Are Islamic banks systemically riskier than conventional banks? An empirical investigation

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Abstract

There has been an increased interest in the structure and growth of Islamic finance and banking over the past few years. This has been the cases especially after the financial crisis that hit the global banking and financial system, which resulted in one of the severest economic slowdown that we have had for many years. This paper is an initial explorative attempt to test a systematic risk model to a sample of Islamic and conventional banks in a number of countries. This paper will addresses the question to whether Islamic banks are systematically more risky than conventional banks and then attempt to explore the impact of such a risk appetite structure on performance.

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Introduction

The financial services industry was largely affect by the global financial crisis of 2008, where the sluggish growth in this sector was mainly due to the loss of confidence by savers and borrowers, the reduction of institutional liquidity available for investment and corporate financial projects, and also to the overall economic slowdown that impacted the growth in the industrialized world, which all seem to have affected both the supply and demand conditions in the global financial market. However, in the wake of the financial crisis there appear to have been an increased interest in a fast growing segment of the financial industry globally; namely Islamic finance and banking.

Islamic banks became an important player in the global financial industry. This is not only due to the amount of assets under management, which totalled over $1,000 billion (The Banker 2011), but also because these banks provide financial services that cater to the needs of a growing segment of investors and credit seekers worldwide who require services and financing opportunities that conform to their religious preferences. It is argued that the increases in income in the oil rich economies, a growing religious middle class in the Islamic world, and a growing confidence in equity related investment instruments than debt based type of products may have contributed and is probably expected to contribute to the growth of this segment of the financial industry.

The Islamic law (*Sharia),* which is derived from the Quran and the teachings of Prophet Mohammad covers a comprehensive range of rules and regulation relating to religious, social, economic, and financial affairs and the governance of the financial dealings of groups and individuals in an Islamic society. With regard to financial transactions in an Islamic society, the *sharia* prohibits the use of interest in financial dealings, it forbids certain types of investments, and recommends that risk management practices be based on a shared model where all parties involved in a financial or business transaction bear some degree of financial responsibility and risk when entering into a transaction. In general Islamic finance

seems to accentuate the concept of trade partnership and profit sharing, which is required to replace interest charging, and it emphasises the importance of equity as much as possible while preventing excessive reliance on and the expansion of debt.

Given the prevalence of such rules and laws, it can be argued that the system of Islamic economics and finance would have an operational structure that recommends the type of financial regulation that govern the working and functions of financial institutions such as banks. Therefore, it would be important academically to explore the conduct of Islamic banks given the concept of risk management and the consequently assess their performance in comparison to conventional banks.

This paper will introduce a)-the concept of Islamic finance, b) - the characteristics of Islamic banks, c) -review some of the key studies and literature conducted in this area, and then given that the risk and profit sharing model is a key element in Islamic banking this research d) - addresses the question to whether Islamic banks are systematically more risky than conventional banks and the impact of such a risk appetite structure on performance. The analysis is based on the theoretical framework proposed by Acharya et al (2010) and the measure developed by Brownlees and Engle (2011). The analysis will be established from the perspective of a firm's that is assumed to have a high likelihood to face a substantial capital shortfall when the financial sector is weak, creating a negative externalities to both the real and the financial sectors of the economy.

Islamic Finance

The field of conventional finance cover areas relating to corporate finance, investments, financial institutions, derivatives, and international finance. These areas relate to the financial management decisions that pertain to making an investment in an asset (both real and financial), the raising of capital through debt or equity to fund these investments, and then the creation of cash flow and rates of returns that are higher than the cost of capital in order to economically and financially justify these investments and hence create value to the provider of capital.

In Islamic finance the decisions relating to an investment in an asset excludes direct or indirect transactions in businesses that pertain to alcohol, pork products, firearms, tobacco, adult entertainment, and the gambling industry (Jobst 2007). With regard to the raising of finance, the parties involved in a financial transaction are forbidden to charge or receive interest (*riba)* or have to any form of dealings that is involved in exchanging money for debt without an underlying asset transfer, and that all the cash flow have to be produced by *sharia-compliant (halal)* sources. In addition, the working of financial institutions such as Islamic banks, takaful companies (Islamic form of insurance), Islamic investment banks, and Islamic private equity firms are prohibited from being involved in speculative activities. These activities involve preventable uncertainty *(gharar)* such as financial derivatives instruments, forwarding contracts, and future agreements (Jobst 2007). However, the main essence of Islamic finance should be the absence of interest where the overall agreement amongst Islamic scholars is that the charging of interest and any fixed rate of return promised to an investor that is predetermined *ex ante,* and are guaranteed regardless of the financial performance of the asset is not permissible (Iqbal and Tsubota, 2006; Iqbal and Mirakhor, 2006; Iqbal and Llewellyn, 2000). Given that Islamic finance encourages a financial structure without interest, then the alternative relationship between the borrower and lender or investor and saver has to be based on shared business risk and returns, and therefore any capital based form of investment that does involve entrepreneurial risk would probably not be considered *halal* under Islamic principles.

It is argued by Iqbal and Mirakhor (2007, pp17) that the unconditional prohibition of interest impacts the overall landscape of the Islamic financial system, this concept relates to the prohibition of pure debt security, and therefore, the alternative in this system is risk and profit sharing taking into consideration that the maximization of profit by producers or utility by consumers are not the sole objectives of the society and that any wasteful consumption is discouraged, this argument points to the fact that the generation of waste due to maximization objectives would result in a misallocation of real and financial resources, therefore an Islamic financial system needs to address that the burden is born by all members of the society, where it appears that there is a social welfare function that the society as a whole needs to attain, and that all the parties in an economic and financial transaction partake by accepting risk sharing, a situation that aims to achieve a more

efficient allocation of resources, and probably allow the distribution of income in a fairer and more effective way .

With regard to capital, the basic proposition of Islamic finance is that the return on capital would be determined *ex post* and not *ex ante*, and that the size of the return is a function of the size of the economic activity in which the funds were employed to develop. In an Islamic financial system the provision of capital should be linked to the productive flow in the economy and where the size of debt claims should not be greater than the value of production, hence the capital structure should based more on equity rather than debt for firms and financial institutions otherwise "debt bubbles" would develop. It is further argued by Iqbal and Mirakhor (2007) that a practical current conventional example relating to the recognition of the impact of debt is observed by what the IMF advises developing countries to follow; namely avoiding debt-creating flows, more reliance on Foreign Direct Investment (FDI), that borrowing should be for longer maturities probably to ensure the ability of the project to economic viability and thus meet the liabilities over the period in question, and that enough primary surpluses are created by the economy to meet the debt obligations, in addition if these countries have to borrow then the sovereign bonds should include clauses that would allow a more flexible debt restructuring environment.

The characteristics of Islamic banks

The characteristics of Islamic banking can be analysed in terms of the relationship between the banks and their clients such as depositors, borrowers, investors...etc., they can also be established in terms of the types of financial products available for financial transactions which are basically the characteristics pertaining to the mode of financing and also the relationship between the bank and the financial market. In addition to that, there is the issue relating to the incorporation of ethical and moral values in investment and financing decisions that are based on the Islamic Sharia law.

When considering the different types of financial transactions offered by Islamic banks, there are a number of modes that are used in this form of banking namely:

Mudaraba – is a financial transaction which relate to profit sharing where one economic agent with capital partners with another that has the business skills, investment

management knowledge, skills in investment project and entrepreneurship, ...etc. The losses are born by the capital owner in this case.

Murabaha - This case is similar to a cost-plus contract where the profit margin given the cost that was incurred by the seller. The cost, profit margin, and selling price must be clearly stated in the contract. This kind of contract is facilitated to businesses or individuals who do not have sufficient capital. The mark – up profit margin is determined by both the financier who purchases the commodity, product, or raw material, real estate...etc. The time value of money is part of the profit margin. In this case the bank cannot charge any interest on late payment or any more compensation outside the financial contract.

Musharaka – is seen as joint venture, or an equity partnership, it is possible that a working partner gets a greater proportion of the profit that a passive partner, and the loss of capital is not in the same ratio to partners. This contract combines the process of management and investment. When the bank is involved in this transaction, the bank claims part of the profit that would compensate for the financial risk.

Ijara – This is a type of a leasing contract, here the bank or the financial institution buys the asset from a seller and leases it to the customer at a certain price which should include the profit.

There are other transactions relating to credit sale or *Bai' al-mujjil*, where the buyer can pay the the seller (possibly a bank) by installment where the profit margin is incorporated. There are contracts *Bai Bathamin Aji* where there is no need to disclose profit margin but payment can still be made by installment for the long term. *Sukuks* which is a form of a bond that constitutes a participation right in an asset.

The above are some examples but there are other products.

Data

The analysis will focus on comparing the systemic risk of Islamic banks and conventional banks that operate in the same economy. The sample of Islamic banks is based on the publicly traded banks listed in The Banker Top 500 Islamic Financial Institutions. After determining the countries in which these banks operate, the sample of conventional banks will be constructed for each economy. The analysis will cover the period from 2005 until 2011 for only four countries in this paper at this stage namely Malaysia, Qatar, Saudi Arabia, and UAE only. The analysis will be extended to the other countries in the dataset available to us. The sample could be extended later on by including Turkey, although the addition is not significant because it has only two Islamic banks only. Some countries were excluded because the stocks Islamic banks in these countries is thinly traded, which make it very difficult to estimate the related model for the volatility and correlations.

Table 1 provides descriptive statistics of the daily stock returns of the both conventional and Islamic subsets for each year in the period covered in our sample. Table 2 demonstrates descriptive statistic of total assets, total liabilities, and total shareholders' equity for both sample subsets.

The classification of Islamic and conventional banks was obtained from the central banks of the previously mentioned eight countries. The daily returns and bank fundamentals data was obtained from Bloomberg.

Table 1 Descriptive statistics of the daily returns of publicly traded conventional and Islamic banks in Malaysia, Turkey, Indonesia, Saudi Arabia, Kuwait, Qatar, Bahrain and UAE. The figures below are the annual average of respective statistic of each bank for each year from 2000 to 2011 except for the min and max, as these figures illustrate the min and max returns in a given year.

Panel A. Conventional Banks

	Mean	Median	Standard Deviation	Max	Min	Number of banks in sample
2000	-0.00374	-0.00819	0.04099	0.67123	-0.51083	52
2001	0.00092	-0.00009	0.03961	0.46155	-0.66089	55
2002	0.00178	-0.00210	0.05158	5.43394	-5.34180	64
2003	0.00590	0.00736	0.04018	0.40547	-0.66783	74
2004	0.00354	0.00328	0.03757	0.52869	-0.40547	77
2005	0.00315	0.00457	0.04192	1.14072	-0.43127	81
2006	0.00032	-0.00513	0.04262	0.43825	-0.36584	88
2007	0.00344	0.00299	0.03576	0.40547	-0.40134	89
2008	-0.00387	-0.00652	0.04483	0.39878	-0.43466	88
2009	-0.00016	-0.00010	0.04491	0.30295	-0.53280	87
2010	0.00099	-0.00053	0.03791	0.53063	-0.41513	85
2011	-0.00388	-0.00740	0.03897	1.21444	-0.37949	87

Panel B. Islamic Banks

	Mean	Median	Standard Deviation	Max	Min	Number of banks in sample
2000	-0.00414	-0.01175	0.04481	0.51060	-0.58740	25
2001	0.00041	-0.00759	0.03952	0.47207	-0.33706	29
2002	-0.00057	-0.00553	0.03480	0.29112	-0.50973	32
2003	0.00266	0.00016	0.03754	0.40478	-0.58901	33
2004	0.00269	0.00128	0.03353	0.44274	-0.35329	36
2005	0.00199	-0.00227	0.02902	0.19419	-0.60864	40
2006	0.00002	-0.00307	0.03145	0.53063	-0.30479	48
2007	0.00120	-0.00158	0.02568	0.29725	-0.21738	49
2008	-0.00422	-0.00771	0.03441	0.47000	-0.41538	52
2009	-0.00009	-0.00297	0.03626	0.43624	-0.44629	53
2010	0.00163	0.00445	-0.02739	-0.28768	0.35020	53
2011	-0.00330	-0.00715	0.03230	0.55811	-1.12393	48

Table 2 Descriptive statistics of total assets, total liabilities, and shareholder's equity of publicly traded conventional banks and Islamic banks in Malaysia, Turkey, Indonesia, Saudi Arabia, Kuwait, Qatar, Bahrain and UAE. The figures are in $USD Million dollars .

Panel A. Conventional Banks

	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Mean	3867.706	3774.188	4202.841	4848.276	5275.447	6345.386	8168.77	11374.11	12064.7	13251.87	14947.52	24218.66
Median	847.8831	937.8464	1073.677	1052.432	1162.771	1649.894	2348.744	2962.883	3078.223	3237.376	3516.638	14396.83
Standard Deviation	5581.793	5415.872	5968.436	6929.838	7488.329	9617.397	11707.97	17004.48	17823.26	19940.32	22298.09	26256.4
Max	26676	26586	28915	30068	32799.23	51665.73	58597.42	76884.88	76887.01	86335.71	97662.7	97599.4
Min	23.0507	22.125	18.309	25.183	29.5025	75.9045	61.5597	83.9947	67.3481	40.5281	68.777	130.2917

Total Liability

	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Mean	3397.905	3333.638	3613.264	4245.09	4566.601	5481.696	7144.338	9970.465	10683.97	11556.09	12934.74	21014.94
Median	771.3522	846.1685	949.1983	858.8548	988.7484	1322.176	1757.883	2280.145	2650.635	2517.888	2755.738	12452.03
Standard Deviation	5016.114	4886.294	5337.019	6187.332	6539.615	8521.454	10486.64	15161.44	15999.79	17587.63	19514.33	23085.39
Max	24355	24239	27081	27971	26397.56	44198.74	51360.81	66747.91	69873.34	76085.29	85367.23	86822.28
Min	0.642	2.9813	0.444	0.628	3.399	22.837	0.0215	0.0875	0.0853	1.8293	2.5393	21.574

Shareholders' Equity

	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Mean	469.8011	440.1764	489.0345	603.1859	710.2213	863.6903	1024.432	1403.641	1380.658	1695.777	2012.778	3203.718
Median	186.2133	167.4369	183.9585	237.9859	277.8396	392.1727	434.9552	622.5349	475.6851	568.895	600.774	1944.798
Standard Deviation	638.8776	565.4484	610.4961	825.9198	1037.855	1157.091	1273.159	1919.1	1894.965	2409.81	2847.337	3281.415
Max	2493.741	2347	2551.073	4615.756	6401.665	7466.999	7236.607	10136.97	7799.695	10250.42	12295.46	11709.46
Min	4.6029	-20.3062	8.1294	5.1288	5.0277	8.3084	14.0168	14.0877	-135.578	17.11	19.8378	45.81

Panel B. Islamic Banks

Total Assets

	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Mean	5057.924	5394.375	6124.2	6004.131	6776.972	7441.996	9149.477	11263.1	11743.47	12988.56	14269.05	20470.4
Median	2034.78	2178.852	2388.915	2396.855	2499.386	2508.525	3179.938	4435.869	4689.23	5275.17	7111.474	10731.88
Standard Deviation	5581.793	5415.872	5968.436	6929.838	7488.329	9617.397	11707.97	17004.48	17823.26	19940.32	22298.09	26256.4
Max	38509.5	39646.32	42356.68	47238.8	50498.75	61037.93	74342.44	82356.76	88403.67	104386.8	88027.86	94805.84
Min	60.4124	63.9414	60.1943	11.9604	13.0371	92.2363	183.3703	224.4892	118.7025	95.1867	87.4148	535.4261

Total Liability

	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Mean	4558.181	4859.493	5509.2	5370.302	6096.25	6625.414	8008.214	9900.867	10358.31	11477.8	12596.4	18065.26
Median	1677.021	1843.974	2096.122	2129.13	1984.654	2032.362	2376.866	3608.173	3925.141	4414.602	5853.461	9797.271
Standard Deviation	250.2108	219.9056	338.4395	245.9189	388.6371	474.4186	563.2778	745.5446	761.1963	791.2945	894.006	1330.161
Max	35783.23	36221.35	38702.69	43274.91	46063.55	56281.56	68587.73	76207.79	81072.81	95499.87	80085.64	86322.3
Min	4558.181	4859.493	5509.2	5370.302	6096.25	6625.414	8008.214	9900.867	10358.31	11477.8	12596.4	18065.26

Shareholders' Equity

	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Mean	7730.304	8009.664	8727.052	9243.065	10211.43	11604.02	14263.56	16651.91	17906.9	20508.48	19758.04	23899.76
Median	7151.685	7319.705	7978.709	8430.769	9358.482	10658.99	13206.85	15299.31	16340.82	18664.4	18042.7	21762.51
Standard Deviation	614.7623	738.1369	773.6966	834.7606	879.1076	1015.113	1427.112	1613.226	1775.755	2035.365	2005.611	2453.583
Max	2726.274	3424.965	3653.995	3963.89	4435.198	4756.369	5908.49	6843.034	7330.861	8886.976	8084.528	8751.815
Min	499.7432	534.8821	606.7021	625.3163	684.0529	816.5827	1149.89	1362.238	1385.163	1510.76	1672.647	2405.139

Methodology

Model Specification and Methodology

The econometric approach that we employ in this paper is adopted from Brownlees and Engle (2011). The intuition behind their systemic risk measure is to gauge a bank's contribution to a crisis when the whole system is undercapitalized. A financial institution that faces a large capital shortfall plays a fundamental role in intensifying a crisis, as it will inflict external costs on the real economy when the whole system is in a crisis. Such a firm is considered be most systematically risky. Therefore, substantial expected capital shortfall not only reflects the firm's exposure to risk but it also indicates how systematically risky the firm is. Consequently, given the model developed by Brownlees and Engle (2011) they define the systemic risk index of firm *i* as

$$SRISK_i = \min(0, CS_{i0})$$

where

$CS_{it} = k(F_{it} + G_{it}) - (1 - k)W_{it}MES_{it}$

F_{it} is the firm's capital raised from risky debt at time *t*

G_{it} is the firm's capital raised from guaranteed debt at time *t*

W_{it} is the firm's initial capital at time *t*

k is the prudential ratio of asset value to equity

The percentage version of this measure is define as

$$SRISK\%_i = SRISK_i / \sum_i SRISK_i$$

The index $SRISK\%$ measures the portion of the total expected capital shortfall of the whole system that is driven by firm *i*.

In order to estimate the systemic risk index for each financial institution in our sample, we need to know each firm's debt, equity, and MES. The debt and equity data is publicly available, so the task of collecting these data is not problematic. However, the challenging task is to estimate the MES, as it requires the application of time series methods to estimate the expected capital shortfall over a long period. To

approach this task, Brownlees and Engle (2001) model the daily market and firm returns in a bivariate conditionally heteroskedastic setting to characterize the dynamics of these returns. In what follows, we describe the characteristics of their model.

Denote by r_{it} and r_{mt} the log returns of firm *i* and the market, respectively. The bivariate process of the firm and market returns is given as follows:

$$r_{mt} = \sigma_{mt}\epsilon_{mt}$$

$$r_{it} = \sigma_{it}\rho_{it}\epsilon_{mt} + \sigma_{it}\sqrt{1-\rho_{it}^2\xi_{it}}$$

$$(\epsilon_{mt}, \xi_{it}) \sim F$$

where the shocks $(\epsilon_{mt}, \xi_{it})$ are i.i.d over time and have zero mean, unit variance, and zero covariance. Note that zero covariance does not mean independence. This is because the model needs to allow for cases when extreme values of the shock hit all systemically risky firms at the same time.

Now that we described the specifications of the returns in the model, we turn to demonstrate the specifications of the conditional standard deviation and the conditional correlation. To model volatility, Brownlees and Engle (2011) choose the TARCH specification proposed by Rabemananjara and Zakoïan (1993). The TARCH model specifies the dynamics of the conditional volatility as follows:

$$\sigma_{mt}^2 = \omega_{mG} + \alpha_{mG}\, r_{mt-1}^2 + \gamma_{mG} r_{mt-1}^2\, I_{mt-1}^- + \beta_{mG}\, \sigma_{mt-1}^2$$

$$\sigma_{it}^2 = \omega_{iG} + \alpha_{iG}\, r_{it-1}^2 + \gamma_{iG} r_{it-1}^2\, I_{it-1}^- + \beta_{iG}\, \sigma_{it-1}^2$$

where $I_{mt}^- = r_{mt} < 0$ and $I_{it}^- = r_{it} < 0$.

This specification of the volatility is able to capture the leverage effect that is the asymmetric reaction of volatility to good and bad news. This model is estimated using a quasi-maximum likelihood approach to ensure that our estimates of the model parameters are consistent, given that the conditional volatility model is specified correctly.

Brownlees and Engle (2011) use the DCC specifications for the time varying correlation proposed by Engle (2002). In this model, the variance covariance matrix is expressed as follows

$$H_t = D_t P_t D_t \qquad (1)$$

Where $H_t = E_{t-1}[r_t r_t']$, $D_t = diag\{\sqrt{h_{i,t}}\}$, and P_t denotes the time varying conditional correlation matrix of the market return and the firm return.

The DCC model does not estimate P_t directly. Rather, it models the correlation matrix as a function of Q_t, which is considered as the correlation driving process, such that

$$P_t = diag(Q_t)^{-1/2} Q_t diag(Q_t)^{-1/2} \tag{2}$$

and

$$Q_t = S(1-\alpha-\beta) + \alpha(\varepsilon_{t-1}\varepsilon_{t-1}') + \beta Q_{t-1} \tag{3}$$

where α and β are scalars and S is the unconditional correlation matrix of ε_{t-1}.

After explaining the specifications of the variance and correlation models that we use in our paper, explain the process we followed to estimate the multi-period ahead MES. As in Brownlees and Engle (2011), we employ simulation techniques to obtain predictions of the MES. This is because a closed-form solution cannot be obtained. The simulation procedure is developed as follows:

To obtain a value of the *h* period MES at each time *t*, *S* return paths are simulated of length *h* on day *t*-1

$$\begin{Bmatrix} r^S_{mt+\tau-1} \\ r^S_{it+\tau-1} \end{Bmatrix}_{\tau=1}^{h} \quad s = 1, \dots, S$$

The paths are obtained by drawing pseudo innovations from the innovation distribution *F*, i.e.

$$(\epsilon^s_{mt+\tau-1}, \xi^s_{it+\tau-1})_{\tau=1}^{h} \sim F$$

Then these draws are fed into the DCC and GARCH models using the current levels of volatility and correlation as starting points. The multi-period MES is then computed from the Monte Carlo average of the simulated paths.

$$MES^h_{it-1}(C) = \frac{\sum_{s=1}^{S} R^S_{it:t+h-1} I\{R^S_{mt:t+h-1} < C\}}{\sum_{s=1}^{S} I\{R^S_{mt:t+h-1} < C\}}$$

where $R^S_{it:t+h-1}$ represents the *s* simulated cumulative return of firm *i* from period *t* to period *t+h*-1, that is

$$R^s_{it:t+h-1} = \exp\left\{\sum_{\tau=1}^{h} r^s_{it+\tau-1}\right\} - 1$$

The same procedure is applied to obtain estimates of $R^s_{mt:t+h-1}$. The mutli-period probability of a crisis is given by

$$\mathrm{Po}S_t^h(C) = P_t(R_{mt:t+h-1} < C) = \frac{1}{S}\sum_{s=1}^{s} I\{R_{mt:t+h-1}^s < C\}$$

In our analysis, we will follow Brownlees and Engle (2011) and estimate a 6 months period MES and use 40% as a threshold that represents a market drop and k=8%. Interested readers can refer to Brownlees and Engle (2011) for more details on the estimation approach that we follow in this paper.

Model Testing

The model developed by Brownlees and Engle (2011) was tested using the data available on Islamic banks is based on the publicly traded banks listed in The Banker Top 500 Islamic Financial Institutions. After determining the countries in which these banks operate, the sample of conventional banks was constructed for each economy; these countries are Malaysia, Qatar, Saudi Arabia, and UAE. The analysis covered the period from 2005 until 2011.

Table 3: SRisk Indices for publicly traded conventional and Islamic banks in Saudi Arabia

	2002		2003		2004		2005		2006
RIBL	34.23%	BSFR	31.0%	RIBL	46.11%	RIBL	53.42%	RJHI*	33.45%
SAMBA	17.83%	RIBL	24.9%	SIBC	14.87%	BSFR	15.23%	SAMBA	16.83%
SABB	11.40%	SIBC	19.2%	SAMBA	11.56%	SAMBA	10.96%	ARNB	16.60%
BSFR	11.34%	ARNB	16.7%	BSFR	10.79%	SABB	8.33%	SIBC	16.02%
RJHI*	5.28%	SAMBA	8.3%	RJHI*	8.33%	SIBC	3.71%	RIBL	10.97%
SIBC	3.26%	SABB	0.0%	SABB	0.00%	RJHI*	0.01%	BSFR	6.14%
ARNB	0.00%	RJHI*	0.0%	ARNB	0.00%	ARNB	0.00%	AAAL	0.00%
AAAL	0.00%	AAAL	0.0%	AAAL	0.00%	AAAL	0.00%	SABB	0.00%
								ALBI*	0.00%
	2007		2008		2009		2010		2011
RIBL	59.53%	BSFR	62.41%	ALBI*	100.0%	ALINMA*	58.18%	RIBL	53%
SAMBA	21.98%	SIBC	37.59%	AAAL	0.0%	RIBL	8.33%	SAMBA	47%
RJHI*	18.49%	AAAL	0.00%	ARNB	0.0%	SAMBA	8.33%	BSFR	0%
AAAL	0.00%	ARNB	0.00%	BSFR	0.0%	BSFR	8.33%	SABB	0%
ARNB	0.00%	RIBL	0.00%	RIBL	0.0%	SABB	8.31%	ALINMA*	0%
BSFR	0.00%	SABB	0.00%	SABB	0.0%	RJHI*	8.29%	AAAL	0%
SABB	0.00%	SAMBA	0.00%	SAMBA	0.0%	ALBI*	0.23%	ARNB	0%
SIBC	0.00%	ALBI*	0.00%	SIBC	0.0%	ARNB	0.00%	SIBC	0%
ALBI*	0.00%	RJHI*	0.00%	RJHI*	0.0%	AAAL	0.00%	ALBI*	0%
						SIBC	0.00%	RJHI*	0%

* An Islamic Bank

When testing the data using the SRisk model developed by Brownlees and Engle (2011), some interesting results transpired where it is observed that over most of the period covered, the SRisk index for conventional banks was in general higher than the SRisk index for Islamic bank, implying that conventional banks tend to probably exhibit higher systematic risk to the economy than Islamic banks in the sampled data in the specific countries under analysis in this paper. This is certainly the case for banks Saudi Arabia and Qatar, where the ranking can be observed and the results seem to be consistent with the hypothesis that conventional banks tend to have higher risk to the economy than conventional banks in general, and certainly when a financial crisis hits the system like the one of 2008.

Table 4: SRisk Indices for publicly traded conventional and Islamic banks in United Arab Emirates

	2005		2006	2007		2008	
ADCB*	49.0%	ADCB*	38.42%	BOS	74.20%	ADCB*	87.53%
DIB*	29.5%	DIB*	31.10%	FH	25.80%	ADIB*	12.35%
ADIB*	14.9%	ADIB*	22.05%	CBI	0.00%	FH	0.12%
CBI	6.5%	FH	8.43%	EMIRATES	0.00%	BOS	0.00%
BOS	0.0%	BOS	0.00%	INVESTB	0.00%	CBI	0.00%
EMIRATES	0.0%	CBI	0.00%	NBAD	0.00%	EMIRATES	0.00%
FH	0.0%	INVESTB	0.00%	UNB	0.00%	INVESTB	0.00%
INVESTB	0.0%	EMIRATES	0.00%	ADCB*	0.00%	NBAD	0.00%
NBAD	0.0%	UNB	0.00%	ADIB*	0.00%	UNB	0.00%
UNB	0.0%	NBAD	0.00%	DIB*	0.00%	DIB*	0.00%

2009		2010		2011	
EMIRATES	54.55%	BOS	96.5%	CBI	98.96%
FH	25.65%	ADCB*	3.5%	DIB*	1.04%
INVESTB	7.55%	CBI	0.0%	BOS	0.00%
NBAD	5.35%	EMIRATES	0.0%	EMIRATES	0.00%
ADCB*	5.00%	FH	0.0%	FH	0.00%
UNB	2.10%	INVESTB	0.0%	INVESTB	0.00%
BOS	0.00%	NBAD	0.0%	NBAD	0.00%
CBI	0.00%	UNB	0.0%	UNB	0.00%
ADIB*	0.00%	ADIB*	0.0%	ADCB*	0.00%
DIB*	0.00%	DIB*	0.0%	ADIB*	0.00%
				AJMANBAN*	0.00%

* An Islamic Bank

In the case of the UAE, again the data available was tested using the SRisk model to assess the systematic riskiness of conventional versus Islamic banks. The results show that Islamic banks had the highest systemic risk during the global financial crises, while during the financial crisis that hit Dubai in 2009, conventional banks had the highest systemic risk. This might give an indication on how each type of bank react to financial turmoil depending on the scope of the crises and also the exposure of banks to the different financial instruments that they had and the structure of the balance sheet.

In terms of these results it is not clear why this would be the case, it is probably reasonable to argue that during predating the financial crisis most banks both conventional and Islamic banks were exposed to the construction and the real estate business, where many construction projects where being developed during the period of time under examination. In the case of the Dubai financial shock in 2009, it can possibly be argued that this was probably only specific to Dubai and not to the

whole UAE, where the conventional banks exposure to real estate lending in Dubai was probably higher than that of Islamic Banks, it is also important to argue that the nature of the lending portfolio are different between Islamic banks and conventional banks, where in the case Islamic banks it is probably the case that their customer base during the period where small-medium sized enterprises, while the customer base of the conventional banks were the larger institutional clients in specific sectors of the economy that felt the financial shock.

Table 5: SRisk Indices for publicly traded conventional and Islamic banks in Qatar

2002		2003		2004		2005		2006	
QNBK	100%	QNBK	97.99%	QNBK	59%	CBQK	100.00%	QNBK	51.50%
QIIK*	0%	DHBK	2.01%	QIIK*	26%	DHBK	0.00%	QIBK*	45.83%
CBQK	0%	CBQK	0.00%	CBQK	15%	KCBK	0.00%	QIIK*	2.67%
DHBK	0%	KCBK	0.00%	DHBK	0%	QNBK	0.00%	CBQK	0.00%
KCBK	0%	QIBK*	0.00%	KCBK	0%	QIBK*	0.00%	DHBK	0.00%
QIBK*	0%	QIIK*	0.00%	QIBK*	0%	QIIK*	0.00%	KCBK	0.00%

2007		2008		2009		2010		2010	
QIBK*	77%	QNBK	0%	KCBK	0%	KCBK	100%	CBQK	100%
QNBK	23%	CBQK	0%	CBQK	0%	CBQK	0.00%	DHBK	0%
CBQK	0%	DHBK	0%	DHBK	0%	DHBK	0.00%	KCBK	0%
DHBK	0%	KCBK	0%	QNBK	0%	QNBK	0.00%	QNBK	0%
KCBK	0%	QIBK*	0%	QIBK*	0%	QIBK*	0.00%	QIBK*	0%
QIIK*	0%	QIIK*	0%	QIIK*	0%	QIIK*	0.00%	QIIK*	0%

* An Islamic Bank

During the 2008 financial crises, Islamic banks had different rankings from country to country. Just like in the case of Saudi Arabia, the situation in Qatar as observed by the results of the data show that conventional banks posed the higher risk to the economy than conventional banks. This is in direct contrast to the case in the UAE and Malaysia, where Islamic banks and the financial groups that have Islamic banking windows were systemically riskier than conventional banks.

Table 6: SRisk Indices for publicly traded financial groups that have conventional and Islamic bank in Malaysia

	2002		2003		2004		2005		2006
ECM	100%	ECM	100%	OSK	100%	OSK	100%	OSK	77.77%
OSK	0%	OSK	0%	ECM	0%	ECM	0%	DRB*	22.23%
AFG*	0%	AFG*	0%	AFG*	0%	AFG*	0%	ECM	0.00%
AMM*	0%	AMM*	0%	AMM*	0%	AMM*	0%	AFG*	0.00%
CIMB*	0%	CIMB*	0%	CIMB*	0%	CIMB*	0%	AMM*	0.00%
DRB*	0%	DRB*	0%	DRB*	0%	DRB*	0%	CIMB*	0.00%
RHBC*	0%	RHBC*	0%	RHBC*	0%	RHBC*	0%	RHBC*	0.00%

	2007		2008		2009		2010		2011
OSK	94.56%	DRB*	99.97%	DRB*	100%	ECM	0%	ECM	0%
DRB*	5.44%	AMM*	0.03%	ECM	0%	OSK	0%	OSK	0%
ECM	0.00%	AFG*	0.00%	OSK	0%	AFG*	0%	AFG*	0%
AFG*	0.00%	ECM	0.00%	AFG*	0%	AMM*	0%	AMM*	0%
AMM*	0.00%	OSK	0.00%	AMM*	0%	CIMB*	0%	CIMB*	0%
CIMB*	0.00%	CIMB*	0.00%	CIMB*	0%	DRB*	0%	DRB*	0%
RHBC*	0.00%	RHBC*	0.00%	RHBC*	0%	RHBC*	0%	RHBC*	0%

* A financial group with an Islamic Banking arm

When testing the data using the SRisk model developed by Brownlees and Engle (2011) in the Malaysian case, some interesting results transpired where it is observed that over most of the period covered, the SRisk index for conventional banks was higher than the SRisk index for Islamic bank, implying that conventional banks probably posed higher systematic risk to the economy than Islamic banks in the sampled data in the specific countries under analysis in this paper. This appears to be the case in most of the four countries except in Malaysia where the results were mixed depending on the year under examination. Malaysia is probably a special case because the banking system is structured in a way where the Islamic banks and Islamic financial institutions are generally part of the financial groups operating in the financial system, which also include conventional arms. Therefore, it can probably be argued that the evidence about the riskiness of Islamic Banks in Malaysia is not very informative and not conclusive given that there are no pure publicly traded Islamic banks.

Concluding Remarks

In the wake of the financial crisis in 2007-2008 there appear to have been an increased interest in a fast growing segment of the financial industry globally; namely Islamic finance

and banking. The interest arose because of many discussions relating to the possible resilience of Islamic banks to the financial crisis. This paper constitute a first explorative attempt to test the systematic risk of Islamic versus conventional banks by applying the model developed by Brownlees and Engle (2011), the publically traded banks of four countries were tested and the initial results showed some interesting but in some cases conflicting findings when measuring the SRisk. This paper is still an initial attempt and is work in progress to analyse the systematic riskiness of Islamic banks, the analysis could be extended to cover probably other samples.

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