

Islamic Capital Asset Pricing Model (ICAPM)

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Abstract

With the increase in trend of moral investment, the conventional finance has observed an over increasing significance of Islamic finance. This change is being observed not only in Asian and Islam dominant countries, but also western corporate world. This paper attempts to empirically evaluate Shari'ah Compliant Asset Pricing Model using data from shari'ah complaint stocks of Karachi- Meezan Index. The results of analysis show that the returns would approximately the same when we use risk free rate (t-bills rate) or inflation rate. However they show a constant trend when evaluated without using risk free rate or inflation rate.

Keywords: Moral investment Islamic Finance CAPM Shariah Complaint Risk free rate Inflation Rate

1. Introduction

With the advent of major corporate scandals of world, a significant shift is observed towards the moral investments. These scandals reinforced investors the ethical dimension in the process of investment selection.

The concept of Islamic Banking and Islamic finance dates back to the establishment of Mit Ghamr Savings Bank in Egypt in 1963. During the past few decades, this concept has developed many folds around the Muslim countries (Iran, Pakistan, Sudan, Bangladesh, Egypt, Indonesia, Jordan and Malaysia) as well as non-Muslim countries (Islamic Bank of Britain, HSBC in USA).

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Many large Western financial institutions have established their own Islamic subsidiaries and offered Islamic financial instruments targeted directly at their Islamic clientele.

One such product is the Dow Jones Islamic market index – US (DJIMI) which tracks the stocks of US corporations whose business and activities are compatible with Islamic Shari'ah. The index is a pool of Shari'ah compliant stocks (shunning unethical or highly-indebted firms, or engaged in gambling, alcohol sales and other prohibited and unethical activities). Islamic financial system" is relatively new, appearing only in the mid-1980s. In fact, all the earlier references to commercial or mercantile activities conforming to Islamic principles were made under the umbrella of either "interest-free" or "Islamic" banking. However, describing the Islamic financial system simply as "interest-free" does not provide a true picture of the system as a whole. Undoubtedly, prohibiting the receipt and payment of interest is the nucleus of the system, but it is supported by other principles of Islamic doctrine advocating risk sharing, individuals' rights and duties, property rights, and the sanctity of contracts.

Similarly, the Islamic financial system is not limited to banking but covers capital formation, capital markets, and all types of financial intermediation. Interpreting the system as "interest free" tends to create confusion. The philosophical foundation of an Islamic financial system goes beyond the interaction of factors of production and economic behavior. Whereas the conventional financial system focuses primarily on the economic and financial aspects of transactions, the Islamic system places equal emphasis on the ethical, moral, social, and religious dimensions, to enhance equality and fairness for the good of society as a whole. The system can be fully appreciated only in the context of Islam's teachings on the work ethic, wealth distribution, social and economic justice, and the role of the state. The Islamic financial system is founded on the absolute prohibition of the payment or receipt of any predetermined, guaranteed rate of return.

As the model of investment is changed with the growth of business size and an ordinary man also wish to own or become a part of these different large size businesses. But from thousands just few have such abilities and investment to own large businesses.

Equity based companies have given opportunity to investors to invest their comparatively smaller amount in different larger companies.

A rational investor is always risk-averse means he wants to maximize his wealth by minimizing risk. So a rational investor will never put his all eggs in a single basket and will prefer to diversify risk by choosing a set of securities(portfolio) which can increase his return by reducing risk(markowitz,1952).

Markowitz gave his Efficient frontier with risk free assets ,where he explained that at given level of risk people always prefer securities with higher return ,in this way (CML) a set of portfolio is formed at every point of risk ,and at every point we have higher return then the risk free assets because risk have direct relation with return, on the basis of this CML, Sharp ratio was drawn which leads to SML and **capital asset pricing model (CAPM)** (Sharp ,1964).

$$R_p = R_f + \beta (R_m - R_f)$$

CAPM is a tool which is used to determine a theoretically appropriate required Rate of Return of an asset. This Asset should be a diversified portfolio, the unsystematic risk of that asset is assumed zero because the securities included in portfolio have diversified that risk. The CAPM was developed by Jack Treynor (1961, 1962), William Sharpe (1964), John Lintner (1965a, b), according to them Risk measure or beta have linear relation with the return of asset, and risk associated with return is of two types, systematic and unsystematic, systematic risk is uncontrollable and unavoidable while unsystematic risk can be diversified by choosing a well diversified portfolio. Jan Mossin (1966) independently, building on the earlier work of Harry Markowitz on diversification and modern portfolio theory. Sharpe, Markowitz and Merton Miller jointly received the 1990 Nobel Memorial Prize in Economics for this contribution to the field of financial economics. Fischer Black (1972) developed another version of CAPM, called Black CAPM or zero-beta CAPM that does not assume the existence of a riskless asset. This version was more robust against empirical testing and was influential in the widespread adoption of the CAPM.

Capital Assets Pricing Model consist of three parts.

- 1-return on Risk free Rate
- 2- Beta, measure of systematic risk
- 3- Risk premium

Risk free rate is associated with time value of money that when an investor scarifies his current need for future spending, he should be able to buy the same commodity in future. As inflation factor is present in market so commodity future price will be higher as compare to today. TVM says person should be rewarded for his risk and time factor. Conventially this rate of return is fixed and secured (Michael at al., 1972)

Beta is systematic risk which measures the ratio of covariance of portfolio with market portfolio and variance of market returns.

$$\beta = \frac{(Cov X, M)}{Var M}$$

As beta have linear relation with return of securities its means higher beta will lead to maximum return which is according to theory. Risk premium (Rm-Rf) is the least amount of money by which the expected return on a risky asset must exceed the known return on a risk-free asset.

1.1 Shari'ah Compliant Asset Pricing Model (SCAPM)

CAPM has given a base to investor to find out its expected return on investment, This Formula provided a strong base for calculation of return in Conventional environment but when we consider it with respect to Islamic economy where there is no concept of fixed return or risk free return it becomes questionable. According to Islam interest is prohibited. Quran says"

O ye who believe! Fear Allah and give up what remains of interest, if you are truly believers. But if you do it not, then beware of war from Allah and His Messenger; and if you repent, then you shall have your principal; thus you shall not wrong nor shall you be wronged. Chapter 2, Al Baqara, Verses 278-279

On another place it is written that O ye who believe! Devour not interest involving multiple additions, and fear Allah that you may prosper. Chapter 3, Aal-Imran, verse 130

Interest or Riba` is a loan with the condition that the borrower will return to the lender more and better than the quantity borrowed, in other words any extra amount on principle borrowing is interest (Shah Waliullah Dehlvi),

As the first part of CAPM is R_f means risk free rate which is fixed return on investment means predetermined return .As Interest is prohibited and ulmas have confusion about this new type of corporations return and investment so if we remove Interest factor (R_f) then

$$K_e = \beta R_m$$

So this form of CAPM can be applied in Islamic economies (Cyril and Ri'fat, 1987).They tried to find out commonalities in western and Islamic countries investment in securities. Kahf explain the banking system on base of Shari'ah and he said that any fix amount on loan is interest and Interest is prohibited, according to Shari'ah P and L sharing is acceptable .Mudarba is acceptable means sharing of capital and management but no fix return on investment is allowed in Islam (Tarek H. Selim, 2008) .

Ashker (1987) used R_f and evidenced that R_f should be replaced by Z which is equal to 2.56% because in order to attract capital for investment it is minimum return an investor would expect (willing) for investment to cover Zakat, otherwise investor would prefer spending instead of investing. Hence equation of CAPM becomes as follows (adopted from Ashker, 1987),

$$R_p = Z + \beta (R_m - Z)$$

So now investors are interested to cover minimum amount which will be deducted for Zakat and risk premium above this Zakat from risky securities.

Sheikh (2010) advised the linkage of debt servicing with nominal gross domestic product growth (NGDPg) and said R_f should be replaced with Nominal Gross domestic product growth rate. Under his planned model equation of CAPM mold into following shape:-

$$R_p = NGDP_g + \beta (R_m - NGDP_g)$$

So that required rate of return of investor depends upon two components; nominal GDP growth rate and risk premium measured through beta of a security in relation to a bench mark (e.g. stock market).

Hanif (2011) replaced R_f with inflation and said it's the responsibility of state to maintain the worth of citizens wealth and ensure that their purchasing power will remain same with the effect of time so the inflation factor should be a part of CAPM presented by Cyril and Rif'at.

$$R_p = I + \beta (R_m - I)$$

2. Data

This study includes 28 companies listed in Karachi Meezan Index (KMI-30). The Index is based on companies which have been screened for Islamic Shariah criteria.

The price data for these Shariah complined stocks are obtained from ZHV Securities and KMI30 index price from Sctraders.

The Sample period is from March 2012 to March2013. Price data is denominated in Pak Rupees. The inflation and risk-free rate (usually Treasury-bill rate) is drawn from the published data of state Bank of Pakistan. For each price, return is defined as the appreciation in the price of stock, while the other income such as interest and dividend is ignored.

3. Methodology

To evaluate the performance of Shariah complined stock we make comparison on the bases of different models such as conventional Capital Asset Pricing Model, Islamic CAPM, (without R_f and replacing R_f with inflation rate), this study examines the return of individual stock by using CAPM with R_f , in absence of R_f and replacing R_f with inflation rate prevailing in the study year in Pakistan. We begin by calculating Beta for each stock listed in KMI-30 and find out market beta by using KMI30 index by using equation.

$$\beta = \frac{(Cov X, M)}{Var M} \quad (1)$$

$$Var M \quad (2)$$

and applied the equation used by Hanif (2011) in his paper "Risk and Return under Shari'ah Framework", 1st we applied conventional model (CAPM) developed by Nobel Laureate William Sharpe (1961),

$$R = R_f + \beta (R_m - R_f) \quad (3)$$

By this model we calculated return by using Risk free rate used in Pakistan for the specific period under study; in second step we used calculated return in absence of Rf by following method

$$K_e = \beta R_m \quad (4)$$

And in 3rd step we used equation

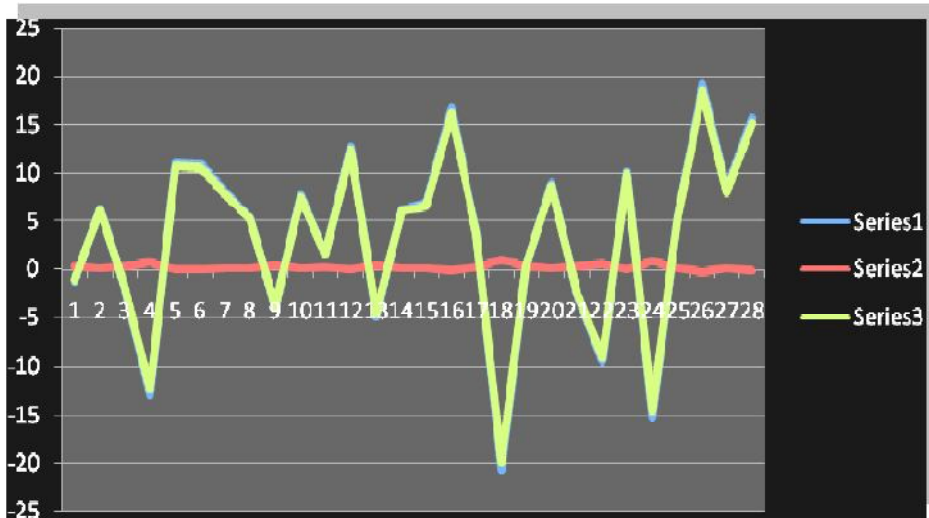
$$R = I + \beta (R_m - I) \quad (5)$$

Where; R=required rate of return

I= Inflation

β =Systematic Risk

Rm= Market return



Series 1= RR with risk free

Series 2= RR without risk free

Series 3= RR with inflation

After calculating Returns with different models we draw it on graph.

Empirical Results and Discussion

Figure 1 plots the required rate of return on Y-axis and each company in index on X-axis. Return with all three equations for each company is plotted on the axis. It is observed that return with risk free rate of return and inflation is nearly overlapping each other, showing that return with two equations are approximately equal. But the return with R_f is prohibited and with inflation it is allowed because according to critics it's the responsibility of state to protect the interest of their citizen. Under paper currency system due to inflation purchasing power of currency reduces and holder of currency loses its assets. It should be prime responsibility of Islamic state to protect the wealth of its citizens along with life, faith, next generation and honor. As Wealth reduces due to unnecessary inflation in the economy and government of Islamic country should not let this phenomenon unchecked. Under Shari'ah compliant financial system, Should the investor be compensated for at least equal to inflation rate in the economy is an issue which is being discussed among the Shari'ah scholars and we expect an early outcome.

As the returns line overlapping its mean with slight difference in return by introducing inflation in conventional CAPM investor can save him from an un-Islamic activity.

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