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13 June 2017

Online at <https://mpra.ub.uni-muenchen.de/79738/>

MPRA Paper No. 79738, posted 17 Jun 2017 02:45 UTC

Are Islamic risk factors blessings or curse for stock return? evidence from Malaysia based on dynamic GMM and quantile regression approaches

Mosharrof Hosen¹ and Mansur Masih²

Abstract

This paper is motivated by the heightened interest in investing in Islamic equities. The paper is the first attempt at analysing the Islamic-effect in a cross-sectional stock return framework to individual 141 Islamic and non- Islamic firms using the dynamic GMM and Quantile regression techniques and we believe this is the first paper that investigates the Islamic-effect in such a context. We combine a unique Malaysian data set of individual Islamic stocks (as opposed to aggregate stock indices) since 1997 with a new method where we apply Islamic business activity and financial ratio screens to the universe of Malaysian stocks. Results tend to indicate that there is no significant relationship between Malaysian Islamic firms and average stock returns.

We extend our results by using a Quantile regression approach to show that the non-significant Islamic effect is, in fact, changing at different percentiles that affect the cross-sectional expected returns of Malaysian common stocks. Results tend to show that some focus variables like market value and book to market and control variable, oil price are not significant at different percentiles, and this result has important implications for the growing Islamic finance industry around the world.

Keywords: Islamic risk factors, Islamic equities, Malaysia, Dynamic GMM, Quantile regression

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1.0 Introduction

Since its appearance in the mid-1970s, it is not surprising to find Islamic equities making encouraging in-roads onto the global equity markets scene, although not the panacea for the current prevailing system, arguably flawed as evidenced by many recent failings. Accordingly, a growing amount of research and empirical analysis has been devoted to studying various aspects of Islamic equity investments. Briefly, *Shari'ah* compliant stocks or simply Islamic equities represent a growing investment category whereby Islamic principles and tenets are employed to screen stocks deemed unacceptable for investment by Muslim investors.

However, the fact that Islamic investors demand financial products that adhere to specific guidelines raises an interesting question: Does adherence to *Shari'ah* law in financial contracts come with an additional cost? Several empirical studies investigate that question in different contexts by looking into how the application of Islamic finance affects the risk–return profile of different financial contracts.

For example, there are studies that investigate the Islamic-effect in the context of mutual fund, [Hayat and Kraeussl \(2011\)](#) offer empirical evidence of conventional funds outperforming Islamic ones. Similarly, [Al-Shakfa and Lypny \(2011\)](#) argued that the expected costs of observance (to *Shari'ah* rulings) was positive. They note that in an out-of-sample basis, secular portfolios performed proportionately better. [Al-Khazali et al. \(2014\)](#) relied on a non-parametric methodology in comparing the performance of Islamic and conventional stock indices, arguing that conventional indices stochastically dominated Islamic indices at second and third orders in all markets except the European market. [Bousalamand and Hamzaoui \(2016\)](#) constructed Islamic indices for the Moroccan market and found that the hypothetical Islamic indices outperformed conventional ones.

However, it would be hasty to conclude that the overall performance of conventional equity investments is superior to that of Islamic ones. [Ashraf and Mohammad \(2014\)](#), [Alam and Rajjaque \(2010\)](#), [Peillex and Ureche-Rangau \(2013\)](#), [Charles et al. \(2015\)](#), and [Shamsuddin \(2014\)](#) are examples of studies with empirical evidence of Islamic equity indices outperformed their conventional counterparts.

To add to this already mixed bag of results, we have yet other studies that find that the risk-adjusted returns of Islamic funds and/or indices to be no different from conventional ones. For example, using robust differences-in-Sharpe ratio tests and time series factor regressions controlling for market risk (CAPM) as well as size, value and momentum

characteristics in the 4-factor framework, [Walkshausl and Lobe \(2012\)](#) did not find evidence that religious (Islamic) stock screens reduced financial performance. In addition to this, [Ahmad and Ibrahim \(2002\)](#), [Hussein \(2004\)](#), [Hakim and Rashidian \(2004\)](#), [Elfakhani et al. \(2005\)](#), [Hassan et al. \(2005\)](#), [Girard and Hassan \(2008\)](#), [Merdad et al. \(2010\)](#), [Dharani and Natarajan \(2011\)](#), and [Binmahfouz and Hassan \(2013\)](#) are examples of studies with empirical evidence of non-conclusive relative risk-adjusted performance of Islamic equity investments vis-à-vis conventional ones.

One of the main reasons the past research on the Islamic-effect is inconclusive is that the Islamic finance and investment industry is still relatively new, compared to its conventional counterpart, and the literature in the field of Islamic finance is still in its infancy. Thus, this paper attempts to bridge the gap in the existing Islamic finance and investment literature by investigating the impact of the Islamic-effect in a manner that is distinctive from previous studies. Specifically, we test for an Islamic-effect in the cross-section of stock returns.

To our knowledge, this is the first paper that examines the Islamic-effect issue along with some control variables in such a context. We argue that developing Shariah-compliant financial contracts begins with defining the underlying operating environment of the firms to which the cash flows of the financial contract are connected. Shariah principles define the types of business activities in which Muslims are willing to engage. So, in this manner, *Shari'ah*-compliance is directly related to and affects firm fundamentals, such as the firm's primary business activities, riskiness, operations, financing sources, profitability, revenues, and leverage. Therefore, in efficient financial markets, we expect the impact of Islamic principles on important firm fundamentals to also be reflected in the values of the firm's financial assets.

We use Malaysia as a case study of Islamic and non-Islamic stock markets for two reasons. First, Malaysia has one of the most strongly established Islamic financial sectors in the world ([Austrade, 2010](#); [Ernst & Young, 2012](#)). According to the Bank Negara Malaysia report (2016), \$65.5bn, of total financial assets in Malaysia, are Islamic. Relative to the Middle East, Malaysia is a highly-sophisticated market with developed infrastructure and is a leader in terms of Islamic finance innovation due to its more liberal *Shari'ah* interpretation (The Banker, 2016).

Second, we use Malaysia because of its unique data on Islamic stocks. While many countries have Islamic stock indices, Malaysia is the only country with comprehensive data on individual stocks that are considered to be Islamic by the Shariah Advisory Council of Malaysia

who provide semi-annual lists of all Malaysian Islamic firms since 1997. Further, we develop a screen-based methodology to create another Malaysian data set where we apply Islamic business activity and financial ratio screens to identify Islamic versus non-Islamic stocks. This methodology helps understand the characteristics of Islamic versus non-Islamic firms and most importantly, it explains what particular business activity or financial ratio screens affect the performance of Islamic and non-Islamic stocks.

Hence, we investigate this important issue, to the best of our knowledge this is the first study, that applies relatively advanced appropriate statistical techniques to individual stock markets using the dynamic GMM, and Quantile regression techniques. Findings from both approaches indicate that there is no significant, relationship between Islamic firms and average returns. The results indicate that, in the context of Malaysian stock market, Islamic risk factor doesn't affect the stock return. This finding has important implications for the growing global Islamic finance industry. Our result is derived using data (2007- 2017, yearly) from conventional and Islamic firms in Malaysia. Accordingly, the application of our results to other Islamic Conference Countries (OIC), as well as other regions with growing Islamic finance industries, should be a priority for future research.

The structure of the remainder of the paper is as follows. The next section will provide a brief knowledge about *Shari'ah* compliant firm and investment and short review of some selected recent literature relevant to the issues and theoretical underpinning, while Section 4 will give a brief description of the Islamic finance in Malaysia and then enlighten you by knowing properties of Islamic and non- Islamic stocks. In section 6 you will get methodology and data. The empirical results will be presented and discussed in Section 7. The final section will conclude the paper and provide some suggested improvements for future research. We believe that such analyses demonstrate the necessity of employing relatively advanced techniques to provide reliable and accurate results for the managers and policy makers in establishing corporate and industry governance strategies.

2.0 Why do we need to think about *Shari'ah* compliant firm and investment?

To identify the risk-return profile of Islamic equities vis-à-vis their conventional peers is importance for both Islamic institutional investors as well as *Shari'ah*-compliant firms. As to the former, there is a trend of sovereign wealth funds (SWFs) in Muslim countries to start operating their investment within a *Shari'ah*-compliant framework. Specifically, the 11 sovereign wealth funds from the member states of the OIC (Organization of Islamic

Cooperation) belonging to the top 20 sovereign wealth funds in the world, are predominantly driven by oil-generated revenues. Nine of these member countries, with total assets of USD 2.853 trillion, have already implemented Islamic finance regulations or guidelines, while enabling the *Shari'ah*-compliant investment framework in the SWFs remains in the progress and becomes a topical issue amongst regulators and practitioners. A double-digit growth of Takaful (Islamic insurance) also gives rise to the potential as another type of Islamic institutional investors. On the contrary, the total assets of the global Islamic asset management industry have reached merely USD 56 billion. The global Islamic funds rely heavily on retail investors (around 80% contribution) while attracting institutional investors remains the main obstacle in the industry.

The main challenge for those Islamic institutional investors has been a limited number, and the variety of asset class, of *Shari'ah*-compliant investment universe, where the assets have been dominated by traditional asset classes such as equities and Sukuk (Islamic bonds). Focusing on equity asset class, the *Shari'ah* screening has removed out the firms with debt/equity ratio exceeding a certain threshold. Hence, the screening results in a lower number of investable equities, with concentration in particular sectors, in the Islamic investment universe. This raises questions of whether investing in Islamic equities will generate a comparable risk-return profile relative to their conventional equities. In view of that, our study attempts to address this issue through assessing the return, volatility, systemic risk and correlation risk, due to the fact that lower number of equities combined with lower level of debt may result in advantages/ disadvantages with respect to risk-return profile.

On the other hand, conducting a comparative analysis for Islamic equities is also important for firms which are either already *Shari'ah*-compliant or otherwise. In particular, the main question lies in whether being Islamic equities (by fulfilling the *Shari'ah* screening criteria) can be a disadvantage in respect of raising equity financing for firms. While attracting financing from the abundant wealth of Islamic institutional investors seems to be promising for firms, the focus remains as to whether being *Shari'ah*-compliant firms would increase the cost of equity that they need to satisfy, which further create the trade off in altering the capital structure. This has also been of particular issue for firms which consider shifting their capital structure in order to be *Shari'ah*-compliant equities.

3.0 Literature Review

Compare to the previous studies we divided our literature review by the two subsections like, Islamic effect on equity market and mutual fund.

3.1 Past empirical studies on Islamic equity market

[Al-Khazali et al. \(2014\)](#) examined the performance between nine Dow Jones Islamic indices and their conventional counterparts (Asia Pacific, Canadian, Developed Country, Emerging Markets, European, Global, Japanese, U.K., and the U.S.) employing stochastic dominance analysis. The findings showed that all conventional indices stochastically dominated the Islamic indices from 2001 to 2006 in all markets except the European market.

However, during the period from 2007 to 2012, the U.S., European and Global Islamic stock indices dominated their conventional counterparts. This is consistent with the study of [Saiti et al. \(2015\)](#) who used wavelet correlation analysis to show that the MSCI conventional stock indices of non-Islamic countries (Japan, China, Korea, Taiwan and Hong Kong) displayed contagion effects while their corresponding Islamic stock markets and the MSCI conventional and Islamic stock markets of the Islamic countries (Malaysia, Indonesia, Turkey, GCC ex-Saudi) did not suffer from contagion effects during the collapse of Lehman Brothers.

[Saiti, Bacha, and Masih \(2014\)](#) suggested that stock markets of Islamic countries tend to provide better diversification benefits compared to the non-Islamic countries. [Majdoub and Mansour \(2013\)](#) investigated the volatility spillover effects between the U.S. Islamic and five Islamic emerging (Turkey, Indonesia, Pakistan, Qatar and Malaysia) stock markets using three Multivariate Generalized Autoregressive Conditional Heteroskedasticity (MGARCH) models. All paired countries exhibited weak conditional correlations over time and showed no evidence of volatility spillover from the U.S. Islamic market into the Islamic emerging equity markets.

However, the empirical evidences above are conflicting with the following studies. [Salina \(2013\)](#) studied the impact of the global financial crisis on the integration among seven Islamic stock markets (Indonesia, Kuwait, Malaysia, Turkey, Japan, U.K., Dow Jones and the U.S.) using time series analysis of Autoregressive Distributed Lag (ARDL) and Vector Error Correction Model (VECM) approaches. The findings showed the absence of integrating relationship among the Islamic stock markets during the pre-crisis, but otherwise during the crisis period.

Abdullah, Saiti, and Masih (2015) found there was cointegrating relationship between Islamic stock indices (Indonesia, Malaysian, Philippine, Singapore, and Thailand) and selective commodities (crude oil, corn and gold) using the cointegration test. While Kabir et al. (2013) demonstrated that the spillover return and volatility in the Islamic equity markets of Asia Pacific, Japan, U.K., the U.S. and Canada were influenced by the extreme market movements and also suggested that Islamic equity returns were comparatively more responsive to the regional than the global market events as well as to the lower leverage ratio of firms as part of their stock screening methods.

Likewise, Hammoudeh et al. (2014) who used a copula approach to reveal that the global Dow Jones Islamic equity index was significantly dependent on three major global conventional equity indices (Asia, Europe, and U.S.) and the global factors (oil prices, stock market implied volatility (VIX), the U.S. 10-year Treasury bond interest rate and the 10-year European Monetary Union government bond index). These findings have implied that the Shariah-compliant screening is not restrictive enough to make the global Islamic equity market distinguishable from the conventional markets.

Hence, the issue of whether the Islamic stock market is sensitive or immune against the arrival of new information in the global or regional markets still remains highly questionable with no prevailing general consensus.

3.2 Past empirical studies on Islamic Mutual funds

The other studies have focused on mutual funds' performance, and found that Islamic funds perform on an average similar to the other conventional counterparts, and even are subject to multiple regimes (Hassan, Antoniou & Paudyal, 2005; Elfakhani, Hassan & Sidani, 2005; Hassan & Antoniou, 2006; Abdullah, Hassan, & Mohamad, 2007). Hoepner, Rammal, & Rezac (2011) found that Islamic funds from Malaysia or GCC do not significantly underperform their respective benchmarks. Kamil et al. (2013) discovered that the Malaysian Islamic equity funds do not outperform market benchmarks. When their performance is superior, only 1.95% of funds are genuinely skilled, whereas 47% of the observed positive fund alpha is statistically due to luck.

Despite of the broad studies that have been undertaken relating to the risk and return relationship, there are limited studies carried out in Malaysian Islamic stock market, that need to further exploration. This study is therefore timely to bridge the literature gap and advanced

appropriate methodology gap by investigating the linkages between Malaysian *Shari'ah* compliant stock and *Shari'ah* non-compliant stock.

4.0 Islamic finance in Malaysia

Malaysia has established dual capital market structures which consist of the conventional capital market and the Islamic capital market. A variety of products are offered in the Islamic capital market such as Shariah-compliant securities, sukuk (Islamic bonds), Islamic mutual funds/unit trust, Shariah indices, warrants (TSR), call warrants and crude palm oil futures contract. Shariah Advisory Council (SAC) was set up in 1997 under the Securities Commission (SC) Act 1993 for the screening process of the products. SAC is responsible to counsel on matters pertaining to Islamic Capital Market (ICM) in Malaysia.

The main thrust of ICM is to ensure that the market activities that are carried out in a way that does not conflict with the principles of Shariah. Financial transactions that involve *riba*, *gharar* and *maisir* are strictly prohibited by the Shariah. In addition, transactions involving products and activities deemed unlawful (*haram*) in Islam such as alcohol brewery, pork, immoral entertainment (such as prostitution and pornography), tobacco, *riba*-based financial services and intoxicating drugs and conventional finance.

The methodology of Shariah screening in Malaysia was first established in the mid 1990s. A listed security must satisfy the screening in two stages, the quantitative and qualitative assessments. In November 2013, the screening methodology was revised by adopting a two-tier approach in the quantitative assessment which consists of business activity benchmarks and the newly-introduced financial ratio benchmarks. The existing qualitative assessments that assess the public perception and image of the company remain unchanged. In the business activity benchmarks, the contribution from Shariah non-compliant is computed and compared with the group revenue or group profit before taxation of the company according to certain percentages of benchmark³ allowed.

While for the financial ratio, it is intended to measure *riba* and *riba*-based elements within a company's statement of financial position which must be lower than 33%. The Kuala Lumpur Syariah Index (KLSI) was launched on 17th April 1999 by the Kuala Lumpur Stock Exchange (KLSE), presently now as Bursa Malaysia (Malaysian Stock Exchange). KLSI acts as a benchmark for tracking the performance of *Shari'ah*-compliant securities. On 22nd January

³ Refer to the Securities Commission Malaysia's website for details of revised Shariah screening methodology.

2007, Bursa Malaysia with the collaboration of FTSE Group (FTSE) launched the FTSE EMAS Shariah Index (FBMS). This new index ran parallel with KLSI for nine months before KLSI was deactivated on 1st November 2007. From then on, FBMS has become the singular benchmark index that tracks the performance of Malaysian *Shari'ah*-compliant securities. The approved list of constituents following the screening processes is updated regularly in every third Friday in June and December. FBMS is free-float adjusted and liquidity screened. The index calculation is real-time recorded in every 60 s and end-of-day index is available.

In 2009, Malaysia was recorded as the largest *Shari'ah* compliant equity market among the Islamic finance centres in the world (PwC, 2010). Besides, four out of the top 10 largest Shariah-compliant constituents were from Malaysia. According to the ICM's statistics, Bursa Malaysia listed 667 Shariah compliant securities out of a total of 903 securities; approximately 73.9% of the total securities traded in the Bursa Malaysia were Shariah-compliant as of December 2016. For market capitalization, the Shariah-compliant securities were valued at MYR1, 086 billion or 64.1% out of a total market capitalization of MYR1, 694 billion⁴. Due to the high progressive of Malaysian Islamic finance, the Malaysian Islamic index is selected in the empirical study analysis.

5.0 Properties of Islamic and non-Islamic stocks

This section gives an overview about the properties of Islamic and non-Islamic stocks and how they could affect risk (return variance), return (average returns) and the mean–variance efficiency of each portfolio. We expect that Islamic stocks have less than or equal returns to non-Islamic stocks. This is because the Islamic portfolio excludes stocks which have been shown to have high returns, such as ‘sin stocks’ which are defined in Hong and Kacperczyk (2009) as publicly traded companies involved in producing alcohol, tobacco and gaming.⁵ They argue that ‘sin stocks’ have higher expected returns than otherwise comparable stocks as they are neglected by institutional investors because of social norms, regulatory scrutiny and litigation risk. This means those stocks experience limited risk sharing and higher idiosyncratic risk and this is compensated with higher average returns (Merton, 1987). Findings in Hong and Kacperczyk (2009) also support the argument in Heinkel et al. (2001) that the drop-in demand

⁴ Source: Securities Commission Malaysia, Bursa Malaysia.

⁵ There is, however, a major difference between non-Islamic stocks and ‘sin stocks’ as non-Islamic stocks also include other prohibited business sectors such as conventional banks and insurance companies, as well as firms with high levels of debt, cash and interest-bearing securities or receivables.

for stock of companies that are perceived as irresponsible should lead to a premium in their returns.⁶

In terms of risk, we expect Islamic stocks to have lower leverage compared to non-Islamic stocks or conventional stocks. First of all, this could be because the principles of Islamic finance aim for minimising uncertainty (*gharar shaghir*) (Sukmana and Kholid, 2010), which can be achieved by avoiding industries and firms with high risk and uncertainty. For instance, Lee et al. (2010) have shown in the context of socially responsible investment (SRI) funds that a fund's total risk decreases as more screens are employed. The authors suggest that this may be due to SRI managers selecting lower beta stocks in order to decrease the overall risk (and compensate for the limited diversification).

In summary, Islamic firms are expected to have a risk–return profile that is distinguished from conventional firms, due to the implementation of Shariah principles within firms that affect their fundamental values. The changes in fundamental firm values should be reflected in the prices of the firms' financial contracts, and the marginal effect that the implementation of Islamic principles has on the stock prices of Islamic firms is referred to as the Islamic-effect. Thus, we test for the existence of the Islamic-effect.

6.0 Data and methodology

6.1 Data Collection

As a growing industry, the Shariah screening process filters whole equities in the investment universe of a particular country or sector. This filtering process comes up with compliant equities, investable for Islamic investors, which are grouped in the form of an Islamic equity index. As a result, all the Islamic equities theoretically belong to the Islamic market portfolio. To tackle this issue, we measure Islamic risk effect on stock return.

To conduct this research work, yearly data of 141 Islamic and non-Islamic stocks have been collected from DataStream and Bloomberg databases over the period 2007 to 2017, from Malaysia. To calculate the market return, we collected daily stock price then use the following

⁶ Fabozzi et al. (2008), Liston and Soydemir (2010) and Durand et al. (2013a) also find that a sin portfolio either outperforms the market, comparable stocks or a faith-based portfolio. Koh et al. (2014) confirm that 'sin stocks' sell at a discount (i.e. they are undervalued and generate higher returns), which is consistent with Hong and Kacperczyk (2009) and Durand et al. (2013a). They further show that firms in the MSCI KLD 400 Social Index attract a premium, suggesting that corporate social responsibility (CSR) creates shareholder value. On the other hand, Chow et al. (2014) find higher long-run abnormal returns for firms added to the MSCI KLD400 Social Index and that this effect is associated with higher shareholdings by institutional investors, analyst coverage and growth opportunities.

equation: $r_{i,t} = \ln\left(\frac{P_{i,t}}{P_{i,t-1}}\right)$. To calculate the excess returns, we used the 3-month T-bill return

	RPM	VIX	PRICE	MV	OP	RPBETA	BTM	SI
Mean	-2.559747	19.99455	1.828395	2328.346	76.32021	-3.526852	0.014518	11630.09
Median	-2.774757	18.21000	0.804038	200.4067	79.34623	-3.022370	0.005445	11865.32
Maximum	13.22017	40.00000	23.08269	45674.45	103.1375	34.76904	0.225965	14400.67
Minimum	-6.667244	11.56000	0.047885	1.950000	42.43226	-21.12659	5.34E-05	7993.435
Std. Dev.	1.266766	7.265589	2.879285	5926.795	20.41283	3.885264	0.025475	2234.691
Skewness	2.589313	1.656254	3.616763	4.055714	-0.336954	1.466365	3.964432	-0.144328
Kurtosis	24.48834	5.496981	18.90726	21.37675	1.525873	18.09314	23.44813	1.414749
Observations	1551	1551	1551	1551	1551	1551	1551	1551

from Bloomberg as a proxy for the risk-free rate which we then subtract from the stock returns. To reduce potential survivorship bias, we use all active and dead stocks on DataStream.

6.1.1 Descriptive Statistic

Table 1: Descriptive Statistic tests

To analyse the result of the study, first it is useful to comment on some preliminary features of our data. In Table 1 shows descriptive statistics for the risk premium (RPM) and the focus variables and control variables used in our model. In average, the return on risk premium of 141 Islamic and conventional firms used in this study is negative 2.56. The mean of all other independent variables is also positive unless risk premium beta (RPBETA).

6.1.2 Panel Unit root test

Variable Name	Z-Statistics	P-value	Variable Name	Z-Statistics	P-value
RPM	12.5909	0.0000	BTM	1.6359	0.0000
D. RPM	-19.6716	0.7326	D. BTM	-1.88799	0.256
Price	20.4033	0.0000	SI	9.8117	0.0000
D. Price	-16.1970	0.7823	D. SI	-1.32798	0.1921
MV	23.2087	0.0000	OP	7.26941	0.0000
D. MV	-9.6467	0.87	D. OP	-1.8520	0.8954
RPBETA	9.66993	0.0000	VIX	13.142	0.0000

D. RPBETA	0.5157	0.3630	D. VIX	-7.142	0.157
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Table 2: Panel Unit root test: Hadri LM Test

From the above table we can see that, RPM is in level form whereas D. RPM is in differenced form. Moreover, Price is in level form and D. Price is in differenced form. Also, Market value which represent in level form but D. Price shows in differenced form. Again, RPBETA which reflects in level form and D. RPBETA represent in differenced form. Furthermore, BTM shows in level form and D. BTM in differenced form. SI represent stock indices in level form and D. SI in differenced form. OP represent oil price in level form and D. OP is in differenced form. Lastly, VIX represent in financial uncertainty in level form but D. VIX is in differenced form.

6.1.3 Panel Cointegration test

Kao Residual Cointegration Test				
Series: RPM VIX PRICE MV OI RPBETA BTM SI				
Date: 04/18/17 Time: 23:57				
Sample: 2007 2017				
Included observations: 1551				
Null Hypothesis: No cointegration				
Trend assumption: No deterministic trend				
User-specified lag length: 1				
Newey-West automatic bandwidth selection and Bartlett kernel				
			t-Statistic	Prob.
ADF			-24.88052	0.0000
Residual variance			1.207393	
HAC variance			0.498551	

Table 3: Kao Residual Cointegration Test

After examining the panel unit root and cointegration test (Table 2 & 3), there is no spurious relationship exists among variables and all variables are co-integrated. From the above table 3 we can see that the probability of ADF test is zero meaning that we reject the null hypothesis which represent no cointegration. Nonetheless, we got our residual variance is 1.207 and HAC variance is 0.498 which represent model is highly cointegrated.

6.2 Methodology and Econometric specifications:

We test for the existence of the Islamic-effect using a panel regression approach. The panel model is used to control for any significant firm-specific effects, and we utilize heteroskedasticity-robust standard errors to control for heteroskedasticity.

Based on [H.J. Merdad et al \(2015\)](#) argue dynamic model uses more information and consequently the determinant factors will be estimated more efficiently. That's why this employ both static and dynamic models.

6.2.1 Static Models (Fixed and Random Effects) and panel model

Fixed Effects Model:

$$Lriskpremium = \alpha + \beta_1 price + \beta_2 rpbeta + \beta_3 market\ value + \beta_4 btm + \beta_5 stockindices + \beta_6 isl + \beta_7 dummy\ for\ beta + \varepsilon \quad (i)$$

$$Lriskpremium = \alpha + \beta_1 price + \beta_2 rpbeta + \beta_3 market\ value + \beta_4 btm + \beta_5 stockindices + \beta_6 isl + \beta_7 dummy\ for\ beta + \beta_8 oil + \beta_9 vix + \varepsilon \quad (ii)$$

Where $Lriskpremium$ is an independent variable which is calculated market return over risk free rate for 141 stocks listed on the Malaysia Stock Exchange, here we used Malaysian three-month treasury bill as a proxy of risk free rate. α is the intercept; the independent variables are the yearly excess market returns over the risk-free rate and multiply by beta, and the $DISL$ represents Islamic dummy variable (1 if the stock (i) is Islamic during month (t) and zero otherwise); $\varepsilon_{i,t}$ is the classical error term; the subscripts (i) and (t) refer to stocks and years, respectively. A significant and positive (negative) estimated coefficient for the “Islamic” dummy variable indicates that there is statistical evidence that Malaysian stocks produce average returns that are higher (lower) than conventional stocks. That is, there is a positive (negative) Islamic-effect or no effects.

6.2.2 Panel Model:

$$\gamma_{i,t} - \gamma_{i,t.1} = \alpha (\gamma_{i,t.1} - \gamma_{i,t.2}) + \beta (X_{i,t.1} - X_{i,t.2}) + (\varepsilon_{i,t.1} - \varepsilon_{i,t.2}) \quad (iii)$$

$$\gamma_{i,t} = \alpha \gamma_{i,t-1} + \beta X_{i,t} + \gamma Z_{t-1} + (\mu_i + \vartheta_{i,t}) \quad (\text{iv})$$

Where,

$\gamma_{i,t}$ = Stock i 's risk premium in year t , namely Risk Premium

$\gamma_{i,t-1}$ = Stock i 's risk premium in year $t-1$

X_i = a vector of current values of explanatory variables

Z_{t-1} = a vector of lagged control variables.

μ_i = An observed risk premium time invariant effect which allows for heterogeneity in the means of

$\gamma_{i,t}$ series across stock

$u_{i,t}$ = Disturbance term which is independent across stock

6.2.3 Quantile Regression (QR) model:

Quantile Regression developed by [Koenker and Bassett \(1978\)](#) is used to transform a conditional distribution function into a conditional quantile function by slicing it into segments. These segments describe the cumulative distribution of a conditional dependent variable Y given the explanatory variable x_i with the use of quantiles. Assuming that the θ th quantile of the conditional distribution of the explained variable is linear in x where $\text{Quant } X_i$, the conditional QR model can be expressed as follows:

$$\begin{aligned} Y_i &= X_i' \cdot \beta_\theta + u_{\theta i} \\ \text{Quant}_\theta (y_i | x_i) &= \inf \{ y : F_i(y|x)\Theta \} = x_i' \cdot \beta_\theta \\ \text{Quant}_\theta (u_{\theta i} | x_i) &= 0 \end{aligned} \quad (\text{V})$$

where $\text{Quant}_\theta (y_i | x_i)$ represents the Θ the conditional quantile of y_i on the regressor vector x_i ; β_θ is the unknown vector of parameters to be estimated for different values of Θ in $(0,1)$; $u_{\theta i}$ is the error term assumed to be continuously differentiable c.d.f. (cumulative density function) of $F_i (y|x)\Theta$ and a density function $F_i (y|x)\Theta$. The value $F_i (y|x)\Theta$ denotes the conditional distribution of y conditional on x . Varying the value of u from 0 to 1 reveals the entire distribution of y conditional on x . The estimator for β_θ is obtained from

$$\min \sum_{i:u\theta>=0}^n \theta \times |u\theta| + \sum_{i:u\theta<=0}^n 1 - \theta \times |u\theta|$$

$$= \sum_{i:yi-x'i.\beta\theta>=0} \theta \times |yi-x'i.\beta\theta| + \sum_{i:yi-x'i.\beta\theta<=0} (1 - \theta) \times |yi-x'i.\beta\theta| \quad (vi)$$

6.3 Descriptive results and analysis:

Variable	Static Model (Fixed Effects)		Dynamic Model (Two step Differenced GMM)	Dynamic Model (Two step System GMM)
	(1)	(2)	(1)	(2)
Constant	-1.107*** [0.14]	-2.423*** [0.36]	-4.093*** [0.72]	0.000 [0.00]
Riskpremium- Lag of dependent variable	-0.072*** [0.02]	0.003 [0.02]	0.235*** [0.06]	0.279*** [0.07]
Price	-0.032 [0.03]	-0.041 [0.03]	-0.120** [0.05]	-0.004 [0.02]
RPBETA	0.336*** [0.01]	0.325*** [0.01]	0.395*** [0.04]	0.325*** [0.06]
Market Value	2.074 [0.87]	2.021 [0.76]	5.076 [3.25]	-7.054 [5.25]
BTM	2.477* [1.48]	2.769* [1.45]	6.315 [5.17]	5.769** [2.82]
Stock Indices	-0.012*** [0.01]	0.013** [0.02]	0.011*** [0.01]	0.017*** [0.03]
ISL	0.049 [0.08]	0.057 [0.15]	0.058 [0.17]	0.053 [0.12]
Dummy for beta		1.062 [0.11]	1.045 [0.13]	1.433*** [0.18]
Control Variables				
Oil		-0.002* [0.00]	-0.001 [0.00]	-0.002** [0.00]
Vix financial Uncertainty		0.034*** [0.01]	0.052*** [0.01]	0.065*** [0.02]
Wald- χ^2			76619.11***	527.74***
R-squared	0.3430	0.3507	0.5044	0.5117
Sargan test			Chi2= 28.04, prob>chi2=0.619	Chi2= 74.43, prob>chi2=0.130
F-stat.	8.26***	7.98***	35.38***	29.14***
AR (1) test			Z= -2.03, p=0.042	Z= -2.77, p=0.006
AR (2) test			Z=-1.36, p=0.175	Z= -0.94, p=0.346

No. of observation	1269	1269	1269	1269
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Standard errors in brackets

Table 4: Descriptive results

* p<0.1, ** p<0.05, *** p<0.01

Notes 1: We used yearly data to calculate yearly returns for all listed firms. The dependent variable is Risk premium which is calculated by subtracting yearly stock return from risk free rate. In addition, the yearly market value (size) for each firm is calculated by multiplying the number of shares outstanding by the stock price at the end of each year. Also, we calculate book-to-market (BTM) values for the listed firms by dividing the firm's book value of common equity by the market value (size) of equity. It is worthy to note that BTM values are computed using the book values from the previous year-end in order ensure that the book value of equity is known by the market. Here price is used yearly market price. Moreover, we calculated risk premium beta by multiplying risk premium and beta. ISL measure Islamic dummy variable which represent whether the stock we used are Islamic or conventional. And, we used dummy for beta which represent systematic risk of an individual firm, we calculated it by taking standard benchmark. If the beta of individual firm is more than benchmark high risky and vice versa. Furthermore, we used oil variable which represent as a control variable. This measure change in oil price has any impact or not. Again, we used another control variable is Vix which represent financial uncertainty. Lastly, we sample the end-of-three month, three-month maturity treasury bill from Bloomberg over the January 2007 to February 2017 sample period. The treasury bill rate serves as a proxy for the monthly risk-free rate.

Notes 2: This study tested the Hausman test and found P-value 0.0248 meaning fixed effect model has been accepted.

Notes 3: Sargan test is a test for the validity of instruments and is asymptotically distributed as χ^2 under the null of valid instruments. If p-value > .05, we confirm the validity of instruments. AR (2) is a test for the second-order serial correlation and is asymptotically distributed as N (0,1) under the null of no serial correlation. If p-value >0.05, we confirm of no serial correlation at order two in the first-differenced errors and the model is well specified. *, **and***indicate significance at the 10%, 5% and 1% levels, respectively.

There are two static models that have been applied. In static model-1 (table-4), only focus variables have been used in this study, whereas model-2 applies both focus variables and control variables. Based on Hausman test, this study accepts the result of fixed effect model (notes-2). The result shows that price, risk premium beta, stock indices and financial uncertainty have a significant impact on the risk premium in all the model that we estimated. The other variables such as market value, book to market, dummy for beta and oil have no statistically significant relationship with dependent variable risk premium at 1%, 5% and 10% significant level respectively.

As expected in Table-4, the empirical findings suggest that RPBETA has a positive relationship with risk premium and it is statistically significant at the 1% level in the fixed

effect model. The result is consistent with previous studies [Peillex and Ureche-Rangau \(2013\)](#), [Charles et al. \(2015\)](#), and [Shamsuddin \(2014\)](#) providing support to the argument that high beta indicates that risk become higher, thus leads more returns. Moreover, generally we can see the if stock rate is more volatile that may earn more return and may be affected by loss as well.

In model-1, the coefficient of stock indices entered all regression models with positive sign suggesting that the higher growth of capital market tend to exhibit the higher profit. Moreover, this result is consistent with our model 4 and 5 all are significant at 1%. Furthermore, most of the model have positive relationship with book to market and risk premium meaning that when book to market lead to increase the risk premium at different level of significance 5% and 10% respectively.

Concerning the external factors, oil price has a negative relationship with risk premium. Although we found here negative relationship, which is contradict with other studies. Hence, we can understand from this relationship is when oil price increase, the risk premium would lead to fall. Even though, another important variable financial uncertainty has positive relationship with risk premium which is theoretically support our result.

Since GMM can solve only the 'fixed effect' problem but fixing the problem of 'correlation between the lagged dependent variable and the error term' and 'the endogeneity of some explanatory variables' require 'instruments' and difference GMM has weak instruments. The system GMM tries to deal with weak instrument problem by augmenting instruments. System GMM does not make any assumption about the distribution of the panel. Hence, tests whether the data follows a normal distribution or if the distribution is skewed are not reported. Nevertheless, there are two assumptions underlying the System GMM technique. System GMM is only consistent when there is no second-order autocorrelation within the error item and second, when the model is not over-identified (i.e. when the instruments are valid). Therefore the table report two tests; the Arrelano and Bond test of first- and second-order autocorrelation in the residuals and the Hansen test of over-identification. Furthermore, the consistency of GMM estimator depends on the validity of the assumption that the error terms do not exhibit serial correlation and on the validity (exogeneity) of its instruments. To validate these assumptions, STATA offers two sets of specification tests. The first set constitutes Sargan and Hansen test of over-identification. This study employed the Sargan test and confirm the validity of instruments (notes 3).

In both difference GMM and system GMM, risk premium beta has significantly positive relationship with risk premium which is theoretically support our result. This is because once risk is high leads to higher return. Our result also show that, in both difference and system GMM, Islamic risk factors dummy is not statistically significant meaning that in Malaysian market has no effect. Hence, it may be due to multi-racial people in this country. Furthermore, dummy for beta is only statistically significant in system GMM which shows at 10% significant level. Turning into external factors variable, oil has negative relationship with risk premium which is contradict with theory. This is happening may be recently remarkable dropped of the oil price. Moreover, another important variable is vix financial uncertainty, which has positive relationship with risk premium. Moreover, this support the theory.

7.0 Robustness Test:

7.1 Quantile Regression:

Descriptive results and analysis:

	OLS_res	Q20_res	Q40_res	Q60_res	Q80_res	Q90_res
RPBETA	.417***	.376***	.408***	.429***	.424***	.396***
Price	-.002	.0007	-.0008	-.006*	-.020***	-.035***
MV	3.44e-07	1.59e-06	1.16e-06	8.93e-07	2.45e-07	1.82e-06
BTM	.757	-.9611	.907	.9206*	1.222	3.918*
BETA	1.146***	1.166***	1.165***	1.138***	1.0014***	.8322***
OP	-.0003477	-.0011**	-.0005	-.00025	-.0012	-.0013
VIX	.0127***	.0045	.0115	.0178***	.0243***	.0239***
*p<0.05,** p<0.01,*** p<0.001						

Table 5: Quantile regression at different percentiles

Notes 1: We used yearly data to calculate yearly returns for all listed firms. The dependent variable is Risk premium which is calculated by subtracting yearly stock return from risk free rate. In addition, the yearly market value (size) for each firm is calculated by multiplying the number of shares outstanding by the stock price at the

end of each year. Also, we calculate book-to-market (BTM) values for the listed firms by dividing the firm's book value of common equity by the market value (size) of equity. It is worthy to note that BTM values are computed using the book values from the previous year-end in order ensure that the book value of equity is known by the market. Here price is used yearly market price. Moreover, we calculated risk premium beta by multiplying risk premium and beta. ISL measure Islamic dummy variable which represent whether the stock we used are Islamic or conventional. And, we used dummy for beta which represent systematic risk of an individual firm, we calculated it by taking standard benchmark. If the beta of individual firm is more than benchmark high risky and vice versa. Furthermore, we used oil variable which represent as a control variable. This measure change in oil price has any impact or not. Again, we used another control variable is Vix which represent financial uncertainty. Lastly, we sample the end-of-three month, three-month maturity treasury bill from Bloomberg over the January 2007 to February 2017 sample period. The treasury bill rate serves as a proxy for the monthly risk-free rate.

For robustness of the study, this study also employ the quantile regression. Table 5 lists the estimation results of the Quantile regression model for the impact of the focus variables and control variables on the risk premium at different percentiles. For comparison, the OLS estimates are also presented. Interestingly, the result of OLS varies at different percentiles except BETA.

According to OLS, price has no impact on risk premium of the firm, whereas quantile regression finds it has also negative impact at 60, 80 and 90 percentiles. From the market value perspective, we got the similar result with OLS and quantile regression both represent non-impact on firm's risk premium. However, we got different result in terms of BTM, OLS has no impact but quantile has impact at 60 percentiles and 90 percentiles.

In term of external factors variables such as oil price has different effect of OLS and quantile regression. By using quantile regression, we got significant only at 20 percentiles. Hence, in term of financial uncertainty OLS and quantile regression give similar result most of the variables are significant unless 20 and 40 percentiles respectively.

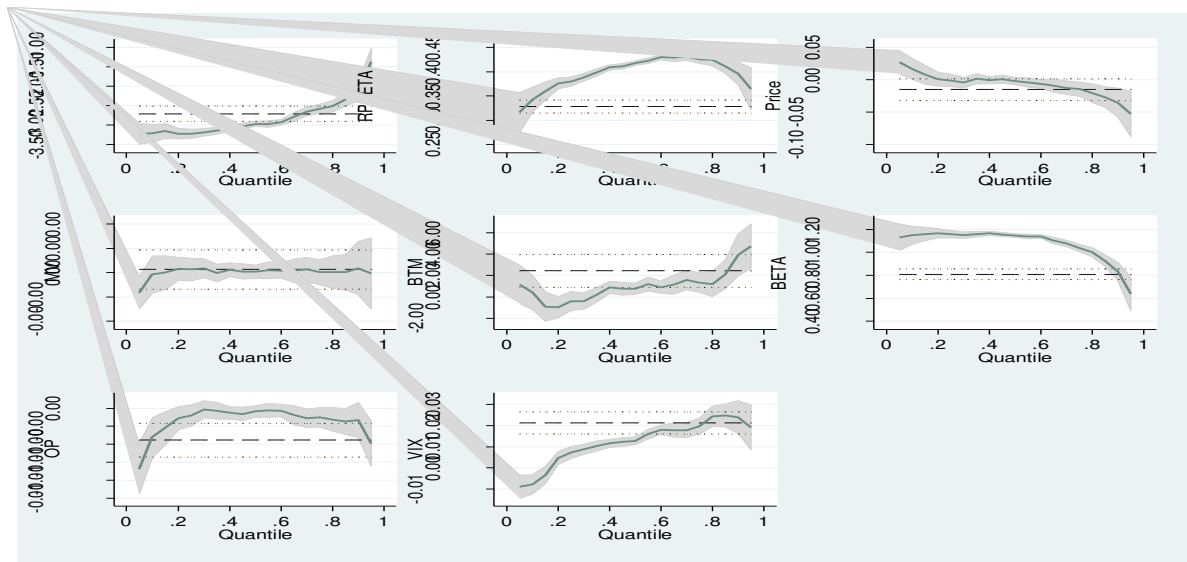


Fig. 1. Variation in the Islamic Risk factors and stock return coefficient over the conditional quantiles. Confidence intervals extend to 95% confidence intervals in both directions. 100 replications is used to bootstrap standard errors. Horizontal bold dotted lines represent OLS estimates with 95% confidence intervals. We have plotted the graphs using the Stata command ‘grqreg’ developed by [Azevedo \(2011\)](#).

The quantile regression coefficients are plotted as lines varying across the quantiles with confidence intervals around them. If the quantile coefficient is outside the OLS confidence interval, then we have significant differences between the quantile and OLS coefficients. Figure 1 depicts the QR estimates and the OLS estimates and finds that most of the variables are not plotted within the confidence interval.

Figure 1 presents the regression lines derived by the QR against the OLS methods. We found that most of the variables are significant at initial, mid or last level which represent that all variables have impact on firm’s risk premium. Here, we can see market value and book to market have more impact on firm’s risk premium which also support by the many finance literature.

8.0 Concluding remarks and policy implications

This paper attempts to bridge the gap in the Islamic finance and investment literature by providing new insights as to the effect of Shariah-compliance on the cross section of stock returns. It is important that Islamic investors understand any significant costs in the form of lower returns that may accompany an investor's decision to insist on Shariah-compliant financial products. We examine this issue by testing for an Islamic-effect in the cross-section

of stock returns. To our knowledge, this is the first paper that investigates the effect of Islamic compliance on expected returns using an asset pricing model approach.

We first test for the existence of an Islamic-effect using a sample of Malaysian stock returns from January 2007 to February 2017 by applying a dynamic GMM approach for technical analysis, as well as it also considers Quantile regression as an additional analysis for ensuring the robustness results. The empirical approach shows that the application of Shariah-compliance, with its restrictions and guidelines, gives Malaysian Islamic firms not a different risk–return profile than that of Malaysian conventional firms. Specifically, result shows that there is no significant relationship between Islamic firms and average returns. Malaysian Islamic stocks, on average, provide investors same returns with those of conventional firms, according to the panel regression approach.

Moreover, our result also shows that market value and book to market also has less impact on risk premium but rest have different impact at different percentiles. This result also indicates that focus variable such as oil price and financial uncertainty has positive impact on risk premium meaning that when financial uncertainty and oil price change that will lead to change in risk premium.

The overall findings suggest that Islamic investors could pay attention to other risk premiums (size, value, quality, etc.) as the sources of sustainable returns in investment ([Asness et al., 2013](#); [Cakici et al., 2013](#)). A robust risk-budgeting technique and factor alignment are required to diversify the identified factor returns, while matching the risks with the returns ([Ceria et al., 2012](#)). This is due to the fact that the Islamic equity universe is smaller and therefore results in more volatile premiums available in the market.

As a consequence, being a *Shariah*-compliant firm does not necessarily imply that it pays a higher cost of equity. In fact, being listed in *Shariah* index would posit an advantage to the firm, since Islamic institutional investors put their commitment to be *Shariah* compliant through investing in Islamic indices, as well as considering such indices which may also serve as a catalyst to more exploratory strategies and alpha generation.

Hence, the study infers that Islamic stocks are the viable and ethical investment avenue to the Muslim investors as they can invest their capital in accordance with their religious beliefs without sacrificing financial performance. Our results have important implications for Islamic finance researchers, investors, regulators, policy makers and

practitioners, as the growth of the Islamic finance industry continues around the globe, and investors determine which risks are relevant in pricing Islamic financial contracts.

To enhance academic understanding of the subject, the research can be extended particularly by studying a larger sample size, since the sample size used in this study might be relatively limited and some other firms were omitted from study which can significantly affect findings. In addition, future studies could be conducted by using more country for identifying Islamic risk factors effect on stock return, this could not be achieved in the current study due to the nature and size of the sample studied. Future research could also include more variables such as, taxation and regulation indicators, as well as exchange rate. Another possible extension could be using some other alternative multivariate volatility modelling in order to identify more robust and precise cross-market risk.

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