INTERNATIONAL JOURNAL OF ACADEMIC RESEARCH IN BUSINESS & SOCIAL SCIENCES

Published Online: 18 December 2022 Vol 12, Issue 12, (2022) EISSN:2222-6990

Capital Asset Pricing Model (CAPM) and Investment Risk from Islamic Perspective

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Abstract

The Capital Asset Pricing Model (CAPM) describes the relationship between the expected return and risk of investing in a security. Expected return on a security can be describes between risk-free return and a risk premium, which is based on the beta of that security. Capital Asset Pricing Model (CAPM) will be used as a model to measure the level of risk using data from the year 2007 when subprime crisis started until 2010. Results of the study show that the volatility of stock market in Malaysia can be considered as a high volatility and its means as a high risk. The findings of study also found that Islamic economic has recognizes the existence of investment risk. One of methods that are used in the management of risk was diversification. This method will reduces risk by allocating investments among various financial instruments, industries, and other categories. In conclusion, the process of diversification that was done by most of the investors are comply with concept of risk management in the Islam.

Keywords: Islamic Risk Management, Stock Market and Capital Asset Pricing Model (CAPM).

Introduction

The Malaysian Securities Commission defines investment as a commitment of funds to one or more assets to be held for a period of time in the future, with the expectation that such assets will generate higher returns. Intangible assets include intangible assets such as real estate or intangible financial assets such as financial securities. The suitability of investments for the assets of this is dependent on the goals and objectives of financial investors . Investors who loved the risks and returns that are higher will be invested in investments that are risky so well otherwise (Romli et al., 2012).

Investment is also defined as an investment in the present and expected to get back a positive or advantage in time will come to take into account some risks (Salleh & Hashim, 1994). Based on this definition, investors will withdraw the amount of capital to invest in a certain period of benefit either in the form of dividends, rental or similar thereto and each of the investors is certainly going to face the risks specific. In Islamic terminology, *al-Istithmar* can define as intends to use the money for short-term, medium or long term in any form of property or property rights through the use of which could double its profits or added benefit shall a not outwardly (Al-Qadir, 1992). As general, investment can be define as an activity for equity participation or profit sharing in which the activity based on the principle of *mudrabah* and *musyarakah* (Saedeq, 1992)

Problem Statement

Before deciding to invest in any portfolio, investors must take into account several important aspects to ensure that the investment does not suffer future losses (Rahul et al., 2020). Shares are defined as holding or ownership in a company. Investors who own shares in a company for immediate have the right of ownership with the companies mentioned . When a company issues shares to the public offer, the company will receive the proceeds of the sale of the stock and subsequently use it for certain purposes. Dividen given for shareholders are much lower than the interest rate charged by the bank (Majid, 1993). By its nature , investors buy shares of a company based on two objectives are the following:

i. Earn a dividend on the profits of the company.
ii. Profit derived from stock transactions bought at lower prices and sold at higher prices.

As a shareholder in the company, investors have certain rights such as attending annual meetings, voting at such meetings, dividends and bonus issues declared by the company from time to time. To facilitate the process of sale and purchase of shares, the exchange of shares has been introduced that where the exchange of shares play a role as a place or the centre of the activities of buying and selling shares. As a shareholder , the investor will benefit in certain forms such as:

i. Capital increases when the shares are sold at a price higher than the purchase price.
ii. Dividends will also be given by the company to the shareholders depending on the profit earned by the company.
iii. There are also shares offered as a bonus to investors as a result of the profits the company has made in the past.

As an investor in the stock market, an investor has the opportunity to get profit from the purchase or sale of a stock. However, investors also need to be careful and take the wise before taking the decision to invest because without proper studies , investors are high exposed to the risk of loss.

The main discussion in CAPM is emphasizing on market risk. In order to get high returns, investors must be brave enough to face high risks. The CAPM model was formulated by Sharpe (1964) which was later developed by (Lintner, 1965; Mossin, 1966; Black, 1972). The model is based on Markowitz (1959) who founded the portfolio risk return theory. According to this model, the rate of return of an asset is equivalent to the sum of the risk-free return with the risk premium. In general, risk can be divided into two, namely market risk and specific risk. Based on portfolio theory, specific risk can be reduced through diversification methods. In general, market risk (systematic risk) is a risk that can be measured using beta. Beta is a measure that allows us to determine whether a stock is active or not compared to the market. Based on the Beta value above, a stock with a beta value equal to 1 indicates that the rise and fall of the stock price is as much as the change in the market. If the beta value is greater than one this indicates that the rise and fall of the stock price is faster than the market. On the other hand, if the beta value is smaller than one, this means that the decrease and increase in the stock price is smaller than the market. Based on the value, the investor will be able to assess the market risk at that time.

Research Objective
Overall, this paper consist three objectives:

1. Define the concept of stock market investment risk .
2. Explain the Capital Asset Pricing Model (CAPM) in determining the level of risk for stock market in Malaysia .
3. Analyse the risk management of stock market from Islamic perspective view.

Capital Asset Pricing Model (CAPM)

CAPM is a model designed to evaluate the risk of a portfolio. The model is also able to show how something asset risk was assessed. To analyse this model , there are several aspects to be considered such as systematic risk and not systematic risk , assessment for beta well understanding of lines market and type of securities . Discussions key in the CAPM is the emphasis on risk markets. CAPM in Islam, based on the investment concept like a *mudharabah* and *musyarakah.* Apart from that , the CAPM in the Islam is free from riba and let the market premium to determine the rate of profit. In the financial Islam, an instrument of financial which is used is based on the contract specified such as *Musyarakah, mudharah , murabahah, al- ijarah (rent) and al- salam (reservation)*. Each instrument is used according to suitability and requirements to meet the needs of social and need to move the economy . The system of Islam, consist three principles key which must be complied together. The principle of these are (Rahahleh et al., 2019).

The Importance of all Parties: In Islam, emphasized the importance of the public is addressing compare to the interests of individuals . Transactions in any case must provide benefits to many parties, including lenders, investors, entrepreneurs, consumers, the private sector, government and the most important is the welfare of the socially. Although the principle of profit is allowed, but the values of chastity not be overlooked simply to achieve profitability.

Prohibition of Riba: Rate of interest is one of the forms of usury . In Islam, interest rates are not allowed as this will oppress the borrower . However , shares of profit (*mudharabah*) and sharing the profit and loss (*musyarakah*) is still allowed . Fixing the rate of interest remains not only suppress the borrower , but in some circumstances be detrimental to investors because it had received a benefit that is set from the beginning of the contract. When entrepreneurs and investors together to share , then the benefits are obtained will be felt by both parties with fair conditions.

Institutions al Hisba: In the Islamic institutions *al- Hisba* is one of institution that was responsible for controlling the state of the economy . In Malaysia, for example , the government plays a role which is important in controlling the economy of the country and the National Bank will be used as a medium to control the institutions of banking in Malaysia. It is important to ensure that all of organizations that are involved obeyed with any rules that are set .

The ARCH and GARCH methods proposed by Engle (1982); Bollerslev (1986) have been used to measure the level of volatility of stock prices by economic sector on Bursa Malaysia. To estimate the market , all analysis regression data have been made before this can be used to analyse the state of the market capital. Bollerslev (1987); Nelson (1991); Glosten, Jagannathan and Runkle (1993); Bera and Higgins (1993); Bollerslev et al (1994) on their study showed that the model ARCH (Autoregressive Conditional Heteroskedasticity) has the higher significant to the sample . The ARCH and GARCH methods have been used to measure the level of volatility of stock prices by economic sector on Bursa Malaysia.

Estimation of Capital Asset Pricing Model

Model estimations are formed based on Yusof and Majid (2007) and Soon, Hussin, Muhammad and Wahab (2020).

$Y_t = \alpha_i + \theta_i Y_{t-1} + \beta_i X_{t-1} + \varepsilon_t$

$Ln\ hijrah_t = \beta_0 + \beta_1 RISK_t + \varepsilon_t$

$Ln\ Composite_t = \beta_0 + \beta_1 RISK_t + \varepsilon_t$

Variable	Constant	ARCH (α)	GARCH (β)	$\alpha+\beta$
$\boldsymbol{Hijrah_t}$	0.005**	0.099*	0.905*	1.004
$\boldsymbol{Composite_t}$	0.011**	0.159*	0.845*	1.004

*significant for level 1%

Variable	Ratio
$\boldsymbol{Hijrah_t}$	Syariah Hijrah FTSE Bursa Malaysia index
$\boldsymbol{Composite_t}$	Kuala Lumpur FTSE Bursa Malaysia Composite index

To test the existence of the volatility for Bursa Malaysia stock market index, GARCH (1,1) estimation test have been used and the result showed on the diagram above . In general, if the tests of $\alpha+\beta$ are carried out to show the result is less than one , then the effects of variance conditional on a time t to the variance conditional variables in the next time will come will be reduced to time. If the value of $\alpha+\beta$ is equal to 1, this brings meaning that the variance of the conditional variable is equal to the variance conditional on the time of *t* and the value of $\alpha+\beta$ which exceeds one shows that the variance for future time will improved compared to the *t* time.

Through tests were carried out, if the value of $\alpha+\beta$ is approaching 1 or more than 1, means the frequency of the volatility of the stock that is high or volatile. Based on the table above, the value of $\alpha+\beta$ for Bursa Malaysia Hijrah Shariah Index and Kuala Lumpur Composite Index, both are the same with value of 1. 004 and this brings the purpose of that and have the same level of high volatility with a value greater than 1.

Based on the values that have been shown in the year 2007-2010 , both index indicates the high volatility and this leads point in that year is the situation the market shares are volatile and many investors have come out in the market for fast. Bursa Malaysia cooperation with FTSE was generally gave the impression to both index either Bursa Malaysia Hijrah Shariah Index or Kuala Lumpur Composite Index. FTSE Bursa Malaysia on stage globally and this in turn becomes a power puller to investors from outside the country to invest . The increase in trading of shares would cause the volatility becomes high and thus encourage holders of shares to sell stocks is when the market is increasingly heightened (You & Liu, 2019). The study, conducted by Tang & Gannon (1998); Bakar et al (2004), shows that the before Kuala Lumpur Syariah Index introduced, Kuala Lumpur Composite Index recorded high volatility and restabilized after the Kuala Lumpur Syariah Index introduced . Although in most studies show that the index of the Shariah Kuala Lumpur more volatile than the Kuala Lumpur composite index, but the crisis of global starting in 2006 has been to give impact to both indices. Schwert (1989) in his study explains that the recession of the economy will lead to the volatility of the market share will increase. This result in line with the results that were obtained by the authors that showed that even crisis financial global nearly ended but the effect still exists in the market shares of Islamic and Conventional.

Olowe (2009) in his study had been using the model EGARCH found that the collapse of the market share during the crisis of subprime already contribute to volatility prolonged of the market share at Nigeria. The findings were obtained by the study of Zhang et al (2011); Kirti and Rinku (2011); Singhania and Anchalia (2013) which showed that the pattern of volatility of the stock market are volatile and sustainable (persistence) during the crisis of global 2007-2008. In addition, the study of Dufrenot, Mignon and Peguin-Feissolle (2011), describe the power of relationship economic between Mexico and the United States have contributed to the volatility of the market share that high in Latin American countries (Surianshah et al., 2017).

Investment Risk from Islamic Perspective

According to the study by Lipka and Hackett (2017), estimated that total population of Muslims in the whole world is approaching 1.8 billion that is approaching one over four population worldwide. This makes Islam as a religion both practiced in the world after Christianity. In addition to that, also expect adherents of Islam would be the population of residents of the largest in the world by 2070 , following the birth of Muslims is 2.7 children per family, while 2.2 children per family religious Christians. By raising the population of Muslim, the industry financial Muslims including of Islamic Capital Market seen to be well develop for future because as investors Muslim, the selection of investments compliant shariah is to be an obligation and not an option (Yusof et al., 2019). So when engaging in market share, it is important to compensate any investor Muslims understand that Islam recognizes the existence of the risk of the investment and the element of risk investment is different to the concept of uncertainty in the Gharar (Romli et al., 2014).

Based on Capital Market Pricing Model above, it can be proved that the stock market was a form of investment that with high risk. Based on the *fiqh* method , damage or harm was a return on profit (*al- ghunmu bi al- ghurmi*). The method was clearly indicated that any profit must be followed by the risk of a certain action. Others method of jurisprudence that supports the existence of risk in every action (*al-ni'mah bi qadr al-niqmah wa al-niqmah bi qadr al-ni'mah).*). Based on the theory of investment also clearly shows that usually the higher of risk

, the higher of return on a stock. Statement related to the high risk of the increasingly high returns also are compatible with the Hadith which is narrated by Sulaiman (t.t) means:

“ Profit Is Based On Liability (Risk) . ”

Based on the description that has been described , showed the risk is an element that is not able to be eliminated in the *muamalat*. However , the risks and *gharar* are two elements which need to be distinguished carefully by investors. It was important to make sure that they are not involved in transactions that are not allowed in the Islam. In the recitation of any element of uncertainty or *gharar* absolutely clear prohibition . Transactions such as buying or selling something that does not exist , sale and buy something that is not confirmed ownership , not certain types of goods , quantity and so on is in between elements are not allowed. In addition to the factors of risk , rate of profit portfolio can be maximize the expected return based on the particular is said to be the portfolio efficiently. Selection of a portfolio is based on the willingness of an investor is to deal with a risk in the investment is (Al- Sarakhsi, 1989).

Financial asset risk was an asset whose returns cannot be ascertained at the time of the future and the possibility to suffer losses that are still there and for example was stock company limited . Financial Assets without risk can be considered as an asset that is free from risk such as government bonds and usually the returns are low .

To assess uncertainties in a portfolio, investor will assume that returns results in the future and then calculated the expectation of that return. All of these final values will be evaluated in the form of an average . Based on the description of the related risk , investors in the market share will be faced with the risk of the investment and if the risk was not well managed, the vulnerability of investors against losses will progressively increase . In general, risk is something that is recognized in the Islam. As in the one of story historical advance , Prophet Ya'qub had advised his son and his brothers in order to enter the land of Egypt through some doors are different . The fact this is based on the verses of al-Quran Surah Yusuf, 12: 67 to bring meaning :

> "And he said further :" O my sons ! Do not you go in (to the city of Egypt) of a door only , but the sign of some of the doors of the different , and I (with my advice is), not can save you from a fate that has been appointed by God. Might set a (reason and excuse) that only certain of God. For Him I trust myself, and to Him should trust the people who want to put themselves ".
>
> (Surah Yusof, 12: 67)

Based on that paragraph, Prophet Ya'qub had prohibit his children from entering Egypt through the same door to prevent them suspected as a dangerous strangers or being attractive because of their good looking appearance and body. This action clearly shows that the management of risk is a matter which is recognized in the Islam.

On the reality of an investment, there are some portfolio risk that can be reduced or eliminated by combining several portfolios. Through the diversification process, the return of each portfolio are not directly in correlated situation. Unit trust was an example portfolio that are using diversification concept which it’s the fund managers will invest the funds in unit trusts to various portfolio and this can reduce the risk of the occurrence of a loss because any return of the portfolio that is not directly correlated for each other's. On the others hand, there are some risks that are not able to eliminated through the diversification and the risk termed as systematic risk and risk that can be eliminated through the method of diversity termed as non-systematic risk .

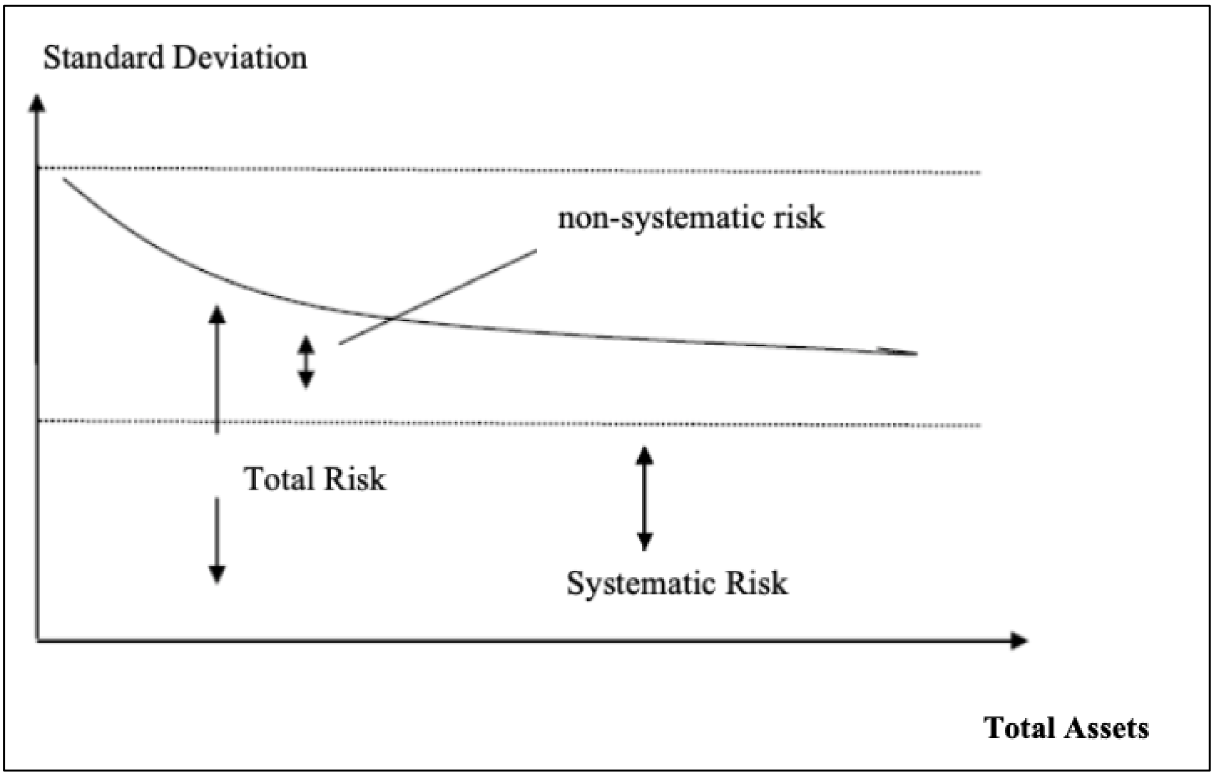

Figure 1: The Relationship Between the Total Assets and the Risk of Portfolio.

Some studies have shown that, the increased number of portfolio holdings by investors, the less risk that would be faced by investors. The theory of this is related to the method of diversity that used to reduce the risk in the portfolio. Through the merger, the risk of staying only a risk that systematically and non-systematic risk can be reduce.

Conclusion

As a summarize, it can be concluded that the stock market after the post subprime economic crisis was volatile with high and occur instability in the return of shares at any stock either Shariah compliant or conventional stock. Refer to the description in the context of risk management from the history of Islam, then it can be explained that Islam recognizes in every single action that made, risk was something that cannot be fully avoided. However, investors should reasonably think the best way to minimize the risk in every investment that was made. The methods that are proposed are diversified or any method of diversity for each risk was divided accordingly to the suitability of the portfolio.

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