Evaluating the performance of managed funds: The cases of equity, ethical funds and Islamic index

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EVALUATING THE PERFORMANCE OF MANAGED FUNDS: THE CASES OF EQUITY, EHTICAL FUNDS AND ISLAMIC INDEX

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Abstract

Managed funds have become a popular investment tool and possess a lot of advantages. However, in spite of their popularity, most past research findings on the evaluation of performance have suggested that managed funds were unable to do significantly better than a large unmanaged portfolio. The aim of this thesis is to evaluate empirically the performance of managed funds. The funds chosen are; UK equity, ethical unit trusts and US-based Dow Jones Islamic index -an index of Islamic ethical funds portfolio.

We examine the performance of UK equity unit trusts which invest in UK equities, using monthly samples over the 1986 to 2001 time period. The study compares the return of these unit trusts with a three-factor model which takes into account their exposure to market, value and size risk. After controlling the risk factors, it is found that managers under-perform the market. Contrary to the notion that small company shares offer abundant "beat the market" opportunities, we find that small company trusts are the worst performers. The performance persistence of unit trusts is also examined and it is found that good performance does not persist.

There are investors who out of their concern regarding adverse changes in our environment, concerns for justice, and because of their opposition to the arms race, decline to purchase the securities of such enterprises that engage in what are termed unethical or socially irresponsible activities. Such activities usually include, but are not necessarily limited to, the production of armaments, alcohol and tobacco; engaging in activities that degrade the environment; and engaging in activities that treat people unfairly. Declining to invest in the securities of enterprises that engage in unethical practices is not only a form of social protest, but can also have the effect of diminishing the demand for a company's securities. A diminishment of demand may then have an adverse financial impact on a company. This may prove to be a crucial factor in influencing companies to change and become more socially responsible. The

question therefore arises: has the investment performance of ethical investors suffered in comparison to those who are not so responsible? To answer the above, a study has been done which encompasses 35 UK ethical unit trusts which cover the period of seven years through 1996. The study presents a comprehensive evaluation of managed funds performance by employing various single to multifactor benchmark models. The added value of introducing extra variables such as size, book to market, momentum and a bond index is explored by evaluating the performance using conditional information and comparing the investment performance of UK ethical unit trusts with unit trusts which are not ethical. After controlling for style tilts and allowing for time variation in betas and expected return, the results show that there is no significant difference in performance between UK ethical unit trust and their conventional peers. Within an unconditional setting SMB, HML and momentum factors are best able to explain ethical unit trust returns. Therefore, unconditional models perform much better than their conditional peers.

Islamic ethical investors apply both Islamic ethical and financial criteria when evaluating investments in order to ensure that the securities selected are consistent with their value system and beliefs. Using monthly returns for the period starting from January 1996 to December 2003, the study is conducted to see the potential impact that Islamic ethical restrictions may have on investment performance by comparing the performance characteristics of a diversified portfolio of Islamic screened stocks (Dow Jones Islamic index) with conventional benchmark portfolio (Dow Jones Index-Americas). Contrary to expectations, our findings indicate that application of Islamic ethical screens do not necessarily have an adverse impact on investment performance. Results actually show that expected returns of Islamic screened portfolios are higher than the expected returns of conventional portfolios.

"Read in the name of your Lord Who creates, creates man from a clot. Read, for your Lord is most Generous; [it is He] Who teaches by means of the Pen, teaches man what he does not know." (The Clot 96:1)

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Introduction

1.1 Motivation

The academic studies since the 1960 in the US have found that mutual funds (similar to the unit trusts in UK) do not systematically outperform the benchmark in general case (Jensen, 1968; Treynor, 1965; Sharpe, 1966, Malkiel, 1995; Gruber, 1996; Davis, 2001). Mutual funds have become one of the largest financial intermediaries in the leading world economies, currently controlling about 7 trillion dollars in assets in the US and over 3 trillion Euros in assets in Europe (Investment Company Institute, 2002). Currently, investors can choose from thousands of funds offering a wide range of investment profiles, from relatively safe short-term debt instruments to relatively risky stocks and derivatives.

According to statistics cited in the Unit Trust Yearbook 2003, there were more than £271bn invested in the unit trusts/managed fund industry in the UK. During the period 1995 to 2002, there was a rapid expansion of the UK unit trusts which carried total funds from £112.8 bn in the year 1995, £131.9 bn in 1996, £157.6 bn in 1997, £182.8bn in 1998, £253.8bn in 1999, £260.9bn in 2000, £235.8bn in 2001 and £260.7bn in the year 2002. An interesting fact is that about 10% of inflows into these funds are invested in ethical unit trusts which are actively managed (Unit Trust Yearbook 2003).

In UK, the Ethical Investment Research Services (EIRIS) research shows that the estimated value of ethical funds grew from £81.5 million to £1285.05 million between years 1995 and 2002, and the number of ethical unit trusts rose from 37 to 62. The demand for securities in which investors can exercise their moral responsibility is met with a supply by financial intermediaries - creating specialised ethical unit trust, ethical pension fund, ecological funds etc; which offer standardised investment packages with regards to return, term, currency, risk. Ethical funds are therefore a response to that demand. In some cases, the responsible investors make their decisions between a minimum (not investing in clearly immoral companies) and a broad range of increasingly extensive opportunities, from financing companies which stand out for their ethical, socially aware or responsible conduct to trying to influence companies' management so that they cease to act immorally and improve their ethical quality (Smith, 1996).

Islamic ethical funds, which provide most of the services of actively managed funds and match the Dow Jones Islamic Global Market Index (DJIM) and FTSE Islamic Global Index, have attracted a good amount of investment in the European and American market. During the late 1990s Islamic ethical funds rode on the technology boom. In 1996, for example, there were twenty-nine Islamic funds on the market with $US800 million in assets. However, by early 2000 the number of funds had grown to ninety-eight with approximately $US5 billion in assets. As at December 2001, there were over one hundred Islamic equity funds with their total assets estimated at roughly US$ 5.3 billion (Failaka, 2002).

There are several possible explanations as to why individual investors continue to buy actively managed unit trusts, ethical unit trusts and Islamic ethical funds even though such funds may have lower returns than index funds.

Firstly, the lure into active management may be strong because the potential profit from active strategies is enormous. This could be explained better by the Robert Merton's example.[1] Consider an investor who had £1,000 on January 1, 1930. If he/she had put it in 30 days commercial paper and rolled over all proceeds, he would have had £3,600 on December 31, 1981, after 52 years. If he had put it in the FTSE index (a passive portfolio), and invested all dividends, after 52 years, he would have had £67,500. However, supposing the investor had perfect insight about the market and was able to tell (with certainty) which would perform better, the FTSE index or 30 days commercial paper and he actively shifted all his money into the better predicted one, then, beginning with £1,000 and after being actively managed for 52 years, he would have gained several thousands of pounds. The extra return is not a risk premium; it is because of superior analysis. It is this enormous extra return that lures investors to seek those 'superior' managers. Investors express a consistent belief that some managers have those skills and the market can select them as time goes by. This also drives the unit trusts, ethical fund or Islamic fund companies to adopt active management strategies in the hope of realising persistent, abnormally high returns.

Secondly, if security markets are not as efficient as researchers believe, there are some portfolio managers who may be able to produce stakes of abnormal returns.

[1] This example is cited in the textbook, Investment, by Bodie, Kane and Marcus(2002)

There is also considerable academic evidence that asset means and variances are to some extent predictable (Shanken, 1990; Ferson and Harvey; 1991)

Thirdly, the unit trusts and Islamic ethical funds allow investors including those with limited wealth to hold a diversified portfolio of financial securities at a low cost. These managed fund shares are easy to buy through an intermediary or directly, via telephone or internet.

Fourthly, shareholders can transfer money between funds within the same family at low cost. In addition, they do not run liquidity risk, since they can sell their units at Net Asset Value (NAV) at any time.

Fifthly, the investment strategy of a managed fund is developed by financial professionals, who are able to select the right stocks at the right time. Thus, unit trusts and Islamic ethical funds claim to be especially attractive for small investors who do not have sufficient resources to follow a sound investment strategy at low cost.

Given the tremendous size of the managed fund industry, it is crucial for the regulatory agencies to ensure that the funds invest the money of their unit-holder/ shareholders efficiently, since even a basis point difference in fund returns implies almost a billion dollar gain or loss for investors. The role of the academic researchers are to check the validity of the claims referred to above. It has been demonstrated that investing in unit trusts and ethical funds may not necessarily be optimal for consumers. It has been shown that active funds, on average, do not earn positive performance adjusted for risk (Gruber, 1996). Even though some funds seem to have

superior risk adjusted performance, there are many funds that consistently underperform their benchmarks (Carhart, 1997; Kosowski et al, 2000). However, most mutual funds with consistently poor performance in the US, are not punished by fund holders/shareholders through the withdrawal of their money, which may be due to various institutional and psychological factors (Gruber, 1996; Sirri and Tufano, 1998). Whilst there has been comparatively very little empirical work carried out on the financial performance of the UK equity unit trusts because the data is not easily available and question therefore remains unanswered here.

On the other hand, the main problem with defining ethical investing is that the parameters or restrictions that apply are individual measures. There is no common threshold that applies evenly across all asset classes. Certain organisations allow companies that manufacture weapons in their portfolios, others do not. Religious organisations have certain screening restrictions, while endowments and foundations have a series of others. For example, under Islamic guidelines money managers are restricted from buying the stock of companies that receive more than 15% of their revenue from interest; as a result, conventional banks and finance companies are basically excluded from this investable universe. Many Christian organizations restrict the purchase of companies that engage in one or more of the following lines of business: tobacco, alcohol, weapons, and contraceptive devices.

The screening restrictions most often considered by ethical investors may be broken into two categories; 1) negative, which involves the search for companies that violate one or more of the restrictions, and 2) positive, which involves the search for companies that contribute in some way to society.

The negative restrictions are designed to eliminate companies from the investable universe, while positive restrictions are designed to add companies to it. The greatest area of controversy about ethical or Islamic screened portfolios centre on their performance results. Proponents of an ethical or Islamic based investment policy must address performance, first generally and then specifically, in the context of the institution's asset allocation decisions and monitoring of its portfolio managers.

Any discussion of a change in investment strategy must include an examination of the relative financial performance of the vehicles under consideration. Ethical and Islamic based investing are no exception to that rule. Indeed, ethical investing has endured some bad press on performance, and proponents must anticipate questions based on it.

The Modern Portfolio Theory holds that, in general, diversification reduces risk and maximizes long-term returns. Anything that limits an investor's ability to diversify therefore increases investment risks unnecessarily. For example, eliminating tobacco company securities will limit a manager's ability to diversify into an industry that may outperform the rest of the stock market. This argument ignores the fact that one hires a manager because he or she is good at narrowing the universe of investable options. In this matter, modern portfolio theory proves to be just a theory and as with any theories, exceptions can be found in practice.

Some studies have indicated that investors applying ethical criteria need not expect to lose anything vis a vis the broad market indexes. Kinder, Lydenberg, and

Domini (1997) report that the longest-running benchmark of socially responsible (ethical) fund performance, the 400-member Domini Social Index (DSI), has higher Sharpe and Treynor scores than the S&P 500 for the six years prior to April 30, 1997. This is not the first time such a disparity has appeared -- Grossman and Sharpe (1986) also sought to explain the nominal outperformance of South Africa-free portfolios for the 1960-1983 time period. Freeman and Winchester (1994) find that by simply removing socially responsible investment stocks from the (State of Connecticut), investable universe would have increased uncompensated risk by more than 2.0%, but they note that adjustment strategies could offset this problem "substantially."

Many studies find that ethically screened portfolios tend to have smaller average capitalisations, higher price-to-book ratios, higher P/E ratios, and more favorable "excellence" ratios than their unscreened counterparts (Davidson et al, 1995; Rivoli, 1995). Money managers who have handled both ethically screened and unscreened accounts for many years report that over the time, the performance of these accounts do not differ materially. Hamilton, Jo, and Statman (1993) find no difference in returns between screened and unscreened mutual funds. Kurtz (1997) finds no significant performance differences for a group of growth managers. If these observations are accurate then either ethical screens have not harmed investment performance or diversification costs have been offset by information effects.

The performance of the Domini 400 and the results of the studies discussed above shift the burden of proof to critics to show that there are indeed "costs" to social screening. Thus far, there appears to be little evidence that ethical screening

necessarily results in negative return. The affirmative case for screened portfolios has not yet been proven. Time and a full market cycle may determine the "cost" question. But, the ultimate questions remain unresolved: do the companies that pass the ethical screening and are described as a good performer, is a better portfolio than an unscreened universe?

1.2 Scope of the Study

Although mutual fund performance in the US is well documented in the finance literature, studies on the UK equity, ethical unit trusts are not well explained. In this study, we evaluate the performance of managed funds. This study notes that some of the following areas are lacking in research. A full understanding of unit trusts and Islamic funds is very important to provide information to policymakers and investors in order to expand and increase efficiency in the capital market.

(1) Most of the studies on performance evaluation of money managers performance say that the managers are not able to outperform markets in any meaningful sense. They do not claim to uncover specific types of market failure as do the 'anomalies' literature of the 1980s and the behavioural finance literature at present time. Rather, money manager studies ask whether there are market failures, regardless of the type, that is systematically exploitable. In our opinion, the conclusion of the literature to date is negatively resounding. Nearly all the studies thus far confine themselves to managers' efforts to outperform the US equity markets. Among them are those by Davis(2001), Carhart(1997), Malkiel(1995). On the hand, study in this area in the UK is lacking. This study will close the

gap in the areas discussed above by examining the performance of all the UK equity unit trusts that concentrate their investment in the UK.

(2) The investment based on ethical or socially responsible criteria appeals to many investors, the general perception is that it most likely reduces portfolio performance. The financial theory argues that ethical investing will under perform over the long term because ethical portfolios are subsets of the market portfolio, which lack sufficient diversification (Anderson, 1996). Further questions raised are that selecting stocks according to ethical screening can be an expensive practice that may ultimately have a negative impact on net return. Therefore, the general perception has been that ethical portfolios are likely to under-perform their conventional peers. Declining to invest in the securities of unethical enterprises is not only a form of social protest, but can also have the effect of diminishing the demand for a company's securities which may have an adverse financial impact on a company. This may be a factor in influencing companies to change and to become more socially responsible. The question arises: Is an investor who declines to purchase the securities of enterprises deemed to be socially irresponsible at a disadvantage versus investors who have no such restrictions? In other words, did the investment performance of ethical investors suffer in comparison to those who are not so responsible?

(3) General methods of risk-adjusted performance evaluation employ unconditional mean-variable criteria together with the Capital Asset Pricing Model (CAPM). Funds have been compared to efficient portfolios from the

unconditional mean-variance frontier. With respect to performance evaluation, most of the studies on ethical funds only deal with two models, or at the most three different performance models. There are larger number of managed fund performance models which create confusion for both academics and practitioners. This leads us to ask what model is to be used for performance measurement. The search for suitable model to measure the ethical fund performance and employment of additional factors, such as SMB, HML, momentum and to use the conditional information appears to be more logical and comprehensive.

(4) Islamic ethical investors represent a unique ethical investment market. As at 2003, the Islamic banking industry held total assets of approximately $250 billion, which is expanding, rapidly with an estimated annual growth rate of 15-20% (Iqbal and Molyneux, 2004). Islamic investors are concerned with a very different set of ethical criteria from other ethical investors but the issues arising out of screening are similar. A large portion of the Islamic community has been excluded from stock market investments due to religious prohibitions on certain business activities and *riba* (interest). The issue of what to do with surplus funds and how to provide financial security for the future has plagued those determined to comply with religious injunctions. A major breakthrough occurred with religious rulings on equity investments and the establishment of Islamic ethical funds in the 1970s. However, the performance of these funds has been mixed and investors have lacked a suitable benchmark with which to assess performance. The Dow Jones Islamic Market index launched in 1999 and marketed by the Dow

Jones & Company at last provides the Islamic community with an acceptable universe of stocks to invest in and a benchmark against which performance can be measured. Most academic studies on ethical fund performance have until now looked into the average performance of ethical funds (Mallin, Saadouni and Briston ,1995) as a group against the unrestricted benchmark portfolios (Statman, 2000; Luther and Matatko, 1994), 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 deviated more clearly from conventional funds with respect to investment style. The influence of screening on performance provides a first hand observation for Islamic ethical investors. Despite the increasing attention given by practitioners to Islamically ethical screened investments, there is scant academic research.

1.3 Research Objectives

The question of why investors choose to invest in actively managed funds such as unit trusts, ethical unit trusts and Islamic ethical funds is beyond the scope of this research. Nor are we trying to initiate the debate about the legitimacy of ethical and Islamic investing. The main objective of this thesis is to investigate empirically the performance of equity, ethical unit trusts and Islamic index. In order to address this matter, the thesis is focused on the following research questions:

Do UK equity unit trust Fund Managers outperform the market?

Does fund performance persist?

Do portfolio of small stocks outperform the market?

(Above research questions are in the chapter 3)

Has the investment performance of the UK ethical unit trusts suffered in comparison to those which are not so ethical?

Which model is suitable for managed funds performance evaluation and what is statistical significance of adding more factors such as size, book-to-market, and momentum and bond index?

What is the economic importance of more elaborate model specifications?

(Above questions are addressed in chapter 4)

What are the actual relative returns of Islamic ethical portfolio and conventional portfolio and impact on Islamic ethical screen on investment performance?

(Above research question is addressed in the chapter 5)

1.4 Overview of the Thesis

The thesis proceeds as follow:

Chapter 2 of this thesis presents an overview of the main topics explored in the literature on managed funds. The largest stand of this literature is devoted to the evaluation of managed fund (mutual fund or unit trust) performance. Since the fund expected returns are affected by their risk exposures, the analysis is usually based on risk-adjusted performance measures. We discuss a number of studies that measure the

average performance of managed funds and examine factors explaining the differences in performance across funds. Another strand of the literature investigates the behaviour of managed fund investors, analyzing the impact of past performance and factors related to the transaction cost on money flows to funds. Since managerial compensation is usually linked to the fund size, the observed flow performance relationship may provide adverse incentives to managers. We also discuss various performance evaluation models in both their unconditional and conditional versions.

Chapter 3 describes in details the UK unit trusts, their broad characteristics and the broad settings in which they operate within the UK. We evaluate the performance of a sample of the UK equity unit trusts for the period 1986-2001 that concentrate their investments in UK equities by employing the single factor CAPM model. It compares the returns of these unit trusts with a three-factor model which takes into account their exposure to market, value and size risk.

Chapter 4 provides a background of the concept of ethical or socially responsible investing. It poses questions in the theoretical context of investor's ethical screening of companies, defines ethical funds and explores the issues of ethical investment. The volume of the UK ethical unit trusts and performance of ethical unit trusts is discussed as well. We also analyse the behaviour of investors and their moral responsibility based on the traditional theory of responsibility within the framework of co-operation. Furthermore, we examine the statistical significance of adding more factors to the single factor model and focus on the economic importance of more elaborate model specifications in respect to performance evolution with a sample of the UK ethical

unit trusts for the period 1996-2003. We then compare their performance with that of the UK non-ethical unit trusts.

Chapter 5 examines the performance of Dow Jones Islamic Market index (DJIM) for the period of 1996-2003, using both unconditional and conditional models to provide an insight into the effect of Islamic ethical screens as well as using lagged information variables in the analysis of performance. The traditional Capital Asset Pricing Model (CAPM) has a number of well-known weaknesses – one of which is that it assumes the risk (beta), to be stationary over time. A more accurate assessment of the expected return can be obtained by relaxing this constraint using the conditional asset-pricing model to estimate the Jensen's alpha. It compares the performance characteristics of Islamic screened index (Dow Jones Islamic market index) with the performance characteristics unrestricted index (Dow Jones Index Americas) to observe relative returns of Islamic ethical and conventional portfolio.

Chapter 6 provides a summary of results, conclusions and suggestions for areas of further investigation.

Chapter 2

Literature Review

2.1 Background to the Academic Literature

The academic literature on the measurement of managed fund performance stretches back over 40 years. The development of the Capital Asset Pricing Model(CAPM)[2] from modern portfolio theory(MPT)[3] created a method of measuring managed fund performance on at the basis of at least two dimensions: risk and expected return. Modern portfolio theory(MPT) is built on the assumption that rational investors need information about the expected return and risk of their potential investments before they can make informed choices. This suggests that return and risk must be included in any performance measurement.

The literature on mutual funds has also contributed to the development of various portfolio performance measures. Moreover, unit trusts[4] or mutual funds have also been used in studies on the strong form of efficiency and the stock pricing ability of fund managers. The first question in any discussion of performance is: can managed funds add value in the sense of 'beating the market'? Early studies of

[2] Sharpe (1964), Linter(1965), Treynor(1965)
[3] Markowitz(1952)
[4] The UK unit trusts are similar to the US open-ended mutual funds

managed funds (mutual funds/unit trusts, index funds, hedge funds, country funds etc.) focused on this issue. These studies were conducted to test the Efficient Markets Theory. They also assist investors to decide whether it is better to invest in an actively managed fund or an index fund. Recently more attention has been focussed on whether past performance of individual funds can be used as a guide to their future performance. Can investors successfully use measures of past performance as a decision tool for fund selection? This issue is also referred to as 'performance persistence'. This Chapter reviews the literature on the main topic and related issues. In particular, it covers the literature on: models of stock return, mutual fund performance with reference to survivorship bias, performance persistence, style performance and modern portfolio theory techniques.

2.2 Stock Return Models

The Capital Asset Pricing Model (CAPM) relies on the mean-variance efficiency of the market portfolio, which implies that: (i) the expected return on a stock is a positive linear function of its market beta; and (ii) the market betas of stocks are adequate for explaining the cross-sectional variation in their expected returns. Jenson's α, which measures empirically the deviation of a portfolio from the CAPM's securities market line, and helps one to obtain this portfolio's risk adjusted return, has been a standard in measuring fund performance since early 1970's. However, persisting questions pertaining as to whether the CAPM can be estimated empirically have put a question mark over the use of Jensen's α as well (Roll, 1977). Banz (1981) found that market equity (a stock's market price per share times its number of shares outstanding) has explanatory power for the cross-sectional variation in average stock

returns. Average returns on small stocks are too high, while those on large stocks are too low, given their beta estimates. Another anomaly relates to the role of book-to-market equity in explaining the cross-section of average stock returns. Rosenberg, Reid, and Lanstein (1985), for example, reported that average returns on the U.S stocks are positively related to the ratio of a firm's book value of common equity to its market value.

Fama and Fench (1992) evaluated the joint roles of market beta, size, price earning ratio, leverage, and book-to-market equity in the cross-sectional variation in average returns on NYSE, AMEX, and NASDAQ stocks for the 1963-1990 period. Using the Fama and MacBeth (1973) cross-sectional regression approach, they observed , among other things, that: (i) market beta does not seem to play a role in the cross-sectional variation in average stock returns; and (ii) size and book-to-market equity to absorb the apparent roles of leverage and earnings-price ration. Kim (1995) observed that Fama and French's (1992) study is subject to the errors in variables (EIV) problem arising, in this case, from estimation betas. The EIV problem has the effect of underestimating the coefficient of the beta variable in the Fama and MacBeth (1973) regression while overestimating the coefficients of the other variables. Kim (1995) suggested a correction for the EIV problem and shows that, after the correction, the market beta explains a good deal of the cross-sectional variation in stock return, although the size variable continues to play a significant role. Kim did not examine the role of book-to-market equity.

In their study, Fama and French (1993) recognised that, although size and book-to-market equity can explain the variation in average returns across stocks, they cannot explain the large difference between average returns on stocks and those on Treasury bills; a stock market portfolio is needed to explain the difference. Because, if stocks are priced rationally, variables that are related to average stock returns must proxy for common risk factors in stock returns. Fama and French employed a time-series regression approach to determine how well returns on stocks are explained by returns on a proxy for the market portfolio of stocks and two mimicking portfolios for risk factors related to size and book- to- market equity, respectively. To form the mimicking portfolios for risk factors related to size and book-to-market equity, six value-weighted portfolios are created from ranking NYSE, AMEX, and NASDAQ stocks on the basis of size and book-to-market equity. Stocks larger (smaller) than the median NYSE stock are placed into the big (small) group. Ranked on the basis of book-to-market equity, stocks are divided into three groups: the lowest 30%, the middle 40 % and the highest 30 %. The intersection of the two size groups and the three book-to-market equity groups yield six portfolios: S/L, S/M, S/H, B/L, B/M and B/H. For example, the S/L portfolio contains the stocks in the small size group that have low book-to-market ratios, and B/H portfolio consists of the stocks in the big size group that have high book-to-market ratios. These portfolios are reformed on an annual basis over the 1963-1991 sample period.

The mimicking portfolio for the risk factor related to size is the small minus big (SMB) portfolio whose return is the difference between the simple average of the returns on the three small-stock portfolios (S/L, S/M and S/H) and the simple average of the returns on the three big-stock portfolios (B/L, B/M and B/H). Because its two

components have about the same weighted-average book-to-market equity, the small minus big (SMB) portfolio is essentially factor related to book-to-market equity. The mimicking portfolio for the risk factor related to book-to-market equity is the high minus low (HML) portfolio whose return is the difference between the simple average of the returns on the two high- book- to-market equity portfolios (S/H and B/H) and the simple average of the returns on the two low-book-to market equity portfolios (S/L and B/L). Fama and French's proxy for the market portfolio is the value-weighted portfolio of the stocks in the six (6) size and book-to-market equity stratified portfolios, plus the negative book-to-market equity stocks excluded from the six portfolios. Twenty five(25) portfolios are constructed from the intersection of the five size and five book-to-market equity quintile portfolios. Their excess returns serve as the dependent variables in the following time series regressions:

$$R_i(t) - R_F(t) = a_i + b_i[R_M(t) - R_F(t)] + s_i R_{SMB}(t) + h_i R_{HML}(t) + e_i(t) \quad \text{----- (2-1)}$$

Where i = 1, 2,,3,.....25, R_i (t) – R_F(t) is the excess return on the *i*th portfolio, $R_M(t)$-$R_F(t)$ is the excess return on the proxy for the market portfolio, and $R_{SMB}(t)$ and $R_{HML}(t)$ are the returns on the mimicking portfolios for the risk factors related to size and book-to-market equity, respectively. In order to investigate the additional explanatory power due to the mimicking portfolios, Fama and Fench also run time – series regressions with the return on the proxy for the market portfolio as the only explanatory variable.

The R^2 values of the one-factor regressions are between 0.61 and 0.92 with only two of them being greater than 0.90. The three-factor regressions show R^2 values between 0.83 and 0.97, with 21 of them being greater than 0.90. Thus adding

the returns on the SMB and HML portfolios to the regression results in large increases in R^2 values. This is especially true with the five portfolios in the smallest-size quintile: their R^2 values increase from between 0.61 and 0.70 to between 0.94 and 0.97. The results of Fama and French factor show that size and book-to-market equity are empirically important in explaining stock returns.

Fama and French (1996) demonstrated that their three-factor model captures many of the widely documented patters in stock returns. For example, the model accounts for the long-term return reversal documented by Debondt and Thaler (1987). Although a number of authors have argued that size and book-to-market equity cannot be interpreted as risk factors in the traditional sense[5], no one seems to question their empirical importance in explaining stock returns. The issue of whether the value and size premiums are caused by risk of inefficiency may not be resolved to everyone's satisfaction. The argument of both sides were strong. For investors, there are two crucial points to remember. Firstly, factors based on value and size have explained much of the common variation in the US stock returns for the past three quarters of a century. Secondly, value and size premiums have been observed in several other countries, with the value premium are being observed in many developed countries that have been studied. While these observations are consistent with a risk based story, they do not prove anything. Nevertheless, something very fundamental would have to change in the financial markets in order for these premiums to disappear. Furthermore, the returns observed in the US market during 1999 show that 'value minus growth' is not low risk strategy.

[5] See, for example, Berk (1995) and Kirby (1998).

The inability of the Fama-French three factor model to explain stock price momentum is a problem for the model's proponents. However, the problem may not be all that serious. Considering the following facts:

- Pure momentum strategies involve very high turnover. Consequently, transaction costs and taxes can significantly erode momentum profits.
- Most of the return to the 'winner minus loser' momentum portfolio is due to the poor performance of the losers. So, in order to capture the bulk of the momentum effect, short positions are necessary. This is not feasible for some investors.
- The momentum effect is stronger among small cap stocks, which tend to be less liquid. Trying to implement a high turnover strategy with small cap stocks is unrealistic.

The research into stock price behaviour and asset pricing continue and a number of interesting results have surfaced recently. Perez-Quiros and Timmermaan (2000) provided evidence that small firms have high average returns because they are more affected by tight credit market conditions. Small firms do not have the same access to domestic and international bond markets that are enjoyed by large firms. Since the availability of credit is tied to economic conditions, so that a credit contraction typically occurs near a recession, small firms would be very sensitive to systematic variation in credit market conditions. Thus, the high returns to small firms might be compensation for the high sensitivity to a credit related risk factor.

Elton, Gruber, Agarwal and Mann (2001) reported that there is a potentially important link between the equity and fixed income markets. If certain risk factors are pervasive enough to explain common variation in stock returns, it is reasonable to expect that these same risk factors would be at work in the bond market as well. Elton et al (2001) provided evidence that SMB and HML do just that. Their research isolates the portion of a bond's return that is due to changing risk premiums, and they showed that this part of the bond's return is strongly related to SMB and HML. Not only does this result support the risk based story, but also it suggests some interesting avenues for future research in fixed income portfolio management.

An interesting study conducted by Lettau and Ludvigson (2001), showed that consumption oriented CAPM that allows expected returns to vary over time provides a nice cross sectional explanation of equity returns. They used the ratio of aggregate consumption to wealth as a "conditioning variables" to model the evaluation of expected returns over time. The relation between the consumption/ wealth ratio and expected returns is straightforward. If investors expected returns to be high in the future, they would be more likely to raise their consumption level relative to their level of wealth. Therefore, an increase in the consumption/ wealth ratio would signal high expected returns. Lattau and Ludvigson also found that the variation in returns that was picked up by Fama and French three factor models appears to be related to the changing risk premium from the consumption CAPM.

In a study, Pastor and Stambaugh (2001) provided evidence that sensitivity to market wide shifts in liquidity might be a risk factor which could be priced. Stocks

that are highly sensitive to shifts in market liquidity (they have liquidity beta) have high average returns. This liquidity factor appears to be distinct SMB and HML, suggesting an independent source of risk. However, it appears that liquidity betas are highly unstable, and there is substantial variation in the corresponding premium. While it is too early to conclude that there is a systematic liquidity factor in stock returns, more research is sure to be forthcoming in this area.

An indication of the acceptance of the three factor model is the frequency with which it is not used as a benchmark for performance measurement. For example, Carhart (1997) and Davis (2001) employed the Fama and French model in studies of the US mutual fund performance.

2.3 Mutual Fund/Unit Trust Performance

The review of the literature in respect of mutual funds/unit trusts performance will proceed in two segments: we will begin with the US literature and then will looked at the UK studies.

2.3-1 Performance Evaluation

The evaluation of mutual fund performance has long been a topic of considerable interest to financial economists. A variety of evaluation techniques have been developed and implemented. There is greatly varying evidence that mutual funds have tended to both outperform and underperform passive benchmark portfolios before as well as after management expenses. Of the few studies that suggest the

contrary, most, if not all, would change their conclusions when survivorship bias and / or correct adjustment for risk are taken into account. For example, Jensen (1968) studied the risk-adjusted performance of 115 mutual funds during the period 1945-1964. Using the CAPM model as the performance measurement model he found that, after management expenses, the performance of the funds was inferior to the performance of the S & P 500 index, while their pre-expense returns scatter randomly about the market line.

In contrast, Ippolito (1989) presented a study of mutual fund performance as a test of the efficiency of the mutual fund industry. The underlying idea was Grossman's (1976) view of efficiency that informed investors earn a sufficient amount to just compensate for the cost of trading and information gathering. The question asked by Ippolito was whether a random selection of mutual funds has yielded a risk-adjusted return equal to that available to investors in a virtually costless index fund.

Like Jensen (1968), Ippolito employed the CAPM model to measure mutual fund performance and the S & P 500 index as a proxy for the market portfolio. Examining a sample of 128 funds over the 20-years period from 1965 to 1984, he found that the funds on average, significantly outperform the market on an after-expense basis. The reported average risk-adjusted return has a magnitude of 0.83% per year and a t-statistic of 4.01. Ippolito (1989) estimated that this risk-adjusted return is just enough to offset the load charges that characterise the majority of the

funds in the sample and concluded that the mutual fund industry was in a condition that characterised efficient markets in the presence of costly information.

Ippolito (1989) also examined the role of turnover in mutual fund performance to obtain additional evidence regarding the efficiency of the mutual fund industry. He found that mutual fund performance (net of expenses) was weakly positively related to turnover. This implies that higher turnover is not associated with lower after-expense performance, which is consistent with the notion that mutual funds invest money efficiently. Thus Ippolito's results and conclusions are contrary to those reached in previous studies and lend strong support to the Grossman view of market efficiency.

However, Elton, Gruber, Das, and Hlavka (1993) showed that Ippolito's results were primarily due to the performance of non-S & P 500 stocks relative to the S & P 500 index in Ippolito's sample period (1965-1984). Re-examining Ippolito's sample, they found that once the impact of holding non- S & P 500 stocks on mutual fund performance was explicitly accounted for, the results change and became identical to those found in previous studies.

The common stocks that compose the S & P 500 index were selected to guarantee broad industry representation. However, within each industry the larger firms were generally selected, and the weight placed on each stock in the index was proportional to the total market value of the firm's equity. As a result, the S & P 500 index was primarily composed of, and affected by, large firms. Thus, to see the effect

of holding non-S & P 500 stocks, Elton, Gruber, Das, and Hlavka (1993) examined the performance of a small stock index, in particular, the value-weighted index of the lowest quintile of the stocks listed on the NYSE, relative to S & P 500 index. They found that the small stock index has a Jensen measure of 10.06 % per year over the Ippolito sample period. This means that holding non-S & P500 stocks in mutual funds would cause positive performance relative to the S & P 500 index over the Ippolito period even if fund managers were not informed investors. Elton, Gruber, Das and Hlavka (1993) also examined the effect of holding bonds on the performance of mutual funds and found that it was relatively small over the Ippolito's sample period.

To correct for the impact of holding non-S & P 500 assets, Elton, Gruber, Das and Hlavka suggested the following three-index model to measure mutual fund performance:

$$R_i(t) - R_F(t) = a_i + b_{iM}[R_M(t) - R_F(t)] + b_{iS}[R_S(t) - R_F(t)] + b_{iD}[R_D(t) - R_F(t)] + e_i(t) \quad \text{---------- (2-2)}$$

In this model, R_M is the return on the S & P 500 index, Rs is the return on a non-S & P 500 stock index that has been made orthogonal to the S & P 500 index, and R_D is the return on a bond index that has been made orthogonal to both the S & P 500 index and the non-S & P 500 stock index.

The researchers used, as a proxy for the non-S & P 500 stock, the small stock index mentioned above, with the effect of the S & P 500 stocks removed. For the bond index, they used a portfolio consisting of 80 % intermediate government bonds

and 20 % long-term corporate bonds, with the effect of the other two indexes removed. Measuring the performance of the funds in the Ippolito's sample using the three-index model, they obtained an average alpha of –1.59% per year, with a t-statistic of –2.35. Alternatively, they used the value-weighted index of all NYSE stocks as a proxy for the non- S & P 500 stock index and found that the funds have an average alpha of –0.88% per year with a t-statistic of –1.46. These results do not support Ippolito's view that mutual fund managers are informed investors.

Elton, Gruber, Das and Hlavka (1993) also examined the effect of turnover on the performance of mutual funds over the Ippolito's sample period. They show that, after adjusting for the effect of non- S & P assets using the three-index measurement model, the relationship between performance and turnover is negative and significant at the 5% level. They concluded that mutual fund managers did not earn enough excess return to compensate for the full cost of increased turnover, a conclusion that is contrary to Ippolito's study.

Grinblatt and Titman (1989) studied mutual fund performance through an analysis of quarterly portfolio holdings. Prior studies of mutual fund performance have examined the actual returns realised by investors and mostly found negative performance for the average fund. This, Grinblatt and Titman(1989) argued, is not surprising from an economic perspective: if mutual fund managers have superior investment talent, they may be able to capture the rents from their talent in the form of higher fees or perquisites obtained through higher expenses. If this is the case, then

we can expect to observe positive abnormal performance by mutual funds only by examining their gross or pre-expense returns.

Utilising quarterly holding data, Grinblatt and Titman(1989) calculated hypothetical returns for the equity portion of the portfolios of mutual funds assuming a buy and hold strategy for each quarter. These hypothetical returns do not have management expenses and transaction costs subtracted from them and are taken as estimates of mutual fund gross returns. The estimated gross returns less the Treasury bill returns are regressed on the excess returns on a benchmark portfolio, called the P8 benchmark, to estimate the pre-expense performance of mutual funds. The P8 benchmark is formed on the basis of firm size, dividend yield, and past returns. It is designed to mitigate small firm size and high dividend yield biases.

Studying a sample of 274 funds in the 1974-1984 period, Grinblatt and Titman (1989) found that the average fund had a slightly positive pre-expense performance of 1.44% per year. This performance was less than the annual management expenses and transaction costs of the average fund, which were estimated as 2.40%. However, it turned out that the average performance of aggressive-growth funds was significantly positive, with a magnitude of 3.24% per year and a t-statistic of 3.07. Grinblatt and Titman(1989) made this as the evidence that superior investment talent exists within the group of aggressive-growth fund managers.

Nevertheless, Grinblatt and Titman's results and conclusions were subject to some criticisms, as the authors themselves acknowledged in a later paper [Daniel,

Grinblatt, Titman, and Wermers (1997)]. Among other things, the number of the funds studied was relatively small, and the benchmark used may not fully account for return anomalies, such as size and book-to-market effects, which were shown by Fama and French (1992, 1993) to be empirically important in explaining common stock returns.

Malkiel (1995) examined the performance of 279 equity mutual funds with continuous records through the 10 years period 1982-1991. With expense rate data, he was able to measure the performance both net of expenses and with all expenses (not including load charges) added back. As he reported, when measured by a two-index model, the funds have an average negative performance not only after expenses but before expenses as well. The two benchmarks used in the two-index measurement model are the S & P 500 index of large stocks and the Wilhire 500 index that includes a large number of small stocks. Considering that the sample examined consists of only the better performing funds that have met the test of survivorship, Malkiel(1995) concluded that general equity mutual funds have not been able to outperform the broad stock market averages even before expenses.

2.3-1A. Persistence of Mutual Fund Manager's Performance

While the efficient market hypothesis implies that past performance is no guide to future performance after adjusting for risk or other pricing factors, in practice money managers are selected and judged primarily on their performance track record. In the academic literature, controversy about the persistence of a mutual fund

manager's performance has continued[6]. Grinblatt and Titman (1992) observed mutual fund return predictability over long horizons of five to ten years. Hendricks, Patel and Zeckhauser (1993) and Goetzman and Ibboston (1994) found evidence consistent with the repeat-winner hypothesis over short-term horizons of one to three years. Lakonishok, Shleifer, and Vishny (1992) also provided some evidence on persistence for pension fund manager's performance over horizons of two to three years, even though the managers did not beat a passive investment strategy. However, Jensen (1968) found little evidences that good performance follows past good performance. Brown, Goetzman, Ibbotson, and Ross (1992) argued that results of persistence would appear spuriously in samples limited to surviving mutual funds. Their argument was that to choose high-risk strategies and survive in the first half of the sample period was likely to lead to above average returns. If these funds continued their high risk strategy and continued to survive, they were also likely to achieve above normal returns in the second half of the sample. Therefore, only using a sample of surviving funds bias results towards finding performance persistence. The degree of this bias, amongst other factors, depends on the fraction of managers that drop out of the sample and whether their characteristics differ systematically from surviving managers. But Brown and Goetzman (1995) found that the persistence phenomenon was dependent upon the time period of study and concluded that it was due to common management strategies. Whereas Malkiel (1995) documented that the persistence phenomenon may not be robust since the strong persistence that characterised the 1970s failed to exist during the 1980s.

[6] There is less controversy on average fund performance. Most studies find that after expenses, mutual fund managers on average under perform a combination of passive portfolios of similar risk (see Jensen (1968), Lehman and Modest (1987), Grinblatt and Titman (1989), Connor and Korajczyk (1991), Sharpe (1992), Elton, Gruber, Das, and Hlavka (1993), Carhart (1997), Malkiel (1995), and Gruber (1996).

2.3-1B Style Performance

Although these studies employed a single market benchmark or multiple portfolio benchmarks to evaluate equity fund performance, they failed to incorporate the concept of style to justify the fund's performance[7]. A fund manager is said to adopt an 'investment style' if he or she identifies a set of securities with certain characteristics for potential inclusion in the portfolio. Fund managers with similar investment philosophies or styles will, on average, perform more like each other than like the overall market or like managers with different styles. Because these managers share similar portfolio characteristics and factor exposures that are priced or rewarded in the market, similarities in performance are to be expected. Therefore, a style benchmark, which more closely embodies the stock universe in which the manager invests and yields more information about the manager's skill, is more relevant than a market benchmark to separate out manager skill from manager universe group behaviour. If investors select managers on the basis of historical performance versus a broad market benchmark, they may unknowingly hire a manager whose current peak performance may be due solely to a style category that has lagged. That is why a benchmark that takes investment style into account should be important in equity fund performance evaluation. Furthermore, without controlling fund styles, fund performance persistence test is sensitive to a style cycle. For example, the strong reversal in Malkiel's (1995)-performance persistence test in 1987

[7] Although the p8 portfolio benchmark employed by Grinblatt and Titman (1989, 1992) and Hendricks, Patel and Zeckhauser (1993) is close to the style benchmark, these eight portfolios are not mutually exclusive. Therefore, it is impossible to differentiate equity fund style based on the factor loading on these portfolio factors.

and 1988 were mainly due to a reversal in the style cycle[8]. While industry terminology for domestic equity styles varies somewhat, there were at least two unambiguous style dimensions: size and value-growth.

In the literature on mutual fund performance evaluation, only the twelve asset classes used in Sharpe (1992)[9], the four indices used in Elton, Gruber, and Blake (1996) and Gruber (1996), and the four factors used in Carhart (1997) were associated with the style benchmark. Using the same four index model, Elton, Gruber, and Blake (1996) and Gruber (1996) reached similar conclusions that past risk-adjusted performance was predictive of future risk-adjusted performance in both 1-year and 3 year horizons. Using an equity fund sample, which was free of survivor bias, Carhart (1997) found that short-term persistence in equity mutual fund returns can be explained by common factors in stock returns and investment costs[10]. It seems that performance persistence was supported more when a style benchmark was incorporated in the analysis.

Chen (1996) shows that the estimated style from either the risk pricing model proposed by Fama and French (1993, 1996) or the asset allocation model proposed by

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[8] Malkiel presents two-way tables of ranked funds' total returns in the performance persistence test in his Table V. The winners in his table in 1987 who were equity funds emphasising on large cap stocks and growth stocks tended to be the losers in 1988 because large cap stocks and growth stocks did poorly in 1988. It is also seen that the strong reversal in the style of size and growth-value from 1988 to 1989 causes fund performance persistence reversibly in his results.

[9] Sharpe (1992) uses twelve asset classes to classify mutual fund styles (not only emphasising domestic equity styles)

[10] Although Carhart (1997) argues that the results from post-formation returns on portfolios of mutual funds sorted on lagged one-year return do not support the existence of skilled fund managers. This procedure is suffered from a problem that the sensitivity of the portfolio of top-performing funds to four common factors is unstable since the characteristics of the top-performing funds change significantly over time.

Sharpe (1992) is as good as the value-weighted rank from the holding characteristic model in describing fund style. These two well-known return-based approaches which incorporate the concept of a style benchmark may be adopted to evaluate fund performance and to address whether performance persistence can still be observed among extreme performers. This issue[11] is important because extreme performers have much larger noise in returns and usually attract much more attention from investors than other agents. Results from these two quite different approaches are compared to check robustness.

2.3-1C Portfolio Holding Approach

When fund portfolio holdings are observable, performance measures adjusted for the holdings' characteristics can be developed. Since this holdings-based approach does not require a model to describe the funds' expected returns and this does not suffer from problems related to parameter estimation, it is a more powerful approach than a return-based approach. Grinblatt and Titman (1994)[12] first utilised the holdings-based approach to measure performance but they failed to account for return anomalies such as the size and book-to-market effect. In a paper documented by Daniel, Grinblatt, Titman, and Wermers (1996) showed that aggressive growth funds exhibit the ability to select stocks. To adjust fund performance for risk, they did not use actual fund returns but used hypothetical returns computed based on quarterly holdings. However, fund portfolio holdings were usually observed on a quarterly

[11] Several studies (such as Grinblatt and Titman (1992), Carhart (1994), Elton et al. (1996), and Gruber (1996) show that the difference in returns across mutual funds are persistent and much of the differences are concentrated in the bottom performing funds. However, the evidence shown by these studies is that mutual funds "on average" persist their performance.

[12] Although Grinblatt and Titman (1989) also utilise fund portfolio holdings data, they only use them to generate funds' gross returns. Therefore, it is not a holdings-based approach.

basis and turnover ratios were unknown within the quarter. In addition, the non-equity proportion held by an equity fund was not shown in the observed portfolio holdings. The difference between actual returns and the hypothetical returns generated from the portfolio holdings may not be trivial. Therefore, caveats emerge about any inferences made.

2.3-1D Conditional Information Variables and Other Approaches

Ferson and Schadt (1996) argued that the 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 can 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[13] in the test of asset pricing theories.

A small group of 'star' fund managers earned superior risk-adjusted performance in the past, this may be due to luck. It is natural to expect that some funds out of thousands in the mutual fund universe outperform market indexes simply by chance. Using a sample of the US equity funds in 1975-1994, Kosowski et al(2000) employed a bootstrap technique to simulate the distribution of the extreme(maximum and minimum) performance measures across funds. Using various unconditional and conditional multi-factor model to measure performance, they demonstrated that the performance of the best and worst funds was not a result of sampling variability. To illustrate this point, 41 funds had a risk-adjusted return of at least 1% in 1995, while only 15 funds were expected to achieve this level by chance. This finding provided strong evidence of differential stock picking skill among fund managers and supports the value of the active managed fund management. In their studies, Antoniou, Barr and Priestly (1998); Lettau and Ludvigson (2001) employed the conditional CAPM- to capture the potential sources of time-varying expected return. Lettau and Ludvigson (2001) observed that the conditional CAPM could hold perfectly means conditional alphas are equal to zero.

Zheng(1999) used a different approach tracking the flow of investors' funds into mutual funds to examine whether investors can successfully discriminate between the relative performance of funds. He examined two basic issues. The first issue was

[13] Conditional performance evaluation approach using lagged default risk, slope term structure, dividend yield and 1 month US Treasury bill rates as the conditional information.

whether investors were smart before the event or did they move their investment money into funds which would perform well or not. The second issue was whether there was information in tracking this flow of funds and the issue of whether it could be used to make abnormal returns? The sample which he used is made up of a comprehensive data set of open-ended mutual fund data running from 1961-1993 including defunct funds. This included both load and un-load (entry fees and no entry fees) funds. On average he had a sample of 478 funds in existence each month with a minimum of 281 funds and a maximum of 1,196 funds. He concluded that aggregate newly invested money in equity mutual funds is able to forecast short-term future fund performance, in that funds that receive more money subsequently perform better than funds which lose money. For the whole sample, there is not statistical evidence that following the money flows will produce a strategy that will beat the market index, but there is evidence for money flows into small funds. However, this smart money phenomenon appears to be short-lived in that the performance ranking of positive and negative portfolios reverses after 30 months.

2.3-2 The UK Studies on Managed Funds

In this sub-section we will review some of the more recent work on the topic of the UK managed funds. Most of the UK unit trusts' studies were related to persistence performance and risk-adjusted performance evaluation. Fletcher (1995) evaluated the performance of 101 UK unit trusts with growth, general growth or income objectives as detailed in the Unit Trust Year Book for 1980. He considered five portfolios based on a ranking of five year risk adjusted performance windows. He then repeated this examining a two-year performance window. Survivorship bias was partly allowed for by the continuation of funds through name changes or changes in

management groups, though mergers were treated as terminations. Fletcher (1995) did not report any evidence of persistence of performance. In his subsequent paper Fletcher (1997) examined 85 UK unit trusts with a US investment orientation between 1985 and 1996 and also reported no evidence of performance persistence.

In another study, Quigley and Sinquefield (1998) examined the performance evaluation of the UK equity unit trusts. They used a similar approach by constructing portfolios, ranked by deciles, on the basis of relative performance in a given year. They then compared the performance of each of these portfolios in the next year. They picked up a large sample taken from the Micropal database of all equity UK unit trusts that were in existence between 1978 and 1997, a total of 752 funds. The unit trusts sample they included which were classified as having objectives of growth and income, growth, equity income or smaller companies. They constructed tests of performance persistence both before and after adjusting for risk. A variety of market and factor-based risk adjustments were then applied which wipe out any positive gains but lead to the conclusion that only poor performance persists.

Lunde, Blake and Timmerman (1998) used the sample of risk-adjusted returns to create portfolios of returns over three year periods using a large data set of 2,300 UK unit trusts obtained from Micropal data. They constructed performance measures based on bid prices and net income without any adjustment for expenses. They made analysis of inter-quartile fund performance over three-year periods. Repeated analysis of inter-quartile performance revealed whether the members of the top quartile remain in that quartile and so on, as applied in the cases of members of

the other three quartiles. The results of their study found evidence of performance persistence would be revealed via inter-quartile transition probabilities in excess of 0.25; which was a probability for the top and bottom quartiles of 0.355 and 0.332, figures which were consistent with the existence of performance persistence. In a subsequent study, Blake and Timmerman (1998) built on their previously mentioned study by analysing persistence at a greater level of disagregation. They analysed performance from 1972-1995 in a sample that included 973 dead and 1,402 surviving funds. Their database was comprehensive and covered domestic equities, international equities, bonds, property and commodities. They reported under-performance of about 1.8 % per annum for the average UK equity fund after risk-adjustment. They also found evidence of performance persistence and suggested that survivor-bias accounts for about 0.8% per year in their sample. Their analysis of fund births and deaths suggested a brief period of out-performance during the first year of a fund's operation and market under-perform of -3.3% in the final year of a fund's life.

The Wood Mackenzie Company (1999) applied a technique of estimating inter-quartile transition probabilities across five year windows for a sample of the UK income and growth funds and found no evidence of performance prediction, but did report evidence of the top quartiles' performance persisting in the next year. Similarly Allen and Tan (1999) reported some evidence of persistence of performance in a sample of 131 UK funds for the period 1989 to 1995. Their study employed a UK sample data set of weekly returns from all equity mutual funds existing each year and available on the DataStream International database. They analysed the relative performance of the funds and determine whether a good past-performance is indicative to any degree of the portfolio's subsequent performance. Unlike previous

studies which compared funds' performance with a benchmark (FTSE 100 or some other benchmark index), in this study Allen and Tan (1999) examined the persistence in performance in the short and long run based on four major empirical tests. These are contingency table analysis of winners and losers and Chi squared tests on these tables, ordinary least squares regression analysis of CAPM risk-adjusted excess returns, and Spearman Rank Correlation Co-efficient analysis of successive period performance ranking. Overall they found that both raw and risk-adjusted returns exhibited evidence of persistence in the long run but not in the very short run. They also explored the relationship between performance and volatility by dividing funds into two groups: high and low variance. The performance in both of these groups exhibited repeat winner patterns suggesting that superior performance was not conditioned purely by risky investment strategies. Some of Allen and Tan's (1999) contingency table results for raw returns are presented below in Table 2.1.

Table 2.1: Two-Way Tables of Ranked Fund Raw Returns Over Successive One-Year Intervals

Combined Results in Successive Periods 1991-1995		
	Winners	Losers
Initial Winners	185 (56.4%)	143 (43.6%)
Initial Losers	140 (42.8%)	187 (57.2%)

(Source: Allen and Tan, 1999)

The holding periods were for one year and a winner/loser was defined in terms of the median performance in the sample each year. The Table 2.1 summaries the results over a succession of periods.

The winner-winner indicates the number of the above median funds in the year that were also above median funds in the following year. Loser-winner, Winner-loser, and Loser-loser were defined similarly. The percentage of period 1 winners and losers that became period 2 winners and losers can be seen the parentheses. The combined summary results from Allen and Tan(1999), for risk-adjusted returns are shown in Table 2.2 below:

Table 2.2: Two-way Tables of Ranked Fund Raw Alphas Over Successive One-Year Intervals

Combined Results in Successive Periods		
	Winners	Losers
Initial Winners	189 (59.1%)	131 (40.9%)
Initial Losers	129 (40.3%)	191 (59.7%)

(Sources: Allen and Tan, 1999)

Jensen's (1968) risk-adjusted performance evaluation method was employed to evaluate the UK unit trust performance. In the regression a significant positive alpha value giving consistent positive residuals would imply that manager was superior.

These results suggested that winners tend to remain winners and losers remain losers, at least when winning or losing is defined relative to the median performance.

Wood Mackenzie Company (2002) also made some interesting comments on persistence performance whether it exists or not. They reported that they have carried out a number of studies in this area, and that in short, the answer is 'it depends':

(1) The time frame being considered. They have previously analysed the UK All Companies sector for persistence in unit trust performance. In the 1999 report they found no evidence of significant persistence looking at five-year time frames. In the 2000 report they provided "evidence of shorter-term persistence with a defined top quartile of trusts in any one year continuing to out-perform a group in the subsequent year."(page 14)

(2) The sector. They found no substantive evidence of longer-term persistence in the 'All Companies' sector, but have published research which would indicate greater consistency within the 'UK small cap' sector. Furthermore, in a study of the UK pension fund performance undertaken in the mid-1990, they found that "evidence appears to be: stronger over medium term periods (3-5 years) than over periods in excess of 5-years.

- The evidence of consistency of performance is stronger when returns are adjusted for risk rather than when absolute return data is analysed.
- Further, statistically significant results are consistently found for the Q4Q4 cell in their matrix analysis which means bottom quartile funds would have a tendency to remain bottom quartile." (page 14)

(3) The time periods. The results differ according to different periods. It seems to them to be impossible to tell when a period of persistency will be apparent and when it will not. Wood Mackenzie Company (2002) further caution and said that: "short term persistence (good or bad) is to be expected. In large part it is nothing more than a particular trust's investment style or approach being in (or out) of favour dependent on the phase of the economic cycle. It follows that many trusts' performances go through cycles: periods of out-performance are followed by periods of underperformance. This is what investment consultants are referring to when noting the lack of consistency in money manager track records. A failure to recognise these cycles can lead investors (whether retail or institutional) to buy a managers' at the top of its cycle or sell at the bottom. This is not a recipe for successful investment." (page 15)

The problems with trying to follow such a strategy are the systematic identification of 'top' and 'bottom' and the costs of switching. Sometimes, managers might be victims of their own short-term success in that their 'successful' investment approach which may be effected adversely by the inflow of substantial amounts of new money 'chasing' this performance. As assets grow, the quality of the portfolio and case of transaction may fall, impairing performance. They concluded that the kind of long-term consistent out-performance that may indicate skill though economic cycles are, by and large, simply not available.

In view of the above review, in respect of performance persistence studies on unit trusts, we may say that there is fairly consistent evidence of performance persistence which suggests that past performance would be useful information to fund investors.

2.4 Modern Portfolio Theory Techniques

Modern portfolio theory dates from Markowitz's (1952) pioneering article. Since then, a variety of approaches based on modern portfolio theory have been developed with the intention of helping investors, especially institutional investors, in order to use security analysis to improve portfolio performance. One such approach is that of Treynor and Black (1973). Their approach assumed that unconstrained short selling was allowed and that returns on securities are generated by the following CAPM based process:

$$R_i(t) - R_F(t) = \alpha_i + \beta_i[R_M(t) - R_F(t)] + \varepsilon_i(t) \text{ ---------- (2-3)}$$

Where $R_i(t) - R_F(t)$ is the excess return on security i for $i = 1, 2,3,---,N$, $R_M(t)-R_F(t)$ is the excess return on the market, and ε is an error term with an expected value of zero and a variance of $\sigma^2\varepsilon$. Given estimates of α, β and $\sigma^2\varepsilon$ for N risky securities, the investment problem Treynor and Black(1973) tried to solve is how to form a portfolio, P, in which money is optimally allocated among the market portfolio, the risk-free asset, and the N risky securities. In other words, they tried to solve the following optimisation problem: Minimise

$$\sigma^2{}_P = (w_M + \sum_{i=1}^{N} w_i\beta_i)^2\sigma^2{}_M + \sum_{i=1}^{N} w_i^2\sigma^2\varepsilon_i \text{ ---------- (2-4)}$$

subject to

$$E(R_P) = \sum_{i=1}^{N} w_i \alpha_i = [w_F + \sum_{i=1}^{N} w_i (1-\beta)] R_F + (w_M + \sum_{i=1}^{N} w_i \beta_i) E(R_M) \text{ ---------(2-5)}$$

$$w_M + w_F + \sum_{i=1}^{N} w_i = 1 \quad \text{----------(2-6)}$$

where E (R_P) and $\sigma^2 p$ are the expected return and return variance of the overall portfolio, respectively, E (R_M) and $\sigma^2{}_M$ are the expected return and return variance of the market portfolio, respectively, w_F is the weight in the risk-free asset, w_M is the weight in the market portfolio, and w_i is the weight in risky security *i*. Solving the optimisation problem yields the following optimal weights:

$$w^0{}_M = [W(R_P) - R_F] \left\{ \frac{\frac{E(R_M) - R_F}{\sigma^2{}_M} - \sum_{i=1}^{N} \beta_i \frac{\alpha_i}{\sigma^2 \varepsilon_i}}{\frac{[E(R_M) - R_F]^2}{\sigma_M{}^2} + \sum_{i=1}^{N} \frac{\alpha_i{}^2}{\sigma^2 \varepsilon_i}} \right\} \text{ ---------- (2-7)}$$

and

$$w^0{}_i = [W(R_p) - R_F] \left\{ \frac{\frac{\alpha_i}{\sigma^2 \varepsilon_i}}{\frac{[E(R_M) - R_F]^2}{\sigma^2{}_M} + \sum_{i=1}^{N} \frac{\alpha^2{}_i}{\sigma^2 \varepsilon_i}} \right\} \text{ ----------(2-8)}$$

for i= 1,2,....,N. In Equations (2-6) and (2-7) , E(R_P) is an exogenous target.

The overall optimal portfolio for the investor can be thought of as consisting of investments in the risk-free asset, the passive market portfolio, and the active portfolio of the N risky securities. The optimal proportion of money to be invested in the active portfolio is:

$$\sum_{i=1}^{N} w_i^{\,0} = \{E(R_P) - R_F\} \left\{ \frac{\sum_{i=1}^{N} \frac{\alpha_i}{\sigma^2 \varepsilon_i}}{\frac{[E(R_M) - R_F]^2}{\sigma^2 M} + \sum_{i=1}^{N} \frac{\alpha_i^{\,2}}{\sigma^2 \varepsilon_i}} \right\} \text{---------- (2-9)}$$

Normalising the weights given in equation (2-8) by dividing them by equation (2-9) results in

$$\frac{w_i^{\,0}}{\sum_{i=1}^{N} w_i^{\,0}} = \frac{\frac{\alpha_i}{\sigma^2 \varepsilon_i}}{\sum_{i=1}^{N} \frac{\alpha_i}{\sigma^2 \varepsilon_i}} \text{ ---------- (2-10)}$$

for i= 1,2,.....,N. These are the weights of the active portfolio in the N risky securities. Interestingly they are independent of E (R_P). Therefore, the larger the abnormal return of a security (α) is, or the more certain the investor is of its abnormal return (that is, the smaller $\sigma^2 \varepsilon_i$ is), the greater the investment in that security should be. Furthermore, the investor should take a long or short position in a security, depending on whether its abnormal return is positive or negative. The Treynor and Black(1973) approach to portfolio construction can be viewed as a two-step process. The first step involved using the estimates of α and $\sigma^2 \varepsilon_i$ for the N risky securities to form the active portfolio according the equation (2-9). The second step involved using equations (2-5), (2-6) and (2-8) to determine the optimal proportions of money to invest in the risk-free asset, the passive market portfolio, and the active portfolio, given a certain level of expected return on the overall portfolio.

Elton, Gruber, and Padberg (1976) developed a CAPM based approach to optionally forming a portfolio of N risky securities. They considered both the case where unlimited short sales were allowed and the case where short sales were

disallowed. When unlimited short sales were allowed, the optimal weighting problem, as presented by the authors, was to find a set of $w_1, w_2, ..., w_N$ to maximise

$$\frac{E(R_P) - R_F}{\sigma_P} \quad \text{----------} \quad (2\text{-}11)$$

where

$$E(R_P) - R_F = \sum_{i=1}^{N} w_i [E(R_i) - R_F] \quad \text{----------} \quad (2\text{-}12)$$

and

$$\sigma_P = \left[\sum_{i=1}^{N} w_i{}^2 \beta_i{}^2 \sigma^2{}_M + \sum_{i=1}^{N} \sum_{j=1:j\neq i}^{N} w_i w_j \beta_i \beta_j \sigma^2{}_M + \sum_{i=1}^{N} w^2{}_i \sigma^2 \varepsilon_i \right]^{\frac{1}{2}}. \quad \text{----------} \quad (2\text{-}13)$$

By imposing the restriction that the portfolio weights sum up to one, it was shown that the optimal fraction of the portfolio in stock *i* is equal to

$$w^0{}_i = \frac{\frac{[E(R_i) - R_F] - C_0 \beta_i}{\sigma^2 \varepsilon_i}}{\sum_{i=1}^{N} \left[\frac{[E(R_i) - R_F] - C_0 \beta_i}{\sigma^2 \varepsilon_i} \right]} \quad \text{----------} \quad (2\text{-}14)$$

where

$$C_0 = \frac{\sigma^2{}_M \sum_{i=1}^{N} \frac{[E(R_i) - R_F]\beta_i}{\sigma^2 \varepsilon_i}}{1 + \sigma^2{}_M \sum_{i=1}^{N} \frac{\beta^2{}_i}{\sigma^2 \varepsilon_i}} \quad \text{----------} \quad (2\text{-}15)$$

The term C_0 depends on the population of the securities being considered and can be calculated before the search for the optimal portfolio begins. Equation (2-14) then allows the investor to determine the optimal proportion of money to place in each

security in terms of the characteristics that are unique to that security. In general, w^0_i can be positive or negative, and correspondingly the investor should take a long or short position in security *i*. To solve the portfolio problem for the case where short sales are not allowed, Elton, Gruber, and Padberg(1976) introduced the constraints that $w_i \geq 0$ for $i = 1,2,\ldots,N$. Employing the Kuhn-Tucker conditions, they obtained the optimal weights for the subset, *k*, of the securities that make up the optimal portfolio as follows:

$$w_J^{\,0} = \frac{\frac{\beta_J}{\sigma^2 \varepsilon_J}\left[\frac{E(R_J) - R_F}{\beta_J} - C^*\right]}{\sum_{J \in k} \frac{\beta_j}{\sigma^2 \varepsilon_J}\left[\frac{E(R_J) - R_F}{\beta_J} - C^*\right]} \quad \text{----------} \quad (2\text{-}16)$$

where $j \in k$ and

$$C^* = \frac{\sigma^2{}_M \sum_{j \in k} \frac{[E(R_j) - R_F]\beta_j}{\sigma^2 \varepsilon_j}}{1 + \sigma^2{}_M \sum_{j \in k} \frac{\beta^2{}_j}{\sigma^2 \varepsilon_j}}. \quad \text{----------} \quad (2\text{-}17)$$

C^* is unique and serves as the cut-off rate. Elton, Gruber, and Padberg (1976) provided a proof that if a security with a particular ratio of $[E(R)-R_F]/\beta$ is included in the optimal portfolio, then all securities with a higher ratio would also be included. On the other hand, if a security with a particular ratio of $[E(R_i)-R_F]/\beta$ was excluded, then all securities with a lower ratio would also be excluded. Therefore, all securities whose excess return to beta ratios were above the cut-off rate were selected and all whose ratios were below were rejected.

Elton, Gruber, and Padberg (1976) illustrated a three-step process of forming the optimal portfolio. The first step was to rank the N securities by their excess return to beta ratios from the highest to the lowest. The higher the excess returns to beta ratio of a security was, the more desirable that security was to the investor. The second step was to determine the cut-off rate, C^*, and the securities to be included in the optimal portfolio. To do this, the investor proceeded to calculate the values of a variable C_k as if the first ranked security was in the optimal portfolio (k=1), then the first and second ranked securities were in the optimal portfolio (k=2), then the first, second, and third ranked securities were in the optimal portfolio (k=3), and so forth, using equation (2-17). These values were candidates for C^*. The investor knew that the optimum C_k, that was, C^* had been found when all the securities used in the calculation of C_k had excess return to beta ratios above C_k and all the securities not used to calculate C_k had excess return to beta ratios below C_k. The third set was simply to use equation (15) to compute the weights of the optimal portfolio. Some of the advantages of Elton, Gruber, and Padberg's approach are:

(i) Its decision criterion for a security to be included in the optimal portfolio has an intuitive interpretation and is easily understood;

(ii) It allows the portfolio manager to quickly and easily see the impact on the optimal portfolio of the introduction of any new security into the decision set; and

(iii) It makes clear to the portfolio manager what characteristics of a security are desirable.

Elton, Gruber and Padberg (1979), extended their portfolio optimisation approach to the case where returns on securities are generated by a multi-index model, which is proposed to capture industry effects on stock returns. They solved the optimal weighting problem when unlimited short sales are allowed using essentially the same procedure as they use for the case of a single-index return-generating model. If short sales are not allowed, no algorithm can be found for exactly solving the optimal weighting problem under the assumption of multi-index return-generating process. To obtain a solution, Elton, Gruber, and Padberg further assume that a market security exists with zero residual risk, and they require that the investor holds part of his wealth in that security. As they pointed out, the introduction of such a market security introduces an internal inconsistency and the solution is at best an approximation. However, they do not necessarily share the view that it is a useful approximation. For our purposes in this research, it is not very useful because it requires an actively managed mutual fund to constantly maintain an investment in the market portfolio.

2.5. Conclusion

The empirical evidence shows that mutual funds/unit trusts either under-perform or outperform benchmarks on a risk adjusted basis. However, although mutual funds performance is well documented in the finance literature, it is not well explained. Previous studies simply interpret either out-performance or under-performance as evidence of superior or inferior stock picking ability respectively, on the part of mutual fund managers. This interpretation is not based on any analysis of mutual fund portfolio holdings and compositions. The performance of a stock

portfolio depends on not only what stocks are in the portfolio, but also how the money is allocated across the stocks picked. Portfolio construction, given a set of selected stocks, can have an important impact on portfolio performance. Inferior portfolio construction can lead to portfolio inefficiency and ultimately inferior portfolio performance. On the other hand the superior portfolio construction can lead to portfolio efficiency and ultimately outperformance. Therefore, to explain mutual fund performance, it is important to utilise portfolio-holding data to examine mutual fund portfolio efficiency. Many recent studies utilised portfolio holdings data to construct new performance measures for mutual funds.

The majority of these studies looked at the US funds whilst a small number have examined the UK unit trusts. Although these studies address some common topics such as mutual fund performance with reference to survivorship bias, performance persistence, and style performance.

Good past performance seems to be, at best, a weak and unreliable predictor of future good performance over the medium to long term. About half the studies found no correlation at all between good past and good future performance. Where persistence was found, this was more frequently in the shorter-term (one to two years) than in the longer term. The longer term comparison may be more relevant to the typical periods over which consumers hold managed funds. Where persistence was found, the 'out performance' margin tended to be small. Where studies found persistence, some specifically reported that frequent swapping to best performing funds would not be an effective strategy, due to the cost of swapping. There are

plausible explanations for these conclusions about the low persistence of past performance.

- The methods which work best in one set of market conditions may not work best at other times. For example, value and growth style managers tend to excel at different times. However, it is hard for a consumer to predict the likely market conditions over the next few years. One of the problems with many of these studies is that they might not track a manager though a full cycle of market conditions.
- Fund managers constantly strive to match the performance of competitors. If one firm is outperforming its peers, others will try to copy its methods and/or headhunt its staff. If it attracts a large inflow of funds it is likely to be difficult to place these funds and maintain relative performance, if it is an active as opposed to a passive fund.
- The future return on investments is extremely hard to predict, so a significant part of a fund's performance (compared to its peers) may be random luck.
- The findings are consistent with other research that shows that it is hard for fund managers to consistently outperform the relevant benchmark.

Chapter 3
Performance Evaluation of UK Equity Unit Trusts

3.1 Introduction

Investors indicate that the performance of managed funds should be the primary factor in choosing a fund and that fund managers are likely to provide historical records of the funds in their pursuit of investors selecting a fund. Researchers, on the other hand, have been trying to document that the performance measures of mutual funds are correlated between periods. Early studies such as Jensen (1968) rejected the persistence in mutual fund performance. Some others have found evidence that certain fund managers have skills in managing their portfolios and that the winners this year may still be the winners next year(Goetzmann, 1995; Malkiel, 1995). Yet, in the academic literature, there is controversy about the persistence of a unit trust[14] or mutual fund manager's performance.[15] Grinblatt and Titman (1992) observed that mutual fund or unit trust return predictability can be seen over long horizons of five to ten years. Hendricks, Patel & Zeckhauser (1993) and Goetzmann & Ibbotson (1994) found evidence consistent with the repeat-winner hypothesis over short-term horizons of one to three years. Similarly, Lakonishok, Shleifer, and Vshny (1992) provided some evidence on persistence on the performance of pension fund

[14] A UK Unit trust is an equivalent of a US open-ended mutual fund.
[15] There is less controversy on average fund performance. Most studies find that after expenses, unit trust or mutual fund managers on average underperforms a combination of passive portfolios of similar risk (see Jensen, 1968; 1987; Grinblatt & Titman and 1989 Malkiel, 1995).

managers over horizons of two to three years, even though the managers do not have a passive investment strategy; and Brown, Goetzmann, Ibboston, and Ross (1992) demonstrated that the relationship between volatility and the returns induced by survivorship can imply the appearance of predictability.

On the other hand, however, Jensen (1968) found little evidence that good performance follows past good performance while Brown and Goetzmann (1995) found that the persistence phenomenon was dependent upon the time period of study and concluded that it was due to common management strategies. Malkiel (1995) concluded that the persistence phenomenon may not be robust since the strong persistence that characterised the 1970s failed to exist during the 1980s.

As to how performance is assessed, fund managers are often judged by their performance relative to a pre-specified benchmark, usually a broadly diversified index with the same style or the median fund manager with the same style. The assessment then affects individual compensation – although a fund manager's compensation is typically determined as a percentage of the assets under management which is highly dependent on the manager's relative performance. Because a unit trust with high relative performance receives increased new investments in the fund, these additional contributions provide, in turn, increased compensation to the fund managers. A fund's performance then affects its growth. Ippolito(1992) found that the relationship between fund growth and performance is significantly positive. Gruber (1996) and Davis (1999) show that investors do act on past relative performance in allocating money to unit trusts (mutual funds). Therefore, rational money managers attempting to maximise their expected compensation may revise the composition of their

portfolios depending on their relative performance during the assessment period. Thus the studies of fund manager performance are the bottom line test of market efficiency. They do not claim to uncover specific types of market failure as do the 'anomalies' literature of the 1980s and the behavioural finance literature that is presently common. However, fund manager studies ask whether there are market failures, regardless of type, that are systematically exploitable. There is relatively little academic research in this area on UK equity unit trusts.

The majority of the studies carried out thus far confine themselves to the fund managers' efforts to outperform the United States equity markets. There are very few studies of the UK market.[16] This study, however, tries to close that gap by examining the performance of the UK equity unit trusts that concentrate their investment in the UK. It also deals with two popular claims by fund managers that fund managers can out perform markets and that this is especially so in the case of small stocks. In order to close the gap and deal with these claims, this study will endeavour to answer three questions;

(1) Do the UK equity unit trusts' fund managers outperform the market?

(2) Does performance persist?

(3) Do small stocks outperform?

3.2 What is a Unit Trust and how does it Work?

As per the definition given in the Unit Trust Year Book 2002, a unit trust is a fund of stock market investments divided into equal portions called 'units'. The price

[16] There are differences in time period coverage and methodology. Please see Blake and Timmerman (1998) , Allen and Tan (1999) and Quigley and Sinquefield (2000).

of units is calculated regularly (mostly every day) by the managers, rather than being determined purely by supply and demand in the market, as is the case with shares. Two prices are quoted for unit trusts – the higher (offer) price being the price the investor pays to buy units, and the lower (bid) price being the price he or she will receive for units sold back to the managers. Unit trust managers are the only people allowed to make a market in unit trust units, and they should be prepared to buy units from, and sell units to, the public at any time, although in the event of very rapid market movements special regulations apply.

The price of units in any unit trust is governed by the value of the underlying securities in the fund – the price can fluctuate with movements of the market sector in which the fund is invested. Therefore, the value of an investor's holding in a unit trust, like an investment in shares, can go down as well as up. This means that a unit trust is a risky investment, although the possibility of strong capital growth also means it is likely to outperform a building society or bank deposit investment over a period of five to ten years.

Unit trusts are investment vehicles that provide a means of participation in the stock market for people who have neither the time, nor the money, nor perhaps the expertise, to successfully undertake direct investment in equities (Unit Trust Year Book 1991). They also provide a route into specialist and overseas markets where direct investment often demands both more time and more knowledge than an investor or his/her financial adviser may possess. A large number of investors pool their money in order to obtain a spread of professionally managed Stock Exchange investments. They could not get such a good spread individually because dealing

costs would make it uneconomical to buy a large number of small holdings. The investor in a unit trust takes less of a risk than a direct equity investor, because a wide range of holdings reduces the effect that any one stock can have on the overall performance of an equity portfolio. Professional management has two main benefits; it provides specialist investment expertise which should ensure greater success than the inexperienced investor could achieve on his/her own and it reduces the administrative burden of investment.

3.2.1 The Regulatory Structure

Unit trusts are governed by the Financial Service Act (FSA) 1986, which regulates many types of investments and whose primary aim is to improve investor protection. The Act set up a self-regulatory structure with a system of Self-Regulatory Organisations (SROs), each responsible for a separate aspect of the financial services industry. The structure is overseen by the Securities and Investments Board (SIB), which is ultimately answerable to the Department of Trade and Industry (DTI). Basic elements of how the financial services industry should operate are laid down in the FSA.[17] In order to operate by law within the financial services industry, all practitioners must be authorised by the correct SRO. The SROs of relevance to the unit trust industry are as follows;

(1) Any practitioner may be directly authorised by the Security Investment Board (SIB), although in practice most are registered with the SRO most closely concerned with the relevant aspect of the industry. Clearing banks, which are very large organisations and carry out many activities requiring authorisation,

[17] More detailed regulations appeared in the SIB rule book. Each of the SROs also has a rulebook which deals in greater detail still on its own area of the industry, and which must be at least as stringent as the rules laid down by the SIB.

are the sort of unit trust management group which may be authorised by the SIB (Unit Trust Yearbook 1991).

(2) Unit trusts must be registered with the Investment Management Regulatory Organisation (IMRO) to cover their investment management activities.

(3) Unit trust groups must be registered with the Life Assurance and Unit Trust Regulatory Organisation (LAUTRO) where their marketing and selling activities are concerned.

(4) Most intermediaries dealing in the unit trusts are registered with the Financial Intermediaries, Managers and Brokers Regulatory Association (FIMBRA).

(5) The Stockbrokers dealing in unit trusts are registered with the Securities Association (TSA).

Unit trusts are themselves authorised by the SIB. Some of the new regulations affecting the industry are contained in the DTI statutory instruments and the DTI directly regulates investment and borrowing powers, though in practice the regulations are enforced by the IMRO.

A unit trust is set up by a trust deed, which is an agreement between the trustees and the managers of the fund, and covers the main aspects of the running of the trust. The essential characteristics of the deed are that it lays down the rights and responsibilities of all concerned, as well as the investment objectives, provisions enabling new members to join, maximum charges that can be made by the managers for administering the fund and provisions for calculating the buying and selling prices of units. The managers of the unit trust make the day to day investment decisions necessary for the running of the trust and deal in units with the public.

The trustee is an independent party whose job is to hold the actual cash and securities belonging to the trust, and also to ensure that the managers are running the trust properly, in accordance with the trust deed. The trustee is usually a major bank or insurance company and it is the trustee who creates and cancels units.

3.2.2 Restrictions of Investment

Unit trust managers are allowed to invest in securities quoted on recognised Stock Exchanges including the Alternative Investment Market in London, the US and Tokyo Over the Counter Markets (TOCM) and the French Second Marche. Most of the funds invest mainly or wholly in the shares of companies (equities). Government stocks (gilts) are also used up to a maximum of 35% in equity trusts, although there are also trusts which invest wholly in gilts. Another specialised form of investment allowed by the new regulations is the use of options, futures and forward currency contracts, which can be used to hedge the currency exposure of a unit trust investing shares.

Certain other investment restrictions are included in the trust deed to ensure that each fund has a sufficiently diversified spread of risk. A unit trust may have up to four holdings each representing a maximum 10% of the fund. All other investments must be limited to 5% of the fund or less. In other words, a trust can effectively have a minimum of 16 holdings. Another restriction on the managers is that each trust must not hold more than 10% of the issued share capital of any company. But with management groups running a whole range of trusts it is not inconceivable that

between their trusts they together hold more than 10% of the share capital of one particular company (Unit Trust Year Book 2002).

The main purpose of these rules is to ensure that the investments held in a fund's portfolio are easily realisable. This in turn enables the managers to buy and sell units at any time.

3.2.3 Investment Management Association (IMA) Sector's Definitions and Classification

As of December 2001, there are 2000 investment funds. In order to identify funds with similar characteristics, they are categorised within a fund classification system of over thirty sectors. The sector categories are broadly divided by the IMA into funds that aim to provide an 'income' and those designed to provide 'growth'. Each sector is made up of funds investing in similar assets, the same stock market sectors or in the same geographical region (IMA offer documents 2002).

Funds are classified in this way to make it easier to find those that meet the customers' investment objectives. This ensures that when comparing one fund with another, one is comparing funds with similar objectives or with similar underlying assets.

(a) Funds Principally Targeting Income - Immediate Income

UK Gilts

Funds which invest at least 90% of their assets in UK Government securities (Gilts)

UK Index Linked Gilts

Funds which invest at least 90% of their assets in UK index linked Government securities (Gilts).

UK Corporate Bonds

Funds which invest at least 80% of their assets in Sterling-denominated (or hedged back to Sterling), Triple BBB (triple B plus rating) minus or above bonds as measured by either Standard & Poor or equivalent – Moody's BAA Baa (rating) or above. This excludes convertibles.

UK Other Bonds

Funds investing at least 80% of their assets in Sterling denominated (or hedged back to Sterling) and at least 20% of their assets in below BBB minus bonds as measured by Standard and Poor's or an equivalent standard. This includes convertibles and income producing preference shares.

Global Bonds

Funds which invest at least 80% of their assets in fixed interest stocks. All funds which contain more than 80% fixed interest investments are to be classified under this heading regardless of the fact that they may have more than 80% in a particular geographic sector, unless that geographic area is the UK, when the fund should be classified under the relevant UK heading.

UK Equity & Bond Income

Funds which invest at least 80% of their assets in the UK, between 20% and 80% in UK fixed interest securities and between 20% and 80% in UK equities. These funds aim to have a yield of 120% or over of the FT All Share Index.

(b) Funds Principally Targeting Income - Growing Income

UK Equity Income

Funds which invest at least 80% of their assets in the UK equities and which aim to achieve a yield on the underlying portfolio in excess of 110% of the FTSE All share yield (net of tax).

(c) Funds Principally Targeting Capital - Capital Growth/Total Return

UK Zeros

Funds investing at least 80% of their assets in Sterling denominated (or hedged back to Sterling), and at least 80% of their assets in zero dividend preference shares or equivalent instruments (i.e. not income producing). This excludes preference shares which produce an income.

UK All Companies

Funds which invest at least 80% of their assets in UK equities which have a primary objective of achieving capital growth.

UK Smaller Companies

Funds which invest at least 80% of their assets in the UK equities of companies which form the bottom 10% by market capitalisation.

Japan

Funds which invest at least 80% of their assets in Japanese equities.

Japanese Smaller Companies

Funds which invest at least 80% of their assets in Japanese equities of companies which form the bottom 30% by market capitalisation.

Asia Pacific including Japan

Funds which invest at least 80% of their assets in Asia Pacific equities, including a Japanese content. The Japanese content must make up less than 80% of all assets.

Asia Pacific excluding Japan

Funds which invest at least 80% of their assets in Asia Pacific equities and exclude Japanese equities.

North America

Funds which invest at least 80% of their assets in North American equities.

North American Smaller Companies

Funds which invest at least 80% of their assets in North American equities of companies which form the bottom 20% by market capitalisation.

Europe including the UK

Funds which invest at least 80% of their assets in European equities. They may include UK equities, but these must not exceed 80% of the fund's assets.

Europe excluding the UK

Funds which invest at least 80% of their assets in European equities and exclude UK securities.

European Smaller Companies

Funds which invest at least 80% of their assets in European equities of companies which form the bottom 20% by market capitalisation in the European market. They may include UK equities, but these must not exceed 80% of the fund's assets. ('Europe' includes all countries in the MSCI/FTSE pan European indices.)

Cautious Managed

Funds which offer investment in a range of assets, with the maximum equity exposure restricted to 60% of the Fund. There is no specific requirement to hold a minimum % of non-UK equities. Assets must be at least 50% in Sterling/Euro and be in equities which are deemed to include convertibles.

Balanced Managed

Funds which offer investment in a range of assets, with the maximum equity exposure restricted to 85% of the fund. At least 10% must be held in non-UK equities. Assets must be at least 50% in Sterling/Euro and be in equities which are deemed to include convertibles.

Active Managed

Funds which offer investment in a range of assets, with the manager being able to invest up to 100% in equities at their discretion. At least 10% must be held in non-UK equities. There is no minimum Sterling/Euro balance and the equities are deemed to include convertibles. At any one time the asset allocation of these funds may hold a high proportion of non-equity assets such that the asset allocation would, by default, place the fund in either the Balanced or Cautious sector. These funds would remain in this sector on these occasions since it is the manager's stated intention to retain the right to invest up to 100% in equities.

Global Growth

Funds which invest at least 80% of their assets in equities (but not more than 80% in UK assets) and which have the prime objective of achieving growth of capital.

Global Emerging Markets

Funds which invest 80% or more of their assets directly or indirectly in emerging markets as defined by MSCI/FTSE indices, without geographical restriction. Indirect investment e.g. China shares listed in Hong Kong, should not exceed 50% of the portfolio.

(d) Funds Principally Targeting Capital Protection

Money Market

Funds which invest at least 95% of their assets in money market instruments (i.e. cash and near cash, such as bank deposits, certificates of deposit, very short term fixed

interest securities or floating rate notes). These funds may be either "money market funds" as defined by the SIB or "securities funds" as long as they satisfy the criterion of concentrating on money market instruments.

Protected/Guaranteed Funds

Funds, other than money market funds, which principally aim to provide a return of a set amount of capital back to the investor (either explicitly guaranteed or via an investment strategy highly likely to achieve this objective) plus some market upside.

(e) Specialist Sectors

Specialist

Funds that have an investment universe that is not accommodated by the mainstream sectors. Performance ranking of funds within the sector as a whole is inappropriate, given the diverse nature of its constituents.

Technology and Telecommunications

Funds which invest at least 80% of their assets in technology and telecommunications sectors as defined by the major index providers.

Personal Pensions

Funds which are only available for use in a personal pension plan or FSAVC scheme. The arrangements for unit trust personal pension schemes require providers to set up

Figure 3.1: IMA Classified Sector-wise UK fund classification system chart

All Funds

Income Funds		**Growth Funds**		**Specialist Funds**
Immediate Income	**Growing Income**	**Capital Protection**	**Capital Growth/Total Return**	Specialist
UK Gilts	UK Equity Income	Money Market	UK All Companies	Technology & Telecommunications
UK Index Linked Gilts		Protected / Guaranteed Funds	UK Smaller Companies	Personal Pensions
UK equity & Bond income			Japan	
UK Other Bond			Japanese Smaller Companies	
Global Bonds			Asia Pacific Including Japan	
			Asia Pacific Excluding Japan	
			North America	
			North American Smaller Companies	
			Europe Including UK	
			Europe Excluding UK	
			European Smaller Companies	
			Cautious Managed	
			Balanced Managed	
			Active Managed	
			Global Growth	
			Global Emerging Markets	
			UK Zeros	

(Source IMA, 2002)

Table: 3.1 Total Fund Size of All Unit Trust Groups

Year	Total Fund Size of All Unit Trust Groups £m
1972	2647
1973	2060
1974	1310.8
1975	2512.4
1976	2543.0
1977	3461.3
1978	3873.4
1979	3936.7
1980	4968.0
1981	5902.4
1982	7768.0
1983	11689.4
1984	15099.0
1985	20307.0
1986	32131.0
1987	36330
1988	41574
1989	58159
1990	46342
1991	55145
1992	63877
1993	95518
1994	92116
1995	112894
1996	131905
1997	157583
1998	182881
1999	253713
2000	260970
2001	235796

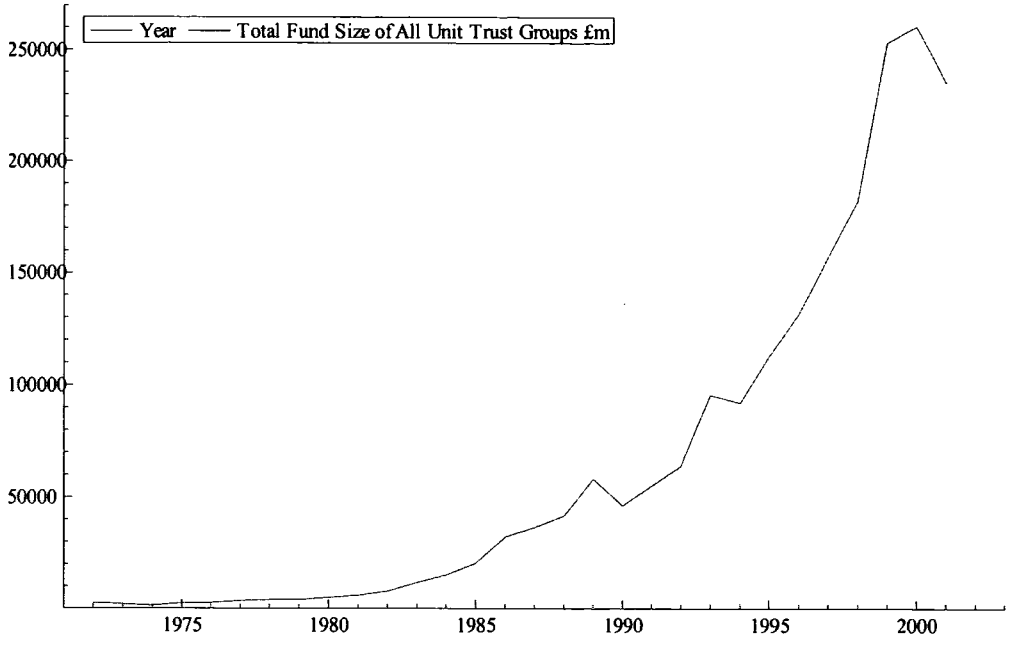
(Sources: Unit Trust Year Books, 2002)

a separate personal pension unit trust under an overall tax sheltered umbrella. These funds then in turn invest in the group's equivalent mainstream trusts. It may be mentioned here that pension funds are not to be confused with 'exempt' funds which are flagged separately. Figure 3.1 describes the sector-wise unit trusts which are understood clearly from the chart.

Table 3.1 shows the size of all groups of unit trusts from 1972 to 2001 in the UK. The great global bull market for equities peaked early in 2001. Sheer momentum carried the UK investment funds industry through to the end of 2001, with an end peak £260,970 (as on December 2000) million for unit trust funds under management, according to the statistics published by the Investment Management Association and the Unit Trust & Open Ended Investment Companies (OEIC) Yearbook 2002. The £260,970 million figure in 2000 represented growth of less than 3 percent from the end of the 1999 level.

The growth of unit trusts dropped in November 1993, following the official abandonment of apartheid. In the UK as of 2000 there were more than 511 unit trusts with a total value of over £260,700 million, which is the highest recorded growth in the UK unit trusts industry. Figure 3.2 show the the growth in size of all the group unit trusts for the period 1972-2001.

Figure 3.2 Total Fund Size of All Unit Trust Groups



3.2.4 How are the Unit Trust Funds Managed?

Each unit trust fund has been divided into equal portions or units. At any one time the fund is divided between a number of unit holders each holding a definite number of units. Each unit represents the same proportion of the value of the shares held by the trust. For example, if unit trust A with holdings worth £20 million has 60 million units in issue each unit will be worth 33.3p. If demand rises for additional units, either from new unit holders joining or existing unit holders wishing to invest more money, the value of the additional money invested exactly matches the increase in the number of units. The value of the each unit in relation to the total value of the fund therefore remains unchanged. For example, if demand rises for another 30,000 units in Trust A, these must be sold at a price which will provide a total amount of cash sufficient to add £10,000 worth of securities to the fund, after meeting the

necessary buying expenses. It follows that the additional units must be sold at the ruling price of 33.3p plus a sum sufficient to cover the necessary expenses.

But the process works in reverse when existing unit holders wish to sell their units and the size of the fund contracts; sufficient securities in the funds must be sold to provide the cash sum that will pay each unit holder withdrawing from the fund for the full value of his/her units. This is how the basic value of the unit is calculated in order to be fair to both existing and incoming unit holders (IMA offer documents, 2000).

3.2.5 Reinvestment of Dividends

The investor can choose whether or not to reinvest his/her income distribution, that is whether to take the distribution as income or to use it to increase his/her holding. There are two different methods by which income may be reinvested. Some trusts simply use the sum distributed to buy further units, increasing the number of units the investor holds. The disadvantages of this are that an initial charge must be paid on the new units and it is hard to keep track of small extra numbers of units. The other method is where the unit trust is effectively split into a distributing fund and an accumulation fund. The distribution fund, as the name implies, distributes all its income to investors. The accumulation fund, for those who want to reinvest income, has its price adjusted when a distribution is made to reflect the addition of the income. The price of the accumulation fund will therefore be higher than that of the distribution fund. Of 273 dead unit trusts during the period from 1986 to 2001, 193 were accumulation units and 80 were income units. For the 470 live unit trusts, 373 were accumulation units and 90 were income units during the period of this study.

There is an advantage that no front-end charge is paid on new units and that the number of units held remains the same. It is easy to see which groups use which method of reinvestment by looking at the prices as a trust which has two prices, will have one labelled 'Acc' or Accumulated units which indicates a separate accumulation fund. Reinvestment of income does not exempt the investor from paying tax on the distributions, as he or she is deemed for tax purposes to have received his or her share of the reinvested income. The managers will send the unit holder of the deemed income upon which any tax will have been levied (Unit Trust Year Book, 2001).

3.2.6 Charges and Taxation

Unit trust charging systems consist of an initial charge and an annual management charge. The initial charge is included in the price at which managers will sell units to the public, and the annual charge is normally taken out of the income of the trust fund. There is no statutory limit on unit charges, although the trust deed itself will state the maximum levels that the managers are permitted to charge. A unit trust is quoted on a bid and offer basis, whilst the level and range of charges is from 5% to 6% for the initial charges and from 0.75% to 1.5% for the annual charges. A few gilt funds have lower charges than average - perhaps only 3% or 3.5% initially - because commissions on gilts are lower than those on equities.

In the UK, an investor holding unit trusts will have two potential areas of tax liability; income tax and capital gain. Income tax is payable on the income received from the unit trust in the form of distributions. If income is reinvested, whether

through the purchase of new units or through accumulation units, the tax liability remains the same. Capital gains tax may be payable if a taxable gain is made when units are sold. A company paying a dividend of £1 would pay £0.2 in taxes, the Advance Corporation Tax, and then distribute £0.8 to the unit trust with an accompanying tax credit for the Advance Corporation Tax paid. The unit trust pays this money as a dividend by declaring a gross dividend of £1 and distributing £0.8 in cash and £0.2 as tax credit. A taxable investor would report £1 dividend income and £0.2 taxes already paid. In 1986 the Advance Corporation Tax rate was 33% and gradually fell to 20%. Until July 1997, a UK tax-exempt investor such as a pension fund could reclaim the tax credit as cash. But in the Budget of July 1997, the ability of such investors to reclaim the tax credit was abolished.

3.2.7 About the Equity Unit Trust

Out of the several above mentioned IMA defined sectors of the unit trusts, we focus on only those funds which are invested primarily in UK equity and which are classified as[18]; (1) UK Equity and Bond Income, (2) UK Equity Income, (3) UK All Companies and (4) UK Smaller Companies. Our study excludes all other non-equity funds, such as international, sector specialist or balanced and fixed income unit trust. We have included in our sample of study only those unit trusts which invest at least 80% of their assets in UK equities which have a primary objective of achieving capital growth. The statistics for the total number of sector-wise live UK equity unit trusts, and the equity unit trusts which were created or died between the period from January 1986 to December 2001 are given below (Table nos: 3.2, 3.3 and 3.4).

[18] Classification changed in 1997. Previously classified as: Growth and Income, Growth, Equity, Income and Smaller companies

Table 3.2: Number of UK Equity Unit trusts by sector 1986-2001

Sector	1986	1991	1996	2001
UK Equity and Bond Income	50	58	70	47
UK Equity Income	103	113	106	85
UK All Companies	175	239	282	302
UK Smaller Companies	50	73	84	74
All UK equity sector	386	488	542	508

(Source: S & P Micropal)

Table 3.3: Birth of Unit Trusts by Sector 1986-2001

Sector	1986-90	1991-95	1996-01	Total
UK Equity and Bond Income	23	37	15	75
UK Equity Income	35	19	13	67
UK All Companies	101	73	123	297
UK Smaller Companies	31	26	15	72
All UK Equity sector	190	155	166	511

Source: S & P Micropal

Table 3.3 shows that over 150 unit trusts have been created in each of the last four yearly periods and that most of the newly created unit trusts are in the UK All Companies sector.

Table 3.4: Death of Unit Trusts by Sector 1986-2001

Sector	1986-90	1991-95	1996-01	Total
UK Equity and Bond Income	18	30	38	86
UK Equity Income	25	26	34	85
UK All Companies	37	30	103	170
UK Smaller Companies	8	15	25	48
All UK Equity sector	88	101	200	389

(Source: S & P Micropal)

Table 3.4 shows that 389 unit trusts, about half of the sample, died during the period of the study which demonstrates the question of survival of the funds.

3.3 Empirical Method

Jensen's Alpha

Like Treynor, 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 and which would be picked up in the intercept alpha. The empirical specification of the model is as follows;

$$E(R_{it}) = \beta_i E(R_{mt}) \qquad (3\text{-}1)$$

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 (3-1) can be written as;

$$R_{it} = \beta_i R_{mt} + e_I \qquad (3\text{-}2)$$

where

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

Jensen's measure of performance includes a constant in equation (3-2) such that

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

$R_{it}-R_{ft}$ = excess return of the portfolio (in our case the unit trust),

$R_{mt}- R_{ft}$ = excess return of the benchmark (in our case the FTSE All Share Index)

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 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 in addition to the conclusion that investors received unanticipated returns over the sample period, a

non-zero estimate of alpha could be indicative of a misspecification of the 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 mis-specified, then predicTable variation in the misspecification can contaminate α and e_i.

Fama - French Three Factor

The need for a three factor/ multifactor asset-pricing model is derived from recent literature on the cross-sectional variation of stock returns. 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 land mark paper of Fama and French (1992) found that beta has little or no ability in explaining cross-sectional variations in equity returns, but that variables such as size and the book-to-market value of equity do have such abilities. In a follow-up paper, Fama and French (1993) and Vuolteenaho (2002) 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[19]. The Fama and French model reads;

$$R_{it} - R_{rft} = \alpha + \beta_0 (R_{mt} - R_{rft}) + \beta_1 SMB_t + \beta_2 HML_t + \varepsilon_t \qquad (3\text{-}4)$$

$R_{it} - R_{rft}$ = 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.

In our study, the primary model of performance measurement is the Fama and French three factor model, which we will compare with the CAPM single factor model. Fama and French (1992, 1993) show that, along with a market factor, size and value (book-to-market) factors help explain both the temporal and cross-sectional variation in stock returns.

In the above models, α is the regression intercept or alpha which estimates a portfolio's exposure to risk factors. In equation (3) β measures the portfolio's exposure to a market factor CAPM. In equation (4) beta measures the portfolio's sensitivity to the market, SMB to a size factor and HML to a value factor. A positive SMB says the portfolio has net exposure to small stocks and a negative value indicates net exposure to large stocks. A positive HML indicates net exposure to value stocks and a negative value indicates net exposure to growth stocks.

3.4 The Data

This study will examine all the UK equity unit trusts from the Micropal database that existed between January 1986 and December 2001 and which were authorised for sale. The subject of a considerable number of investment performance league Tables, the Micropal provides an interesting group for comparative study whilst the large number of unit trusts and variety of investment objectives offer an

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

opportunity for reducing the impact of confounding variables. Particular difficulties in performance measurement arise from international objectives as such objectives require a suitable international benchmark portfolio to be specified for unit trusts that invest a substantial proportion of their funds overseas. This problem arises particularly in the case of performance measurement of UK unit trusts. For this reason our sample includes only those unit trusts that invest primarily in UK equities and are classified by the Investment Management Association (IMA) as UK Equity and Bond Income, UK Equity Income, UK All Companies and UK Smaller Companies. In order to qualify as 'UK', a unit trust must have at least 80 percent of its investments in the UK.

3.4-1 Exclusion of Unauthorised and Other Unit Trusts

In our study we have excluded unauthorised unit trusts because we have insufficient information to determine their investment objectives. Furthermore, we excluded all international, sector specialist, and balance and fixed income unit trusts. According to Micropal's record, their dividend data on dead unit trusts are incomplete. Since we will work with the total return data of the live UK equity unit trusts a complete set of total return data is available from 1986 which includes dividends and therefore we start our sample period from January 1986.

3.4-2 The Sample and the Sample Period

Overall, in our sample list there are 470 unit trusts which were still alive at the end of December 2001 and 276 of them which had existed for some period between January 1986 and December 2001 were dead. At the end of the 2001, the aggregate

value of the UK equity trusts we studied was £12,471 million and at the end of 2001 the entire UK unit trusts' value reached £235,796 million.

3.4-3 Survivorship Bias Free Data

We employed both the live and dead funds' monthly time series of return data for all the UK equity unit trusts covered by this study, information which is available from Micropal. Therefore, our data base is survivorship bias free. This bias afflicts nearly all commercial databases of unit trust performance, as mostly the poor performing funds do not survive to the end of the sample period and get dropped from the database even though they are investment options while they exist. The opportunity set which investors face through time is the combined universe of live and dead funds. This universe has lower returns than the set of surviving funds. Since our study is to evaluate the performance of the unit trusts, and not their investors, we use returns gross of the Advance Corporation Tax.

3.4-4 Gross Return Data

We have stated that the money returns of each equity unit trust are calculated from monthly offer prices and dividends paid by the unit trust in the month that the dividend is declared ex-dividend. The offer price of the unit trusts includes the load charge, brokerage fees and stamp duty. Therefore, our sample of the unit trusts can be viewed approximately as gross of the load charge and trading costs.

3.4-5 Selection Criterion of the UK Equity Unit Trusts

In respect of selection criteria of the unit trusts, we used the monthly Money Management Magazine of Standard & Poor's Micropal from 1986 and the Unit Trust

Year Book 1987 and all the unit trusts with UK equity objectives have been selected. Using subsequent copies of monthly Money Management Magazines and Unit Trust Year Books, newly established unit trusts were added to the sample if they had UK Equity objectives. The history of each trust was traced throughout the sample period and name changes and transfers of unit trusts were treated as a continuation of the original trust. If the unit trust was taken over and the investment objective changed to non-UK equity objectives, then the returns of the trust were taken up to that point.

3.4-6 Equally Weighted Portfolios

For conducting different tests, we formed for each month equally weighted portfolios of unit trusts, using sorting and classification rules appropriate to each test. Therefore we formed equally weighted portfolios for each month's unit trust based on the sector (sector-wise) both for live and dead unit trusts.

We have tried to make our sample survivor bias free by including each dead UK equity unit trust through the last month it reported a return. A portfolio that holds a unit trust that dies, equally weights the remaining unit trusts. This is similar to the method used by Carhart (1997). If a unit trust dies in the month following the last reported return, then the return in the month of death is omitted. Therefore our sample is free from survivorship bias.

3.4-7 Excess Return

The excess returns on unit trusts are calculated by deducting the monthly return of the unit trust with the risk-free rate (which is calculated from one month UK

T-Bill). The UK 1-month T-Bill data was downloaded from DataStream International database.

3.4-8 Benchmark Specifications

Two different benchmark specifications were used to evaluate the UK equity unit trusts. Firstly, we used the excess return FTSE All Share Price Index as the benchmark. The excess return of the FTSE All Share Price was calculated by subtracting the risk free rate. Our second benchmark was based on the findings of Fama & French (1993) which indicated that size and book to market ratio help to explain the cross-sectional patterns in US stock returns. Quigley and Sinquefield (2000) documented that similar effects exist in the UK. Fama & French's three index benchmark specifications, which include the excess stock market returns and two self-financing portfolios, capture the size and book to market effects in stock returns.

The monthly sample of total return (R_m) data of the FTSE All Share Price for the period from 1986 to 2001 was downloaded from DataStream International. We used the Fama & French three factor model (equation 3-4) to infer the UK equity unit trusts' performance evaluation for the period from 1986 to 2001. In their model, SMB stands for Small minus Big and HML stands for High minus Low (meaning high book value minus low book value). We obtained factor-mimicking portfolios of Fama-French UK factors for size (SMB) and book-to-market (HML) from Stefan Nagel of the London Business School Share Price database[20]. In order to construct the UK version of Fama-French (1993), Nagel used total return data of the FTSE All Share Price index. SMB is a size factor which is measured by the monthly returns of

[20] He has recently moved to Harvard Business School, US.

Table 3-5A: Summary Statistics of Live, Live and Dead Equity Unit Trusts, T-Bills, Market, SMB and HML, 1986-2001

	Live UK Equity Unit Trust	Live and Dead UK Equity UT	T-Bills	Market (Rm-Rf)	SMB	HML
Mean Return	1.54	1.49	0.58	0.67	-0.02	0.21
Standard Deviation	4.84	4.62	0.26	4.68	2.65	2.26
Annual Compounded Return	18.48	17.88	6.96	8.04	-0.24	2.52

Table 3-5B: Correlation of Regression Market, SMB and HML

	Market	SMB	HML
Market	1.0		
SMB	-0.31	1.0	
HML	-0.02	0.14	1.0

the Hoare Govett Smaller Companies Index (total return, ex-investment trusts) minus the FTSE All Share index total return. HML is a value (book to market) factor which is the returns of top 30% of companies ranked by book to market minus the FTSE All Share price index total return.

3.5 Empirical Results

Table 3.5A and 3.5B show the summary statistics for live gross UK equity unit trusts, live and dead UK equity unit trust, 1-month treasury bills, market (FTSE all share index), SMB and HML. For the unit trusts we calculated for each month an equally weighted average for two sets of data; (1) live gross of tax returns of all the equity unit trusts that are still in existence during the period 1986 to 2001 and (2) the live and dead gross of tax returns for all the equity unit trusts whether or not in existence during the period 1986 to 2001.

The returns of the live unit trusts and the live and dead unit trust are 18.24% and 17.88% per year respectively. According to our estimates, the survivorship bias is 0.6% per year. This is the difference between the annually compounded gross returns of the live unit trusts and the annually compounded gross returns of combined sets of live and dead unit trusts. It reveals from the results, how poorly the non-surviving unit trusts perform. In contrast, according to Carhart's (1997) estimate of survivor bias, this is 1% for US equity mutual funds, whereas it is 1.4% in Malkiel's (1995) study.

3.5.1 Sector-wise Performance

Table 3.6A and 3.6B show the results of when the UK unit trusts are arranged according to the Investment Management Association (IMA) category. In the case of live and dead (L&D), in the group-wise, equity income and small companies sectors, they exhibit the largest differences between the single factor and three factor models. In the case of equity income, it is the relatively high HML coefficient that causes the difference. In the small companies sector, the cause is the large SMB exposure of 1 in the Fama & French three factor regression. When we control for the size factor, the beta increases from 0.80 to 0.97 and the R^2 goes up from 0.681 to 0.962. The small companies unit trusts live up to their name and concentrate on small company stocks and the three-factor alphas say that in no IMA sector of unit trusts in aggregate are able to beat the market. However, the three-factor model explains almost all the variance in the returns of this unit trust and is an improvement on the Capital Asset Pricing Model (CAPM).

Table 3-6A: Summary Performance of CAPM Single Factor Regression of Sector-wise UK Equity Unit Trust, 1986-2001
(Regressions, based on monthly returns)

IMA Sector	Live /Live-Dead	Average number of Trusts	Annual Comp-ounded Retrun	Stand. Devi.	α	β	t(β-1)	Adj. R2
UK Equity and Bond	Live	86.9	17.6	12.00	0.00 (0.04)	0.80	-9.63	0.968
	L&D	115.9	17.16	11.89	-0.02 (-0.48)	0.89	-10.55	0.957
UK All Comp.	Live	82.6	17.22	12.29	-0.03 (-0.29)	0.88	-5.89	0.929
	L & D	114.9	16.46	12.11	-0.09 (-1.08)	0.91	-5.31	0.932
Equity Income	Live	56.7	18.22	12.99	0.08 (0.79)	0.85	-8.53	0.911
	L & D	82.1	17.52	12.76	0.03 (0.21)	0.84	-9.22	0.910
Smaller Comp.	Live	35.6	17.34	14.89	0.08 (0.39)	0.79	-5.95	0.667
	L & D	52.7	16.49	14.99	0.00 (0.00)	0.80	-5.69	0.681

Table 3-6B: Summary Performance of F-F Three Factor Regression of Sector-wise UK Equity Unit Trusts, 1986-2001
(Regressions based on monthly returns)

IMA Sector	Live /Live-Dead	Average number of Trusts	Annual Comp-ounded Retrun	Stand. Devi.	α	β	t(β-1)	SMB	HML	Adj. R^2
UK Equity and Bond	Live	86.9	17.6	12.00	-0.04 (-0.76)	0.92	-8.07	0.16 (11.14)	0.06 (4.16)	0.981
	L&D	115.9	17.16	11.89	-0.06 (-1.41)	0.91	-9.13	0.16 (10.50)	0.06 (4.60)	0.980
UK All Comp.	Live	82.6	17.22	12.29	-0.05 (-1.24)	0.97	-2.84	0.36 (18.49)	0.04 (1.44)	0.966
	L & D	114.9	16.46	12.11	-0.11 (-2.60)	0.98	-1.71	0.36 (20.43)	0.01 (0.44)	0.968
Equity Income	Live	56.7	18.22	12.99	-0.01 (-0.11)	0.91	-7.40	0.40 (13.40)	0.22 (8.34)	0.956
	L & D	82.1	17.52	12.76	-0.06 (0.88)	0.90	-8.44	0.40 (13.12)	0.33 (8.66)	0.951
Smaller Comp.	Live	35.6	17.34	14.89	0.00 (0.00)	0.95	-2.66	1.00 (40.11)	-0.08 (-3.23)	0.958
	L & D	52.7	16.49	14.99	-0.07 (1.29)	0.97	-1.97	1.00 (41.88)	-0.09 (-3.02)	0.962

Each month we calculated total returns of equally weight portfolios of the above categories of the UK unit trust grouped by Investment Management Association. Live fund means those surviving during 1986-2001 and Live and dead means those surviving and those not surviving through during 1986-2001

Annual Compounded Return (ACR), Standard deviation is annual of each portfolio. Alpha is expressed as per cent excess return per month. R^2 are adjusted for degree of freedom.

We test the t-statistics of β-1 to measure to see how reliably β differs from 1

3.5-2 Performance of the Trusts Ranked by SMB and HML Exposure

There is a common claim that markets for small stocks are less efficient than those for large stocks. This proposition is tested directly by comparing the performance of small company unit trusts to that of large company unit trusts. We then make the same comparison for the value and growth unit trusts.

We form the portfolios based on prior SMB exposure, in order to investigate the small stock argument. We rank all unit trusts each year based on their SMB exposure over the prior three year period. If a unit trust starts within the three year period, we include it if it has at least 30 months worth of returns. Based on these rankings, ten equally weighted portfolios were formed and each portfolio contained the same number of unit trusts. We held the ten portfolios for one year and then reformed them at the start of the next year. This produced a time series of portfolios of unit trusts. The top SMB portfolio will always contain the unit trust with the highest SMB exposure over the preceding 3-year period and the lowest SMB portfolio will always contain the unit trusts with the lowest SMB exposure over the preceding three year period. If a unit trust in a portfolio drops out of the database over the following year, we include its return through the last month it reports. The return of the portfolio in the next month is equally weighted on the average of the remaining unit trusts. We used the data from the 1983 to 1985 period, and since we needed three years to generate the first rank, our series started in January 1986.

Table 3-7A: Portfolio of Unit Trust (live and dead) from 1986 to 2001 based on prior three-years three factor model SMB loading in CAPM Single Factor Regression
(Regressions are based on monthly returns)

SMB decile	Average number of Trusts	Annual Comp-ounded Retrun	Stand. Devi.	α	β	t(β-1)	Adj. R^2
High	30	15.38	15.55	-0.07 (-0.47)	0.08	-5.52	0.678
2	30.2	15.56	14.38	-0.08 (0.56)	0.81	-6.28	0.749
3	31.1	16.39	13.11	-0.06 (-0.46)	0.84	-6.75	0.843
4	31	16.41	12.11	-0.07 (-0.68)	0.85	-7.97	0.889
5	30.6	17.7	12.09	0.03 (0.32)	0.88	-7.68	0.922
6	30.2	16.99	12.06	-0.03 (-0.62)	0.90	-6.78	0.933
7	31	17.10	12.22	-0.04 (-0.75)	0.92	-7.06	0.946
8	31.1	17.18	12.32	-0.03 (-0.71)	0.92	-7.46	0.958
9	30.7	16.16	12.10	-0.11 (-2.66)	0.94	-6.39	0.969
Low	31.2	17.01	11.88	-0.05 (-1.35)	0.93	-7.29	0.971

Table 3-7B : Portfolio of Unit Trust (live and dead) from 1986 to 2001 based on prior three-years three factor model SMB loading in F-F Three Factor Regression
(Regressions, based on monthly returns)

SMB decile	Average Number of Trusts	Annual Comp-ounded Retrun	Stand. Devi.	α	β	t(β-1)	SMB	HML	Adj. R2
High	30	15.38	15.55	-0.16 (-2.38)	0.97	-1.58	0.95 (34.77)	0.00 (0.09)	0.948
2	30.2	15.56	14.38	-0.17 (-3.11)	0.96	-3.59	0.84 (40.21)	0.00 (-0.01)	0.951
3	31.1	16.39	13.11	-0.13 (-2.18)	0.95	-4.18	0.57 (26.33)	0.08 (3.77)	0.951
4	31	16.41	12.11	-0.13 (-2.44)	0.93	-6.28	0.04 (21.77)	0.14 (5.32)	0.966
5	30.6	17.7	12.09	-0.05 (-0.66)	0.94	-5.54	0.03 (14.72)	0.12 (4.85)	0.961
6	30.2	16.99	12.06	-0.08 (-1.72)	0.95	-4.49	0.27 (12.33)	0.08 (4.03)	0.969
7	31	17.10	12.22	0.07 (-1.82)	0.95	-4.57	0.18 (10.55)	0.20 (5.10)	0.973
8	31.1	17.18	12.32	0.06 (-1.70)	0.95	-5.67	0.14 (8.16)	0.08 (5.01)	0.978
9	30.7	16.16	12.10	-0.12 (-3.12)	0.96	-4.56	0.09 (4.68)	0.05 (1.79)	0.976
Low	31.2	17.01	11.88	-0.08 (-1.34)	0.94	-6.38	0.04 (1.58)	0.02 (0.57)	0.973

We rank unit trusts samples each year based on their three-factor SMB exposure over the prior three-year period. If a unit trust starts within the three year period, it is included if it has at least 30 months of returns. We form ten portfolios based on these rankings with the same number of unit trusts in each portfolio. Ten portfolios are held for one year and then reformed each year. A monthly total return series is estimated for each portfolio by calculating each month the average post tax-return of live and dead unit trusts.

In order to compare and evaluate the ten SMB portfolios, we used the three factor F-F model. The results are shown in Table 3-7B and a comparison of results with a single factor CAPM are shown in Table 3-7A. The degree of SMB exposure of these portfolios is in exactly the same order as the pre-formation ordering. The portfolio of the unit trusts with the highest prior three year SMB exposure produces the highest post-formation SMB exposure of 0.95 and the portfolio of the unit trusts produces the lowest post-formation SMB exposure of 0.03. The relative exposure to SMB over the three year period was a strong predictor of relative exposure in the following year and there is a widespread of SMB exposure among the unit trusts. The Fama-French (F-F) factor of excess returns (alphas) of these portfolios shows us how well they perform (value) and the risks they assume but the small company portfolio have excess returns (alpha) that are reliably negative.

A similar analysis is done to see how the 'value' managers perform. We ranked all the unit trusts for each year based on their HML exposure over the prior three year period and then we formed ten portfolios in exactly the same way as we did for the SMB ranking. Hence the top HML portfolios contained the unit trusts with the highest HML exposure over the preceding three year period and the lowest HML portfolio will always contain the unit trusts with the lowest HML exposure over the preceding three year period. The results are shown in Tables 3-8A and 3-8B. The Fama-French three factor model results show that there is some persistence in the relative exposure to HML in these portfolios but it is weak with a spread of only 0.22 between the highest and lowest HML portfolios. This suggests that there are few UK

Table 3-8A: Portfolio of Unit Trust (live and dead) from 1986 to 2001 based on prior three-years three factor model HML loading in CAPM single factor Regression
(Regressions, based on monthly returns)

HML decile	Average number of Trusts	Annual Comp-ounded Retrun	Stand. Devi.	α	β	t(β-1)	Adj. R^2
High	30.7	17.16	12.44	0.00 (0.03)	0.84	-7.41	0.871
2	31	17.17	12.49	-0.03 (-0.28)	0.87	-7.31	0.911
3	31	16.89	12.38	-0.06 (-0.79)	0.88	-7.12	0.923
4	30.7	16.99	12.28	-0.05 (-0.56)	0.89	-7.28	0.932
5	31.1	16.92	12.36	-0.06 (-0.88)	0.89	-8.29	0.934
6	31.1	17.03	12.06	-0.04 (-0.45)	0.88	-7.82	0.923
7	31.2	16.33	11.66	-0.08 (-1.32)	0.90	-6.85	0.931
8	31.2	16.08	12.01	-0.12 (-1.43)	0.90	-6.32	0.921
9	30.5	15.89	12.11	-0.12 (-1.09)	0.88	-6.17	0.889
Low	31	15.99	12.67	-0.05 (-0.39)	0.84	-6.48	0.833

Table 3-8B: Portfolio of Unit Trust (live and dead) from 1986 to 2001 based on prior three-years three factor model HML loading in F-F three factor Regression (Regressions are based on monthly returns)

HML decile	Average Number of Trusts	Annual Comp-ounded Retrun	Stand. Devi.	α	β	t(β-1)	SMB	HML	Adj. R^2
High	30.7	17.16	12.44	-0.07 (-1.24)	0.92	-5.53	0.39 (17.44)	0.22 (7.11)	0.949
2	31	17.17	12.49	-0.07 (-1.28)	0.93	-5.06	0.31 (13.54)	0.15 (5.59)	0.955
3	31	16.89	12.38	-0.13 (-2.41)	0.94	-5.01	0.32 (17.05)	0.14 (6.11)	0.961
4	30.7	16.99	12.28	-0.08 (-1.89)	0.95	-5.11	0.29 (15.62)	0.10 (4.41)	0.963
5	31.1	16.92	12.36	-0.09 (-2.10)	0.94	-6.12	0.25 (14.45)	0.07 (3.39)	0.971
6	31.1	17.03	12.06	-0.08 (-1.77)	0.95	-5.89	0.36 (21.55)	0.04 (1.66)	0.978
7	31.2	16.33	11.66	-0.12 (-2.91)	0.96	-4.46	0.32 (18.12)	0.03 (2.21)	0.969
8	31.2	16.08	12.01	-0.13 (-2.92)	0.97	-3.15	0.37 (19.31)	0.00 (-0.18)	0.963
9	30.5	15.89	12.11	-0.13 (-2.81)	0.97	-2.89	0.44 (23.12)	-0.04 (-1.11)	0.961
Low	31	15.99	12.67	-0.11 (-1.72)	0.96	-3.83	0.59 (26.66)	0.00 (-0.06)	0.959

Each year we rank our sample of all unit trusts based on three-factor HML exposure over the prior three-year period.

unit trusts that have a consistently high exposure to value stocks or a consistently high exposure to growth stocks.

According to the Tables 3-7B and 3-8B, there is some inadvertent connection between the unconditional shorts on SMB and HML. The highest and lowest SMB portfolios have the lowest HMLs and the highest and lowest HML portfolios have the highest SMBs. In order to control for the interaction effects, we performed a joint sort. Starting with each year, we sorted the unit trusts on their prior three year SMB exposure into three equal groups. Within each SMB group, we sorted them on their HML exposure into three sub-groups by creating nine SMB/HML portfolios. We calculated the returns for these portfolios in the same way as before by reforming portfolios each year. The result of such analysis is been shown in Tables 3-9A and 3-9B. The portfolios in each SMB group in Tables 3-9A and 3-9B almost have the same SMB exposure. Within each SMB group, the spread in HML exposure is almost similar but about 66% of what it was in the unconditional HML sort. As per the evidence, there is a bit of a performance pattern in that the small-company unit trusts have significantly negative alphas in all three HML subgroups. If there are inefficient small-company UK stocks, the unit trust managers, according to our results, do not exploit them. In the remaining two SMB groups, three of six alphas are reliably negative. In his study, Davis (1999) performs a similar analysis of US mutual funds and finds that there is no evidence of outerperformance in any style or sector-wise group of mutual funds.

Table3- 9A: Portfolio of Unit Trust (live and dead) from 1986 to 2001 based on prior three-years three factor model SMB and HML loading in CAPM single factor
(Regressions, based on monthly returns)

SMB tritile	HML tritile	Average number of Trusts	Annual Comp-ounded Retrun	Stand. Devi.	α	β	t(β-1)	Adj. R^2
High	High	34.2	15.95	14.11	-0.07 (-0.54)	0.83	-6.53	0.791
	Med	34.5	15.36	13.63	-0.10 (-0.81)	0.83	-6.60	0.795
	Low	34.4	15.99	14.01	-0.05 (-0.37)	0.83	-5.91	0.753
Med	High	34.5	17.12	12.95	-0.04 (-0.36)	0.89	-7.26	0.927
	Med	34.4	18.10	11.80	0.05 (0.66)	0.88	-8.23	0.944
	Low	34.4	16.35	11.96	-0.08 (-1.23)	0.92	-6.13	0.941
Low	High	34.6	17.45	12.33	-0.02 (-0.25)	0.92	-7.87	0.950
	Med	34.4	16.89	11.89	-0.06 (-1.62)	0.95	-7.33	0.970
	Low	35.5	16.20	12.01	-0.13 (-2.73)	0.96	-5.83	0.969

Table 3-9B: Portfolio of Unit Trust (live and dead) from 1986 to 2001 based on prior three-years three factor model SMB and HML loading in F-F three factor (Regressions, based on monthly returns)

SMB tritile	HML tritile	Average number of Trusts	Annual Comp-ounded Retrun	Stand. Devi.	α	β	t(β-1)	SMB	HML	Adj. R
High	High	34.2	15.95	14.11	-0.16 (-2.36)*	0.96	-3.68	0.68 (27.30)	0.20 (3.56)	0.949
	Med	34.5	15.36	13.63	-0.19 (-3.39)***	0.96	-4.18	0.74 (34.99)	0.03 (0.84)	0.958
	Low	34.4	15.99	14.01	-0.14 (-2.20)*	0.98	-2.39	0.82 (34.72)	-0.03 (-0.39)	0.951
Med	High	34.5	17.12	12.95	-0.08 (-1.62)*	0.95	-5.28	0.29 (12.88)	0.18 (7.28)	0.965
	Med	34.4	18.10	11.80	0.00 (-0.03)	0.94	-6.74	0.28 (13.67)	0.10 (4.83)	0.973
	Low	34.4	16.35	11.96	-0.14 (-2.45)*	0.97	-3.26	0.32 (14.11)	0.05 (1.99)	0.965
Low	High	34.6	17.45	12.33	-0.06 (-1.06)	0.93	-6.25	0.12 (6.23)	0.14 (5.62)	0.970
	Med	34.4	16.89	11.89	-0.08 (-2.15)*	0.95	-5.70	0.08 (4.38)	0.06 (2.83)	0.981
	Low	35.5	16.20	12.01	-0.11 (-2.92)**	0.96	-4.28	0.08 (3.88)	0.00 (-0.24)	0.978

We rank all unit trusts each year based on their three-factor SMB exposure over the prior three-years period. If a unit trust starts within the three-years period, it is included if it has at least 30 months of return. Based on these rankings, we form three groups with the same number of unit trusts in each group. Within each group we rank all unit trusts according to their HML exposure over the same three-years period and then form three HML based portfolios with each containing the same number of unit trusts. This produces nine SMB/HML portfolios. We hold them for one year and then repeat the formation process. A monthly total return series is estimated for each portfolio by calculating each month the average return of the live and dead unit trusts.

3.5-3 Performance Persistence

In respect of analysis of performance persistence, the raw return may be observed. We formed ten portfolios of unit trusts each year based on the rank of their total returns over the previous year. The results are shown in Tables 3-10A and 3-10B. It seems that there is a market persistence in returns over a one year period. The spread in annual performance between the best and worst one year return portfolios is 3.52%. These results might suggest a market failure and thus an easy beat-the-market strategy. However, this result happens for the following two causes;

(1) The turnover from the strategy is over 80% per year. The average bid/ offer spread is 5%. Therefore together these two would wipe out all gains even if the pattern in Tables 3-10A and 3-10B repeats itself perfectly.

(2) The F-F three factor alphas of the top two portfolios, while positive, are not statistically significant. The three-factor regressions distinguish between performance due to market, size and also risk factors and that due to the manager's ability to generate returns above those, he or she will get for simple risk bearing. The returns that result from risk bearing are in principle available from structured or index-like portfolios. The F-F three factor alphas imply that even the best of the funds did not earn returns above three kinds of strategies. In contrast, the negative alphas of the bottom four portfolios are all significant at the 5% level.

This results of the study are similar to results of the studies of the samples of US mutual funds done by Carhart (1997) and Malkiel (1995), which show that poor performance persists but good performance does not.

Table 3-10A: Portfolio of Unit Trust (live and dead) from 1986 to 2001 based on prior one-year return single factor CAPM Model (Regressions, on monthly returns)

PR1YR decile	Average number of Trusts	Turn-over	Annual Comp-ounded Retrun	Stand. Devi.	α	β	t(β-1)	Adj. R^2
High	35.5	82.5	18.56	11.54	0.09 (0.59)	0.91	-3.73	0.835
2	35.4	88.0	18.05	11.46	0.05 (0.42)	0.88	-5.92	0.892
3	35.8	87.6	17.52	11.51	-0.02 (-0.12)	0.90	-6.22	0.932
4	35.4	87.6	17.51	11.53	-0.03 (-0.26)	0.91	-6.05	0.938
5	35.3	87.1	17.62	11.51	-0.02 (-0.16)	0.91	-5.83	0.937
6	35.3	90.5	17.61	11.53	-0.02 (-0.17)	0.92	-6.15	0.936
7	34.8	88.1	17.78	11.90	-0.08 (-0.99)	0.89	-5.38	0.933
8	35.1	89.2	17.49	12.55	-0.09 (-0.97)	0.89	-6.31	0.931
9	35.7	89.1	15.29	12.52	-0.18 (-1.59)	0.89	-5.42	0.895
Low	34.4	82.6	15.04	14.91	-0.19 (-1.32)	0.88	-4.72	0.865

Table 3-10B: Portfolio of Unit Trust (live and dead) from 1986 to 2001 based on prior one-year return three factor F-F Model (Regressions based on monthly returns)

PR1YR decile	Average number of Trusts	Turn-over	Annual Comp-ounded Retrun	Stand. Devi.	α	β	t(β-1)	SMB	HML	Adj. R
High	35.5	82.5	18.56	11.54	0.08 (0.86)	0.99	-0.71	0.59 (20.05)	-0.03 (-0.56)	0.945
2	35.4	88.0	18.05	11.46	0.03 (0.33)	0.94	-9.41	0.46 (18.55)	0.05 (1.47)	0.960
3	35.8	87.6	17.52	11.51	-0.05 (-0.77)	0.95	-4.95	0.33 (16.37)	0.08 (3.19)	0.972
4	35.4	87.6	17.51	11.53	-0.06 (-0.94)	0.95	-4.61	0.29 (14.99)	0.07 (2.91)	0.974
5	35.3	87.1	17.62	11.51	-0.06 (-0.95)	0.95	-4.55	0.27 (13.87)	0.12 (4.91)	0.972
6	35.3	90.5	17.61	11.53	-0.06 (-0.98)	0.94	-4.97	0.27 (12.99)	0.12 (4.65)	0.971
7	34.8	88.1	17.78	11.90	-0.13 (-2.29)	0.96	-3.76	0.30 (15.88)	0.11 (4.81)	0.974
8	35.1	89.2	17.49	12.55	-0.14 (-2.05)	0.94	-5.02	0.34 (14.87)	0.09 (3.14)	0.965
9	35.7	89.1	15.29	12.52	-0.19 (-2.77)	0.95	-3.67	0.45 (16.41)	0.04 (0.95)	0.954
Low	34.4	82.6	15.04	14.91	-0.21 (-2.58)	0.96	-2.39	0.55 (17.80)	0.07 (1.78)	0.940

We examine persistence in risk-adjusted performance. As in earlier processes, we sorted the unit trusts on three year Fama-French (F-F) three factor alphas (PR3YA), then formed portfolios and computed returns over the next 12 months. The process was then repeated each December. The three year period was from 1983 to 1985 and therefore, the monthly time series ran from 1986 to 2001. The results are shown in Tables 3-11A and 3-11B and similar to those in Tables 3-10A and 3-10B which shows a clear persistence in both absolute and risk-adjusted returns over a one year period. The spread in annual compounded returns between the top and bottom PR3YA portfolios is 2.97% and the spread in three-factor model alphas for these portfolios is 0.19% per month. Furthermore, as in Table 3-10B, only the top two PR3YA portfolios have positive F-F three factor model alphas. The largest alpha for the highest prior alpha portfolio is only 5 basis points, 0.58 t-ratios, above zero. The other eight PR3YA portfolios have negative three-factor alphas but among the three lowest portfolios, one is significant at 10% level and the remaining two are significant at a level of 5%.

From the above results, we have some evidence of positive as well as negative persistence, both occur in the high SMB group. There is not need to explain the negative persistence. In defence of market efficiency, the observed poor persistence, even if it continues, is not exploitable. The bid/ offer spreads of the unit trusts are almost three times as large as the alphas in year one. Therefore, from a practical view point it is intriguing. One explanation may be that of Carhart (1997) who shows that the persistence of US mutual funds occurs because of persistence in the underlying

Table 3-11A: Portfolio of Unit Trust (live and dead) from 1986 to 2001 based on prior three-years return single factor CAPM model alpha (Regressions, based on monthly returns)

PR3YR decile	Average number of Trusts	Turn-over	Annual Comp-ounded Retrun	Stand. Devi.	α	β	t(β-1)	Adj. R^2
High	31.3	52	17.83	17.77	0.05 (0.35)	0.85	-5.52	0.835
2	31.3	74	17.83	12.61	0.04 (0.34)	0.86	-7.11	0.910
3	31.5	80	17.30	12.48	-0.03 (-0.31)	0.88	-6.31	0.932
4	31.1	86	17.34	12.95	-0.05 (-0.52)	0.91	-5.25	0.949
5	30.0	86	17.46	12.66	-0.04 (-0.38)	0.91	-5.47	0.951
6	31.2	84	17.72	12.95	0.02 (-0.11)	0.92	-5.82	0.951
7	30.8	86	17.17	12.91	-0.05 (-0.56)	0.90	-5.43	0.940
8	31.1	80	16.98	12.08	-0.06 (--0.67)	0.90	-5.38	0.931
9	30.2	77	16.32	13.26	-0.12 (-1.05)	0.90	-4.75	0.913
Low	30.3	53	14.86	13.84	-0.19 (-1.58)	0.88	-5.21	0.866

Table 3-11B: Portfolio of Unit Trust (live and dead) from 1986 to 2001 based on prior three-years return three factor F-F model alpha (Regressions based on monthly returns)

PR3YR decile	Average number of Trusts	Turn-over	Annual Comp-ounded Retrun	Stand. Devi.	α	β	t(β-1)	SMB	HML	Adj. R
High	31.3	52	17.83	17.77	0.05	0.96	-4.04	0.63	-0.04	0.966
					(0.58)			(26.92)	(-0.95)	
2	31.3	74	17.83	12.61	0.02	0.94	-6.56	0.42	0.03	0.974
					(0.21)			(20.92)	(1.05)	
3	31.5	80	17.30	12.48	-0.05	0.95	-5.07	0.34	0.07	0.975
					(-1.03)			(16.84)	(2.75)	
4	31.1	86	17.34	12.95	-0.08	0.96	-3.56	0.29	0.08	0.979
					(-1.42)			(15.45)	(3.48)	
5	30.0	86	17.46	12.66	-0.06	0.96	-3.78	0.28	0.06	0.981
					(-1.14)			(15.98)	(2.58)	
6	31.2	84	17.72	12.95	-0.05	0.96	-4.42	0.27	0.07	0.980
					(-0.84)			(15.10)	(3.66)	
7	30.8	86	17.17	12.91	-0.09	0.96	-3.78	0.31	0.08	0.974
					(-1.52)			(14.22)	(3.84)	
8	31.1	80	16.98	12.08	-0.11	0.96	-3.89	0.34	0.13	0.976
					(-1.97)			(16.77)	(5.22)	
9	30.2	77	16.32	13.26	-0.15	0.96	-2.80	0.36	0.10	0.966
					(-2.27)			(16.11)	(3.36)	
Low	30.3	53	14.86	13.84	-0.24	0.96	-3.51	0.52	0.11	0.961
					(-3.52)			(20.48)	(3.42)	

We rank all unit trusts of our sample each year based on their three-factor alpha over the prior three-year period.

stocks they buy. He also finds that when managers try to exploit this persistence effect by buying the previous year's winner stocks, they fail to generate higher absolute returns than managers who do not. Further research is needed to determine whether this explanation applies to UK unit trusts.

3.6 Summary and Conclusion

This empirical chapter has focused on the performance evaluation of UK equity unit trusts to test; (1) that the managers of the unit trusts can out perform the market; (2) that the small stocks of unit trusts are less efficient than those of large stocks of unit trusts and (3) that the performance persistence of the UK equity unit trusts. Our sample consists of the Micropal database, covering monthly data from 1986 to 2001, which largely controlled for survivorship bias. The number of unit trusts is reported in this chapter on the live funds, live and dead funds and the whole sample whilst the spread of the survivorship bias was argued based on the gross returns of the funds. The examination of the UK unit trusts' performance reported that UK fund managers are unable to outperform once we have taken into account their exposure to market, value and risk. This study is analogous to most studies of US fund managers. Furthermore, in contrast to the notion that small company shares offer abundant 'beat the market' opportunism, we find that small company unit trusts are the worst performers.In this study, we employed the Fama-French three factor model to study the behaviour of the UK markets. For the UK market, the F-F three factor model has better explanatory power than the single factor CAPM model, especially for the unit trusts that invest heavily in small companies. In respect of performance persistence, in our study we find only poor persistence performance. As others found for US mutual funds, we found the same for those in the UK.

Chapter 4

Performance Evaluation of Ethical Unit Trusts

Part-1

On the Perspective of the Ethical Funds in the UK: A Tool For Promoting Ethics in Finance

4.1 Introduction: Conceptual Framework of Ethics, Business and Financial Ethics

...ethical elements enter in some measure into every contract and without them, no market could function. There is an element of trust in every transaction..... It is not adequate to argue that there are enforcement mechanisms, such as police and the courts; these are themselves services bought and sold and it has to be asked why they will in fact do what they have contracted to do (Arrow, 1973)

The concepts of ethics are represented by the words 'good' and 'ought' (Harvey, 1994). With 'good,' a distinction can be made between good as a means and good as an end. It is people who impose a standard upon nature and who in this way introduce morals into the natural world, in spite of the fact that people themselves are part of this world (Popper, 1966). It is known that most writing on ethics concentrates on the issues confronting the individual and then on the organisation of society. In 'A Short History of Ethics", MacIntyre (1966) states that ethics is essentially concerned with the distinction between what it is expedient for an individual to do and what it would be morally right to do. This distinction is illustrated with examples from

Ancient Greece by contrasting the pragmatic concept of 'good' in the simple tribal situation (described by Homer, where it reflects the pragmatic behaviour expected of a tribal chief) and the abstract concept of 'the good' as an ideal removed from human contact as explained, albeit differently, by Plato and Aristotle[21].

In "The Open Society and it Enemies", Popper (1966) states that so called 'open society' is contrasted with the 'tribal society' where the conduct of human beings is circumscribed by superstition and a belief in magic. In the present world an open society recognises the difference between nature and convention and accepts that laws governing society, unlike natural laws, are made by humans. The conventional laws are based on moral decisions that reflect the reaction of individuals or governments to facts, whether of the natural world or of social life. Most of the reactions are generally reflected in religious beliefs[22]. It is observed that in our society, the way in which our lives are directed forms a part of the prescription made by religion. MacIntyre (1966) states that the adaptability of the Judaeo-Christian tradition can be found in many different forms of societies and government.[23] One can also identify aspects of this in the Islamic code of ethics, for example: "be honest and truthful, keep your word, do not lead a life of extravagance, use mutual consultation in business affairs, do not deal in fraud, do not bribe or deal justly."(Beckun,1996, page 32).

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[21] This arguments drawn from the excellent reviewed by Robert Taylor "Putting Ethics into Investment," Business Ethics: A European Review, Vol. 10, Issue 1, 2001, pp.53

[22] Reference of Propper(1996) discussion were drawn from Robert Taylor's "Putting Ethics into Investment," Business Ethics: A European Review, Vol. 10, Issue 1, 2001, pp.54

[23] MacIntyre, A (1966), "A Short History of Ethics," Ch 9 , P111, London: Routledge and Kegan Paul

Deontological theories emphasise the goals that motivate human actions. Kant (1785) states that the good deeds are all that matters and one's action should be judged by the underlying intentions. He further states that a person's intentions are probably unknown to an external observer. The predominance of these maxims suggests that individuals should follow duty based universal rules like the Golden Rules: 'Do unto others as you would have them do unto you' (Kant, 1785; p. 29).

The virtue of ethics places much emphasis on character; it acknowledges that outcomes and actions cannot be dissociated from the actor. As argued by Aristotle in his 'Nicomanchean Ethics' (Jonathan, 1991)[24], virtuous people can take only good actions, so ethics is primarily about defining virtues. Virtue is that trait of character that allows the person to provide the appropriate response in a given context. In the Ancient Greek context, Aristotle listed some 12 virtues, including courage, temperance, right ambition, and modesty (Jonathan, 1991). The most important of these, high-mindedness, can be understood as a kind of self-respect. Philosophers' interest in Aristotle's view on ethics is rather recent, and spherical credit should be assigned to the work of Anscombe (1958), who points out that the quest of both utilitarian and deontological theorists for universal rules of action might be void, since no rule can be consistent with the huge variety of real life situations. Several scholars argue that virtue ethics might provide the most suitable channel for anglicising ethical issues pertaining to business situations, as it is able to strike a subtle balance between determinism and human character (Solomon, 1992; Koehn 1995, Murphy, 1999).

[24] Aristotle(1991) in B. Jonathan(ed), 'Nicomanchean Ethics', New York: Pantheon.

Dobson (1993) remarked, "ethics is concerned with the motivations for human behaviour. It is a fundamental motivation and cannot be diluted into a constraint on achieving some other objective. Whether or not a given individual is ethical cannot be determined by observing his/her actions, but only by observing his/her motivations for those actions. An individual who acts in a trustworthy manner but does so because this action supports an underlying objective of material gain is not an ethical individual."(p.57).

The structure of society changed in modern times but ethical concepts and categories have not changed. Many ethical concepts are still based on the conditions of the zero-sum games of the pre-moderns. Most conceptions of ethics still require us to be moderate, to share, to redistribute, to sacrifice. This is evidenced in the call for altruism, for the priority of common good and the like. The pursuit of self-interest and individual advantages is often seen as something akin to an evil drive that needs to be termed. Human beings are weak and cannot tame themselves because of the demands of the competitive market. Thus the state is regarded as the right institution to enforce morality by taming the market.

Furthermore, Dobson (1993) discusses elaborately about the role of ethics in the financial community. He states that contemporary financial economists observed "ethics" in the context of the objective of 'wealth minimisation' which means an investor would get less return if they follow the ethical values in their investment objectives. In this matter, some economists further think that ethics function primarily as a constraint on behaviour. But this view is both illogical and ambiguous. It is illogical because it may actually sanction unethical behaviour if such behaviour can

be shown to lead to material gain. It is ambiguous because throughout the history of moral philosophy ethics has generally been viewed as a behavioural motivation, not as a constraint. If a conception of ethics as the fundamental objective in all human endeavours is disseminated in the financial community, there is real hope that ethics will be accepted as both logically consistent and desirable.

Mitchell, Puxty and Sikka (1994) consider that ethical statements have actually acted to protect the accounting professions from sustained scrutiny. Far from providing a substantial and robust method of realising the ideals of independence and integrity, the ethical aspects are little more than a smokescreen from the pursuit and protection of sectional interests. Consistently, Neimark (1995) suggests that the periodic identification and punishment of individuals and businesses whose actions have edged past the boundaries of acceptable business conduct, actually allows the official discourse of business ethics to reassure that the system is working and that honesty balances rapaciously.

Concerning the ethical function to co-ordinate and achieve the co-operation of corporate members, Neimark (1995) argues that the official discourse of business ethics by business executives and political leaders is invariably aimed at representing a positive affirmation of the processes of the system, rather than any genuine criticism of its activities. Neimark (1995) says, "It is a distraction and a means of defeating the cynicism and dissonance created by the growing tension between capitalism's growth and the broader visions we have for society"(p.82). In this way, the ethics of the system are never challenged. Lovell (1995) agrees with this sentiment and argues further that while ethical codes are part of the moral atmosphere, in many respects

they are also a defensive strategy, necessary to assuage public fears. Thus, the official discourse acts to deflect attention from the culpability of capitalism itself and to deflect attention from contradictions and tensions. It would otherwise translate into social conflict and change by reducing the matter of business ethics to cases of individual corruption. The morality in this way portrayed is that honesty actually works.

The main aim of this study is to focus on the importance of the establishment of the UK ethical funds in general and the UK ethical unit trusts in particular, to analyse the criteria of choosing stocks and reflecting on the decisions of both investors and fund managers. The layout of Part –I of this study is as follows:

In section 4.2-1, we will give a brief historical background of the ethical investment together with the antecedents to the ethical investment and issues of ethical funds. Section 4.2-2, discuses the growth of the UK ethical funds. Section 4.2-3 examines the investor's attitude to ethically sensitive issues. Section 4.2-4 discusses the active engagement of investors and focuses on the dimensions of investor behaviour. Section 4.2-5 discusses the investor's moral responsibility based on the traditional theory of responsibility within the framework of co-operation. This is followed by an overview of the solutions offered by the ethical funds and main problems that arise in promoting and managing the ethical funds.

4.2 Historical Background of Ethical Investment

4.2-1 Ethical Investment- A Brief History

Some philanthropic and reforming capitalists in the 19th century, mostly influenced by their religious beliefs, wanted to ensure that the people and employees of the companies had better working conditions, good accommodation and education (Taylor, 2001). The roots of ethical investing or socially responsible investing (SRI) can be traced to the Quakers during the seventeenth century. Among their values was a refusal to profit from war or slave trading (Kinder, Lydenberg, and Domini,1993). The Quakers avoided involvement in slave sales and weapons for reasons of faith convictions. Until the 1960s, the heart of ethical investing continued to avoid companies viewed to be engaging in irresponsible behaviors. The intentional exclusion or screening of company stocks remains one of the foremost practices in the ethical investing movement at present time. Then, in 1970, in one of the most widely discussed articles in the social responsibility literature, Milton Friedman (1970) presented the argument that the only ethical responsibility of a business is to increase profits for shareholders. This position has been a lightening rod for much of the debate regarding not only the role but also the very definition of an ethical company. Friedman's position stands in stark contrast to that of industrialist Mohn (1996), who writes, "management's objectives are no longer confined to maximizing profits, but will aim at optimal efficiency in the interest of society" (p. xiv).

Complementing Mohn's statement on the need for companies to be responsible to society is the growing belief that individual investors seek the same balance. While

the corporation seeks a double bottom line of profitability and social change, the investor seeks financial returns and a social dividend. Domini (1997) writes that the advocates of the socially responsible investor (SRI) or ethical investor see it as a "means of returning corporations to their original purpose whereby financial markets serve economic needs" (p. 19). Furthermore, Adamson (1997) says that "The return of our investments is much and much more than a total sum of dollars. It is an expression of our character and integrity" (p. 1).

Over the past 30 years, almost all research measuring the financial effects of the avoidance/divestment facet of ethical investment has used five traditional social screens: alcohol, tobacco, gambling, military, and nuclear power. In the 1990s, we observe the emergence of a new set of more conservative concerns about companies profiting from abortion/contraceptives, pornography, and offensive entertainment of a gratuitous sexual or violent nature. The year 1991 is notable for Pope John Paul II's renewal of emphasis on social and economic issues in Centesimus Annus, preceding his encyclical on abortion/contraceptives and pornography titled Evangelium Vitae (SIF, 1991). The Social Investment Forum's(1997) "Trends Report" notes that half of all ethically screened assets avoid investments in abortion/contraceptives companies. A case study on Socially Responsible Investment (SRI) in 1997 which speaks out against social injustices like poverty and conservatively disapproves of abortion and contraceptives(SRI, 1997). As the richest not-for-profit organization in the world, the Roman Catholic Church also has the opportunity to exercise these principles in managing funds of Catholic foundations, universities, pension and insurance groups, hospitals, archdioceses, and its affiliated charitable organizations.

Issues like the environment, civil rights and nuclear energy served to increase the social awareness of investors. Accordingly, mutual funds/unit trusts were set up which met the demand for incorporating ethical criteria in the investment process. This led to a dramatic increase in ethically managed unit trust/mutual fund assets, an industry which now represents $153 billion in the United States and approximately £1.3 billion million in UK as at the end of 2002 (Unit Trust Yearbook, 2003). In the case of US, if it includes all US private and institutional ethically screened portfolios, then this number tops the $ 2 trillion mark at the end of 2000 (Trend Reports: Social Investment Forum, 2001).

(1) Ethical Issues

The dominant characteristics of the ethical investors highlight the controversial nature of the field. Therefore, the ethical or socially responsible investors (SRI,1995);

1. Believe that the private sector is a critical vehicle for accomplishing social objectives through positive or negative reinforcement;
2. Are advocates for social change; and
3. Are willing to put their money where their heart is, but still demand no less of a financial return (or not significantly less) than they might get with traditional investment vehicles.

The first characteristic highlights the critical marketplace factor of need. Is the ethical or SRI a product in search of a market? The evidence seems to clearly say that ethical investment taps into a significant segment of the investor market. One of the early criticisms of ethical investment was that it was a one-horse operation--South Africa. When apartheid was ended in 1993, it was predicted socially responsible investment (SRI) would disappear. It has not. Research conducted by the Social Investment Forum finds that 78% of private money managers continued some form of SRI after apartheid was dismantled (SRI, 1995).

The second characteristic speaks to the issue of credibility. Although ethical concerns continue to grow in terms of both level and intensity, the question remains whether the screening criteria and the methodology used to evaluate businesses are reliable and valid.

The issues around the development and application of ethical screens are substantial. First is the question of the categories themselves, and whether they are the 'right' ones to define an ethically responsible company. It is true that defining ethical responsibility is too ambiguous. Nuclear power or gambling may be perceived as wrong by some, but ethically responsible by others. In other words, categories are too subjective (Vrana, 1997). Entine (1996) makes the case that screens are really a mere reflection of the ethical values of a particular group than measures of responsible or ethical behavior. Thus the focus should shift away from ideological issues like animal testing and embrace more fundamental issues such as job creation, benefits, or safety. The second issue is the measurement criterion. For example, exclusionary screens

might seem clear cut and easy to apply. If companies that manufacture cigarettes are to be excluded from an investment portfolio then it would seem easy enough to exclude Philip Morris. But what about companies that supply Philip Morris with components such as paper? Maybe those companies have stellar records as socially responsible companies.

Clearly the judgment requires a more complex answer than a simple yes or no. Entine (1995) raises the issues of military weapons production and animal testing as examples of this complexity. Can military production always be unethical, given events such as World War II and the Holocaust or the more recent conflict with Afghanistan? His contention is that rather than the simplistic yes/no screen, the more credible approach is one that evaluates the kind and type of military activity and its relationship to the reality of hope for peace.

Testing of Animal raises a different question. The question here is whether the right companies end up being included in the set of ethical investment alternatives. Entine (1996) contends that companies like P&G or Gillette may be more worthy than companies like the Body Shop or Aveda. While the former companies do animal testing, they invest in extensive research laboratories and have pioneered alternatives to animal testing. The Body shop or Aveda promote anti-testing values and reportedly using animal-tested ingredients in their products but invest nothing in research to find alternatives(Vrana, 1997).

The credibility issue is neither likely to go away, nor it should be. It is accepted that ethically responsible by definition is not value-neutral. Additionally, the decision process necessitates subjective judgments and personal choice regarding the level of social change one wishes to express. In an industry with these characteristics, dialogue, debate, and even conflict should be encouraged as a way to continually clarify the values and direction of the movement (Griffin and Mahon, 1997).

The third characteristic, the viability of ethical investment, has produced considerable debate .Performance has been hotly contested, researched, and analysed. The basic question since ethical investment began is whether financial sacrifices have to be accepted when one engages in ethical or socially responsible investment (SRI). It appears the answer is no. Over more than twenty years, it has been observed in the numerous studies on financial performance (Kinder, Lydenberg, and Domini, 1992; Guerard, 1997; and Griffin and Mahon, 1997).

Another researcher Young (1996) reports that the Domini 400 Social Index outperformed the Standard & Poor's 500 stock index for the second year in a row. In fact, since the Domini 400 was launched in 1990, it has returned 191.3% compared to 171.4% for the S&P 500. Overall, eleven of the forty-four ethical or socially responsible mutual funds returned more than 20% in 1996. In looking at a longer-term time frame, Guerard (1997) finds that average monthly returns of unscreened and screened portfolios in 1987-1994 were not significantly different. Kurtz and DiBartolomeo (1996) conclude that social screens neither help nor hurt performance.

The past record of ethical investment indicates its staying power as a concept. Its growth curve and research on relative performance suggest a viable product meeting a need in the investor market place. It should be expected that, like any product, there will be a continued evolution with regard to developmental enhancements. Part of this developmental need is to improve on the traditional investment characteristics. Ethical investment funds stand at the interface among the above mentioned factors on the one hand and business on the other hand. This is especially important because the role of business could be crucial in dealing with issues which are central to the concerns of many ethical funds.

(2) Entering the Ethical Investment Mainstream

The first UK ethical unit trust started in 1984, with the launch of the Friends Provident Stewardship Fund (EIRIS, 1993). In the year 1985, it was estimated that the ethical investment market in the UK would reach a maximum size of around £2 million. Yet by the end of 2002 it had grown in value to reach some £3.9 billion - and the growth shows no signs of slowing[25].

The rise of ethical investment is closely linked to major changes in society in the last third of the century. It follows the growth of key social movements for the environment, human rights and animal rights. Major economic trends such as the increasing financial independence of women and young people, the growth of employment in the voluntary sector, the emerging power of multinationals and the massive increase in share ownership by unit trusts, pension funds and insurance companies have all helped to drive ethical investment forward. Taken together, these

make it a rapidly expanding movement with a powerful future. The combined UK membership of Greenpeace and Friends of the Earth grew from 50,000 in 1981 to over 2 millions by 2000 (Shepherd, 2001). It is therefore not surprising that ethical investment took off over this period and outpaced total investment in unit trusts and investment trusts.

The Ethical Investment Research Service (EIRIS) had been set up in 1983 with the help of churches and charities which had investments and needed a research organisation to help them to put their principles in practice. Responding to increasing concern about environmental issues and sustainable development, "green" unit trusts arrived in 1988 with the launch of the Merlin Ecology Fund (now the Jupiter Ecology Fund). For the first time ever, investors were able to put their money into companies in order to get benefit from the transition to a sustainable future. Other environmental funds soon followed (EIRIS, 1993). Many other vehicles for ethical or socially responsible investment started in this period. Triodos Bank (formerly Mercury Provident) was set up in 1974 to lend to projects with a social benefit. Seven years later, the Ecology Building Society began financing the purchase of properties with an ecological payback in 1981. The trade union-backed Unity Trust Bank arrived in 1984, and ethical banking received an important boost in 1992 when the Co-operative Bank introduced its highly successful ethical policy (EIRIS, 1993). Specialist community development finance organisations such as Industrial Common Ownership Finance began to seek "socially directed investments", offering a high social return with zero or low interest. By Autumn 2000, 'Shared Interest', the most successful such specialist, held nearly £20 million to finance fair trade (Shepherd, 2001).

[25] Besides other references acknowledged here, it is also pointed that this sub-section draws on the

The UK Social Investment Forum (SIF) was formed in 1991 to bring together key figures across the full range of ethical and socially responsible investment to co-operate in sharing knowledge and advancing the agenda. Ultimately this helped to stimulate interest among pension funds, which now own more than a third of all UK Shares when back in 1963, they owned just 7% (EIRIS, 1993). Local Authority Pension Funds led the way in considering the social consequences of this type of investment. In the 1980, councils sought particularly to avoid investment in South Africa and some of them later began to invest small amounts in ethical investment funds. Following significant court cases in the same decade, the Goode Committee on 'Pension Law Reform' highlighted the legality of ethical investment for pension funds[26]. The committee's report declared that trustees are "perfectly entitled to have a policy on ethical investment and to pursue that policy, so long as they treat the interests of the beneficiaries as paramount and the investment policy is consistent with the standards of care and prudence required by law"(PACEC, 1998, p. 11). In 1997, a group of University lecturers launched the Ethics for Universities Superannuation Scheme (EUSS) campaign for the ethical and environmental investment of their pension fund namely Universities Superannuation Scheme (USS). In 2000, USS announced its new policy on Sustainable and Responsible Investment[27].

Ethical investment received a further boost in 1998, when the then Pensions Minister of UK, John Denham announced that he was "minded to require trustees to disclose to what extent, if any, they have taken account of social responsibility

excellent review by Shepherd(2001).

[26] Nottinghamshire Country Council and Public and Corporate Economic Consultants (PACEC), Pension and Environment, 1998.

[27] Please see Penny Shepherd, "A History of Ethical Investment", (UK Social Investment Forum, 2001), pp1-2

considerations in their investment strategy" (Shepherd, 2001.p. 2). He won early support from the pension fund of the Sainsbury supermarket chain, which stated that it wanted to improve the environmental behaviour of companies. Since these proposals became law on 3 July 2000, all occupational pension funds have to consider formally whether or not to develop policies on social, ethical and environmental issues. A UK Social Investment Forum (SIF) survey published in October 2001 found that 59% of the largest pension funds, representing over £230 billion of assets, had incorporated social responsibility issues into their investment strategies (SIF, 2001).

Changing company behaviour by shareholder influence is likely to be a key future trend within ethical investment. One turning point was the resolution on social and environmental policy proposed at the 1997 AGM of Shell by corporate governance specialists, Pensions and Investment Research Consultants and the church-based Ecumenical Council for Corporate Responsibility. Shareholders representing 17% of Shell's share capital withheld their support from the company on the resolution[28]. Another example may be mentioned here, in 2001 the shareholder resolutions were tabled at the BP Amoco and Balfour Beatt AGMs in order to change the company's behaviour (Sparkes, 1994).

4.2-2 Growth in the UK Ethical Funds

The most visible sign of public interest in socially responsible investment (SRI) is probably the continuing strong growth in the number and size of socially responsible funds or ethical funds available to the public. This includes unit trusts, open-ended investment companies (OIECs) and related pension and insurance funds.

It was also observed that there was a rapid growth of ethical unit trusts in the first ten years of their life, following the launch of Friends Provident Stewardship in June 1984[29].

Sparkes (2000) argues that the universe of retail ethical funds was doubling in size every three years since it inception. Despite its larger size, the industry is still demonstrating the same extraordinary growth rate. As per Ethical investment Research Institute (EIRIS)'s Annual Report 1999, during the year 1998-1999; the SRI products were launched by many of the heavyweight names of the UK insurance industry: Legal & General; Norwich Union; Scottish Amicable; Sun Life, and Standard Life, etc (EIRIS, 1999). Many of these new funds are relatively new and may be expected to see significant growth over the coming years. Partial causes of the growth may be that the last twenty years has seen a steady erosion of public support for political parties and the established churches combined with continued growth in support for environmental and social campaigning groups such as Greenpeace, Friends of the Earth, and Amnesty International. Retail ethical funds offer a vehicle for supporters of such groups to ensure that their investments mirror the values that they feel are crucial (Sparkes, 2000).

In the year 1985 the ethical unit trust size was £6.58 million in the UK. The EIRIS research (EIRIS, 2003) shows that the estimated value of ethical funds grew from £2600 million to £3900 million between December 1999 and December 2002, and the number rose to 62. The growth of ethical funds in value are shown in

[28] Mark Moody-Stuart, Chairman of Shell Transport & Trading, Financial Times Guides to Responsible Business, 1998.
[29] Please see Russell Sparkes, "The Rewards of Virtue", Professional Investor, (1994), July issue

table 4.1. Table-4.2 shows the size of all groups of unit trusts from the year 1972 to 2002 and size of ethical unit trusts from 1984 to 2002 in UK. However, the ethical investment in the UK has a long way to go to match the size of the market in the US, where the Social Investment Forum estimates that nearly one in eight dollars held with investment institutions are either in ethically screened portfolios, or subject to share voting policies which incorporate social responsibility criteria. This helps to predict that a growing number of people will now be investing both for financial return and to promote positive change in the world through ethnical investment.

Table 4.1 Ethical Funds (All Type of Ethical Funds)

Year	1990	1993	1996	1999	2002
Total £m	321	728	1480	2600	3900
Total Funds	30	41	45	60	62

(Source: Professional Investor, June issue, 2000 and ERIS Annual Report 2002)

According to the statistics published by Association of Unit Trusts and Investment Funds (AUTIF) and the Unit Trust & OEIC Yearbook 2002, the global bull market for equities peaked up early in 2001. Sheer momentum carried the UK investment funds industry through to the end of 2001 and the year 2002 end peak £235,796 million and £206,700 million (tentatively) respectively for funds under management. The £260,700 million figure in 2002 represented growth of less than 3 percent from the end 1999-level (Table 4.2). The period of exceptionally rapid

Table: 4.2 Total Fund Size of All Unit Trust Groups

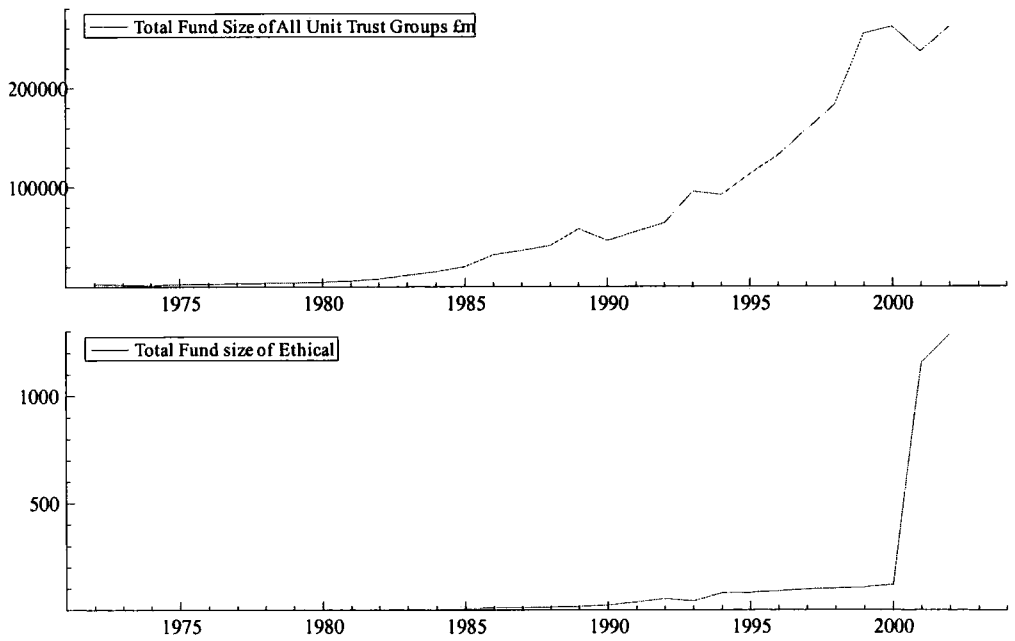
Year	Total Fund Size of All Unit Trust Groups £m	Total Fund size of Ethical Unit Trust out of the All Unit Trust Groups £m
1972	2647	
1973	2060	
1974	1310.8	
1975	2512.4	
1976	2543.0	
1977	3461.3	
1978	3873.4	
1979	3936.7	
1980	4968.0	
1981	5902.4	
1982	7768.0	
1983	11689.4	
1984	15099.0	1.01
1985	20307.0	6.58
1986	32131.0	11
1987	36330	11.3
1988	41574	14.11
1989	58159	17.04
1990	46342	22.47
1991	55145	37.11
1992	63877	51.9
1993	95518	41.54
1994	92116	79.8
1995	112894	81.5
1996	131905	88.8
1997	157583	97.23
1998	182881	101.9
1999	253713	106.81
2000	260970	119.23
2001	235796	1151.65
2002	260700	1285.05

(Sources: Unit Trust Year Books & Ethical Investment Research Service, 2002)

expansion, which carried total funds from £112,894 million to £260,700 million within 7 years, appears to have ended. The retail sales in the year 2000 expanded new record levels, at £17.9 billion against £14.3 billion in 1999, and a mere £3.1bn in 1995. This sales flourish of the bull market in 2000 heavily reflected the success of the individual savings account (ISA).

Although since the 1987 crash of the capital market, markets have tended to move sideways, at the start of 1991 with a poor set of short term figures for the entire unit trusts sector, the growth rate of ethical unit trust were upward from 3.4% to 18 % of the total ethical funds so far. The growth of ethical unit trusts shown downward in November 1993, following the official abandonment of apartheid (EIRIS,1999).

Figure 4.1 Size of All Unit Trust Vs Ethical Unit Trusts



In the UK as of 2002, there were more than 30 ethical unit trusts out of a total of 62 ethical funds (all types), valued over £12.8 billion which is the highest record growth in UK ethical unit trusts industry so far (Unit Trust Yearbook, 2003). Figure 4.1(graphs) shows the comparative performance between total size of all group unit trusts and total size of ethical unit trusts.

4.2-3 Attitude Towards Ethical Investing

Several studies have been conducted in the U.K. in an attempt to ascertain investors' attitudes toward ethically sensitive issues and some of them are given below:

(1) NOP Survey: In September 1997, the Ethical Investment Research Service (EIRIS), an independent organisation with the most comprehensive data base of corporate activity in the U.K., commissioned NOP Solutions to carry out a survey representative of all adults in Great Britain researching attitudes toward ethical investment (NOP Solution)[30]. Almost two-thirds of respondents thought their "pension fund should operate an ethical policy (p.12)."[31] Of these, more than a quarter advocated adopting an ethical policy "even if it may reduce financial return." Fewer than one in five considered that their "pension scheme should concentrate on financial return and not take any ethical factors into account (NOP Solutions, 1998, p. 12)." In terms of negative or exclusionary factors, more than half of all respondents would object to a pension fund investing in companies that:

[30] Source: NOP Solutions, 1998
[31] "Ethical Pension," NOP Solutions (Ethical Investment & Research Service), 1998

Manufacture weapons (57%).

Test products on animals (57%).

Break environmental regulations (54%).

Make investments in countries with oppressive regimes (51%).

Use ozone-depleting chemicals (50%). (NOP /EIRIS, 1998, p. 21)

From a positive or inclusion perspective, more than half of the respondents preferred that their pension fund favour companies with a good record on:

Employment conditions (53%).

Environmental issues (52%).

Fewer than half of the respondents preferred favouring companies:

with a good record on equal opportunities (46%).

with a good record on customer care (43%).

producing products meeting basic needs or solving important problems (38%).

that support community projects (36%).

that have good relations with their suppliers (24%).

(NOP Solutions, 1998, p.24)

While the NOP study is notable for pointing out general support for aligning ethical pre-dispositions with investment policy, it also finds broad differences between men and women; geographic areas; age groups; and income classes.

(2) Ethical Investment Research Service (EIRIS) Experience

The EIRIS's client base includes institutional investors, charities, religious bodies, local authorities, and private investors. The EIRIS (Ethical Investment Research Service) has developed over thirty areas of ethical concern, each researched to a varying degree. Supporting the NOP survey (1998) results, military-related activities, animal testing, environmental impact, and involvement with oppressive regimes/exploitation of third world markets are significant concerns of EIRIS's clients. Tobacco production/retailing is screened for by 80% of clients, while it is identified as of concern to only 45% of the NOP respondents (EIRIS, 1998). volvement in the nuclear power industry, production of pornographic material, and gambling-related activities are screened for by at least half of EIRIS's clients, issues not surveyed by NOP.

(3) Hart's Study:

Hart, quoted in Smith (1996)[32], surveyed several "ethical" unit trusts in the U.K to ascertain the criteria he uses to determine which companies are included in or excluded from investment portfolios. The study confirms the conviction that companies with poor environmental records; maintaining relations with repressive regimes; involved in weapons manufacturing; or engaged in animal experimentation/ exploitation should be excluded from investment portfolios. The top-ranking positive/inclusive criteria include environmental awareness and employees welfare. The Hart's study (Smith,1996) finds higher support among unit trusts for the supply of beneficial products/services and community responsiveness than was apparent in the NOP or EIRIS studies.

[32] Reference on Hart's study in this paragraph draws on the excellent review by Smith (1996).

There is significant overlap between the U.K and American concerns when we look at the Domini 400 Social Index[33]. Perhaps the most notable difference between American and British concerns are in relation to animal rights; the DSI has no specific animal-testing screen. In the U.K., screening for some level of testing products on animals is performed for 80% of EIRIS's clients. Animal testing is the most significant issue for respondents to the NOP survey and for almost two-thirds of the trusts surveyed by Hart (Smith, 1996). Pornography represents another notable difference between the American and British experience. In the U.K., the public offence associated with pornography prevails over any defence of freedom of speech.

The DSI400 index's corporate citizenship screen includes remuneration as well as places emphasis on the relationship between a company and its community, tolerance of debate over company activities, responsiveness to shareholders, and employee relations. Involvement with oppressive regimes has been a significant concern of U.K investors for many years. When the DSI400 index was launched the only oppressive regime screen referred to investments or operations in South Africa. This screen was dropped in November 1993, following the official abandonment of apartheid (Stephen, 1999). While ethical investors in Britain broadly agree with many of the ethical concerns of their American counterparts, significant differences remain.

[33] Comparison of screens adopted by DS1400 with support by more than five surveys/services.

4.2-4. Activism of the Ethical Investors

An important objective of the ethical investment is to influence companies to improve their ethical and environmental performance. Lewis and Mackenzie (2000) argue that most of the ethical funds do not pursue any kind of engagement with the companies in which they invest, although most ethical funds do talk to companies and have meetings with them. It is routine for most fund managers to research companies and meet with them (Smith, 1996). In the majority of the UK ethical funds engagement is limited to questions from the fund seeking clarification on company policy and information on ethical policy. This activity is not sufficient to persuade companies to change their policies.

In their study Lewis and Mackenzie (2000) further say that at least three ethical fund managers in the UK do have policies of engaging with companies in order to persuade them to change their policy, namely Friends Provident Stewardship, NPI Global Care and Jupiter Ecology. As at December 1998, the Friend's Provident Stewardship has £900 million and the Jupiter Ecology and NPI Global Care have over £100 million of funds under their management (EIRIS, 1999). These funds have used a number of different procedures to pursue engagement, including writing letters, holding meetings with managers, doing sector surveys and feeding back the results to management. They also made several attempts to lead policy in more general ways by writing articles, briefing the press, giving addresses at conferences and participating in industry wide initiatives.

4.2-5 Responsibility of the Investors

Before going to discuss on responsibility of the investors, we should discuss about the investment decision of the investors in market. The investment decision is a principle of freedom. Firstly, the agent is responsible for his own life and, therefore, it is incumbent upon the investor to freely administer the assets. Secondly the principle of responsibility that is inherent in any freely made decision: the agent is responsible for their free acts[34]. This means that the ultimate responsibility lies with the investor and this responsibility must be judged applying the criteria traditionally used in ethics. The nature of the action, whether lending or investing money, is in principle a moral action. The effects of this decision include, the direct effects, which will primarily be those affecting the preservation and growth of wealth, in accordance with the rules of prudent financial management. The indirect effects, with an investment decision the saver is contributing to fund certain activities and therefore, becomes jointly responsible for their morality. This responsibility must be understood not only in the light of its positive effects – whether what is being funded is a morally good activity - but also in the light of its negative effects-whether the activity is morally reprehensible (Cummings, 2000). The action of investing wealth may give rise to a co-operation with good or bad, positive or negative ethical judgements[35]. Exercising responsibility in ownership always has an ethical dimension, even though the motivation of investors in the ethical aspect may vary.

[34] Here moral responsibility is discussed, not legal responsibility. Investment decisions usually meet the requirements for an action to be morally imputable and the effect of actions are reasonably predictable.

[35] The businesses of the companies funded by the investors are benefited by all.

It is often argued that the existence of a moral responsibility in the investor's decision goes against economic rationality. It is said that the company's sole purpose is to maximise the value of its shares. Therefore, the sole purpose of any investment decision must be to obtain the highest possible return, or better still, a return-risk mix that matches the agent's preferences-risk aversion. Argandona (1995) says that this is reasonable. But before passing it as morally acceptable, it is necessary to understand why it is reasonable.

If all investors act in such a manner so as to maximise the yield of their portfolios, an optimum will be achieved. As a result the economic efficiency will be maximal-in the sense that, given the resources available, it will not be possible to obtain higher production volumes and no subject will be able to increase utility without decreasing that of another subject. Maximising share value or portfolio yield is therefore dependent upon a certain conception of the economic system's rationality. When it is said that companies or investors "must" act in this manner, what is actually being said is that, by this means, the economic system as a whole will achieve the optimum profit that is supposed to be its goal.

4.2-5A Difficulties in Exercising Moral Responsibility of the Investors

When the investors set out to exercise their responsibilities as owners, they can do so from a negative viewpoint (means not to cause harm, that is, not to contribute with their capital to financing immoral activities) or from positive motivations (Cowton, 1999). The latter can be achieved either by investing only in companies whose activities are morally excellent or by trying to change the decisions made by

the companies in which the investors had already invested in or may invest in so that, at the very least, they do not act immorally in the future. This diversity of options corresponds to the conception of ethics as a minimum which must be met if man and society are not to deteriorate. In view of the above, there is plenty of room for the ethical development of people and society (Prodhan, 1994).

It is noted that any investor who wishes to act ethically will encounter, at least, some of the following difficulties;

(1) Lack of information about the companies that engage in morally reprehensible or excellent activities. The same is also true for investments made through intermediaries, for example, deposits in a bank which, in turn, lends to companies, etc.

(2) Lack of information about the functioning of investment mechanisms; very rare in countries with a financial system developed to a certain minimum level[36].

(3) Inability to steer investments towards ethically correct companies, for example, the companies which are not listed[37].

(4) Inability to change the company's conduct because the investor is a minor shareholder without any voice on the board of directors or at the shareholders' meeting. In any case, given the need to diversify the portfolio to reduce the risk, it is unlikely that many investors will have significant equity holdings in certain companies (Argandona, 1995).

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[36] The investor may think that if he/she buys shares that have already been issued, his/her funds do not go directly to the company engaging in unlawful activities.

[37] In theory, each investor could create whatever portfolio he/she may wish. In practice, however, this is not true due to information, transaction costs etc.

(5) Lack of knowledge about the criteria used by the company in making its decisions. For example, companies in which it is possible to invest may have positive aspects and negative aspects of ethical criteria.

For many investors, these considerations induce them to invest their assets through specialised organisations by purchasing the secondary financial products with return-driven and risk-driven goals. It means, that the investor's responsibility disappears because the investor continues to co-operate with the company's activities. What will change is how the investor will exercise it.

4.2-5B Ethical Funds

The demand for securities in which investors can exercise their moral responsibility[38] is met by a supply by financial intermediaries. It creates specialised ethical unit trust, ethical pension fund, ecological funds etc[39]; offering standardised investment packages as regards return, term, currency, risk etc. Ethical funds are therefore, a response to that demand. In some cases the responsible investor makes his/her decision between a minimum (not investing in clearly immoral companies) and a broad range of increasingly extensive opportunities. For example, financing companies which stand out for investors' ethical conduct, try to influence companies' management so that they cease to act immorally and improve their ethical quality (Smith, 1996).

[38] The demand for socially responsible investments may be in response to moral incentives as well as other types of incentive. The demand for environment-friendly investments may derive from economic incentives and the investor's personal interest.

[39] Not just funds, but also social banks, co-operative banks, community-oriented ventures etc.

In view of the above discussion, the four main groups of decisions that may be made by ethical funds are:

(1) Selection Criteria

The determination of the selection criteria used to choose the industries and companies in which the fund will invest or not to invest[40]. At this stage, the fund defines its investment profile and, therefore, its product appeal to the public to "create the need" to invest in accordance with specific criteria (Argandona, 1995). If promoters of the fund or managers have definite ethical attitudes, these attitudes will show in the criteria chosen[41]. If they do not have such attitudes, they will formulate generic product packages targeting customers with imprecisely specified preferences (Argandona, 1995). In this case, the criteria set will be generic and based on sociological rather than ethical criteria[42].

There is no single, unquestioned definition of what an ethical company is. Furthermore, there will never be unanimous agreement with respect to the criteria chosen. This process is associated with at least two practical problems. Firstly, the more criteria there are and the more specific they are, the smaller the number of companies that can be invested in. Secondly, the positive criteria can be added to the negative criteria or used to offset them. The fundamental criterion is usually the

[40] All funds must define the economic, financial criteria which it will apply in its investments. In the case of the ethical funds, the field of decision is enlarged, although it may also be divided so that the ethical decisions are left to the ethics committee of the Asset management board, while the analysts, managers, members of the board, etc. take the "technical" decisions.

[41] In a way, we are proposing to distinguish between funds that are created out of a genuine ethical and social concern, and those that simply offer investments with that feature, not out of personal conviction but as a sales strategy.

[42] It is likely that many funds have implemented certain measures more as a reaction to political events than to true ethical problems. One example in this regard is the investment boycott at South Africa in the years of the apartheid.

nature of the products or services offered by the company. In this matter, there may be the possibility of non-ethical effects that their production or use may have on the environment or on public health, for example: nuclear energy, tobacco, chemicals using environmentally damaging or hazardous processes, child labour, etc. Often, other criteria are added, such as the company's labour, their attitude towards the local community, their co-operation with certain political regimes, etc. In view of this, the investors usually may not have clearly defined criteria on what they consider ethical or unethical either from an economical, politically or morally bias. If an investor knows what he/she wants, he/she can administer his assets himself/herself or give precise instructions to his/her manager. He/she can also try to change the criteria used by his/her fund or promote a new fund.

(2) Choosing the companies to invest in

This is associated with information problems and problems arising from a prudent application of the principles described above. Ideally, companies should provide the funds with abundant information on its products, markets, technologies, production process, personnel policies, customer relations, etc., to enable the funds to make informed decisions. However, this information is usually not given, either because the companies themselves do not have it, or if they have but do not want to give it. Some times they give it in an incomplete, confusing and non-verifiable manner (Argandona, 1995). The existence of impartial agencies may play a significant role towards alleviating these problems.

The choice of companies remind the investor about the existence of a problem that is closely tied with the ethical funds' basic criteria. From the financial

viewpoint, the selection is made in accordance with future criteria, that is, in accordance with the companies' expected return. From the ethical viewpoint, the criteria used focuses on the past. This is because it is assumed that companies showing a good ethical behaviour in the past will continue to behave ethically in the future, and also its staff members have developed virtues that facilitate morally correct action (McEwan,2001).

However, the above-mentioned concept has a number of drawbacks. Firstly, investments are made in a company's stock because it is hoped that its conduct will continue to be ethical and not as a reward for past performance. Second, a company must be allowed to make mistakes and perform immoral actions, provided that it rectifies, apologises and tries to behave ethically again in the future (Joly, 1993). It is important to stress that the fact that an ethical fund includes certain securities in its portfolio should not be interpreted as a denial of the ethical qualities of the companies not included in the fund. To put it another way, the fund guarantees its customers that the companies included in its portfolio meet certain minimum standards or certain criteria, and nothing more.

(3) Setting the investment maintenance and financial replacement criteria

For ordinary funds, these criteria are clear, mainly in terms of yield and risk. However, ethical funds must also take into account a third dimension, the moral one, by making prudential decisions, such as those indicated above.

(4) Establishment of the policy relationships

There is needed to establish the policy of relationships with the management of the companies whose shares are included in the fund. This includes, for example, how the voting right will be used at shareholders' meetings, how the customers' instructions, if any, will be taken into account, for the benefit of whom the voting right will be exercised, etc (Lohnert 1995).

Related with the abovementioned issues are the funds' attitude towards the definition and implementation of the company's goals and strategies which we could call the fund's "activism" (Lewis and Mackenzie, 2000). If they are simply trying to place their assets in ethically correct businesses, they will prefer a passive policy on the part of the funds. In that case, if necessary, it can withdraw its shares from the company when it will behave inappropriately. However, if they take a more active attitude in the application of their ethical preferences, they will ask for a greater involvement by the fund in the companies' management. They will even be prepared to suffer economic setbacks for that very reason. Joly (1993, pp. 23-24) sets a series of following rules that ethical funds should follow;

Gross impropriety rule; ethical funds should not invest in companies or industries whose activities go against society's moral requirements such as drug trafficking, pornography, etc.

Controversial issue rule; when an investment goes against the moral requirements of a large social group, the fund should identify and exclude such investments such as nuclear energy, tobacco, arms dealing, etc.

Prudence rule; to assess all companies so that all its relevant results can be identified such as on the environment, on individuals, etc.

Proportionality rule; the larger the volume (absolute or relative) of the funds placed in a company, the more attention should be paid to the economic, moral, social or environmental consequences arising from this.

Accountability rule; the reports on the fund's investment should not only include the companies' financial performance but also the extra-economic data that may impact on the decision to invest in or divest the security in question.

Controversially rule; the fact that an investment is controversial does not mean that the fund should pull out of it but only that it should be studied.

Negligence rule; the managers of ethical funds should be aware of all of the consequences of their decisions. Ignorance is no excuse.

Same boat rule; it is desirable that the fund's managers should commit at least part of their personal assets.

Collective and individual responsibility; responsibility should be shared by all those who take part in the fund's decision.

Dilemmas; the solution to dilemmas is not to ignore them but to study them[43].

In conclusion, we can say that one of the most exciting developments in the financial world in recent years has been the growth of the ethical funds. The UK's first ethical unit trust was launched in 1984. By 2001 some £4 billion had been invested in the UK ethical funds by individuals and organisations wanting their investments to reflect their personal values. Individual investors have played a vital role in supporting the growth of the ethical investment market. Ethical investment was given a further boost in July 2000 when new legislation was introduced under the 1995 Pension Act. Since then many pension funds have started to take social and environmental issues into account in the management of their investments. They include several local authority pensions' funds such as Nottinghamshire and Strathclyde, the University Superannuation Scheme etc. Not surprisingly, many charities and organisations recognise the importance of investing in a way that is consistent with their values.

[43] Other rules are preserving the fund's independence and impartiality, preserving the confidentiality of the information received on companies, distinguishing between facts and opinions.

Part –II

4.3 Measuring Performance of UK Ethical Unit Trusts in Changing Economic Conditions

4.3-1 Introduction

The investment based on ethical or socially responsible criteria appeals to many investors. The general perception is that it most likely reduces portfolio performance. The financial theory argues that ethical investment will under perform over the long term because ethical portfolios are subsets of the market portfolio which lack sufficient diversification. A further issue raised is that selecting stocks according to ethical screens can be an expensive practice that may ultimately have a negative impact on net return. Therefore, the general perception has been that ethical portfolios are likely to under-perform their conventional peers. The relevant literature provided up to this point however has not been able to find a significant performance gap between ethical and conventional portfolios. For example Dilz (1995), Guerard (1997) and Sauer (1997) conclude that there are no statically significant differences between the returns of ethically screened and unscreened universe in United States. Using single factor Jensen alpha model Mallin, Saddouni & Briston (1995); and Gregory, Matatko & Luther (1997) find no significant difference between the financial performance of ethical and conventional unit trusts in the United Kingdom.

There are several extended models to evaluate the performance of managed funds that too control for several stock market anomalies (Ippolito, 1989). For instance, Fama and French (1992, 1996) add promise for size and book-to-market, while Carhart (1997) introduces a stock-momentum variable. Later Ferson and Schadt

(1996); Antoniou, Barr and Priestly(1998); Lettau and Ludvigson (2001); Wang (2002) and Zhang, (2003) explore the added value of introducing time-varying betas and alphas in existing models. By doing that fund managers change their portfolios over time, based on observable information variables. Most of these studies, however, only deal with two, or at most three different performance models. Because of the relatively larger number of managed fund performance models, this potentially creates a problem for both academics and practitioners about which models to use for performance measurement.

The objective of this part of the study is to provide a comprehensive evaluation of the UK ethical unit trust performance by employing single factor to multifactor models using both their unconditional and conditional versions. Using monthly sample of the UK ethical unit trusts for the period from 1996 to 2003, we introduce extra variables such as size, book-to-market, momentum and a bond index (which compares with its conventional peer) is explored. In order to address the objective, this study has focused on the following research questions;

(1) Did the investment performance of UK ethical unit trusts suffer in comparison to those that are not so ethical?

(2) Which model is suitable for ethical fund performance evaluation and;

(3) What is the statistical significance of adding more factors such as size, book-to-market, momentum factor and bond index?

4.3-2 Brief Literature Review on Ethical Mutual Funds/Unit Trusts

This literature review will focus on the studies which examine the performance of ethical funds and especially those which directly compare ethical and conventional funds. Substantial literature on conventional mutual funds/unit trusts has already been documented in the literature review chapter-2, therefore, this literature is not considered here. Instead we concentrate on those investigations which have examined the risk adjusted returns that ethical funds have achieved.

Early studies of the UK ethical unit trusts performance only compared ethical unit trusts with market-wide benchmarks. For example, the study of Luther, Matatko and Corner (1992) provided weak evidence that the ethical funds outperformed two market indices. In a subsequent study, Luther and Matatko (1994) addressed some of the concerns raised in this early work. Since the ethical unit trust tended to invest in a larger part of the funds in smaller companies with lower dividend yields, they argued that a small company index should be employed as a market proxy for ethical funds in addition to a broad based stock market index. Their findings demonstrated that ethical funds performed much better when evaluated against a small company benchmark, than when only the Financial Times All Share Price index (FTSA) was used.

The study of Mallin et al. (1995) examined the performance of UK ethical unit trusts by using a matched pairs analysis. They compared the performance of 29 ethical unit trusts with a sample of 29 conventional unit trusts between the years 1986 and 1993, matched on the basis of age and size by using the Jensen, Sharpe and Treynor performance measures. Their findings concluded that a small majority of funds from both groups underperformed the market as measured by the FTSE All Share Price

index. These findings were remarkable, since Luther et al. (1992) argued that ethical unit trusts have a large number of small companies in their portfolios.

Another study of the UK ethical unit trust performance by Gregory et al. (1997) adopted a matched pair approach which was similar to that used in the Mallin et al. (1995) investigation. They compared the performance of a smaller sample of 18 UK ethical unit trusts with 18 conventional unit trusts between 1986 and 1994. They also employed a size- adjusted measure of performance. Their results revealed that one ethical unit trusts and one conventional unit trust had a negative Jensen alpha, which was significant at the 5% level. However, there was no significant difference between the returns earned by the ethical and conventional unit trusts and both groups underperformed the FTSE All Share Price index.

There are several studies on ethical funds out side the UK. Studies done by Hamilton, Jo and Statman (1993) and then Statman (1999) compared the returns of ethical and conventional US mutual funds to each other, and to both the S & P 500 and the DSI. Both studies used the Jensen's alpha and conclude that no significant differences between risk-adjusted returns for ethical and conventional funds exist. Kreander, Gray, Power, and Sinclair (2000) extended this analysis to consider European funds from a small number of countries, but encountered the problem of selecting an appropriate benchmark against which to judge the funds. Kreander, Gray, Power, and Sinclair (2000) eventually chose the Morgan Stanley Capital International World Index, primarily on the pragmatic grounds that this index was commonly adopted as benchmark for ethical funds. They pointed out that when Swedish ethical funds were evaluated against a Swedish benchmark their performance was

outstanding, while the performance was much more modest when compared to Morgan Stanley Capital International World Index.

By employing a multi-factor Carhart (1997) model, Bauer, Koedijk and Otten (2003) in their study found little evidence of significant differences in risk-adjusted returns between ethical and conventional mutual funds. Using both domestic and international samples of the Germany, UK and US for the period 1990-2001, their results show that introducing time-variation in beta leads to a significant under-performance of domestic US mutual funds and a significant out-performance of UK ethical funds, relative to their conventional peer.

The followings are summaries of the studies on ethical fund performance and in particular those using the 'matched pairs' technique. The findings from these most of the cases, the authors concluded that the differences were small or statistically insignificant. Therefore, the evidence to suggest that ethical funds systematically under-perform conventional mutual funds is limited. Indeed some evidence suggests that the risk adjusted performance of certain ethical funds may outperform the conventional funds which do not have any ethical criteria for selecting the equities which they include in their portfolios. A list of the key findings of the studies on ethical funds is reported in the figure 4.2.

Figure 4.2 : A list of the key findings of the studies on ethical funds

Study	Country/Region	Data	Time Period	Findings for Ethical Funds
Bauer et al. (2003)	Germany, U.K. & U.S.	103 ethical mutual funds and 4,384 traditional mutual funds	January 1990 to March 2001	-evidence of both higher and lower returns -differences are not statistically different
Geczy et al. (2003)	United States	35 no-load ethical mutual funds and 859 no-load conventional mutual funds	July 1963 to December 2001	-lower returns difference is significant under certain conditions
Gregory et al. (1997)	United Kingdom	18 ethical unit trusts matched with 18 traditional mutual funds	January 1986 to December 1994	-lower returns differences are not statistically different
Hamilton et al. (1993)	United States	32 ethical mutual funds versus 170 conventional mutual funds	January 1981 to December 1990	-no statistically significant performance differences
Haveman and Webster (1999)	United Kingdom	15 ethical funds versus peer medians	5-year periods ending June 1998	-lower returns -lower risk
Mallin et al. (1995)	United Kingdom	29 ethical unit trusts matched with 29 conventional unit trusts	January 1986 to December 1993	-higher returns -lower risk differences considered insignificant
Otten and Koedijk (2001)	Netherlands	4 ethical funds matched with 4 conventional mutual funds	January 1994 to December 2000	lower returns similar returns when style biases corrected
Statman (2000)	United States	31 mutual funds versus 62 conventional mutual funds	Periods ending September 1998	higher returns differences are not statistically different

Sources: ABN-AMRO (2001), Mallin et al. (1995), Gregory et al. (1997), Bauer et al. (2003)

4.3-3 Methodology

The objective of this study is to provide a comprehensive assessment of existing managed fund/mutual fund performance models, using the UK Ethical Unit Trust data from the Micropal database. In doing so, we will be able to investigate ethical unit trusts' (mutual fund) performance relative to conventional unit trusts(mutual funds).

Unconditional Models

Starting with the most basic Capital Asset Pricing Model (CAPM), we will then explore the added value of introducing extra variables such as size, book-to-market, momentum and a bond index. In addition, we will evaluate the use of introducing time-variation in beta and alpha. The models to be used to evaluate risk-adjusted UK Ethical Unit Trust performance are Jensen (1968) single factor, Fama & French (1992, 1993) three factor, Carhart (1997) four factor and finally Elton and Gruber (1999) fifth factor model. With respect to single, three factor model, we have already discussed in the methodology section of our previous chapter . In the previous chapter , we have evaluated the performance of the UK unit trusts by employing the Fama-French three factor model to study the behaviour of the UK market. For the UK market, the F-F three factor model has better explanatory power than the single factor CAPM model, especially for the unit trusts that invest heavily in small companies. As per results, we reported that the UK fund managers are unable to outperform the markets.

In this chapter, we will introduce more models like Carthart(1997) four factor and Elton and Gruber (1999) five-factor models.

Multi-factor Models

Carhart Four Factor

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 French, 1993 & 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 funds 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:

$$R_{it} - Rf_t = \alpha_i + \beta_{0i}(Rm_t - Rf_t) + \beta_{1i}SMB_t + \beta_{2i}HML_t + \beta_{3i}Mom_t + \varepsilon_{it} \qquad (4\text{-}1)$$

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.

Elton-Gruber Five Factor Model

Elton, Gruber, Das & Hlvaka (1993) and Elton & Gruber (1999) propose the inclusion of a bond index in managed fund performance assessment. They argue that some funds invest in higher yielding and risky bonds, which is not picked up by risk-free rate (Rf). Although in their analysis the bond index only shows up significantly for less than 50 percent of all funds, we consider the sensitivity of funds returns to a government bond index. The Elton and Gruber five factor model reads;

$$R_{it} - Rf = \alpha_i + \beta_{0i}(Rm_t - Rf_t) + \beta_{1i}SMB_t + \beta_{2i}HML_t + \beta_{3i}Mom_t + (Rb_t - Rf_t) \quad .....(4-2)$$

Conditional Models

Single, Three, Four, and Five Factor Models 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 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 chapter we illustrate the conditional performance evaluation approach using lagged default risk, slope term structure, dividend yield and 1 month UK Treasury bill rates as the conditional information[44].

Traditional performance evaluation approaches assume that the consumer of the performance evaluation does not use public information on the economy to form

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

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."

There are many studies which 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 & 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:

$$R_{it} - Rf_t = \alpha_i + \beta_{i0}(Rm_t - Rf_t) + B_i' Z_{t-1}(Rm_t - Rf_t) + \varepsilon_{it} \qquad (4\text{-}3)$$

Z_{t-1} is a vector lagged pre-determined instrument. Assuming that the beta for a fund varies over time, and this variation can be captured by a linear 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 at Fama-French three factor and Carhart's multiple factor model. The conditional three and four-factor model will form the following regressions for the managed portfolio return.

The conditional Fama-French three factor model:

$$R_{it} - R_{ft} = \alpha_i + \beta_{oi}(Rm_t - Rf_t) + \beta_{1i} SMB_t + \beta_{2i} HML_t + \beta_{3i}[Rm_t - Rf_t) \times (DeRisk)_{-1}]$$
$$+ \beta_{4i}[Rm_t - Rf_t) \times (Slop - Term)_{-1}] + \beta_{5i}[(Rm_t - Rf_t) \times (D/P)_{-1}] +$$
$$\beta_{6i}[(Rm_t - Rf_t) \times (TB)_{-1}] + \varepsilon_{it} \text{ ----------(4-4)}$$

and the Carhart four factor conditional model;

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

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 information 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 UK T-Bill rate. All instruments are based on lagged 1 month. These variables are essentially interaction terms between the excess return of the 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 the equation (4-5), 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.

Traditionally performance is measured using unconditional expected returns assuming that both the investor and managers use no information about the state of the economy to form expectations, however, if managers trade on publicly available information and employ dynamic strategies, unconditional models may produce inferior results. Calculating average alpha using a fixed beta estimate for the entire performance period consequently leads to unreliable results if expected returns and

risk vary over time. To address these concerns on unconditional performance models, Ferson and Schadt (1996); Antoniou, Barr and Priestly (1998); Lettau and Ludvigson (2001); Wang (2002) and Zhang, (2003) advocate conditional performance measurement. This is done by using time-varying conditional expected returns and conditional betas instead of the usual, unconditional betas. The predetermined information variables we use as used by Ferson and Schadt (1996) which are publicly available and proven to be useful for predicting stock returns and they are: lagged level of 1-month UK T-bill rate; the lagged dividend yield on market index (FSTE all share price index); a lagged measure of the slope of the term structure and finally a lagged quality spread, by comparing the yield on UK government and corporate bonds.

In the present chapter we will evaluate the added value for performance measurement by introducing time-variance in several betas. First we let the CAPM market beta vary over time. Subsequently time-variation is added to Fama & French model (SMB and HML), Carhart four factor model (Momentum) and finally Elton and Gruber five factor model (bond beta).. The conditional five -factor model (Elton and Gruber, 1999) will form the following regression for the managed portfolio return;

$$R_{it} - Rf_t = \alpha_i + \beta_{0i}(Rm_t - Rf_t) + \beta_{1i}SMB_t + \beta_{2i}HML_t + \beta_{3i}Mom_t + \beta_{4i}(Rb_t - Rf_t) + \beta_{5i}[(Rm_t - Rf_t)\times(DeRisk)_{-1}] + \beta_{6i}[Rm_t - Rf_t)\times(SlopTerm)_{-1}] + \beta_{7i}[(Rm_t - Rf_t)\times(D/P)_{-1}] + \beta_{8i}[(Rm_t - Rf_t)\times(TB)_{-1}] + \varepsilon_{it} \quad (4-6)$$

We will, therefore, test eight model (please see table 4.3) specifications, which will be evaluated based on statistical and economical relevance.

Table 4. 3 Eight Models

Models
1 Unconditional CAPM
2. Unconditional Fama and French 3- factor (added SMB and HML)
3. Unconditional Carhart 4-factor (added momentum)
4.Uncondition Elton and Gruber 5 factor (added momentum and bond)
5.Conditional CAPM (added predetermined information variables)
6. Conditional F -F 3- factor(added predetermined information variables)
7. Conditional Carhart 4-factor (added predetermined information variables)
8. Condition Elton and Gruber 5 factor (added predetermined information variables)

CAPM, Capital Asset Pricing Model

4.3-4 The Data

I. UK Ethical Unit Trust Data

Using Micropal database we construct a database of all domestic UK ethical unit trusts with at least 18-months of data. We exclude balanced and bonds and the funds which invest internationally. Particular difficulties in performance measurement arise from international objectives as such objectives require a suitable international benchmark portfolio to be specified for unit trusts that invest substantial proportion of their funds overseas. For this reason a sample of 35 UK ethical unit trusts (opened ended ethical mutual funds) was chosen with both predominantly UK based assets and UK All companies, Equity Income or Active Managed objectives as detailed in the Unit Trust Year Book for 2003. The database covers monthly return data during the period 1996 to 2003 (Appendix 1). All returns are in UK pound sterling inclusive of distributions and net of management fees. To investigate the influence of investment style on performance we divide ethical unit trusts into subgroups, based on the definition given by Investment Management Association and Unit Trust Year Book(UK) on the basis of unit trusts' investment objective. This leads to three

portfolios of funds: the UK All companies(capital growth), the UK equity income (growing income) and the UK active managed(growth). For purpose of comparison, 35 UK conventional Unit Trust are matched according to age, size and investment universe and monthly return data obtained from Micropal database (Appendix 2).

II Benchmark Indices and Factor Variables

In order to determine the explanatory power to a range of performance models (table 1), we use a number of benchmarks. We obtain factor mimicking portfolios for size (SMB) and book to market (HML) from Krishna Paudyal[45]. The factor-mimicking portfolio for one-year momentum in stock returns have been provided by Stefan Nagel[46]. Apart from these, we include the UK medium term government bond index to test for cash holdings and this data obtained from DataStream. Finally we will examine the marginal explanatory power of introducing time-variation in beta and alpha. In the line with for instance Ferson and Schadt (1996), we use predetermined information variables. We obtain the one-month UK treasury bill data and dividend yield of FTSE All Share price index from DataStream International, slope of term structure and quality spread (comparing the yield of UK government and corporate bonds) obtained from The Economist (economic indicators). All instruments are lagged one month to be predicted. Summary statistical of all variables are show in the Table 4.4.

[45] Professor Krishna Paudyal of Centre for Empirical Research in Finance, School of Economic, Finance and Business, University of Durham, UK. He updates the benchmark returns every month. The benchmark factors (1) the performance of small stocks relative to big stocks (SMB, small minus big) and (2) the performance of value stocks relative to growth stocks (HML, High minus low). The portfolios include all the stocks of FTSE All Share price index. Paudyal supplied us only up todate benchmark factor data. The momentum factor data was received from Nagel. Benchmark factor data of Nagel was not up to date, therefore we use benchmark factor upto date data provided by Paudyal.

[46] Stefan Nagel is a lecturer at Harvard Business School, United States.

Table 4.4

Summary Statistics 1996-2003
Panel A : Sample 35 Ethical Unit Trust Returns

Investment objectives	Mean returns	Standard deviation	Number of funds
UK All Company	0.4521	3.1634	32
UK Equity Income	0.3937	3.4713	2
Active Managed	0.6013	4.9225	1
Combined all fund samples	0.4824	3.5345	35

Summary Statistics 1996-2003
Panel B: Sample 35 Conventional Unit Trust Returns

Investment objectives	Mean returns	Standard deviation	Number of funds
UK All Company	0.5346	4.0544	32
UK Equity Income	0.9355	5.6231	2
Active Managed	0.5470	4.4363	1
Combined all fund samples	0.8004	4.93	35

Panel C: Benchmark Returns for the Period 1996-2003

			Cross Correlation			
Benchmark	**Mean return**	**Std dev**	**RM**	**SMB**	**HML**	**Momentum**
Market(rm-rf))	0.5941	4.4932	1.00			
SMB	0.0630	2.3483	-0.04	1.00		
HML	1.0582	2.8001	-0.15	0.60	1.00	
Momentum	0.3904	4.5048	-0.08	0.35	0.10	1.00
Govt. Bond	5.6399	1.2421	0.11	-0.00	-0.15	-0.03

Panel D: Instrumental variables for the Period 1996-2003

			Cross Correlation		
Variables	Mean	Standard deviation	UK T-Bill	Def-Risk	Slop-Term
1 month T-Bill	.5701	1.1904	1.00		
Def-Risk	0.6422	0.5236	0.22	1.00	
SlopTerm	0.6616	1.7182	-0.71	-0.45	1.00
Dividend Yield	2.9232	0.6151	-0.14	-0.34	0.67

Note: This table reports summary statistics on the UK ethical unit trust (panel A), conventional unit trusts (panel B), benchmark indices (panel C) and instrumental variables (Panel D). The market factor is the excess return on the FTSE All Share price index, SMB the factor mimicking portfolio for size, HML the factor mimicking portfolio for book-to-market, momentum factor the factor mimicking portfolio for the 12 month return momentum and government bond the excess return on a UK Govt. Bond index.

4.3-5 Empirical Results

In order to examine the statistical and economic power of a range of fund performance models, we focus the results at an aggregated level. In view of this, we use separate equally weighted portfolio of the UK Ethical Unit Trusts and the UK conventional unit trusts as input. Later we make groups of unit trusts into portfolios based on self-reported investment styles. Table 4.5 presents out findings with respect to both ethical unit trusts and compared it with conventional unit trust portfolio. In each of the eight models we report alpha, beta, R^2 and log-likelihood (Log L). Using Log L we perform a standard Likelihood Ratio (LR) test in order to determine whether the explanatory power of the new model differs significantly from a previous one in a statistical sense. These comparisons are performed on two different levels. First, we compare all models to the previous model (table 4.5). As for example, we examine whether the Fama- French three factor model fits better than the single-factor CAPM and subsequently whether the Carhart four-factor model fits better compared to the Fama-French three-factor model. Second, we examine whether the conditional version fits better than the unconditional version. Further, we compare the conditional CAPM model to the unconditional CAPM model. If two times the difference in Log L between two models exceeds the corresponding critical value of the χ^2 (degree of freedom) test statistics we report, 'yes'. If not, a no is reported, indicating that the new models do not significantly add explanatory power in assessing ethical unit trust performance. In the table 4.5, using single factor unconditional CAPM model only leads to a monthly alpha estimate of -0.0072 (t-value –0.0213), a market beta of 0.2935 (t-value 3.93) and R^2 of 0.139. Based on these results we could argue that ethical unit trusts do not follow the market closely and underperform. The next model

we consider is the Fama-French model, which introduces two additional risk factors, size and book-to–market. The inclusion of two extra factors lead to significant increase Log L, indicating the relevance of the Fama-French model versus CAPM. Examining the betas enable us to comment on the ethical unit trusts' average investment strategies. As the SMB factor loading is significantly negative (1% significant level), we can forecast that all the ethical unit trusts portfolio is relatively more driven by large cap returns than small cap returns. The HML factor loading is significantly negative (1% significant level), indicating a sensitivity to low book to the market stocks (growth) instead of high book-to-market stocks (growths). Furthermore, there is exposure to the market ups to 0.72, after adding SMB and HML. Controlling for the market risk, size and book-to-market exposures, and the alpha estimate rises from -0.0072 to 0.5684 to (at 5% significant level).

By adding momentum the Carthar four factor models emerges (equation 4-1). The results show that statistically insignificant positive momentum coefficient signal the sensitivity of the ethical unit trust portfolio for low momentum stocks. The inclusion of momentum factor finally makes increase of alpha (0.5385) at 5 % significant level and Log L also increased. Based on this result, we can say that the Carhart four factor models are better at explaining ethical unit trusts' returns. The last unconditional model (equation 4-2) considers the additional value of a government bond index. Although the Log L of this model increases compared to the previous model, it does not meet the critical value at 5% level and underperforms the benchmark.

Emperical Results for an Equally Weighted Portfolio of 35 Samples (each of Ethical & Conventional Unit Trusts), 1996-2003

(Observations: 96, t-value in parentheses)

Model	Alpha	Market	SMB	HML	Mom.	Bond	R^2	Log L	Significant Increase in Log L previsous model?	Significant Increase in Log L to unconditional model?
Ethical Unit Trusts										
1 Unconditional CAPM	-0.0072	0.2935					0.139	-250.081		
	(-0.0213)	(3.90)***								
2 Unconditional FF	0.5684	0.2297	-0.6973	-0.497			0.725	-195.19	Yes	
	(2.67)**	(5.28)***	(-6.77)***	(-5.67)***						
3 Unconditional 4 Factors	0.5385	0.2338	-0.7371	-0.4831	0.044		0.728	-194.715	Yes	
	(2.51)**	(5.35)***	(-6.59)***	(-5.43)***	((0.953)					
4 Unconditional 4 Factors +Bonds	0.4992	0.233	-0.737	-0.4823	0.0444	0.00074	0.728	-194.715	Yes	
	((0.553)	(5.30)***	(-6.50)***	(-5.30)***	((0.949)	((0.0448)				
5 Conditional CAPM	-2.2991						0.173	-248.121		yes
	(-0.948)									
6 Conditional FF	1.3386	0.1426	-0.687	-0.5098			0.734	-193.68		yes
	((0.936)	((0.364)	(-6.45)***	(-5.68)***						
7 Conditional 4 Factors	1.244	0.1511	-0.7221	-0.4964	0.0358		0.735	-193.37		yes
	((0.864)	((0.385)	(-6.19)***	(-5.41)***	((0.746)					
8 Conditional 4 Factors + Bonds	1.4012	-0.0629	-0.733	-0.4914	0.0362	0.1203	0.736	-193.26		yes
	((0.942)	(-0.102)	(-6.13)***	(-5.29)***	((0.749)	((0.449)				
Conventional Unit Trusts										
1 Unconditional CAPM	0.1684	0.1799					0.0267	-288.08		
	((0.336)	(1.61)*								
2 Unconditional FF	1.1379	0.0777	-0.9154	-0.8528			0.699	-231.65	yes	
	(3.66)***	((1.22)	(-6.05)***	(-6.65)***						
3 Unconditional 4 Factors	1.0946	0.0834	-0.9736	-0.8327	0.0642		0.702	-231.18	yes	
	(3.48)***	((1.31)	(-5.95)***	(-6.40)***	((0.943)					
4 Unconditional 4 Factors +Bonds	2.286	0.0877	-0.9536	-0.8557	0.0612	-0.2255	0.705	-230.72	yes	
	(1.74)*	((1.37)	(-5.78)***	(-6.46)***	((0.898)	((-0.933)				
5 Conditional CAPM	-1.478	0.5441					0.032	-287.82		yes
	((-0.403)	((0.545)								
6 Conditional FF	4.3332	-0.7259	-0.9575	-0.8717			0.714	-229.29		yes
	(2.09)**	((-1.28)	(-6.22)***	(-6.71)***						
7 Conditional 4 Factors	4.1492	-0.7094	-1.0258	-0.8457	0.0697		0.717	-228.74		yes
	(1.99)*	((-1.25)	(-6.08)***	(-6.38)***	((1.00)					
8 Conditional 4 Factors + Bonds	4.4212	-1.0799	-1.0445	-0.837	0.0703	0.2083	0.718	-228.57		yes
	(2.06)**	((-1.21)	(-6.04)***	(-6.24)***	((1.01)	((0.538)				

Note:This table reports ordinary least squares estimates for the eight different different modesl we employ. As input we use an equally weighted portfolio of all ethical and convetional unit trusts in our smaple. The last two colums provide an answer to the question of whether the explanatory power of the new model differs significantly from the previous model and whether if differs from the corresponding unconditional mdoel. If two times the difference in Log L between two models exceeds corresponding cretical value (5%), we report yes.

The performance results of the conventional unit trusts portfolio are similar to ethical unit trusts portfolio (at 1% significant level both F-F three factor and Carhart four factor model) . According to statistical viewpoint, we conclude that in an unconditional setting both Fama –Franch three factor model and Carhart four factor model are best suited to measure the unit trust performance.

From conditional CAMP model (equation 4-3), we move over to conditional performance measurement. This model introduces time variation in the CAPM beta. Judging from the increase in Long L (last column of table 4.5), introducing time-variation in market beta does not add explanatory power in compare to unconditional CAPM model. It is mentioned here that for the conditional models we do not report ordinary least squares estimates for betas. It focuses instead on the variation through time of specific variables.

By adding time-variation market beta , we now allow the SMB and HML to vary as well . This does not lead to a significant increase in Log L compared to unconditional model. Alpha of this model is 1.33386 (t-value 0.936), but not taking into account time-variation, lead to an underestimation of managerial performance. Along the same lines we introduce time-variation in momentum and bond . There is a little trend in increasing in Log L, but not much significant improvement for both models (equation 4-5 and 4-6), compared to the previous conditional models with fewer factors. Only the introduction of time-variation in alpha does not lead to an increase in explanatory power. The results show that all conditional models underperform much more than their unconditional peers (last column of table 4.5).

Emperical Results for UK All Companies Investment Style level (Ethical & Conventional Unit Trusts, 1996-2003
(Observations:96, t-values in ţ in parentheses)

Model	Alpha	Market	SMB	HML	Mom.	Bond	R^2	Log L	Significant Increase in Log L Previous Model?	Singnificant in Increase in Log L to unconditional model?
Ethical Unit Trusts(UK All Com)										
1 Unconditional CAPM	-0.0521	0.4542					0.417	-220.55		
	(-0.210)	(8.20)***								
2 Unconditional FF	0.3633	0.4085	-0.486	-0.3597			0.787	-172.2	yes	
	(2.17)**	(11.9)***	(-5.97)***	(-5.97)***						
3 Unconditional 4 Factors	0.3444	0.411	-0.512	-0.3509	0.028		0.788	-171.89	yes	
	(2.03)**	(11.9)***	(-5.81)***	(-5.00)***	((0.764)					
4 Unconditional 4 Factors +Bonds	-0.0423	0.4096	-0.5185	-0.3434	0.029	0.0732	0.789	-171.73	yes	
	(-0.0596)	(11.8)***	(-5.81)***	(-4.79)***	((0.560)	((0.560)				
5 Conditional CAPM	-1.7013	0.858					0.432	-219.261		yes
	(-0.948)	(1.72)*								
6 Conditional FF	0.8877	0.2797	-0.4996	-0.3585			0.792	-170.92		yes
	((0.787)	((0.905)	(5.95)***	(-5.07)***						
7 Conditional 4 Factors	0.8024	0.2873	-0.5312	-0.3465	0.0323		0.794	-170.52		yes
	((0.707)	((0.928)	(-5.78)***	(-4.79)***	((0.854)					
8 Conditional 4 Factors + Bonds	1.1748	-0.2197	-0.5569	-0.3346	0.0331	0.2852	0.798	-169.49		yes
	((1.01)	((-0.455)	((-5.96)***	((-4.62)***	((0.878)	((1.36)				
Conventional Unit Trusts(UK All Com)										
1 Unconditional CAPM	0.0594	0.1316					0.021	-269.47		
	((0.149)	((1.45)								
2 Unconditional FF	0.4949	0.0715	-1.1449	-0.3378			0.7	-212.63	yes	
	(1.94)*	((1.37)	(-9.22)***	(-3.21)***						
3 Unconditional 4 Factors	0.467	0.075	-1.18	-0.3248	0.0414		0.702	-212.34	yes	
	(1.81)*	((1.43))	(-8.80)***	(-3.04)***	((0.740)					
4 Unconditional 4 Factors +Bonds	1.119	0.0776	-1.1715	-0.3374	0.0398	-0.1234	0.703	-211.14	yes	
	((1.03)	((1.47)	(-8.61)***	(-3.09)***	((0.708)	((-0.620)				
5 Conditional CAPM	-2.9352	1.0772					0.043	-268.36		yes
	(-0.980)	((1.30)								
6 Conditional FF	0.8436	0.1849	-1.1745	-0.3412			0.7156	-210.231		yes
	((0.497)	((0.398)	(-9.30)***	(-3.21)***						
7 Conditional 4 Factors	0.7405	0.1941	-1.2128	-0.3266	0.0391		0.717	-209.91		yes
	((0.434)	((0.417)	(-8.76)***	(-3.00)***	((0.685)					
8 Conditional 4 Factors + Bonds	0.4316	0.614	-1.1914	-0.3365	0.0385	-0.2365	0.719	-209.47		yes
	((0.245)	((0.839)	(-8.41)***	(-3.06)***	((0.673)	((-0.745)				

*** Coefficient is statistically signifiacnt at 1%, ** Cofficient is significant at 5% and * Coefficient is significant at 10%

In summary the results show that when we employ unconditional F-F three and Carhart four factor model, the ethical unit trusts outperform. It is observed that the value of alphas increase when we add more factors. But adding bond as factor, the unit trusts beat the market. Further, the average result of conventional unit trust outperform against benchmark as we see in the performance of ethical unit trusts except in the single factor and five factors models. Above results show that unconditional models are best suited to measure the unit trust performance.

Investment Style Level

We will not examine whether the previous results are biased because all ethical unit trusts are pooled within one portfolio and compared with conventional unit trusts portfolio. We will investigate the explanatory power of our eight performance models at the investment style level. Based on the investment style (investment objectives) reported by Investment Management Association UK and Unit Trust Year Book, we built three equally weighted portfolios of the UK ethical unit trusts and they are: the UK All companies, Equity Income and Actively Managed. This allows us to dig deeper into the drivers of unit trust returns which in turn leads to a more detailed analysis of the fund performance. The results of the UK All companies, equity income and actively managed trusts are reported in the table 4.6, table 4.7 and table 4.8 respectively. We observe in the table 4.6 (UK All companies), table 4.7 (Equity Income) and table 4.8 (Actively Managed), inclusion of the SMB and HML adds explanatory power to the unconditional models for all three style portfolios. The momentum factor does not show significant result in all the three equally weighted portfolios of ethical unit trusts. The bond factor does not seem to add any

Emperical Results for UK Equity Income Portfolio(Ethical & Conventional Unit Trusts), 1996-2003

(Observation: 96; t-value in parenthesis)

Model	Alpha	Market	SMB	HML	Mom.	Bond	R^2	Log L	Significant increase in Log L previous model?	Significant increase in Log L to unconditional model?
Ethical Unit Trusts(UK Equity Income)										
1 Unconditional CAPM	-0.093	0.2634					0.117	-249.64		
	(-0.277)	(3.52)***								
2 Unconditional FF	0.1961	0.2224	-0.8154	-0.2211			0.57	-215.02	yes	
	-0.75	(4.16)***	(-6.41)***	(-2.05)**						
3 Unconditional 4 Factors	0.1998	0.2219	-0.8194	-0.2229	-0.0055		0.571	-215.01	yes	
	((0.752)	(4.11)***	(-5.86)***	(-2.03)**	(-0.0962)					
4 Unconditional 4 Factors +Bonds	0.1899	0.2213	-0.8134	-0.2194	-0.005	0.0342	0.572	-215	yes	
	((0.0170)	(4.06)***	(-5.81)***	(-1.95)*	(-0.087)	((0.167)				
5 Conditional CAPM	-1.996	0.7513					0.172	-246.45		yes
	(-0.838)	((1.34)								
6 Conditional FF	0.5344	0.1523	-0.7987	-0.2236			0.591	-212.65		yes
	((0.307)	((0.310)	(-6.16)***	(-2.05)**						
7 Conditional 4 Factors	0.5613	0.1499	-0.7888	-0.2274	-0.0101		0.591	-212.63		yes
	((0.319)	((0.312)	(-5.53)***	(-2.03)**	(-0.173)					
8 Conditional 4 Factors + Bonds	0.6318	0.0538	-0.7037	-0.2251	-0.01	0.054	0.591	-212.62		yes
	((0.347)	((0.071)	(-5.42)***	(-1.98)**	(-0.170)	((0.165)				
Conventional Unit Trusts(UK Equity Income)										
1 Unconditional CAPM	0.454	0.2048					0.026	-300.57		
	((0.794)	(1.61)*								
2 Unconditional FF	1.6929	0.0814	-0.801	-1.1125			0.662	-249.68	yes	
	(4.52)***	((1.06)	(-4.39)***	(-7.19)***						
3 Unconditional 4 Factors	-1.112	0.0879	-0.868	-1.0893	0.0738		0.665	-249.26	yes	
	(4.33)***	((1.14)	(-4.40)***	(-6.94)***	((0.898)					
4 Unconditional 4 Factors +Bonds	3.01	0.0928	-0.8451	-1.1158	0.0704	-0.2587	0.668	-248.84	yes	
	(1.90)*	((1.2)	(-4.24)***	(-6.97)***	((0.855)	(-0.877)				
5 Conditional CAPM	-0.747	0.335					0.032	-300.29		yes
	(-0.179)	((0.289)								
6 Conditional FF	6.078	-1.1385	-0.85	-1.1361			0.681	-247.1		yes
	(2.44)**	(-1.67)	(-4.58)***	(-7.26)***						
7 Conditional 4 Factors	5.854	-1.1184	-0.9331	-1.1044	0.085		0.684	-246.53		yes
	(2.34)**	(-1.64)*	(-4.60)***	(-6.92)***	((1.02)					
8 Conditional 4 Factors + Bonds	6.4136	-1.88	-0.9718	-1.0865	0.0862	0.4286	0.687	-246.06		yes
	(2.49)**	(-1.75)	(-4.69)***	(-6.75)***	((1.03)	((0.922)				

*** Coefficient is statistically signifiacnt at 1%, ** Cofficient is significant at 5% and * Coefficient is significant at 10%

Emperical Results for UK Active Managed (Ethical & Conventional)Unit Trusts, 1996-2003
(Observation: 96; t-value in parenthesis)

Model	Alpha	Market	SMB	HML	Mom.	Bond	R^2	Log L	Significant Increase in Log L previsous previous model?	Significant Increase in Log L to unconditional unconditional model?
Ethical Unit Trusts(UK Active Mnag.)										
1 Unconditional CAPM	0.1236	0.1629					0.022	-288.1		
	((0.246)	((1.46)								
2 Unconditional FF	1.146	0.0586	-0.7885	-0.9101			0.66	-237.36	yes	
	(3.47)***	((0.868)	(-4.91)***	(-6.69)***						
3 Unconditional 4 Factors	1.071	0.0684	-0.8889	-0.8754	0.1106		0.668	-236.12	yes	
	(3.24)***	((1.02)	(-5.16)***	(-6.39)***	((1.54)					
4 Unconditional 4 Factors +Bonds	1.521	0.07	-0.8813	-0.8841	0.1095	-0.0851	0.669	-236.09	yes	
	((1.09)	((1.03)	(-5.05)***	(-6.31)***	((1.52)	(-0.333)				
5 Conditional CAPM	-3.1994	1.2511					0.055	-286.41		no
	(-0.885)	((1.25)								
6 Conditional FF	2.5936	-0.0041	-0.7628	-0.9474			0.675	-235.09		yes
	((1.18)	(-0.0068)	((-4.66)***	(-6.86)***						
7 Conditional 4 Factors	2.3683	0.016	-0.8464	-0.9155	0.0854		0.68	-234.35		yes
	((1.07)	((0.266)	(-4.74)***	(-6.51)***	((1.16)					
8 Conditional 4 Factors + Bonds	2.3969	-0.0229	-0.8483	-0.9146	0.0855	0.0219	0.68	-234.35		remain same
	((1.05)	(-0.024)	(-4.62)***	(-6.42)***	((1.15)	((0.053)				
Conventional Unit Trusts(UK Active Mang.)										
1 Unconditional CAPM	0.0762	0.0883					0.008	-278.6		
	((0.168)	((0.872)								
2 Unconditional FF	0.3817	0.0375	-1.2489	-0.2099			0.569	-238.548	yes	
	((1.14)	((0.550)	(-7.68)***	(-1.52)						
3 Unconditional 4 Factors	0.3768	0.0382	-1.2555	-0.2076	0.0072		0.579	-238.543	yes	
	((1.11)	((0.554)	(-7.11)***	(-1.48)	((0.0992)					
4 Unconditional 4 Factors +Bonds	-0.984	0.0333	-1.2783	-0.1813	0.0107	0.2575	0.574	-238.02	yes	
	(-0.694)	((0.482)	(-7.18)***	(-1.27)	((0.145)	((0.988)				
5 Conditional CAPM	-6.9121	2.1278					0.066	-275.67		yes
	(-2.14)**	(2.37)**								
6 Conditional FF	-3.7036	1.338	-1.2854	-0.1718			0.602	-234.77		yes
	(-1.69)*	(2.23)**	(-7.87)***	(-1.25)						
7 Conditional 4 Factors	-3.7423	1.3423	-1.2994	-0.1665	0.0413		0.602	-234.75		yes
	(-1.69)*	(2.22)**	(-7.24)***	(-1.18)	((0.193)					
8 Conditional 4 Factors + Bonds	-4.0896	1.8165	-1.2754	-0.1776	0.0135	-0.2667	0.604	-234.51		yes
	(-1.79)*	(1.91)*	(-6.94)***	(-1.54)	((0.183)	(-0.647)				

*** Coefficient is statistically signifiacnt at 1%, ** Cofficient is significant at 5% and * Coefficient is significant at 10%

explanatory power based on all ethical unit trust portfolios. We see similar results at the all conventional unit trust portfolios.

Moving over to conditional performance models we first observe that the inferiority of all conditional models over their unconditional counterparts (last column of tables 4.6, 4.7, and 4.8). Within the range of conditional models, the addition of time-varying SMB, HML factors are relevant for all style portfolios. The evidence of momentum and bond do increase a little in Log L both for ethical and conventional unit trusts. We do not observe any significant time-variance in alpha in any of the three portfolios either in ethical or conventional unit trusts. The economic significance of the eight different model specifications will be illustrated by examining the influence of more elaborate performance models on alpha. For the UK all companies and active portfolio of ethical unit trusts, the alpha estimates do not change dramatically when going from an unconditional CAPM model to Carhart four factors model. The same can be observed with conventional unit trusts as well (table 4.6). For equity income portfolio the use of elaborate performance models has a good impact on both ethical and conventional unit trust alphas. Moving from an unconditional CAPM model (table 4.8) to conditional CAPM model makes alpha for active managed decrease from 0.12% to -3.19% per month.

Finally, the differences in alpha between ethical and conventional funds provides us with an interesting development. Although in single factor model for both unconditional and conditional, alphas are insignificant and negative but subsequently with addition of more factors, alphas are gradually transformed into a slight out-

Emperical Results of Difference Between the Ethical and Conventional Portfolio of Sample Unit Trusts, 1996-2003
(Observations:96, t-values in ţ in parentheses)

Model	Alpha	Market	SMB	HML	Mom.	Bond	R^2	Log L	Significant Increase in Log L to Previous model?	Significant increase in Log L to unconditional model?
1 Unconditional CAPM	-0.1756	0.1135					0.046	-216.22		
	(-0.740)	(2.15)**								
2 Unconditional FF	-0.5694	0.1521	0.2185	0.3558			0.379	-195.62	yes	
	(-2.67)**	(3.48)***	(2.10)**	(4.04)**						
3 Unconditional 4 Factors	-0.556	0.1503	0.2365	0.3495	-0.0198		0.38	-195.53	yes	
	(-2.56)**	(3.41)***	(2.10)**	(3.9)***	(-0.42)					
4 Unconditional 4 Factors +Bonds	-1.7867	0.1459	0.2158	0.3734	-0.0167	0.2329	0.3939	-194.48	yes	
	(-1.98)*	(3.32)***	(1.91)*	(4.11)***	(-0.35)	((1.41)				
5 Conditional CAPM	-0.8211	0.3993					0.074	-214.82		yes
	(-0.47)	((0.83)								
6 Conditional FF	-2.9946	0.8686	0.2704	0.3619			0.447	-190.06		yes
	(-2.17)**	(2.30)**	(2.64)**	(4.19)***						
7 Conditional 4 Factors	-2.9052	0.8606	0.3036	0.3492	-0.0339		0.45	-189.76		yes
	(-2.10)**	(2.27)**	(2.70)**	(3.95)***	(-0.73)					
8 Conditional 4 Factors + Bonds	-3.02	1.017	0.3115	0.3455	-0.0341	-0.0879	0.451	-189.7		yes
	(-2.11)**	(1.71)*	(2.70)**	(3.86)***	(-0.73)	(-0.34)				

*** Coefficient is statistically signifiacnt at 1%, ** Cofficient is significant at 5% and * Coefficient is significant at 10%

performance from 10% to 5% significant level (Table 4.9). It reveals that the UK ethical unit trusts performance clearly hold up with conventional funds at least during our sample period. As the SMB factor loading is significantly positive both unconditional and conditional models, we believe that all fund portfolios are relatively more driven by small cap returns than by large cap returns. The HML factor loading on the other hand is significantly positive too, indicating sensitivity to high book to market stocks (value). When we observe the Carhart model, the significantly negative momentum coefficient signals the sensitivity of the ethical unit trust portfolio for low momentum stocks. Based on the increase in Log likelihood, the 4 factor model is better at explaining the unit trust return. The inclusion of the momentum factor makes slightly the alpha increase to -0.03 in unconditional model to -0.09 in conditional model. The last unconditional model considers the additional value of a government bond index. Although Log likelihood of this model slightly increases, it does not meet the critical value at 10% level. From the statistical view point we do not find any significant different of the results between unconditional and conditional models in this case.

In summary, we can say that SMB and HML add explanatory power to the unconditional models for all portfolios styles compared to conditional models. After controlling the momentum factor, the results show significant performance to all three portfolios of ethical unit trusts.

4.3-6 Conclusions

Ethical system contains specific guidelines for achieving the moral filter and for conducting business. These guidelines derive from the interrelated concepts of unity,

justice and trustship. The demand for securities in which investors can exercise their moral responsibility is met by the supply- the financial intermediaries-which creates ethical funds, following the tendency to offer standardised investment packages with regards to return, term, currency etc. Ethical funds are therefore a standard response to that demand. The responsible investors make their decision between a minimum (not investing in clearly immoral companies) and a broad range of increasing excellent opportunities (from financing companies which stand out for ethical conduct and trying to influence companies management so that they cease to act immorally or improve quality based on ethics). We discussed that it is possible to define four main groups of decisions that must be made by ethical funds; (1) the determination of the selection criteria based on ethical guidelines to choose the industries and companies in which the ethical fund will invest (positive criteria) or not to invest (negative criteria); (2) choosing the companies to invest in (this is associated with information problems and problems arising from the prudential application of ethical principles); (3) setting the investment maintenance and replacement criteria and (4) establishing the policy of relationships with the management of the companies whose shares are included.

The ethical unit trust industry in UK has witnessed a rapid growth in the last 15-20 years and has become a significantly large retail market. This study provides a comprehensive assessment of mutual fund performance models using UK ethical unit trusts relative to their conventional peers with the intention to complement existing studies on ethical unit trust performance. Our results reveal five conclusions. First, within an unconditional setting, we find Fama-French three factor and Carhart four factor model including market beta, SMB, HML and momentum are best able to

explain ethical unit trust returns. Second, conditioning betas on publicly available information proves to be unsuitable for ethical unit trust performance. All conditional models are inferior to their unconditional peers. Third, we find very little evidence of time-variation in fund alphas. Only at the investment style level the portfolio containing funds in the UK All companies exhibit a little time varying in fund alphas. Fourth, at the aggregate level all ethical unit trust portfolios, the alphas do change when going from unconditional CAPM to conditional Carhart four factor model. In the investment style level, the influence of unconditional Fama-French three factor model and unconditional Carhart four factor models are more significant. Fifth, after controlling for style tilts and allowing for time variation in betas and expected return, the UK ethical unit trust results are consistent with the general perception that there is no difference between ethical unit trust performance and their conventional peers.

When we go to the question of which model to use for performance measurement, we make statistical and economic relevance. Purely based on statistical significance, the unconditional Fama-French three factor and Carhart four factor are clearly superior to the conditional models. When measuring performance at an aggregated level the influence of using elaborate conditional models are not that obvious. At the investment style level, however, the use of three factor and multifactor models do have a clear positive impact to estimate alpha of the funds.

4.7 Appendix

Appendix 1 Sample of UK Ethical Unit Trust 1996-2003

Sl. No.	Name of the Ethical Trust	Sample date/ Starting date	Fund size (in million £)	Investment Objective
1	Abbey Nat.Ethical Ac	12.09.1987	49.8	UK All companies
2	Abbey National Ethical Inc	12.09.2000	10	UK All companies
3	AEGON Ethical Inc	17.04.1989	45.4	UK Equity Income
4	Allchurches Amity Acc	10.02.1988	32.2	UK All companies
5	Allchurches UK Equity Gwth Acc	21.10.1988	55.2	UK All companies
6	AS Church House UK Growth	29.06.2000	14	UK All companies
7	AXA Ethical Acc	05.05.1998	24.2	UK All companies
8	Berkeley Socially Resp Acc	01.02.2000	66.87	UK All companies
9	CAF Socially Responsible Fund	01.11.00	35	UK All companies
10	Credit Suisse Fellowship Rtl	01.07.1986	57.85	UK All companies
11	CIS Unit Marg.Environ Tst	01.01.1996	125.8	UK All companies
12	Family Charities Ethical	01.03.1982	10.74	Active Managed
13	Family Inv.Man. Charities Ethical	01.10.1999	52	UK All companies
14	Friends Provt. Stw. Inc. Trust Ac	01.06.1984	667.33	UK All companies
15	Friends Provt. Stw. Inc. Trust Dist	13.10.1987	382.68	UK Equity Income
16	Friends Provt. I & S UK Ethical UK	22.11.1982	65.86	UK All companies
17	Henderson UK Ethical A	31.12.1969	53.9	UK All companies
18	Insight Inv Eur Ethical Rtl	17.03.2000	19.5	UK All companies
19	ISIS UK Equity Sc1 Acc	31.05.1984	545	UK All companies
20	ISIS UK Ethical Sc2 Inc	01.10.1996	30.3	UK All companies
21	ISIS Stewardship Gth SC1 Inc	13.10.1987	124.2	UK All Companies
22	Jupiter Environmental Opps	22.11.1999	20	UK All companies
23	Jupiter Ecology Fund	01.01.1988	158.3	UK All companies
24	L&G Ethical	05.07.1999	32.7	UK All companies

25	Morley SF UK Growth	19.02.2001	41.9	UK All companies
26	Norwich UK Ethical	10.05.1999	69.01	UK All companies
27	Old Mutual Ethical A Inc	31.03.1998	9.3	UK All companies
28	Scot Amicable Ethical	20.08.1997	43.3	UK All companies
29	Sovereign Ethical	02.05.1989	25	UK All companies
30	St Jam Place Ethical Ac	01.05.1999	22	UK All companies
31	St Jam Place Ethical Inc.	01.05.1999	21	UK All companies
32	Std Lf UK Ethical Rtl	16.02.1998	52.8	UK All companies
33	SW Environmental Investor Acc	30.09.1987	142.01	UK All companies
34	SW Ethical A Acc	30.09.1987	40.4	UK All companies
35	Teachers Sov. Ethical Fund	01.10.1996	25	UK All companies

Appendix 2: Sample of Conventional UK Unit Trust 1996-2003

Sl. No.	Name of the Trust	Sample Start date	Fund Size as on 28.03.02	Investment Objective
1	Abbey Natl N&P UK Growth	01.01.1996	69.4	UK All Companies
2	Aberdeen UK Opps A Inc	01.01.1996	61	UK All Companies
3	AEGON UK Equity Growth A	01.01.1996	287.7	UK All Companies
4	Artemis UK Growth	01.05.1998	200.9	UK All Companies
5	Allianz Dresdner UK Equity C	01.01.1996	63.2	UK All Companies
6	AXA UK Growth	01.01.1996	344.18	UK All Companies
7	BWD UK Mid Cap Growth	02.08.1999	29.41	UK All Companies
8	BWD UK Blue Chip Growth	01.01.1996	31.1	UK All Companies
9	BGI Growth & Income Inc	01.01.1996	152.5	UK All Companies
10	Canlife General	01.01.1996	167.2	UK All Companies
11	Cavendish Opportunities Rtl	01.01.1996	8.27	UK All Companies
12	Cazenove Managed UK Equity B	01.12.1999	39.91	UK All Companies
13	Credit Suisse FTSE100Tkr Rtl	03.05.1999	14.14	UK All Companies
14	Deutsche Genesis	01.01.1996	82.1	UK All Companies
15	Endurance Fund	01.01.1996	17.6	UK All Companies
16	Fidelity Growth & Income	01.01.1996	180.5	UK All Companies
17	Fidelity MoneyBuilder UK Indx	01.01.1996	241.7	Active Managed
18	GAM Multi-UK Inc	01.06.1999	29.03	UK Equity Income
19	Hiscox UK Opportunities	01.04.1998	50	UK All Companies
20	INV PERP Rupert Children's	01.01.1996	71.28	UK All Companies
21	INV PERP UK Key Trends	02.03.1998	26.22	UK All Companies
22	ISIS UK Prime SC1 Acc	01.05.2001	27.2	UK All Companies
23	JPMF UK Dynamic Shares Acc	01.11.2000	49.99	UK All Companies
24	Jupiter Undervalued Assets	01.06.2000	43.7	UK All Companies

25	L&G Stockmarket Growth (xBa)	01.06.1998	75.3	UK All Companies
26	L&G Growth Inc	01.12.2000	64.2	UK All Companies
27	Marks&Spencer UK 100 Cos	01.01.1996	356	UK All Companies
28	Merrill Lynch UK Dynamic Inc	01.11.2000	270.9	UK All Companies
29	MFM Bowland Fund	02.08.1999	3.03	UK All Companies
30	SW UK Tracker A Acc	01.11.1996	298.11	UK All Companies
31	SocGen UK Spec 350 Equity	03.01.2000	94.4	UK All Companies
32	Solus UK Growth	01.01.1996	8.96	UK All Companies
33	Solus UK Special Situation	01.01.1996	34.51	UK Equity Income
34	SVM UK Opportunities Rtl	03.04.2000	18.3	UK All Companies
35	SVM UK 100 Select Rtl	03.04.2000	18.2	UK All Companies

Chapter 5

Ethical Investing

The Impact of Ethical Screening on Investment Performance

– The Case of the Dow Jones Islamic Index

5.1 Introduction

One of the most important features that enables Islamic ethical funds to distinguish themselves from conventional funds is the type of ethical screening they perform. Generally, Islamic ethical 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. The literature also refers to a third type of screening – best of sector (best in class) which combines both positive and negative screening on a sector basis (Cummings, 2000). An example might be the best scoring company within the oil sector (although this sector has issues of pollution).

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 personal 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 magazines etc.), tobacco, weapons production (e.g., the sale or production of strategic goods or services for military use including nuclear weapons), the manufacture of ozone-depleting chemicals, the extraction/ use of large quantities of tropical hardwood, environmental pollution and any other activity deemed offensive to the principles of Islam. More recently, Islamic investing concerns have expanded to include 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 to continue (Iqbal, 2000; Hassan, 2002). Islamic investing, however, is not without its critics. The primary objective of this research is to gain further insights into the potential impact these additional Islamic ethical screens have on investment performance.

There are essentially two opposing views regarding the economic viability of Islamic 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 personal values, while also raising this awareness to firms that are not responsible to social 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

investing highlight the potential adverse side effects that might result from using Islamic screens to limit the investment universe. Major concerns include the potential increase in volatility, lower returns, reduced diversification and the additional screening and monitoring costs that result from implementing Islamic ethical screening. In particular, Islamic screenings tend to eliminate larger firms from the investment universe and as a result, the remaining firms tend to be smaller and have more volatile returns. Lower returns are also possible as Islamic screens eliminate stable blue chip companies and otherwise attractive investment opportunities from further consideration.

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

During the late 1990s, Islamic ethical funds rode on the technology boom. In 1996, for example, there were twenty-nine Islamic funds on the market with $US800 million in assets. However, (although according to a study on Islamic funds for the year ending 2001 (Failaka), the high growth rate of about 50%, has dropped) by early 2000 the number of funds had grown to ninety-eight with approximately $US5 billion in assets. As at December 2001, there were over one hundred Islamic equity funds with total assets estimated at roughly US$ 5.3 billion (Failaka, 2002).

A key factor in the growth may be 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 – and, as a result, interest has been generated among the managers of equity funds. Furthermore, the payment of dividends complies with Shari'ah (whereas the payment or receipt of interest (*riba*) does not). Therefore, unlike fixed income assets such as government bonds, mutual funds and equities are more compatible with the Islamic doctrine of profit and risk sharing principles.

Until now, most academic studies on ethical fund performance have 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), whilst 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 and the influence of screening on performance provides a first hand observation for Islamic ethical investors. Despite the increasing attention given by practitioners to Islamically ethical screened investments, there is scant academic research. As far as we know, no other studies have tried to differentiate between Islamic ethical and conventional investment and to compare their performance.

The primary objective of this study is therefore to determine the impact that Islamic screens have on investment performance. This research is interesting, because

the nature of equity funds inhibits our ability to use a comparison of Islamic fund performance as a means for isolating the additional costs that result from applying Islamic screens. If we go into depth concerning the nature of this problem, it may be observed that Islamic fund performance does not merely reflect the returns to its underlying securities, but rather that it 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 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 fund performance to establish the impact that the application of Islamic ethical screens has on investment performance.

Therefore, we examine the performance of characteristic Islamic screened stock indexes that impact upon the performance of actively managed Islamic ethical funds. A comparison of the performance characteristics 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 questions of what are the actual relative returns of an Islamic ethical portfolio? and what impact does an Islamic ethical screen have on investment performance?

We evaluated the performance of the Islamic and conventional indexes using the traditional risk-adjusted measures such as the Sharpe, Treynor and the Jensen measures. We also employed more elaborate multi-factor models that controlled 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 portfolios. The chapter is organised into eight sections. Section 5.2 discusses the features of the Islamic ethical funds and investment. Section 5.3 highlights the regulatory framework of Islamic capital markets. Section 5.4 looks at the possible ways in which Islamic ethical investment criteria can impact of financial performance. Section 5.5 discusses the models and methodology used in the performance analysis. Section 5.6 focuses on the data sources and variables employed in the study. Section 5.7 presents the empirical results based on the single factor asset pricing model, the three factor Fama -French model as well as Carhart's four factor model using both unconditional and conditional information. Section 5.8 contains conclusions.

5.2 Features of Ethical Funds and Investment

5.2-1 Islamic Ethical Investment

Islamic ethical investment can be defined as investment in financial services and investment products that adhere to principles established by the Shari'ah. These principles require that;

- Investments must be in ethical sectors (i.e., profits cannot be made from prohibited activities).
- Investment in interest (riba) based financial institutions is not allowed.
- Investment in interest-based securities (e.g. bonds, bank deposits etc.) is not allowed since these securities provide returns that are predetermined and

unrelated to the underlying performance of the asset that is generating the returns.[47]

- All wealth creation should result from a partnership between the investor and the user of capital in which rewards and risks are shared.
- Returns on invested capital should be earned (i.e. tied to the profits generated by the capital) rather than be pre-determined (as in interest based returns provided by bank deposits).

5.2.2 Stock Market Investment

There is a near consensus among contemporary scholars that it is lawful (halal) to invest in stock markets provided the company invested in is not engaged in a business forbidden by Shari'ah (Usmani, 2002). However, there is also a minority view that even when an investment in a business is prima facie lawful (halal), it will still not be lawful because all businesses, especially publicly listed joint stock companies, in practice use interest-based financing to establish and run their business. That said, the opinions of contemporary scholars are converging more in favour of shares of companies whose gearing level does not exceed 33% and whose earnings from interest and incidental unlawful (haram) activities do not exceed 5% of the total earnings and whose assets do not comprise cash and receivables in excess of 49%. Based on the criteria outlined above, special indices – e.g., Dow Jones Sustainability Index, Dow Jones Islamic Market Index, FTSE Islamic Index et al – have been designed containing stocks listed world-wide.

[47] By the same logic, equity securities (shares) are considered permissible by a consensus of contemporary Islamic ethical scholars (e.g. the Islamic Fiqh Academy), because the profits an investor makes on equity securities are tied to returns of the underlying company and hence are risk related.

As the popularity of equity markets increases, Islamic scholars and business people have progressed towards defining and implementing the principles underlying Islamic investing (DeLorenzo, 2001). The progress has been helped by the establishment of the Dow Jones Islamic Market Index (DJIM) in 1996 and the FTSE Global Islamic Index in 1999. The two Indexes have spawned over fifteen style[48] and regional indexes tracking stocks conforming to Islamic principles.

As of 31st December 2002, the Dow Jones Islamic Market Index (DJIM) had a total market worth approximately $7.5 trillion and is composed of over 1,000 equities. The average capitalization of a firm on the index is about $12 billion. The DJIM index is reviewed quarterly to ensure it keeps up with religious and capitalization guidelines. It is weighted approximately 75% to the Americas, 15% to Europe and Africa and 10% to Asia and the Pacific Rim. The high weighting for the Americas occurred in part because American companies, which have relatively low debt ratios, generally survive screening better than firms in other parts of the world. As per offer documents published by the Dow Jones Index Group in 2003, it is expected that $15 billion to $30 billion will be under management in active and index mutual funds within 4 to 5 years. Given this expansion, it can be expected that the Dow Jones Islamic index will be followed with special interest by ethical investors living in the West.

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[48] The managers of individual stock funds nowadays feel pressured to keep the portfolios they manage fully invested at all times, and to confine themselves to a given portfolio style that defines the fund's strategy-growth versus value stocks, for example, or large-cap stocks versus small-cap stocks.

5.2.3 Qualitative and Quantitative Screening of Stocks

The DJIM addresses demand by creating a standard for applicable Islamic equity investing. It was designed to track the performance of leading, publicly traded companies whose activities are consistent with Islamic Shari'ah principles. Two types of screening are practised;

1) Qualitative Screen;

This is a part of the general rules followed by Shari'ah scholars in determining what is lawful (halal) and what is unlawful (haram) for investment.

There are two types of qualitative screens;

(i) Industry screening (positive screening);

Is the company in an industry prohibited as per Islamic ethical criteria or in an industry involved in unethical business/ activities?

(ii) Business practices (negative screening);

Is the company exploitative in its relationship with customers and suppliers or unethical in its trade practices?

2) Quantitative Screen;

Again, this is a part of the general rules followed by Shari'ah scholars in determining what is lawful (halal) and what is unlawful (haram) for investment. There are three types of quantitative screens;

(i) Debt/ asset ratio;

Has the company borrowed funds on interest (whether fixed or floating)? It is clear that there should ideally be no interest-based debt but that it should be based on the Islamic legal principle of "li al-akthar hukm al-kul" (to the majority goes the

verdict of the whole) and subsequent scholarly opinions that a company is not a permissible investment if debt financing is more than 33% of its capital.

(ii) Interest-related income;

Does the company generate any interest or interest-related income? This includes those companies which do not make earning interest their business but place their surplus funds in investments that yield interest income. As in the previous case, ideally no income should come from interest-related sources. According to some scholars, however, up to 10% of a company's total income can be derived from interest sources.

(iii) Monetary assets;

Are substantial portions of the company's assets monetary? Items such as accounts receivable and liquid assets such as bank accounts and marketable securities are relevant. Various minimums have been set for the ratio of illiquid assets (assets that are not in the form of money) necessary to make an investment permissible. Some set this minimum at 51% (again, according to the principle of "to the majority goes the verdict of the whole"). A few ethical scholars cite 33% as an acceptable ratio of illiquid assets to total assets.

Like socially responsible screening, Islamic screening criteria provide a complete framework for fund managers to follow in their investment practices. Consequently, the exclusion of some sectors and preference for others will have an effect on the direction that Islamic ethical funds follow. This can be a positive or negative effect depending on the balance of sectors in the portfolio. Major concerns include the potential increase in volatility, lower returns and reduced diversification (Sauer, 1997) and opponents argue that Islamic screening tends to smaller and more

volatile returns. Lower returns are indeed possible because Islamic screens can eliminate stable blue chip and other attractive investment opportunities.

5.2.4 Trading and Investing Practices

In addition to criteria for selection of securities, Shari'ah principles are also applicable to investing and trading practices when applied to individual investors as well as Islamic ethical funds. Among the principles is the insistence that investable funds must be free of interest-based debt. The investors cannot borrow on interest to finance their investments, and therefore they cannot trade on margin i.e., borrow to purchase shares. Conventional funds such as hedge funds, arbitrage funds and leveraged buy-out (LBO) funds all borrow heavily in order to finance their investment practices, and so are prohibited for Islamic ethical investors.

Unlike conventional investors, Islamic ethical investors are prohibited to participate their investment decisions on short-term speculation. Trading is important and should be well timed to take advantage of market prices but these considerations should go hand in hand with the fundamental value of the companies in which investment is made.

5.3 Regulatory Framework of the Islamic Capital Market

The main goals of stock market regulation are to promote efficiency and to ensure ethics and fairness in the markets. However, a conflict exists between efficiency and ethics and in such cases regulations involve a trade-off between efficiency and ethics. Islamic norms and ethics are enunciated by Islamic jurisprudence (Shari'ah) which governs Islamic markets.

The problem arises because allocative efficiency implies that funds should be channelled into financially desirable projects. Prices theoretically signal the flow of funds and reflect the intrinsic value of stocks in both the primary market where initial public offerings are made and the secondary market where stocks are continuously traded. Pricing efficiency (prices of stocks must equal their respective fundamental values at all times) is a prerequisite for allocative efficiency. The equality between prices and value of a stock can only be achieved where there is informational efficiency. A further aspect of the situation is that, in order for there to be operational efficiency, transactions should be executed at minimal costs. Thus both informational efficiency and operational efficiency are pre-requisites to pricing efficiency. Consequently, any move or regulation that reduces transaction costs, simplifies the trading system, increases the availability and accuracy of information or improves information processing by participants, is a step towards improving allocative efficiency. In an efficient market, violent price swings are also ruled out.

5.3.1 Ethics and Efficiency Issues in Conventional and Islamic Ethical Investing

However, whilst the promotion of efficiency is the primary goal of the stock market regulator, another goal is to ensure ethics and fairness in the markets. Shefrin and Satatman (1992) present a much broader framework and identify the following seven classes of market fairness;

- Freedom from coercion; all investors have the right not to be coerced into a transaction.
- Freedom from misrepresentation; all investors have the right to rely on information voluntarily disclosed as truthful.

- Equal information; all investors are entitled to have equal access to a particular set of information.
- Equal processing power; all investors are entitled to a competency floor of information processing ability and protection against cognitive errors.
- Freedom from impulse; all investors are entitled to protection from imperfect self-control.
- Efficient prices; all investors are entitled to trade at prices they perceive as efficient or correct.
- Equal bargaining power; all investors are entitled to equal power in negotiations leading to a transaction.

Sherifin and Sataman (1992) also analyse the following six major stock market regulations;

(1) Merit or blue sky regulations

(2) Mandatory disclosure regulations

(3) Stability regulations

(4) Margin regulations

(5) Trading interruption regulations

(6) Insider trading regulations

Regulations would vary across country markets because of differences in the relative importance given to concerns about ethics and efficiency by regulators. In many countries that have Islamic stock markets, regulators seem to have adopted the framework of governance that exists in the US as a benchmark, thus having

underlying US model ethics-efficiency notions but subjecting them to an Islamic evaluation.

The Islamic system can be defined in terms of rights or entitlements alone. Rights in the Islamic framework are subsumed under the broader concept of fairness (haqq) which places an emphasis on both rights and obligations. Islamic jurisprudence (Shari'ah) as formulated through various judicial schools contains commands and prohibitions in five broad categories;

(1) Obligatory acts,

(2) Recommended acts,

(3) Permitted actions,

(4) Acts that are discouraged and regarded as reprehensive but not strictly forbidden,

(5) Acts that are categorically forbidden.

Both ethics and efficiency notions involve Islamic jurisprudence (Shari'ah), which underlie all Shari'ah rulings that form the basis of legislation and regulation in an Islamic system. The objectives of rulings or regulations in the Islamic system comprise benefits and maintain fairness. Regulations in conventional markets, such as the US, have continuously evolved over time. Their present shape may be traced to decades of debate, discussions in the light of new events, practices in markets and the experiential learning of regulators and policy makers. All regulations and rules in an Islamic system are derived from the Quran, Hadith (tradition of the Prophet) and through Ijtihad (the process of extracting or deriving legal rules form the sources of law is termed Ijtihad, which means endeavour involving total expenditure of effort).

5.3.2 Ethics and Regulation of Islamic Stock Market

The stock market regulation framework, according to Islamic ethics, is based on the following principles;

(1) Freedom of Contract

Neither conventional nor Islamic markets provide total freedom from coercion. Conventional markets are characterised by merit regulations and trading halts. In the primary market, merit regulations govern the issuance and sale of securities. This diminishes the right to freedom from coercion and makes sense only in a world where investors are likely to commit cognitive errors and lack of perfect self-control. Regulations requiring mandatory disclosures improve the informational efficiency of the market.

As far as secondary markets are concerned, trading halt regulations permit an exchange to suspend trading temporarily. Similar regulations also attempt to introduce price limits – upper and lower bound – outside which trading cannot take place, and disallow short-sale when prices are declining. In an Islamic market, there are far greater constraints on freedom. A constraint that has a direct impact on the size of the Islamic stock market relates to the objective of the exchange. In an Islamic market, the objective of the contract must be lawful. Equity or stock as a contract has been subjected to much scrutiny and has been generally found to be acceptable in an Islamic system. However, while stocks of all kinds of companies may be traded in a conventional market, the universe of permissible stocks is considerably smaller than

in an Islamic market. Based on Shari'ah compatibility, only about 22 % of stocks that are part of the Dow Jones Index are found to be permissible.

(2) Prohibition of Riba (interest/usury)

Prohibition of riba is central to the Islamic financial law and also unique to an Islamic stock market. The Quran and Hadith (tradition of the Prophet) are explicit in condemning riba and leave little room for divergence of views or interpretation. The riba-related norms require that stocks of conventional banks and financial institutions that explicitly deal in interest-based activities are excluded from the universe of permissible stocks. Another major requirement of riba prohibition is that stocks must reflect ownership interests in real assets and not in debts or money in order to be tradable at a market price. When a stock represents ownership interests in money or debt, these can only change hands without any increase or riba. The norm relating to riba-prohibition also rules out interest-based borrowing that is part of the market microstructure, such as margin trading.

(3) Prohibition of Gharar

The Arabic word gharar means risk, uncertainty and hazard. Some degree of gharar is acceptable in the Islamic stock market. Only conditions of excessive gharar need to be avoided. There are several categories of gharar, as follow;

- Settlement Risk (when the seller has no control over the subject matter i.e. a sale without taking possession),
- Inadequacy and inaccuracy of information (gharar or uncertainty may be caused by a lack of adequate value-relevant information),

- Complexity in Contracting (gharar also refers to undue complexity in contracts; Shari'ah does not permit interdependent contracts, for example combining two sales in one is not permitted according to a number of authenticated hadiths),
- Games of Chance (the Quran prohibits contracts based on uncertainty or pure games of chance).

A gharar transaction is a zero-sum game with uncertain payoffs (Al-Suwailem, 1990). A zero-sum game, by definition, is a game in which the interests of the two parties are in direct opposition. The set of Islamic rules and regulations, such as the prohibition of gharar, seek to ensure that exchange is undertaken for achieving win-win outcomes and excluding transactions leading to win-lose or lose-lose outcomes. A legitimate question arises concerning the difference between buying a lottery ticket and buying a share in the stock market. A clear difference is that a lottery is a zero-sum game. The winner of a lottery only wins at the expense of the others. In a stock market, all participants might win when economic conditions are favourable. The implication is that since collective winning is possible in a stock market, it certainly does not involve gharar and is therefore permissible. Al-Suwailem (1999) provides very useful regulatory rules for the stock market as far as gharar is concerned. Therefore, it is evident that the regulator would need to be extremely vigilant, play a dynamic role and ensure that speculation is discouraged to the minimum, even if not entirely eliminated. But the microstructure of conventional markets is often designed to facilitate such speculation. With minimisation of speculation as an important motive of the regulator, the regulator should focus on curbing the anomalies which arise primarily due to the presence of speculation fuelled by the availability of usury

(riba) based financing of stock transactions, stock lending systems, margin trading and periodic settlement systems.

(4) Free and Fair Price

At the macro level, Islamic finance envisages a free market where prices are determined by forces of demand and supply. There should be no interference in the price formation process even by the regulators. Islamic ethics condemn any attempts to influence prices through creating artificial shortage of supply – the Islamic term for this is ihtikar. Similarly, any attempt to bid up the price by creating artificial demand is considered unethical. The presence of ghubn means the difference between the price at which a transaction is executed and the fair price and this makes a transaction unethical.

Speculation is also against the norms of Islamic ethics and an Islamic market would be free from any mechanism that encourages speculation. However, since the distinction between speculation and genuine investment is largely a matter of intention by the individual, the former cannot be directly prohibited. Of course, the observed difference is generally in terms of the difference in time horizon. To curb speculation it is suggested that a minimum holding period requirement should be imposed.

5.3.2-1 Speculation, Margin Trading, Short Selling and Insider Trading not Allowed in the Islamic Market

We observe from the above discussion that in an Islamic market speculation is not acceptable and measures would have to be taken to control speculative trading. In addition short selling and margin trading are restricted. Causes are discussed below;

Speculation

Speculators take a number of forms, but underlying the practice is the fact that speculators are not concerned with the underlying commodity or security in which they trade. A speculator may trade in gold, US dollars or Saudi Riyal or IMB stock, not because of an interest in the economic aspects of being a long term investor but because of a desire to make a quick gain from buying and selling. A speculator will buy stock with the anticipation of prices rising usually with a short-term horizon. The danger of this is that what is initially planned as a short-term position with a sale to be completed before taking delivery of stock, may well result in a longer-term position when the stock does not perform as expected. Such purchases are often financed on margins or other forms of borrowing. A speculator will sell in anticipation of prices falling. This strategy may involve a short sale whereby the speculator borrows stock from a broker with a view to subsequently buying it at lower prices, thereby completing the deal. Related to speculation is the practice of arbitrage. An arbitrageur is a particular type of speculator who seeks to obtain a risk free return with a zero investment. An example of a potential arbitrage opportunity is the existence of identical assets at different prices in different markets. Such practices are more difficult with modern communications and computerised trading, as price discrepancies in different domestic markets are quickly eliminated from the system.

From an ethical viewpoint this type of arbitrage will be regarded as one aspect of speculation. The use of the term speculation will apply to any practice that aims at short term gain without an intention to participate as an equity investor in the company concerned. In view of this, the speculation is unacceptable in Islamic capital markets because of its association with gambling and excessive risk taking. In addition, speculation creates volatility.

Margin Trading

Margin trading refers to the purchase of stocks on credit using a margin account at a stockbrokering firm. The opening of an account enables the client to commence margin trading, that is buying stock by paying part of the price in cash and borrowing the remainder from the broker at an interest rate called the margin interest rate. Formalised margin trading is well established in most stock markets and regulatory authorities attempt to use margin call and margin interest rates as devices for controlling speculative activity. Non-formalised margin trading through personal borrowing, without notification to the broker concerned, is more difficult to control. The appeal of margin trading is the ability to magnify any gains on a transaction, but at the same time it magnifies any losses, as these are not shared with the brokers. Therefore, in an Islamic capital market, the margin trading is unacceptable.

Short Selling

A short selling is simply the sale of a stock not owned by the vendor. The purpose is to take advantage of an expected price decline. When the price declines, the stock is purchased and the short position closed. To facilitate these transactions the vendor's broker will cover the sale by lending stock. Islamic shari'ah does not

permit the sale of any commodity a person does not posses, however there are certain exceptions such as Salam contracts. Under the Salam contract, a clearly identifiable commodity can be sold for future delivery provided the vendor has paid in full for the commodity in advance. It may be possible to view a short sale as resembling a Salam contract but it would fail a test of being permissible because short sales involve part payment through a margin account. The vendor hopes to buy the stock at a future date at an amount below the selling price. The purchase price is not yet known and cannot be paid in full. The balance of evidence is that short selling is not accepTable in an Islamic stock market.

Insider Trading

Insider dealing is a phenomenon subject to regulation in many stock markets in the world. An insider is typically defined as any director, officer or stockholder of a company who has access to privileged information not available to other stockholders or potential investors in the firm. Insiders do some time trading in the firm's stock (Cao, Field and Hanka, 2004). The danger is that insiders may trade on inside information to the detriment of other investors. Generally, the mere act of trading on inside information to the detriment of other investors, even if the trader is not an insider, is interpreted as an unacceptable price. In many countries it is deemed to be illegal. In an Islamic market it is also prohibited.

5.3.3 Efficiency of Islamic Markets

The absence of professional speculators, liquidity and operational efficiency adversely affects Islamic markets but it would certainly have a salutary impact on its allocative efficiency. Keynes (1936) shows that prices of stocks deviate significantly

from their underlying values because of the undue emphasis on liquidity. Even the so-called presence of informed and professional investors is not likely to ensure pricing efficiency or equality between prices and values. Subsequent developments in stock market literature brought back the emphasis on liquidity as the efficient market theory gained wide acceptance and that stock prices are at all time equal to their values in an efficient market. The efficient market theory was the ruling paradigm for about four decades until the 1980s. The second half of the 1980s witnessed the birth of a new body of literature which questioned the fundamental assumption underlying the efficient market theory that the markets are dominated by informed and not noise traders. This brings the focus back to the need for ensuring equality between prices and values. In the Islamic framework, this is attempted through stringent restrictions on all form of speculation. What is condonable in an Islamic market is mild speculation and marginal discrepancy between price and value, not because these are desirable, but because, since intentions and perceptions play a role, it is difficult to fully eliminate them.

In view of the above discussions, we see that there is great degree of commonality between the notions of Islamic ethics with the secular notions of ethics and efficiency underlying regulations in conventional markets. Furthermore, Islamic ethics would ensure stability and allocative efficiency by reducing disparity between prices and stock values.

5.4 The Possible Ways: Islamic Ethical Investment Criteria Can Impact on Financial Performance

There are many ways in which company strategies perceived as ethical can impact on share prices both at the company and at the Islamic ethical portfolio level.

We will examine the different ethical influences through two models in order to understand how risk and returns can be affected by the performance.

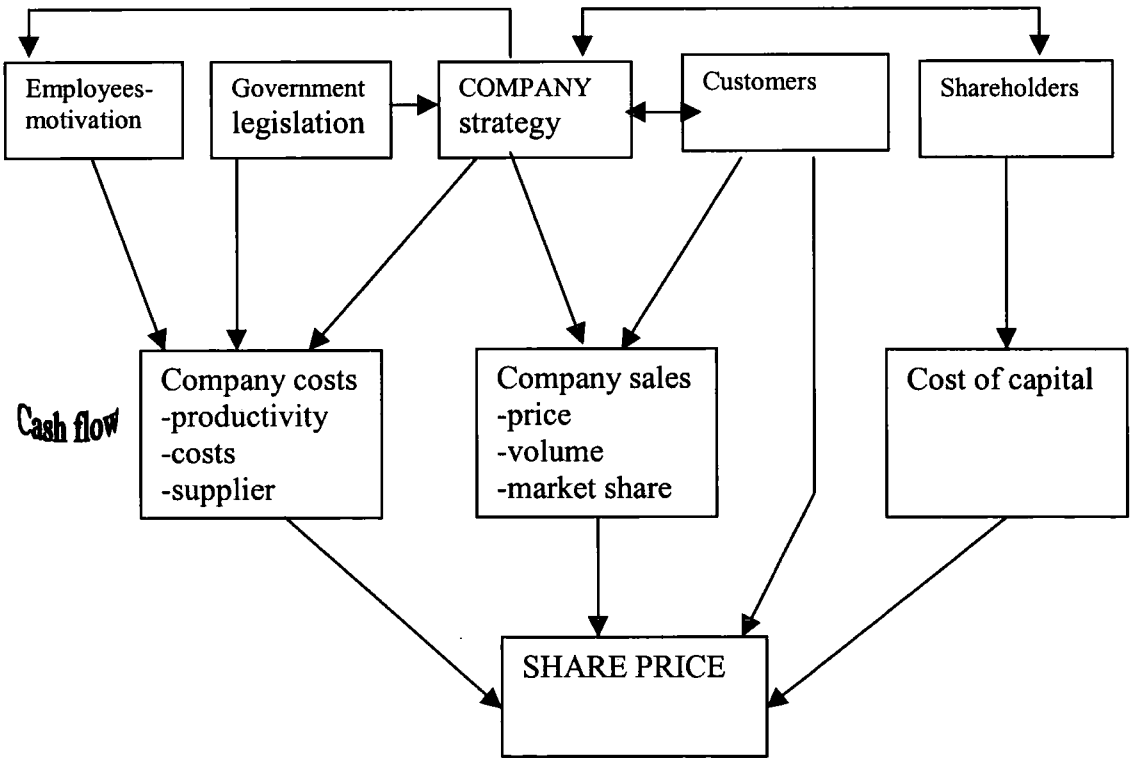
5.4.1 The Effects of Ethical Behaviour on Company Share Prices

The social responsibility of business is to maximise profits (Friedman, 1958). Spiller (2000) argues that this belief does not describe what the most successful companies actually do. Citizen campaigns against irresponsible corporate behaviour along with consumer action and increasing shareholder pressure have given rise to the 'stakeholder approach'. Wheeler and Sillanpaa (1997) examined stakeholder relationships and company success and in conclusion stated that "the long-term value of a company rests primarily on the knowledge, abilities and commitment of its employees; its relationships with investors and customers; and the way the company is perceived to create 'added value' beyond the commercial transaction. Added value embraces issues like quality, service, care for people and the natural environment and integrity. It is our belief that the future of the development of local, inclusive stakeholder relationships will become one of the most important determinants of commercial viability and business successes." (page 48)

Agenda 21 of the United Nations Conference on Environment and Development (UNCED) held in Rio de Janeiro in 1992 adopted two important issues of sustainable development – financing and technology transfer from developed countries to underdeveloped countries. In light of the demands for sustainable development and the call of agenda 21, the United Nations Environment Programme (UNEP) recognised the importance of financial institutions by stating that "financial institutions which assume the risk of companies and plants can exercise considerable

influence – in some cases, control – over investment and management decisions which could be brought into play for the benefit of the environment" (UNEP, 1998, p.17). Investment managers stand a good chance of improving their portfolio performance and reducing their risks if they pay closer attention to the environmental performance of the companies in which they plan to invest. There are 'downside' factors which may serve to depress investment returns and 'upside' factors which could benefit companies. The downside factors are the cost and availability of capital, increased liability claims, expanded rules on disclosure, greater emphasis on environmental factors in credit risk ratings, the availability and cost of insurance, the emergence of environmental taxes, and the increasing use of economic arguments by ecological pressure groups. The upside factors include; increases in resource productivity, market share growth and new business development due to companies recognising the potential offered by the upside factors (EIRIS, 1999).

Figure 5.1 Effects of Ethical Behaviour on Company Share Price



We will see the ways in which company strategies perceived as ethical can impact on share price. The model (Figure 5.1, which is replicated from the EIRIS model) shows the main links between the company, shareholders, employees, customers and government and how ethics can impact on a company's cash flow in terms of costs, sales and the cost of capital.

Company Policies

Improved environmental performance can lead to cost savings by preventing environmental liabilities, and by reducing materials and energy consumption. At the same time it should be recognised that some of the behaviour that ethical investors favour is very unlikely to be more profitable for a company, at least in the short term. A good example is a company's decision to turn down a lucrative military contract with an oppressive regime – that is not likely to increase profits unless the company can find an equally profitable contract elsewhere but the long term effects on their reputation may prove to be more beneficial. Similarly not all effects to reduce detrimental impacts on the environment may save money or earn a reward in the marketplace.

Reputation

It may be mentioned that ethical or unethical behaviour can have an impact on reputation and share price. A good example is how an oil exploring company like Shell can be sidetracked by wider social issues. The boycott of Shell in 1995 resulting from the company's attempt to dump its Brent Spar oil platform in the North Sea showing a willingness by the consumer to favour companies which have a policy to respect the environment. Later Shell found itself at the centre of an international

controversy for its operations in Nigeria in relation to that country's poor human rights record[49]. Shareholder and consumer pressure forced Shell to recognise that the separation of business from wider society is not healthy for business. Klassen and McLaughlin (1996) argue that environmental disasters such as oil spills reduce company share prices in excess of the direct clean up costs.

Consumers

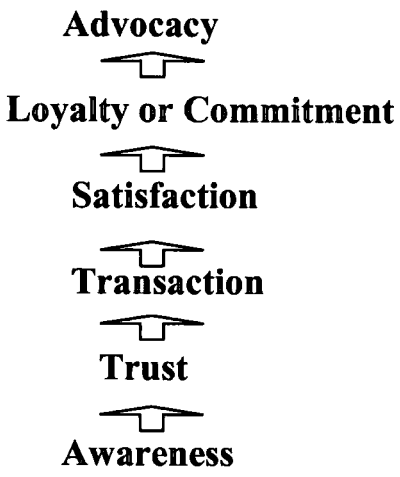
In the business world, professional companies are increasingly recognising that they have to pay attention to all their stakeholders. Enlightened consumers are aware of the market movement and of the fact that concern about unethical behaviour can harm sales. In 1996, MORI conducted a poll about the consumer product of companies and found that three out of ten people had chosen or boycotted a product or company for ethical reasons[50]. Campaigning organisations are increasingly targeting their campaigns against large multinationals and using the power of consumers and investors whose awareness of ethical issues is growing to persuade companies to change.

MORI has developed a model for assessing the key relationships of a business, called the Relationship Hierarchy (Hutton, 1997). It proposes that the key relationships of a business can be thought of in terms of a hierarchy, as shown in the Figure 5.2. The level of loyalty or commitment implies not only a willingness to repurchase but also to recommend the business to others if asked. At the highest level of advocacy, the individual is so impressed by the company that customers will

[49] Mark Moody-Stuart, *Financial Times Guide to Responsible Business*, 1998.
[50] For more details, P.Hutton (1997), " MORI Customer Relation Research: Using Research to Improve Quality and Service Provision," Paper presented at SMI Conference January 1997.

recommend it to others without being asked. Thus the company's own customers and other stakeholders are doing its marketing for them.

Figure 5.2 MORI Relationship Hierarchy



(Source: MORI Customer Relation Research)

Regulation

Government regulation plays an important role in promoting ethics in business. Managers of ethical funds also claim that the companies they select for investment will, because of the companies' proactive stance on the environment, be that of using the latest environmental technology, minimising damage to the environment or operating 'best practice' ie. benefiting from future regulation by being ahead of the game.

Employees Motivational Training

Human resources development or the motivational training of employees make for a pleasant working environment and sound working practices which have a positive effect on productivity and efficiency. Motivational training can provide

profitability within the company. A MORI survey in 1996 found that 41% of employees satisfied with their jobs will recommend their employer's products or services without being asked. On the other hand it may also be observed that not all attempts to invest in better stakeholder relations can be expected automatically to yield a greater return.

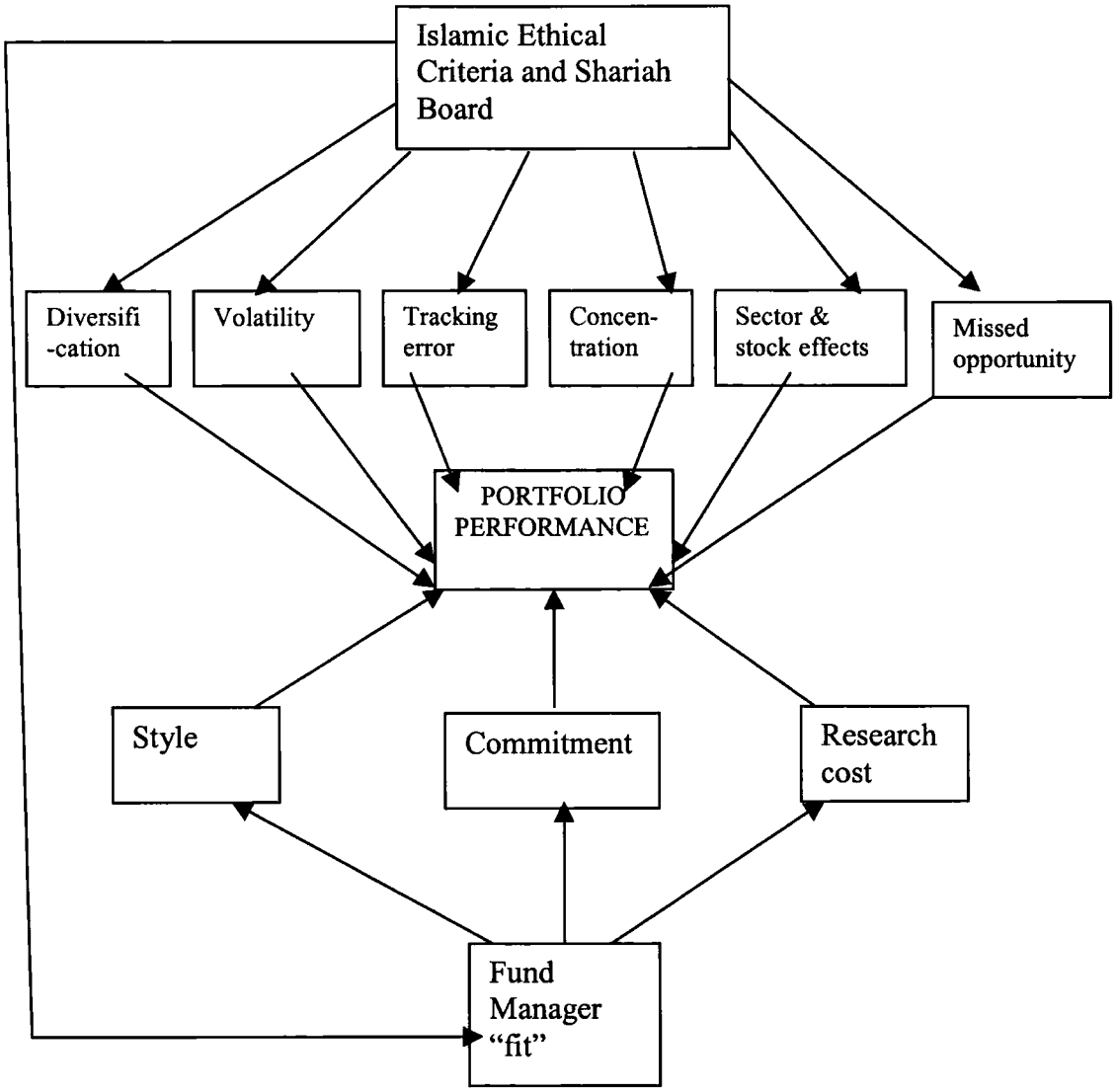
5.4.2 The Effects of Islamic Ethical Investments on a Portfolio

The Islamic ethical criteria of the fund and its managers are the key influences on portfolio performance. The Shari'ah Supervisory Board based on Islamic ethics will define the ethical universe from which the fund manager can invest. In the case of a passively managed fund, it is only the Islamic ethical criteria and the index construction rules that are the key influences, although very few passively managed ethical tracker funds exist. Figure 5.3 below shows the ways in which Islamic ethical investment criteria can impact on portfolio performance (a model developed based on the model of EIRIS, 1999).

Diversification

The use of Islamic ethics to define the investable universe at the portfolio level means there may be some degree of lesser diversification. The portfolio variability does not reflect the average variability of its components because diversification reduces variability (Howcroft, 2001). Brearley and Myers (1996) argue that even a little diversification can provide a substantial reduction in variability but that the investor can get most of the benefits with relatively few stocks. Therefore the diversification effects of selecting stocks from an Islamic and ethically constrained universe are likely to be very tiny.

Figure 5.3 Effects of Islamic Ethical Investment on a Portfolio



Sector and Stock Effects

Islamic ethical restrictions will have an impact on the size and structure of the resulting investible universe. It is often said that ethical investment funds exhibit a smaller-companies effect since they tend to invest in smaller or medium size companies (Gregory, Matatko and Luther, 1997). Larger companies may be more

likely to be ruled out by Islamic ethical screening as they tend to be involved in a larger number of areas of which investors might disapprove. Smaller companies may be more volatile than larger companies, which matters in the short term, although a portfolio of smaller companies will diversify away the specific risk of individual stocks.

Islamic ethical funds are often overweighted in some sectors such as technology and service sectors. The Islamic ethical universe completely avoids sectors like tobacco, conventional banks, pornography, alcohol, gambling, polluting industries and so on, which are against the Islamic Shari'ah criteria. In the short term, these sectoral effects will come into play as some sectors do better than others. This can have a positive or negative effect depending on the balance of sectors in the portfolio compared with the unconstrained universe. Nevertheless, sometimes sectors viewed as unethical will have inherent long-term liabilities, for example the tobacco sector. Overall, the likelihood is that individual sectoral effects will balance out, at least in the long term.

Tracking Error

The tracking error of an Islamic ethical fund against unrestricted (conventional) indices (such as MSCI-US or CRSP) compared with that of an unconstrained fund is also likely to be higher. Shorter term performance may diverge widely from that of funds using more conventional approaches and from the unrestricted indices (conventional index). But the tracking error may not matter to the investor concerned about the balance between return and risk measured by the volatility of a fund.

Missed Opportunity

Sometimes opportunities might be missed because a Shari'ah supervisory board based on Islamic ethical criteria may prevent investment in a company that is predicted to out-perform.

Concentration

Like mainstream ethical funds, a few Islamic ethical funds claim that because they have fewer companies to invest in, they know those companies better and are more focused on their activities and, as they are often long term investors, this pays off over time. If Islamic ethical funds have fewer companies to invest in and a tendency to invest in them for longer, there will be less churn in the portfolio and hence lower trading costs.

The style of fund manager and their level of experience may or may not fit with a particular Islamic ethical approach. A particular style may suit restrictions better than others or for some fund managers Islamic ethical criteria may interfere with their strategy. For example, suppose a fund manager's strategy calls for an overweighting of chemical stocks; in this case Islamic screening may interfere with implementation because of environmental considerations. A possible source of under performance could therefore be a mismatch between the skill and style of the fund manager and the requirements of the particular Islamic ethical approach adopted.

The research cost into the company activities may be passed on by fund managers to the investor because increased management costs may impinge on the financial performance of some Islamic ethical funds. Pradhan (1994) argues that

screening may represent in an extra layer of cost but this is more than compensated for by the high level of customer retention that ethical funds appear to have.

Management of Fund

With regards to the portfolio effects from the fund manager's perspective, the Islamic ethical investment industry claims that while assessing a company's environmental and social record, a better insight into an organisation's financial performance can be gained. Some behaviour also positively viewed from an ethical standpoint (such as the implementation of an environmental management system or good employee relations) can be a proxy for a generally well-managed company.

In conclusion we can state that there are a wide range of ways in which ethical or unethical behaviour could influence a company's commercial success and its share price. The above models demonstrate that the use of Islamic ethical criteria in the selection of a portfolio of shares could also have a variety of positive and negative effects upon investment performance. The combination of all these factors may have the overall effect of broadly similar financial performance. It is not true that Islamic ethical criteria will always lead to a good performance, nor will it always lead to a bad one.

5.5 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. First, the performance of the Dow Jones Islamic

Market Index and Dow Jones Index-US are assessed using the traditional measures of performance in relation to a risk adjusted benchmarks (Sharpe, 1966; Treynor, 1965; and Jensen, 1969) and comparing the results between Islamic ethical index and conventional index. Subsequently, the Carhart (1997) approach to conditional asset pricing models is followed to see the differences between the unconditional and conditional approaches to measuring performance. The main model used in this study is the capital asset pricing (CAPM) single index model extended to the Fama & French three 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 the Carhart (1997) four-factor model to test robustness.

Sharpe Measure

Based on his earlier work on the CAPM, Sharpe (1966) conceived of a composite measure of performance dealing with the capital market line (CML). The Sharpe measure of portfolio performance (S) indicates the risk premium return per unit of total risk (sd) to compare the portfolios to the CML. It measures the return of a portfolio, in excess of the risk-free rate, relative to its total risk.

$$\text{Sharpe measure}(S_i) = \frac{R_i - R_{rf}}{\sigma_i} \qquad (5.1)$$

R_i = average return for the asset i,

R_{rf} = average rate of return on the risk free asset,

σ_i = standard deviation of the rate of return of the asset i.

Higher Sharpe measures are associated with superior performance.

Treynor Measure

In contrast to the Sharpe measure, the Treynor (1965) measure (T) treats only non-diversifiable market risk (beta) by examining performance in relation to the security market line (SML) as follows;

$$\text{Treynor Measure (T)} = \frac{R_i - R_{rf}}{\beta_i} \qquad (5.2)$$

where;

R_i = average rate of return for the asset i,

R_{rf} = average rate of return on the risk free asset,

β_i = the systematic risk for asset i.

Like the Sharpe (S) measure, the Treynor (T) measure is a relative measure and must be compared with the values of the benchmark (T_m). By assumption the beta of the market proxy is 1.0. Higher Treynor measures are associated with superior performance.

5.5.1 Unconditional Models

Starting with the most basic Capital Asset Pricing Model (CAPM), we then explored the added value of introducing extra variables such as size, book-to-market and momentum. In addition to that, we evaluated the use of introducing time-variation in beta and alpha. The models to be used to evaluate risk-adjusted performance are Jensen (1968) single factor, Fama & French (1992, 1993) three factor, and Carhart (1997) four factor. In respect of the single and the three factor model, we have already discussed these in the methodology section of our previous chapter 3 (please see equation 3.3 and 3.4 in chapter 3). The Carhart (1997) four factor which we have also

employed in chapter 4 is used to evaluate the ethical unit trust performance (please see the equation 4.1 in chapter 4). This 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.

5.5.2 Conditional Model

Four Factor Model with the Conditional Information

The significance of the 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 chapter we employ the conditional performance evaluation approach using the conditional information[51].

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,

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

1996). Time variation in a managed portfolio beta may arise for three distinct reasons;

(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."

The conditional Carhart's four-factor model will form the regression for the managed portfolio return (please see the conditional Carhart four factor model equation 4.5 in chapter 4). The conditional information is; (1) quality spread, by comparing the yield of government and corporate bonds; (2) the slope of the term structure; (3) the dividend yield on the market indices and (4) the 1-month US T-Bill rate. All instruments are based on a 1 month lag. These variables are essentially interaction terms between the excess return of the benchmarks (MSCI-US and CRSP) 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 the equation (4-5 in chapter 4), 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 abnormal performance.

5.5.3 Hypotheses

This study examines the return of the Dow Jones Islamic Index (DJIM) against the MSCI-US and CRSP benchmark indices and compares the results with conventional Dow Jones Index-Americas of the Dow Jones Group over the period of January 1996 to December 2003. There are three alternative hypotheses about relative returns of Islamic ethical portfolios and conventional portfolios and they are;

(1) The expected return (risk adjusted) of Islamic ethical portfolios are equal to the expected return (risk adjusted) of conventional portfolios. This is consistent with a world where the Islamic ethical responsibility feature of stocks is not priced. In other words, Islamic ethical investors who sell stocks find enough conventional investors ready to buy them such that the prices of the stocks do not drop. This is the hypothesis that is closest in spirit to the standard framework of finance, where factors that are not proxies for risk do not affect expected returns (Statman, 2000). Because expected returns to investors are also the cost of capital to the company; this hypothesis implies that Islamic ethical investors do not reduce the relative cost of capital to Islamic ethically responsible companies by favouring their stocks.

(2) The expected returns of Islamic ethical portfolios are lower than the expected returns of conventional portfolios. This hypothesis implies that Islamic ethical investors have an impact on stock prices. They increase the ethical values of the companies relative to the value of conventional companies. It implies, contrary to the first hypothesis, that the market prices reflect Islamic ethical characteristics.

(3) The expected returns of stocks of Islamic ethical portfolios are higher than the expected returns of conventional portfolios. This happens when a large number of investors consistently underestimate the probability that negative information is released about the companies that are not ethically responsible. For example, it is stated that conventional investors consistently underestimate the probability that oil companies will find themselves in trouble because of oil spills (Moody-Stuart,1998). Declines in the price of oil company stocks following oil spills will lower the return on conventional portfolios holding oil company stocks but the portfolios of Islamic ethical investors who shun oil stocks will be affected.

To determine which of the three hypotheses is consistent with the evidence, we evaluate the performance of the DJIM. We thus test;

H_0: $\alpha^e = \alpha^c$

H_1: $\alpha^e < \alpha^c$ or

H_1: $\alpha^e > \alpha^c$

where α^e is the return of Islamic ethical portfolios and α^c is the return of conventional portfolios.

5.6 Sample Data and Variables

Why Study an Islamic Index?

Although Islamic funds are the fastest growing funds in the markets of developed countries, one of the problems of undertaking research on Islamic funds is the lack of reliable data. Since our study is related to the impact of Islamic screening on the investment performance of Islamic funds, the performance implications

resulting from the use of Islamic screens can be assessed by comparing the performance characteristics of the Dow Jones Islamic Market Index (DJIM) with two unrestricted and well diversified benchmark portfolios. More specifically the performance of the DJIM will be compared to the performance of the Morgan Stanley Capital International - United States (MSCI-US) and the Chicago for Research in Security Prices (CRSP). These benchmarks are not actively managed and therefore, their performance is not impacted by transaction costs, management fees or changing investment policy as mutual funds, as equity funds are. In effect, the MSCI-US and CRSP benchmark portfolios represent two ideal proxies for the unrestricted investment universe of equity securities traded.

The Dow Jones Islamic Market Index (DJIM) represents a carefully constructed portfolio of Islamic stocks that is not subject to the confounding effects that impact on an Islamic fund's performance. As an index, the performance of the DJIM does not change in investment policy. No attempt are made to shift the portfolio's composition in response to a changing market, rather the composition of the DJIM is only affected by changes in Islamic social concerns and by changes in corporate responsiveness to those concerns. Accordingly, the performance of the DJIM merely reflects the return to its underlying securities of Islamically screen stocks. By design, securities in the Dow Jones Islamic Market Index (DJIM) are selected to minimise the potential negative side effects associated with the implementation of Islamic ethical investment. Therefore, the DJIM represents an ideal proxy for the restricted investment universe of Islamically screen stocks.

The DJIM is made up of one thousand stocks and 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 price. It does not include reinvested dividends and is based from December 31st 1995 on 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 95% of the float-adjusted market capitalization of United States. It does not include reinvested dividends.

Data Variables

The Dow Jones Islamic Market Index (DJIM) data was obtained directly from Dow Jones & Company. The data consists of the monthly prices for the DJIM[52]. The monthly data of the Dow Jones Index-Americas (as index portfolio) was obtained from DataStream International.

Two market proxies were used[53]. The first was the MSCI-US (Morgan Stanley Capital International-United States) index as benchmark and the monthly data for the period from January 1996 to December 2003 was obtained from DataStream International. The second market proxy used as a benchmark was the CRSP (Centre for Research and Security Prices) for the period from January 1996 to December 2003 and the monthly data was obtained from a French database[54]. The performance

[52] Monthly return formed the database for most of the major investigations of stock market activities.

[53] MSCI-US index aims to serves as a large cap proxy and CRSP value weighted index was selected in order to minimise any potential small firm size effect.

[54] 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

implications resulting from the use of Islamic ethical screens was isolated by comparing the performance characteristics of the Dow Jones Islamic Market Index with MSCI-US and CRSP. These two benchmark portfolios are actively managed and, therefore, their performance is not impacted by transaction costs, management frees or changing investment policy. These benchmark portfolios represent two proxies for the unrestricted investment universe of equity securities traded in the US.

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

To test the robustness of the results, the performance of DJIM and the Dow Jones-Americas were 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 a French database. The risk free rate is deducted from these to get the (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 & French benchmark portfolio has been constructed from the 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 the case of Carhart's four factor model.

month, stocks are ranked based on their market capitalisation which is the closing price at the end of

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

Summary statistics of the raw monthly excess return of the Dow Jones Islamic Market Index (DJIM), Dow Jones Index-Americas, MSCI, CRSP, SMB, HML and momentum (Mom) factors are presented in panel A and B of Table 5.1. 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 the two un-restricted benchmark indices- MSCI-US (0.3909) and CRSP (0.5485).

This appears to suggest that DJIM out-performs the conventional Dow Jones Index-Americas as well as the benchmark indices. The skewness and kurtosis for all the series except the Dow Jones Islamic Market Index, HML and Momentum, suggests that returns are not normally distributed.

previous month multiplied by the number of shares outstanding to form ten size portfolios. Each portfolio contains same number of stocks.

Table 5.1

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

Series	Mean Excess 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]
MSCI-us	0.3909	4.7133	-16.143	9.9971	-0.4983	0.6094	4.4110 [0.1102]
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]**

Note: This table reports summary statistics on the Dow Jones Islamic index, Dow Jones index Americas (dependent variables). The benchmarks are (1) Centre for Research in Security Prices(CRSP) and (2)Morgan Stanley Capital International-United States(MSCI-US). SMB is factor mimicking portfolio for size, HML the factor mimicking portfolio for book-to-market, momentum factor is prior one year factor mimicking portfolio (12 months return momentum).

** Coefficient is statistically significant at 5%

Table 5.1, Panel B: Summary Statistics: Cross Correlations from 1996 to 2003

	Cross Correlations						
Portfolios	Market MSCI-us	Market CRSP	SMB	HML	**Mom**	Dow J. Islamic	Dow J. Americas
Market MSCI-US	1.0000	0.8774	-0.0284	0.0543	-0.4330	0.5189	0.8735
Market CRSP	0.8774	1.0000	0.2010	-0.2937	-0.2572	0.5961	0.9422
SMB	-0.0284	0.2010	1.0000	-0.3835	0.0189	0.0749	0.1815
HML	0.0543	-0.2937	-0.3835	1.0000	-0.6362	-0.3634	-0.2507
Mom	-0.4330	-0.2572	0.0189	-0.6362	1.0000	0.0239	-0.2955
Dow J. Islamic	0.5189	0.5961	0.0749	-0.3634	0.0239	1.0000	0.5916
Dow J. Americas	0.8735	0.9422	0.1815	-0.2507	-0.2955	0.5916	1.0000

Note: this table reports summary of cross correlations of excess return of Dow Jones Islamic index, Dow Jones Index-Americas (all are dependent variables). Excess return of benchmark indexes (MSCI-US and CRSP), SMB,HML, Momentum factors are independent variables.

Table5.1, Panel C: Summary Statistics: Instrumental Variables

			Cross Correlations				
Variables	Mean Excess Return	Std. Devn	1-month US T-bill	DeRisk	Term Spread	Dividend Yield (msci-us)	Dividend Yield (crsp)
1-month-UST-bill	1.0060	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

Note: This tables reports summary statistics of conditional information variables. They are (1) 1-month T-bill rate, (2) dividend yields on the benchmark indexes (CRSP, MSCI-US), (3) the slope of term structure and (4) the quality spread, by comparing the yield of government and corporate bonds. All theses variables are independent variables.

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, MSCI-US and CRSP indices reveal an interesting result. The standard deviation of the returns for the DJIM (3.54) is much lower than conventional Dow Jones Index-Americas - (4.88). The standard deviation of the returns for the MSCI-US (4.71), 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 a lower return volatility and similar in the case of conventional Dow Jones Index-Americas as well as the two unrestricted MSCI-US and CRSP benchmarks. 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 of the independent comparison of raw excess returns and standard deviations of the DJIM, which is an ethically screened index, and the MSCI-US and the CRSP which are unrestricted benchmark indices. Therefore, more appropriate risk-adjusted performance measures such as Sharpe's index, the Treynor measure, the Jensen measure and the Fama-French estimations are more relevant for making inferences. These are discussed in section 5.4.

Panel B of Table 5.1 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 better explain the variations in average portfolio returns. The SMB, HML and Momentum (Mom)

factors do explain the differences in returns in stock, 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.

In 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 C of Table 5.1 presents the summary statistics on informational variables.

5. 7 Empirical Results

First of all we examine the Sharpe Index, Treynor measures performance of the Dow Jones Islamic Index (DJIM) and Dow Jones Index-Americas relative to the two benchmarks for the sample period of 1996 to 2003. The results of the Sharpe and Treynor measures for the DJIM and the Dow Jones Index-Americas, as well as the two benchmark indices, are reported in Table 5.2

Table 5.2 Sharpe and Treynor Performance Indices for the Period 1996-2003

	D J Islamic	DowJones-Amer	MSCI-us	CRSP
Sharpe Performance Index	0.2904	0.1006	0.0823	0.1074
Treynor Performance Index	1.0333	0.4948	0.3909	0.5485

The use of the Sharpe index for evaluating the performance of an ethically screened portfolio is more appropriate and relevant than the Treynor measure. It can

be argued that a more appropriate measure of risk exposure for an Islamic ethically screened portfolio might be total risk, rather than market risk. This is because investors implementing Islamic ethical screens restrict their investment universe and inadvertently subject themselves to an otherwise diversifiable risk. The Sharpe index represents the average risk premium per unit of total risk and therefore represents a more relevant risk-adjusted performance measure for less than a well-diversified portfolio. Since the Treynor measure uses undiversifiable risk, β, it is of little importance here. The results indicate that the Sharpe risk-adjusted premium per unit of total risk for the Dow Jones Islamic Market Index (0.2904) is statistically better than that for the Dow Jones Index-US (0.1006), MSCI-US (0.0923) and for the CRSP (0.1074).

Using the Treynor measure, which is the average risk premium per unit of systematic risk (β), DJIM (1.0333) also performs better than its counterpart Dow Jones Index-Americas (0.4948). The DJIM out-performs against the two benchmarks MSCI-US (0.3909) and the CRSP (0.5485) whereas the Dow Jones Index-Americas outperforms against the MSCI-US benchmark and has an almost similar performance to the CRSP benchmark

As per the results in Table 5.2, the Sharpe Index for the Dow Jones Islamic Market Index (DJIM) is distinguishable from the Sharpe Indexe for the competing unrestricted benchmark portfolios. This result is somewhat surprising since it is reasonable to expect that the CRSP index would be more efficient in eliminating diversifiable risk through a passive diversification strategy. The evidence indicates

that the use of Islamic screens does not necessarily have an adverse impact on the risk-adjusted returns for the less than well-diversified investor.

5.7.1 Results of the Single-Factor CAPM Model Using the MSCI-US and CRSP Indices

The empirical evidence created by using the Sharpe Index, as reported earlier in this study, clearly indicates that the application of Islamic screens alone does not necessarily have an adverse impact on performance. These results pertains from the perspective of both a well diversified and less than well diversified investor as reflected in the performance of the Dow Jones Islamic Market Index (DJIM) relative to the MSCI-US and CRSP value weighted market indexes respectively. The application of Islamic ethical screens does not necessarily result in higher volatility or reduced returns.

We estimated the Jensen measure of performance based on the standard CAPM security market line against the MSCI-US and CRSP benchmarks. The single factor model was estimated by Ordinary Least Squire (OLS) and the comparative performance against both benchmark results are reported in Table 5.3. Results in Table 5.3 show that the Dow Jones Islamic index (DJIM) demonstrated positive abnormal performance (1% significant level) against the MSCI-US and also outperformed (by a significant 5% level) against the CRSP benchmark. The alpha of Dow Jones Islamic index (0.8809, t=2.80) against the MSCI-US and alpha (0.8053, t=2.72) and against the CRSP benchmark are statistically different from zero.

Table 5.3 Summary Performance, CAPM Regressions of Dow Jones Islamic Market Index and Dow Jones Index-US from 1996 to 2003

(Regressions are based on monthly return, Observations: 95, t-statistics in parentheses)

Dependent Variables	**Alpha**	Beta-Market	R^2
(Benchmark MSCI-US)			
DJ Islamic Market Index	0.8809 (2.80)***	0.3899 (5.86)***	0.2693
Dow Jones Index-Americas	0.1251 (0.505)	0.9061 (17.3)***	0.7630
(Benchmark CRSP)			
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

The table reports the results of estimation single factor CAPM model. Alpha is risk adjusted return.R^2 is coefficient of determination.

** Coefficient is statistically significant at 5%

*** Coefficient is statistically significant at 1%

These positive abnormal alpha results of the Dow Jones Islamic index imply that contrary to earlier research, the performance of ethically screened portfolios is not inferior to the fully diversified unrestricted portfolios. The coefficient of determination (R^2) of the Dow Jones Islamic index (DJIM) is in both cases 26.93% and 35.54% with the estimations using the MSCI-US and CRSP benchmarks respectively. These low percentages imply that separately the two benchmarks leave much of the changes in the DJIM returns to be explained by some other unknown factors. It also indicates that perhaps the chosen benchmarks are not able to fully explain the fund returns. Kothari and Warner (2001) argue that standard performance measures depend on the benchmarks' ability to mimic the fund style, and therefore the benchmarks must be carefully selected.

The performance results of the conventional Dow Jones Index-Americas are not statistically significant against both benchmarks (Table 5.3). The coefficient of determination (R^2) of the Dow Jones Index-Americas against the MSCI-US proxy is higher (76.30%). The R^2 against the CRSP benchmark is also very high (88.42%) which implies that the Dow Jones Index-Americas follow the market quite closely. Table 5.3 shows that the Dow Jones Index-Americas performs as well as the Dow Jones Islamic Market Index but that alpha is not statistically significant against the MSCI-US benchmark and underperforms against the CRSP benchmark. In order to validate the robustness of this conclusion, the asset-pricing model is extended to a three-factor modelling following Fama & French (1993).

5.7.2 The Fama- French Three Factor Model Results

One of the central themes 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 reasoned that they proxy for undiversifiable risk factors in returns. The Fama-French model is an extension of the CAPM based single factor regression[55]. In the model, the factors are the value-weighted index, as well as 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 the excess returns (the monthly portfolio, the Dow Jones Islamic Market Index and the Dow Jones Index-Americas returns minus the one-month US T-bill rate) to be the dependent variables and the excess returns of the value-weighted market factor, the size and book-to-market factors to be the explanatory variables. The summary test statistics are presented in panels A and B of Table 5.1. The estimated results from the Fama-French three-factor model, together with the comparative single factor results, are presented in Table 5. 4.

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[55] 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 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 caused 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 that 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 5.4. Using the MSCI-US as benchmark, both the single and three factor estimation models produce intercepts (α's) of the Dow Jones Islamic Market Index that are positive abnormal returns with statistically significant performance. In the single factor model $\alpha = 0.8809$ (t value =2.80) and in the three-factor model $\alpha = 0.9594$ (t=3.38). This observation implies that irrespective of the estimation model chosen, the Dow Jones Islamic Market Index produces a positive abnormal performance compared to that obtained by the MSCI-US. The performances of the conventional Dow Jones Index-Americas are insignificant for both the single factor model and the three-factor model against the MSCI-US market proxy.

When the CRSP is used as the benchmark, both the single and three factor models again yield positive abnormal performance of the Dow Jones Islamic Market

Index. The single factor $\alpha = 0.8053$ is statistically significant (t value=2.72). Again the three factor, $\alpha = 0.9067$ (t value = 3.13), is positive abnormal with statistically significant (Table 5.4). We observe that the magnitude of the market beta increases from the single factor to the three-factor regression. It is also observed that the intercepts are improving from the single factor to the three factor regression. This result is contrary to the Fama-French conclusion but in agreement with the results of the study by Ottens and Bams (2002). In the case of the conventional Dow Jones Index-Americas, alphas are statistically insignificant against market proxies for both the single factor and the three factor model. The market betas are significant at 1% in both the single factor and the three factor against both benchmarks and this result is in agreement with the Fama-French result. The portfolio of the Dow Jones Islamic Market Index exhibits a negative factor loading/ sensitivity on both the size and book-to-market factors SMB and HML (Table 5.4) while the returns on the SMB portfolio and HML portfolio are quite high (see Panel A of Table 5.1). Therefore, adding these two additional factors (SMB and HML) to the market factor causes the alpha of the portfolio to increase.

Table 5. 4. Comparative Performance, CAPM Single Factor and F-F Three-Factor Model from 1996 to 2003

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

	Alpha	Beta-Market	Beta-SMB	Beta-HML	R^2
Single Factor (Benchmark MSCI-US)					
DJ Islamic M. Index	0.8809 (2.80)***	0.3899 (5.86)***			0.2693
Dow Jones Index-Am	0.1251 (0.505)	0.9061 (17.3)***			0.7630
Single Factor (Benchmark CRSP)					
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 (Benchmark MSCI-US)					
DJ Islamic M. Index	0.9594 (3.38)***	0.4055 (6.80)***	-0.0601 (-0.823)	-0.2906 (-4.88)**	0.4274
Dow Jones Index-Am	0.1151 (0.598)	0.9238 (22.9)***	0.1270 (2.57)**	-0.2463 (-6.11)***	0.8622
Three-Factor (Benchmark CRSP)					
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

The table presents the results from unconditional single factor CAPM and unconditional Fama-French three factor model. Alphas are the risk adjusted return of Dow Jones Islamic index and Dow Jones index-Americas against MSCI-US and CRSP benchmarks

** Coefficient is statistically significant at 5%

*** Coefficient is statistically significant at 1%

Factor Sensitivities (SMB and HML)

The results show that in the three-factor Fama-French model, the portfolio R_{DJIM}-R_f exhibits a positive abnormal and significant loading for the CRSP (Rm-Rf) and MSCI-US (Rm-Rf). The size (SMB) and book-to-market (HML) factors show rather significant negative loadings against both benchmarks. This seems to suggest that the returns of the portfolio appear to be driven relatively more by size (SMB) and book-to-market (HML) factor of the stocks. The SMB and HML factors therefore seem to add more explanatory power to the variation in the average portfolio returns. According to Fama & 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 bigger ones. The fact that small firms can suffer long-term earnings as opposed to big firms suggests 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 suggest that relative profitability is the source of a common risk factor, which might explain the positive relation between B/M and average returns. This apparent negative relation between size and returns on the one hand and the positive relationship between B/M equity and returns on the other, are not evident from the results in Table 5.4.

Table 5.4 shows that the conventional Dow Jones Index-Americas (Ri-Rm) exhibits a significantly positive loading (1% significant) for both MSCI-US (Rm-Rf) and CRSP (Rm-Rf). The size (SMB) factor show a significant (5% level) positive

loading and rather significant (1%) negative loading on the book-to-market (HML) factor against the MSCI-US benchmark. In the other case, the size (SMB) and book-to-market (HML) factors show insignificant positive loadings against the 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 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 move downwards towards 1. According to Fama & French (1993), this behaviour is due to correlations between the market and SMB or HML. This conclusion is apparently contrary to the results summary in Table 5.4.

In respect of the Dow Jones Islamic Market Index, the market betas in the single factor regression are 0.3899 (t-value = 5.86) and 0.4157 (t value = 7.16) for MSCI-US and CRSP respectively. This beta sensitivity increases in magnitude to 0.4055 (t-value=6.80) against MSCI-US and decreases to 0.3824 (t value = 6.47) when the SMB and HML factors are added. The correlations between the market, and the SMB and HML returns can be seen in panel B of Table 5.1. The implication here is that the market factor together with the size (SMB) and B/M (HML) proxies better

explain the average portfolio returns. The SMB and HML factors do explain the differences in returns in stock, while the market factor (Rm-Rf) and 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 the case of the conventional Dow Jones Index-Americas, the market beta in the single factor regression is larger and more statistically significant (1%) against both the MSCI-US and CRSP market proxies. This beta sensitivity increases in magnitude against both benchmarks when the SMB and HML factors are added (Table 5.4). This means that the market factors together with the SMB and HML proxies better explains the average portfolio returns.

Coefficient of Determination

The coefficient of determination R^2 expresses the percentage or proportion of 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 5.4, the R^2 value increases from the single factor (R^2 = 26.93%) to the three-factor (R^2= 42.74%) against the MSCI-US and single factor (35.54%) to the three-factor (40.90%) against the CRSP market proxy. These increases in R^2 mean that the market factor alone is responsible for only amount of 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 42.74% (against the MSCI-US) and 40.90% (against the CRSP) of variations in the portfolio returns, while the rest of the percentages are due to unknown factors. Such large unexplained proportions of return

might be due to a possible model misspecification in which the 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 and so on (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 4, the R^2 value increases from the single factor (76.30% against the MSCI-US and 88.77% against the CRSP) to the three-factor (86.22% against the MSCI-US and 88.84% against the CRSP).

By employing the single factor CAPM and the three factor Fama-French models for both the Dow Jones Islamic Market Index and the 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 but that the Dow Jones Index-Americas underperforms the benchmarks. However, the inclusion of the two risk factors; size and book to market- alpha, log-likelihood and R^2 increased in the three factor model.

5.7.3 Carhart Four Factor Model Results

Table 5.5 presents the alphas, market beta, SMB, HML, Momentum, Log Likelihood and R^2 for the Carhart-four factor (unconditional) model. In Table 5.6, we compare the results using both the three and four factor models. The results from the Fama-French model are imported from Table 5.4. First we notice that with the

inclusion of another factor i.e. Momentum, the Alpha(α) of the Dow Jones Islamic Market Index again showed a positive abnormal return (alpha =0.9777, t value=3.20) at 1% significant level against the MSCI-US benchmark index. The Alpha (α) exhibits positive abnormal performance (alpha=0.8895 and t value=2.81) against the CRSP benchmark index in the Carhart four factor model. Secondly, (see Table 5.6), there is a minor increase in average R^2 for the multifactor model i.e. 0.4276 against the MSCI-US and 0.4091 against the CRSP respectively compared to the three-factor model (0.4274 and 0.4090 against the MSCI-US and CRSP benchmarks respectively). This indicates that the extended model is more able to explain the fund returns.

In addition to this we reported the log-likelihoods of both models, which enabled us to perform a standard LR test. This confirmed 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 both the MSCI-US and CRSP benchmarks (both at a 1% significant level) and significantly negative SMB against the MSCI-US benchmark (at a 1% significant level). Also the factor loadings revealed negative significant HML (1% significant level against the MSCI-US and CRSP benchmarks) with the Fama-French three factor model and insignificant against both benchmarks in the Carhart four factor model.

Table 5 .5 Summary Results of 4-Factor Model from 1996 to 2003

(Number of Observations: 95, t-statistics in parentheses)

Index(Depaendent Variables	Alpha(α)	Beta(β_0)	SMB(β_1)	HML(β_2)	Mom(β_3)	Log-Likelihood	R^2
Benchmark: MSCI-US							
Dow Jones Islamic Market Index	0.9777	0.399	-0.0651	-0.3014	-0.0121	-228.42	0.4276
	(3.20)***	(5.56)***	(-0.822)	(-3.42)***	(-0.167)		
Dow Jones Index -Americas	0.35	0.8394	0.0633	-0.3851	-0.1568	-185.79	0.8775
	(1.79)*	(18.3)***	(-1.25)	(-6.85)***	(-3.36)***		
Benchmark: CRSP							
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)*		

This table presents the results from the unconditional 4-factor model. Reported are the OLS esitmates for excess return of Dow Jones Islamic index and Dow Jones index-Americas against MSCI-US and CRSP benchmarks. The SMB and HML- the factor mimiciming portfiios for the size and book-to-market. Mom is a factor mimicking portfolio for the 12monthr return momentum.

*Coefficient is statistically significant at 10%

*** Coefficient is statistically significant at 1%

The results also show insignificant Momentum loadings with the Carhart four factor model against both the MSCI-US and CRSP benchmarks. All these results indicate that the momentum strategy slightly added value in the Dow Jones Islamic Market Index (DJIM) which showed positive abnormal returns and confirmed that the Carhart four factor model is able to explain the DJIM returns. In other words, we can say that the performance of the DJIM is driven toward positive abnormal return by the inclusion of the momentum factor.

On the other hand the performance of the conventional Dow Jones Index-Americas showed first time positive abnormal returns (at a 10% significant level) against the MSCI-US and insignificant positive returns against the CRSP. After controlling for market risk, size, book-to-market and momentum, the alphas are not significantly different from zero. All these results indicate that the momentum strategy more or less added value in the Dow Jones Index-Americas positive abnormal returns (1% significant) against the MSCI-US market proxy and positive insignificant return against the CRSP market proxy (Table 5.5) which confirms that the Carhart four factor model is able to explain the Dow Jones Index-Americas returns. Like the Dow Jones Islamic Market Index, we also reported the log-likelihoods of both models for the Dow Jones Index-Americas, which enabled 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 (Table 5.6).

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

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(Depaendent Variables)	Alpha(α)	Beta(β0)	SMB(β1)	HML(β2)	Mom(β3)	Log-Likelyhood	R^2
F-F 3-Factor Model							
Benchmark: **MSCI-US**							
Dow Jones Islamic Mar. Index	0.9594	0.4055	-0.0601	-0.2906		-228.434	0.4274
	(3.38)***	(6.80)***	(-0.823)	(-4.88)**			
Dow Jones Index-Americas	0.1151	0.9238	0.127	-0.2463		-191.421	0.8622
	(0.598))	(22.9)***	(2.57)**	(-6.11)***			
Benchmark: **CRSP**							
Dow Jones Islamic Mar. Index	0.9067	0.3824	-0.1126	-0.1752		-229.942	0.409
	(3.13)***	(6.47)***	(-1.51)	(-2.82)***			
Dow Jones Index-Americas	-0.029	0.915	0.0019	0.0277		-181.369	0.8884
	(-0.167)	(25.8)***	(0.0441))	(0.744))			
Carhart 4-Factor Model							
Benchmark: **MSCI-US**							
Dow Jones Islamic Mar. Index	0.9777	0.399	-0.0651	-0.3014	-0.0121	-228.42	0.4276
	(3.20)***	(5.56)***	(-0.822)	(-3.42)***	(-0.167)		
Dow Jones Index-Americas	0.35	0.8394	0.0633	-0.3851	-0.1568	-185.79	0.8775
	(1.79)*	(18.3)***	(1.25))	(-6.85)***	(-3.36)***		
Benchmark: **CRSP**							
Dow Jones Islamic Mar. 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)*		

This table present the rsults from the uncoditional Fama - French 3-factor and Carhart-4 factor model. The results from the unconditional F-F 3 factor model imported from the table 5.4.

* Significant at the 10% level

** Significant at the 5% level

*** Significant at the 1% level

5.7.4 Robustness Test: the Conditional Four-Factor Model

Time Varying Conditional Alphas(α)

In Tables 5.4, 5.5 and 5.6, we estimated the single factor CAMP and the three-factor Fama and French against the MSCI-US and CRSP benchmarks. The unconditional CAPM assumes that both betas and the alphas are constant over time but that they may differ across funds. The conditional Carhart four factor model allows time varying betas but assumes that any abnormal performance is captured by the fixed alpha coefficients. Table 5.7 summarises the results of estimating the four factor model equations in the conditional four factor model with time varying conditional alphas. This model approximates the conditional alpha as a linear function of the predetermined information, allowing the function to be different for each fund manager. While estimating the conditional Carhart four factor model, Table 5.7 reports that the average R^2 goes up more for both the Dow Jones Islamic Market Index and the conventional Dow Jones Index-Americas when the conditioning variables such as 1 month treasury bill, default risk, term spread or dividend yield are brought into the model. This suggests that there is a time variation in the fund betas that washes out at 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 by both the Dow Jones Islamic Market Index and the conventional Dow Jones Index-Americas.

Table 5.7 Unconditional Versus Conditional Carhart's 4-Factor Performance from 1996 to 2003
(Number of Observations: 95, t-statistics in parentheses)

Index(Depaendent 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											
Benchmark: MSCI-US											
Dow Jones Islamic Market Index	0.9777	0.399	-0.0651	-0.3014	-0.0121					0.4276	0.000**
	(3.20)***	(5.56)***	(-0.822)	(-3.42)***	(-0.167)						
Dow Jones Index -Americas	0.35	0.8394	0.0633	-0.3851	-0.1568					0.8775	0.000**
	(1.79)*	(18.3)***	(1.25))	(-6.85)***	(-3.36)***						
Benchmark: CRSP											
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											
Benchmark: MSCI-US											
Dow Jones Islamic Market Index	1.045	0.3963	-0.0556	-0.3656	-0.0826	-0.2248	-0.202	0.0468	0.4449	0.4588	0.000**
	(3.31)***	(5.19)***	(-0.692)	(-3.94)***	(-1.02)	(-1.47)	(-0.870)	(0.0543))	(1.08))		
Dow Jones Index -Americas	0.2725	0.8798	0.0391	-0.3412	-0.0931	0.0245	0.3064	-1.0587	-0.3001	0.9009	0.000**
	(1.46))	(19.5)***	(0.825))	(-6.23)***	(-1.95)*	(0.272))	(2.24)**	(-2.08)**	(-1.23)		
Benchmark: CRSP											
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	-0.3001	0.9092	0.000**
	(0.094))	(21.1)***	(-1.05)	(-0.190)	(-0.141)	(-1.22))	(1.16))	(-0.0828)	(-1.23)		

This table presents the results from the unconditional and conditional Carhart-4 factor performance models. Here we allow the market, SMB,HML and Mom betas to vary over time as a function of (1) 1 month T-Bill rate, (2) devidend yield (3) the slope of the term structure and (4) the quality spread.

*Coefficient is statistically significant at 10%

** Coefficient is statistically significant at 5%

*** Coefficient is statistically significant at 1%

Table 5.7 also reports a test for the hypothesis that the betas are constant for each dependent variable. These are based on the Bonferroni[56] inequality and the results in Table 5.7 reject the hypothesis that the manager of the fund has constant conditional betas. In the results it is also observed that unconditional and conditional versions of all alphas of the Dow Jones Islamic Market Index show positive abnormal performance at a 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 a negative relationship between new money flows and fund betas.

Additionally, in the case of the conventional Dow Jones Index-Americas, unconditional and conditional versions of all alphas show underperformance (except in the unconditional four factor model against the MSCI-US market proxy which showed a positive abnormal performance at a 10% significant level) and conditional alphas are on average lower than unconditional alphas (Table 5.7). While we also find time-varying betas for conventional Index-Americas, it is likely that the flow of monies and the cash holdings of the conventional funds do not respond as much in the

[56] 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).

short run to expected market returns. This may explain the difference between our results in Table 5.7 and the findings of Ferson and Schadt (1996).

In the conditional four factor model among the conditional information, the dividend yield and the Treasury bill yield are more important variables. In respect of the Dow Jones Islamic Market Index, the coefficient for alpha, on both the dividend yield and on the Treasury bill are positive, and for the Dow Jones Index-Americas, the coefficient for alpha, both the dividend yield and the Treasury bill are also negative. This says that the managers of Islamic ethical funds deliver higher risk adjusted abnormal performance relative to the CAMP when dividend yields are 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 the Dow Jones Islamic Market Index shows the positive abnormal return (alpha is 1.045 and t-value: 3.31) at a 1% significant level against the MSCI-US benchmark and also positive abnormal return (alpha is 1.003 and t-value is 3.13) against the CRSP benchmark. In the results, the conditional models do suggest that the Dow Jones Islamic Market Index (DJIM) routinely out-perform the MSCI-US and CRSP benchmarks on a risk-adjusted basis. Table 5.7 shows that in the conditional four factor model, the conditional alphas of the conventional Dow Jones Index-America are statistically insignificant against both benchmarks as exhibited in Table 5.4.

In the above results, we observed that the performance result is essentially higher in the case of the Dow Jones Islamic Market Index and lower in the case of the conventional Dow Jones Index-Americas (underperform) against both benchmarks, as would be expected in an efficient market. Why does the conditional model produce such impressions about the alphas of Islamic portfolios compared to conventional portfolios 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 portfolio betas and in the expected market return. This variation is captured by the interaction terms in the conditional model. A comparison of the results between the unconditional four factor model and the conditional four factor model shows that the difference between the two measures of alphas are 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 the Dow Jones Islamic Market Index for the conditional four factor model are 0.5487 against the MSCI-US and 0.9068 against the CRSP benchmarks whereas the R^2 values for the conditional four factor model are 0.0560 against the MSCI-US and 0.9155 against the CRSP benchmark – significantly higher than the Fama-French three factor (that does not include the momentum factor) and the unconditional Carhart four factor model.

It seems that in a conditional setting the factor model is suited to measuring the Islamic portfolios. This indicates that; (1) the Momentum factor adds significant explanatory power and that (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 raises them when expected returns are low (Ferson and Warther, 1996). They are;

(1) The betas of the underlying assets change over time, such that even a buy and hold strategy has changing betas.

(2) Fund portfolio weights depart from a buy and hold strategy because of flows of cash into the funds or active management behaviour.

Table 5.7 records the coefficients of the conditional beta models for both the Dow Jones Islamic Market Index (DJIM) and the conventional Dow Jones Index-Americas and their t-ratios. Estimating the conditional betas of the underlying strategies of assets as they change over time produce negative coefficient of default-risk and slope of the 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 the 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 both benchmarks. All conditional constant betas are lower than the unconditional models indicating the strong time varying betas. The factor loading HML is statistically significant and negative against both benchmarks. The SMB and the Momentum that allow for time variation in the DJIM betas are negative and statistically insignificant against both benchmarks.

The second explanation for the movements in the DJIM betas involves the flow of money into the portfolios (fund) of the DJIM. If money flows into the fund's portfolio 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 fund's portfolio would have large cash holdings at such a time. Large cash holdings imply low betas. The effect of new money flows on the portfolios' betas will depend on the magnitude 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 whereby 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, which are also strongly correlated with the portfolio weight in cash. When inflows are large, the cash balances of 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 5.7 supports the hypothesis that the Islamic fund's portfolio 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 returns than the conventional Dow Jones Index-Americas as well as the two unrestricted benchmark. The Sharpe risk-adjusted premium per unit of total risk for the Dow Jones Islamic Market Index is statistically better than that for the conventional Dow Jones Index-Americas as well as for the MSCI-US and CRSP proxies. When the single factor CAPM, the Fama–French three factor and the Carhart four factor models are employed, the risk adjusted returns of the Dow Jones Islamic Market Index are statistically significant (at a 1% significant level) and the alphas are increased with the addition of extra factors.

On the other hand, when the single factor CAMP, the Fama-French three factor and the Carhart four factor models are employed, the alphas of the conventional Dow Jones Index-Americas remain statistically insignificant against both benchmarks except for the four factor model against the MSCI-US (at a 1 % significant level) although with the addition of the additional factors the value of the alphas are 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 portfolios is accepted. The hypothesis implies that Islamic ethically responsible investors do not face any

adverse effects from Islamic ethically screened stock prices and that an Islamic ethical investor can expect as much returns as an investor would gain from a conventional fund or in some cases may be even higher return. Moreover, Islamic ethical investors increase the value of ethically responsible companies relative to the value of conventional companies by keeping returns records at a par with the market. Investors can expect to lose nothing by investing in Islamically screened ethical portfolios and ethical factors have a positive effect on expected stock returns or companies cost of capital.

5.8 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 that try to influence them on ethical issues. Where companies can anticipate financial rewards by changing policy, Islamic ethical investors are most likely to be successful in influencing companies. In respect of performance effects concerning Islamic ethical criteria, there are a number of ways in which Islamic ethics could have an influence and an impact both on 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 cases the issue of financial returns 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.

There is a great degree of commonality between the notions of Islamic ethics with the secular notions of ethics and efficiency underlying regulation in conventional markets. However, what makes an Islamic market distinct is its emphasis on riba (usury) prohibition and curbs on speculation. Regulation is a dynamic process and a Shari'ah scholar should be part of a process of continuous monitoring and surveillance of the market and should come up with regulatory rules based on the realities of a given market. It may be noted that the Islamic stock market does not hamper market efficiency within Islamic ethics.

Islamic ethical investments are to be found most particularly in developed markets rather than in the Islamic or emerging markets. The reason behind this might be the fact that most markets in developing countries in general and in the Arab world in particular are considered to be volatile, inefficient 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 by placing a large percentage of their investments in technology stocks, mostly in the US. However, due to poor performing stock markets worldwide during the sample period of our study, Islamic ethical funds, just like unscreened funds, reacted accordingly by rebalancing their holdings. 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 US and the UK, Islamic ethical investment has always faced the prejudice that limiting one's potential investment pool will also limit one's potential for financial growth.

For the purpose of the robustness test, we compared the performance of Dow Jones Islamic Market Index with its conventional counterpart the Dow Jones Index-Americas of the same Dow Jones Group. The Sharpe risk-adjusted premium per unit of total risk for the Dow Jones Islamic Index was statistically significant and better than that for the conventional Dow Jones Index-Americas as well as for the MSCI-US and CRSP proxies. When the single factor CAPM, the Fama–French three factor and the Carhart four factor models are employed, the risk adjusted returns of the Dow Jones Islamic Market Index were statistically significant (1 % significant). Overall, introducing the conditioning information seems to have had a greater impact on the measures of performance than moving from the single factor to the four factor model. Additionally, in the case of the conventional Dow Jones Index-Americas, unconditional and conditional versions of all alphas showed underperformance (except in the unconditional four factor model against the MSCI-US market proxy which showed a positive abnormal performance at a 10% significant level) and the conditional alphas were average lower than the unconditional alphas (Table 5.7). In their study, Luther and Matako (1993) 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 chapter clearly indicates that 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 portfolios is rejected

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

Whilst some of the screens would imply a negative impact on performance whilst others suggest a positive impact (Sauer, 1997), this study indicates that the net effect of the various screens, even when more rigorous measures of performance such as the single index CAPM model and the Fama–French three-factor model are used, is not a negative but rather a positive abnormal performance. When we add the momentum factor and estimated unconditional and conditional four factor models, according to the results, the four factor model explains most of the variation in average portfolio returns. By employing both the unconditional and conditional Carhart's four factor model, the DJIM shows positive abnormal performance against the both benchmarks. These results are consistent with the results of Lettau and Ludvigson (2001) and Wang (2002) who argue that the momentum factor and conditional information can help to explain most of the variation in average portfolio returns.

With regard to the study on Islamic ethical investing, several issues should be considered. Firstly, the sample period considered (1996 to 2003) was very short in the case of time series analysis. Furthermore, the second half of the 1990s was one of the longest bull runs in history and the screening possibly generates a portfolio biased in favour of stocks that do well in a bull market and thus performance may be due to the non-ethical characteristics of the Dow Jones Islamic Market Index (DJIM). Besides this, the prohibition on stocks which derive a substantial part of their revenue from interest income, suggests that the index could by default be selecting companies

that make the most productive use of their surplus cash. A similar argument can be put forward for the low receivable screens and more efficient working capital management. Another cause can be the low average leverage screen, which might reduce the risk of the index, whilst the sector exclusions (financial services) may increase the non-systematic risk of the index.

In order for an Islamic ethical fund to succeed, it must be successfully promoted. A qualified investment advisor may be capable of selling funds but they may not be well versed in Islamic practices to promote Islamic ethical funds. Knowledge of the Shari'ah board is quite useful in this situation by providing recommendations on how to promote Islamic ethical funds. Another step for a successful Islamic ethical fund is distribution, as a fund may either be marketed through a reputed distributor or financial investment firms who may create its own fund. Either way, the company should have a solid reputation for successful investments and customer service. At this juncture, the reputation of the Shari'ah Advisory Board must also be considered. In order for funds to get widespread approval, the Shari'ah members must be well-respected Islamic scholars. In many ways the success of the fund is based on the Shari'ah Board's reputation.

The Islamic ethical fund must be easily accessed through multiple distribution channels and there exist opportunities for the fund managers in marketing Islamic investments worldwide. Islamic investors as well as ethical investors in the West want to own profitable companies that will make a contribution to society and help economic growth. There is no question that there is a sizeable, yet untapped market for Islamic 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 the 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.

Chapter 6
Conclusions and Recommendations

This thesis presents a comprehensive evaluation of existing managed funds performance by employing single factor to multifactor models both in their unconditional and conditional versions. Rationale is offered to explain the immense popularity of managed funds in light of the research findings which suggest that sometimes managed funds are unable to do significantly better than a large unmanaged portfolio. We examine the performance for a monthly sample of all the UK equity unit trusts, the UK ethical unit trusts and the Dow Jones Islamic index- an Islamic ethical screened index, to see whether these actively managed portfolios underperform or outperform the benchmark. The managed fund performance in the US is well documented in finance literature but the literature on performance of managed fund on the UK unit trusts and Islamic ethical funds are lacking.

Chapter 2 provides an in-depth literature review on mutual fund performance, model stock return and modern portfolio theory. The most commonly used managed fund performance indices like Sharpe (1966), Treynor index (1965) and Jensen (1968) alphas have drawbacks in the performance evaluation. Fama and French (1996) demonstrate that their three-factor model captures many of the widely documented patterns in stock returns. For example, the model accounts for the long-term return

reversal documented by Debondt and Thaler (1987). Although Berk (1995) and Kirby (1998) and some other authors argue that size and book-to-market equity cannot be interpreted as risk factors in the traditional sense, no one seems to question their empirical importance in explaining stock returns. The issue of whether the value and size premiums are caused by the risk of inefficiency may never be resolved to everyone's satisfaction, as feelings run strong on both sides of the argument. There are two crucial points to remember both for investors and managers. First of all, factors based on value and size have explained much of the common variation in the US stock returns for the past three quarters of a century. And secondly, value and size premiums have been observed in several other countries, with the value premium being observed in developed countries that have been studied. While these observations are consistent with a risk-based story, they do not prove anything. Nevertheless, something very fundamental would have to change in the financial markets in order for these premiums to disappear. Moreover, the returns observed in the US market during 1999 show that 'value minus growth' is not a low risk strategy.

Performance evaluation is in essence an assessment of the tools of measurement through the asset pricing theory models, which will in turn help to forecast the expected return of the underlying securities of the companies. It is therefore not surprising that the issues in performance measurement arise out of the validity and assumptions of the return generating process. The imposition of the semi-strong efficiency assumption using information variables has given rise to conditional models of performance measurement. A related issue is the consistency of the multitude of potential performance measures.

The latest performance measures have arisen out of developments in asset pricing theory. For example, the use of efficient benchmark portfolios in order to combat the problem of ambiguity and rank reversal of passive portfolios as a result of inefficient benchmarks. Unlike the traditional approaches to performance measurement which are unconditional, the latest performance measures use conditional information variables to account for time variation in expected returns and risk. Subject to certain limitations of their own, these measures have been considered more accurate and, potentially, the future of performance measurement will be enhanced through more research.

The UK unit trust industry is becoming popular to individual investors, academics, and regulators. Therefore, the role of the fund manager is, with respect to selection stocks, also important in the financial markets. Chapter 3 provides a detailed discussion on the goal of the unit trusts selection to improve investor's odds of earning a good return on investment. Investors will make more informed choices if they understand the relationship between past and future fund performance. The study addresses the following research questions;

1) Did the fund managers and small stocks outperform the market?
2) Does fund performance persistence exist ?

In order to address the above questions, we examine the performance of all the UK unit trusts that concentrate their investments in the UK equities. The study covers the period from January 1986 to December 2001. The return of these unit trusts is compared with a three-factor model which takes into account their exposure to market, value and size risk. Once these risk factors are controlled, it is observed that

the fund managers underperform the market. The results are worse for small company unit trusts. Contrary to the notion that small company shares offer abundant 'beat the market' opportunities, it is found that small company trusts are the worst performers.

In methodology, this study leans heavily on the same kind of three-factor model that Fama and French have found to give an accurate description of the behaviour of the US equity markets. For the UK market, the three-factor model has better explanatory power than a single-factor model, especially for unit trusts that invest heavily in small companies. Does fund performance persistence exist? The results say 'yes' but only poor performance. Carhart (1997) shows that the persistence performance of the US mutual funds occurs because persistence exist in the underlying stocks which the investors buy. It would require further research to determine whether this explanation applied to the UK unit trusts.

Ethical investment refers to a set of approaches that include social or ethical goals or constraints as well as more conventional financial criteria in decision over whether to acquire, hold or dispose of a particular investment. Chapter 4 discusses that the practice of ethical investment is directed towards the pursuit of two primary goals; firstly, providing a solution to the investment ethics problem, and secondly, addressing the corporate harm problem. The ethical investment avoids investing in companies with unethical practices and, instead, invests in companies which can be regarded as making a positive ethical contribution. Declining to invest in the securities of companies that act in a socially irresponsible way is not only a form of social protest, but can also have the effect of diminishing the demand for a company's securities. Diminishment of demand may have an adverse financial impact on a

company. This may be a factor in influencing companies to change and to become more ethically responsible. However, the question still arises; is an ethical investor who declines to purchase the securities of enterprises deemed to be disadvantaged with regards to investors who have no such restrictions? In other words, has the investment performance of ethical investors suffered in comparison to those who are not so responsible? To answer the above, this study has encompassed 35 ethical unit trusts in the United Kingdom. The investment performance of ethical unit trusts has been compared to conventional unit trusts, which are not ethically responsible. The study shows no clear pattern of either superior or inferior investment rates of return for ethical unit trusts when compared to conventional unit trusts.

In chapter 4, a comprehensive evaluation of ethical unit trusts performance is presented by employing various return-based benchmark models at both their unconditional and conditional versions. Using the data of the UK ethical unit trusts for the period from 1996 to 2003, this study explores the added value of introducing extra variables such as size, book-to-market, momentum and a bond index, which compare with its conventional peer. In addition to that, the use of introducing time variation in betas and alphas is evaluated. The search for the most suitable model to measure the UK ethical unit trust performance has addressed two points; firstly, the statistical significance of adding more factors to the single factor model and, secondly, the economic importance of more elaborate model specifications. The results reveal five conclusions.

First, within an unconditional setting it is found that Fama-French (1992) three factor and Carhart (1997) four factor model including market beta, SMB, HML and momentum factors are best able to explain ethical unit trust returns.

Second, conditioning betas on publicly available information proves to be unsuitable for ethical unit trust performance. All conditional models are inferior to their unconditional peers.

Third, we find very little evidence of time-variation in fund alphas, with the exception of the investment style level of the portfolio funds. It is also noted that all companies exhibit a little time varying in fund alphas.

Fourth, at the aggregate level, all ethical unit trust portfolios, the alphas do change when going from unconditional CAPM to conditional Carhart four factor model. In the investment style level, the influence of unconditional Fama-French three factor model and unconditional Carhart four factor models are more significant.

Fifth, after controlling for style tilts and allowing for time variation in betas and expected return, the UK ethical unit trust results are consistent with the general perception that there is no significant difference between ethical unit trust performance and their conventional peers.

Which model is best for performance measurement with regards to statistical as well as economic relevance? Based purely on statistical significance, the unconditional Fama-French three factor and Carhart four factor are clearly superior to

the conditional models. When measuring performance at an aggregated level, the influence of using elaborate conditional models is not that obvious. At the investment style level, however, the use of richer models do have a clear impact on alpha estimates.

The performance of ethical unit trusts indicate that long term investment rates of return are not influenced by use or lack of use of social criteria as part of the investment selection process. These results are supportive of Mallian, Saadouni and Briston (1995) who find that ethical funds outperform non-ethical funds. It is even seen that some results (Gregory et al, 1997) might disappoint the ethical investors who hope to perform well while doing good. They might also disappoint ethical investors who are willing to receive low returns as fair exchange for complying with their beliefs. But not all ethical investors have the same moral outlook. As Domini(1992) noted: "Often socially responsible investors express the impetus to manage their money as a desire for an integration of money into one's self and into the self one wishes to become" (p. 11). An institution may strive for consistency between its mission and the way it achieves that mission. In both instances, this motivation comes from within. The provost of a Quaker College was asked why his college did not invest in the manufacturers of armaments. Did the board of trustees think it was going to stop the armaments build up? 'No,' he responded, "our board isn't out to change the world. We're seeking [unity] between ourselves and our Lord."(pp. 5-7)

Chapter 5 examines the potential impact of Islamic ethical screening restrictions on investment performance of Islamic ethical common stocks by

comparing the performance characteristics of a diversified portfolio of Islamic screened stocks (Dow Jones Islamic index) with two conventional benchmarks. The research questions addressed in the study are ; (i) what are the actual relative returns of Islamic ethical portfolio versus conventional portfolio and (ii) what is the impact of Islamic ethical screening on investment performance?

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. In contrast to prior research on ethical investment, 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 Sharpe and Treynor measures and positive abnormal performance of Islamic portfolios (alpha) by employing the single factor, Fama and French three-factor and Carhart four factor model. Contrary to expectations, our findings indicate that application of Islamic ethical screening does not necessarily have an adverse impact on investment performance. There are three main conclusions in this chapter.

Firstly, that the Islamic ethically constrained Dow Jones Islamic market index delivers significant abnormal returns over the period examined.

Secondly, that the abnormal performance indicated is affected by whether or not the models used to measure performance which incorporate lagged information variables. This can be verified by the fact that the conditional measure increases the unconditional measure by above 10%.

Finally, we conclude that following one's conscience in financial investments do not necessarily lead to the investor being financially penalised. However, if these screens provide private information, we can expect that this effect will be arbitraged away. As the influx of global investment banks into this field indicate, the Islamic ethical fund sub-sector may become increasingly attractive to those who may not share the ethical concerns but desire a share of the Islamic ethical rewards. The acceptance of the importance of the value expressive features of the Islamic ethical funds would provide more than a better framework for fund analysis. It will also open the door to insights about the value-expressive features of all investments, from municipal bonds to hedge funds and internet stocks. Acceptance of the importance of the value-expressive features of investments would also take us along the road to future "behavioural asset pricing model," which has been described by Statman (1999), in which both utilitarian and value-expressive features determine the demand for investments and expected returns. Sharpe, in an interview with Burton (1998), described an 'extended' capital asset pricing model in which expected returns would be determined by beta, taxes, liquidity, dividend yield and other features that investors care about. Investors care about ethical responsibility and other value-expressive features, so a future behavioural asset pricing model would build on Sharpe's extended CAPM by including value-expressive features together with utilitarian features as determinants of investment demand and expected returns.

The analysis of the managed fund industry conducted in this thesis can be extended in several directions. One interesting topic for further research is the past returns on various systematic risk factors, such as size or momentum, on the

behaviour and strategies of equity, ethical and Islamic fund investors and managers. On the one hand, investors may select funds not only on the basis of their beliefs and past risk-adjusted performance, but also the risk characteristics of their portfolios. For example, they may reward funds with high exposure to the "hot" factors which recently realised high returns. In this thesis, we provide preliminary evidence that some investors take fund raw performance into account, and also that further analysis is required to identify separate impact of different systematic risk factor on managed fund flows. On the other hand, fund managers may pursue a similar 'style-timing' strategy of increasing the exposure to the well-performing risk factors. This strategy may help them to minimise the gap in performance with respect to funds that concentrate their investments in 'hot' styles and have higher raw returns (Barberis and Schleifer, 2000). Such behaviour may be more pronounced for managers of small and more volatile funds, for which it is easier to make significant changes in investment policy, as well as managers of underperforming funds who are likely to change the fund's strategy in order to improve fund performance and decrease the probability of being fired.

Another topic for further study is the identification of the calendar-year effects in the dynamic structure of the flow-performance relationship. The question is whether year-to-date performance has a separate impact on fund flows, on the top of the impact of past performance measured over a fixed, such as a one-year rolling horizon.

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