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Research Paper

Analysis of CAPM and SCAPM to Predicting Company's Stock Return in Jakarta Islamic Index (JII)

Achmad Fadlan, Abdul Hamid Habbe, Syarifuddin Rasyid
[1](*Master of Accounting, Faculty of Economics, Hasanuddin University)*
[2](*Lecturer in Accounting, Faculty of Economics, Hasanuddin University)*
[3](*Lecturer in Accounting, Faculty of Economics, Hasanuddin University)*

ABSTRACT: *This study aims to analyze the accuracy of CAPM and SCAPM in predicting stock returns.The sampling technique used was purposive sampling and obtained 15 shares,which are listed at Jakarta Islamic Index in 2017-2019.The accuracy of CAPM and SCAPM models is measured by standard deviation and t-tests are utilized to compare precision between CAPM and SCAPM models.The results of this study show that there is a significant difference in accuracy between capm and SCAPM models.*
KEYWORDS: *CAPM, SCAPM, Return, Stock*

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I. INTRODUCTION

Investment is an activity to postpone current consumption in order to gain profits in the future. Furthermore, Hartono (2017: 5) explains that investment is a delay in current consumption to be included in productive assets. With the existence of productive assets, the delay in current consumption which is invested in these productive assets will increase the total utility.One form of investment is the purchase of shares of a security. In stock investment, all investors who invest certainly expect a rate of return that exceeds the invested funds. But the return expected by investors is sometimes not in accordance with the actual return obtained. This indicates that investors are dealing with risk in investing, investors must estimate how much risk they face.So we require a great and simple estimation strategy in evaluating the return of a security. Thus one method that can be used to estimate the return of a security is the Capital Asset Pricing Model (CAPM).

The establishments for the advancement of the CAPM were laid by Markowitz (1952) and Tobin (1958).Early theory or modern portfolio theory states that the risk of individual securities is the standard deviation of returns (a measure of return volatility). Therefore, the greater the standard deviation of the security's return, the greater the risk.This theory generates efficient portfolio limits and investors areanticipated to selectthe most suitable portfolio for them from the set of efficient portfolios available to them.Tobin (1958) suggests identifying the right portfolio among the efficient set. Through the earlier work of Markowitz (1952), Sharpe (1964) developed the CAPM for valuing risky assets; Lintner (1965), Mossin (1966), Fama and French (1992), and all contributed by extending the model.

Since the rise of Sharia capital market, the main question arises,is it fitting to utilize CAPMin decidingasset price in Sharia capital market? Because one of the factors in CAPM isthe interest rate. Usmani (2007:141) explained that sharia terms do not allow interest. So in practice every security should be free of interest. Qizam et al., (2020) explains that sharia capital market is a capital market that adheres to Islamic principles in conducting business activities so that things that are prohibited by Islam should not be done such as usury, gambling (*maysir*), and speculation (*gharar*).

Hanif (2011) states that risk free returns do not exist in the Islamic financial system, so there needs to be a modification of the conventional CAPM to be converted into the Shari'a Compliant Asset Pricing Model (SCAPM). The proposal to modify CAPM to SCAPM has occurred before, Cyril and Ri'fat (1987) recommends removing risk free from CAPM to convert it to SCAPM. They assume that the level of risk can be reduced without using the concept of interest and in Islamic economics there is no interest debt. Selim (2008) compares Islamic risk and return with conventional risk. This study modifies the CAPM by using direct musharaka (direct investment partnership without fixed interest which has been determined by profit/loss sharing agreement) as a substitute for interest rates. The findings of the study show that direct musharaka is very influential in reducing

investment risk. However, direct musharakah is not appropriate to be used as a substitute for interest rate variables in estimating market risk. Furthermore, Hakim et al., (2016) examined the comparison of accuracy between CAPM and SCAPM on the Malaysian stock exchange and changed the interest rate variable in the CAPM with the sukuk form AAA to conform to sharia. This study concludes that SCAPM can measure the level of risk-return of stocks such as the CAPM.

Research related to SCAPM is very rare in Indonesia, because based on the results of the proceedings of the National Accounting Symposium, there are no journals on the topic of SCAPM. Quthbi (2017) researched on SCAPM in analyzing efficient Islamic stocks and replacing risk-free component variables in exchange for Bank Indonesia Syariah Certificates (SBIS). From the results of this study, it is illustrated that there is a linear relationship between systematic risk and the required return. Husein and Hasanah (2017) also replaced the risk-free component variable with the SBIS proxy and found that SCAPM could explain the state of risk and return in the short term. In line with the two previous studies, Hasanah and Maspupah (2017) also recommend the SBIS proxy as a substitute for the interest rate proxy because it is in accordance with Islamic monetary instruments in Indonesia.

In recent years, some researchers have developed a new mathematical model CAPM which achieves compliance with Sharia. Derbali et al., (2017) develop a new mathematical model of SCAPM, the risk free proxy is replaced with the sukuk rate and integrates zakat, purification of returns, and short sale exceptions. The results show that the proposed SCAPM is appropriate and relevant in investigating the relationship between risk and return in the Islamic stock market even though the expected rate of return and standard deviation of the minimum variance portfolio for SCAPM is lower than the conventional CAPM. This research is supported by Hazny et al., (2017) who found that SCAPM is appropriate and can be applied to examine the relationship between risk and return in the Islamic stock market. These two studies will be the main basis in compiling the research conducted by the author.

II. LITERATURE REVIEW

Modern Portfolio Theory

Modern portfolio theory was first known through academic work Markowitz (1952, 1959), by means of the work of Markowitz later dubbed the father of modern portfolio theory. Markowitz (1952) states that the portfolio selection process begins with relevant beliefs about the future and ends with portfolio selection. Modern portfolio theory finds from the observation that investors not only own one, but create a portfolio based on the amount of personal investment. Vaclavik Jablonsky (2012) states that at a certain amount of risk, the Markowitz model can help portfolios with expected returns and possible returns or choose portfolios with the lowest possible level of risk.

Shipway (2009) explains that modern portfolio theory has two main assumptions: 1) Investors are rational individuals and want to get returns commensurate with risk. 2) Every investor is risk averse. In the sense that investors do not want to take risks, it is just that investors will prefer assets that are less risky when faced with two assets that offer the same expected return. On the other hand, investors will take a high risk if it is compensated with a higher expected return.Fabozzi et al., (2002) explained that through modern portfolio theory, a portfolio of securities can be formed in such a way that the level of risk is at the minimum level for the specified expected return level. Furthermore, this portfolio has a unique nature so that no other combination of securities can result in a lower level of risk at a specified level of expected return. This unique portfolio is known as mean-variance efficiency. Modern portfolio theory develops the CAPM method on the basis of mean-variance efficiency.

Return

Return is a motivation in investing (Jones, 2012). Hartono (2015) also explains that return is the result obtained from investment activities. In other words, the return can be a gain or loss from the investment results.Hartono (2015) divides returns into two types, namely actual return and expected returns. Actual return is the difference between the current period's stock price and the previous period's stock price. Meanwhile, expected return is the level of return expected by investors in the future. Expected return is considered more important because it becomes a benchmark for investors in the success of their stock investments in the future.

Capital Asset Pricing Model (CAPM)

Brigham and Houston (2009) define CAPM as a model based on the proposition that each stock must have a return equal to the risk-free rate of return plus a risk premium that only reflects the risk remaining after diversification. Laubscher (2002) explains that the principle underlying the CAPM is that there is a linear relationship between systematic risk as measured by beta and expected stock returns. CAPM tries to illustrate this relationship by using beta to explain the difference between expected returns on various stocks and stock portfolios.

McDonald (2003) explains the standard assumptions used in the development of the CAPM as follows: 1) There is a perfect capital market. Information is available to all with no fees, no transaction fees, and assets can be shared indefinitely and remain available. each investor can borrow and lend a certain amount of capital with the same interest rate. The risk of default related to borrowing is negligible. 2) Investors avoid risk and maximize the utility of expected wealth at the end of the planning horizon, which lasts one period. Portfolios are valued only by the expected rate of return and the standard deviation of returns. 3) The planning horizon is the same for all investors, and all portfolio decisions are made at the same time. 4) All investors have identical estimates of the expected rate of return and the standard deviation of return.

If the CAPM accurately describes the capital market, then it becomes a simple matter of establishing a risk-return relationship for an efficient market strategy (Laubscher, 2002).Here is a function of the CAPM equation:

$$R = R_f + \beta(R_m - R_f) \quad \rightarrow (1)$$

Shari'a Compliant Asset Pricing Model (SCAPM)

Hanif (2011) reveals that there is a need to analyze the pricing model of securities in accordance with Sharia compliance. Islamic law prohibits risk-free returns because of the charging of interest. So there needs to be a change in the CAPM that is in accordance with the Sharia framework.

Derbali et al., (2017) and Hazny et al., (2017) formulate some underlying assumptions to modify the CAPM mathematical model according to Sharia. Some of these assumptions are as follows:1) The investors' decisions are solely in terms of expected values and standard deviation of asset returns, 2) No transaction cost, 3) Zakat and purification are deducted from the expected return, 4) The assets are infinitely divisible, 5) The assets are marketable, 6) Unlimited lending and borrowing at the sukuk profit rate or other Islamic benchmarks, 7) Homogeneity of expectations, 8) An investor cannot influence the price of a stock by his buying and selling actions.

The SCAPM proposed by Derbali et al., (2017) and Hazny et al., (2017) has the following equation:

$$E(R_i) = R_{St} + \beta_{im}\left\{E(R_m) - \frac{R_{St}}{1 - \partial m}\right\} \quad \rightarrow (2)$$

III. RESEARCH METHODS

This type of research is quantitative. The population in this study were companies registered at JII in the period 2017 to 2019. The sampling technique used was purposive sampling. Purposive sampling is done by taking samples from the population based on certain criteria (Hartono, 2017:98). The criteria used in determining the sample in this research are as follows: 1) Companies that are consistently listed in JII in 2017-2019 2) Companies that are consistently listed in JII's stock list during the period 2017-2019.

Data Analysis Technique

The accuracy of the CAPM and CAPMS models on stocks can be measured as follows:

1. Normality Test
2. Measurement of Variability (Standard Deviation)
3. Test One Sample T Test
4. Test t-test
5. Comparative Descriptive Analysis
6. CAPM and SCAPM Calculation Simulation

IV. RESULT

No.	Company Code	R_i	R_m	R_f	β	CAPM
1	ADRO	0.0029	0.0009	0.0042	1.5777	-0.0010
2	AKRA	-0.0074	0.0009	0.0042	1.5700	-0.0010
3	ANTM	0.0069	0.0009	0.0042	2.2051	-0.0031
4	ASII	-0.0035	0.0009	0.0042	0.9057	0.0012
5	BSDE	-0.0069	0.0009	0.0042	0.7954	0.0016
6	ICBP	0.0083	0.0009	0.0042	0.5785	0.0023
7	INCO	0.0167	0.0009	0.0042	2.1206	-0.0029
8	KLBF	0.0034	0.0009	0.0042	1.1831	0.0003
9	LPPF	-0.0264	0.0009	0.0042	1.1292	0.0005
10	PTBA	-0.0164	0.0009	0.0042	-0.2068	0.0049

11	PTPP	-0.0142	0.0009	0.0042	2.5243	-0.0042
12	TLKM	0.0013	0.0009	0.0042	0.5936	0.0023
13	UNTR	0.0033	0.0009	0.0042	0.5325	0.0025
14	UNVR	0.0036	0.0009	0.0042	1.1164	0.0005
15	WIKA	0.0035	0.0009	0.0042	1.8818	-0.0021

Table 1: Expected Return CAPM

Table 1 shows the expected return value with a systematic risk level (beta). PTBA shares have the highest return of 0.0049, while PTPP shares have the lowest return of -0.0042. Of the total 15 companies, there are 9 companies that produce a positive expected return, while 6 companies that produce a negative expected return. Furthermore, there are 9 companies that produce >1, 5 companies that produce <1, and 1 company that produces negative.

In addition, it can be seen that stocks are efficient and inefficient. From the table above, ADRO, ANTM, ICBP, INCO, KLBF, UNTR, UNVR, and WIKA stocks are efficient stocks, because the actual rate of return is higher than the level of expected return. Meanwhile, AKRA, ASII, BSDE, LPPF, PTBA, PTPP, and TLKM stocks are inefficient stocks, because the actual rate of return is smaller than the expected return level.

No.	Company Code	R_i	R_m	R_{st}	Beta	SCAPM
1	ADRO	0.0029	0.0009	0.0049	1.5777	-0.0006
2	AKRA	-0.0074	0.0009	0.0049	1.5700	-0.0006
3	ANTM	0.0069	0.0009	0.0049	2.2051	-0.0028
4	ASII	-0.0035	0.0009	0.0049	0.9057	0.0017
5	BSDE	-0.0069	0.0009	0.0049	0.7954	0.0021
6	ICBP	0.0083	0.0009	0.0049	0.5785	0.0029
7	INCO	0.0167	0.0009	0.0049	2.1206	-0.0025
8	KLBF	0.0034	0.0009	0.0049	1.1831	0.0008
9	LPPF	-0.0264	0.0009	0.0049	1.1292	0.0010
10	PTBA	-0.0164	0.0009	0.0049	-0.2068	0.0056
11	PTPP	-0.0142	0.0009	0.0049	2.5243	-0.0039
12	TLKM	0.0013	0.0009	0.0049	0.5936	0.0028
13	UNTR	0.0033	0.0009	0.0049	0.5325	0.0030
14	UNVR	0.0036	0.0009	0.0049	1.1164	0.0010
15	WIKA	0.0035	0.0009	0.0049	1.8818	-0.0017

Table 2: Expected Return SCAPM

Based on table 2 shows PTBA stock has the highest expected return of 0.0056 and PTPP stock has the lowest expected return with a value of -0.0039. Overall 9 companies that produce a positive expected return and 6 companies that produce a negative expected return.

In addition, it can be seen that stocks are efficient and inefficient. From the table above, ADRO, ANTM, ICBP, INCO, KLBF, UNTR, UNVR, and WIKA stocks are efficient stocks, because the actual rate of return is higher than the level of expected return. Meanwhile, AKRA, ASII, BSDE, LPPF, PTBA, PTPP, and TLKM stocks are inefficient stocks, because the actual rate of return is smaller than the expected return level.

Normality Test

This study uses the Kolmogorov-Smirnov non-parametric statistical test in conducting the normality test. The normality test aims to assess whether the data distribution is normally distributed or not. The results of the Kolmogorov-Smirnov non-parametric statistical test are presented in table 1 as follows:

One-Sample Kolmogorov-Smirnov Test			
		SD_CAPM	SD_SCAPM
N		15	15
Normal Parameters[a,b]	Mean	0.0000000	0.0000000
	Std.	0.01012288	0.01016829

	Deviation		
Test Statistic		0.105	0.133
Asymp. Sig. (2-tailed)		.200[c,d]	.200[c,d]

Table 3: Kolmogrov-Smirnov Test Results

From table 3, it can be seen that the data is normally distributed, both the SD CAPM value of 0.200 > 0.05 and the SD SCAPM value of 0.200 > 0.05. So, the data in this study have met the assumption of normality.

Measurement of Variability (Standard Deviation)

The standard deviation is used to determine the deviation of the sample data with its average. The standard deviation is used to compare the accuracy of the calculation results of the CAPM and SCAPM methods.

No.	Company Code	SD CAPM	SD SCAPM	More Accurate
1	ADRO	0.070	0.075	CAPM
2	AKRA	0.042	0.056	CAPM
3	ANTM	0.069	0.090	CAPM
4	ASII	0.031	0.033	CAPM
5	BSDE	0.044	0.046	CAPM
6	ICBP	0.026	0.030	CAPM
7	INCO	0.075	0.078	CAPM
8	KLBF	0.027	0.035	CAPM
9	LPPF	0.076	0.079	CAPM
10	PTBA	0.133	0.135	CAPM
11	PTPP	0.077	0.092	CAPM
12	TLKM	0.031	0.031	-
13	UNTR	0.046	0.046	-
14	UNVR	0.024	0.033	CAPM
15	WIKA	0.079	0.083	CAPM
Average		0.057	0.062	

Table 4: Standard deviation results of CAPM and SCAPM

From table 4 it can be seen that CAPM is more accurate than SCAPM in estimating stock returns because the average standard deviation is closer to zero or smaller than the standard deviation of SCAPM, 0.057<0.062. The value of the highest standard deviation of CAPM in PTBA stock is 0.133 and the lowest is in UNVR stock at 0.024. The highest standard deviation value of SCAPM in PTBA stock is 0.135 and the lowest is in ICBP stock at 0.030.

Test One Sample T Test

Test one sample t test is used to determine whether the CAPM or CAPM Syariah is accurate in predicting stock returns.

One-Sample Test

	Test Value = 0					
					95% Confidence Interval of the Difference	
	t	df	Sig. (2-tailed)	Mean Difference	Lower	Upper
CAPM	7.353	14	.000	.0566667	.040137	.073196

Table 5: One sample t test CAPM results

Based on table 5, it can be seen that the significance value is 0.000, where the value 0.000 is smaller than the significance level (α=0.05), (0.000<0.05). So it can be concluded that the CAPM method is accurate in predicting stock returns.

One-Sample Test

	Test Value = 0					
	t	df	Sig. (2-tailed)	Mean Difference	95% Confidence Interval of the Difference	
					Lower	Upper
SCAPM	7.982	14	.000	.062400	.04563	.07917

Table 6: One sample t testSCAPM results

Based on table 6, it can be seen that the significance value is 0.000, where the value 0.000 is smaller than the significance level (α=0.05), (0.000<0.05). So it can be concluded that the SCAPM method is accurate in predicting stock returns.

Test t-test

The t-test was used to see if there was a significant difference between the standard deviation of the CAPM and the standard deviation of the SCAPM.

Paired Samples Test

Paired Differences					t	df	Sig. (2-tailed)
Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
			Lower	Upper			
-0.005733	0.005898	0.001523	-0.008999	-0.002467	-3.765	14	0.002

Table 7: Paired sample t test results

Based on table 7, it can be seen that the significance value is 0.002, where the value is 0.002 less than the significance level (α=0.05), (0.002<0.05). So it can be concluded that there is a significant difference in accuracy (SD value) between CAPM and SCAPM in calculating stock returns.

Comparative Descriptive Analysis

Comparative descriptive analysis was used to compare the returns calculated by the conventional CAPM and SCAPM methods at a certain time in each sample. This aims to see whether or not there is a difference between the realized return and the return obtained from the calculation of the CAPM and SCAPM methods. The sample data used to compare are companies registered with JII and announcing dividend distributions in a row in 2017, 2018, and 2019.

No.	Company Code	Dividend Announcement Time	CAPM	SCAPM	Actual Return	(CAPM-RR)	(SCAPM-RR)	CAPM Category	Category SCAPM
1	ADRO	28-Apr-17	0.0412	0.0031	-0.0139	0.0551	0.0170	Over Price	Over Price
2	AKRA	21-Apr-17	0.0411	0.0031	-0.0112	0.0523	0.0143	Over Price	Over Price
3	ASII	21-Apr-17	0.0254	0.0039	0.0796	-0.0542	-0.0757	Under Price	Under Price
4	ICBP	06-Jun-17	0.0142	0.0043	0.0145	-0.0003	-0.0102	Under Price	Under Price
5	KLBF	07-Jun-17	0.0249	0.0036	0.0263	-0.0014	-0.0227	Under Price	Under Price
6	LPPF	28-Apr-17	0.0306	0.0036	0.1082	-0.0776	-0.1046	Under Price	Under Price
7	PTBA	25-Apr-17	-0.0009	0.0052	0.0719	-0.0728	-0.0667	Under Price	Under Price
8	PTPP	17-Mar-17	0.0671	0.0020	-0.0867	0.1538	0.0887	Over Price	Over Price
9	TLKM	26-Apr-17	0.0180	0.0043	0.0784	-0.0604	-0.0741	Under Price	Under Price
10	UNTR	18-Apr-17	0.0166	0.0044	0.0315	-0.0149	-0.0271	Under Price	Under Price
11	UNVR	21-Jun-17	0.0238	0.0037	0.0327	-0.0089	-0.0290	Under Price	Under Price
12	WIKA	21-Mar-17	0.0510	0.0027	0.0000	0.0510	0.0027	Over Price	Over Price

Table 8: The results of the calculation of Abnormal Return in 2017

Underpriece category due to abnormal return <0 and overprice category due to abnormal return> 0. From table 8, it can be seen that in the CAPM category there are 8 underprice company stocks, namely ASII, ICBP, KLBF, LPPF, PTBA, TLKM, UNTR, and UNVR, while 4 overpriced company shares, namely ADRO, AKRA, PTPP, and WIKA. Likewise with the SCAPM category, there are 8 company shares that are underpriced, namely ASII, ICBP, KLBF, LPPF, PTBA, TLKM, UNTR, and UNVR, while 4 company shares are overpriced, namely ADRO, AKRA, PTPP, and WIKA. Shares of companies that fall into the underprice category are recommended for investment, because the rate of actual return is greater than the level of expected return.

No.	Company Code	Dividend Announcement Time	CAPM	SCAPM	Actual Return	(CAPM-RR)	(SCAPM-RR)	CAPM Category	Category SCAPM
1	ADRO	25-Apr-18	-0.0268	0.0024	0.0443	-0.0711	-0.0419	Under Price	Under Price
2	AKRA	08-May-18	-0.0424	0.0025	-0.1837	0.1413	0.1862	Over Price	Over Price
3	ASII	26-Apr-18	-0.0139	0.0032	-0.0208	0.0069	0.0240	Over Price	Over Price
4	ICBP	05-Jun-18	-0.0159	0.0037	0.0701	-0.0860	-0.0664	Under Price	Under Price
5	KLBF	07-Jun-18	-0.0371	0.0030	-0.0101	-0.0270	0.0131	Under Price	Over Price
6	LPPF	30-Apr-18	-0.0182	0.0029	-0.0548	0.0366	0.0577	Over Price	Over Price
7	PTBA	13-Apr-18	0.0075	0.0045	0.1706	-0.1631	-0.1661	Under Price	Under Price
8	PTPP	30-Apr-18	-0.0450	0.0013	-0.0690	0.0240	0.0703	Over Price	Over Price
9	TLKM	02-May-18	-0.0137	0.0037	0.0545	-0.0682	-0.0508	Under Price	Under Price
10	UNTR	18-Apr-18	-0.0067	0.0037	0.1323	-0.1390	-0.1286	Under Price	Under Price
11	UNVR	24-May-18	-0.0290	0.0031	0.0021	-0.0311	0.0010	Under Price	Over Price
12	WIKA	27-Apr-18	-0.0326	0.0020	-0.0796	0.0470	0.0816	Over Price	Over Price

Table 9: The results of the calculation of Abnormal Return in 2018

From table 9, it can be seen that in the CAPM category there are 7 underprice company stocks, namely ADRO, ICBP, KLBF, PTBA, TLKM, UNTR, and UNVR, while 5 overpriced company shares, namely AKRA, ASII, LPPF, PTPP, and WIKA. Then in the SCAPM category, there are 5 shares of companies that are underpriced, namely ADRO, ICBP, PTBA, TLKM, and UNTR, while 7 shares of companies that are overpriced, namely AKRA, ASII, KLBF, LPPF, PTPP, UNVR, and WIKA. Shares of companies that fall into the underprice category are recommended for investment, because the rate of actual return is greater than the level of expected return.

No.	Company Code	Dividend Announcement Time	CAPM	SCAPM	Actual Return	(CAPM-RR)	(SCAPM-RR)	CAPM Category	Category SCAPM
1	ADRO	03-May-19	-0.0733	0.0035	0.0075	-0.0808	-0.0040	Under Price	Under Price
2	AKRA	03-May-19	-0.0729	0.0035	-0.1342	0.0613	0.1377	Over Price	Over Price
3	ASII	26-Apr-19	-0.0159	0.0044	0.0699	-0.0858	-0.0655	Under Price	Under Price
4	ICBP	10-Jun-19	0.0210	0.0047	-0.0025	0.0235	0.0072	Over Price	Over Price
5	KLBF	24-May-19	-0.0537	0.0040	-0.1093	0.0556	0.1133	Over Price	Over Price
6	LPPF	02-May-19	-0.0510	0.0040	0.0100	-0.0610	-0.0060	Under Price	Under Price
7	PTBA	29-Apr-19	0.0098	0.0057	-0.0595	0.0693	0.0652	Over Price	Over Price
8	PTPP	03-May-19	-0.1202	0.0024	0.0610	-0.1812	-0.0586	Under Price	Under Price
9	TLKM	28-May-19	-0.0244	0.0047	-0.0440	0.0196	0.0487	Over Price	Over Price
10	UNTR	18-Apr-19	-0.0073	0.0049	-0.0325	0.0252	0.0374	Over Price	Over Price
11	UNVR	22-May-19	-0.0504	0.0041	-0.1284	0.0780	0.1325	Over Price	Over Price
12	WIKA	03-May-19	-0.0883	0.0031	0.0737	-0.1620	-0.0706	Under Price	Under Price

Tabel 10: The results of the calculation of Abnormal Return in 2019

From table 10 it can be seen that in the CAPM category, there are 5 underprice company shares, namely ADRO, ASII, LPPF, PTPP, and WIKA, while 7 overprice company shares, namely AKRA, ICBP, KLBF, PTBA, TLKM, UNTR, and UNVR. Likewise with the SCAPM category, there are 5 shares of companies that are underprice, namely ADRO, ASII, LPPF, PTPP, and WIKA, while 7 shares of companies that are overpriced, namely AKRA, ICBP, KLBF, PTBA, TLKM, UNTR, and UNVR. Shares of companies that fall into the underprice category are recommended for investment, because rate of actual return is greater than the level of expected return.

CAPM and SCAPM Calculation Simulation

This calculation simulation is used to examine the differences in the accuracy of the CAPM and SCAPM calculations. The calculation simulation is divided into two stages: 1) Removing the risk free proxy from the CAPM calculation model and the sukuk and zakat proxies from the SCAPM calculation model. 2) Re-entering the risk free proxy into the CAPM calculation model and the sukuk and zakat proxies into the SCAPM calculation model.

No.	Company Code	CAPM	Std. Dev	SCAPM	Std. Dev
1	ADRO	0.0014	0.070	0.0014	0.070
2	AKRA	0.0014	0.042	0.0014	0.042
3	ANTM	0.0020	0.069	0.0020	0.069
4	ASII	0.0008	0.031	0.0008	0.031
5	BSDE	0.0007	0.044	0.0007	0.044
6	ICBP	0.0005	0.026	0.0005	0.026
7	INCO	0.0019	0.074	0.0019	0.074
8	KLBF	0.0011	0.027	0.0011	0.027
9	LPPF	0.0010	0.076	0.0010	0.076
10	PTBA	-0.0002	0.133	-0.0002	0.133
11	PTPP	0.0023	0.076	0.0023	0.076
12	TLKM	0.0005	0.031	0.0005	0.031
13	UNTR	0.0005	0.046	0.0005	0.046
14	UNVR	0.0010	0.024	0.0010	0.024
15	WIKA	0.0017	0.082	0.0017	0.082
Average		0.0011	0.057	0.0011	0.057

Table 11: The simulation results of calculation of phase 1

No.	Company Code	CAPM	Std. Dev	SCAPM	Std. Dev
1	ADRO	-0.0010	0.070	0.0030	0.075
2	AKRA	-0.0010	0.042	0.0030	0.055
3	ANTM	-0.0031	0.069	0.0023	0.089
4	ASII	0.0012	0.031	0.0038	0.033
5	BSDE	0.0016	0.044	0.0040	0.047
6	ICBP	0.0023	0.026	0.0042	0.030
7	INCO	-0.0029	0.075	0.0024	0.077
8	KLBF	0.0003	0.027	0.0035	0.035
9	LPPF	0.0005	0.076	0.0036	0.078
10	PTBA	0.0049	0.133	0.0052	0.135
11	PTPP	-0.0042	0.077	0.0019	0.091
12	TLKM	0.0023	0.031	0.0042	0.031
13	UNTR	0.0025	0.046	0.0043	0.046
14	UNVR	0.0005	0.024	0.0036	0.033
15	WIKA	-0.0021	0.079	0.0027	0.081
Average		0.0001	0.057	0.0034	0.062

Table 12: The simulation results of calculation of phase 2

From table 11 it can be seen that the results of the calculation simulation stage 1 there is no difference in the calculation results and standard deviation between the CAPM and SCAPM methods. Furthermore, table 12 shows that the results of the calculation simulation stage 2 have different calculation results and standard deviations between the CAPM and SCAPM methods. So it can be concluded that the risk free proxy in the

CAPM method and the sukuk and zakat proxies in the SCAPM method are differentiating factors so that the calculation results are different.

V. DISCUSSION

The results of the test show that there is a significant difference in accuracy between the CAPM method and the SCAPM method in estimating stock returns. This means that there is a significant difference in the level of accuracy between the CAPM method and the SCAPM method. The difference occurs due to the risk free proxy, namely the interest rate on the CAPM method is changed to a sukuk proxy. Furthermore, the difference is also found in the existence of a purification proxy for return by integrating zakat.

The test results are in line with modern portfolio theory which states that by looking at the level of expected return, it can help develop a portfolio that has a high rate of return or a portfolio that has the lowest risk. Fabozzi et al., (2002) explained that through modern portfolio theory, a portfolio of securities can be formed in such a way that the level of risk is at the minimum level for the specified expected return level. Jones (2012) also states that the expected return of each portfolio can be calculated as a weighted average of the expected returns of individual securities. Furthermore, Vaclavik and Jablonsky (2012) state that at a certain amount of risk, the Markowitz model in modern portfolio theory can help in choosing a portfolio with the highest level of expected return or choosing a portfolio with the lowest possible risk level. Modern portfolio theory also explains that to diversify risk by investing in a number of assets, so that the composition of the portfolio consists of various kinds of assets.

The test results are supported by the results of Derbali et al., (2017) and Huzny et al., (2017) which state that the disparity occurs due to the integration of zakat to purify returns or can be concluded from proxy changes in the SCAPM method.

VI. CONCLUSION

Empirically there is a significant difference in accuracy between the CAPM method and the SCAPM method in estimating stock returns. These results indicate that there is a significant difference between the CAPM method and the SCAPM method to calculate the expected return. The results show that changes in the proxy to fit sharia CAPM method to produce new mathematical model CAPM named SCAPM can make a significant difference

There are several suggestions for further research related to CAPM and SCAPM analysis, namely 1) further research can extend the research observation period. 2) further research to analyze the calculation of CAPM and SCAPM in the period before the pandemic COVID-19 and the current pandemic COVID-19. 3) Further research can compare CAPM and SCAPM on other Islamic stock exchanges, such as the Indonesian Sharia Stock Index (ISSI) and the Jakarta Islamic Index 70 (JII70).

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