Analyzing Performance of Shariah and Non-Shariah Portfolios during the Global Financial Crisis 2007-2008: Malaysia's Experience

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This study is an attempt to explore the relative performance of shariah and non-shariah portfolios at Bursa Malaysia during the global financial crisis from 2007 through 2008. Specifically, this study looks into the risk-return profile of these two portfolios over the two-year period. Return on equity (ROE) and earning per share (EPS) are used to measure the performance of the two portfolios, involving a sample size of 558 firms at Bursa Malaysia. Hypothesis testing is carried out by conducting independent two-sample t tests upon the two competing portfolios. The findings are surprising as there is no significant difference between the mean ROE of shariah and non-shariah portfolios. Similar finding is also observed on the mean EPS. This paper contributes to the literature by providing empirical evidence of relative strength of a shariah portfolio against its counterpart during the peak of the U.S sub-prime crisis.

Key words: *U.S sub-prime crisis, Bursa Malaysia, Shariah and non-shariah portfolios, Independent two-sample t test, Return on equity (ROE), Earning per share (EPS).*

Introduction

In the mid-2000s, a majority of the commercial banks in the United States (U.S) dropped down their lending standards and offered sub-prime mortgages to market players which in turn gave rise to the global financial crisis several years later. The market panic started when a number of U.S investment banks collapsed as they

failed to sell out the mortgage-based assets which they held as collateral. The situation led to a housing bubble in the middle of 2007. The spill-over effect of the crisis not only affected the U.S, but also European and Asian emerging economies (Coulibaly, Sapriza and Zlate, 2013). During the period of 2007-2009, developing countries in Asia suffered the most, as they experienced significant drops in their inward foreign direct investment (FDI) and slower export activities (James et al., 2008). Malaysia is no exception as its export-oriented economy was also adversely affected, and this was coupled with poor performance of Bursa Malaysia (Nambiar, 2009; Chang, 2017).

The negative impact of 2007-2008 global financial crisis was clearly visible on the Malaysian economy in the fourth quarter of 2008 and the first quarter of 2009. Records show that exports declined rapidly and year on year GDP grew only 0.1% in the fourth quarter of 2008, which was considerably less than the year on year GDP of 4.7% at the end of third quarter of same year (Khoon and Mah-Hui, 2010). The average GDP growth was 5.9% in first three quarters of 2008 which then dropped to 0.1% in the fourth quarter (Nambiar, 2009). Likewise, the recession continued into the first quarter of 2009 and a further decline in year on year GDP confirmed that Malaysia had entered an economic recession (Khoon and Mah-Hui, 2010).

Doraisami (2012) recorded that the Malaysian export value from manufacturing and commodity sectors dropped by 55% and 33% respectively during the crisis period. He further explained that commodity prices, namely crude oil, palm oil and rubber declined between 30% and 50%. The Asian financial markets were also adversely affected, particularly their equity and debt markets. In the case of Malaysia, the main market index, as proxied by Kuala Lumpur Composite Index (KLCI), showed a significant decline, with almost a 40% drop in listed firm's share values (Angabini and Wasiuzzaman, 2011). This major drop has been considered as the biggest decline in KLCI since the Asian financial crisis 1997 (Chin, 2009).

This global financial crisis once again brought in a new chapter for deliberation among scholars. A majority of them still believe that the world has yet to find the most viable financial system which can resolve the problems of asset allocation, productive utilization and optimization. Islamic researchers believe that the ideal solution lies in the principles of Islamic Finance (Elasrag, 2017; Clausen, 2018). Malaysia practises a dual financial system involving both conventional and Islamic approaches. The Malaysian stock market, that is, Bursa Malaysia presently categorises its listed companies into Shariah and Non-Shariah groups. As such, it is in the best interest of this paper to investigate which portfolio is the most resilient in

the face of market volatility. The global financial crisis in 2007-2008 is the best test pad to examine the relative strength of these two competing portfolios.

The rest of the study is organized as follows. Section 2 reviews previous literature and empirical evidences on the subject matter. Section 3 provides the details of the data collection and methodology adopted for empirical investigation while section 4 presents the empirical findings and discussion. Finally, the conclusion summarizes the empirical results and provides some recommendations for future research.

Literature Review

A financial system operationally requires domestic and international settings, which involve: financial institutions, market players, regulatory bodies and of course a central bank. An efficient financial system enables financial resources to be allocated in the most productive manner which in turn provide desirable return on investment. Financial stability is important because any disruption in the finance value cycle will affect key players in the financial system. Those key players are the economic surplus units, deficit units and intermediaries. It is the primary duty of any central bank around the world to make sure that its' financial system is operationally and informationally efficient so that market transactions can take place with market confidence.

Literature on Islamic equity markets has been enriched and academics continue to study its uniqueness and strengths. A number of Muslim countries have adopted a shariah approach in classifying their public listed companies into shariah and non-shariah categories. Some earlier studies reveal that shariah companies are performing well, even during periods of financial crisis. Additionally, there are studies that indicate an insignificant difference between the performance of shariah and non-shariah portfolios. Belouafi, Bourakba and Saci (2015) investigated the stability of Islamic financial institutions during the financial crisis of 2008-2009 and concluded that Islamic financial institutions show some resilience against the first wave of the financial turmoil. However, they highlighted that some financial institutions started to show signs of weakening during the second wave as almost all developed and developing economies were at the verge of recession.

Kayed and Hassan (2011) examine the lessons from global financial crisis 2007-2008, and suggest that this financial turmoil is a test to check the resilience and strength of shariah based financial systems. In terms of performance, their investigation shows that shariah-based portfolios are more consistent as compared to their non-shariah based counterparts. Rizvi, Arshad and Alam (2015) compare

Islamic financial markets with non-Islamic markets during the crisis and their study shows that Islamic-based stocks in the U.S are less affected during the sub-prime crisis. However, Islamic financial markets in the Asia Pacific region are more vulnerable to the detrimental effect of the financial crisis due to their inability to absorb internal and external systemic shocks.

The stability and strength of the Islamic banking system are also put into test during the global financial crisis. A number of studies have been carried out in Muslim countries with mixed results. Hasan and Dridi (2010) compare and analyze the performance of conventional and Islamic banks during the crisis. Their study extracts accounting data from 120 banks in Malaysia, Kingdom of Saudi Arabia, Jordan, UAE, Bahrain, Qatar and Turkey. In relation to conventional banks, they discover that Islamic banks are more financially viable and less vulnerable during the peak of the financial crisis. Their study further concludes that Islamic banks enjoyed steadier profits throughout the period of financial crisis as compared to their non-shariah counterparts. Ali (2013), however, found that Islamic banks in Turkey were adversely affected by the financial crisis, with a number of local banks being forced into insolvency.

Ahamad and Ibrahim (2002) conducted a comparative study on the Kuala Lumpur Shariah Index and Kuala Lumpur Composite Index (KLCI) over a sample period from 1999 through 2002. Their study examined the performance of these two indices into three economic phases - growth period, declining period and full-sample period. The study analyzed the standard deviation as well as the risk adjusted returns. Using relative return techniques together with independent two-sample t test, the study evaluated the characteristics of the two competing indices. They found that the shariah-based index underperforms the KLCI during the crisis and full-sample period. Interestingly, the shariah-based index outperforms its counterpart during the growth period. The study also indicates that there is no difference in the overall performance of both market indices.

Having outlined the key literature about the strength and resilience of shariah and non-shariah based portfolios; the next section provides an explanation about the two profitability measures, namely return on equity (ROE) and earning per share (EPS). The ROE and EPS are the two financial ratios which are used to analyze the performance of the two competing portfolios so as to address the central issue of this study.

Return on Equity (ROE)

Return on Equity (ROE) is one of the financial ratios which is commonly used to measure financial performance of a company or invested fund (Hamid et al., 2015). This financial ratio is expressed as net income divided by shareholders' funds. Tan and Hamid (2016) posit that ROE is one of the factors that determines a firm's capital structure in the Bursa Malaysia plantation sector. They also find that there is a positive significant association between that sector's ROE and its' capital structure. Abdul Hadi et al. (2018) also used ROE as one of the capital structure determinants involving both shariah and non-shariah listed firms at Bursa Malaysia. They also found that there is a significant relationship between ROE and a firm's debt equity choices. Based upon past literature, this study selects ROE as a variable of interest to examine the relative performance of shariah and non-shariah portfolios.

Earnings per Share (EPS)

Earnings Per Share (EPS) is another profitability measure that is frequently used by researchers and analysts. This ratio simply reveals how much income one share can create for shareholders (Shahveisi et al., 2012). It is expressed as profit after tax divided by number of ordinary shares issued by a company. Because of this formula, the EPS is expressed in Ringgit Malaysia (RM). Salim and Yadav (2012) consider EPS as one of the key determinants of a firm's capital structure at Bursa Malaysia, and their study shows a positive relationship between the two. Tan and Hamid (2016) take a slightly different approach in their capital structure study at Bursa Malaysia. They used total debt to total asset ratio as a proxy for a firm's capital structure, they revealed a significant positive relationship between EPS and a firm's capital structure. Having explained the relevance of EPS in finance research, this study chooses EPS as an alternative measure of a firm's profitability.

In summary, previous literature indicates that there is no conclusive evidence that supports the superior performance of either shariah-based or non-shariah based portfolios. Nevertheless, it is not advisable to downplay the influence of Islamic finance in Malaysia because of its enormous market size and product offerings. Only a few studies are available on examining the relative strength and resilience between shariah and non-shariah portfolios at Bursa Malaysia, particularly during the period of financial crisis 2008-2009.

Data & Methodology

This study focuses on examining the resilience, and to provide better understanding, of risk-return profiles of both shariah and non-shariah portfolios at Bursa Malaysia. The study only concentrates on the main market of Bursa Malaysia, which is divided into fourteen different sectors. However, the close-end funds and the special purpose acquisition company (SPAC) sectors are omitted due to data unavailability. To begin with, a total of 558 listed firms over the two year period are extracted from Bloomberg database. The firms are further divided into shariah and non-shariah categories based upon the shariah guidelines. At the end of the process, there are 441 counters categorized into shariah portfolio while the remaining 117 go into non-shariah category. To measure the performance of each portfolio, their individual EPS and ROE are calculated and compared. SAS software is used to perform the statistical analysis and the empirical results are reported.

The hypothesis testing is carried out by using two independent samples t test. These test statistics are deployed to check the difference between the means of two populations (Snedecor and Cochran, 1989). The two-sample t test model is formulated as follows:

$$t = \frac{\bar{x}_2 - \bar{x}_1}{\sqrt{\frac{s_1^2}{n_1} + \frac{s_2^2}{n_2}}} \qquad (1)$$

where, equation (1) provides the expected value of t, $\bar{x}_2$ and $\bar{x}_1$ indicates means for sample, standard deviation is denoted by S_1^2 and S_2^2 and sample sizes is mentioned by n_1 and n_2 .

The degree of freedom is used to find the t distribution from which t (t-alpha) is produced. Alpha (α) is basically taken as a significance level which is used to test the hypothesis. Moreover, this test has a t-distribution with the below given degree of freedom (df) which are for the equal variance case:

$$df = \frac{\left[\left(SE_1 \right)^2 + \left(SE_2 \right)^2 \right]^2}{\frac{\left(SE_1 \right)^4}{n_1 - 1} + \frac{\left(SE_2 \right)^4}{n_2 - 1}} \qquad (2)$$

where $SE_1 = \frac{s_1}{\sqrt{n_1}}$ and $SE_2 = \frac{s_2}{\sqrt{n_2}}$

According to Boneau (1960), some of the underlying assumptions that must be fulfilled in conducting an independent two-sample t test are:

i. The nature of data sets should be continuous;
ii. Standard probability distribution should be followed by selected data;
iii. The variance of two selected populations are equal;
iv. The two selected sample sets are independent; and
v. Both samples of data set are random simple samples for a defined population.

Empirical Findings

As practised by numerous researchers (see Cressie and Whitford, 1986; Moser et al., 1989; Boneau, 1960), if the p-value is less than 0.05 (denoted by α) then these test statistics indicate that there is a statistically significant difference between the two investigated samples. However, if the p-value is greater than α of 0.05 then it implies no statistical difference between the two selected samples. As such, the formal hypothesis test for this study is expressed as follows:

$H_0 : \mu_1 = \mu_2$: No difference between the mean ROE of shariah and non-shariah portfolios.

$H_1 : \mu_1 \neq \mu_2$: There is a difference between the mean ROE of shariah and non-shariah   portfolios.

The alternative hypothesis supports this study's claim that there is a difference in both mean ROE and EPS of shariah and non-shariah portfolios.

The following tables present the statistical results from the independent two-sample t test. Table 1 below provides the details of descriptive statistics of ROE for 2008-2009 analysis.

Table 1: Descriptive Statistics (ROE for the years 2008-2009)

Portfolio	N	Mean		Std Deviation		Coefficient of Variation		Minimum		Maximum	
		2008	2009	2008	2009	2008	2009	2008	2009	2008	2009
Non-Shariah	117	0.099	0.0721	0.233	0.215	2.353	2.982	-0.515	-0.4676	1.996	1.700
Shariah	441	0.053	0.0493	0.193	0.153	3.641	3.103	-1.860	-0.8889	1.024	0.923

From the descriptive statistics in 2008, the mean ROE for the non-shariah portfolios is 9.90% but the mean ROE for shariah portfolios is much lower at 5.36%. The higher mean of ROE in non-shariah portfolios demonstrates their resilience towards the unstable market conditions that existed during the peak of the global financial crisis. In the following year, the ROE of non-shariah portfolios registered a lower mean at 7.21% and this downward trend continued to influence the shariah portfolio that settled at 4.93%. In terms of a portfolio's total risk, standard deviation is employed to measure variability. During the two-year period, the total risk of non-shariah portfolios is consistently higher than the shariah's and the gap is even widened in 2009. From the coefficient of variation (CV) analysis, some interesting findings are observed. The shariah portfolio seems to be of higher risk as indicated by its higher CV values in comparison with the non-shariah portfolio in 2008 and 2009. This phenomenon could be attributed to the presence of outliers (maximum-minimum profiles) in both portfolios.

Table 2: Independent Two-Sample t-test (ROE over 2008-2009 period)

Financial Crisis Year-2008				
Method	**Variance**	**DF**	**t value**	**Pr > |t|**
Pooled	Equal	556	2.19	0.0287**
Satterthwaite	Unequal	161.08	1.97	0.0503*
Financial Crisis Year-2009				
Method	**Variance**	**DF**	**t value**	**Pr > |t|**
Pooled	Equal	556	1.30	0.1947
Satterthwaite	Unequal	148.85	1.07	0.2850

** Significant at 5% level & * significant at 10% level

Looking at the statistical results from Table 2 in 2008, the low p-values from the Pooled and Satterthwaite statistics (P< 0.028 and P< 0.050, respectively) clearly show that there is a statistically significant difference between the mean ROE of shariah and non-shariah portfolios at the onset of the financial crisis in Malaysia. The non-shariah portfolio (mean ROE of 9.9%) is superior to its shariah counterpart (mean ROE of 5.3%) by almost a 5% spread. Nevertheless, the test results in 2009 prove otherwise. As the financial crisis entered its second year, there is no difference between the mean ROE of shariah and non-shariah portfolios.

Besides ROE, this study uses EPS as an alternative variable to measure portfolio performance. From the earlier ROE analysis, it is evident that one must be ready to assume higher risk level in order to be compensated for higher rate of return. Table 3 presents the descriptive statistics of the EPS analysis from 2008 through 2009.

Table 3: Descriptive Statistics (EPS in RM over 2008-2009 period)

Portfolio	N	Mean		Std Dev		Coefficient of Variation		Minimum		Maximum	
		2008	2009	2008	2009	2008	2009	2008	2009	2008	2009
Non-Shariah	117	0.109	0.105	0.341	0.318	3.128	3.028	-1.100	-0.669	2.843	2.615
Shariah	441	0.097	0.086	0.251	0.196	2.587	2.279	-1.875	-0.691	1.450	1.500

The descriptive statistics of EPS in Table 3 clearly demonstrate the superiority of non-shariah portfolios over the observed period. The mean EPS of non-shariah portfolios over the two-year period stays slightly above 10 cents, while the mean EPS of shariah portfolios settle marginally below the 10 cent level. Once again, the higher mean of EPS in this non-shariah portfolio proves its resilience during volatile market conditions. In terms of riskiness, the standard deviations of non-shariah portfolios during the two-year period appear higher, indicating a sturdy risk-return trade-off. However, it is noteworthy that the mean EPS spread between the two competing portfolios is much thinner as compared to the mean ROE. Unlike ROE, the coefficients of variation of both portfolios are consistent with their risk-return profiles.

Table 4: Independent Two-Sample t test (EPS over 2008-2009 period)

Financial Crisis Year-2008				
Method	**Variance**	**DF**	**t value**	**Pr > |t|**
Pooled	Equal	556	0.41	0.6845
Satterthwaite	Unequal	150.9	0.34	0.7333
Financial Crisis Year-2009				
Method	**Variance**	**DF**	**t value**	**Pr > |t|**
Pooled	Equal	556	0.41	0.6845
Satterthwaite	Unequal	150.9	0.34	0.7333

The test statistics from the Pooled and Satterthwaite methods show that the null hypothesis cannot be rejected. Their high p-values of 0.6845 and 0.7333 indicate that there is no statistically significant difference between the mean EPS of shariah and non-shariah portfolios over the observed period. Even though EPS is computed in different measurement units, the results from its statistical inferences are very

much in line with the empirical evidence presented by ROE. Both profitability measures lead to one conclusive finding, that there is no significant difference in mean ROE or EPS of the two opposing portfolios.

Conclusion

The global financial crisis in 2007-2008 provides the best opportunity for fund managers and investors to prudently examine the resilience and strength of two competing groups - shariah and non-shariah portfolios from Bursa Malaysia. Malaysia is an emerging market which is different from other Asian financial markets, as all listed companies at Bursa Malaysia must comply with the exchange's shariah guidelines. From the overall findings, it is evident that there is no difference in both mean ROE and EPS involving shariah and non-shariah portfolios over the observed period. However, the mean difference in ROE is only detected in 2008. As a whole, the empirical results from this study are consistent with past literature, in that there is no difference in overall performance of shariah and non-shariah portfolios (Ahamad and Ibrahim, 2002). It is imperative to note that despite the turbulence period, the shariah portfolio succeeded in registering positive ROE and EPS. Perhaps, future researchers should consider incorporating an alternative profitability measure like return on assets (ROA) or Tobin's Q ratio which is more reflective from the market's point of view.

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