

## ANALYSIS OF CAPITAL ASSET PRICING MODEL ACCORDING TO SHARIAH PRINCIPLE: INDONESIAN EVIDENCE

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**Abstract:** Capital Asset Pricing Model (CAPM) is one of the estimated return models developed in conventional financial instruments that have different characteristics from Islamic financial instruments. So the CAPM model cannot be directly applied in Islamic financial instruments, so an estimation model is needed, namely the Shariah Compliant Capital Asset Pricing Model (SCAPM). This study aims to produce a SCAPM model that can be applied to estimate returns in Islamic financial instruments. The data used in the test is a list of sharia companies listed on the IDX, sharia company stock prices, Indonesia Sharia Stock Index (ISSI), yield of *sukuk* and return of Bank Indonesia Certificates (SBI) for the period 2010 - 2018. Testing is done by comparing expected return with the CAPM and SCAPM models. The SCAPM model used is to eliminate the risk free asset factor and replace it with inflation, zakat, and yield of *sukuk*. The results of the analysis using graphs and the compare mean test show that the results of the expected return with the SCAPM and CAPM models have no difference, so the SCAPM model can be used as an alternative model of return estimation in Islamic Financial Instruments on the IDX.

**Keywords** : *Capital Asset Pricing Model, Islamic Capital Asset Pricing Model, Expected Return, Risk Free Asset*

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### 1. Introduction

Efforts to select investments in a financial instrument are appropriate by estimating the level of returns and risks of the financial instruments that we choose. There are two models used to estimate the level of stock returns of Capital Asset Pricing Model (CAPM) and Arbitrage Pricing Theory (APT). The CAPM was first developed by William Sharpe (1964). This model is a development of the Markowitz model (Reilly and Brown, 2006). Ross (1976) formulated a theory called Arbitrage Pricing Theory (APT). Just like the CAPM, APT also illustrates the relationship between returns and risks but with different assumptions and procedures. The assumption underlying the APT model is the condition of the capital market is in the form of perfect competition, investors always prefer wealth greater than a little even though with certainty and the results of the stochastic process or asset income are determined by the risk factor model.

CAPM analysis is conducted to determine how investors can form an efficient portfolio while the APT concept uses the one price concept, namely the concept that two investment opportunities that have the same characteristics cannot be sold at different prices. If assets that

have the same characteristics are sold at different prices then there is an opportunity to buy at a low price and sell at a higher price at the same time so that there is profit without any risk

Another difference between the two models lies in the APT treatment of the relationship between the level of security gains. APT assumes that the level of profit is influenced by various factors in the economy and industry. The correlation between the level of profit of two securities occurs because the securities are affected by the same factors. Conversely, although the CAPM recognizes the existence of correlations between levels of profit, the model does not explain the factors that influence the correlation. Both CAPM and APT both argue that there is a positive relationship between the expected level of profit and risk. CAPM is often used in estimating returns because it has several advantages, that is, it does not require a long time to estimate returns, data needed in estimation is easily obtained and can be used to estimate returns in the short term.

One of the assumptions used in the CAPM model is that all investors can lend a number of funds (lending) or borrow (borrow) a number of funds with an unlimited amount of risk-free interest rates (Jogiyanto, 2015). Borrowing and lending funds at risk-free interest rates carried out when applied in Islamic financial instruments are not in accordance with sharia principles. Islamic financial instruments have characteristics that are different from conventional financial instruments. The characteristics of sharia financial instruments, among others, meet the halal criteria according to sharia principles, free from the elements of usury and gharar (speculative). So that the assumptions used in the CAPM model are not in accordance with sharia principles because lending and borrowing transactions by charging interest contain elements of usury. The other basic assumption of CAPM is the concept of risk free assets. This concept is not in accordance with sharia principles, namely the existence of risks that arise in an effort to obtain profits.

Islamic Finance Instrument is an investment alternative that is starting to attract investors. Various sharia-based investment options began to be developed on the Indonesia Stock Exchange and showed significant development. The increase in the number of sharia financial instruments traded includes Islamic stocks, *sukuk*. Islamic mutual funds and state *sukuk*. According to IDX data as of 30 April 2017, the number of sharia shares reached 354 shares, an increase of 0.29% compared to the end of 2016 of 347 sharia shares. Islamic mutual funds amounted to 148 or increased by 8.82% compared to the end of 2016, namely 136. The number of outstanding corporate *sukuk* as of April 30, 2017 was 60 series, an increase of 13.21% compared to the end of 2016 of 53 series of *sukuk*.

Although the increase is quite significant, the assessment carried out in Islamic financial instruments still uses conventional models. This is shown from several previous studies, including the assessment of Islamic financial instruments still using the CAPM model and other conventional models (Hakim, 2016). Isnurhadi (2014) uses the CAPM model to predict the level of return on Islamic stocks and conventional shares. The results showed that the CAPM model was accurate enough to predict Islamic stock returns (JII index) and conventional stock returns (LQ45). Affaneh (2013) conducted a study of the comparison of Islamic and conventional financial performance by using Sharpe Ratio Adjusted to test the autocorrelation and skewness of the difference in portfolio returns and risk-free assets. The same study by Dewi and Ferdian (2012) also compared Islamic and conventional financial performance in Indonesia and Malaysia.

Portfolios formed with the CAPM model approach consist of halal and non-halal securities that are not in accordance with sharia principles. Therefore Muslim investors need a Shariah

Compliant Capital Asset Pricing Model (SCAPM). So that this study was conducted to determine whether there is a difference in expected return by using the Capital Asset Pricing Model (CAPM) and the Shariah Compliant Asset Pricing Model (SCAPM). If there is no difference in the expected return CAPM and SCAPM models, then the next test is carried out to find out whether the Shariah Compliant Asset Pricing Model (SCAPM) model can be used to predict expected return. This is necessary to provide certainty to investors in determining the investment to be selected in accordance with sharia principles.

## **2. Literature Review**

### **2.1 Stock Return and Risk**

Return is a result obtained from investment (Jogiyanto, 2015), total return is the overall return of an investment in a given period, or can be formulated as follows:

$$\text{Total return} = \text{capital gain (loss)} + \text{yield}$$

where:

capital gain (loss): is the difference in profit (loss) of the investment price now relative to the price of the past period

yield: is a percentage (%) of periodic cash receipts for the investment price of a certain period of an investment

Risk is the difference in actual returns with returns expected by investors. The method commonly used to calculate risk is a standard deviation (standard deviation) that measures the absolute deviation of values that have occurred with their expected values (Jogiyanto, 2015):

$$SD = \sqrt{\frac{\sum_{i=1}^n [X_i - E(X_i)]^2}{n - 1}}$$

where:

SD = standard deviation

X<sub>i</sub> = value of i

E (X<sub>i</sub>) = expectation value

n = number of observations

Risks can be separated into two, namely systematic risk and unsystematic risk. Systematic risk is a market risk that is related to changes that occur in the market as a whole that affect the variability of returns, so that systematic risk cannot be diversified. While non-systematic risks are risks that are not related to the overall market change. The risk is not systematic regarding changes related to the condition of the company issuing the shares, so that this risk can be minimized by means of portfolio diversification

### **2.2 Capital Asset Pricing Model**

Capital Assets Pricing Capital (CAPM) is a model used to determine the price of a asset in equilibrium conditions, the goal is to determine the minimum required return of risk assets. Rational investors will reject the risk (risk averse), so they will try to improve their welfare by reducing the level of risk. Investors will not place their wealth in one type of investment but they

prefer risk diversification by choosing a combination of portfolios that will increase returns and reduce the level of risk (Markowitz, 1952), this theory became known as portfolio theory. Diversification in portfolios can reduce systematic risk but cannot reduce risk not systematically. Furthermore, William Sharpe in 1964 introduced a standard model that tested the effect of systematic risk (beta coefficients) using a regression equation between portfolio returns and benchmark portfolios.

In 1964, William Sharpe introduced a model used to test the effect of systematic risk between portfolio returns and benchmark portfolio. The return equilibrium condition of the required result (required return) by the investor for securities will be affected by the risk of the security. In this case the calculated risk is only systematic risk or market risk that measures the value of beta ( $\beta$ ). While non-systematic risk (unsystematic risk) is irrelevant, because this can be eliminated by diversification. The relationship between risk as measured by beta and required return is shown by the security market line (SML). Conditions like this, the beta of a security can be measured precisely, and the required return can also be estimated in an equilibrium state

The CAPM calculation model consists of 3 interrelated variables, namely, systematic risk or beta ( $\beta$ ), market return ( $R_m$ ), and free risk assets ( $R_f$ ). Systematic risk or beta is variability in all risky assets caused by macroeconomic variables. Beta is an important factor in the CAPM model because it is an identification and comparison between the expected rate of return and the actual rate of return in the portfolio. Systematic risk can be measured by the standard deviation of market portfolio returns and can change at any time or can be formulated as follows:

$$\beta = \frac{\text{Cov} (R_i - R_m)}{\text{Var } R_m}$$

The estimated of the beta coefficient can use the regression equation as follows:

$$R_i = \alpha_i + \beta_i R_M + \epsilon_i$$

where:

$R_i$  = security return i

$R_M$  = market index return

$\alpha_i$  = intercept

$\beta_i$  = slope

$\epsilon_i$  = random residual error

This regression will produce a value of  $\alpha_i$  (measure of security return i that has nothing to do with market returns) and  $\beta_i$  (increase in expected return on securities i for every increase in market return of 1%). Risk free assets are assets with zero variance and have zero correlation with all other risk assets.

Based on the variables included in the CAPM model, the CAPM equation used in estimating returns (Sharp, 1964) is:

$$E (R_i) = R_f + \beta (R_M - R_f)$$

where:

$E (R_i)$  = Expected return

$R_f$  = Risk free rate

$R_M$  = Return market

$R_M - R_f$  = Risk premium

From the formula above the size of the risk premium for securities  $i$  can be calculated by diverting the securities beta to market risk premium (market risk premium). While the market risk premium is the difference between the expected return on the market portfolio ( $RM$ ) and the level of risk-free return ( $R_f$ ).

Premium market risk can be formulated as follows:

$$E(R_i) = R_f + \beta(RM - R_f)$$

where:

$E(R_i)$  = Expected return

$R_f$  = Risk free rate

$RM$  = Return market

$RM - R_f$  = Risk premium

From the formula above the size of the risk premium for securities  $i$  can be calculated by diverting the securities beta to market risk premium (market risk premium). While the market risk premium is the difference between the expected return on the market portfolio ( $RM$ ) and the level of risk-free return ( $R_f$ ). Premium market risk can be formulated as follows:

$$\text{Securities risk premium } i = \beta_i (\text{market risk premium}) = \beta_i (RM - R_f)$$

### 2.3 Shariah Capital Asset Pricing (SCAPM)

The development of Islamic financial instruments requires an assessment in accordance with sharia principles. CAPM is one of the return valuation models that requires adjustments to be implemented in accordance with sharia principles. The basic assumptions used in the CAPM model (Jogiyanto, 2015), are all investors have the same time period horizons and have the same expectations (homogeneous expectation) of the input factors used so that investment decision making is based on the consideration of the expected return value and the standard deviation of the return from the portfolio. In addition, investors can also lend a number of funds (lending) or borrow (borrowing) a number of funds with an unlimited amount of risk-free interest rates. In this assumption investors are price-takers. The other CAPM assumption is that all assets can be divided into smaller parts indefinitely, all assets can be marketed in perfect liquid, no transaction costs, no inflation, no personal income tax and capital markets in equilibrium conditions.

The CAPM assumption when viewed from a sharia perspective, there are those that are in accordance with the sharia concept, including:

Investor Homogeneity,

All investors have the same expectations (homogeneous expectation) of the input factors used. In Islamic finance, investors are encouraged to invest according to sharia to generate profits in an acceptable and risky way (Islahi, 1988). Therefore, each asset will have a market price (Omar et al., 2010). This pricing will lead to mutual agreement, and finally the homogeneity of expectations from investors will emerge.

There is no personal income tax,

In Islam what is known is the concept of zakat which is only subject to excess wealth and not to income. The zakat factor is used as a substitute for risk free asset factors on the grounds that investors expect a minimum return to fulfill their zakat obligations from investment activities carried out (Ashker, 1987).

There are no transaction fees.



The assumption of "no transaction fees" actually does not conflict with the principles of Islamic finance and sharia (Derbali et al., 2017)

While the CAPM assumption that requires adjustment according to sharia principles is:

Investors can lend a number of funds (lending) or borrow (borrowing) a number of funds with an unlimited amount of risk-free interest rates,

From an Islamic perspective, the prohibition of interest leads to the absence of risk-free assets, and the elimination of risk-free assets. In Islamic finance, instruments that resemble risk-free assets such as *sukuk* (Islamic bonds). Omar et al. (2010) develop the use of treasury bills as a proxy for risk-free assets. Hakim, et al (2016) used the *sukuk* yield factor as a substitute for risk free assets that contain elements of usury and are considered irrelevant to sharia rules. The effort of sharia-based CAPM adjustment is carried out, among others, by eliminating risk free assets. Tomkins and Karim (1987) state that the expected rate of return of securities is equal to the level of market risk (beta). The inflation factor is used to replace the interest rate factor by Hanif (2011). The inflation factor is a form of state responsibility for the well-being of its population and ensures the ability of people's purchasing power which is influenced by the inflation rate.

## **2.4 Review of Previous Research**

Research on CAPM modification with the application of sharia principles has been done before. Several studies that have been carried out previously state that the CAPM method can be applied in a sharia conceptual framework, by making several adjustments. The research carried out by Tomkins and Karim (1987) states that the CAPM equation must issue an element of risk free rate, because the risk free rate is the interest rate that is not in accordance with sharia principles. The CAPM equation becomes  $K_e = \beta R_m$ , which is the return (stock return) that is expected to equal the level of stock market risk. Ashker (1987) replaces risk free assets by using the zakat component which is equivalent to 2.5%. Zakat is the minimum rate of return that is expected so that investors can carry out religious obligations on the value of the investment they have. Hanif (2011) uses the inflation variable to replace risk free assets. The inflation variable is included in the CAPM equation on the grounds that the government has responsibility for the welfare of the community and protects and guarantees the level of people's purchasing power from the influence of inflation.

Raei et al. (2011) developed and modified the standard CAPM model into several models. The results of the study show that CAPM modification shows a better interpretation of market conditions in units of economic units and portfolio structure. Research also shows that there is a modification of the CAPM model based more on the strengths and weaknesses of the CAPM model for financial managers, financial analysts and investors

Hanif (2011) stated in his research that the application of conventional asset valuation models adjusted to sharia principles. Implementation is carried out by making minor adjustments to the valuation of conventional assets against the risk free return because it is not in accordance with the principles of Islamic finance. Adjustments are made by eliminating the risk free return and changing the inflation rate.

Abbes (2012) ignores the prohibition of usury and applies conventional CAPM and Sharpe ratios to compare the rate of return of Islamic and conventional financial instrument indicators

Sadaf and Andleeb (2013) examined the Shariah Complaint Capital Asset Pricing Model by using Karachi sharia shares - the Meezan Index. The study was conducted using a risk free rate and without the risk free rate as a parameter for measuring returns. The results show that the two equation models used produce almost the same trend return value.

Hakim et al (2016) examined the application of CAPM in Islamic financial instruments using data on the Malaysia Stock Exchange. In his research formulated a sharia-based CAPM model, namely by changing the parameters of the risk free rate with the treasury bill and using the yield value of *sukuk* as a zero beta parameter. This is done to eliminate the element of usury in conventional CAPM formulations. The results of the study show that sharia-based CAPM can be used to predict securities returns as conventional CAPM.

Derbali et al (2017) developed a shariah-compliant CAPM model by making several changes in the model of integrating zakat, refining returns and exceptions to short sales. Tests are carried out using a sample of 10 Islamic stocks listed on the Malaysia Stock Exchange. The results of the study indicate that the proposed CAPM is suitable and relevant in investigating the relationship between risk and return on sharia stock exchanges.

### **3. Data And Methodology**

#### **3.1 Data and Samples**

This research is a comparative descriptive study that takes a population of publicly listed companies listed on the Indonesia Stock Exchange (IDX). Samples were selected by purposive sampling method with several criteria, namely Sharia Company shares which for four consecutive years, namely 2014 - 2018 entered the Jakarta Islamic Index (JII), stock price data is known, and dividend data is known. In addition to stock data, the data needed in the study are Jakarta Composite Index (JCI), inflation rate and *sukuk* yield data.

#### **3.2 Definition of Variable Operationalization**

The definition of each variable used in the study is as follows:

- Pt = Price period t which is the stock price, namely by using the closing price of the monthly stock price
- Pt-1 = Price period t-1 which is the monthly t-1 stock price closing price
- Dt = Diveden, that is the amount of cash dividend distributed by the company
- Ri = Stock return / stock return is the level of return obtained from the investment of funds in a particular investment at each share price.
- E (Ri) = Expected Stock Returns / expected returns are the level of average return of shares that are expected by stock investors in a certain period.
- Rm = Market market Return / return is a rough return that will be obtained by investors as reflected in changes in the price index for a certain period, the price index used is the Jakarta Composite Index (CSPI)
- E (Rm) = Expected Market Return is the rate of return on the average capital market in a given period, which is judged by the average JCI.
- Rf = Risk Free Rate is the rate of return obtained from investment in risk free assets, namely the interest rate of Bank Indonesia Certificates (SBI).
- $\beta$  = Systematic risk is a risk related to market conditions and cannot be eliminated by diversification.
- Z = Zakat which uses a zakat percentage of 2.5%
- I = inflation rate in the study period
- Rz = Yield *sukuk* is the rate of return from *sukuk*

Calculation of each variable using the following formulations:

Calculating sample company returns:

$$R_i = (P_t - P_{t-1} + D_t) / P_{t-1}$$

$P_t$  = stock price  $i$  at time  $t$

$P_{t-1}$  = stock price  $i$  at  $t - 1$

$D_t$  = dividends distributed at time  $t$  (if any)

Calculate the return market:

$$R_m = (JCI_t - JCI_{t-1}) / JCI_t$$

$JCI_t$  = Jakarta Composite Index at time  $t$

$JCI_{t-1}$  = Jakarta Composite Index at time  $t-1$

Calculating CAPM:

CAPM equation (Sharp, 1964):

$$E(R_i) = R_f + \beta (R_M - R_f)$$

$E(R_i)$  = Expected return

$R_f$  = Risk free rate

$R_M$  = Return market

Calculating SCAPM:

The SCAPM equation according to Tomkins and Karim (1987):

$$E(R_i) = \beta R_m$$

$E(R_i)$  = The expected return of the  $i$  stock that contains risk

$\beta$  = The level of market risk that cannot be diversified

$R_m$  = Return market

SCAPM according to Ashker (1987),

$$E(R_i) = Z + \beta (R_m - Z)$$

$E(R_i)$  = The expected return of the  $i$  stock that contains risk

$Z$  = Zakat Level

$R_m$  = Return market

$\beta_i$  = The level of market risk that cannot be diversified

SCAPM according to Hanif (2011), as follows:

$$E(R_i) = I + \beta_i (R_m - I)$$

$E(R_i)$  = The expected return of the  $i$  stock that contains risk

$I$  = inflation rate

$R_m$  = Return on market portfolio. which are expected

$\beta_i$  = The level of market risk that cannot be diversified

SCAPM according to Hakim et al (2016) as follows:



$$E(R_i) = R_z + \beta_i (R_m - R_z)$$

$E(R_i)$  = The expected return of the  $i$  stock that contains risk

$R_z$  = Yield *Sukuk*

$R_m$  = Return on market portfolio

$\beta_i$  = The level of market risk that cannot be diversified

## 4. Results

### Descriptive Analysis

Descriptive analysis includes a description of the data used in the model to calculate the expected return. The description of the data includes the mean and standard deviation of the CAPM and SCAPM models as well as the graph that illustrates the expected return value of each model whether or not it has the same pattern. The stages of analysis carried out are: calculating the value of each variable to be analyzed in accordance with the formulation in the definition of operationalization of variables. The variables obtained include the expected return value of the CAPM model and each SCAPM model then presented in graphical form. The analysis is done by comparing the CAPM pattern with each SCAPM pattern. If the SCAPM pattern is the same as the CAPM pattern, then the SCAPM model can be used as an alternative estimation return model.

Table 1 shows the calculation of the expected return using the CAPM and Shariah Complaint Capital Asset Pricing Model which is calculated by the CAPM and SCAPM models

**Table 1. Calculation of Expected return with CAPM and SCAPM**

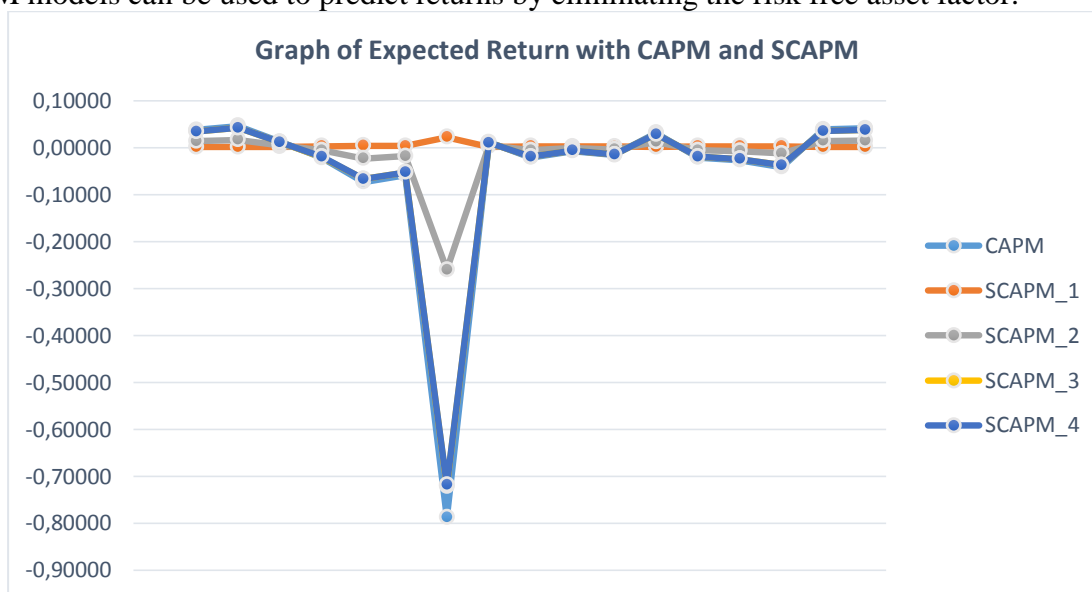
Company	CAPM	SCAPM_1	SCAPM_2	SCAPM_3	SCAPM_4
AALI	0,03715	0,00088	0,01351	0,03416	0,03405
ADRO	0,04557	0,00067	0,01630	0,04187	0,04174
AKRA	0,01202	0,00153	0,00518	0,01116	0,01112
ASII	-0,02186	0,00239	-0,00605	-0,01986	-0,01979
ASRI	-0,07367	0,00371	-0,02323	-0,06730	-0,06706
BSDE	-0,05858	0,00333	-0,01823	-0,05348	-0,05329
ICBP	-0,78795	0,02193	-0,26004	-0,72125	-0,71875
INDF	0,01104	0,00155	0,00485	0,01026	0,01023
INTP	-0,02125	0,00237	-0,00585	-0,01930	-0,01923
KLBF	-0,00741	0,00202	-0,00126	-0,00663	-0,00660
LPKR	-0,01628	0,00225	-0,00420	-0,01475	-0,01469
LSIP	0,03097	0,00104	0,01146	0,02851	0,02841
PGAS	-0,02146	0,00238	-0,00592	-0,01949	-0,01942
SMGR	-0,02695	0,00252	-0,00774	-0,02452	-0,02443
TLKM	-0,04144	0,00289	-0,01255	-0,03779	-0,03765
UNTR	0,03840	0,00085	0,01392	0,03531	0,03519
UNVR	0,04094	0,00079	0,01477	0,03763	0,03751
SCAPM_1	SCAPM no risk free asset				
SCAPM_2	SCAPM with Zakat factor				

**Table 1. Calculation of Expected return with CAPM and SCAPM**

Company	CAPM	SCAPM_1	SCAPM_2	SCAPM_3	SCAPM_4
SCAPM_3	SCAPM with Inflation factor				
SCAPM_4	SCAPM with yield <i>sukuk</i>				

The expected return value obtained from the calculation of the conventional CAPM formula and SCAPM of each model, namely SCAPM without the risk free rate, SCAPM with zaka factors, SCAPM with inflation factors and SCAPM with *sukuk* yield can be illustrated by graph. From the graph can be selected from each model. The SCAPM model which has the same pattern as CAPM capital, shows that the expected return generated from the calculation of the SCAPM model can be used as an alternative estimation return model. While the SCAPM model which has a different pattern, shows that the expected return generated from the SCAPM model cannot yet be used as a model of estimating returns that are compatible with sharia principles. Adjustments are still needed by adding factors that can replace the risk free asset factor in the CAPM model which can produce the same graph pattern as the CAPM model

Comparison of the expected return can also be seen graphically below. SCAPM\_1 charts (without risk free asset factors) have a different pattern with the CAPM pattern. This shows that SCAPM without a risk free asset factor cannot be used as an estimation return model. SCAPM\_2 (SCAPM with zakat factor) and SCAPM\_3 (SCAPM with inflation factors) and SCAPM\_4 graphs with *sukuk* yield factors have almost the same pattern as CAPM. This shows that the three SCAPM models can be used to predict returns by eliminating the risk free asset factor.



Comparison of the three modes besides being illustrated in graphical form is also carried out comparative testing by comparing the mean. The results of the compare mean test can be seen in the following table:

**Table 2. Comparative Test of CAPM and SCAPM without Risk Free Assets**

		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence	
Expected_return	Equal variances assumed	4.592	.040	-1.146	32	.260	-.05375647	.04690873	-.14930644	.04179350
	Equal variances not assumed			-1.146	16.021	.269	-.05375647	.04690873	-.15318804	.04567510

Source: Data processed

Table 2 shows the results of the Levene's test or homogeneity test between the CAPM and SCAPM models without the risk free rate, that is, the value of  $F = 4,592$  with a significance level of  $0.04 (<0.05)$ . This shows that there are differences in the variance of the CAPM and SCAPM models. The t test (equal variance not assumed) shows a significance level of  $0.269 (> 0.05)$ . This shows there is no difference in return with the CAPM and SCAPM methods without the risk free rate. So the SCAPM model without a risk free rate can be used to predict returns.

**Table 3. Comparative Test of CAPM and SCAPM with Zakat Factor**

		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence	
Expected_return	Equal variances assumed	1.948	.172	-.709	32	.483	-.03504000	.04940348	-.13567159	.06559159
	Equal variances not assumed			-.709	19.475	.487	-.03504000	.04940348	-.13827212	.06819212

Source: Data processed

Table 3 shows the results of the Levene's test between the CAPM and SCAPM models with the zakat factor, namely the value of  $F = 1.948$  with a significance of  $0.172 (> 0.05)$ . This shows that the CAPM and SCAPM models with zakat factors have the same or homogeneous variance. The t test (equal variance assumed) shows a significance level of  $0.483 (> 0.05)$ . This shows that there is no difference in return with the CAPM and SCAPM methods with the zakat factor. So that the SCAPM model with zakat factors can be used to predict returns.

Table 4. Comparative Test of CAPM and SCAPM with Inflation Factor

		Levene's Test for Equality of Variances		t-test for Equality of Means						
				t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence	
		F	Sig.						Lower	Upper
Expected_return	Equal variances assumed	.019	.892	-.070	32	.945	-.00442882	.06357863	-.13393425	.12507660
	Equal variances not assumed			-.070	31.754	.945	-.00442882	.06357863	-.13397360	.12511595

Source: Data processed

Table 4 shows the results of the Levene's test between the CAPM and SCAPM models with inflation factors, namely the value of  $F = 0.019$  with a significance of  $0.892 (> 0.05)$ . The t test (equal variance assumed) shows a significance level of  $0.945 (> 0.05)$ . This shows there is no difference in return with the CAPM and SCAPM methods with inflation factors. So that the SCAPM model with inflation factors can be used to predict returns.

Table 5. Comparative Test of CAPM and SCAPM with Yield Sukuk

		Levene's Test for Equality of Variances		t-test for Equality of Means						
				t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
		F	Sig.						Lower	Upper
Expected_return	Equal variances assumed	.020	.888	-.072	32	.943	-.00459412	.06347846	-.13389551	.12470727
	Equal variances not assumed			-.072	31.735	.943	-.00459412	.06347846	-.13393793	.12474969

Source: Data processed

Table 5 shows the results of the Levene's test between the CAPM and SCAPM models with the *sukuk* yield factor, namely the F value =  $0.020$  with a significance of  $0.888 (> 0.05)$ . The t test (equal variance assumed) shows a significance level of  $0.943 (> 0.05)$ . This shows there is no difference in returns with the CAPM and SCAPM methods with *sukuk* yield factors. So that the SCAPM model with *sukuk* yield factors can be used to predict returns.

The four models show the same return average but the SCAPM model with inflation and *sukuk* yield shows the closest return to the CAPM model, with the mean difference =  $-0.004$  compared to the mean difference of the SCAPM model without risk free rate =  $-0.054$ , SCAPM with zakat factor =  $-0.035$

## 5. Conclusion

### Results

The results of the descriptive analysis based on the mean value, testing with graphs and Levene's test show that the SCAPM model that does not use risk asset factors cannot be used, because it

has a different pattern with CAPM and the data is not homogeneous even though it has the same return value as the CAPM. While the three SCAPM models with zakat factors, inflation and *sukuk* yield used in the study show the same pattern as the CAPM model. The second test result with a comparable mean also shows the same return value of the three SCAPM models with the zakat factor, inflation and *sukuk* yield and the CAPM model. So that based on the results of the two analyzes carried out with the graph and the compare mean test, it shows that there is no difference in the expected return calculated using the CAPM and SCAPM models, so the SCAPM model can be used as an alternative for calculating the expected return in accordance with sharia principles.

The results of this study reinforce previous research conducted by Ashker (1987) the degrading SCAPM model by including the zakat and Hanif (2011) factors using the SCAPM model by including the inflation factor. Hakim et al (2016) replaced the risk free rate parameter with the treasury bill and used the yield value of *sukuk* as a zero beta parameter. While the SCAPM model used by eliminating interest rate factors cannot be used to predict returns because graphically, the resulting pattern is different and there are differences in data variants with CAPM. This is different from the results of research conducted by Tomkins and Karim (1987) which shows that SCAPM without a risk free asset factor can be used as an alternative model of estimation of returns in accordance with sharia.

### **Suggestions and Recommendations**

This study still has several limitations that can be used as recommendations for further research. The limitations of the period used are only for three periods. Future studies are expected to be carried out by extending the research period to find out the consistency of the results of return calculations based on CAPM and SCAPM. The limitation of the number of samples in the study is that it only uses 17 samples so it is necessary to increase the number of samples by entering a sample of all Islamic stocks.

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