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IMPACT OF ETHICAL SCREENING ON INVESTMENT PERFORMANCE: THE CASE OF THE DOW JONES ISLAMIC INDEX

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Islamic ethical investors apply both Shari[ah *and financial criteria when evaluating investments in order to ensure that the securities selected are consistent with their value system and beliefs. This paper examines the potential impact of these restrictions on investment performance by comparing the performance characteristics of a diversified portfolio of Islamic screened stocks with conventional benchmark portfolio. In contrast to prior research on ethical investment, the performance of Islamic ethical portfolio examined in this paper is not subject to the confounding effects of transaction costs, management fees, or differences in investment policy that are associated with actively managed funds. Contrary to expectations, our findings indicate that application of Islamic ethical screens do not necessarily have an adverse impact on investment performance*.

1. INTRODUCTION

One of the most important features that enable Islamic funds to distinguish themselves from conventional funds is the type of the ethical screening they apply. Generally, Islamic funds apply two screenings – positive and negative. Negative screenings delete stocks having a poor ranking on certain Islamic ethical indicators whilst positive screenings reward companies having a high one. A key factor in the growth of Islamic funds is that Shari[ah scholars have accepted the common stock guidelines. There is Shari[ah agreement that the buying and selling of corporate stocks does not violate Islamic norms because stocks and shares represent real assets. **A**s a result, interest has been generated among the managers of equity funds. Furthermore, the payment of dividends complies with Shari[ah (whereas the

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payment/receipt of interest (*riba*) does not)**.** Therefore, government bonds, mutual funds and equities are more compatible with the Islamic doctrine of profit and risk sharing principles than fixed income assets.

During the late 1990s Islamic funds rode on the technology boom. In 1996, for example, there were twenty-nine Islamic funds on the market with US$800 million in assets. However, by early 2000 the number of funds had grown to ninety-eight with approximately US$5 billion in assets. As at December 2001, there were over one hundred Islamic equity funds with their total assets estimated at roughly US$ 5.3 billion (Failaka, 2002).

Most academic studies on ethical fund performance in UK and US, have until now studied the average performance of ethical funds as a group or compared the performance of ethical mutual funds with the performance of alternative, unrestricted benchmark portfolios (Statman, 2000; Luther and Matatko, 1994; Mallin, Saadouni and Briston, 1995), ignoring any effect screening might have. The reason for this is obvious – a lack of comprehensive data and information on the exact approach followed by the funds. The screeners deviate more clearly from conventional funds with respect to investment style. Obviously screening leads to different performance and investment style patterns. The influence of screening on performance provides a first hand observation for Islamic ethical investors. Despite the increasing attention given by practitioners to Islamically screened ethical investments, there is scant academic research.

The primary objective of this study is to determine the impact that Islamic screens have on investment performance. This research is interesting, because of the nature of funds inhibits our ability to use a comparison of Islamic fund performance as means for isolating the additional costs that result from applying Islamic screens. If we go into the depth of this nature of the problem, it may be observed that Islamic fund performance does not merely reflect the returns to its underlying securities, but rather also reflects differences in management fees and transaction costs which can vary widely across mutual fund companies and stated investment objectives. In addition, conventional or Islamic mutual fund performance reflects a fund manager's ability to make appropriate decisions concerning asset allocation, sector selection, and security selections within each sector. Together, these confounding effects make it extremely difficult to rely upon the differences in mutual fund performance to establish the impact that application of Islamic ethical screens has on investment performance.

Therefore, we examine the performance of characteristic Islamic screened stock index that impact the performance of actively managed Islamic ethical funds. A comparison of the performance characteristics of Islamic screened index (DJIM) with the performance characteristics of two unrestricted benchmark portfolios could provide a better picture by subjecting the investment universe to Islamic

ethical screening. In this study, we will address the research question: what are the actual relative returns of Islamic ethical portfolio and conventional portfolio and impact on Islamic ethical screen on investment performance?

We analysis the performance of the Dow Jones Islamic market index and Dow Jones index-Americas using the traditional risk-adjusted measures such as the Sharpe, Treynor and the Jensen measures. We also employ more elaborate multi-factor models that control for size, book to market, momentum and time-variation in betas. Results show that expected returns of Islamic screened portfolios are higher than the expected returns of conventional portfolio.

The paper is organised into six sections. Section 2 discusses Islamic screening practices. Section 3 discusses the models and methodology used in the performance analysis. Section 4 focuses on the data sources and variables employed in the study. Section 5 presents the empirical results based on single factor asset pricing model, three factor Fama -French model as well as Carhart's four factor model using both unconditional and conditional information. Section 6 contains conclusion.

2. ISLAMIC SCREENING

Islamic screening is designed, on Islamic principles, to ensure social responsibility in the investment universe. It uses a series of financial and social criteria in order to ensure that investments are consistent with the value systems and beliefs of the investors. Thus, there are prohibitions on buying stocks in companies whose primary business involves conventional banking, alcohol, pork processing, gambling, pornography (e.g., the publishing, printing or wholesaling of such magazines etc.), tobacco, weapon production (e.g., the sale or production of strategic goods or services for military use including nuclear weapons) (Iqbal 2000; Usmani, 2002). More recently, Islamic investing concerns have expanded to include the manufacture of ozone-depleting chemicals, extraction/use of large quantities of tropical hardwood, environmental pollution, corporate citizenship issues evaluating corporate responsiveness to the needs of the environment, customers, employees and the community in general. While the focus of Islamic ethical screens continues to evolve as new issues become important, it is reasonable to expect interest in Islamic investments will continue (Iqbal, 2000, Hassan, 2002). Secondly Islamic investing, however, is not without its critics.

There are essentially two opposing views regarding economic viability of Islamic ethical investing. Advocates of Islamic investing argue that it makes good social and economics sense to evaluate potential investments with both financial and Islamic ethical screens. By screening potential investments, Islamic ethical investors ensure that the investments they select are consistent with their values, while also raising awareness to firms that are not responsible to Islamic concerns.

As Islamic ethical investors become aware of a firm's non-responsiveness to social concerns, they can place pressure on those firms to change. In addition, they argue that the resulting set of firms may be stronger financially and more profitable than those firms that are eliminated through the screening process. In contrast, opponents of Islamic ethical investing highlight the potential adverse side effects that might results from using Islamic screens to limit the investment universe. Major concerns include the potential increase in volatility, lower returns, reduced diversification and monitoring costs that result from implementing ethical screening (Sauer, 1997). In particular, Islamic screenings tend to eliminate larger firms from the investment universe and as a result, remaining firms tend to be smaller and have more volatile returns. Lower returns are also possible as Islamic screens eliminate stable blue chip and otherwise attractive investment opportunities from further consideration.

Contrary to what might be expected, Islamic ethical screening has not hindered the expansion of Islamic ethical investing. Indeed, often hailed by conventional financial observers as the pre-eminent emerging market, Islamic ethical investing has grown from a small regional activity to an international industry encompassing mutual fund complexes, investment banks, and retail brokerage, etc.

3. RESEARCH METHODOLOGIES

This study assesses the performance of the Dow Jones Islamic Index (DJIM) to see if there is any ethical effect. Simultaneously, the study examines the impact of the type of performance used on the estimated performance. The questions of this study are approached as follows. The main model used in this study is the capital asset pricing (CAPM) single index model extended to the Fama and French three factor and Carhart (1997) four factor model. The intercept of such a model,α, gives the Jensen alpha which is usually interpreted as a measure of out or under performance relative to the used market proxy. Subsequently, these results are compared with conditional four-factor model to test robustness.

3.1 Unconditional Models

Jensen's Alpha

Jensen (1968) relied on Sharpe (1964), Linter (1965) CAPM to develop an estimate of the extra return earned by a fund. The Jensen measure has become the standard measure of performance evaluation and has been applied extensively in evaluating managed fund's performance. Performance is measured by the Jensen's alpha since superior (inferior) performance would have consistently positive (negative) random error terms, which would be picked up in the intercept, alpha.

The empirical specification of the model is as follows:

$$E(R_{it}) = \beta_i E(R_{mt}) \quad (1)$$

where

R_{it}= excess return on asset i in the period t -net of the risk free rate,
R_{mt}= excess return on the benchmark asset,
β_i = systematic risk for asset i,
E= expectations operator

Assuming rational expectations and efficient markets, the equation (1) can be written as :

$$R_{it} = \beta_i R_{mt} + e_i \quad (2)$$

where

e_i = forecast error with mean of zero, $[E(e_i)=0]$

Jensen's measure of performance includes a constant in equation (2) such that

$$R_{it}-R_{ft} = \alpha + \beta i\,(R_{mt} - R_{ft}) + e_i \quad (3)$$

$R_{it}-R_{ft}$ = excess return of the portfolio (in our case the Dow Jones Islamic Market Index and Dow Jones Index-Americas),
$R_{mt}- R_{ft}$ = excess return of the benchmark (CRSP)
α = a constant that measures abnormal performance,
β_i = systematic risk of the portfolio.

The advantage of Jensen's approach is that it enables one to determine whether the performance indicated by the alpha is statistically significant using t-tests. The null hypothesis of neutral performance –i.e. no Islamic ethical effect – is that alpha is equal to zero. A positive alpha is usually interpreted as a measure of superior performance and a negative alpha as reflecting inferior performance. However, it may be noted that if investors received unanticipated returns over the sample period, a non-zero estimate of alpha could be indicative of a misspecification of CAPM as a model of the returns generating process or market inefficiency. Any inference about market efficiency involves a joint hypothesis (Fama, 1970). If the model is misspecified, then predictable variation in the misspecification can contaminate α and $e_{i.}$.

3.2 Fama - French Three Factor and Carhart Multifactor Asset Pricing Model

Roll (1977) has criticised the use of proxies for test of CAPM and the portfolio performance evaluation. He argues that the performance ranking may change with the use of different proxies for the market portfolio. Roll's (1977) criticism about CAPM leads us to question the adequacy of a single factor model to explain managed fund or index's performances.

The need for three factor/multifactor asset-pricing model is derived from the recent literature on the cross-sectional variation of stock returns (Fama and French, 1992 and 1993). The single-factor assumes that a managed fund's investment behaviour can be approximated using a single market index. It does not, however, fully account for holdings in smaller companies. For this reason Elton, Gruber, Das and Hlavka (1993) proposed to add a small cap benchmark to the previous single-factor model. The landmark paper Fama and French (1992) found that beta has little or no ability in explaining cross-sectional variation in equity returns, but that variables such as size and book-to-market value of equity do have such ability. Following this lead, the case against beta and/or CAPM has been forcefully presented by others including Grinold (1993), Davis (1994). In a follow up paper Fama and French (1993) moved to a time series based testing framework. Besides a value-weighted market proxy two additional risk factors are used; size and book-to-market[4]. The Fama and French model reads:

$$R_{it} - R_{rft} = \alpha + \beta_0 (R_{mt} - R_{rft}) + \beta_1 SMB_t + \beta_2 HML_t + \varepsilon_t \qquad (4)$$

$R_{it} - R_{rft}$ = the excess return of index at the time t,

$R_{mt} - R_{rft}$ = the excess return of the benchmark at the time t,

SMB_t = the difference in return between a Small Cap portfolio and a Large Cap portfolio at time t,

HML_t = the difference in return between a portfolio of high-book-to market stocks and one of low book to market stocks at time t.

3.3 Multi-Factor Model

The importance of a multi-factor asset pricing model can be found from the recent studies on cross sectional variation of stock returns (for example, Fama and

[4] Otten and Bams (2002) and Kothari & Warmer (1997) provide evidence on the applicability of this model.

French, 1993 and 1996; Chan, Jegadeesh and Lakonishok, 1996). The findings of these studies raise the question about the adequacy of a single index model to explain fund's performance. In view of this, the Fama and French (1993) three-factor model has been considered to give a better explanation of fund behaviour. In this regard, this model improves average CAPM pricing errors but is not able to explain the cross-sectional variation in momentum-sorted portfolio returns. Therefore Carhart (1997) extends the Fama-French model by adding a fourth factor that captures the Jegadeesh and Titman (1993) momentum anomaly. The Carhart's (1997) four factor model is consistent with a market equilibrium model with four risk factors, which can also be interpreted as a performance attribution model, where coefficients and premia on the factor-mimicking portfolios indicate the proportion of mean return attributable to four elementary strategies. The model is described in the following notations:

$$R_{it} - Rf_t = \alpha_i + \beta_{0i}(Rm_t - Rf_t) + \beta_{1i}SMB_t + \beta_{2i}HML_t + \beta_{3i}Mom_t + \varepsilon_{it} \quad (5)$$

where,

SMB_t = the difference in return between a small cap portfolio and a large cap portfolio at time t,

HML_t = the difference in return between a portfolio of high book to market stocks and one of low book to market stocks at time t

Mom_t = the difference in return between a portfolio of the past 12 months' winners and a portfolio of the past 12 month's losers at time t.

Carhart(1997)'s four factor alpha is an estimate of the net returns earned by the fund manager after adjusting for the fund's risk, which is done by controlling for its various characteristics.

3.4 Four Factor Model with the Conditional Information

Traditional approaches to performance measurement are unconditional, which means that they use historical average returns to estimate expected performance. For example, an alpha may be calculated as the historical average return of a fund in excess of a beta-adjusted historical average for a benchmark portfolio. Sometimes, the beta is simply assumed to be equal to 1.0. Unconditional measures do not account for the fact that risk and expected returns may vary with the state of the economy. In particular, traditional performance measures ignore the evidence that expected returns in the stock market are higher at the beginning of an economic recovery, when dividend yields are high and interest rates are low. If the market exposure of a managed portfolio varies predictably with the business cycle

but the manager does not have superior forecasting ability, a traditional approach to performance measurement will confuse the common variation between fund risk and expected market returns with truly superior information and abnormal performance. Therefore, in recent times, interest in performance evaluation has been renewed with the emergence of two branches of research. The first development is the use of efficient benchmark portfolios. The second development is the use of conditional information variables in tests of asset pricing theories.

Most significant of a conditional approach to performance evaluation is that it can accommodate whatever standard of superior information is held to be appropriate by the choice of the lagged information. By incorporating a given set of lagged instruments, managers who trade mechanically in response to these variables should be unable to 'game' the performance measure. In practice, the trading behaviour of managers may overlay complex portfolio dynamics on the underlying assets they trade. The desire to handle such dynamic strategies further motivates a conditional approach. In this paper, we illustrate the conditional performance evaluation approach using lagged default risk, slope term structure, dividend yield and 1 month US Treasury bill rates as the conditional information.[5]

Traditional performance evaluation approaches assume that the consumer of the performance evaluation does not use public information on the economy to form expectations, whereas a conditional approach assumes market efficiency with respect to the particular market indicators. In a conditional market-timing model, the idea is to distinguish market timing based on public information from marketing information that is truly superior to the public information. A technical assumption required for this approach is a functional form for the betas or factor sensitivities of a managed portfolio (Ferson and Warther, 1996). Time variation in a managed portfolio beta may arise for three distinct reasons and they are:

(i) the betas of the underlying assets may change over time such that even a passive strategy, such as buy and hold, will experience changes in beta;

(ii) a manager can actively manipulate the portfolio weights, departing from a buy and hold strategy, and thereby create changes in the portfolio beta;

(iii) a fund may experience net cash inflows or outflows, which the manager does not directly control. If such flows affect the cash holdings of the fund, then beta will fluctuate as the percentage of cash held by the fund fluctuates. The combined effect of these various factors on the conditional beta is modelled as "reduced form."

[5] For evidence that these variables capture variation in both risk and expected returns, see Otten and Bams (2002).

There are many studies that use the conditional CAPM- to capture the potential sources of time-varying expected returns (Antoniou, Barr and Priestly, 1998; Lettau and Ludvigson, 2001) and conditional CAPM could hold perfectly- that is, conditional alphas are zero (Lettau and Ludvigson, 2001; Zhang, 2003). Jagannathan and Wang (1996); Wang (2002) and Ang and Chen (2002) show that the time varying betas do help to explain the size, B/M (book-to-market) stocks and momentum effects. Our approach is motivated from Chen and Kenz (1996); Ferson and Schadt (1996) and Bauer, Koedjik and Otten (2003), among others who argue that the CAPM biases are related to cross sectional conditional returns. We use the following linear function, which is a natural extension of traditional CAPM model for fund risk:

$$R_{it} - Rf_t = \alpha_i + \beta_{i0}(Rm_t - Rf_t) + B_i' Z_{t-1}(Rm_t - Rf_t) + \varepsilon_{it} \qquad (6)$$

Z_{t-1} is a vector lagged pre-determined instrument. Assuming that the beta for a fund varies over time, and that this variation can be captured by a liner relation to the conditional instruments, then $\beta_{it} = \beta_{i0} + B_i' Z_{t-1}$, where B'_i is a vector of response coefficients of the conditional beta with respect to the instruments in Z_{t-1}. A linear function may be motivated by Taylor series approximation. A linear function is also attractive because it results in simple regression models that are easy to interpret. Although we use simple linear functions to illustrative conditional approach, the correct specification of the conditional beta is an empirical issue. The general approach can accommodate other choices for functional form, so it should be possible to improve upon our example in actual applications.

The above conditional single index model equation can easily be extended to incorporate Carhart's multiple factor model and conditional four-factor model will form the following regression for the managed portfolio return:

$$R_{it} - Rf_t = \alpha_i + \beta_{0i}(Rm_t - Rf_t) + \beta_{1i} SMB_t + \beta_{2i} HML_t + \beta_{3i} Mom_t + \beta_{4i}[(Rm_t - Rf_t) \times (DeRisk)_{-1}] + \beta_{5i}[Rm_t - Rf_t) \times (SlopTerm)_{-1}] + \beta_{6i}[(Rm_t - Rf_t) \times (D/P)_{-1}] + \beta_{7i}[(Rm_t - Rf_t) \times (TB)_{-1}] + \varepsilon_{it} \qquad (7)$$

The instruments (market indicators) used in the model are publicly available and proven to be useful for predicting stock returns by several previous studies (as for example, Pesaran and Timmerman, 1995). The informations are: (1) quality spread, by comparing the yield of government and corporate bonds, (2) the slope of the term structure; (3) dividend yield on the market indices and (4) 1-month US T-Bill rate. All instruments are lagged 1 month. These variables are essentially interaction terms between the excess return of the benchmark (here we use the

CRSP as benchmark) and the lagged values of the market indicators. These interaction terms pick up the movements through time of the conditional betas as they relate to the market indicators. In equation (7), the coefficients β_1 , β_2, β_3, β_4, β_5, B_6, β_7 measure the response of the conditional betas to the lagged market indicators-SBM, HML, Momentum, default risk, slope of the term structure, dividend yield and 1-month treasury bill rate. The intercept, α, is the conditional alpha, which measures the abnormal performance.

4. DATA AND VARIABLES

We use the total return data of The Dow Jones Islamic Market Index (DJIM) and the Dow Jones Index-Americas as our sample which belong to the Dow Jones Global Index group(DJGI). The Dow Jones Islamic Market Index represents a carefully constructed portfolio of Islamic ethical stocks that is not subject to the confounding effects that impact Islamic mutual fund performance. As an index, performance of the DJIM does not reflect management fees, transactions costs, or changes in investment policy. No attempts are made to shift the portfolio's composition in response to a changing market; rather, composition of the DJIM is only affected by changes in Islamic ethical concerns and by changes in corporate responsiveness to those concerns. Consequently, performance of the DJIM merely reflects the returns to its underlying securities of the Islamic ethical screened stocks.

The DJIM is made up of one thousand stocks and it is an Islamic equity benchmark index that excludes stocks from the DJGI whose company and primary business is non-permissible, based on Shari[ah principles. The DJIM is a capitalisation weighted price index computed on the basis of the last prices. It does not include reinvested dividends and is based on December 31, 1995 with the base value set at 1000. On the other hand the Dow Jones Index-Americas includes all stocks from the corresponding Dow Jones Global Indexes (DJGI) country index that meet the defined criteria for growth or value. The Dow Jones index-Americas cover 90% of the float-adjusted market capitalization of United States. It also does not include reinvested dividends.

Total return data of the Dow Jones Islamic market index (DJIM) was obtained directly from the Dow Jones & Company.[6] The data consists of the monthly prices for the DJIM.[7] The monthly data of the Dow Jones Index-Americas (as index portfolio) was obtained from DataStream International.

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[6] Rushdi Siddiqi, Director of the Dow Jones Islamic index supplied us total return data of Dow Jones Islamic market index.

[7] French database is publicly available to use for research. Monthly return formed the database for most of the major investigations of stock market activities.

We use CRSP (Centre for Research and Security Prices) as market proxy for the period from January 1996 to December 2003 and the monthly data was obtained from French database.[8] The performance implications resulting from the use of Islamic ethical screens will be isolated by comparing the performance characteristics of the Dow Jones Islamic Market Index with CRSP. This benchmark portfolios is actively managed and, therefore, its performance is not impacted by transaction costs, management frees, or changing investment policy.

The one-month US Treasury bill return is used as a proxy for the risk-free rate which is obtained from Ibbotson Associate. This rate is subtracted from the DJIM, Dow Jones index-Americas and the benchmark (CRSP) index returns to compute monthly excess returns.

To test the robustness of the results, the performance of DJIM and the Dow Jones-Americas are evaluated by employing the CAPM, Fama-French (F-F) three factor and the Carhart four factor models. We use the F-F factor data i.e. size, SMB, HML and momentum which were obtained from French database. The risk free rate is deducted from these to get excess return of the market (Rm-Rf) factor. The Fama and French benchmark factors were constructed by Fama and French based on (1) the overall market return (Rm), (2) the performance of small stocks relative to big stocks (SMB, Small Minus Big), and (3) the performance of value stocks relative to growth stocks (HML, High Minus Low). The Fama and French benchmark portfolio has been constructed from CRSP database using sorts on size (market equity and the ratio of book equity to market equity). The book-to-market ratio is high for value stocks and low for growth stocks. The momentum factor is added in case of Carhart's four factor model.

In order to test the robustness using conditional information in the four factor model, the data in respect of yield of corporate, government bonds are obtained from the Economist. Dividend yields of the CRSP returns are obtained from DataStream and French data base respectively.

Summary Statistics of Month Excess of DJIM, Dow Jones Index-Americas, CRSP, SMB,HML and Momentum Factors:1996-2003

Summary statistics of the raw monthly excess return of the Dow Jones Islamic Market Index(DJIM), Dow Jones Index-Americas, CRSP, SMB, HML and momentum(Mom) factors are presented in the panel Table 1, and Panel A of Table

[8] Fama-French obtained the size portfolio from the CRSP of the University of Chicago. The size portfolios are value-weighted portfolios using NYSE and AMEX stocks. At the beginning of each month, stocks are ranked based on their market capitalisation which is the closing price at the end of previous month multiplied by the number of shares outstanding to form ten size portfolios. Each portfolio contains same number of stocks.

2. The mean raw excess return (1.0334) of the Dow Jones Islamic Index is larger than its conventional counterpart Dow Jones Index-Americas (0.4793) and conventional benchmark CRSP (0.5485). This appears to suggest that DJIM out-performs the conventional Dow Jones index-Americas as well as the benchmark index. The skewness and kurtosis for all series except Dow Jones Islamic Market Index, HML and Momentum, suggests that returns are not normally distributed.

A brief comparison of the standard deviations or variability of the monthly mean excess returns of the Dow Jones Islamic Market Index (DJIM), Dow Jones Index-Americas, CRSP index reveals an interesting result. The standard deviation of the returns for the DJIM (3.54) is lower than conventional Dow Jones Index-Americas(4.88). The standard deviation of the returns for CRSP(5.07), SMB (4.15), HML(5.11) and Momentum factor (6.31) are also larger than the Dow Jones Islamic market index. This result implies that the returns volatility of the Islamic ethically screened index DJIM is lower to the return volatility of both conventional Dow Jones Index-Americas as well as conventional CRSP benchmark. This result is contrary to popular opinion that ethically screened investment portfolio will always yield volatile returns compared to unrestricted well-diversified portfolio. The argument is that an unrestricted portfolio tends to have relatively bigger stocks than a screened portfolio and therefore its return volatility tends to be lower. This result may be somewhat misleading, because the independent comparison of raw excess returns and standard deviations of the DJIM which is an ethically screened index and CRSP unrestricted benchmark index. Therefore, more appropriate risk-adjusted performance measures like Jensen measure and the Fama-French estimations are more relevant for making inferences. These are discussed in section 4.

Panel A of Table 2 shows the results of the correlations between the market, SMB, HML and momentum (Mom). It explains that the market factor together with the size (SMB), B/M (HML) and Momentum (Mom) proxies explain better the variations in average portfolio returns. The SMB , HML and momentum(Mom) factors do explain the differences in stock return, while the market factor (Rm-Rf), the risk premium for being a stock (rather than a one month T-bill), explains the average returns of stocks over one month T-bills.

Table - 1

Summary Statistics of Monthly Excess Returns of DJ Islamic Market Index, Dow Jones-Americas index, CRSP index, SMB, HML Momentum Factors from 1996 to 2003 (Number of Observation: 95)

Series	Mean Return	Std. Devn	Minimum	Maximum	Skewness	Kurtosis	Chi^2 (Normality test)/ p-value
Dow Jones Islamic	1.0334	3.5412	-12.876	11.315	-0.5924	2.3152	15.310 [0.0005]**
Dow Jones Americas	0.4793	4.8893	-12.838	12.962	-0.3500	-0.1598	2.3977 [0.3015]
CRSP	0.5485	5.0783	-15.990	8.1600	-0.6406	0.0072	9.6315 [0.0081]**
SMB	0.4200	4.1597	-11.600	14.620	0.2991	0.6701	3.8138 [0.1485]
HML	0.2042	5.1158	-20.790	14.920	-0.6692	3.4157	25.254 [0.0000]**
Mom.	0.9358	6.3117	-24.960	18.380	-0.61522	2.7153	18.890 [0.0001]**

** Coefficient is statistically significant at 5%

Table - 2, Panel A:

Summary Statistics: Cross Correlations from 1996 to 2003

	Cross Correlations					
Portfolios	Market CRSP	SMB	HML	Mom	Dow J. Islamic	Dow J. Americas
Market CRSP	1.0000	0.2010	-0.2937	-0.2572	0.5961	0.9422
SMB	0.2010	1.0000	-0.3835	0.0189	0.0749	0.1815
HML	-0.2937	-0.3835	1.0000	-0.6362	-0.3634	-0.2507
Mom	-0.2572	0.0189	-0.6362	1.0000	0.0239	-0.2955
Dow J. Islamic	0.5961	0.0749	-0.3634	0.0239	1.0000	0.5916
Dow J. Americas	0.9422	0.1815	-0.2507	-0.2955	0.5916	1.0000

In the line with Ferson and Schadt (1996), we use a collection of public information variables that have been proven to predict returns and risks over time. Panel B of Table 2 presents the summary statistics on informational variables.

Table - 2, Panel B:

Summary Statistics: Instrumental Variables

			Cross Correlations				
Variables	Mean	Std. Devn	1-month US T-bill	DeRisk	Term Spread	Dividend Yield (msci-us)	Dividend Yield (crsp)
1-month-US T-bill	3.9360	1.6977	1.0000	-0.3400	-0.9301	-0.2799	0.0315
Default Risk	1.4260	0.3812	-0.3400	1.0000	0.1190	-0.3294	-0.0894
Term Spread	1.6985	1.3849	-0.9301	0.1990	1.0000	0.4345	0.0033
Dividend Yield (msci-us)	1.5389	0.3003	-0.2799	-0.3294	0.4395	1.0000	0.2008
Dividend Yield (crsp)	1.9292	4.6532	0.0315	-0.0894	0.0033	0.2008	1.0000

5. EMPIRICAL RESULTS

5.1 Results of the Single-Factor CAPM Model Using CRSP Benchmark

We estimate the Jensen measure of performance based on the standard CAPM security market line against the CRSP benchmark. Equation (3) is estimated by Ordinary Least Squire (OLS) and the comparative performance results are reported in the Table 3.

Table 3

Summary Performance, CAPM Regressions of Dow Jones Islamic Market Index and Dow Jones Index-US from 1996 to 2003
(Regression are based on monthly returns,
Number of Observations: 95,
t-statistics in parentheses)

Index	Alpha	Beta-Market	R^2
DJ Islamic Market Index	0.8053 (2.72)**	0.4157 (7.16)***	0.3554
Dow Jones Index-Americas	-0.0181 (-0.107)	0.9071 (27.1)***	0.8877

** Coefficient is statistically significant at 5%
*** Coefficient is statistically significant at 1%

Results in Table 3 show that the Dow Jones Islamic index (DJIM) out performs (5% significant level) against benchmark. The alpha of Dow Jones Islamic index (0.8809, t=2.80) and alpha (0.8053, t=2.72) against CRSP benchmark are statistically different from zero. These positive abnormal alpha results of Dow Jones Islamic index imply that contrary to earlier research and popular opinions, the performance of ethically screened portfolios are not inferior to the fully diversified unrestricted portfolios. The coefficient of determination (R^2) of Dow Jones Islamic index (DJIM) is 35.54%. These low percentages imply that separately the benchmark leave much of the changes in the DJIM returns to be explained by some other unknown factors. It also indicates that the chosen benchmark is not able to fully explain the portfolio returns.

The performance results of the conventional Dow Jones index-Americas are as good as DJIM and underperforms against CRSP (Table 3). The R^2 against CRSP benchmark is also very high (88.42%) which imply that the Dow Jones index-Americas follow the market quite closely.

In order to validate the robustness of this conclusion, the asset-pricing model is extended to a three-factor modelling following Fama and French (1993).

5.2 The Fama- French Three Factor Model Results

One of the central theme of the Fama-French three-factor model is that if assets are priced rationally, non-beta variables that are related to average returns, such as size and book-to-market ratio, must proxy for sensitivity to common (shared and thus undiversifiable) risk factors in returns (Banz, 1981). Chan, Jagadeesh and Lakonishok (1996) argue that size and book-to-market equity are related to

economic fundamentals and therefore have reason to expect that they proxy for undiversifiable risk factors in returns. The Fama-French model is an extension of the CAPM based single factor regression.[9] In the model, the factors are the value-weighted index, and mimicking portfolios for size and book-to-market factors. In such model, a non-zero intercept in a regression of excess portfolio returns on excess factor returns will denote an abnormal performance.

The time-series regressions in this study estimate excess returns (monthly portfolio, Dow Jones Islamic Index and Dow Jones Index-Americas returns minus the one-month US T-bill rate) as the dependent variable and excess return of the value-weighted market factor, the size and book-to-market factors as explanatory variables.

The summary test statistics are presented in the panel Table 1 and A of Table 2. The estimated results from the Fama-French three-factor model together with the comparative single factor results are presented in Table 4.

Table 4

Comparative Performance, CAPM Single Factor and F-F Three-Factor Model from 1996 to 2003

(Regression are based on monthly returns, Number of Observations: 95, t-statistics in parentheses)

	Alpha	Beta-Market	Beta-SMB	Beta-HML	R^2
Single Factor					
DJ Islamic M. Index	0.8053 (2.72)**	0.4157 (7.16)***			0.3554
Dow Jones Index-Am	-0.0181 (-0.107)	0.9071 (27.1)***			0.8877
Three-Factor					
DJ Islamic M. Index	0.9067 (3.13)***	0.3824 (6.47)***	-0.1126 (-1.51)	-0.1752 (-2.82)***	0.4090
Dow Jones Index-Am	-0.0290 (-0.167)	0.9150 (25.8)***	0.0019 (0.0441)	0.0277 (0.744)	0.8884

** Coefficient is statistically significant at 5%
*** Coefficient is statistically significant at 1%

[9] Many studies have also been published arguing (to various degrees) against the Fama and French approach (Kothari, Shanken & Sloan, 1995; Clare, Priestly & Thomas, 1997; Shumway and Warther,1999)

Performance Measurement (α)

The alpha (intercept) in the CAPM based single factor model as well as the three factors Fama-French and four factor model (when non-zero), are interpreted as a measure of out or under performance relative to the used market proxy. In the Fama and French study, adding the market factor to the SMB and HML factors cause the intercepts to reduce. Since in the three factor regressions, the market slope (beta) is very high; this average market risk premium then absorbs or reduces the similar strong intercepts observed in the regressions of stock returns on SMB and HML. It means that the size and book-to-market factors can explain the differences in average return on stocks, but the market factor is needed to explain why stock returns are on average above the one month T-Bill rate.

The comparative results for the single and three-factor are presented in Table 3. Both the single and three factor models yield positive abnormal performance of Dow Jones Islamic market index. The single factor $\alpha = 0.8053$ focused to be statistically significant (t value=2.72). Again the three factor $\alpha= 0.9067$ (t value = 3.13) is positive abnormal with statistically significant (Table 4). We observe that the magnitude of the market beta increases from the single factor to three-factor regression. It is also observed that the intercepts are improving from single factor to three factor regression. This result is contrary to the Fama-French conclusion but in agreement with result of the study done by Ottens and Bams (2002). In the case of conventional Dow Jones index-Americas, alphas are statistically insignificant against market proxy for both single factor and three factor model. The market betas are significant at 1% in both single factor and three factor against benchmark and this result is in agreement with the Fama-French result.

The portfolio of Dow Jones Islamic market index exhibits a negative factor loading/sensitivity on both the size and book-to-market factors SMB and HML (Table 4) while the returns on the SMB portfolio and HML portfolios are quite high (Table 1). Therefore, adding these two additional factors (SMB and HML) to the market factor causes alpha of the portfolio to increase.

Factor Sensitivities (SMB and HML)

The results show that in the three-factor Fama-French model, the portfolio R_{DJIM}-R_f means excess return of DJIM exhibits a positive abnormal and significant loadings for the excess return of CRSP (Rm-Rf). The size (SMB) and book-to-market (HML) factors show a rather significant negative loadings against benchmark. This seems to suggest that the returns of the portfolio appear to be driven relatively more by large cap return (SMB) and indicating a sensitivity to low book-to-market (HML) factor of the stocks. The SMB and HML factor, seems to add more explanatory power to the variation in the portfolio average returns. According to Fama and French (1992), the firms with high B/M (i.e. a low stock

price relative to book value) tend to have low earnings on assets while low B/M (high stock price relative to book value) is associated with persistently high earnings. Controlling for book-to-market equity, small firms tend to have lower earnings on assets compared to big ones. The facts that small firms can suffer a long earnings depression as opposed to big firms suggest that size is associated with a common risk factor, which might explain the negative relation between size and average returns. Similarly the relation between B/M equity and earnings suggests that relative profitability is the source of a common risk factor, which might explain the positive relation between B/M and average return. This apparent negative relation between size and return on one hand and positive relation between B/M equity and return on the other are not evident from the results in the Table 4.

Table 4 shows that the conventional Dow Jones index-Americas (Ri-Rm) exhibits a significantly positive loadings (1% significant) for the CRSP (Rm-Rf). The size (SMB) and book-to-market (HML) factors show insignificant positive loadings against CRSP market proxy. This seems to suggest that the returns of the portfolio appear to be driven relatively more by the book-to-market (HML) factors. The SMB factor seems to add less explanatory power to the variation in the portfolio average returns.

Market Beta

Another important issue raised by the Fama-French (1993) study relates to the market beta and its changing characteristics in the single and three-factor models. With a low slope (beta) of the market factor in the single factor CAPM-based model, adding the SMB and HML factors increases the market beta and causes it to move up towards 1. However, if the market beta in the single factor model is already greater than 1, adding the SMB and HML causes the market beta to collapse downwards towards 1. According to Fama and French (1993), this behaviour is due to correlation between the market and SMB or HML. This conclusion is apparently contrary to the result summary in the table 4.

In respect of Dow Jones Islamic market index, the market beta in the single factor regression is larger figure i.e. 0.4157 (t value = 7.16) of CRSP. This beta sensitivity decreases in magnitude to 0.3824 (t value = 6.47) as the SMB and HML factors are added. The correlations between the market, SMB and HML returns can be seen in panel A of Table 2. The implication here is that the market factor together with the size (SMB) and B/M (HML) proxies explain better the average portfolio returns. The SMB and HML factors do explain the differences in returns in stock, while the market factor (Rm-Rf), the risk premium for being a stock (rather than one month T-Bill), explains or links the average returns on stocks and one month T-bills.

In case of conventional Dow Jones index-Americas, the market beta in the single factor regression are larger and statistically significant (1%) against market proxy. This beta sensitivity increases in magnitude against benchmark as the SMB and HML factors are added (Table 4). It means that the market factor together with SMB and HML proxies explain better average portfolio returns.

Coefficient of Determination

The coefficient of determination R^2 expresses the percentage or proportion of the variations in the portfolio Dow Jones Islamic market index returns that is explained by the explanatory variables (Rm-Rf), size (SMB) and book- to- market (HML). From table 4, the R^2 value increases from single factor(35.54%) to three-factor (40.90%) against market proxy. This increase in R^2 mean that the market factor alone is responsible for only small percentage of the R^2 of the variation in the portfolio returns. In other words the market leaves much of the variations in portfolio returns that might be explained by the size and book-to-market factors. Together the 3 factors explain 40.90% of variations in the portfolio returns, while rest of the percentages are due to unknown factors. Such large unexplained proportion of return might be due to a possible model misspecification in which case size and book-to-market factors even fail to capture completely the characteristics relevant for returns. Another problem might be the time-varying nature of returns etc (Kothari and Warner, 1997).

On the other hand, the coefficient of determination R^2 expresses the percentage or proportion of the variations in the portfolio of the Dow Jones index-Americas returns that is explained by the explanatory variables (Rm-Rf), size (SMB) and book- to- market (HML). From table 3, the R^2 value increases from the single factor (88.77%) to three-factor (88.84%).

By employing single factor CAPM and three factor Fama-French models for both Dow Jones Islamic market index and Dow Jones index-Americas, we observed the results of alpha, beta, log-likelihood and R^2. Based on the results we could argue that both portfolios follow the market. The inclusion of two risk factors: size and book to market- alpha, log-likelihood and R^2 increased in three factor model.

5.3 Carhart Four Factor Model Results

Table – 5

Summary Results of 4-Factor Model from 1996 to 2003
(Number of Observations: 95, t-statistics in parentheses)

Index (Dependent Variables)	Alpha(α)	Beta (β_0)	SMB(β_1)	HML(β_2)	Mom(β_3)	Log-Likelihood	R^2
Dow Jones Islamic Market Index	0.8895	0.3886	-0.1091	-0.1638	0.0107	-229.93	0.4091
	(2.81)***	(5.21)***	(-1.38)	(-1.59)	-0.137		
Dow Jones Index-Americas	0.0902	0.872	-0.0223	-0.0506	-0.0742	-180.01	0.8916
	(-0.481)	(19.8)***	(-0.476)	(-0.828)	(-1.61)*		

*Coefficient is statistically significant at 10%
*** Coefficient is statistically significant at 1%

Table 5 presents Alphas, market beta, SMB, HML, Momentum, Log Likelihood and R^2 for the Carhart-four factor (unconditional) model. In Table 6, we compare the results using both the three and four factor model. The results from the Fama-French model are imported from Table 4. First we notice that with the inclusion of another factor i.e. Momentum, the Alpha (α) exhibits positive abnormal performance (alpha=0.8895 and t value=2.81) in Carhart four factor model.

Table - 6

Results of F-F 3-Factor versus Carhart's 4-Factor Model from 1996 to 2003
(Number of Observations: 95, t-statistics in parentheses)

Index portfolio (Dependent Variables)	Alpha(α)	Beta(β_0)	SMB(β_1)	HML(β_2)	Mom(β_3)	Log-Likelihood	R^2
F-F 3-Factor Model							
Dow Jones Islamic Market Index	0.9067 (3.13)***	0.3824 (6.47)***	-0.1126 (-1.51)	-0.1752 (-2.82)***		-229.942	0.409
Dow Jones Index-Americas	-0.029 (-0.167)	0.915 (25.8)***	0.0019 (0.0441)	0.0277 (-0.744)		-181.369	0.8884
Carhart 4-Factor Model							
Dow Jones Islamic Market Index	0.8895 (2.81)***	0.3886 (5.21)***	-0.1091 (-1.38)	-0.1638 (-1.59)	0.0107 -0.137	-229.93	0.4091
Dow Jones Index-Americas	0.0902 (0.481)	0.872 (19.8)***	-0.0223 (-0.476)	-0.0506 (-0.828)	-0.0742 (-1.61)*	-180.01	0.8916

*Coefficient is statistically significant at 10%
** Coefficient is statistically significant at 5%
*** Coefficient is statistically significant at 1%

Secondly (Table 6), there is a minor increase in average R^2 for the multifactor model 0.4091 compared to three-factor model (0.4090). This indicates that the extended model is more able to explain the fund returns. In addition to this we report the log-likelihoods of both models, which enable us to perform a standard LR test. This confirms the results of examining the differences in R^2. Log-likelihood of the three-factor model against both benchmarks is higher than ones obtained from the four factor model. Thirdly, the market–beta is significant against benchmark (1% significant level).

Also factor loadings reveal negative significant HML (1% significant) with Fama-French three factor model and insignificant against benchmark in Carhart four factor model. The results also show the insignificant Momentum loadings with Carhat four factor model. All these results indicate that the momentum strategy slightly add value in Dow Jones Islamic market index (DJIM) which show the positive abnormal returns and confirms the Carhart four factor model is able to explain the DJIM returns.

On the other hand the performance of conventional Dow Jones index-Americas shows positive return but does not beat the market. Like Dow Jones Islamic market index, we also report the log-likelihoods of both models for Dow Jones index-Americas, which enable us to perform a standard LR test. This confirms the result of examining the differences in R^2. Log-likelihood of the three-factor model against benchmark is higher than ones obtained from the four factor model (Table 6).

However, finally we will draw our conclusion after the robustness test by estimating the four factor model, using conditional information.

Robustness Test: Conditional Four-Factor Model
Time Varying Conditional Alphas(α)

In the Tables 3, 4, 5 and 6 we estimated the single factor CAMP, three-factor Fama and French and multifactor models against benchmark. The unconditional CAPM assumes that both betas and the alphas are constant over time but that they may differ across funds. The conditional model (7) allows time varying betas, but assumes that any abnormal performance is captured by the fixed alpha coefficients. Table 7 summarises the results of estimating equation (7) in conditional four factor model with time varying conditional alphas. This model approximates the conditional alpha as a liner function of the predetermined information, allowing the function to be different for each fund manager.

Table - 7

Unconditional Versus Conditional Carhart's 4-Factor Performance from 1996 to 2003
(Number of Observations: 95, t-statistics in parentheses)

Index Portfolio(Dependent Variables)	Alpha(α)	Beta(β_0)	SMB(β_1)	HML(β_2	Mom(β_3)	Def Risk(β_4)	SlopTerm (β_5)	Div.Yield (β_6)	T-Bill (β_7)	R^2	W-Test (p-value)
Unconditional Carhart 4-Factor Model											
Dow Jones Islamic Market Index	0.8895	0.3886	-0.1091	-0.1638	0.0107					0.4091	0.000**
	(2.81)***	(5.21)***	(-1.38)	(-1.59)	-0.137						
Dow Jones Index -Americas	0.0902	0.872	-0.0223	-0.0506	-0.0742					0.8916	0.000**
	(+0.481)	(19.8)***	(-0.476)	(-0.828)	(-1.61)*						
Conditional Carhart 4-Factor Model											
Dow Jones Islamic Market Index	1.003	0.395	-0.1056	-0.2425	-0.1155	-0.2741	-0.2387	0.2854	0.6652	0.4597	0.000**
	(3.13)***	(5.26)***	(-1.34)	(-2.31)**	(-1.29)	(-1.52)	(-0.922)	(+0.338)	(1.54)		
Dow Jones Index -Americas	0.017	0.8964	-0.0468	-0.0112	-0.0071	-0.124	0.1694	-0.0395	-3001	0.9092	0.000**
	(0.094))	(21.1)***	(-1.05)	(-0.190)	(-0.141)	(-1.22)	(1.16)	(-0.0828)	(-1.23)		

*Coefficient is statistically significant at 10%
** Coefficient is statistically significant at 5%
*** Coefficient is statistically significant at 1%

While estimating the conditional Carhart four factor model, table 6 reports that the average R^2 goes up more for typical Dow Jones Islamic market index and conventional Dow Jones index-Americas when the conditioning variables, 1 month treasury bill, default risk, term spread, dividend yield are brought into the model. This suggests that there is time variation in the fund betas that washes out the aggregate level. Regressions for the dependent portfolios show this to be the case. Using a 5% significance level, the F-statistics (Wald test) is rejected of both Dow Jones Islamic market index and conventional Dow Jones index-Americas. Table 7 also reports a test for the hypothesis that the betas are constant for each dependent variable. These are based on the Bonferroni[10] inequality. The results in Table 7 reject the hypothesis that manager of the fund has constant conditional betas. In the results it is also observed that unconditional and conditional versions of all alphas of Dow Jones Islamic market index show positive abnormal performance at 1% significant level and average larger than unconditional alphas. This similarity in distributions is an interesting result, in view of the finding by Ferson and Schadt (1996) that conditional alphas for mutual funds are on average larger than unconditional alphas. Ferson and Warther (1996) show that these differences reflect a positive correlation between expected market returns and the flow of new money into the funds over time, combined with negative relation between new money flows and fund betas.

And in case of conventional Dow Jones index-Americas, unconditional and conditional versions of all alphas show positive performance and conditional alphas are average lower than unconditional alphas (Table 7). While we also find time-varying betas for conventional index-Americas, it is likely that flow of monies and the cash holdings of the conventional funds do not respond as much in the short run to expected market returns. This may explain the difference between our results in Table 6 and the findings of Ferson and Schadt (1996).

In conditional four factor model among the conditional information, the dividend yield and the Treasury bill yield are the more important variables. In respect of the Dow Jones Islamic index, the coefficient for alpha on the both dividend yield and on the Treasury bill are positive, and for Dow Jones index-Americas, the coefficient for alpha on both the dividend yield and on the Treasury bill are negative. This says that the managers of Islamic ethical funds deliver higher risk adjusted abnormal performance relative to the CAMP when dividend yield are

[10] Consider the event that any of N statistics for a test of size p rejects the hypothesis. Given dependent events, the joint probability is less than or equal to the sum of the individual probabilities. The Bonferroni p-value places an upper bound on the p-value of a joint test across the equations. It is comupted as the samllest of the N p-values of the indvidual tests, multiplied by N, which is the number of funds in a group. The Bonferroni p-values one-tailed tests of the hypothesis that all of the slope coefficients are zero against the alternative that at lest one is positive (maximum value) or negative (minimum value).

high and short-term interest rates are low, even after allowing for time-varying risk exposures. Since high dividend yield predicts high stock returns, the conditional alphas tend to be positively correlated with expected stock market returns.

In the conditional four factor model the conditional alpha of Dow Jones Islamic Market index shows the positive abnormal return (alpha is 1.003 and t-value is 3.13) against benchmark. In the results, the conditional models do suggest that the Dow Jones Islamic market index (DJIM) routinely out-perform the benchmark on a risk-adjusted basis.

Table 7 shows that in the conditional four factor model the conditional alphas of conventional Dow Jones index-America are positive against benchmark as exhibited in Table 4.

In the above results, we observe the performance result is essentially higher in case of Dow Jones Islamic market index and slightly lower in case of conventional Dow Jones index-Americas, as would be expected in an efficient market. Why do the conditional models produce such impression about alphas of Dow Jones Islamic market index as compared to the conventional Dow Jones index-Americas as exhibited in the unconditional single and three factor models? The statistical reason is that there is a common variation through time in the fund's betas and in the expected market return. This variation is captured by the interaction terms in the conditional model. A comparison of equations 3 and 7 shows that the difference between the two measures of alpha is determined by the average values of the interaction terms. These terms measure the covariance between the conditional beta and the expected value of the market return formed using the lagged instruments. If this covariance is positive (negative), the conditional alpha will be lower (higher) than the unconditional alpha. Therefore, the key to understanding the different results about alpha is the behaviour of the conditional betas.

The R^2 values of Dow Jones Islamic market index for the four factor model is 0.9068 against benchmark whereas R^2 for conditional four factor model is 0.9155 against benchmark – significantly higher than the Fama-French three factor (that does not include the momentum factor) .

It seems that a conditional setting the factor model is suited to measure the Islamic portfolios. This indicates that: (1) the Momentum factor adds significant explanatory power and (2) the conditional four factor model explains most of the variation in average portfolio returns. Therefore, our results are consistent with the results of Lettau and Ludvigson (2001) and Wang (2002) who argue that conditional information helps to explain most of the variation in average portfolio returns.

Explaining Beta Changes

We can consider two reasons as to why the fund managers tend to reduce their market betas when public information implies relatively high expected market returns and/or raise them when expected returns are low (Ferson and Warther, 1996). They are:

i) The betas of the underlying assets change over time, such that even a buy and hold strategy has changing betas.
ii) Fund portfolio weights depart from a buy and hold strategy because of flows of cash into the funds or active management behaviour.

Table 7 records the coefficients of the conditional beta models for both Dow Jones Islamic market index (DJIM) and conventional Dow Jones index-Americas and their t-ratios. Estimating the conditional betas of the underlying strategies of assets change over time produce negative coefficient of default-risk, slope of term structure. Firstly this result suggests that it is likely that some of the beta variation is the result of time-varying conditional betas for the underlying assets of Dow Jones Islamic market index (DJIM). The results also show that the conditional constant betas of both Islamic and conditional dependent variables are positive and statistically significant at 1% against benchmark. All conditional constant betas are lower than the unconditional models indicating that the strong time varying betas. The factor loading HML are statistically significant and negative. The SMB and the Momentum that allow for time variation in the DJIM betas are negative and statistically insignificant.

The second explanation for the movements in DJIM betas involves the flow of money into portfolio (fund) of the DJIM. If money flows into the funds when the public perceives expected stock returns to be high and if managers take some time to allocate new money according to their usual investment styles, then the funds would have large cash holdings at such time. Large cash holdings imply low betas. The effects of new money flows on the funds' betas will depend on the magnitudes of the flows, the size of the asset holdings and the speed with which new monies are invested. Warther (1995) reports a study of net cash flows for mutual funds. Net cash is defined as new sales (excluding reinvested dividends minus withdrawals, plus net transfers between funds), normalised by the lagged aggregate stock market value. A strong correlation is found between net cash flows and concurrent stock market returns, which suggest a connection between cash flows, are also strongly correlated with the portfolio weight in cash. When inflows are large, cash balances at funds tend to increase. Therefore, our results indicate that the Islamic ethical investors can expect to lose nothing by investing in Islamic ethical funds. Overall, the evidence of Table 6 and 7 supports the hypothesis that the Islamic ethical fund flows partly explain the changes in betas over the time,

which are captured by the lagged market indicators and therefore affect the performance results.

We can draw conclusion from the above results that the Dow Jones Islamic market index has much higher raw return than the conventional Dow Jones index-Americas as well as unrestricted benchmark. When single factor CAPM, Fama – French three factor and Carhart four factor models are employed, the risk adjusted returns of the Dow Jones Islamic market index are highly statistically significant (1 % significant level) and alphas are increased with the addition of the additional factors.

On the other hand when single factor CAMP, Fama-French three factor and Carhart four factor model are employed, the alphas of the conventional Dow Jones index-Americas remain positive (most of the cases) against benchmark for four factor model although with the addition of the additional factors the value to alphas slightly increased. Overall, introducing the conditioning information seems to have a greater impact on the measures of performance than does moving from the single factor to the four factor model.

Therefore the alternative hypothesis that expected returns of Islamic screened portfolios are higher than the expected returns of conventional portfolio is accepted. The hypothesis implies that Islamic ethically responsible investors do not face any adverse effect on Islamic ethically screened stock prices or the companies' cost of capital. An Islamic ethical investor can expect as much return as an investor would gain from a conventional fund or in some cases may earn even higher return. Moreover Islamic ethical investors increase the value of ethically responsible companies relative to the value of conventional companies by keeping returns record at par with the market.

6. CONCLUDING REMARKS

The use of Islamic ethical criteria in investment decision-making has grown in popularity in the western world since 1990. Many Islamic ethical investors engage with companies, trying to influence them on ethical concerns. Where companies can anticipate financial reward for changing policy, Islamic ethical investors are most likely to be successful in influencing companies. In respect of performance effects of Islamic ethical criteria, there are a number of ways in which Islamic ethics could influence and have an impact both at the company and ethical portfolio level. It is not true that Islamic ethical criteria will always lead to good performance, nor will it always lead to bad performance. It may be pointed out that in some case the issue of financial return for some Islamic ethical investors is not of primary importance. Some investors may be willing to accept a lower return in order that their investments do not compromise their beliefs, in the same way that some consumers will pay a price premium for fair trade goods.

Islamic ethical investments are particularly to be found in the developed markets rather than in the Islamic or emerging markets. The reason behind this might be the fact that most markets in the developing countries in general and Arab world in particular are considered to be volatile, underdeveloped and illiquid. At the same time, being a relatively new industry, Islamic ethical finance has been seeking more reliable investments in industrial economies and especially in 'new' sectors. The leading performance of technology related sectors particularly in the second half of the 1990s encouraged Islamic fund managers to take advantage of the soaring prices, placing a large percentage of their investments in technology stocks, mostly in the US. There is a continuing trend in the Islamic ethical funds industry of shifting from blue-chip technology stocks to 'old economy' stocks, especially in the energy sector.

Like ethical investment in the West, Islamic ethical investment has always faced the prejudice that limiting one's potential investment pool will also limit one's potential for financial growth. Some studies have suggested that the ethical funds may have even more difficulty in performance. However, the result of this study indicates that any assumption that Islamic ethical investment is not financially profitable as compared with other forms of investment is questionable. This is supported by relatively higher risk adjusted returns in the positive abnormal performance of Islamic portfolios (α's**)** by employing the single factor, Fama and French three-factor and Carhart four factor model.

For the purpose of robustness test, we compare the performance of Dow Jones Islamic market index with its conventional counterpart the Dow Jones index-Americas of the same Dow Jones Group. When single factor CAPM, Fama – French three factor and Carhart four factor models are employed, the risk adjusted returns of the Dow Jones Islamic market index are statistically significant (1 % significant). Overall, introducing the conditioning information seems to have a greater impact on the measures of performance than does moving from the single factor to the four factor model. And in case of conventional Dow Jones index-Americas exhibits performances as good as Dow Jones Islamic Market index and conditional alphas are on average lower than unconditional alphas (Table 6). In their study Luther and Matako (1994) associated the inferior performance of ethical unit trusts compared to the whole UK stock market between 1985 and 1992 to the heavy concentration in the smaller company sector, which had performed poorly over the studied period. The empirical evidence presented in this study clearly indicates that the investors can choose Islamic ethical investments that are consistent with their value system and beliefs without being forced to sacrifice performance.

Therefore the alternative hypothesis of expected returns of Islamic screened portfolios being lower than the expected returns of conventional portfolio is

rejected in our study. This hypothesis implies that Islamic ethically responsible investors have an impact on stock prices.

While some of the screens would imply a negative impact on performance others suggest a positive impact (Sauer, 1997). This study indicates that the net effect of the various screens, even when a more rigorous measure of performance measurement models are employed, the alphas remain rather positive abnormal performance. By employing both unconditional and conditional Carhart's four factor model, the DJIM shows the positive abnormal performance against the benchmark. These results are consistent with the results of Lettau and Ludvigson (2001) and Wang (2002) who argue that momentum factor and conditional information help to explain most of the variation in average portfolio returns.

Islamic investors as well as ethical investors in the West want to own profitable companies that will make contribution to society and help economic growth (Hassan, 2002). Islamic mutual fund companies can target these investors by customising their operations, products and those funds are invested in equities. There is no question that there is a sizeable, yet untapped market for the Islamic mutual funds. If financial institutions want to capitalise on this market, they must be knowledgeable of Shari[ah precepts and structure their products accordingly. The final step necessary to face the challenges facing Islamic financial sector are; achieving a degree of consistency and persistence in performance, obtaining a higher level of diversification in terms of markets and sectors, and the need for new Islamic ethical equity instruments to help hedge against potential risks.

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