

A COMPARATIVE STUDY OF THE PERFORMANCE OF SAUDI MUTUAL FUNDS

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Abstract

This study examines the performance of 21 Saudi mutual funds using the CAPM and downside CAPM D-CAPM models over the period 2005-2011. Initially equity fund performance is examined against two benchmarks TASI and the GCC Islamic index utilizing the traditional beta and CAPM performance evaluation measures. The evaluation is then replicated utilizing the downside beta and other tests of funds' performance derived from the CAPM in the down side framework. The results indicate that the downside beta could be more relevant in terms of its higher explanatory power than the traditional beta and thus CAPM in the downside framework could be more relevant to report on funds' performance in this emerging market. After exploring the aggregate performance by forming two fund portfolios; one representing the average Islamic mutual fund and the other is the average conventional fund, to examine the performance of the Islamic mutual funds portfolio compared to its conventional peers and to the overall market, the study finds, on average, Islamic mutual funds in outperform conventional mutual funds and the market portfolio. The study concludes that it is equally important for practitioners in emerging markets, to report performance using both CAPM measures and D-CAPM measures and if differences exist, then the D-CAPM could be the superior measure because of its suitability to the asymmetrical distribution of returns existing in emerging markets in general.

Keywords: Islamic Funds, Conventional Funds, Performance, Downside Beta, Traditional Beta, CAPM, D-CAPM, Shariah Compliance

JEL classification: G11, G12, G14, G23

1. INTRODUCTION

Mutual funds have become a popular structure for investors seeking exposure to financial markets. Gregoriou (2007) claims there are two reasons why rational investors delegate their wealth management to mutual funds. First, economies of scale, which reduces wealth management costs. Second, private investors might expect that professional mutual fund managers have superior management skills, leading to positive risk-adjusted excess returns.

Islamic law or *Shariah* is the law that governs all aspects of day-to-day Muslims' life. Islamic finance industry plays an important role in the global finance market and is expected to grow even more rapidly in the future. It is argued that Islamic financial institutions can make a useful contribution to economic growth and development particularly in a situation of recession, stagnation and low-growth-level. Islamic finance continues to increase in popularity as it records double-digit asset growth numbers even after the recent financial crisis. The resilience of Islamic banks and the diversification benefits offered by Islamic capital markets have not been unnoticed by Western governments and conventional investors. As a result Islamic finance ranks high in many government agendas.

Islamic financial institutions appeared to some analysts as Ilias (2010) to be more resilient than

their conventional peers to the immediate effects of the recent international financial crisis and global economic downturn. Some researchers have attributed this to Islamic institutions' avoidance of speculative activities as in Derbel (2011) and Abdullah *et al.* (2007).

Maggs (2011) views that the risk diversification benefits and profit opportunities are the main drivers and that the shift to the Modern Islamic banking and finance legislation has originated not bottom up from the Islamic faithful, but top down from multinational businesses seeking a profitable market position. Malik and Shah (2011) are supporting this opinion by trying to capture this advancement of Islamic banking and finance in the United Kingdom. They relate this to the fact that more conventional banks and financial institutions in the United Kingdom currently have Islamic windows, offering Islamic banking services and are structuring new products and services that are Shariah-compliant as HSBC AMANAH and Lloyds TSB.

Islamic financial institutions have basically the same purpose as the conventional institutions except that they operate in accordance with the rules of *Shariah*, known as *Fiqh al-Muamalat* Islamic rules on transactions. A thorough explanation of the differences between Islamic financial institutions and Shariah compliant

products from their conventional peers is presented in Ghayad (2008), Olson and Zoubi (2008), and Khaldi and Hamadouni (2011). Mutual funds are becoming an investment vehicle of choice for many investors. These financial institutions pool financial resources of different investors and invest in tradable financial securities. They are viewed as increasingly effective means for income generation, capital appreciation, and diversification benefits to investors (Bryant, 2009).

The mutual fund industry can be portrayed as a competitive market that has experienced significant growth over the past 20 years. Islamic mutual funds were nonexistent before the 1990 when Muslim scholars reached consensus regarding the permissibility of equity investing as long as it adheres to the five main Islamic finance principles: prohibition of interest Riba, excessive uncertainty Gharar, speculation Maysar, risk and return sharing and the prohibition of investing in unethical industries (Hayat and Kraeussl, 2011). It is believed that Islamic equity funds are still not at their full potential, as according to the CIA world's fact book - 2007¹⁷ in Hassan *et al.* (2010), Muslims represent 21.01% of the world's population growing at 1.84% annually, of these around 62% live in Asia-Pacific and they have between USD 250 billion and USD 1 trillion to invest, growing at 15% annually in a market that is not fully exploited. Lipper and Thomson Reuters (2014) report that asset under management of Islamic asset management firms has doubled over the last six years reaching US\$ 56 billion from US\$ 26 billion in 2007. Due to the demand for Islamic finance, most major commercial investment banks and firms provide opportunities to invest in Shari'ah compliant funds. The number of Islamic mutual funds has more than doubled in the period 2007-2013 from 572 mutual funds in 2007 to 1065 in 2013 (Lipper and Thomson Reuters, 2014).

The revolution of performance evaluation is primarily initiated by Markowitz's (1952) mean-variance portfolio theory and the capital asset pricing theory CAPM developed by Sharpe 1964, which shows a linear relationship between systematic risk and expected return. A theory that was then criticized by researchers because of its own assumptions as the perfect market hypothesis, the difficulty of choosing the market portfolio, even the values needed to be assigned to the risk-free rate of return and more importantly the reliance on only one variable which is the systematic risk in explaining the expected returns. Studies as Ross (1997), Fama and French (1993), Jagadeesh and Titman (1993), Campell (1997) and Keith (2002) all view that returns can be explained by more than one variable and argue that multi factor models do a better job in explaining the variability of returns.

Although the performance of mutual funds in developed markets has been investigated thoroughly in literature, studies of the Middle East and North Africa MENA region generally are relatively thin and incomplete. Academic research on emerging Arab markets in general and the benefits of investing in

Islamic mutual funds versus conventional funds in specific is very limited. Some studies as Xu (2005), Abdullah *et al.* (2007), Estrada (2002, 2007), Imisiker and Ozlale (2008) all tried to examine the characteristics and returns of different emerging markets. Studies as of Iqbal (2001), Kalim and Lodhi (2006), Derbel (2011) and Razzaq *et al.* (2012) all argue that the Islamic system and *Shariah* compliant investments are better suited to adjusting to shocks and as equally profitable as the conventional investments. Abdullah, *et al.* (2007) studied the emerging market of Malaysia and provided evidence that Islamic mutual funds can maintain positive returns during bearish markets and thus can be seen as a good hedging investment alternative even for conventional investors in their portfolio selection, especially during market downturns. Hoepner *et al.* (2011) compare the performance of Islamic equity funds IEFs with that of conventional funds offered in 20 different countries. Their findings suggest that IEFs in countries with a low Muslim population, on average, not only trail their equity market benchmark but also exhibit a small stock bias. In contrast, IMFs from countries with a significant Muslim population neither underperform their equity market benchmarks nor experience a small cap bias. Yu and Lee (2011) suggest that portfolio selection must consist of more criteria than only risk and return in order to provide investors with additional choices.

This study attempts to contribute to the debate, being conducted in a different setting from previous studies that focused on developed markets, thus provides new empirical evidence for theories and models so far established. One of these is the appropriateness of the multi-factor models as opposed to single factor models to report on performance. This study compares the appropriateness of using the Fama and French 3 factor model versus the CAPM and DCAPM in one of the largest emerging Arab markets; the market of Saudi Arabia. This study also evaluates the influence of *Shariah*-compliant transactions on funds' performance by comparing Saudi Islamic versus conventional funds' performance over the period 2005- 2011. It is an attempt to add knowledge to the existing literature and to highlight the possible benefits, if any, of investing in *Shariah* compliant instruments, especially with the rapid increase in launching new Islamic funds, Islamic indices, and with the increase in the knowledge of the Islamic financial system worldwide. Initially equity fund performance in Saudi Arabia is examined against two benchmarks TASI and the GCC Islamic index utilizing the traditional beta and CAPM performance evaluation measures. The evaluation is then replicated utilizing the downside beta and other tests of funds' performance derived from the CAPM in the down side framework. The study documents evidence that beta in the downside framework could be more relevant in terms of its higher explanatory power than the traditional beta and thus the capital asset pricing model in the down side framework could be more relevant to report on funds' performance in this emerging market. After exploring the aggregate performance by forming two fund portfolios; one representing the average Islamic mutual fund and the other is the average

¹⁷ "The world fact book," Central Intelligence Agency" <https://www.cia.gov/library/publications/the-world-factbook/geos/xx.html>, Oct. 20, 2008.

conventional fund, to examine the performance of the Islamic mutual funds portfolio compared to its conventional peers and to the overall market, the study presents evidence based on aggregate returns that on average, Islamic mutual funds in Saudi Arabia outperform conventional mutual funds and the market portfolio. The study concludes that it is equally important for practitioners in emerging markets, to report performance using both CAPM measures and D-CAPM measures and if differences exist, then the D-CAPM could be the superior measure because of its suitability to the asymmetrical distribution of returns existing in emerging markets in general.

The Saudi market is believed to be a good representative of emerging markets. Saudi Arabia is the birthplace of Islam, ranks the first among all other Muslim countries when it comes to the enforcement of Islamic investment rules. Generally, there is a widespread support and encouragement for Islamic financing in the kingdom, manifested by the establishment of the Jeddah based Islamic Development Bank IDB, with the Kingdom contributing almost 25 percent of the 8 billion capital of the largest Islamic financial institution owned by the members of the organization of Islamic conference (Ramady, 2005). When it comes to the size of the equity markets, Smimou and Karabegovic (2010) specified that Saudi Arabia had by far the largest total market capitalization value in the MENA region 246 billion in 2008, followed by Turkey 118 billion, then Egypt with an 85 billion-market capitalization value. According to the official Saudi stock market TADAWUL website www.tadawul.com.sa, has reached a market capitalization of 370 billion dollars in August 2012.

The Saudi market is relatively new as the main TASI index was launched in 2003. It is intensively engaged in activities aiming to increase its financial liberalization, trying to enhance the market's efficiency and the corporate governance within, but still suffers the limitations existing in emerging markets in general as the unavailability of free, complete information, transaction costs and illiquidity of some of its stocks.

Conventional and Islamic financial systems operate side by side in KSA. However, because most of the population of Saudi Arabia is Muslims, ideally concerned with Islamic rules and principles, and expected to avoid dealing in interest bearing transactions, more conventional banks prefer to deal in operations that are *Shariah*-compliant, aiming higher profits and bigger market share. The size of the mutual fund industry in Saudi Arabia ranks first among the GCC countries, followed closely by Kuwait and UAE. There are currently around 240 mutual funds in the Saudi capital market. The investments are spread across local and international stocks, bonds, trade finance and money markets www.tadawul.com.sa.

The rest of the paper is organized as follows. Section two presents a glimpse on the difference between Islamic and conventional equity funds with a brief overview of the Saudi Arabian market and the Saudi mutual funds. Section three reviews previous literature. Section four presents for the data and the methodology used. Section five

presents for the results and discussion. Finally, section six concludes the study.

2. ISLAMIC VERSUS CONVENTIONAL EQUITY FUNDS

Shariah compliant funds are investment vehicles that are fully compliant with the principles of Islam. The funds are prohibited from making investments in industries categorized as immoral as gambling or alcohol, investing in conventional banking because of the concept of interest bearing debt, or even investing in highly leveraged companies. Speculative activities like short selling and forward contracts used in conventional funds are not allowed either for Islamic funds.

Islamic mutual funds have been around for less than a decade and are still in their infancy stage of growth and development because of several obstacles mainly the limited risk management instruments alternatives, the liquidity problems, the fewer number of securities that can pass the Islamic criteria screening and the poor awareness among potential investors despite the expectations of a substantial market with almost 1.3 billion Muslims. It is argued in Hassan *et al.* (2010) that Islamic mutual funds are similar to conventional mutual funds in many ways. The main difference is that Islamic mutual funds must conform to Shariah investment percepts that govern mainly the funds' asset allocation decisions, investment and trading practices, and income distribution. As for asset allocation, conventional funds can freely choose between debt bearing investments and profit bearing investments. Islamic mutual funds, on the other hand, can only invest in those companies that meet its qualitative and quantitative criteria set by the Shariah guidelines. This screening can filter out companies according to the nature of their business as selling alcohol or biotechnology firms using human embryos...etc., or conducting unethical business practices as per Shariah.

In terms of investment and trading practices, fixed income instruments such as corporate bonds, treasury bonds or bills, certificates of deposits and preferred stocks, and some derivatives such as options; are all not allowed for Islamic mutual funds. Islamic funds cannot trade on margin, cannot use interest-bearing debt to finance their investments, unlike the conventional funds that are allowed to speculate and to rely heavily on interest bearing debt to finance their activities. On the other hand, "contaminated" income is to be purified, that is, investments in companies with tolerable amount of interest income or with tolerable revenues from unacceptable business activities can be made if these impure earnings are purified by giving them away to designated charities.

Saudi Arabia's economy and stock market are the largest in the Middle East. It is the largest crude oil producer and its economy is characterized by high liquidity and steady growth. The growth of Saudi mutual funds has been impressive over such a short period of time. Initially the focus was on selecting high net worth or "private bank" clients but now all Saudi banks have expanded their target market to include middle-income investors. The size of the mutual fund industry in Saudi Arabia ranks

first among the Gulf Cooperation Council hereafter GCC countries. According to Ramady (2005), there is a growing desire among Saudi investors to invest in Islamic based mutual funds that are Shariah-compliant, and are at the same time consistent with the principle of equity participation and risk sharing, at the expense of demand for conventional or non Shariah Compliant funds. This is evidenced by the remarkable market share that Al-Rajhi Banking and Investment Corporation an Islamic institution currently enjoys, and the conversion of a large number of the branches of conventional commercial banks to “Islamic branches”.

3. LITERATURE REVIEW

Contributions made by Markowitz (1952), Treynor (1965), Sharpe (1966), Jensen (1968), and Fama (1972), added enormously to the area of modern portfolio theory. Pioneered by the capital asset pricing model, numerous studies were directed to evaluate mutual funds performance and to examine if they can actually beat their benchmark and achieve abnormal performance on a consistent manner. Many studies cited in literature criticized the suitability of the CAPM model and provided evidence that returns can be explained by more than one variable and thus performance measurement was extended to multifactor models as Ross (1997), Fama and French (1993), Jagadeesh and Titman (1993), Campell (1997) and Keith (2002).

Most of these studies were actually devoted to the developed markets of the U.S. and the U.K. However, with respect to emerging markets, some studies were cited in literature as Xu (2005) comparing the performance of Securities Investment Funds in China to those of the U.S. utilizing the CAPM performance measures. Imisiker (2008) has used CAPM performance measures, along with Fama's performance attribution analysis by Fama (1972) in assessing selectivity and market timing performance of Mutual Funds industry in Turkey. Low (2010) studying the relationship between fund performance and characteristics of the Malaysian Unit Trust Fund utilizing the CAPM measures. All of the results generally used the CAPM model and generally agreed that on average mutual funds cannot beat their index. Alternatively, Merdad *et al.* (2010) using a sample of monthly data of Islamic and conventional funds in Saudi Arabia, examined the risk return behavior by employing the CAPM performance evaluation measures and dividing the sample period to bearish and bullish periods, provided evidence that Islamic funds underperform conventional funds in bull periods but outperforms them in bearish periods and thus offer hedging opportunities to investors during economic downturns. These results are consistent with similar tests of Malaysian funds presented by Abdullah *et al.* (2007), and Mansor and Bhatti (2011) and Mansor *et al.* (2012).

The use of multifactor models in emerging markets was rarely cited in literature if any, although it has proved to provide a relatively higher degree of accuracy compared to the CAPM model in many of the developed markets. A major reason in our opinion is the unavailability of high frequency data needed for the construction of the variables

used in these models. A popular approach for multifactor models is the one suggested by Fama and French (1993) in which they proposed, besides the return on the market portfolio two additional variables related to firm size and the book to market ratio. Fama and French (1993) constructed variables related to size and book-to-market ratio, called SMB and HML respectively. Each year from 1963 to 1991, NYSE, Amex and NASDAQ stocks are ranked in size and split into two groups Small and Big based on median NYSE size. NYSE, Amex and NASDAQ stocks are also ranked on the basis of book-to-market ratio and broken into three groups 30% each for High and Low and 40% for Medium. This allows six value-weighted portfolios to be constructed S/L, S/M, S/H, B/L, B/M, B/H. The SML variable is constructed by the average of the three small cap stock portfolios minus the average of the three big cap stock portfolios. Similarly, the HML is the average of the two high book-to-market stock portfolios minus the average of the two low book-to-market stock portfolios. They provided evidence in their study that the cross section stock returns can be best explained by the return of the market portfolio and two mimicking portfolios related to size and value risk premiums.

Recent studies with respect to emerging markets were directed towards examining the suitability of the downside risk performance measures over the traditional CAPM measures arguing that CAPM doesn't work for emerging markets, as the main assumption of the financial theory of the normal distribution of returns is not valid for emerging markets.

Of the core assumptions of the CAPM model is that investors are rational, with homogeneous expectations, and they can borrow and lend at the risk free rate. Taxes and transaction costs are zero and none of the securities suffers from illiquidity. Galagedera (2007) argues that the traditional CAPM has failed to explain the variation in equity prices in emerging markets since return distributions are found to be non-symmetric and highly volatile. He used the monthly returns of 27 emerging markets January 1995 to December 2004. The proxy used for the market index is the world index and the proxy for the risk-free rate is the 10-year US Treasury bond rate. He tried to establish a relation between beta and downside beta arguing that this relation is influenced by such characteristics as the standard deviation, skewness and kurtosis of the market portfolio returns distribution, and suggested that the downside beta might be more appropriate as it provides better explanation of variability of returns in emerging markets.

Estrada (2002, 2007) argues that of the main characteristics of the CAPM model is that it measures risk by beta, which follows from an equilibrium model in which investors display mean-variance behavior. In that framework, risk is assessed by the variance of returns which is a questionable measure of risk since it requires returns to be symmetric and normally distributed and both assumptions are highly questionable for emerging markets. Instead he proposed the semi-variance of returns as a more acceptable measure of risk and one that can be used to generate an alternative behavioral hypothesis mean-semi-

variance behavior, an alternative measure of risk for diversified investors the downside beta, and an alternative pricing model the downside CAPM. By using monthly data on 27 emerging markets, he provided evidence supporting the use of downside risk measures over the standard risk measures, and concluded by suggesting the importance of the downside beta and downside risk measures to replace the traditional CAPM performance evaluation measures.

Mamoghli and Daboussi (2008) performed a comparison between traditional CAPM and CAPM in the downside risk framework on the one hand and between traditional performance evaluation measures and those in the downside risk framework on the other hand. They used a database of monthly returns of emerging markets over the period from January 1995 to December 2004. They agreed with Estrada's 2007 conclusions about the insufficiency of traditional CAPM and traditional performance measures in the presence of asymmetrical returns distributions and stressed on the importance of the incorporation of downside risk measures in the CAPM and in the performance measures. The different arguments could be summarized in that the main criticism against the use of the CAPM in emerging markets is that it may lead to an incorrect evaluation because of the asymmetric nature of returns and because its beta treats the returns above the mean in the same way as returns below the mean, despite the fact that investors themselves treat returns higher than the mean in a different manner from those below the mean.

Following the seminal work of Fama and French (1993), Breloer et al. (2014) analyse the impact of index momentum factors on the performance of international and global equity funds. Extending an international, index-based version of the Fama and French (1993) three-factor model by adding the factors of country momentum and sector momentum, they find that more than 50% of funds exhibit significant exposure to at least one of these factors.

Babalos et al. (2012) implement a multicriteria methodology using stochastic multicriteria acceptability analysis, on Greek domestic equity funds for the period 2000–2009. They find that the sophisticated Carhart's alpha plays the most

important role in determining fund rankings. On the other hand, funds' rankings are affected only marginally by operational attributes. Tamiz et al. (2013) investigate the use of several factors for portfolio selection of international mutual funds using goal programming. Past performance of twenty mutual funds selected from ten countries in seven regions provides the data for various goal-programming models used in the experiments. In et al. (2014) examine the impact of both socially responsible SR and conventional entrant funds on SR incumbent funds using an overlap in portfolio holdings to measure the impact of competition in the US mutual fund industry. This paper's findings indicate that over the past decade the increase in competition from SR entrants has been associated with an increase in fees but not in capital flow. Moreover, their results show that the increase in the number of SR fund entrants does not have a negative impact on fund performance. Mohammad and Ashraf (2015) investigate the determinants of return performance of Islamic equity indices IEs. They employ an extended four-factor dynamic condition correlation GARCH model to a sample of IEs from different regions for the period 2002–2013. The empirical results indicate a statistically significant difference between IEs from developed markets and those from emerging markets during the sample period. Findings suggest that Shari'ah screening helps IEs to select securities of firms that are not financially distressed, are growth oriented and are exhibiting a positive momentum. Most recently, Stafylas et al. (2016) survey articles on hedge funds' performance persistence and fundamental factors from the mid-1990s to the present. They find that small funds, younger funds and funds with high performance fees all outperform the opposite. Long lockup period funds tend to outperform short lockups and domiciled funds tend to outperform offshore funds.

4. METHODOLOGY AND DATA

For deciding on which performance evaluation measures will be more appropriate to be used for investigating the funds' performance, Fama and French (1993) three-factor model is used as follows:

$$R_{pt} - R_{ft} = \alpha_p + \beta_{0p}(R_{mt} - R_{ft}) + \beta_{1p}SMB_t + \beta_{2p}HML_t + \varepsilon_{pt} \quad (1)$$

where:

- $R_{pt} - R_{ft}$ is the average excess return of the fund p .
- SMB is the difference in return between a small cap portfolio and a large cap portfolio and
- HML is the difference in return between a portfolio of high book-to-market ratio and a portfolio of low book-to-market ratio.

Given the complexity of the issues involved, it is not surprising that there is no single universally accepted asset pricing model, but there is a wide choice of models each with its own merits. Our choice of portfolio evaluation measures generalises the studies of Grinblatt and Titman (1989) and Mansor and Bhatti (2011) by including a wider set of measures.

The CAPM is given by:

$$E(R_i) = R_f + \beta(E(R_m) - R_f) \quad (2)$$

Where, ER is the expected return on the asset;
 R_f - the risk-free rate;

$ER - R_f$ - the market premium;
 β - is the sensitivity of asset returns to market returns.

The D-CAPM may be expressed as:

$$E(R_i) = R_f + \beta^- (E(R_m) - R_f) \tag{3}$$

Where:

$$\beta^- = \frac{\sum_{t=1}^T [\min(R_{i,t} - R_{f,t}, 0)] \times [\min(R_{m,t} - R_{f,t}, 0)]}{\sum_{t=1}^T [\min(R_{m,t} - R_{f,t}, 0)]^2}$$

Contrary to the CAPM that uses variance to measure risk, the D-CAPM uses the semi-variance. Therefore the D-CAPM penalizes the downside return potential of the asset.

In both the CAPM and the D-CAPM the beta and downside-beta may be estimated with a regression of the asset's excess return on the market's excess return. A restriction is applied for the D-CAPM case so that market excess return is only taken into account if it falls below its mean value.

For evaluating the funds' performance, the methodology based on the classical CAPM model along with its based performance evaluation measures are applied as follows:

Treynor's coefficient Reward-to-Volatility or RVOL is used to measure the excess return of a fund, over the risk free rate, per unit of systematic risk as suggested by Treynor (1965).

$$TreynorRatio = (R_p - R_f) / \beta_p \tag{4}$$

Where, $(R_p - R_f)$ is the average excess return and β_p is the fund's beta.

Sharpe ratio Reward-to-Variability: As suggested by Sharpe (1966), measures the average excess returns of a fund, over the average risk free rate, per unit of total risk of the fund.

$$Sharpe = \frac{R_i - R_f}{\sqrt{\text{var}(R_i - R_f)}} = \frac{R_i - R_f}{\sigma} \tag{5}$$

Where, $(R_p - R_f)$ is the average excess return and σ is the total volatility of the fund.

Jensen's Alpha: Measures the Funds' excess returns, over and above those of the benchmark. The alpha measure as suggested by Jensen 1968 is:

$$Jensen's \alpha = R_p - R_f - \beta_p (R_M - R_f) \tag{6}$$

Where, α is the fund excess returns over and above those of the benchmark, R_p is the average return of the fund over the measurement period, β_p is the sensitivity of the fund excess returns, over the risk free rate, to the excess returns of the benchmark and R_M is the average market return over the measurement period.

framework. As presented in Estrada (2002, 2007), in the alternative mean semi- variance framework, the investor's utility will depend on the *downside* variance of returns semi-variance of the investor's portfolio. In this framework, Estrada downside beta with respect to the risk free rate is determined as follows:

Estrada

The second part of the study then applies the capital asset pricing model in the downside

$$\beta_{Di} = \frac{\sum_{t=1}^T [\text{Min}(R_{p,t} - R_{f,t}, 0)] * [\text{Min}(R_{m,t} - R_{f,t}, 0)]}{[\text{Min}(R_{m,t} - R_{f,t}, 0)]^2} \tag{7}$$

Then, three performance measures in the downside risk framework are applied. These are:

The Sortino ratio

Sortino and Price (1994) ratio is presented as follows:

$$SOR = \frac{R_p - R_f}{\sigma_{DP}} \tag{8}$$

Where, R_p is the portfolio's return, R_f is the risk-free rate which here represents the minimum acceptable return or MAR and σ_{DP} is the downside deviation of the portfolio returns.

The index of Mishra and Rahman

Similar to the Treynor ratio but only replacing traditional beta by the downside beta was presented

by Mishra and Rahman (2002) in Mamoghli and Daboussi (2008). The new ratio is written as follows:

$$MR = \frac{R_p - R_f}{\beta_{DP}} \quad (9)$$

Where, R_p is the return of portfolio, R_f is the risk-free rate and β_{DP} is the downside beta.

The alpha of Mamoghli and Daboussi

A third performance measure, in the downside framework that is similar to the Jensen alpha, utilizing Estrada's beta, was presented by Mamoghli and Daboussi (2008) as follows:

$$\alpha_{DP} = R_p - R_f - \beta_{DP}(R_M - R_f) \quad (10)$$

The adjusted Jensen alpha based on the Estrada downside beta calculates the return of the portfolio in excess of its required rate of return calculated according to the D-CAPM of Estrada 2002.

The latter part of the study explores the aggregate performance by forming two fund portfolios; one representing the average Islamic mutual fund and the other is the average conventional fund, to examine the performance of the Islamic mutual funds portfolio compared to its conventional peers and to the overall market. Only TASI local all share index is used in these tests. GCCI index was excluded because of its zero values for the coefficient of determination.

The research data is a unique data set. First, for the construction of Fama and French three-factor model, the variables were calculated based on the data of companies listed on the Saudi stock exchange for the period from December 2006 to September 2011. Out of 156 Saudi listed companies only 89 were included in the construction of the benchmarks. Quarterly rate of returns of individual stocks were manually copied from the Saudi exchange official website as prior to 2006, quarterly data was unavailable. Book values and market capitalization values for the selected companies were manually copied from the quarterly reports issued on the official Saudi exchange website for the entire sample period. Quarterly data were used since many of the data values were not available on monthly basis.

All of the stocks on December 2006 are ranked on size and split into two groups small and big. Then all the stocks are also ranked on the basis of book to market ratio and broken into three groups 30% each for high and low and 40% medium, resulting in six value-weighted portfolios S/L, S/M, S/H, B/L, B/M, B/H. The SML variable is constructed by the average of 3 small cap stock portfolios minus the average of 3 big cap stock portfolios. The HML is the average of the two high book to market stock portfolios minus the average of the two low book to market stock portfolios.

Then, for the Saudi funds data: out of 240 mutual funds dominated in different currencies and with different objectives, only 21 equity funds, 10 Islamic and 11 conventional equity funds, dominated in local currency, in existence from June 2005 were chosen. Monthly net asset values were collected from Bakheet Investment Company a service for a fee. Missing monthly net asset values were collected manually from the interactive chart available on the official Saudi exchange website.

Two indices are used: The Saudi Tadawul all-share index. It is an all share absolute market capitalization index that does not include dividends www.tadawul.com.sa and the GCCI Islamic index, issued by Global Investment House Company; a well-recognized investment company located in Kuwait. The index is constructed to include stocks from selected listed companies in the Gulf Cooperation Council region Source www.globalinv.net.

The risk free rate is taken to be the 1-month Saudi interbank offered rate SIBOR, obtained from the National commercial Bank. Survivorship bias was cited in literature as in Brown *et al.* (1992) and Otten and Bams (2004) highlighting the fact that if funds which are unable to survive for the whole sample period are eliminated from the sample, the performance measurement can be upwardly biased. This data set is not subjected to survivorship bias, since no open-end mutual fund dropped out of sample.

5. RESULTS AND DISCUSSION

Table 1 reports the regression results of Islamic versus conventional Saudi funds portfolios, based on quarterly aggregated returns, applying CAPM, Fama and French three factor model and D-CAPM. The Islamic and conventional funds are calculated on equally weighted portfolio of all funds using quarterly returns from December 2006 to September 2011.

For the Islamic mutual funds IMF portfolio, the CAPM regression results showed relatively lower values for the adjusted R^2 coefficient as opposed to the conventional mutual funds CMF portfolio, suggesting that the model is only capable of explaining 41% of the variability of returns in the Islamic fund portfolio as opposed to 96% for the conventional fund portfolio. The D-CAPM regression results showed higher values for the IMF adjusted R^2 coefficient, implying that it is capable of explaining 97% of its variability of returns and is still capable of explaining 87% of the variability of the conventional fund portfolio. Beta values using both models and for the two fund portfolios were high and statistically significant at 1% level of significance, implying that both funds under the two models are applying defensive strategies. The absence of statistically significant positive α values implies that none of the funds under both models were able to show superior performance.

Table 1. Regression results of Islamic and conventional funds using CAPM model, Fama and French 3-factor model FF and D-CAPM

Panel A: Islamic Mutual Funds IMF					
	α	β	SMB	HML	Adj. R ²
CAPM	0.0697	1.0363***	-	-	0.410
FF	0.0718	1.1235***	-0.0530	-1.0780	0.376
D-CAPM	0.0050	0.9860***	-	-	0.972
Panel B: Conventional Mutual Funds CMF					
	α	β	SMB	HML	Adj. R ²
CAPM	0.0054	0.9388***	-	-	0.961
FF	0.0043	0.9477***	-0.0121	-0.0327	0.962
D-CAPM	-0.0081	0.8600***	-	-	0.873

This table shows the regression results of Islamic and conventional funds using CAPM model, Fama and French 3-factor model and DCAPM model. The Islamic and conventional funds are calculated on equally weighted portfolio of all funds using quarterly returns from December 2006 to September 2011. α represents the Jensen's alpha and the β is the systematic risk. SMB and HML are the factors for measuring the influence of size and book to market effect, calculated as the average quarterly return of the SMB and HML portfolios.

Note: ***Significant at 1% level.

By using Fama and French three factor model, both alphas and betas for the two funds scored very close values to those scored by the traditional CAPM model. However, and as noted by the adjusted coefficient of determination, Fama and French model was only capable of explaining 38% of the IMF variability of returns as opposed to 41% when using the CAPM model. What is more important is that the influence of the book to market ratio and the size effect on the portfolios are not statistically significant. That is our results do not seem to provide evidence on the superiority of the Fama and French three factor model on the other two models in explaining the relationship between the risk and return in the Saudi market. D-CAPM seems to be the more appropriate model.

This result should be evaluated with caution. We understand that using quarterly data for a short sample period is insufficient and maybe if higher frequency data were employed, different results

would have been expected. However the problem of data collection in this market is a major obstacle and this is why further research is encouraged when more data is available. For this reason, the rest of the study will only employ the CAPM and D-CAPM models in measuring funds' performance, to determine whether Islamic funds are better performers than conventional funds and which, if any was successful in profiting from the mispricing opportunities that may be existing in the Saudi market given the fact that this relatively new emerging market is generally thought to be less efficient than the large and more mature markets.

Starting with the traditional CAPM model and its performance evaluation measures; Tables 2 and 3 report the relative performance and risk measures for 10 Islamic equity funds and 11 conventional equity funds operating in the Saudi market, measured against two indices: TASI and GCCI index, using the traditional CAPM model.

Table 2. Islamic funds: Descriptive statistics and CAPM performance evaluation measures

	Mean	SD		Beta	R ²	α	Sharpe	Treynor
TASI	-0.006	0.155		1.00		0.000	0.087	0.013
GCCI	0.100	1.050		1.00		0.000	0.116	0.122
HSBC Amanah1	0.136	1.280	TASI	1.58***	0.040	0.134	0.120	0.100
			GCCI	0.01	0.000	0.150	0.120	11.700
HSBC Amanah 2	-0.001	0.160	TASI	1.03***	0.960	0.004	0.111	0.017
			GCCI	0.01	0.009	0.020	0.111	1.220
NCB Saudi stock	-0.001	0.159	TASI	0.97***	0.880	0.005	0.110	0.018
			GCCI	0.01	0.008	0.016	0.110	1.300
Riyad 2	-0.003	0.158	TASI	0.99***	0.950	0.003	0.105	0.017
			GCCI	0.02	0.100	0.015	0.105	1.010
Rajhi local	0.000	0.150	TASI	0.95***	0.960	0.007	0.130	0.021
			GCCI	0.02	0.010	0.018	0.130	1.280
Taybat	-0.008	0.145	TASI	0.84***	0.800	-0.003	0.075	0.013
			GCCI	0.01	0.010	0.009	0.075	0.800
ANB Mubarak	-0.001	0.144	TASI	0.89***	0.920	0.006	0.125	0.020
			GCCI	0.01	0.010	0.016	0.125	1.320
Alyusr	-0.003	0.160	TASI	1.01***	0.950	0.003	0.100	0.016
			GCCI	0.02	0.010	0.014	0.100	0.990
SAEB Corp	0.100	1.040	TASI	0.56***	0.007	0.116	0.120	0.220
			GCCI	0.01	0.000	0.124	0.120	-25.700
Al Raed	-0.005	0.160	TASI	0.96***	0.900	0.002	0.090	0.015
			GCCI	0.02	0.010	0.013	0.090	0.940

This table shows the CAPM regression results for 10 Islamic Saudi equity funds over the period June 2005 to September 2011. To proxy the market, two indices are used: TASI all share index and GCCI index. ***Significance at 1% level

Tables 2 and 3 display the CAPM regression results along with the performance evaluation measures against the two benchmarks used: TASI all share index and the GCCI index. With respect to the TASI index, all funds sampled either Islamic or

conventional have mean returns higher than the mean returns of the TASI index. Variability of returns SD on average is higher except for three Islamic funds and three conventional funds.

When evaluating systematic risk, all the beta values for all funds are significant at 1 per cent level of significance. It is noted that the average beta for all funds was 0.94, implying that the funds are, on average, less risky than the benchmark. The coefficient of determination averaged 0.73, implying that on average almost 73 per cent of the movements in the funds' excess returns can be explained by the movement in the excess returns of TASI index.

When looking at Sharpe ratio results, all of the eleven conventional funds scored higher return per unit of total risk as opposed to the index, while nine Islamic funds out of the ten funds scored higher Sharpe ratio than the TASI index. On the other hand, the Treynor ratio for all funds in the two samples provided higher scores and thus higher return per unit of systematic risk compared to the TASI index.

Table 3. Conventional funds: Descriptive statistics and CAPM performance evaluation measures

	Mean	SD		Beta	R ²	α	Sharpe	Treynor
TASI	-0.006	0.155		1.00		0.000	0.087	0.013
GCCI	0.100	1.050		1.00		0.000	0.116	0.122
HSBC FI	-0.005	0.160	TASI	0.80***	0.640	0.003	0.090	0.017
			GCCI	0.01	0.006	0.013	0.090	0.150
HSBC Stock	-0.001	0.160	TASI	1.01***	0.960	0.006	0.120	0.019
			GCCI	0.01	0.009	0.020	0.120	1.270
HSBC T	0.000	0.160	TASI	1.03***	0.940	0.006	0.120	0.019
			GCCI	0.02	0.010	0.018	0.120	1.270
Saudi Hollandi FI	0.100	1.030	TASI	0.99***	0.020	0.105	0.115	0.119
			GCCI	0.00	0.000	0.119	0.115	-55.500
CAAM	-0.002	0.160	TASI	1.01***	0.960	0.003	0.106	0.017
			GCCI	0.01	0.100	0.015	0.106	1.140
Riyad 1	0.000	0.156	TASI	0.80***	0.630	0.009	0.125	0.024
			GCCI	0.01	0.007	0.018	0.125	1.560
Riyad 3	-0.002	0.152	TASI	0.94***	0.910	0.005	0.113	0.018
			GCCI	0.01	0.009	0.016	0.113	1.270
ANB	-0.005	0.160	TASI	0.73***	0.530	0.005	0.094	0.020
			GCCI	0.02	0.010	0.013	0.094	0.970
SAEB	-0.004	0.150	TASI	0.93***	0.930	0.002	0.100	0.016
			GCCI	0.01	0.007	0.013	0.100	1.230
Al Fareed	-0.005	0.160	TASI	0.73***	0.510	0.005	0.090	0.020
			GCCI	0.02	0.020	0.010	0.090	0.760
Al Musahem	-0.005	0.150	TASI	0.96***	0.940	0.001	0.090	0.015
			GCCI	0.02	0.100	0.012	0.090	0.960

This table shows the CAPM regression results for 11 conventional Saudi equity funds over the period June 2005 to September 2011. To proxy the market, two indices are used: TASI all share index and GCCI index. ***Significance at 1% level

As for Jensen's alpha, none of the funds was able to score a positive significant value for alpha, that is, none was able to earn excess returns and beat the index on a consistent manner. This result is generally consistent with the arguments criticizing the use of market indices like TASI and concluding that mutual funds, on average, cannot beat their benchmark since it is nearly impossible for an investor to form a portfolio whose returns replicate those of the index. A main reason for that could be the presence of transaction costs that are encountered to form or restructure the portfolio.

By employing the GCCI index, all funds sampled have lower mean returns than the GCCI index except for one Islamic fund. All funds scored lower values for SD implying that they have lower total risk than the GCCI index except for the same Islamic equity fund with the highest mean return. Four Islamic funds and three of the conventional funds scored higher Sharpe ratio and providing higher return per unit to total risk, and ten conventional versus nine Islamic equity funds scored higher Treynor ratio and earning higher return per unit of systematic risk. Similarly, none of the funds was able to achieve a significant value for Jensen's alpha and to beat the GCCI index on a consistent manner. The significantly noticeable values in these results are the values of the sampled funds' beta and the values of the coefficient of determination. Beta values were too low for all funds averaging 0.01, and none of the beta values were significant at any level of significance tested.

The average coefficient of determination is 0.02 that is only 2 per cent of the movements in the funds' excess returns can be explained by the movement in the excess returns of the GCCI index.

Of the main assumptions of the CAPM is the symmetrical distribution of portfolio's returns around the mean. In the CAPM, risk is measured by the fund's beta, which is rooted in the variance. Variance, on the other hand, is the most commonly used measure of risk that measures the dispersion of returns from the mean with no distinction between upside and downside volatility. It is frequently argued that the returns of emerging markets are less normal and more skewed than those of developed markets. Variance is criticized for not being a suitable measure of risk. Actually there are some studies that provided evidence that downside risk measures excel over the standard risk measures in explaining variability in the cross section of returns in emerging markets as in Estrada (2002, 2007). Tables 4 and 5 report the relative performance and risk measures for the 10 Islamic equity funds and the 11 conventional equity funds operating in the Saudi market, measured against the two indices TASI and the GCCI, using the Estrada's downside beta and CAPM model in the downside framework.

In order to calculate the downside risk performance measures: semi-variance, semi-deviation and downside beta are all calculated and used to determine the three selected downside risk performance measures. Tables 4 and 5 show the

mean returns of the ten Islamic and eleven conventional mutual funds regressed on Estrada's downside beta. It is important to mention that the appropriate way to estimate Estrada's beta β_D was derived from Estrada's 2002 work by doing a simple linear regression without a constant between the dependent variable $Y_i = [\text{Min}(R_p - R_f), 0]$ and the independent variable $X_i = [\text{Min}(R_M - R_f), 0]$ and obtaining the downside beta as the slope of this regression.

The Sortino ratio uses the downside semi variance, which actually penalizes the fund's returns that fall below the risk free rate or what we call the "undesirable volatility" and treats the returns that

are above the risk free rate as an underperformance of zero, making it a more realistic measure of risk adjusted returns. The same applies to the other two measures of the adjusted alpha of Mamoghli and Daboussi 2008 and the MR ratio in which both use the downside beta instead of the traditional beta. Any difference in rankings of funds could be directly attributable to the asymmetry of returns and the risk perception of the investors who do not perceive the upside volatility in the same manner as they do for the downside volatility which are not captured by the traditional beta of both Treynor ratio and Jensen's alpha.

Table 4. Islamic funds: Descriptive statistics and D-CAPM performance evaluation measures

	Mean	D-SD		D-Beta	R ²	α	SOR	MR
TASI	-0.0060	0.0790		1.00		0.000	0.169	0.013
GCC	0.1000	0.1240		1.00		0.000	0.980	0.130
HSBC Amanah1	0.1360	0.1120	TASI	1.03 ^{***}	0.570	0.140	1.390	0.150
			GCCI	0.42 ^{***}	0.200	0.100	1.390	0.370
HSBC Amanah 2	-0.0010	0.0800	TASI	1.02 ^{***}	0.960	0.004	0.220	0.018
			GCCI	0.41 ^{***}	0.350	-0.030	0.220	0.040
NCB Saudi stock	-0.0012	0.0780	TASI	0.94 ^{***}	0.930	0.005	0.230	0.019
			GCCI	0.38 ^{***}	0.330	-0.030	0.230	0.050
Riyad 2	-0.0028	0.0800	TASI	1.00 ^{***}	0.950	0.003	0.200	0.017
			GCCI	0.39 ^{***}	0.320	-0.030	0.200	0.040
Rajhi local	0.0004	0.0740	TASI	0.91 ^{***}	0.960	0.007	0.270	0.022
			GCCI	0.36 ^{***}	0.330	-0.020	0.270	0.055
Taybat	-0.0080	0.0680	TASI	0.80 ^{***}	0.830	0.000	0.160	0.014
			GCCI	0.32 ^{***}	0.290	-0.030	0.160	0.030
ANB Mubarak	-0.0010	0.0710	TASI	0.84 ^{***}	0.910	0.007	0.260	0.020
			GCCI	0.33 ^{***}	0.310	-0.020	0.260	0.050
Alyusr	-0.0031	0.0800	TASI	1.02 ^{***}	0.950	0.003	0.195	0.016
			GCCI	0.40	0.320	-0.030	0.195	0.041
SAEB Corp	0.1000	0.1300	TASI	0.92 ^{***}	0.360	0.110	0.960	0.130
			GCCI	0.36 ^{***}	0.120	0.080	0.960	0.350
Al Raed	-0.0050	0.0790	TASI	0.95 ^{***}	0.920	0.002	0.180	0.015
			GCCI	0.37 ^{***}	0.310	-0.030	0.180	0.040

This table shows the CAPM regression results for 10 Islamic Saudi equity funds over the period June 2005 to September 2011. To proxy the market, two indices are used: TASI all share index and GCCI index. ***Significance at 1% level of significance.

Table 5. Conventional funds: Descriptive statistics and D-CAPM performance evaluation measures

	Mean	D-SD		D-Beta	R ²	α	SOR	MR
TASI	-0.0060	0.0790		1.00		0.000	0.169	0.013
GCC	0.1000	0.1240		1.00		0.000	0.980	0.130
HSBC FI	-0.0050	0.0740	TASI	0.83 ^{***}	0.700	0.004	0.198	0.018
			GCCI	0.35 ^{***}	0.300	-0.030	0.198	0.040
HSBC Stock	-0.0005	0.0800	TASI	0.96 ^{***}	0.960	0.006	0.240	0.020
			GCCI	0.40 ^{***}	0.350	-0.030	0.240	0.050
HSBC T	0.0004	0.0800	TASI	1.02 ^{***}	0.950	0.006	0.240	0.019
			GCCI	0.41 ^{***}	0.340	-0.030	0.240	0.050
Saudi Hollandi FI	0.1000	0.1230	TASI	0.86 ^{***}	0.330	0.110	0.980	0.122
			GCCI	0.36 ^{***}	0.120	0.075	0.980	0.330
CAAM	-0.0020	0.0800	TASI	1.01 ^{***}	0.960	0.003	0.205	0.017
			GCCI	0.41 ^{***}	0.340	0.080	0.205	0.040
Riyad 1	0.0002	0.0800	TASI	0.79 ^{***}	0.620	0.009	0.240	0.024
			GCCI	0.36 ^{***}	0.270	-0.020	0.240	0.055
Riyad 3	-0.0020	0.0800	TASI	0.92 ^{***}	0.910	0.005	0.220	0.019
			GCCI	0.36 ^{***}	0.300	-0.030	0.220	0.050
ANB	-0.0050	0.0690	TASI	0.59 ^{***}	0.430	0.007	0.210	0.020
			GCCI	0.27 ^{***}	0.190	-0.020	0.210	0.060
SAEB	-0.0040	0.0750	TASI	0.90 ^{***}	0.930	0.003	0.200	0.020
			GCCI	0.35 ^{***}	0.300	-0.030	0.200	0.040
Al Fareed	-0.0050	0.0710	TASI	0.60 ^{***}	0.420	0.007	0.210	0.024
			GCCI	0.28 ^{***}	0.200	-0.020	0.210	0.520
Al Musahem	-0.0050	0.0770	TASI	0.94 ^{***}	0.940	0.002	0.185	0.015
			GCCI	0.36 ^{***}	0.310	-0.030	0.185	0.038

By employing the TASI index, all funds have lower semi deviation than the TASI index except for

one conventional fund and 4 Islamic funds. Downside beta for all funds is significant at 1 per

cent level of significance, averaging 0.99, and confirming that all funds are on average, less risky than the TASI index. The coefficient of determination averages 0.79, implying that almost 79 percent of the movements in the funds' excess returns can be explained by the TASI's excess returns movements.

This table shows the CAPM regression results for 11 conventional Saudi equity funds over the period June 2005 to September 2011. To proxy the market, two indices are used: TASI all share index and GCCI index. ***Indicate significance at 1% level

The Sortino ratio for all funds, the performance measure that is similar to the Sharpe ratio but in the down side framework, scored higher value than that of the index except for one Islamic equity fund. Similarly, all funds scored higher values for the MR ratio, and none of the funds was able to score a positive alpha.

By using the GCCI index, all funds have lower semi deviation except for one Islamic fund. All funds scored lower Sortino ratio except for one Islamic fund and for the MR ration, two Islamic and two conventional equity funds scored higher values than the GCCI index.

As for the downside beta values and unlike the traditional beta values calculated earlier, they are

significant for all funds at the 1 per cent level of significance tested, averaging 0.4. The coefficient of determination averages 0.3 that is almost 30 percent of the funds excess returns in the downside framework can now be explained by the GCCI's excess returns movements as opposed to only 2 per cent using the traditional beta. This difference in the results, especially with respect to the GCC index, could be attributable to the asymmetry of returns and the risk perception of the investors, which are not captured by the traditional variance and beta used in the traditional CAPM performance evaluation measures.

The previous results can be summed up in providing strong evidence the D-CAPM is equivalently important as the traditional CAPM with respect to the TASI index and that the downside beta and the downside CAPM performance evaluation measures are more suitability with respect to the GCCI index as opposed to the traditional CAPM performance evaluation measures.

Table 6 represents summary statistics of Islamic and conventional funds against the TASI index based on monthly aggregated return. The Islamic and conventional fund returns are calculated on an equally weighted portfolio of all funds.

Table 6. A summary statistics of Islamic and conventional mutual funds against TASI

<i>Fund portfolio</i>	<i>Return %</i>	<i>SD</i>	β	α	<i>Sharpe</i>	<i>Treynor</i>	R^2
<i>IMF</i>	0.04	0.22	0.98***	0.03	0.19	0.04	0.47
<i>CMF</i>	0.027	0.18	0.91***	0.01	0.15	0.03	0.64
<i>TASI</i>	0.01	0.15	1.00	0.00	0.08	0.01	1.00

This table shows the summary statistics of Islamic and conventional funds against the TASI index based on monthly aggregated return. The Islamic and conventional fund returns are calculated on an equally weighted portfolio of all funds. All ratios are calculated based on the monthly returns. α represents the Jensen's alpha and the β is the systematic risk. IMF: Islamic Mutual Funds; CMF: conventional mutual funds; TASI: Tadawul All Share Index. ***Indicate significance at 1% level

In Table 6, the Sharpe ratio is used as one of the risk adjusted performance measures used in this paper. It estimates the return to risk trade-off by dividing the excess returns of the fund portfolio with the standard deviation over the sample period. Thus, the higher the Sharpe ratio, the better is the performance of the fund portfolio. Over the period of study, the average Islamic mutual fund earned higher average returns than the conventional fund portfolio and the market 4% versus 2.7% and 1% respectively. The Islamic mutual fund also had higher standard deviation. The results therefore, suggest that Islamic mutual funds were more risky but had higher returns than their conventional peers and the market portfolio. The Sharpe ratio indicates that Islamic mutual funds outperformed conventional funds and the market portfolio on risk adjusted basis.

The same applies for Treynor ratio that gives the excess return per unit of systematic risk. Islamic mutual funds outperformed the conventional funds and the market portfolio. As for the Jensen's alpha, the regression results show that both Islamic and conventional funds perform better than the markets with positive alpha values, however these values

were not statistically significant at any level of significance tested.

To conclude, this part presents evidence based on aggregate returns that on average, Islamic mutual funds in Saudi Arabia outperforms conventional mutual funds and the market portfolio using TASI local all share index as the market proxy. These results are consistent with Abdullah *et al.* (2007) and Hassan *et al.* (2010).

6. CONCLUSION

From the modern portfolio theory by Markowitz, many studies provided evidence that returns can be explained by more than one variable, and thus performance measurement was extended to multifactor models. Fama and French three factor model was applied on our selected market of Saudi Arabia and our results were unable to provide evidence on the superiority of the Fama and French three factor model on the CAPM or the DCAPM models in explaining the relationship between the risk and return in the Saudi market. We generally agree that the appropriate model does not only depend on the method used, but also on the appropriateness of this measure to the data used and the market surveyed.

This paper then is mainly evaluating the performance of Islamic versus conventional local equity funds in Saudi Arabia, by utilizing the data of two samples of equity funds, 10 Islamic and 11 conventional mutual funds, operating in one of the leading Arab emerging markets, Kingdom of Saudi Arabia, over the period 2005-2011.

The equity fund performance is examined against two benchmarks, a locally focused and a regionally focused Islamic index. The performance is first evaluated utilizing the traditional beta and CAPM performance evaluation measures. The evaluation is then repeated utilizing the downside beta and other tests of funds' performance derived from the CAPM in the down side framework.

Aggregate performance is then explored by forming two fund portfolios; one representing the average Islamic mutual fund and the other is the average conventional fund, to examine the performance of the Islamic mutual funds portfolio compared to its conventional peers and to the overall market. The study presents evidence based on aggregate returns that on average, Islamic mutual funds in Saudi Arabia outperforms conventional mutual funds and the market portfolio using TASI local all share index as the market proxy.

The study shows that, despite the fact that the Saudi Arabian market as an emerging market and to some degree is informationally inefficient given its size and maturity, equity mutual fund do not seem, generally, to have been able to benefit or to show superior performance. All funds have either negative values for alpha or positive insignificant values, implying that no fund was able to beat the market and realize superior returns on a consistent manner, either when using beta or downside beta.

The paper also reports mixed results as to whether conventional funds are better performers than Islamic funds. The fund with the lower beta and SD did just as well as the fund with the higher beta and SD values, suggesting that funds with the relatively higher betas and higher Standard deviation, are not necessarily better performers. *Shariah* Compliant funds are doing just as well or as bad as non- *Shariah* Compliant.

Our results generally providing evidence on the suitability of the downside beta and the downside CAPM performance evaluation measures which is consistent with Estrada's 2002 and 2007 in that Semi variance could be a more suitable measure of risk when returns are asymmetrical since it incorporates skewness and is just as good as the variance when returns are symmetrical. The results provide some evidence that downside beta can empirically provide a better risk measure than the traditional beta and may actually improve the asset pricing models in the emerging market of Saudi Arabia. The results are also in accordance with Galagedera (2007) and Mamoghli and Daboussi (2008) stressing on the importance of the incorporation of downside risk measures in the CAPM and in the performance measures.

The main implication of the study is that it is equally important that practitioners report performance using both CAPM measures and D-CAPM measures and if differences exist, then the D-CAPM could be the superior measure because of its suitability to the asymmetrical returns existing in the Saudi market being an emerging market. Another important implication is that Islamic funds could be a more attractive source of investing, even for conventional investors, especially during market downturns, since they can offer a good hedging investment alternative as they are not involved in speculative activities and still can report a similar or

even better performance than their conventional peers.

One of the limitations of this study is that it was conducted when the world was experiencing a financial crisis. Changes in the macro economic conditions were not taken into consideration. Additionally, due to the limited sample of only 10 Islamic and 11 conventional local equity funds, generalization of results should be done with caution. This study is covering only seven years of weekly returns, against one local benchmark calculated by the stock exchange of the market under study. Seven years are considered too short to make any definitive conclusions.

For future research, it is suggested to evaluate the Islamic and the conventional funds performance more comprehensively when more data become available as daily net asset values, daily data about specific attributes as size and number of shares outstanding and complete data set for funds' fees to provide more solid conclusions. The appropriateness of the use of multifactor models in emerging markets should be further investigated when more data becomes available. Currently, the calculation of the variables needed for the construction of these multi factor models is quite complicated and very time consuming.

Our findings would be of use to market participants and regulators as they support the suitability of an asymmetric capital asset pricing model and the diversification benefits, particularly during bear markets, from Islamic mutual funds. Directions for future research could shift the focus to mutual funds that invest in Islamic bonds, real estate and commodities, prominent financial products in Islamic finance.

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