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Diversification: A Sharia Effect? Some Evidence From Malaysia

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Abstract

This study compares the effect of diversification between the Sharia and non-Sharia stocks listed on Bursa Malaysia during the period January 2002 to April 2014. The standard deviations of stock portfolios were calculated for the entire and two market phase defined bull and bear periods. Independent samples T-test indicated that there is significant difference in standard deviation between Sharia and non-Sharia portfolios for the bear and first bull period with no significant difference in the entire and second bull period. It can be concluded that portfolio diversification applies in both Sharia and non-Sharia compliant stocks of the Malaysian stock market. In addition, Sharia compliant stocks required a smaller number of stocks in a portfolio to reduce specific amount of risk.

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1. Introduction

Sharia defines activities that are not permissible for Muslims, such as consumption of pork, practice of riba, gambling, conventional insurance, and alcoholic production and sales. Sharia investors are thus limited to halal (permissible) securities and exclude companies which are haram (forbidden) or gharar (uncertainty) (Derigs and Marzban, 2008; Rahman, Yahya and Nasir 2010). Sharia investments are deemed different from non-sharia investments in terms of risks and returns. (Ahmad and Ibrahim 2002; Kassab and Morocco 2013). Sharia stocks are considered less risky due to the principles of Muamalat as well as the quantitative screening reducing the probability of default in payment of debt (Wee, 2012). However, requirements of low gearing and levels of liquidity may allow

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managers to escape market monitoring and encourage investment in negative cash flow projects (Jouaber, Salah and Rigobert, 2012; Rahman et al., 2010). Sharia investors could end up holding securities where the firms may have over invested in projects with little or no profits.

Systematic risks are macroeconomic factors such as interest rates, inflation rates and economic growth deemed not eliminable and non–systematic risks are microeconomic factors and can be reduced by forming portfolios.(Goetzmann and Kumar, 2001; Barber, Heath and Odean, 2003, Goetzmann, Massa and Simonov, 2004; Sutton, 2009; Bodie, Kane and Marcus, 2011). Islamic and non-Islamic stock indices are reported to be responsive to microeconomic and macroeconomic risks (Girard and Hassan (2008), Albaity and Ahmad (2011)).

Markowitz (1952) stated that portfolio size was often the root of diversification effect but there is no consensus on how many stocks is needed for a truly diversified portfolio (Markowitz, 1952, Perold 2004, Hight, 2009, Aleknevicience, Alekneviciute, Rinkeviciene 2012). In the classic studies of Evans and Archer (1968) and Statman (1987), it was concluded that 10 to 40 stocks are required to achieve diversification effect. Naïve strategy is one of an investor's preferred strategies (Benartzi and Thaler, 2001) and investors can expect that the variance of the expected returns is lower in the portfolio (DeMiguel, Garlappi and Uppal, 2009). This strategy will work particularly in the strong and semi strong market when information is widely available and allowing investors a chance to form a portfolio that performs even better than financial analysts (Malkiel, 1989; Dechow and Sloan, 1997).

Insignificant differences on the expected returns between Sharia and non-Sharia securities in Malaysia, Indonesia and the United States were reported by Statman, 2000; Hakim and Rashidian, 2002; Hussein and Omran, 2005; Albaity and Ahmad, 2011; Setiawan and Oktariza, 2013. Volatility of standard deviation is much larger in non-Sharia stocks and may explain why more non-Sharia stocks are needed to eliminate total portfolio risk (Chiadmi and Ghaiti 2012; Kassab and Morocco, 2013).

The term 'bull' and 'bear' are broadly used to explain the behaviour of stock market. Bull market indicates the period where major indexes gain at least 50% while, bear market, an index loss of at least 20% (Ho, 2012; Rieman, 2012; Planes 2013). There are also periods where the gains and losses could have offset one another that ended up in a flat market trend. Studies have suggested that Sharia and non-Sharia investment are different in terms of performance during the bull and bear market periods (Hussein 2005; Hussien and Omran, 2005; Sadeghi, 2008). The conclusions are mixed, with Sharia outperforming non-Sharia securities during the bear period (Abdullah, Hassan and Mohamad, 2007). Abdullah et al., (2007) suggested that conventional investment outperformed Islamic investment during the bullish market as conventional investors are able to invest in any stocks which involved high risk exposure activities. Hussein (2004) comparing FTSE Global Islamic index with FTSE All-World index reported that Islamic index underperformed during the bear period but achieved better performance for bull and whole period. Jouaber, Salah and Rigobert (2012) examined a set of Dow Jones Islamic indexes and reported that the difference between Islamic and conventional indexes is not affected by the bear and bull markets.

The paper has five objectives i) Does diversification works for both Sharia and non-Sharia stocks in Malaysia? ii) Is there a Sharia effect on diversification in relation to standard deviation? iii) Is there any difference in the number of stocks required to eliminate specific amount of risk for Sharia and non-Sharia compliant stocks? iv) Is there a market phase impact on diversification in relation to standard deviation? v) Is there any difference in the number of stocks required to reduce specific amount of risk for Sharia and non-Sharia compliant stocks during different market phase?

2. Methodology

There are a total of 905 securities as at May 2014 which consist of 673 (74%) Sharia securities and the remaining 232 securities are the non-Sharia stocks (www.sc.com.my). The Sharia Advisory Council Malaysia is responsible in the approving for companies to be listed as sharia securities on Bursa Malaysia. Due to the limit of listed non-Sharia stocks, 30 Sharia and non-sharia stocks in each category were selected. The sample period was from January 2002 to April 2014 and the peaks and troughs to identify the bull and bear markets were benchmarked based on the KLCI index. Data were extracted from Bursa Malaysia website and Data Stream using monthly log returns.

Table 1 Change in Index during Bull 1, Bear and Bull 2

Period	Months	Index	Increase/Decrease in Index(%)
Bull 1	2 Jan-02	682.83	111.62
	3 Dec-07	1,445.03	
Bear	2 Jan-08	1,435.68	-38.94
	2 Mar-09	876.56	
Bull 2	1 Apr-09	884.18	108.8
	1 Apr-14	1,846.10	

The bull and bear phase were identified from the peaks and troughs of monthly closing prices from January 2002 to April 2014. From table 1, bull 1 period was defined from the index as starting from January 2002 to December 2007 with an increase of 111.62%. The stock market shows a steady decline in early 2008 and remained bearish till 2009 with the market index experienced a fall of 38.94%. The bear period in this study was from January 2008 till March 2009. In mid-2009, there was a sign of recovery and bull 2 begin from April 2009 to April 2014 with an increment of 108.8%.

A naïve strategy was adopted where individual stock were added incrementally to form equally weighted portfolios of one until all 30 stocks were included for both Sharia and non-Sharia portfolios. Standard deviation of each stock is calculated and added on to the standard deviation of previous stocks to obtain standard deviation of each portfolio until all 30 are included for both categories of stocks. T-test was applied to examine for significant differences in standard deviation for both Sharia and non-Sharia stocks. Based on the standardized standard deviation the number of stocks for Sharia and non-Sharia stocks were determined to achieve diversification. This method also allows examining if there is any difference in the number of stocks required for diversification. Standardized standard deviation is defined as the portfolio standard deviation relative to a one stock portfolio.

3. Findings

Table 2 Number of Stocks required for Diversification of Sharia Stocks

Number of stocks	Standardized SD
1	1.00
5	0.90
8	0.80
13	0.70
22	0.60

The standard deviation of the first Sharia stock was 0.153. The combination of the second stock showed a slight reduction to 0.136 an elimination of about 11% portfolio risk. Referring to Table 2 as the number of stocks increased, standard deviation of stocks had fallen dramatically and required only 8 stocks to achieve a standardized standard deviation of 0.80. This was a reduction of about 20% diversifiable risk. Portfolio risk could be reduced up to 40% with a total of 22 stocks suggesting it may require more than 30 Sharia shares to diversify 50% of the portfolio risk.

For non-Sharia stocks, diversification effect seemed to be weaker as compared to Sharia stocks. The first stock had a standard deviation of 0.1295 and declined in standard deviation was noted from the 6th stock onwards. The overall risk reduction for 30 stocks was from 0.1295 to 0.0919, a reduction of 29.0%. However, this was less than the overall risk reduction of Sharia stocks suggesting more stocks may be needed for non-Syariah portfolio to achieve diversification as compared to Syariah stocks.

Table 3 Number of Stocks required for Diversification for Non-Sharia Compliant Stocks

Number of Stocks	Standardized SD
1	1.00
4	0.90
10	0.80
17	0.70
28	0.60

A standardized reduction to 0.90 of a 1 stock portfolio was achieved with only 4 stocks which was equivalent to a reduction of 10% volatility. In order to eliminate approximately 20% of the risk, 10 stocks are needed. Non-Sharia stocks required 17 stocks to reduce 30% of the portfolio risk while Sharia stocks only require 13 stocks. A standardized standard deviation of 0.60 or reduction of 40% of the total risk was achieved with the 28 stock portfolio, thus, providing evidence that non-Sharia requires more stocks than Sharia to achieve diversification effect.

Bull market has been identified in two periods during January 2002 to December 2007 and April 2009 to January 2012. For the first bull period, the first Sharia stock had a standard deviation of 0.118. As the size of the portfolio increases, the standard deviation started declining gradually. After the 10th stock, there was a random behaviour of risk reduction. This can be due to highly correlated stocks. The adding of more stocks, ultimately, reduces the overall standard deviation from 0.118 to 0.074 which was equivalent to a total reduction of 37.0%.

The diversification effect of Sharia stocks were not evidence during the bear period as compared to the first bull period as the stocks tend to fluctuate more during the bear period likely due to investors' panic selling. The first stock provided a standard deviation of 0.137 and a declining pattern is observable up to the 14 stock portfolio. There is a reduction of 32.5% total risk during the bear phase which was less than the reduction of the first bull period.

The first stock during the second bull period provided a standard deviation of 0.227. As more stocks were added into the portfolio, standard deviation fall dramatically until all 30 stocks were included in the portfolio. There was a reduction of 48.6% from 0.164 to 0.0845. This was more than the reduction during the first bull as well as the bear market period.

Table 4 Number of Stocks required during Different Market phase for Sharia Stocks

Bull1	Bear	Bull2	Standardized SD
1	1	1	1.00
2	4	4	0.90
6	8	6	0.80
8	26	8	0.70
≥30	>30	14	0.60

In summary, in the first bull and bear period, at least 30 stocks were needed in order for Sharia stocks to reduce up to 40% of the portfolio risk. Due to the higher correlation of returns in a bear market more Sharia stocks was required for diversification effect. It only required 14 stocks in the second bull period in achieving standardized standard deviation of 0.60 or to reduce 40% of the total diversifiable risk.

For the non-Sharia portfolio, the standard deviation during the first bull of the first stock was 0.119. When all 30 stocks were added, only 25.6% of the risk could be diversified away from 0.119 to 0.088. This was less than the reduction of risk by the Sharia stocks in the first bull period.

For the bear phase, the combination of the first few stocks (1st to 4th stocks), the standard deviation increased which may indicated that the stocks are highly correlated. Beginning from the 5th stock, there was a fall in standard deviation

as more stocks were added until all 30 stocks were included. The overall risk reduced was only 29.3% which was less than the reduction of Sharia stocks 32.5% in the bear period.

During the second bull period, the first stock's standard deviation was 0.1386. Generally the result shown the portfolio risk reduced as the number of stocks increased. The grouping of all stocks had reduced the risk from 0.1386 to 0.0893 which was equivalent to 35.6% which was less than the reduction in volatility achieved by Sharia stocks.

Table 5 Number of Stocks Required for Diversification Effect during Different Market phase for Non-sharia stocks

Bull 1	Bear	Bull 2	Standardized SD
9	7	1	1.00
15	11	5	0.90
21	18	10	0.80
>30	30	20	0.70
>30	≥30	≥30	0.60

From the findings discussed above, non-Sharia required a higher number of stocks to reduce the risk. Both Sharia and non-sharia stocks required more than 30 stocks to eliminate 40% of the portfolio risk. For the bull period, the number of stocks needed was different in reducing diversifiable risk. Based on the standard deviation in the second bull period, non-Sharia stocks required at least 30 stocks whereas for Sharia, 14 stocks were enough to eliminate 40% of the risk. This also indicated that volatility of non-Sharia stocks was higher than the Sharia stocks over the two sub-periods.

Both Sharia and non-Sharia compliant required a smaller amount of stocks to reduce the specific amount of risk during the second bull period, nonetheless, both Sharia and non-Sharia stocks were unable to achieve the diversification level of more than 50%.

Table 6 Independent T-Test on Means of Standard Deviation of Sharia and Non-Sharia Portfolio

Periods	Types of Stocks	Mean	T-Test	p-value	n
	Sharia	*0.0821*			*30*
Entire			*-1.012*	*0.159*	
	Non-Sharia	*0.0844*			*30*
	Sharia	*0.0832*			*30*
Bull 1			*7.371*	*0.000*****	
	Non-Sharia	*0.1089*			*30*
	Sharia	*0.1049*			*30*
Bear			*-3.862*	*0.000*****	
	Non-Sharia	*0.1197*			*30*
	Sharia	*0.0869*			*30*
Bull 2			*1.486*	*0.074*	
	Non-Sharia	*0.0777*			*30*

Notes:

**p < 0.05 , ***p < 0.001

T-tests indicated there were significant differences in the standard deviations between the two categories during the first bull as well as the bear period. Sharia stocks had a lower mean as compared to non-Sharia over three of four periods.

4. Conclusion

Does diversification works for both Sharia and non-Sharia stocks in Malaysia?

Portfolio risks were reduced as more assets are added in both Sharia and non-Sharia portfolios. The results were consistent with prior researches (Tang, 2004; Ahuja, 2011; Frahm and Wiechers, 2011, Rani 2013). Portfolio diversification can be easily applied with the method of naïve diversification without any used of complex techniques (Tang, 2004).

Is there a Sharia effect on diversification in relation to standard deviation?

The principles of Muamalat such as the exclusion of uncertainty activities have led to returns of Sharia stocks to be less volatile with a significant difference between the mean standard deviation for both Sharia and non-Sharia stocks. This finding supported Kassab and Morocco (2013) where it was reported that Islamic index is less volatile with a lower standard deviation than the conventional index likely due to the exclusion of uncertain elements such as gambling (Abdullah et al., 2007; Lean and Parsva, 2012).

Is there any difference in the number of stocks required to eliminate specific amount of risk for Sharia and non-Sharia compliant stocks?

Sharia portfolio required a smaller number of stocks to eliminate a total of 40% diversifiable risk than non-Sharia portfolio. This could be due to the standard deviation of non-Sharia stocks being much higher than Sharia stocks. This paper had identified at least 22 stocks were required by Sharia portfolio whereas it is necessary for non-Sharia to hold more stocks to achieve a standardized standard deviation of 0.60.

Is there a market phase impact on diversification in relation to standard deviation?

There is a significant difference in standard deviation for Sharia and non-Sharia stocks during different market phase. During the first bull period, from January 2002 to December 2007, T-test had indicated that there is a significant difference in standard deviation between Sharia and non-Sharia stocks; however, there was no significant difference in the second bull from 2009 till 2012. There was a significant difference between Sharia and non-Sharia standard deviation during the bear market. This finding is also in line with the research of Hayat and Kraeussl (2011) where the Islamic investment was less risky, but the return was lower as compared to the conventional investment during the bear period.

Generally, standard deviation of Syariah and non-Syariah stocks performed significantly different as indicated by the T-test analysis over the first bull and bear period. This is consistent with the study by Albaity and Ahmad (2008), Abdullah et al., (2007), Lean and Parsva (2012) and Kassab and Morocco (2013). And in line with the findings of Albaity and Ahmad (2011); Chiadmi and Ghaiti (2012); Wee (2012): Setiawan and Oktariza (2013) which all reported a lower volatility for sharia index compared to non-sharia index.

Is there any difference in the number of stocks required to reduce specific amount of risk for Syariah and non-Syariah compliant stocks during different market phase?

There is a difference in the number of stocks required for Sharia and non-Sharia stocks to achieve diversification during different market phase. Volatility was reduced by 43.9% with the holding of 30 Sharia stocks and a reduction of 29% for non-Sharia portfolios. Bear markets are characterized by panic selling as the returns of conventional stocks falls, but as Sharia stocks are held based on faith rather than risk and return factors, Sharia portfolios should be affected less during bear periods. Another possibility is the highly positive correlation between the non-Sharia portfolios during the periods and need more stocks to reduce the risk (Hight, 2009).

Diversification had proved to be applicable in Malaysian stock exchange market. This is in line with the Portfolio Diversification theory. The lower volatility of Sharia stocks could be due to the exclusion of unethical elements such as gambling from the Islamic investment (Abdullah et al., 2007; Lean and Parsva, 2012)

Recommendations for future papers will be a comparative study among different Sharia markets for instance, Pakistan, Indonesia, Thailand to compare the risk and identify number of stocks needed to reduce a specific amount of risk.

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