs have to be incurred.

By contrast, the more goods or services are tailored to the individual requirements of the buyer, the higher the asset specificity. If someone wants to buy an Islamic financial asset, for example, a non-listed company, the buyer will have to invest considerable time and money to assess whether it is *halal*. Such investments are quite specific and include, for example, detailed knowledge of *Fiqh Al Muamalat*.

[120] Some typical examples of credence goods are education and medical treatment.

[121] As an example, suppose a Dutch person wants to conduct a trade with a person from Rwanda. If the Dutch person does not speak *Kinyarwanda* (the official language of Rwanda) nor vice versa, and neither speak English, one person has to invest in learning the other party's language to facilitate the trade. Suppose this is the Dutch person. The investment (time, effort, and money) the Dutch person has to make in order to learn *Kinyarwanda* is an asset specific investment because not many people outside Rwanda speak *Kinyarwanda*. Thus, speaking it is only valuable within the Dutch-Rwanda trade relationship. This is not the case for English. The value of learning English is not specific to this transaction relationship. It is likely to benefit the Dutch person in other trade relationships as well since English is spoken widely throughout the world.

Moreover, such investments will not benefit that person much in other transactions; they are tied to buying Islamic assets. It is a well-established concept in transaction cost economics that due to opportunistic behavior underinvestment will occur in relationships requiring specific investments (Nunn, 2007).

In our example, the opportunistic behavior arises because the seller of a *halal* financial product might game the buyer by asking a higher price after the buyer has already invested in the relationship. The buyer will anticipate such behavior and consequently underinvest in the relationship, and thus in some cases the transaction will not occur.

Standards are able to reduce transaction costs because they reduce information asymmetries and asset specificity and enhance trust between buyers and sellers. A standard can be seen as a label given to a product or service that conveys certain information about its characteristics, including quality.

In our case, a *halal* certification is a standard that reduces the transaction costs associated with buying an Islamic financial product. The buyer no longer has to find out whether the product is, in fact, *halal*. Contracting costs are reduced since the contracts need not specify as many terms (namely the ones relating to the product being *halal*).[122] In addition, the buyer does not have to worry about monitoring and enforcement since these costs are borne by the seller, who is responsible for maintaining the *halal* certificate.

In order to work properly, a standard has to be unambiguous, universally accepted, and credible. Unfortunately, as we have seen, these qualities are currently lacking in *halal* certificates. They are not universally accepted, their meaning is ambiguous, and their credibility is questionable given the incentive of the certifiers to be excessively lenient.

[122] More specifically, Islamic financial products often make use of Special Purpose Vehicles (SPVs) as an intermediate trading party to make Islamic financial products *halal*. See El Gamal (2006) for some detailed examples.

7.6. Recommendations

The previous discussion shows that *halal* certification as a standard misses the crucial qualities that make standards effective. Consequently, the same problems of asymmetric information and opportunistic behavior exist for *halal* certification as for Islamic financial products themselves. How can these problems be mitigated?

Certify the certifiers: A single outside party that governs the market for certifiers would help, but can only be successful if such a party is independent. Currently, such a role is attempted by the AAOIFI and IFSB, but they seem to lack this quality. Grais and Pellegrini (2007) indicate that there are also national *Shariah* boards (Central *Shariah* Boards) in Malaysia, Kuwait, UAE, Indonesia, Sudan, and Pakistan. However, more than one governing party raises the prospect of different opinions. Furthermore, the current national *Shariah* boards are mainly concerned with standardization of *Shariah* interpretation and disputes within *Shariah* boards. This solution also raises the question of who would govern the many certifiers of certifiers.

Increase competition: Competition in certifier markets could also work, but is problematic when the underlying assets are complex (Skreta and Veldkamp, 2009) or the certification process is not transparent (Farhi, Lerner, and Tirole, 2008).[123] Both problems are present in *halal* financial products. As a result, competition will lead sellers to shop around for favorable certification. In addition, Becker and Milbourn (2011) find that in the case of credit ratings, competition can also lead to lower quality of ratings due to lower expected future profits as a result of the increased competition.

Disclose conflict of interest: Consumers often do not properly discount advice from certifiers even if they disclose a possible bias (Cain, Loewenstein, and Moore, 2005). Cain et al. argue that certifiers might strategically take advantage of this fact and give even more biased ratings. The certifiers may even feel "morally licensed" to do so since any conflict of interest has already been disclosed.

[123] Sellers have an extra incentive to shop around for certification when the application process is not transparent because they do not fear that prior rejections of certification become widely known.

Some authors downplay certifier bias in Islamic finance, arguing that it is mitigated by reputation effects (e.g., Grais and Pellegrini, 2006). *Shariah* scholars that have a reputation of being too lenient will suffer reputation loss and thus refrain from such activities.

However, Mathis, McAndrews, and Rochet (2009) show that for credit rating agencies reputation will only discipline certifiers if a large fraction of their income stems from certifying simple assets. When assets are complex, certification become less stringent, especially when the certifier's reputation is good. In addition, Bolton, Freixas, and Shapiro (2012) show that for rating agencies, certifiers inflate ratings when consumers are naïve or when the expected reputation loss from inflating ratings is low.

Establish non-profit certification: Lessons from new institutional economics (e.g., Ménard and Shirley, 2005) indicate that a single, external, neutral, and not-for-profit party for *Shariah* ratings can mitigate many of the current problems. It may not be feasible to fully avoid partiality, since the members of this new non-profit certification entity would likely include at least some of the current top *Shariah* scholars. However, let us assume that it is not deemed necessary that financial *Shariah* scholars must be scholars in Islamic commercial law with knowledge of finance and that they could also be experts in finance with knowledge of Islamic commercial law.

In that case, a country with good institutional quality and financial talent could specialize in such certification and provide it on a non-profit basis to the international Islamic financial community. The individual scholars would earn a fixed salary and the number of products they can certify would be limited. The Islamic financial community would pay for this service collectively. This arrangement would require (international) governmental intervention, though.

If left to the market, free rider problems will prevent its inception since it would be a public good. Countries willing to host such an organization should have an excellent institutional quality, a highly developed financial sector, and an open culture. Admittedly, all these aspects are difficult to measure.

However, as a proxy for a country's governance quality, the Worldwide Governance Indicators (WGI) of the World Bank could be used (Kaufmann, Kraay, and Mastruzzi, 2010). These indicators have been designed specifically to measure governance quality. They do this by assessing six aspects of country level governance, namely Voice and accountability, Political atability, Government effectiveness, Regulatory quality, Rule of law, and Control of corruption (see Kaufmann, Kraay, and Mastruzzi, 2010, for details on calculations, definitions, etcetera). The WGI are widely used as a proxy for governance quality in empirical economic research (e.g., De Groot et al., 2004; Lankhuizen, De Groot, and Linders, 2011).

Furthermore, as a proxy for financial development, the Financial Development Ranking (FDR) of the World Economic Forum could be used (World Economic Forum, 2012). The FDR evaluates financial development of countries across a wide range of variables such as financial stability, size of the banking sector, quality of non-banking financial services, etcetera. These variables measure the breadth, depth, and efficiency of a country's financial system and capital markets (World Economic Forum, 2012).

Assuming that these two measures are reasonable proxies of governance quality and financial development, they can be used to rank countries.[124] To give an indication of such a ranking (assuming both measures are equally important), we combine data on the top 10 ranked countries based on WGI and FDR.[125] The results are in Table A9 of the Appendix. They show that only three countries rank among the top 10 according to both measures, namely Switzerland, Sweden, and the Netherlands. These countries would make good candidates for hosting a non-profit organization that specializes in providing *halal* certification. We acknowledge that there are many caveats of using such rankings and we acknowledge that realizing such a non-profit solution is far away. Nevertheless, it provides a model to strive for.

[124] As far as we know, there is no well-established proxy for cultural openness. In the future, if such a measure becomes available, it could be added to these two measures.
[125] Since the WGIs are only reported separately, we calculate an overall governance ranking by simply averaging the ranking of each of its six subcomponents.

7.7. Conclusions

Halal certification by a *Shariah* scholar can reduce the transaction costs of buying an Islamic financial product. Individual Muslims no longer have to assess whether the financial product is *halal*, thereby avoiding transaction costs, including the effort required to learn Islamic law and monitoring costs.

However, in practice *halal* certification itself still entails high explicit and implicit transaction costs. The explicit costs of certifying an investment fund are estimated to be around USD 122,000 per year for the first year and USD 34,000 per year in the following years. These costs are comparable to getting a credit rating for bonds. In addition, there are implicit costs that arise due to the relatively long time it takes to certify an Islamic financial product (between 11 and 14 weeks on average).

It also remains difficult to assess whether the *Shariah* scholar has provided a good quality certification and whether the assessment is correct. These findings for financial products resemble those of Van Waarden and Van Dalen (2011), who report similar problems in the Dutch market for *halal* certification of food.

In addition to high transaction costs and quality assessment, there are a number of other problems with *halal* certification of financial products. First, contrary to the view of Williams and Zinkin (2010), there is no consensus on what constitutes *halal* due to different schools of thought in Islamic law.

Second, the market for *halal* certification of financial products is highly concentrated and consists of a closed circle of just a handful of individuals. Although there are around 400 *Shariah* scholars, the top 20 supply more than half of the certifications. Earnings of top scholars are high.

We estimate the top three scholars to earn an average of USD 4.5 million per year. Obtaining a position as *halal* certifier is difficult. The top scholars enjoy substantial brand value, and

consequently the cost of obtaining certification differs substantially between well-known and lesser-known scholars.

There is thus a clear risk of what Dranove and Jin (2010) call a certifier bias. The certifiers have a strong incentive to be excessively lenient in giving *halal* certificates to attract business. There is ample evidence of such certifier bias in related industries such as credit ratings (e.g., Mathis et al., 2009; Bolton et al., 2012) and stock recommendation (e.g., Hong and Kubik, 2003). For Islamic finance specifically, it has also been noted by El Gamal (2006).

Third, *Shariah* scholars often sit together on standard-setting bodies (e.g., the AAOIFI) that aim to supervise the industry. As a result, some of these certifiers are supervising themselves, which is bad governance.

Fourth, the competence of *Shariah* scholars in evaluating complex financial products is questionable. Our findings indicate that Malaysia and Pakistan are the only Muslim countries that have specific criteria for financial *halal* certifiers. In principle, anyone with proper knowledge of Islamic commercial law (*Fiqh Al Muamalat*) could qualify. In practice, many of these certifiers have PhDs in *Fiqh Al Muamalat*, mostly from Egyptian and Saudi Arabian universities such as Al Azhar University and Imam Muhammed Ibn Saud Islamic University, while less than 40 percent have degrees in Economics, Finance, or Management. As financial products become increasingly complex, the credibility of these *Shariah* scholars becomes ever more questionable.

In order to deal with these problems we propose several solutions: a certifier for certifiers, more competition, disclosure of conflict, reputation loss, and establishing non-profit certification. The last solution has some important policy implications: a neutral country with high governance quality and a well-developed financial sector should specialize in the oversight of *halal* certifiers. This oversight should preferably be non-profit.

The analysis of this chapter also has its limitations. Our dataset is very limited (six observations), and our calculations on the market size of *halal* certificates are rough estimates and should be

interpreted with caution. Nevertheless, we believe that the results are informative since the current number of *Shariah* advisory firms is likely to be small (our sample thus represents a respectable portion thereof) and our assumptions for the market size calculations are reasonable.

Further research could focus on whether Muslim investors are willing to accept less return on assets because they derive utility from investing in a *Shariah* compliant way. Elfenbein and McManus (2010), for example, find that people are willing to pay more for products linked to charity, and *halal* investing might have similar characteristics. More specific to investing, Renneboog et al. (2011) find that investors derive non-financial utility from investing in ethical investment funds.

Finally, research is also needed on the difference between Islamic principles and practices and how this relates corporate social responsibility. Although in principle Islamic finance might be quite similar to corporate social responsibility (Williams and Zinkin, 2010), in practice neither Islamic countries (Rehman and Askari, 2010) or Islamic financial institutions (Khan, 2010) seem to follow these principles widely.

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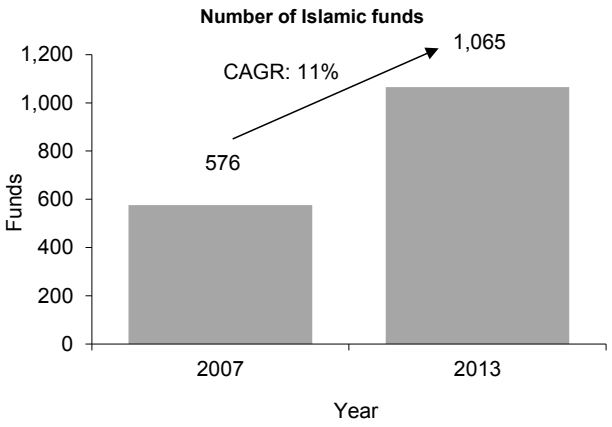
Appendix

Figure A1: The growth of Islamic investment funds in recent years

This figure shows the number and assets under management of Islamic investment funds in 2007 and 2013. Data is from Thomson Reuters (2013).

Panel A



Panel B

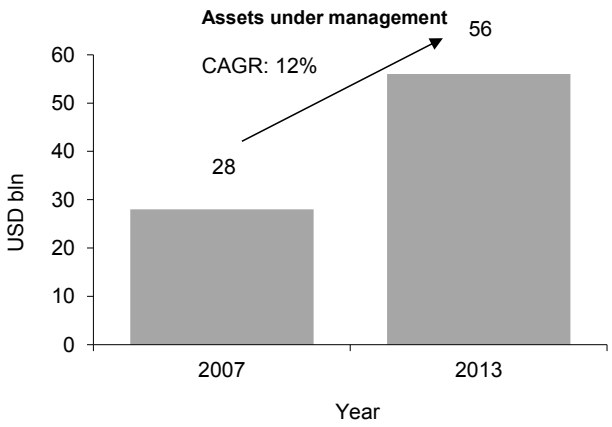


Table A1: Cultural and economic indicators of Islamic finance hubs

This table contains data on several indicators that influence SRI growth and possibly also growth in *Shariah* compliant stock investing. Cultural indicators are based on Hofstede (1980, 1991) and taken from http://geert-hofstede.com/countries.html. Regarding economic indicators: Pension fund assets in Malaysia are based on the size of the two largest pension funds and data on their size is taken from these funds' websites (http://www.kwsp.gov.my/portal/en/about-epf/investment-highlights and http://www.kwap.gov.my/En/BusinessPerformance/Pages/FinancialHighlights.aspx). Data on pension fund assets in Saudi Arabia is from IMF (2014). Data on pension fund assets in Luxembourg is from OECD (2013). GDP data on all three countries is from IMF's World Economic Outlook Database (http://www.imf.org/external/pubs/ft/weo/2014/02/weodata/download.aspx). All data is in USD. Data on trade is from Unctad (http://unctadstat.unctad.org/EN/).

Indicator	**Malaysia**	**Saudi Arabia**	**Luxembourg**
Cultural			
Power distance	100	95	40
Individualism	26	25	60
Masculinity	50	60	50
Uncertainty avoidance	36	80	70
Economic			
Pension fund assets / GDP (%)	66	33	2
Trade (Imports + Exports) / GDP (%)	140	75	71

Table A2: Sample IEFs Chapter 4, Bloomberg Tickers

This table contains Bloomberg identifier codes (Bloomberg tickers) of the 145 IEFs analyzed in Chapter 4. "Global" refers to IEFs that invest in global equities, "Malaysian" refers to IEFs that invest in Malaysian equities, and "Other" refers to IEFs that invest in equities from various regions.

Global			Malaysian	
aaspace sp equity	pubisab mk equity	1	aiadysy mk equity	packlsi mk equity
adifwoe lx equity	pubisad mk equity	2	aiaisti mk equity	phedama mk equity
adjex us equity	pubisas mk equity	3	alladib mk equity	prlrasl mk equity
alglbte ab equity	rcmiema lx equity	4	allalif mk equity	prualil mk equity
alhctre ab equity	rcmigea lx equity	5	amisgr mk equity	ptbasdi mk equity
alsctre ab equity	riygleq ab equity	6	amoagis mk equity	pubiogf mk equity
bnpieoc lx equity	rjsemea id equity	7	asmbpsi mk equity	pubisef mk equity
cimik17 mk equity	rjshbwa id equity	8	bbmbdpi mk equity	pubisop mk equity
cimik22 mk equity	rshamk2 ab equity	9	bhlbahi mk equity	pubisse mk equity
cimik27 mk equity	sametfi ab equity	10	bhlpda2 mk equity	pubistr mk equity
cimisge mk equity	sgletra ab equity	11	bhlpdai mk equity	pubpbie mk equity
citispa lx equity	sutegro sp equity	12	bhlpdaz mk equity	pubpidf mk equity
citispb lx equity	suteval sp equity	13	cimissg mk equity	rhbisgr mk equity
dbsmegi sp equity	swipisl lx equity	14	cmsisla mk equity	sbbfaiz mk equity
dwngesa id equity	ubsisge lx equity	15	djim25 mk equity	sbbikls mk equity
dwngesb id equity		16	gebrkah mk equity	tauisla mk equity
dwngesj id equity		17	hijaswi mk equity	
dwnpmsa id equity		18	hlaitza mk equity	
dwnpmsj id equity		19	hlbmakm mk equity	
eti sw equity		20	hwaizdi mk equity	
foaswora cn equity		21	ingbccp mk equity	
hegiraa ky equity		22	ingeisl mk equity	
hsbcgle lx equity		23	ingsyar mk equity	
imanx us equity		24	ipdasaf mk equity	
isem ln equity		25	klittfi mk equity	
iswd ln equity		26	kuteqis mk equity	
jademrg ab equity		27	maafaid mk equity	
jdwldeq ab equity		28	maafauz mk equity	
jpmcdba lx equity		29	maafayd mk equity	
keptaka sp equity		30	maasyar mk equity	
keptsin sp equity		31	maydana mk equity	
ntuameq sp equity		32	mblazim mk equity	
oacrequ sj equity		33	oskdana mk equity	
oasgloa uh equity		34	pacdadi mk equity	
pbisase mk equity		35	pacdnai mk equity	

Table A2: Sample IEFs Chapter 4, Bloomberg Tickers (continued)

Other		
aaamans ij equity	pruapse mk equity	1
aaasyar ij equity	pubasit mk equity	2
adifeeq lx equity	seiemma id equity	3
aeifx us equity	seieuea id equity	4
alaspte ab equity	seipaba id equity	5
aleurtr ab equity	seiusea id equity	6
alustra ab equity	trisyah ij equity	7
amagx us equity		8
amanx us equity		9
bsdssyh ij equity		10
bsnaqaa ab equity		11
cimapad mk equity		12
cimbisl ij equity		13
dadinar ij equity		14
dansyai ij equity		15
dwnapea id equity		16
dwnapeb id equity		17
dwsncea id equity		18
dwsnceb id equity		19
foascana cn equity		20
foraman ij equity		21
glbisah mp equity		22
hitkapf sp equity		23
hsamapa id equity		24
hsampea id equity		25
hsiscia hk equity		26
isus ln equity		27
jadarab ab equity		28
jadgcce ab equity		29
ktaslte tb equity		30
maashap mk equity		31
manisya ij equity		32
mantrak ij equity		33
navsami cd equity		34
ntutaka sp equity		35
phaseji mk equity		36
pnmeqty ij equity		37

Table A3: Sample firms Chapter 5

This table contains names of the companies added to (229) or deleted from (143) the FTSE *Shariah* Global Equity Index between September 2002 and March 2012. Names that appear more than once are firms that were added or deleted multiple times.

Added			Deleted	
Abercrombie & Fitch Co	Celanese	1	3Com Corp	Extreme Networks
Activision Blizzard	Celgene Corp	2	Adobe Systems Inc	Fifth Third Bancorp
Adobe Systems Inc	CF Industries Holdings	3	Agilent Technologies	First Marblehead Corporation (The)
Agere Systems Inc	CH Robinson Worldwide Inc	4	Air Products And Chemcom	First Solar Inc
Agere Systems Inc	CH Robinson Worldwide Inc	5	Akamai Technologies	Fluor Corporation
Agilent Technologies	Check Point Software Technologies	6	Allergan	General Motors Corp
Akamai Technologies Inc.	Chesapeake Energy	7	Alliance Data Systems Corp	Gentex Corp
Alcon Inc	Chico's FAS Inc	8	Apollo Group Class A	Goodrich
Allegheny Technologies	Cimarex Energy Co	9	Autodesk	Goodyear Tire & Rubber
Allergan	Cintas Corp	10	Autonation	Hillenbrand Indus
Alliance Data Systems Corp	Circuit City Stores Inc	11	Avon Products	Hillenbrand Indus
Alliant Techsystems Inc	Coach Inc	12	Becton Dickinson	Hillenbrand, Inc.
Alpha Natural Resources	Cognizant Technology Solutions Corp	13	BJ Services Co	Honeywell International Incorporation
American Eagle Outfitters	Colgate-Palmolive	14	Brinker International	Hospira
Ametek Inc	Compuware Corp	15	Brunswick Corp	HSN, Inc.
Anadarko Petroleum	Compuware Corp	16	C.H. Robinson Worldwide	IMS Health
Apollo Group Class A	Conagra Foods	17	Cabot Corp	International Paper
AT&T	Cons Edison Holding	18	Career Education Corporation	Interpublic Group Cos
Autodesk Inc	Consol Energy Inc	19	Cephalon	Interval Leisure Group, Inc.
Autonation	Continental Resources OK	20	Check Point Software	Intl Flavours & Fragrances
Autonation	Convergys Corp	21	Chesapeake Energy	Intuit
Avery Dennison Corp	Cooper Cameron Corp	22	Chesapeake Energy	Janus Capital Group
Avnet Inc	CR Bard Inc	23	Chico's FAS, Inc.	JDS Uniphase Corporation
Babcock & Wilcox Co.	D.R. Horton Inc	24	Circuit City Stores	Jones Apparel Group Inc.
Barr Laboratories Inc	Denbury Rsc De	25	Cognizant Tech Solutions	KB Home
Becton Dickinson	DNP Select Income Fund Inc	26	Compuware Corp	Kinetic Concepts
Bemis Co	Dollar Tree Stores Inc	27	Conagra Foods	King Pharmaceuticals
BJ Services Co	DST Systems Inc	28	Cons Edison Holding	Kla-Tencor Corp
Block (H & R) NPV	DST Systems Inc	29	Convergys Cp	Lam Research
BorgWarner	DTE Energy	30	Costco Wholesale Corp	Lear Corp.
Brinker International Inc	Ecolab	31	Donnelley (Rr) & Sons	Legg Mason Inc
Broadcom Corp	Edison International	32	Dr Pepper Snapple Group	Lender Processing Services
Broadridge Financial Solutions	Energizer Holdings Inc	33	DST Systems	Lennar Class A
Campbell Soup Cap	Energizer Holdings Inc	34	Ecolab	Lexmark International Inc
Cardinal Health	Entergy Corp	35	Edison International	Life Technologies
Career Education Corp	EOG Resources Inc	36	Entergy Corp	Limited Brands

Table A3: Sample firms Chapter 5 (continued)

Added			Deleted	
Equitable Resources Inc	King Pharmaceuticals Inc	1	Limited Brands	Rockwell Collins
Expeditors International Washington Inc	Kmart Holding Corp	2	Lincare Holdings	Rohm & Haas
F5 Networks Inc	Laboratory Corp Of America Holdings	3	Liz Claiborne Inc.	Schering-Plough
Family Dollar Stores	Laboratory Corp Of America Holdings	4	Louisiana-Pacific	Seahawk Drilling
Fastenal Co	Lafarge North America Inc	5	LSI	Sealed Air
Federated Investors Inc	Lam Research Corp	6	Macys	Sepracor Inc
First Health Group Corp	Lam Research Corp	7	Manpower Inc	St Joe Co (The)
First Marblehead	Lear Corp	8	Masco Corp	St Joe Co (The)
First Solar Inc	Lender Processing Services	9	McData Corp A	Starbucks
Flowserve Cp	Lennar Corp	10	MEMC Electronic Materials	Synopsys Inc
Fluor Corporation	Life Technologies	11	Microchip Technology	Target Corp
FMC Technologies Inc	Limited Brands	12	Mylan	Telephone and Data Systems, Inc.
Foot Locker Inc	Lincare Holdings Inc	13	Nabors Industries	Tellabs
GameStop Corp	Lincare Holdings Inc	14	Nat Semiconductor	Teradata
General Motors	Louisiana-Pacific Corp	15	NetApp	Teradyne
Gentex Corp	Macys	16	Northeast Utilities	Toll Brothers
Getty Images Inc	Macys	17	Novell	Toll Brothers
Gilead Sciences	Manor Care Inc	18	Novellus Systems	Total System Services
Halliburton	Manpower Inc	19	Nvidia	Tronox Inc. Cl B
Health Net Inc	Manpower Inc	20	NVR Inc	Tyco Electronics
Hormel Foods Corp	Marvell Technology Group Ltd	21	Office Depot Inc.	Ultra Petroleum
Hospira	Masco Corp	22	OfficeMax Incorporated	Universal Health Services B
Hospira	Maxim Integrated Prod.	23	Pall Corp	Viad Corp
Human Genome Sciences	McCormick & Co Inc	24	Pall Corp	Vitesse Semiconductor Corp
Humana Inc	McDermott International	25	Patriot Coal Corporation	Vulcan Materials
IAC InterActiveCorp	MDU Resources Group Inc	26	Peabody Energy Corp	WABCO Holdings
International Bus Machns.	MEMC Electronic Materials Inc.	27	Plains Exploration & Production	Wal-Mart Stores
Interpublic Group Cos	MEMC Electronic Materials Inc.	28	Praxair	Western Union
Interpublic Group Cos	Michaels Stores Inc	29	Price (T. Rowe) Group	Williams-Sonoma Inc.
Intl Flavours & Fragrances	Microchip Technology Inc	30	Priceline.com	Winn-Dixie Stores Inc
Intuit	Microchip Technology Inc	31	Public Svc Enterprise Group	Xilinx
Jabil Circuit Inc	Millicom International Cellular S.A.	32	Pulte Homes	XTO Energy Inc
Jacobs Engineering Group Inc	Mirant Corp	33	Pulte Homes	Zebra Technologies
Jacobs Engineering Group Inc	Mohawk Industries Inc	34	Pulte Homes	
JB Hunt Transport Services Inc	Monsanto Co	35	QEP Resources	
JB Hunt Transport Services Inc	Monster Worldwide Inc	36	Qualcomm	
Jones Apparel Group Inc	Murphy Oil Corp	37	Quest Diagnostics	
Joy Global Inc	Nabors Industries	38	Questar Corp	

Table A3: Sample firms Chapter 5 (continued)

Added			Added	
National-Oilwell Inc	Perrigo Co	1	Roper Industries	Total System Services Inc
NAVTEQ Corp	Petsmart Inc	2	Ross Stores Inc	Transocean (New)
Network Associates Inc	Pixar Inc	3	Sabre Holdings Corp	Ultra Petroleum Corp
Network Associates Inc	Plains Exploration & Production	4	Salesforce.com	Ultra Petroleum Corp
Newell Rubbermaid	Pogo Producing Co	5	Sandisk Corp	United Parcel Service
Newfield Exploration Co	PPL Corporation	6	Schering-Plough	United States Steel Corp
NII Holdings	Priceline.com	7	Sealed Air	Urban Outfitters Inc
Noble Energy Inc	Public Storage Inc	8	SEI Investments Co	Varian Medical Systems Inc
Northeast Utilities	Public Storage Inc	9	Sepracor Inc	Vulcan Materials
Novellus Systems Inc	Public Svc Enterprise Group	10	Smith International Inc	Waters Corp
Novellus Systems Inc	Pulte Homes	11	Southern Copper Corp.	Waters Corp
NVIDIA Corp.	Pulte Homes	12	Southwestern Energy	Waters Corp
NVR Inc	QLogic Corp	13	St Joe Co (The)	WebMD Corp
O Reilly Auto	Quest Diagnostics	14	Stanley Black & Decker	Western Digital
Officemax Inc	Radioshack Corp	15	Storage Technology Corp	Weyerhaeuser
Omnicare Inc	Range Resources	16	Symantec Corp	Williams-Sonoma Inc
Omnicare Inc	Red Hat Inc	17	Synopsys Inc	Xerox Corp
Outback Steakhouse Inc	RJ Reynolds Tobacco Holdings Inc	18	Teradata	Zebra Technologies Corp
Pall Corp	Robert Half International Inc	19	Tiffany & Co	
Patterson-UTI Energy Inc	Robert Half International Inc	20	Toll Brothers	
Peabody Energy Corp	Rockwell Collins	21	Toll Brothers	

Table A4: Sample firms Chapter 6

This table contains the names of firms listed on the S&P500 as of September 2013. Firms that are also listed on the Dow Jones Islamic Market World Index as of September 2013 are under "Islamic", while firms that are not are under "Non-Islamic". Data is from Thomson Reuters Datastream.

Islamic			Non-Islamic	
3M	Cameron International	1	General Electric	Costco Wholesale
Abbott Laboratories	Carefusion	2	Wells Fargo and Company	Dow Chemical
Abbvie	Celgene	3	JP Morgan Chase and Company	Hewlett-Packard
Abercrombie and Fitch 'A'	Cerner	4	AT&T	Anadarko Petroleum
Accenture Class A	CF Industries Holdings	5	Bank of America	Duke Energy
Adobe Systems	CH Robinson Worldwide	6	Citigroup	Twenty-First Century Fox Class A
ADT	Chevron	7	Verizon Communications	Simon Property Group
Agilent Technologies	Cintas	8	Philip Morris International	Blackrock
Air Products and Chemicals	Citrix Systems	9	Amazon Com	Lockheed Martin
Akamai Technologies	Clorox	10	Cisco Systems	Prudential Financial
Alexion Pharmaceuticals	Coach	11	Pepsico	Target
Allegheny Technologies	Coca Cola	12	Walt Disney	PNC Financial Services Group
Allergan	Cognizant Technology Solutions 'A'	13	McDonald's	Capital One Financial
Altera	Colgate-Palmolive	14	United Technologies	Kinder Morgan
American Tower	Corning	15	Visa 'A'	Bank of New York Mellon
Amphenol 'A'	Covidien	16	Comcast 'A'	Southern
Analog Devices	Cummins	17	Amgen	Deere
Apache	CVS Caremark	18	ConocoPhillips	Dominion Resources
Apple	Danaher	19	Boeing	General Mills
Applied Materials	Delphi Automotive	20	American Express	Nextera Energy
Autodesk	Dentsply International	21	Goldman Sachs Group	Viacom 'B'
Automatic Data Processing	Diamond Offshore Drilling	22	UnitedHealth Group	Directv
Autozone	Dollar Tree	23	Mastercard	Kraft Foods Group
Baker Hughes	Dover	24	American International Group	Eaton
Baxter International	DR Pepper Snapple Group	25	Altria Group	Yum! Brands
Becton Dickinson	DUN and Bradstreet Delaware	26	Ford Motor	General Dynamics
Bed Bath and Beyond	E I du Pont de Nemours	27	United States Bancorp	State Street
Biogen Idec	EBay	28	Caterpillar	Ace
BMC Software	Ecolab	29	Time Warner	Franklin Resources
Borgwarner	Edwards Lifesciences	30	Mondelez International Class A	Time Warner Cable
Bristol Myers Squibb	Eli Lilly	31	Starbucks	Travelers Companies
Broadcom 'A'	EMC	32	Metlife	CBS 'B'
C R Bard	Emerson Electric	33	Morgan Stanley	Mckesson
CA	EOG Resources	34	Express Scripts Holding	Aflac
Cabot Oil and Gas 'A'	Equitable	35	General Motors	Raytheon 'B'

Table A4: Sample firms Chapter 6 (continued)

Islamic			Non-Islamic	
Estee Lauder Companies 'A'	Intuitive Surgical	1	Archer-Daniels-Midland	Actavis
Expedia	JDS Uniphase	2	Charles Schwab	Dollar General
Expeditor International of Washington	Johnson and Johnson	3	Dell	Equity Residential Trust Properties SHBI
Exxon Mobil	Johnson Controls	4	Exelon	Fifth Third Bancorp
F5 Networks	Joy Global	5	Reynolds American	PG&E
Family Dollar Stores	Juniper Networks	6	Wellpoint	Prologis
Fastenal	Kansas City Southern	7	Carnival	Suntrust Banks
Fedex	Kimberly-Clark	8	CSX	Sysco
First Solar	KLA Tencor	9	BB&T	T Rowe Price Group
Flir Systems	Kohl's	10	CME Group	Waste Management
Flowserve	Laboratory Corporation of America Holdings	11	Marsh and Mclennan	Ameriprise Financial
Fluor	Leggett and Platt	12	Williams Companies	Cardinal Health
FMC	Life Technologies	13	Aetna	Macy's
FMC Technologies	Linear Technology	14	Discover Financial Services	Mcgraw Hill Financial
Forest Laboratories	Lowe's Companies	15	Kellogg	Netflix
Fossil Group	LSI	16	Allstate	Ventas
Freeport-Mcmoran Copper and Gold	Lyondellbasell Industries Class A	17	Cigna	Chesapeake Energy
Gap	Marathon Oil	18	Devon Energy	Consolidated Edison
Garmin	Marathon Petroleum	19	Northrop Grumman	L Brands
Genuine Participations	Mattel	20	American Electric Power	Loews
Gilead Sciences	Medtronic	21	Chubb	Lorillard
Google 'A'	Merck and Company	22	International Paper	Omnicom Group
Halliburton	Microchip Technology	23	Spectra Energy	Public Service Enterprise Group
Harman International Industries	Microsoft	24	AON Class A	Avalonbay Communities
Helmerich and Payne	Molex	25	Crown Castle International	Boston Properties
Hess	Monsanto	26	Sempra Energy	Firstenergy
Home Depot	Monster Beverage	27	Best Buy	Humana
Honeywell International	Mosaic	28	Centurylink	M&T Bank
Hospira	Motorola Solutions	29	Kroger	Mead Johnson Nutrition
Illinois Tool Works	Murphy Oil	30	Paccar	Micron Technology
Ingersoll-Rand	National Oilwell Varco	31	HCP	Progressive Ohio
Intel	Newmont Mining	32	Health Care REIT	The Hershey Company
International Business Machines	Nike 'B'	33	PPL	Vornado Realty Trust
International Flavors and Fragrances	Noble Energy	34	Valero Energy	Amerisourcebergen
Intuit	Nordstrom	35	Whole Foods Market	Conagra Foods

Table A4: Sample firms Chapter 6 (continued)

Islamic			Non-Islamic	
Norfolk Southern	Sherwin-Williams	1	Edison International	Discovery Communications 'A'
Nucor	Sigma Aldrich	2	Fidelity National Information Services	Eastman Chemical
O Reilly Automotive	Southwestern Energy	3	Hartford Financial Services Group	Entergy
Occidental Petroleum	Staples	4	Mylan	J M Smucker
Oracle	Stericycle	5	Parker-Hannifin	Republic Services 'A'
Pall	Stryker	6	Western Digital	Hormel Foods
Patterson Companies	Symantec	7	Boston Scientific	Keycorp
Paychex	TE Connectivity	8	Campbell Soup	Whirlpool
Perkinelmer	Teradata	9	Ensco Class A	Aluminum Company of America
Perrigo	Teradyne	10	Harley-Davidson	Brown-Forman 'B'
Petsmart	Texas Instruments	11	Intercontinental Exchange	Noble
Pfizer	Thermo Fisher Scientific	12	Moody's	Oneok
Phillips 66	Tiffany and Company	13	Netapp	PVH
Pioneer Natural Resources	TJX Companies	14	Northern Trust	Rockwell Collins
PPG Industries	Total System Services	15	Principal Financial Group	SLM
Praxair	Tripadvisor 'A'	16	Regions Financial New	AES
Precision Industries Castparts	Tyco International	17	Stanley Black and Decker	Avon Products
Priceline Com	Union Pacific	18	Xcel Energy	Carmax
Procter and Gamble	United Parcel Service 'B'	19	Xerox	Cbre Group Class A
Public Storage	Urban Outfitters	20	Fiserv	Centerpoint Energy
Qualcomm	V F	21	Invesco	Constellation Brands 'A'
Quanta Services	Varian Medical Systems	22	Nielsen Holdings NV	Leucadia National
Ralph Lauren Class A	Verisign	23	Northeast Utilities	Nvidia
Range Resources	Wal Mart Stores	24	NYSE Euronext	Western Union
Red Hat	Walgreen	25	Wynn Resorts	XL Group
Regeneron Pharmaceuticals	Washington Post 'B'	26	Chipotle Mexican Grill	Kimco Realty
Robert Half International	Waters	27	Davita Healthcare Partners	L3 Communications Holdings
Rockwell Automation	Weyerhaeuser	28	DTE Energy	Macerich
Roper Industries New	WW Grainger	29	Host Hotels and Resorts	Mccormick and Company Non Voting
Ross Stores	Xilinx	30	Lincoln National	Molson Coors Brewing 'B'
Saint Jude Medical	Xylem	31	Marriott International 'A'	Nisource
Salesforce Com	Yahoo	32	Pentair	NRG Energy
Sandisk	Zimmer Holdings	33	Starwood Hotels and Resorts Worldwide	Quest Diagnostics
Schlumberger	Zoetis	34	Beam	Southwest Airlines
Seagate Technology		35	Coca Cola Enterprises	Wisconsin Energy

Table A4: Sample firms Chapter 6 (continued)

Non-Islamic	Non-Islamic		Non-Islamic
Wyndham Worldwide	Lennar 'A'	1	Newfield Exploration
Airgas	NASDAQ OMX Group	2	Pepco Holdings
Ameren	News 'A'	3	Pitney-Bowes
CMS Energy	Pinnacle West Capital	4	Ryder System
Computer Sciences	Pultegroup	5	Apartment Investment and Management 'A'
Consol Energy	Scana	6	Assurant
Electronic Arts	Sealed Air	7	Cablevision Systems
Equifax	Torchmark	8	Teco Energy
H&R Block	Darden Restaurants	9	Tenet Healthcare
Lam Research	Hudson City Bancorp	10	WPX Energy
Tyson Foods 'A'	International Game Technology	11	Berkshire Hathaway 'B'
Ball	Iron Mountain	12	
Cincinnati Financial	Peabody Energy	13	
Comerica	Tesoro	14	
Gamestop 'A'	Vulcan Materials	15	
Huntington Bancshares	Windstream	16	
Interpublic Group	Zions Bancorporation	17	
Jacobs Engineering	AGL Resources	18	
Newell Rubbermaid	Avery Dennison	19	
Plum Creek Timber	Frontier Communications	20	
Safeway	Integrys Energy Group	21	
Scripps Networks Interactive 'A'	Jabil Circuit	22	
Textron	Nabors Industries	23	
Unum Group	Owens Illinois New	24	
Goodyear Tire and Rubber	Penney JC	25	
Masco	Peoples United Financial	26	
Meadwestvaco	QEP Resources	27	
Autonation	Rowan Companies Class A	28	
Bemis	Saic	29	
D R Horton	Snap-On	30	
Denbury Resources	United States Steel	31	
Gannett	Advanced Micro Devices	32	
Genworth Financial Class A	Cliffs Natural Resources	33	
Harris	E*trade Financial	34	
Hasbro	Legg Mason	35	

Table A5: Variable definitions, sources, and previous literature

This table contains the definitions, sources, and previous recent literature on the main variables used in Chapter 6. All value-based metrics are in USD million unless stated otherwise. All variables are calculated based on 2012 (thus annual figures where relevant), except for the Islamic dummy, Top shareholder, CEO stock ownership, CEO duality, and the fixed effect dummies, which are from 2013. The source for all the variables is Bloomberg unless stated otherwise. Whenever there are more than four references, only the most recent four are shown.

Variables	Definition, description and other notes	Previous literature
Dependent variables		
CGQ	ISS Corporate Governance Quotient. Overall governance score based on 51 governance issues across 8 rating categories (e.g. audit, charter/bylaws, and director compensation). This is a relative score running from 0 to 100 and indicates percentile scores, comparing each firm with all other listed firms evaluated by ISS. For 2012, there is no data on this measure. To get a proxy for 2012, I take data on the last 3 months of 2011 and use this as a proxy for 2012. I use the first three months of 2011 as proxy for 2011.	Hugill and Siegel (2013), Jiraporn et al. (2012), Daines et al. (2010), Jiraporn et al. (2012).
BBG	Bloomberg Governance Disclosure score. Overall governance score based on a firm's disclosure of governance data. This is a score running from 0.1 to 100 and indicates percentile scores, comparing each firm with its industry peers. Here, 0.1 indicates that a firm discloses a minimum amount of data and 100 indicates that a firm discloses every data point collected by Bloomberg. The data points are weighted by importance with more importance given to board of directors' data than other data.	None as far as I know.
IND	Percentage of the board of directors that is independent. Independent means having no material ties to the firm or its management.	Fisman et al. (2013), Dahya et al. (2008), Linck et al. (2008), Li and Harrison (2008).
A4CG	Thomson Reuters ASSET4 Corporate Governance Score. An overall governance score that measures governance across 5 main pillars (board structure, compensation policy, board functions, shareholder rights, and vision and strategy). This is a relative score running from 0 to 100 and indicates percentile scores, comparing each firm with all other firms in Asset4's database. Data source: Thomson Reuters Datastream.	Mackenzie et al. (2013), Cheng et al. (2014).
Independent variables		
Firm size	Log of Sales.	Hugill and Siegel (2013), Edgerton (2012), Boytsun et al. (2011), John and Litov (2009).
Firm age	Number of years since the company was founded. Data source: Yahoo Finance.	John and Litov (2009), Dahya et al. (2008), Linck et al. (2008), Beiner et al. (2004).
Woman on board	Percentage of women in the board of directors.	Adams and Ferreira (2009).
Top shareholder	Percentage of total shares owned by the top shareholder as of November 2013.	Boytsun et al. (2011), Doidge et al. (2007), Li and Harrison (2008), Harford et al. (2008).
Tobin's Q	Tobin's Q (ratio of the market value of a firm to the replacement costs of its assets) as defined by Bloomberg, namely: (Market capitalization + Total liabilities + Preferred equity + Minority interest) / Total assets.	Hugill and Siegel (2013), Adams and Ferreira (2009), Doidge et al. (2007).
Profitability	Net profit margin (Net income / Sales).	Hugill and Siegel (2013), Adams and Ferreira (2009), Li and Harrison (2008), Yu (2008).
Dividend payout	Dividend payout ratio as defined by Bloomberg, namely: Cash common dividends / (Income before extraordinary items - Minority interest – Cash preferred dividend).	Hugill and Siegel (2013), Sawicki (2009).
CEO stock ownership	Percentage of shares owned by the CEO.	Linck et al. (2008), Harford et al. (2008), Jiraporn and Liu (2008).
CEO incentive based compensation	Percentage of total CEO pay that consists of stocks and options.	John and Litov (2009), Harford et al. (2008).

Table A5: Variable definitions, sources, and previous literature (continued)		
Variables	**Definition, description and other notes**	**Previous literature**
Independent variables		
CEO tenure	Number of years the current CEO has held this position.	Linck et al. (2008), Adams and Ferreira (2009), Coles et al. (2008).
CEO turnover	Number of times the company has changed its CEO over the past five years.	Fisman et al. (2013).
CEO duality	Dummy variable indicating whether the CEO is also chairman of the board of directors (1) or not (0).	Linck, et al. (2008), Beiner et al. (2004).
Board duration	Number of years a member of the board of directors can hold this position.	Cohen et al. (2013), Bebchuk et al. (2009), Jiraporn and Liu (2008), Gompers et al. (2003).
Volatility	Annualized volatility of the previous year's daily returns. Returns are based on daily changes in the natural log of prices. Daily return volatility is annualized by multiplying it with the square root of 250.	Adams and Ferreira (2009), Dahya et al. (2008), Linck et al. (2008), Coles et al. (2008).
R&D	Research and development expenditures / Total assets.	Hugill and Siegel (2013), Linck et al. (2008), Coles et al. (2008).
Free cash flow	Free cash flow / Total assets. Free cash flow is as defined by Bloomberg, namely: Net income - Depreciation, Amortization and other non-cash items + change in non-cash Working capital - Capital expenditure.	Linck et al. (2008), Coles et al. (2008).
Board size	Number of members of the board of directors.	Dahya et al. (2008), Linck et al. (2008), Coles et al. (2008), Breiner at al. (2004).
Islamic criteria		
Islamic	Dummy variable indicating whether a company is part of the Dow Jones Islamic Market World Index (1) or not (0). Data source: Thomson Reuters Datastream.	None as far as I know.
Leverage	Debt (Long-term debt + Short-term debt) / market value of Total assets. Market value of total assets is defined as book value of debt plus market value of equity (Market capitalization).	Hugill and Siegel (2013), Linck et al. (2008), John and Litov (2009), Li and Harrison (2008).
Accounts receivable / Total assets	Accounts receivables / Total assets.	None as far as I know.
Cash / Total assets	Cash / Total assets.	Hugill and Siegel (2013), Doidge et al. (2007).
Interest income / Sales	Interest income / Sales.	None as far as I know.
Fixed effect variables		
Industry	Dummy variables (18), each indicating that a firm belongs to a certain Industry (1) or not (0). Industries are based on 2 digit ICB classifications.	Cheng et al. (2014), Jiraporn et al. (2012), Daines et al. (2010), Boytsun et al. (2011).
State	Dummy variables (29), each indicating that a firm is incorporated in a certain US state (1) or not (0).	Wald and Long (2007), Qi and Wald (2008).
Time	Dummy variable indicating whether the year is 2011 (1) not (0).	Cheng et al. (2014), Hugill and Siegel (2013), Jiraporn et al. (2012), John and Litov (2009).

Table A6: The effect of governance on leverage

This table contains the results of regressing leverage (the dependent variable) of S&P500 firms on corporate governance quality and several firm-based control variables (the independent variables). Corporate governance quality is measured by CGQ, BBG, IND, and A4CG. The control variables are Size (log of assets), Age (number of years since the firm was founded), Women on board (percentage of women in the board of directors), Tobin's Q (the ratio of a firm's market value to the replacement cost of its assets), Ebit ratio (Ebit to total assets), Dividend payout (dividend to net income, multiplied by 100), Credit rating (S&P long term debt issuer rating as of October 2013, ranging from 7 [AAA] to 1 [CC+]), Non-debt tax shield (depreciation and amortization to total assets), Fixed assets (gross fixed assets to total assets), industry dummies (based on the one digit ICB classification), and a year dummy (2011). In choosing these control variables, I follow Jiraporn et al. (2012), Arping and Sautner (2010), and Adams and Ferreira (2009). Leverage is based on 2012. All independent variables are lagged one year (thus based on 2011 and 2010), except credit rating (on which I only have data from 2013) and the fixed effect dummies. The source of the additional variables (Ebit ratio, Credit rating, Non-debt tax shield, and Fixed assets) is Bloomberg. Standard errors are corrected for heteroscedasticity and autocorrelation using the Newey-West (1987) estimator. The asterisks, ***, ** and * indicate significance at the 1%, 5%, and 10% level, respectively.

Independent Variable	**Dependent variable**			
	Leverage	Leverage	Leverage	Leverage
Intercept	39.22***	41.84***	38.65***	37.69***
	(6.00)	(5.85)	(7.03)	(5.80)
CGQ	-0.03			
	(0.02)			
BBG		-0.22***		
		(0.08)		
IND			-0.05	
			(0.06)	
A4CG				-0.09***
				(0.03)
Size	2.44*	4.45***	3.28**	4.06***
	(1.48)	(1.42)	(1.42)	(1.45)
Age	0.00	0.00	0.00	0.00
	(0.01)	(0.01)	(0.01)	(0.01)
Women on board	0.14***	0.16***	0.15***	0.13***
	(0.05)	(0.05)	(0.05)	(0.05)
Tobin's Q	-4.18***	-3.85***	-3.97***	-3.71***
	(0.79)	(0.69)	(0.72)	(0.72)
Ebit ratio	-0.17*	-0.10	-0.15	-0.13
	(0.10)	(0.09)	(0.10)	(0.10)
Dividend payout	0.51***	0.47***	0.47***	0.48***
	(0.00)	(0.00)	(0.00)	(0.00)
Credit rating	-6.64***	-7.02***	-6.96***	-6.82***
	(0.85)	(0.83)	(0.85)	(0.86)
Non-debt tax shield	0.05	-0.17	0.07	0.10
	(0.06)	(0.30)	(0.06)	(0.05)
Fixed assets	0.04***	0.05***	0.04***	0.04***
	(0.02)	(0.02)	(0.02)	(0.02)
Model	OLS	OLS	OLS	OLS
Industry fixed effects	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes
Observations	686	722	759	636
Adjusted R^2	63.9%	66.0%	63.8%	64.0%

Table A7: Cross-sectional analysis

This table contains the results of cross-sectional regressions where corporate governance quality of S&P500 firms is the dependent variable and an Islamic dummy and several control variables are the independent variables, as in Table 6.4. Corporate governance quality is measured by CGQ, BBG, IND, and A4CG. The main variable (Islamic) is a dummy that is 1 when a firm is Islamic and 0 otherwise. The data is based on 2012 (dependent variables) and 2011 (independent variables). Thus, the control variables are lagged one period (one year) to mitigate reverse causality where possible. However, data for the Islamic dummy, Top shareholder, CEO duality, CEO stock ownership, and the state and industry dummies is from 2013 since I do not have historical data on these variables. For details on the source, description, and calculation of all these variables, see Table A5 in the Appendix. Standard errors are corrected for heteroscedasticity using White's (1980) estimator. The asterisks, ***, ** and * indicate significance at the 1%, 5%, and 10% level, respectively.

Independent variable	**Dependent variable**			
	CGQ	BBG	IND	A4CG
Islamic	3.09	2.07***	-0.10	2.07
	(3.29)	(0.74)	(1.06)	(1.94)
Model	OLS	OLS	OLS	OLS
Industry and state fixed effects	Yes	Yes	Yes	Yes
Control variables included	Yes	Yes	Yes	Yes
Observations	369	415	435	306
Adjusted R^2	20.3%	21.1%	24.6%	3.1%

Table A8: Alternative proxies

This table contains the results of running the same regressions as in Table 6.5, except using some alternative proxies for the control variables. Specifically, I run five separate regressions and in each of these I: (i) replace market value based Leverage to book value based Leverage (book value of long- plus short-term debt to book value of Assets), (ii) replace log of Sales with log of Assets, (iii) replace Net profit margin with Ebitda to Assets, (iv) replace Age in years with log of Age in years, and (v) replace two digit ICB industry dummies with one digit dummies (using a total of eight dummies). Similar to Table 6.5, Islamic indicates the coefficient on the Islamic dummy. The source of the alternative variables is Bloomberg, the data set runs from 2010 to 2012, and the variables are lagged one year. Standard errors are corrected for heteroscedasticity and autocorrelation using the Newey-West (1987) estimator. The asterisks, ***, ** and * indicate significance at the 1%, 5%, and 10% level, respectively.

Independent variable	**Dependent variable**			
	CGQ	BBG	IND	A4CG
Leverage (book value)				
Islamic	3.73	1.67**	-0.20	2.11
	(3.14)	(0.69)	(1.21)	(1.72)
Size (log of Assets)				
Islamic	3.66	1.51**	-0.20	1.45
	(3.27)	(0.68)	(1.26)	(1.83)
Profitability (Ebitda/Assets)				
Islamic	3.49	1.89***	-0.13	1.72
	(3.22)	(0.70)	(1.25)	(1.78)
Log of Age				
Islamic	3.90	1.94***	-0.15	1.54
	(3.26)	(0.72)	(1.26)	(1.82)
Industry dummies (1 digit ICB)				
Islamic	4.99	1.65**	0.54	1.13
	(3.38)	(0.71)	(1.28)	(1.74)
Model	OLS	OLS	OLS	OLS
Control variables included	Yes	Yes	Yes	Yes
Industry and state fixed effects	Yes	Yes	Yes	Yes
Time fixed effects	Yes	Yes	Yes	Yes

Table A9: Rankings of institutional quality and financial development

This table contains the top 10 rankings of countries based on governance quality and financial development. Governance quality is measured as the average of six sub rankings based on six aspects of governance, namely Voice and Accountability, Political Stability, Government Effectiveness, Regulatory Quality, Rule of Law, and Control of Corruption (for definitions and data, see Kaufmann, Kraay, and Mastruzzi, 2010 and www.govindicators.org). The financial development ranking is from World Economic Forum (2012).

Country	Governance Quality	Financial Development
Finland	1	17
New Zealand	2	n.a.
Norway	3	13
Sweden	**4**	**10**
Switzerland	**5**	**8**
Luxembourg	6	n.a.
Denmark	7	12
Netherlands	**8**	**9**
Liechtenstein	9	n.a.
Austria	10	22

Samenvatting (Summary in Dutch)

De Islam beperkt de mogelijkheden voor Moslims om te beleggen in aandelen. Zij kunnen namelijk alleen in zogenoemde *Shariah compliant* aandelen beleggen (hierna, Islamitische aandelen). Deze aandelen moeten aan bepaalde financiële en niet financiële criteria voldoen om als Islamitisch gemerkt te worden. In deze zin, kan "Islamitisch" als een label worden gezien. Dit proefschrift gaat over dit label. Specifiek wil ik de vraag beantwoorden of een Islamitische label voor beursgenoteerde bedrijven aangeeft dat ze anders zijn dan beursgenoteerde bedrijven zonder een dergelijk label.

Deze vraag is interessant omdat Islamitisch financieren (waarvan Islamitische aandelen een deelverzameling zijn) de afgelopen 10 jaar met dubbele cijfers groeit en voorstanders van deze industrie beargumenteren dat het een beter alternatief is voor het huidige financiële systeem. Het argument gaat dat, omdat Islam vermijding van schuld en het nemen van excessief risico preekt, de recente financiële crisis voorkomen (of tenminste gemitigeerd) had kunnen worden als het was gebaseerd op Islamitische principes. Dit zou heel goed waar kunnen zijn, maar in de praktijk neigt Islamitisch financieren erg op conventioneel financieren te lijken.

In dit proefschrift laat ik zien dat deze gelijkenis nog sterker is voor Islamitische aandelen. Met andere woorden, een Islamitische label voor aandelen heeft geen betekenis, althans geen financiële betekenis. Dit betekent niet dat het geen waarde heeft. Moslims zouden heel goed waarde kunnen hechten aan beleggen volgens hun geloof, zoals andere ethisch gezinde beleggers waarde hechten aan beleggen in duurzame bedrijven. Wat ik beargumenteer is dat Moslims geen extra financieel voordeel (nog nadeel!) moeten verwachten van beleggen in Islamitische aandelen.

Dit argument is gebaseerd op de bevindingen van een aantal studies, die in dit proefschrift als hoofdstukken zijn opgenomen. In Hoofdstuk 2 beschrijf ik kort de industrie van het Islamitisch financieren en laat zien dat Islamitisch financieren in het algemeen en beleggen in Islamitische aandelen specifiek inderdaad een sterke groei heeft laten zien, het laatste 28% per jaar in de

afgelopen 17 jaar. De literatuur geeft aan dat voor Islamitisch financieren in het algemeen, de groei gedreven is door de omvang, groei, vermogen en koopkracht van Moslims. Voor beleggen in Islamitische aandelen (Islamitisch beleggen) specifiek is er veel minder literatuur. Maar ik betoog dat duurzaam beleggen (*Socially Responsible Investing*, SRI) wellicht wat inzicht kan bieden.

Om dit te doen, laat ik eerst zien dat SRI en Islamitisch beleggen aan elkaar verwant zijn. Namelijk, als SRI wordt gedefinieerd volgens de definitie van Eurosif (2014), dan kan beleggen in Islamitische aandelen gezien worden als een deelverzameling van SRI. Specifiek, SRI dat bepaalde sectoren/bedrijven uitsluit van haar beleggingsuniversum op ethische/morele gronden. Dit is precies wat Islamitisch beleggen doet, hoewel wat moreel acceptabel is soms verschilt met SRI (bijvoorbeeld bedrijven die varkensvlees produceren of verkopen).

Gegeven hun verwantschap, beschrijf ik de literatuur over de groei van zowel SRI als Islamitisch beleggen. Deze groei wordt meestal gemeten door de groei van SRI beleggingsfondsen en fondsen die beleggen in Islamitische aandelen. Uit de literatuur maak ik op dat de factoren die deze groei verklaren grofweg geclassificeerd kunnen worden in micro factoren en macro factoren.

Wat betreft de micro factoren lijkt de groei van SRI beleggingsfondsen gedreven te zijn door hun rendementen, leeftijd, risicogehalte en beheersvergoedingen (Renneboog et al., 2011) en dit lijkt niet te verschillen voor Islamitische beleggingsfondsen (Marzuki en Worthington, 2011). Grofweg kan gesteld worden dat beide type beleggingsfondsen die betere historische rendementen hebben en jonger zijn, meer geld aantrekken. Beheersvergoedingen, omvang en risicogehalte beïnvloeden ook de groei van beide type beleggingsfondsen maar het is minder helder of het effect voor beiden in dezelfde richting is.

Wat betreft de macro factoren betreft lijkt de groei van SRI beleggingsfondsen gedreven te zijn door verschillen tussen landen in cultuur, de omvang van de pensioen fonds sector, economische openheid en de fiscale omgeving (Scholtens, 2005; Scholtens en Dam, 2007; en Scholtens en Sievänen, 2013). Wat specifieker, landen met (i) een cultuur van lage mannelijkheid en een hoge

aversie voor onzekerheid (zie Hofstede 1980 en 1991), (ii) een grote pensioen fonds sector en (iii) een open economie (in termen van handel) neigen meer aan SRI te doen dan landen zonder deze kenmerken. Dit zou ook zo kunnen zijn voor Islamitisch beleggen. Als een hele ruwe indicatie: de drie landen waar de meeste islamitische beleggingsfondsen zijn gehuisvest lijken deze kenmerken inderdaad te hebben. Echter, er is meer data en statistische analyse nodig om te kunnen concluderen dat deze factoren daadwerkelijk de groei van Islamitisch beleggen in deze landen hebben beïnvloed. Dit is een interessant onderwerp voor verder onderzoek.

Hoofdstuk 3 vergelijkt het risico en de rendementen van de Islamitische aandelenmarkt met de conventionele aandelenmarkt. Specifiek, analyseert het de rendementsdistributies van Islamitische en conventionele aandeelindices en laat zien dat deze vergelijkbaar zijn. Grofweg renderen Islamitische aandelen beter tijdens een neergaande markt en slechter tijdens een opgaande markt, maar niet significant anders over de lange termijn, noch lijken ze minder riskant te zijn dan conventionele aandelen. Dit is nog steeds goed nieuws voor Moslims want het betekent dat ze geen rendement hoeven op te geven of extra risico te dragen om volgens hun geloof te beleggen.

Helaas kan hetzelfde niet gezegd worden over de beleggingsfondsen die daadwerkelijk in deze Islamitische aandelen beleggen (zogeheten *Islamic Equity Funds*, IEFs). Namelijk, Hoofdstuk 4 analyseert het rendement van deze IEFs en laat zien dat ze niet beter renderen dan conventionele noch Islamitische aandeelindices. Tijdens de financiële crisis van 2008/2009 renderen deze IEFs zelfs significant slechter dan zowel de conventionele als Islamitische aandelenmarkt. De reden voor deze slechte rendementen lijkt te zijn dat IEF managers proberen de markt te *timen* (door in en uit de markt te stappen op de juiste momenten, in afwachting van een stijging respectievelijk daling) maar als gevolg daarvan hun rendementen verminderen omdat ze er in niet in slagen. Dit is jammer, want beleggingsfondsen rekenen vergoedingen (doorgaans 2% van het belegd vermogen) om het vermogen van hun klanten te beheren en verantwoorden deze vergoedingen door een hoger rendement te bieden dan de markt index. Dat beleggingsfondsen de markt niet kunnen verslaan is vaak empirisch vastgesteld. Mijn bevindingen geven aan dit niet verschilt voor Islamitische beleggingsfondsen.

Ondanks het feit dat Islamitische indices noch IEFs beter renderen dan conventionele indices zouden Moslims toch (monetaire) waarde kunnen hechten aan beleggen in overeenstemming met hun geloof. Een manier om dit te testen is om te analyseren hoe aandelen reageren wanneer ze een Islamitische label krijgen en wanneer dit label wordt verwijderd. Als Moslims daadwerkelijk waarde hechten aan een Islamitische label, dan kan verwacht worden dat aandelen die dit label krijgen in waarde stijgen omdat er extra vraag naar is en het omgekeerde geldt wanneer dit label verwijderd wordt.

Dat is wat ik analyseer in Hoofdstuk 5. Echter, mijn bevindingen zijn dat aandelen niet reageren wanneer ze een Islamitische label krijgen of wanneer dit label wordt verwijderd. Specifiek analyseer ik toevoegingen aan en verwijderingen van de FTSE *Shariah* Global Equity Index (FTSE Islamic). Het lijkt erop dat, na het corrigeren van andere factoren die aandeelrendementen verklaren (zoals het marktrendement, een *value factor*, een *size factor* en een *momentum factor*), aandelen die worden toegevoegd aan (verwijderd van) de FTSE Islamic geen abnormaal hoge (lage) rendementen laten zien op die dag, noch over de lange termijn. Beleggers lijken dus niet veel waarde te hechten aan een Islamitische label, tenminste, niet genoeg om aandeelprijzen te laten reageren[126].

Hoofdstuk 5 laat ook zien dat het niet vreemd is dat beleggers een Islamitische label niet verdisconteren in aandeelprijzen. Namelijk, het laat zien dat er geen significant verschil is in risico, winstgevendheid of bekendheid bij beleggers van aandelen in de periode voor- en nadat ze een Islamitische label krijgen (of verliezen). Als er wel significante verschillen waren in risico, winstgevendheid of bekendheid bij beleggers, zou dit een indicatie kunnen zijn dat een Islamitische label informatie geeft over deze karakteristieken.

Maar wellicht geeft een Islamitische label andere positieve attributen aan die niet direct zichtbaar zijn. Een belangrijke hiervan is goed ondernemingsbestuur (*corporate governance*). Want recent onderzoek laat een directe link zien tussen goed ondernemingsbestuur en schuld (bijv. Arping en Sautner, 2010). Specifiek wordt in dit onderzoek beargumenteerd dat schuld en goed

[126] Een alternatieve verklaring van deze absente reactie op een Islamitische label is dat er niet genoeg beleggingsfondsen zijn die beleggen in deze Islamitische index om haar component aandelen te laten reageren.

ondernemingsbestuur substituten van elkaar zijn om zogeheten *agency* problemen te verminderen. Vanuit dit gezichtspunt trekken bedrijven met een slechte kwaliteit van ondernemingsbestuur schuld aan om *agency* problemen (zoals excessieve vergoedingen en onnodige maar prestige vergrotende overnames) te verminderen. Als dit het geval is zou het omgekeerde ook moeten gelden. Met andere woorden, van bedrijven met een lagere schuld kan verwachte worden dat ze beter ondernemingsbestuur hebben.

Aangezien het Islamitische label een lage schuld aangeeft, zou het dus impliciet ook goed ondernemingsbestuur aan kunnen geven. Het Islamitische label wordt inderdaad soms door haar verkopers (zoals FTSE en Dow Jones) gebrandmerkt als SRI. Maar zoals eerder uitgelegd lijkt SRI alleen op Islamitisch beleggen in enge zin. Beide sluiten bepaalde sectoren en bedrijven uit op ethische/morele gronden. Echter, waar SRI meestal rekening houdt met zogeheten ESG criteria (*Environmental, Social* en *Governance*), houdt het islamitische label in haar doorlichtingsproces niet expliciet rekening met deze ESG criteria. Toch zou de marketing van het Islamitische label als ethisch deels verantwoord kunnen zijn, tenminste in termen van goed ondernemingsbestuur (de G van ESG).

Echter, Hoofdstuk 6 laat zien dat dit niet het geval is. Hoofdstuk 6 analyseert het effect van een Islamitische label op goed ondernemingsbestuur. Het laat zien dat het Islamitische label, na het corrigeren voor andere determinanten, geen significante invloed heeft op de kwaliteit van algeheel ondernemingsbestuur. Een Islamitische label geeft dus niet aan dat er sprake is goed ondernemingsbestuur[127].

Hoewel een Islamitische label geen financieel betekenisvolle informatie lijk te bevatten, noch iets zegt over goed ondernemingsbestuur, laat Hoofdstuk 7 zien het hoge kosten met zich meebrengt om dit label te verkrijgen (wat ik in dit hoofdstuk *halal* certificering noem). Voor een standaard Islamitisch financieel product (een Islamitisch beleggingsfonds), schat ik dat deze kosten vergelijkbaar zijn met het verkrijgen van een *credit rating* voor obligaties. Hoofdstuk 7

[127] Het Islamitische label heeft echter wel een positieve invloed op de kwaliteit van ondernemingsbestuur zoals gemeten door de Bloomberg Corporate Governance Disclosure score. Deze relatie blijft robuust in verschillende specificaties. Maar ik verbind hier geen sterke conclusies aan omdat dezelfde Islamitische label geen significante invloed heeft op al mijn andere drie maatstaven voor kwaliteit van ondernemingsbestuur.

laat ook zien dat de markt voor deze *halal* certificeringen gedomineerd wordt door een klein aantal Islamitische geleerden. Het elite gedeelte van deze geleerden krijgt aanzienlijke vergoedingen (geschat op USD 4.5 miljoen per jaar) voor het geven van deze certificeringen en heeft dus een duidelijke prikkel om hierin te soepel te zijn.

Hoofdstuk 7 bespreekt een aantal mogelijke oplossingen voor dit probleem. Het beste van deze oplossingen is dat een neutrale organisatie zonder winstoogmerk het geven van alle *halal* certificeringen op zich neemt, haar *Shariah* geleerden een vaste vergoeding betaalt en collectief gefinancierd wordt door de internationale Islamitische financiële gemeenschap. Idealiter is deze organisatie gevestigd in een land dat neutraal is, instituties heeft van uitstekende kwaliteit, een goed ontwikkelde financiële sector en een open cultuur.

De algemene conclusie van dit proefschrift is dat er niks inherent anders is aan beleggen in Islamitische aandelen. Dit is in contrast met eerder onderzoek, die te positief neigt te zijn over beleggen in deze aandelen. Het laat bijvoorbeeld zien dat Islamitische aandelen beter bestand zijn tegen financiële crises (Bhatt en Sultan, 2012), geschikt zijn voor risico averse beleggers (Ho et al., 2014) en in sommige gevallen zelfs beschouwd kunnen worden als een aparte *asset class* (Dewandaru et al., 2014). De bevindingen van dit proefschrift suggereren dat men voorzichtig zou moeten zijn om deze claims als waarheid aan te nemen.

Verder heeft mijn onderzoek vijf belangrijke implicaties die de huidige situatie van Moslim beleggers kan verbeteren. Ten eerste kan Islamitisch beleggen de welvaart van Moslims verhogen. Namelijk, het geeft hun een kans om te beleggen in overeenstemming met hun geloof zonder rendement op te geven of extra risico te nemen. Een specifieke manier om dit te bereiken is bijvoorbeeld door Moslims de mogelijkheid te geven om hun pensioenen op een Islamitisch verantwoorde manier te beleggen.

Ten tweede zouden potentiele Moslim beleggers expliciet gewezen moeten worden op de specifieke risico's van Islamitisch beleggen. Bijvoorbeeld de hoge allocatie naar de gezondheids-, technologie- en energiesector. Maar ook de subtielere blootstelling naar zogenaamde *growth* aandelen.

Ten derde, als Moslims besluiten om te beleggen in Islamitische aandelen kunnen ze beter beleggen in passieve beleggingsfondsen zoals Islamitische *Exchange Traded Funds* (ETFs) in plaats van te beleggen in Islamitische beleggingsfondsen (IEFs). Want IEFs verslaan de markt niet, terwijl ze wel hogere beheersvergoedingen vragen dan passieve fondsen.

Ten vierde, een neutrale organisatie zonder winstoogmerk zou de huidige certificering van Islamitische financiële producten over moeten nemen. Dit is omdat Moslim beleggers momenteel een additionele bron van onzekerheid hebben, die niet gedragen wordt door conventionele beleggers. Namelijk, de onzekerheid omtrent Islamitische geleerden (de kans dat een Islamitische geleerde zijn gedachte verandert over wat precies als *halal* beschouwd kan worden). Zo een organisatie zou idealiter gebaseerd moeten zijn in een neutraal land met goede institutionele kwaliteit, een goed ontwikkelde financiële sector en een open cultuur. Gebaseerd op institutionele kwaliteit en ontwikkeling van de financiële sector lijken Zwitserland, Zweden of Nederland goede kandidaten te zijn omdat ze hoog scoren op deze beide kenmerken.

Tenslotte zou het Islamitische label expliciet ESG criteria in haar doorlichtingsproces op moeten nemen. Want de principes van de Islam vragen er expliciet om dat bedrijvigheid gevoerd wordt op een manier die rekening houdt met het milieu, een positieve invloed heeft op de samenleving en goed wordt bestuurd. Zonder deze ESG criteria op te nemen loopt het Islamitische label het risico om een marketing truc te worden in plaats van een ethisch kwaliteitskeurmerk.