PORTFOLIO FORMATION USING ISLAMIC - APPROVED STOCKS IN MALAYSIA

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ABSTRACT

This study attempts to provide evidence of the effectiveness of portfolio using Islamic-approved stocks listed on the Kuala Lumpur Stock Exchange (KLSE). Using the techniques developed by Elton, Gruber and Padberg (1976), the process of stock selection and portfolio are performed using sample 156 companies with daily data running from April 1999 to October 2001. overall, only 5 companies are identified to form an equal-weighted portfolio. The short-term performance of the portfolio is evaluated using Treynor and Jensen Indices. The results show that the simple techniques used in this study is able to form an optimal portfolio using Islamic-approved stocks that outperform the market. Nonetheless, further detailed research is necessary to determine the robustness of this technique.

INTRODUCTION

The growing interests for religiously permissible economic activities among Muslim population in Malaysia has contributed to the rise in demand for Islamic financial services. Spurs by the success of the banking sector, attentions are now being focused on the development of capital market that conforms to the Islamic law – the *Syariah*[1]. The Government, through Securities Commission (SC), has placed special emphasis in the development of an Islamic capital market in the country with the setting up of the Islamic Capital Market Unit. It oversees the progress of the creation of an Islamic capital market to complement the existing conventional one. This effort is deemed necessary to tap and mobilize funds from Muslim population whose awareness towards religious obligations is growing by day.

Today, more and more Islamic-based financial institutions emerge in this country to provide services that are parallel to the ones offered by the conventional financial institutions[2]. While Bank Negara

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[1] *Syariah means a path to a watering place. It implies a path leading to the source of meaningful life – the Islamic path or way of life. The main components of Syariah are (i) Aqidah or belief and faith, (ii) Akhlaq or moral and ethics and (iii) Fiqh or legal rulings that govern the acts of human beings.*

[2] *It is a common practice for local banks to provide both conventional and Islamic banking services to customers regardless of religious backgrounds.*

Malaysia's (BNM)[3] success in developing modern Islamic banking system has become the benchmark for other Muslim countries to emulate, continuous effort is being pursued by SC and Kuala Lumpur Stock Exchange (KLSE) to stimulate awareness and interests toward investment in the *Syariah*-compliant stocks. The former formed a working committee called the Islamic Instrument Study Group which was succeeded in May 1996 by an advisory board named *Syariah* Advisory Council (SAC) to advise the SC in matters concerning *Syariah*-compliant financial instruments. All in, the Council approves 627 counters[4] representing around 82 percent of the total companies listed on the KLSE and this includes ordinary shares, warrants and transferable subscription rights.

In classifying the securities as approved securities, the SAC adopts a standard framework that focuses on the core activities of the listed companies. Securities will be excluded from the approved list if the core activities of the companies are found to be connected to:

1. *Riba* (interest rate) such as conventional banking activities;
2. Gambling;
3. Manufacture and/or sale of *haram* (forbidden) products such as liquor and pork.
4. Element of *gharar* (uncertainty) such as conventional insurance business.

   For companies whose activities comprise both permissible and non-permissible elements, the SAC applies several additional criteria, such as:
5. The core activities of the companies must not be against the *Syariah* as outlined in the four criteria above. In addition, the *haram* component must be very small as compared to the core activities;
6. Public perception or the image of the company must be good; and
7. The core activities of the companies have importance and *maslahah* (benefit in general) to the Muslim *Ummah* (nation) and the country and the *haram* element is very small and involves matters such as '*umum balwa* (common plight), '*uruf* (custom) and the rights of the non-Muslim community which are accepted by Islam.

April 19, 1999 marks another positive development of the Islamic capital market in Malaysia when KLSE launched the *Syariah Index* (SI) which is based on all *Syariah*-approved shares at that time. The

[3] *The Central Bank of Malaysia.*
[4] *As at April 27, 2001.*

component of the index is updated as and when the updated list of the SC's *Syariah*-approved stocks is announced. The approved list is updated twice a year that is on the last Friday of the months of April and October every year. The SI is based on all *Syariah*-compliant shares that are listed on the Main Board of KLSE and MESDAQ. It acts as an indicator for the performance of the *Syariah*-approved securities. As at 27 April 2001, the SI includes a total of 343 Main Board shares that are on the list of SC's Syariah-approved securities. Table 1 gives the breakdown of the number of stocks from each respective sector.

The introduction of the *Syariah*-approved stocks has resulted in a new form of investment trend emerging in Malaysia. Not only does the list becomes helpful guidelines to individual Muslims investors, institutional investors such as unit trust companies are beginning to introduce new financial products based on the religiously approved financial instruments[5]. To date, majority of the unit trust companies in Malaysia, both state-run and privately-owned, provides Islamic-based trust funds as alternatives for the investing public. Their presence not only provides wider range of investment choices but also seen as a vehicle to propel the local stock market to its old competitive level[6]. Given the growing acceptance of the Islamic-approved stocks, this paper attempts to investigate the potential of portfolio diversification using *Syariah*-compliant stocks. The study covers the process of stock selection, portfolio formation and performance evaluation. The findings are useful for both individual and institutional investors on the prospect of Islamic-based investment in the Malaysian equity market.

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[5] *One of the latest product is MBf Syariah Index Fund (MSIF) launched by MBf Unit Trust Management Berhad (MBfUT) as reported in Investors Digest, March 2002 on page 35.*

[6] *Prior to being hit by the financial crisis in 1997, the KLSE is regarded as one of the fastest growing stock market in the world. Nonetheless, it succumbs to the regional crisis though it is now slowly recovering. An active demand for Syariah-approved stocks which represent almost 80 percent of the traded stocks will surely help to boost the market.*

Table 1 : Syariah Approved Securities (KLSE)

Main Board / Second Board KLSE	Approved Securities	Total Securities	Percentage of Approved Securities	First Board	Second Board
Consumer Products	104	115	90.43%	46	58
Industrial Products	226	239	94.56%	97	129
Mining	5	8	62.50%	5	0
Construction	62	67	92.54%	31	31
Trading / Services	111	144	77.08%	55	56
Properties	57	73	78.08%	54	3
Technology	17	17	100.00%	11	6
Plantations	33	37	89.19%	32	1
Infrastructure Project Companies (IPC)	6	6	100.00%	6	0
Finance	4	62	6.45%	4	0
Trusts	2	4	50.00%	2	0
Closed End Fund	0	1	0.00%	0	0
Hotel	0	6	0.00%	0	0
TOTAL	627	761	82.39%	343	284

REVIEW OF LITERATURE

Ever since Markowitz (1952) introduces the highly acknowledged Modern Portfolio Theory (MPT), the landscape of portfolio management has changed tremendously. Through the theory, Markowitz claims that diversification across various forms of risky assets can result in risk reduction which is the ultimate benefit of portfolio formation. Accordingly, risk reduction is achieved through the combination of stocks that do not move together with one another. By combining assets which are less than perfectly positively correlated, the level or risk can be reduced without sacrificing portfolio returns. The lower the correlation between assets, the more risk can be reduced through diversification. Through portfolio formation, the unsystematic component of risk is expected to be eliminated.

Evidence to support the claim is extensive. Among others, Fama (1965) investigates the issue using a general model for portfolio analysis under the assumption that stock returns follow stable Paretian distributions. Using the model, conditions under which diversification leads to reduction of risk for a portfolio can be determined even if the variance of the distribution is infinite. Evans and Archer (1968) discover the presence of a relatively stable and predictable relationship between the number of securities included in a portfolio and the level of portfolio dispersion. This relationship appears to take the form of

sharply decreasing asymptotic function, with the asymptote approximating the level of systematic variation in the market.

In similar note, Wagner and Lau (1971) analyze the effect of simple diversification across stocks that have the same rating as the Standard and Poor's. Based on samples of 200 NYSE stocks covering the period of June 1960 and May 1970, geometric means and standard deviations for the stocks were analyzed. The results show that a relatively stable and predictable relationship exists between the number of securities included in a portfolio and the level of portfolio dispersion. On average, risk can be reduced when stocks are randomly included into a portfolio. They also conclude that the *highest-quality portfolio* of randomly diversified stocks is able to achieve lower level of risk than the randomly diversified portfolio of *lower-quality* stocks.

Fung (1979) study the relationship between risk reduction and the size of portfolio as well as beta effect on the process of diversification. He discovers that the reduction of risk becomes insignificant beyond holding eight assets due to the averaging process. This result is obtained after studying the sample of 144 securities from London Stock Exchange over the period of January 1970 to December 1974. However, his findings fail to find a significant positive relationship between beta values and the number of assets required to attain a prescribed level of risk. He suggests that the relationship of beta effect in diversification found in earlier studies is possibly due to mis- specified model. But Frankfurter (1981) insists that even an effectively diversified portfolio still contain a substantial amount of non-market risk. Only when portfolios are assembled non-randomly, the benefits of diversification may be rather difficult to achieve.

The concept of diversification has also been extended across borders. Numerous studies have been documented on international portfolio diversification. Solnik (1974) and Jorion (1985) are among the pioneers who investigated the benefits of cross borders diversification. Solnik discovers that an international portfolio of stock has about half as much risk as portfolio of the same size containing only U.S. stocks. When he considers countries having far smaller stock markets, he finds that the gains from international diversification are much larger than for the United States. He concludes that the gain from diversification through holding equities of different countries tend to greatly exceed the gain through holding different equities within a single country.

Jorion, on the other hand, questions Solnik's findings on the benefits of international portfolio diversification. He believes that there is an upward bias in the estimated benefits of international

diversification due to basing international portfolio on past returns rather than the distribution of futu returns. As a result, the benefits of international portfolio diversification have indeed been overestimate in many studies. Nevertheless, he believes there is still some gain from international portfoli diversification.

In terms of portfolio optimization, Speidell, Miller and Ullman (1989) believes that diversification i the most basic level for a portfolio optimizer. They agree that diversification should take into consideratio of the correlation between risky assets, which is the extent to which prices move together. By combinin stocks in different sectors of the economy, the price movements tend to complement one another. A optimizer can then form a portfolio that offers the highest level of return for each level of risk. The agree that the riskier the portfolio, the higher the returns should be in the long run. But Elton, Grube and Padberg (1976) show that an optimal portfolio can also be constructed by simple rules that do no involve using quadratic programming techniques. They develop a model that leads to a unique rankin of stocks such that the desirability of any stocks for the inclusion in a portfolio can be judged before th portfolio composition itself is obtained. This provides an intuitive explanation to the practitioner as t why and how much of a stock should be included in a portfolio.

Clearly, portfolio diversification seems to have contributed to the process of risk reduction. Whether i involves locally or internationally selected stocks, the benefit gained from a well-diversified portfolio i said to come not from high returns but instead from controlled level of risk. However, the enhancemen in the field of optimization has lead to the belief of possible optimal formation of portfolio. On that note this study plans to emulate the work of Elton, Gruber and Padberg (1976) in selecting stocks for portfoli formation using the *Syariah*-approved counters. The performance of this portfolio will then be evaluated to seek the effectiveness of portfolio diversification using Islamic stocks.

DATA AND METHODOLOGY

In this study, samples covering 2½ years running from April 1999 to October 2001 are used. This perio is chosen since *Syariah* Index was only launched on April 19, 1999. Although there were 62 *Syariah*-approved counters listed on the two boards of the Kuala Lumpur Stock Exchange (KLSE) as a October 27, 2001, only 156 counters, which are the components of SI, were chosen for this study. Th 156 counters represent 45% of total stocks (343) that made up the *Syariah* Index and they were chose based on their capitalization within their respective sectors. Table 2 shows the composition of SI and the samples used in this study.

Table 2 : Composition Of Sample By Sectors

SECTORS	Main Board	Number of Sample	% Sample
Consumer Products	46	21	45.65
Industrial Products	97	42	43.30
Mining	5	2	40.00
Construction	31	12	38.71
Trading / Services	55	26	47.27
Properties	54	25	46.30
Technology	11	6	54.55
Plantations	32	16	50.00
Infrastructure Project Companies (IPC)	6	3	50.00
Finance	4	2	50.00
Trusts	2	1	50.00
TOTAL	343	156	45.48

the closing price for *Syariah* Index, which is considered as the market portfolio in this study, and the selected samples, series of daily return are generated for the data based on the following calculation:

$$R_{CIt} = \frac{P_t - P_{t-1}}{P_{t-1}}$$

where,

R_{CIt} = Return at period t

P_t = Price at period t

P_{t-1} = Price at period t-1

Based on these series, a simple regression is performed to determine the value of Beta (β_i), the systematic risk, for each company. The following equation explains the regression model:

$$R_i = \alpha_i + \beta_i R_M + e_i$$

where,

R_i = Return of stock *i*

α_i = Level of interception

β_i = Beta of stock *i*

R_M = Return of market (SI)

e_i = Standard error of stock *i*

In addition, the standard deviation is also calculated following the equation below to determine the level of total risk for each sample.

$$\alpha = \sqrt{\frac{\sum_{t=1}^{n}(X - \bar{X})^2}{n-1}}$$

where,

σ = Standard deviation

X = Return for each observation in the sample

$\bar{X}$ = The mean returns of the observations

In order to select suitable stocks to form the portfolio, a 2-step procedure is adopted. First, stocks are ranked based on their excess return to Beta ratio ($(\bar{R}_i - R_F)/ \beta i$), known also as Reward Ratio, which is determined from the following equation:

$$\text{Excess Return} = \frac{\bar{R}_i - R_F}{\beta_i}$$

where,

$\bar{R}_i$ = Average return on stock *i*

R_F = Return on a risk-free asset[7]

β_i = Level of systematic risk for stock *i*

Following Elton, Gruber and Padberg (1976), the next procedure is to calculate the C_i ratio for each stock in order to determine the cut-off ratio (C^*). This point is the maximum value of C_i for all the stocks that are already ranked from highest to lowest based on the $(\bar{R}_i - R_F)/ \beta_I$ ratio. The cut-off point is used as the benchmark for selecting or rejecting a stock. Eventually, only stocks that are located on (or at) the upper part of C^* are included into the portfolio. The following equation is used to compute the C_i:

$$C_i = \frac{\sigma_m^2 \sum_{j=1}^{i} \frac{(\bar{R}_j - R_F)\beta_j}{\sigma_{ej}^2}}{1 + \sigma_m^2 \sum_{j=1}^{i} \left(\frac{\beta_j^2}{\sigma_{ej}^2} \right)}$$

[7] *The daily yield based on 3 month T-bill is used as the indicator of the risk-free rate of return.*

where,

σ_m^2 = Variance in the market index

σ_{ej}^2 = Variance of the stock's movement that is not associated with the movement of market index (unsystematic risk)

To measure the performance of the portfolio, Treynor Index and Jensen Index are employed. Treynor Index[8] is calculated using the following equation:

$$T_P = \frac{\bar{R}_P - \bar{R}_F}{\beta_P}$$

where,

β_P = Beta of portfolio P

$\bar{R}_P$ = Expected return from a portfolio

$\bar{R}_F$ = Risk-free rate of return

Jensen Index estimates the portfolio Alpha[9] (α_P) which represents the constant periodic return that a portfolio is able to generate above (or below, if negative) market return. The estimation is done using the following equation:

$$R_P - R_F = \alpha_P + \beta_P(R_M - R_F) + e_P$$

where,

R_p = Average Return of portfolio

R_F = Risk Premium

R_m = Market Return

In order to test for the robustness of the findings, the study is replicated over three different time periods - Time Horizon 1 (2.5 years), Time Horizon 2 (2 years) and Time Horizon 3 (1.5 years), to account for the time horizon effect.

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[8] *A larger T_P value indicates a better portfolio.*

[9] *If the estimated alpha values are positive and statistically significant, the portfolio is said to possess good performance and vice-versa.*

RESULTS AND ANALYSIS

Panel A of Table 3 shows the results obtained for Time Horizon 1. Out of the 156 selected companies, only 79[10] show positive excess return over beta or Reward Ratio. It is found that the excess return (R_i) of each stock ranges from 7.70% for Sapura to –3.53% for Pan Pacific Asia Bhd. (PPAB). The overall average for the excess return is 0.37%. Sapura also exhibits the highest total risk with 38.57% as measured by standard deviation, while MISC has the lowest total risk of 5.13%. The grand average for total risk is 14.29%. The value of Beta (β_i) ranges from 0.12 for Esso to 3.53 of Sapura. The average value of Beta is 1.19. GPLUS is found to have the highest level of unsystematic risk (σ^2_{ej}) of 36.88% while Malakof registers the smallest level of unsystematic risk with 3.61%. The excess return and total risk for the *Syariah* Index during Time Horizon 1 are found to be 0.375% and 7.34% respectively. In general, the overall average excess return for all counters during Time Horizon 1 is relatively the same with what is registered by the market performance (0.37% vs. 0.375%). However, the average total risk for the counters exceeded the one of the market (14.29% vs. 7.34%). This suggests that the average stock return is more volatile that market return. The above market level of average Beta (1.19) may help contribute to this finding.

Panel B of Table 3 illustrates the results for Time Horizon 2. It shows that 70 companies have recorded positive Reward Ratio with the mean return (R_i) of the stocks ranges from 5.05% for Bintai to –2.87% for Esso. The grand average return for the whole sample during that time horizon is 0.01%. Once again GPLUS is found to have the highest total risk with 44.18% as measured by standard deviation (σ_i) while Esso records the lowest level of total risk of 4.61%. The average total risk for all 156 counters during this time horizon is 14.3%. The value of the beta (β_i) for these stocks ranges from 0.06 for Intan to 3.84 for Sapura. The average Beta is 1.16. Uniphone carries the largest level of unsystematic risk (σ^2_{ej}) with the value of 31.13%, while AMFPT has the smallest value with 3.28%. The total risk of the Syariah Index during this period, as measured by standard deviation (σ_m), is 7.52 while the mean return is –0.29%. The overall average excess return for all counters is therefore higher than market performance (0.01% vs. –0.29%). Once again, the average total risk for the counters exceeded the one of the market (14.3% vs. 7.52%) but these values are almost consistent with the ones recorded during Time Horizon 1. This suggests that the average stock return is more volatile that market return and perhaps it can be related to the above market level of average Beta (1.16) for the sampled counters.

[10] *Detailed results are available upon request.*

Panel C of Table 3 shows the result for Time Horizon 3. It is found that 103 of the total 156 companies have recorded positive Reward Ratio. The mean return (R_i) for the samples ranges from 14.20% for Sapura to –4.90% for PPAB. The grand average return is 1.77%. As in Time Horizon 2, GPLUS records the highest total risk of 49.27% while Esso records the lowest level of total risk of 4.18% as well as the lowest level of mean return which is –2.63%. The grand average of total risk during that period is 14.81%. The value of Beta (β_i) for the stocks ranges from 0.123 for stock KLK to 4.09 for Sapura while the average beta is 1.19. GPLUS is also found to have the largest level of unsystematic risk (σ_{ei}^2) with the value of 47.05% while AMFPT has the smallest value of unsystematic risk with the value of 2.56%. The total risk for the Syariah Index in this case, as measured by standard deviation (σ_m), is 7.84 while the average return is 1.77%. The overall average excess return for all counters is once again higher than market performance (1.77% vs. 0.846%). Although the average total risk for the counters exceeded the risk of the market (14.81% vs. 7.84%), these values are almost consistent with the ones recorded during Time Horizon 1 and 2.

Table 3 : Risk And Return For Selected Samples Over Various Time Horizons

Panel A:

	2.5 Years				
	Company	Return	Risk	Beta	Unsys. Risk
1	SAPURA	7.70%	38.57	3.53	29.11
2	PPAB	-3.53%	20.96	1.98	15.34
3	MISC	2.06%	5.13	0.324	4.62
4	ESSO	-2.01%	5.20	0.12	5.10
5	GPLUS	3.99%	36.88	2.45	36.88
6	MALAKOF	0.29%	5.21	0.48	3.61
7	SYARIAH INDEX	0.375%	7.34	1.00	
	G. Average	0.37%	14.29	1.19	

Panel B:

2.0 Years					
	Company	Return	Risk	Beta	Unsys. Risk
1	BINTAI	5.05%	9.52	0.73	16.06
2	ESSO	-2.87%	4.61	0.12	4.63
3	GPLUS	3.82%	44.18	2.56	40.68
4	ESSO	-2.88%	4.61	0.12	4.63
5	INTAN	0.61%	9.56	0.06	9.76
6	SAPURA	8.44%	42.55	3.84	31.96
7	UNIPHONE	6.94%	41.00	3.65	31.13
8	AMFPT	-0.76%	4.86	0.49	3.28
9	SYARIAH INDEX	-0.29%	7.52	1.00	
	G. Average	0.01%	14.3	1.16	

Panel C:

1.5 Years					
	Company	Return	Risk	Beta	Unsys. Risk
1	SAPURA	14.20%	46.58	4.09	34.82
2	PPAB	-4.90%	14.15	1.20	10.91
3	GPLUS	8.72	49.27	2.37	47.05
4	ESSO	-2.63%	4.18	0.20	4.00
5	KLK	0.06	4.86	0.12	4.91
6	AMFPT	-0.10	4.57	0.49	2.56
7	SYARIAH INDEX	0.846	7.84	1.00	
	G. Average	1.77%	14.81	1.19	

From the ongoing analysis, it is observed that the number of companies that records positive Reward Ratio is quite stable over Time Horizon 1 and Time Horizon 2 as compared to Time Horizon 3. Over a shorter time horizon, the number of companies with positive Reward Ratio jumps drastically. It is also noticed that the ranking of the companies, based on Reward Ratio, is not consistent over the three time horizons. Similarly, the mean value of the Reward Ratio is also found to be different over those three time horizons. Nonetheless, the average value of total risk and Beta are found to be almost consistent between Time Horizon 1, 2 and 3. The same goes for the value of total risk for the *Syariah* Index although the Reward Ratio is found to be inconsistent.

Using the results of Reward Ratio obtained from Table 3, the order of ranking running from the highest to the lowest value of Reward Ratio for the three time horizons is assembled. The idea is to generate the cut-off point that will determine the optimal number of stocks to be included into the portfolio for performance evaluation. Panel A, B and C in Table 4 shows the cut-off point for each time horizon. It is determined by the peak value of C_i before starting to decline.

From Panel A, the cut-off point is found to be at 6.00. Only stocks which ranked on the upper part of this point are eligible for inclusion into the portfolio. Five stocks qualify for this time horizon starting with Bintai which has the Reward Ratio value of 4.34%. Others include MISC, MMC, UAC and HUMECEM. The cut-off point for Time Horizon 2 is set at 5.126 as shown by Panel B of Table 4. Once again, only five counters qualify for the inclusion into the portfolio and they are Bintai, Intan, UAC, MISC and HUMECEM. For Time Horizon 3, only three stocks i.e. UAC, Mflour and Bintai, qualify for the selection into the stock as shown by Panel C in the same table.

It is, therefore, noticed that the optimal size of the portfolio for Time Horizon 1 and 2 are similar, i.e. only five counters are eligible. However, the composition of the companies that made the portfolio is different during the two periods. The cut-off points for the three time horizons also vary. For the purpose of portfolio formation in this study, stocks that are identified from Time Horizon 1 i.e. Bintai, MISC, MMC, UAC and HUMECEM are selected for further testing. Table 5 categorizes each stock into the respective sector. An equal weight investment is assumed between the five stocks, which means 20% allocation of investment for each stock. This assumption is based upon the work of Alexander and Resnick (1985).

Table 4 : Cut-Off Rate For Three Different Time Horizons

Panel A:

	1	2	3	4	5	6	7
	Company	$\frac{(\bar{R}_i - R_F)}{\beta_i}$	$\frac{(\bar{R}_i - R_F)\beta_i}{\sigma_{ei}^2}$	$\frac{\beta_i^2}{\sigma_{ei}^2}$	$\sum_{j=1}^{i}\frac{(\bar{R}_i - R_F)\beta_i}{\sigma_{ej}^2}$	$\sum_{j=1}^{i}\frac{\beta_i^2}{\sigma_{ej}^2}$	C_i
1	BINTAI	6.836	0.222	0.032	0.222	0.033	4.353
2	MISC	5.625	0.1278	0.0227	0.350	0.055	4.744
3	MMC	4.935	0.504	0.102	0.854	0.157	4.855
4	UAC	4.685	0.197	0.042	1.051	0.199	4.862
5	HUMECEM	4.676	0.727	0.078	1.779	0.278	6.000
6	OYL	3.959	0.163	0.041	1.942	0.319	5.752
7	NESTLE	3.136	0.046	0.0147	1.988	0.334	5.643
8	DLADY	3.116	0.253	0.0812	2.241	0.415	5.170
9	INTI	2.775	0.598	0.215	2.834	0.630	4.375
10	IOIPB	2.666	0.343	0.129	3.182	0.759	4.092

Panel B:

	1	2	3	4	5	6	7
	Company	$\frac{(\bar{R}_i - R_F)}{\beta_i}$	$\frac{(\bar{R}_i - R_F)\beta_i}{\sigma_{ei}^2}$	$\frac{\beta_i^2}{\sigma_{ei}^2}$	$\sum_{j=1}^{i}\frac{(\bar{R}_i - R_F)\beta_i}{\sigma_{ej}^2}$	$\sum_{j=1}^{i}\frac{\beta_i^2}{\sigma_{ej}^2}$	C_i
1	BINTAI	6.30	0.224	0.035	0.224	0.035	4.266
2	INTAN	6.326	0.002	0.000	0.226	0.035	4.280
3	UAC	6.085	0.148	0.024	0.375	0.060	4.849
4	MISC	5.471	0.122	0.022	0.496	0.082	4.988
5	HUMECEM	5.305	0.408	0.077	0.904	0.159	5.126
6	MMC	4.786	0.386	0.081	1.290	0.239	5.020
7	OYL	4.497	0.167	0.037	1.457	0.276	4.954
8	NESTLE	3.381	0.062	0.018	1.519	0.295	4.862
9	INTI	3.326	0.717	0.215	2.235	0.510	4.235
10	DLADY	3.222	0.221	0.069	2.456	0.579	4.118

Panel C:

1	2	3	4	5	6	7
Company	$\frac{(\bar{R}_i - R_F)}{\beta_i}$	$\frac{(\bar{R}_i - R_F)\beta_i}{\sigma_{ei}^2}$	$\frac{\beta_i^2}{\sigma_{ei}^2}$	$\sum_{j=1}^{i} \frac{(\bar{R}_i - R_F)\beta_i}{\sigma_{ei}^2}$	$\sum_{j=1}^{i} \frac{\beta_i^2}{\sigma_{ei}^2}$	C_i
UAC	12.452	0.207	0.017	0.207	0.017	6.287
MFLOUR	11.056	0.123	0.011	0.329	0.028	7.489
BINTAI	9.351	0.290	0.031	0.620	0.059	8.260
MISC	7.878	0.115	0.015	0.735	0.073	8.198
MMC	5.922	0.397	0.067	1.132	0.140	7.224
EKOVEST	5.799	0.418	0.072	1.550	0.212	6.775
MTDBHD	5.556	0.295	0.053	1.845	0.266	6.545
HUMECEM	5.138	0.517	0.101	2.362	0.366	6.175
DLADY	5.013	0.297	0.059	2.659	0.425	6.019
IOIPB	4.891	1.171	0.239	3.830	0.665	5.623

Table 5 : Stocks Selected For Portfolio Testing

	Company	Sector
1	Bintai Kinden Company	Trading and Services
2	Malaysian International Shipping Company (MISC)	Trading and Services
3	Malaysian Mining Corporation	Mining
4	UAC Bhd.	Industrial Product
5	Hume Cemboard Bhd.	Industrial Product

The procedure for portfolio evaluation begins with the collection of daily data for the five counters as well as the Syariah Index covering 25[11] trading days starting from November 1 to December 7, 2001. The mean daily return, standard deviation, Beta and standard error for each counter and the portfolio are then computed. The results are shown in the Table 6. Consistent with the result found earlier, only UAC registers above market average daily return of 0.58% compared to 0.375% of the market index. The other four counters - Bintai, MISC, MMC and HUMECEN, have recorded lower than market average daily return. As such, the average daily return for the portfolio is found to be lower than the market

[11] *The short simulation period to reflect trading strategy using recent market data.*

return i.e. 0.191% compared to 0.375%, thus suggesting the ineffectiveness of portfolio formation using the five counters. Nonetheless, the formation of portfolio seems to have benefited from risk reduction since the level of risk as measured by the standard deviation, is found to be lower for the portfolio as compared to the market index i.e. 0.479% to 0.792%. Perhaps, the low portfolio Beta of 0.185 explains the lower risk and lower return recorded by the portfolio compared to the market performance[12].

Table 6 : Result of Portfolio Testing

	Bintai	MISC	MMC	UAC	Humecem	Portfolio*	SI
Mean	0.196%	-0.139%	0.009%	0.580%	0.306%	0.191%	0.375%
Std. Dev	1.791%	1.271%	1.362%	1.391%	0.867%	0.479%	0.792%
Beta	0.478	0.514	-0.164	0.072	0.027	0.185	
Std Error	1.788	1.230	1.384	1.420	0.886	0.465	

Treynor Index and Jenson Index are used to evaluate the performance of the portfolio. The summary of Treynor Index is shown in the Table 6. The result shows that the portfolio under study has outperformed the overall market performance. This is evident by Treynor Index for portfolio which is found to be 0.985 exceeding the one of market index which is only 0.368. This finding implies that the method of portfolio formation proposed by Elton, Gruber and Padberg (1976) seems to work well with Islamic-approved counters listed on the local stock exchange in generating better than market return over a short-term period.

Table 6 : Portfolio Performance Evaluation - Treynor Index

Portfolio Testing	Result	
Portfolio Average Return	0.1905	
Portfolio Standard deviation	0.4785	
Portfolio Beta	0.1854	
Portfolio Std Error	0.4652	
Risk Free	0.0079	
Market Return	0.3754	
Market Std Div	0.7915	
	Market	Portfolio
Treynor Index	0.3675	0.9851

[12] *This finding is consistent with risk-return relationships as advocates by the Security Market Line.*

Although not statistically significant, the result from Jensen Index test also indicates that the portfolio performs relatively better than market index. As graphically shown in Figure 1, the regression line cuts the y-axis at 0.1145, which means that the coefficient for Alpha (α) has a positive value. This finding suggests that the portfolio has a slightly better performance than the market. Table 7 shows the outputs from the regression analysis. It is found that the degree of diversification for the portfolio, as measured by R^2 statistic, is very low (9.4%) and the result is not significant. The correlation coefficient (0.307), which indicates the percentage change in portfolio due to change in *Syariah* Index is also low albeit positive. The low positive relationship between the portfolio and the *Syariah* Index is also found to be insignificant.

Figure 1 : Portfolio Performance Evaluation – Jenson Alpha

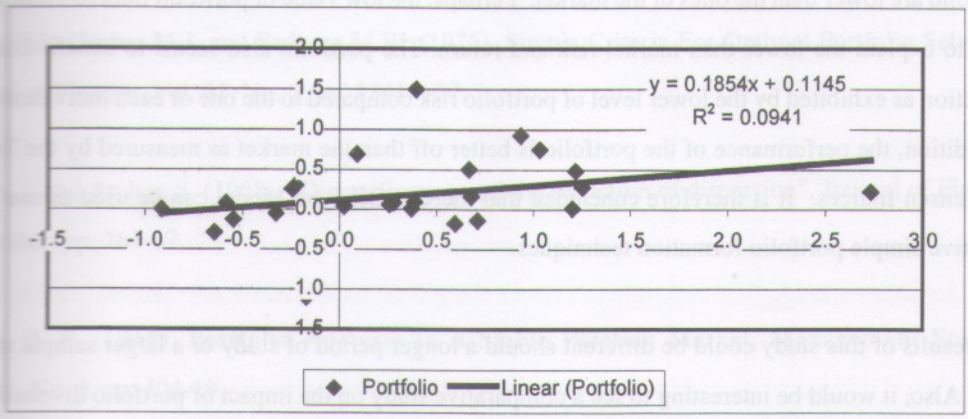

Table 7 : Portfolio Regression Test

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Correlation	Durbin-Watson	Sig.
1	0.307	0.094	0.055	0.46522	0.307	2.167	0.136

a Predictors: (Constant), SI

b Dependent Variable: Portfolio

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	.115	.103		1.170	.254
SI	.185	.120	.307	1.545	.136

CONCLUSION

This study applies the Cut-Off Rate Model by Elton, Gruber and Pedberg (1976) to determine the component of efficient portfolio using the *Syariah*-compliant stocks listed on the Kuala Lumpur Stock Exchange. Accounting for time effect, the result shows that 79, 70 and 103 companies recorded positive Reward Ratios for the three different time horizons. Nonetheless, only 5, 5 and 3 companies are eligible to be considered for the optimal portfolio based on the C_i value as compared to the cut-off point, C^*, for each time horizon. Nonetheless, the composition of eligible companies differs for each time zone. Eventually, 5 companies - Bintai, MISC, MMC, UAC and HUMECEM are chosen to form the optimal portfolio.

The results from portfolio analysis show that the average daily return and standard deviation for the portfolio are lower than the ones of the market. Perhaps, the low value of portfolio Beta (0.1854) can be used to explain the lower than market risk and return. The portfolio also seems to benefit from risk reduction as exhibited by the lower level of portfolio risk compared to the one of each individual stock. In addition, the performance of the portfolio is better off than the market as measured by the Treynor and Jensen Indices. It is therefore concluded that the Cut-Off Rate Model can be used as one of the effective simple portfolio formation techniques.

The results of this study could be different should a longer period of study or a larger sample size are used. Also, it would be interesting to see a comparative study on the impact of portfolio diversification using *Syariah*-approved stocks listed on the Main Board and Second Board. From this point onwards, ample of rooms are opened for future research to help the investing public to better understand the benefit of Islamic-based investment particularly in the age of Islamic resurgence in Malaysia.

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