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Portfolio Performance Analysis with Jensen's Alpha Using Single Index Model and CAPM on IDX30 Stocks

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Abstract

This study aims to evaluate the formation of an optimal stock portfolio using the Capital Asset Pricing Model (CAPM) and Single Index Model (SIM) approaches, and to assess portfolio performance using Jensen's Alpha generated from stocks included in the IDX30 index during the period April 2024 to March 2025. This study uses a quantitative descriptive approach with a population of 30 IDX30 stocks. The methods applied include calculating stock returns and betas, as well as forming an optimal portfolio using the CAPM and SIM formulas. Portfolio performance is then measured by Jensen's Alpha. The results of the study show that based on CAPM, BRIS.JK and EMTK.JK stocks are worthy of being included in the optimal portfolio because they have a positive expected return and Jensen's Alpha that slightly outperforms the market. EMTK.JK also has a lower risk. Meanwhile, based on SIM, only BBCA.JK is included in the optimal portfolio because it meets the criteria for Excess Return to Beta (ERB) > cut-off rate (C^*), and shows a positive Jensen's Alpha. The conclusion of this study is that both models can identify superior performing stocks for the optimal portfolio in the period.

Keywords: Single Index Model, Capital Asset Pricing Model, IDX30, Jensen's Alpha

1. Introduction

Investing in shares in the capital market is one of the main choices for investors who want to gain long-term financial benefits.(Adnan & Kristianti, 2025). However, in the midst of dynamic economic and political conditions, investors are required to be more careful in managing risk and choosing the right investment strategy. One approach that can be used to optimize investment results and minimize risk is to form an optimal investment portfolio.(Tarina et al., 2021). In financial theory, the formation of this portfolio can be done with the help of investment models such as the Single Index Model (SIM) and the Capital Asset Pricing Model (CAPM), which have been widely used as decision-making tools in stock investment.(Aunillah & Wahyudi, 2022).

Single Index Model (SIM) is a method used to form a portfolio by linking stock returns to a single market index, assuming that stock price movements are correlated with the underlying market index.(Margana & Artini, 2017). Meanwhile, the Capital Asset Pricing Model (CAPM) measures the relationship between systematic risk (beta) and the expected return of a stock.(Hasudungan et al., 2015). These two models provide different approaches to forming an optimal portfolio, but both aim to minimize risk and maximize returns.

While the Single Index Model (SIM) and the Capital Asset Pricing Model (CAPM) can be used to construct an investment portfolio, it is also important to evaluate how the portfolio is performing. One way to assess this is by using Jensen's Alpha, a tool that measures the difference between the actual return of a portfolio and the return it should have received based on its risk level.(Ignatius, 2023). If Jensen's Alpha value is positive, it means that the portfolio is able to provide higher profits than expected.(Susilowati et al., 2020). Therefore, this method is very useful to find out whether the chosen portfolio formation strategy has provided better results than market expectations.

This research is set in the period from April 2024 to March 2025, which coincides with the momentum of national political turmoil due to the change of president. This moment creates quite high political and economic uncertainty, where many investors tend to be cautious and restrain themselves while waiting for the direction of economic policy to be taken by the elected president (Telew et al., 2025). This uncertainty can cause significant fluctuations in stock prices, including stocks included in the IDX30 index. Market responses to these policies can open up new opportunities as well as new risks for investors. Therefore, analyzing portfolio formation and performance during this period is not only relevant but also important to provide an overview of how investment models such as SIM and CAPM can function in a market situation that is adjusting to the new national leadership.

Several previous studies have also been conducted to assess the effectiveness of SIM and CAPM in portfolio formation. Adnan & Kristianti (2025) used SIM to form a portfolio of IDX30 stocks for the 2018–2022 period, and found that six stocks were worthy of being included in the optimal portfolio with a return of 2.12% and a risk of 2.99%. Meanwhile, research by The Last Supper (2022)conducted during the Covid-19 pandemic, and showed that although CAPM and SIM (Single Index Model) can both be used, portfolios formed with SIM show better performance based on the Sharpe, Treynor, and Jensen indices. Other research by Ka'bu' et al. (2023) also shows that the Single Index Model provides superior portfolio performance, with a positive Jensen's Alpha indicating that the portfolio is able to beat the market.

Based on the results of the study, it is seen that SIM and CAPM have their respective advantages in forming an optimal portfolio, and performance evaluation such as Jensen's Alpha is very important to assess the effectiveness of the investment strategy implemented. Therefore, this study will combine both approaches to form and evaluate the optimal portfolio on IDX30 stocks during the period of change to adjustment of the new government, in order to provide a more realistic picture for investors in facing uncertainty and market dynamics during the national political transition.

2. Literature Review

2.1. Investment Portfolio

Modern portfolio theory was first introduced by Harry Markowitz in 1952, who is famous for the principle of "don't put all your eggs in one basket". The essence of this theory is to obtain optimal investment returns with a certain level of risk by combining various types of stocks into one portfolio, instead of investing in only one stock. This modern investment concept is based on the approach developed by Markowitz (1952), where the average (mean) is used to measure the rate of return, while the variance is used to assess the level of risk.(Zhu et al., 2020). Tandelilin (2010, p. 116) explains that in making investment decisions, an investor should spread funds to various stocks by considering the covariance and negative correlation coefficients between stocks, so that risk can be suppressed. This approach is known as diversification in the formation of an optimal portfolio based on the Markowitz model (Dewi & Candradewi, 2020).

2.2. Return

Return is the result obtained from an investment, which is calculated as the difference between the final price and the initial price of an asset. Mathematically, the return of a stock or portfolio can be calculated using the following formula(Susilowati et al., 2020):

$$R_t = \frac{P_t - P_{t-1}}{P_{t-1}}, \tag{1}$$

with R_t is the return in period t, P_t is the stock price in period t, P_{t-1} is the stock price in the previous period $(t-1)$.

2.3. Risk

While risk (or return variability) is measured using standard deviation or standard deviation which shows how much the return of an asset or portfolio fluctuates. Risk is calculated using the following formula(Susilowati et al., 2020):

$$\sigma = \sqrt{\frac{1}{n}\sum_{i=1}^{n}(R_i - \mu)^2}, \tag{2}$$

where σ is the standard deviation or risk, R_i is the return in the i-th period, μ is the expected return of all periods, n is the number of observation periods.

2.4. Covariance

Covariance is a measure that shows the extent to which two assets move together. To calculate the covariance between two assets, the formula used is (Susilowati et al., 2020):

$$Cov(X,Y) = \frac{1}{n}\sum_{i=1}^{n}(R_{X,i} - \mu X)(R_{Y,i} - \mu Y), \tag{3}$$

with $Cov(X,Y)$ is the covariance between two assets X and Y, $R_{X,i}$ and $R_{Y,i}$ are the returns of the two assets in period i, μX and μY is the average return of assets X and Y.

This covariance is then used to calculate the risk of a portfolio consisting of several assets, with the following formula.(Susilowati et al., 2020):

$$\sigma_P = \sqrt{\sum_{i=1}^{n} w_i^2 \sigma_i^2 + 2\sum_{i \neq j} w_i w_j Cov(R_i, R_j)}, \tag{4}$$

with σ_P is the portfolio risk, w_i is the investment weight on the i-th stock, σ_i is the risk of the i-th stock, $Cov(R_i, R_j)$ is the covariance between the i-th and j-th stocks.

2.5. Single Index Model (SIM)

The Single Index Model (SIM) was developed by William Sharpe to form an optimal portfolio.(Tarina et al., 2021). In this model, the underlying assumption is that each stock is related to a single market index, which influences the entire price movement of that stock.(Tristanto & Destiana, 2020). To form an optimal portfolio, SIM uses the Excess Return to Beta (ERB) formula which can be calculated using the following formula (Margana & Artini, 2017):

$$ERB_i = \frac{R_i - R_f}{\beta_i}, \tag{5}$$

where ERB_i is the Excess Return to Beta of the i-th stock, R_i is the return of the i-th stock, R_f is the risk-free rate, β_i is the beta of the i-th stock which measures the sensitivity of the stock to market movements.

Stocks that have a value ERB_i greater than the cut-off rate (C_i) will be selected to be included in the optimal portfolio. With this approach, SIM simplifies portfolio analysis by relying on only one main risk factor, namely the relationship of stocks to the market index.

2.6. Capital Asset Pricing Model (CAPM)

The Capital Asset Pricing Model (CAPM) is used to determine the relationship between a stock's systematic risk and its expected return.(LIADI et al., 2020). CAPM provides a formula for calculating the expected return of an asset based on market risk. The CAPM formula is as follows(Suhartono et al., 2015):

$$R_i = R_f + \beta_i(R_m - R_f) \tag{6}$$

with R_i is the expected return of the i-th stock, R_f is the risk-free rate of return, β_i is the beta of the stock which measures the systematic risk of the i-th stock, and R_m is the market return.

This formula shows that the expected return of a stock depends on its beta, which measures how much the stock's price fluctuates compared to the market as a whole. The CAPM provides a guide to measuring whether a stock is providing adequate compensation for the risk it faces.

2.7. Investment Weight of SIM model portfolio

In the Single Index Model (SIM), investment weights are calculated based on Excess Return to Beta (ERB) and cut-off rate (). The weight of stocks in a portfolio is calculated by selecting stocks that have a value greater than the specified cut-off rate. Mathematically, the weight of stocks in a SIM portfolio can be calculated using the formula$C_i ERB_i w_i$ (Aunillah & Wahyudi, 2022):

$$w_i = \frac{ERB_i}{\sum_{i=1}^{n} ERB_i} \tag{7}$$

where w_i is the investment weight on the i-th stock, ERB_i is the Excess Return to Beta of the i-th stock, and n is the total number of stocks selected for the portfolio.

2.8. CAPM Model Portfolio Investment Weights

In the Capital Asset Pricing Model (CAPM), investment weights are calculated based on the systematic risk of stocks as measured by beta and market returns. The weight of stocks in a CAPM portfolio is calculated by considering how much each stock contributes to the expected portfolio return, taking into account its systematic risk. The weight of stocks in a CAPM portfolio can be calculated using the following formula w_i (Aunillah & Wahyudi, 2022):

$$w_i = \frac{\frac{R_i - R_f}{\beta_i}}{\sum_{i=1}^{n} \frac{R_i - R_f}{\beta_i}} \tag{8}$$

with w_i is the investment weight on the i-th stock, R_i is the expected return on the i-th stock, R_f is the risk-free return, β_i is the beta of the i-th stock which measures systematic risk, n is the total number of stocks in the portfolio.

2.9. Jensen's Alpha

Jensen's Alpha is used to measure the extent to which the return generated by a portfolio exceeds the expected return based on systematic risk as measured by the CAPM. A positive alpha indicates that the portfolio outperforms the market, while a negative alpha indicates underperformance.(Riandini & Risman, 2022). The formula for calculating Jensen's Alpha is as follows(Mumtazah & Permadhy, 2022):

$$\alpha = R_p - \left(R_f + \beta_p\left(R_m - R_f\right)\right) \tag{9}$$

where α is Jensen's Alpha, R_p is the actual return of the portfolio, R_f is the risk-free return, β_p is the beta of the portfolio, R_m is the market return. Jensen's Alpha provides a measure of portfolio performance by comparing the actual return with the expected return based on the level of systematic risk faced by the portfolio.

2.10. Indonesia Stock Market and IDX30

The Indonesian stock market can be represented by the Composite Stock Price Index (IHSG) which includes all stocks listed on the Indonesia Stock Exchange (Aunillah & Wahyudi, 2022). However, for the purpose of this study, the focus is on IDX30, which consists of 30 stocks with the largest liquidity and market capitalization. The stocks in IDX30 were chosen because they have a good representation of the performance of the Indonesian stock market.

The selection of IDX30 shares is also based on their characteristics of high liquidity and good stability, which makes them ideal candidates for forming an optimal portfolio.(Tristanto & Destiana, 2020). By using SIM and CAPM, the IDX30 stock portfolio can be analyzed to evaluate whether the portfolio formed can optimize returns and minimize risks.

3. Materials and Methods

3.1. Data

The type of data used in this study is secondary data, which includes monthly stock prices of stocks listed on the IDX30 during the study period. The data required includes the closing stock price for each company listed on the IDX30 as well as market return data (IHSG) and risk-free returns (government bond yields). The population used is historical data for the period April 1, 2024 to March 31, 2025. The sample used is stocks that are consistently and consistently included in the period April 1, 2024 - March 31, 2025, totaling 16 stock issuers.

The data sources used are the Indonesia Stock Exchange (IDX) and Yahoo Finance to obtain stock price data, while risk-free return data is taken from Bank Indonesia. The data used is secondary and is accessed through www.idx.co.id, www.finance.yahoo.com, www.investing.com, and www.bi.go.id.

3.2. Methods

This study uses a quantitative approach with a descriptive design to analyze the formation of an optimal portfolio using two main models: Single Index Model (SIM) and Capital Asset Pricing Model (CAPM). This study will also evaluate the performance of the portfolio formed using Jensen's Alpha. This study aims to provide an overview of how the two models can be used to form an optimal portfolio on stocks included in the IDX30 on the Indonesia Stock Exchange which can be downloaded from the pagewww.yahoofinance.com. The stages carried out are as follows:

a) Method of collecting data
   Data collection is done through access to publicly available secondary data. The data collection process is carried out in the following manner:

1) Collecting daily closing price data for shares included in IDX30 during the period April 2024 to March 2025.
2) Collecting Composite Stock Price Index (IHSG) data as an indicator of the Indonesian stock market during the same period.
3) Taking risk-free return data published by authorized authorities (such as Bank Indonesia) for use in CAPM calculations.

b) Data Analysis Methods

The data analysis method used in this study includes the following steps:

1) Return Calculation
   a. Calculate stock returns for each stock listed in IDX30 based on the closing price of the stock each month.
   b. Calculating market returns using IHSG data as a reference for the Indonesian market.
   c. Calculating risk-free returns based on available data.
2) Beta (β) Calculation
   a. Calculating stock beta for each stock in IDX30 using linear regression between stock returns and market returns (IHSG).
   b. Beta is used to measure the systematic risk of each stock.
3) Formation of Single Index Model (SIM) Portfolio:
   a. Calculate the Excess Return to Beta (ERB) for each stock.
   b. Determine the cut-off rate (C_i) and select stocks that have a value ERB_i greater than that.
   c. Compiling an optimal portfolio based on selected stocks.
4) Capital Asset Pricing Model (CAPM) Portfolio Formation:
   a. Calculate the expected return ($E(R_i)$) for each stock using the CAPM formula.
   b. Determine the investment weight (w_i) based on the expected return value and beta of each stock.
   c. Constructing an optimal portfolio by selecting stocks that provide the best compensation for risk.
5) Portfolio Performance Measurement
   a. Measuring the performance of a formed portfolio using Jensen's Alpha to evaluate whether the portfolio can beat market returns.
   b. Assessing portfolio results using Jensen's Alpha
6) Portfolio Evaluation
   a. Comparing the performance of the two portfolios (SIM and CAPM) based on Jensen's Alpha value.
   b. Determining the most efficient portfolio based on the results of Jensen's Alpha calculations.

c) Framework

The framework of thought in this research is presented in Figure 1 below.

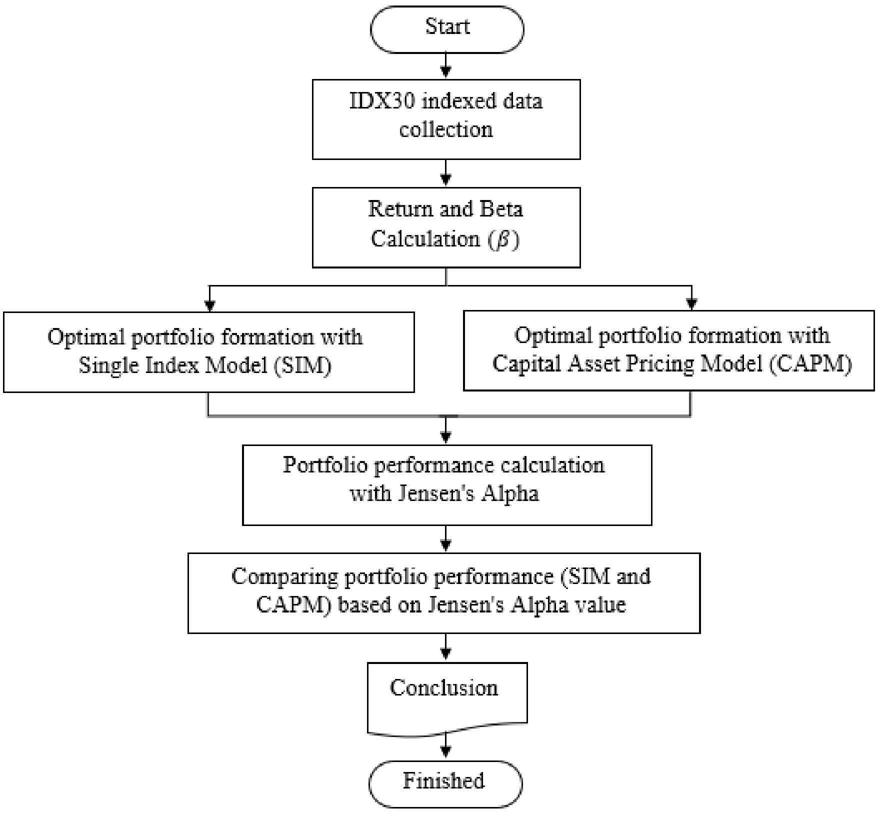

Figure 1: Framework

4. Results and Discussion

4.1. Capital Asset Pricing Model Method

Every investor certainly wants a profitable expected return from their stock ownership. Determining the value of this anticipated return requires three main components: the risk-free interest rate, the expected market return, and the beta coefficient (β).

Table 1 : Expected Stock Return

Share	β	$E(R_i)$
ADRO.JK	-0.147	-1.176%
AMRT.JK	-2.238	-18576%
ANTM.JK	-0.288	-2.346%
ARTO.JK	0.132	1.632%
ASII.JK	-0.053	-0.395%
BBCA.JK	0.240	3.327%
BBNI.JK	0.055	0.511%
BBRI.JK	-0.670	-5.528%
BMRI.JK	-0.379	-3.101%
BRIS.JK	0.059	0.541%
OPEN.JK	-0.149	-1.191%
CPIN.JK	0.353	4275%
EMTK.JK	0.020	0.218%
EXCL.JK	-0.751	-6202%
GOTO.JK	0.226	2762%
ICBP.JK	-0.533	-4390%

Source: Data processing

Table 1 presents the Beta (β) and Expected Return $(E(R_i))$ values calculated for each stock based on the CAPM formula. From this data, we can see how systematic risk (β) correlates with the expected return of each stock. For example, stocks with negative beta β such as ADRO.JK (-0.147) and AMRT.JK (-2.238) show significant negative expected returns (-11.76% and -18.576% respectively). Negative beta indicates that the stock movement tends to be in the opposite direction to the overall market movement. Conversely, stocks with positive beta β such as ARTO.JK (0.132) and BBCA.JK (0.240) have positive expected returns (1.632% and 3.327%), indicating that these stocks move in line with the market and have the potential to provide profits when the market rises. Stocks with beta close to zero, such as EMTK.JK (0.020), have very small expected returns (0.218%), indicating low sensitivity to market movement.

Based on the analysis on Table 1, then it can be expressed as a Security Market Line (SML) by using Beta (β) and individual Expected returns $(E(Ri))$ as in Figure 2 following.

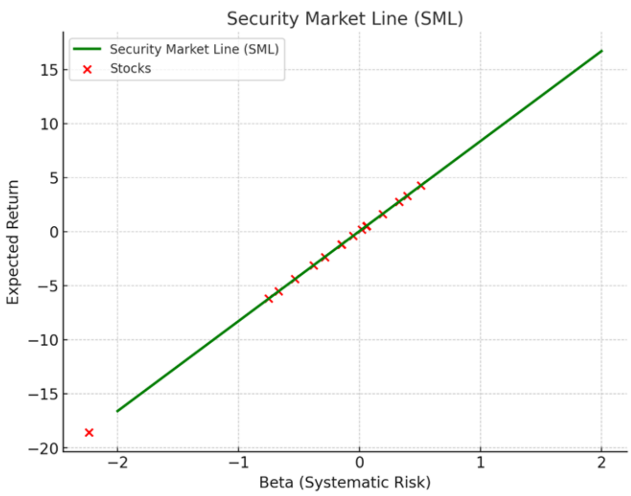

Figure 2 : Security Market Line

The relationship between Beta.(β) and Expected Return ($E(R_i)$) is visualized in the Security Market Line (SML) in Figure 2. The SML line shows the expected return for each level of systematic risk. Stocks that are above the SML line (as seen in the several red dots above the green line in Figure 2) indicate that the stock is undervalued or provides a higher expected return for its level of systematic risk. Conversely, stocks that are below the SML (overvalued) or provide a lower expected return than they should. Data on stocks with negative betas that are far from the SML (for example in the lower left of the chart) indicate that these stocks have very low or negative expected returns even though their risk is different from the market.

Next, the Excess Return to Beta (ERB) is calculated for the Single Index Model (SIM) to obtain results such as Table 2 following.

Table 2 : Excess Return to Beta

Share	(ERB)
ADRO.JK	8.323198
AMRT.JK	8.323198
ANTM.JK	8.323198
ARTO.JK	8.323198
ASII.JK	8.323198
BBCA.JK	8.323198
BBNI.JK	8.323198
BBRI.JK	8.323198
BMRI.JK	8.323198
BRIS.JK	8.323198
OPEN.JK	8.323198
CPIN.JK	8.323198
EMTK.JK	8.323198
EXCL.JK	8.323198
GOTO.JK	8.323198
ICBP.JK	8.323198

Source: Data processing

Table 2 shows the results of the calculation of Excess Return to Beta (ERB) for each stock. The results of this calculation show the same ERB value for all selected stocks, which is 8.323198. The uniformity of this ERB value, as mentioned, may be due to the insignificant variation in Expected Return between stocks after being calculated using CAPM. In ideal conditions, varying ERB values will allow for better determination of stocks to be included in the optimal portfolio. Nevertheless, this uniform ERB value is still the basis for continuing the analysis of the optimal portfolio with SIM.

To proceed to the optimal portfolio analysis, the Single Index Model (SIM) approach is used to perform stock selection and further calculations. The process begins with determining the proportion of funds for the optimal portfolio and calculating portfolio performance. To proceed to the next stage, it is necessary to calculate the proportion of funds for each stock in the optimal portfolio using the Single Index Model (SIM). Based on the Excess Return to Beta (ERB), it can be determined which stocks will be selected in the optimal portfolio and calculate the weight or proportion of funds that must be allocated to each stock. The following is the proportion of funds (W_i) calculated for each stock in the optimal portfolio using the Single Index Model (SIM).

Table 3 : Proportion of funds per portfolio stock

Share	(W_i)	Share	(W_i)
ADRO.JK	0.2799	BMRI.JK	0.7188
AMRT.JK	4,2493	BRIS.JK	-0.0161
ANTM.JK	0.5465	OPEN.JK	0.2833
ARTO.JK	-0.0520	CPIN.JK	-0.1388
ASII.JK	0.1014	EMTK.JK	-0.0055
BBCA.JK	-0.1077	EXCL.JK	1.4264
BBNI.JK	-0.0152	GOTO.JK	-0.0891
BBRI.JK	1,2729	ICBP.JK	1,0132

Source: Data processing

Table 3 presents the proportion (W_i) of funds allocated to each stock in the optimal portfolio based on the Single Index Model (SIM). It is important to note that some stocks have negative proportions of funds, such as AMRT.JK (-4.2493), BBCA.JK (-0.1077), and BMRI.JK (-0.7188). These negative proportions indicate that these stocks should theoretically be excluded from the optimal portfolio, or even short-sold, if possible. Stocks with positive proportions of funds, such as ADRO.JK (0.2799), ANTM.JK (0.5465), and BBRI.JK (1.2729), are candidates for inclusion in the portfolio because they contribute positively to portfolio returns.

The next step is to evaluate the portfolio by calculating the expected return and risk of the portfolio based on the selected stocks. Stocks with high risk and negative returns will be removed, such as stocks that have a negative fund proportion or large price variability. so that the results are obtained as in Table 4 following.

Table 4 : Return, Risk, and Portfolio Performance

Share	$E(R_i)$	σ_P	Jensen's Alpha
BRIS.JK	0.541	382.57%	5.6E-11
EMTK.JK	0.220	83.23%	2.8E-11

Source: Data processing

Table 4 shows Return, Risk (σ_P), and Jensen's Alpha for stocks included in the optimal portfolio, namely BRIS.JK and EMTK.JK. These results were obtained after removing stocks with negative fund proportions or high risk. Most of the stocks analyzed have a Jensen's Alpha of zero (0), indicating that the returns generated are in line with those expected based on the CAPM and the systematic risk of the stock. This means that these stocks do not significantly outperform or outperform the market.

However, BRIS.JK and EMTK.JK stocks show positive Jensen's Alpha, although the value is very small (around 5.551115×10^{-17} for BRIS.JK and 2.775558×10^{-17} for EMTK.JK). Positive Jensen's Alpha, although small, indicates that these stocks slightly outperform the market, generating slightly higher returns than expected based on the systematic risk. Therefore, these stocks can be considered more profitable compared to other stocks that have zero or negative alpha. In the context of portfolio formation, stocks with positive Jensen's Alpha such as BRIS.JK and EMTK.JK can be maintained or given a larger weight in the portfolio to increase the potential for better returns.

4.2. Single Index Model (SIM)

This approach indicates that the higher the expected return, the greater the inherent risk, even exceeding the risk level of the existing investment portfolio. The following are the results of the Single Index Model (SIM) calculation which includes Beta, Alpha, and Excess Return to Beta (ERB) for each valid stock:

Table 5 : Alpha, Beta, and Expected Return to Beta Values

Share	β	α	(ERB)
ADRO.JK	1.823	0.353	-0.673
AMRT.JK	1.485	-17.331	-12.542
ANTM.JK	-0.072	-2.407	33.192
ARTO.JK	0.918	2.402	1.722
ASII.JK	0.988	0.434	-0.450
BBCA.JK	0.735	3.944	4.458
BBNI.JK	1.478	1.751	0.312
BBRI.JK	2.087	-3.778	-2.673
BMRI.JK	2.081	-1.356	-1.514
BRIS.JK	1.023	1.399	0.480
OPEN.JK	-0.517	-1.625	2.401
CPIN.JK	0.655	4.825	6.446
EMTK.JK	0.329	0.493	0.511
EXCL.JK	0.309	-5.943	-20.262
GOTO.JK	0.222	2.949	12.192
ICBP.JK	0.856	-3.672	-5.187

Source: Data processing

Stocks with positive and α positive ERB such as BBCA.JK, CPIN.JK, and GOTO.JK show better performance than expected based on the SIM model and the overall market. Stocks with negative ERB such as AMRT.JK, EXCL.JK, and BBRI.JK show worse performance than expected and should be excluded from the portfolio. Stocks with β positive (such as BBCA.JK and BRIS.JK) tend to be more sensitive to market movements and can bring greater returns in favorable market conditions. To form an optimal portfolio, stocks with positive ERB and positive Alpha such as BBCA.JK, CPIN.JK, and GOTO.JK can be selected because they show higher returns compared to the risks taken.

After calculating the ERB for each stock, the next step is to compare the ERB with the C^* value (cut-off point). If ERB > C*, the stock is included in the optimal portfolio. C^* is set as the threshold value (cut-off) used to select the best stocks for the portfolio. Based on the calculations made, only one stock meets the ERB > C^* criteria, namely BBCA.JK. This stock has a positive ERB, indicating that the stock provides a higher return compared to the risk taken, and can be included in the optimal portfolio.

Table 6 : Comparison of Expected Return to Beta with cut-off point

Share	(β)	(α)	(ERB)	A_i	B_i	C_i
BBCA.JK	0.8937	0.0108	0.0002	0.0455	187,5611	0.0001

Source: data processing

The crucial step in SIM is to compare the ERB of each stock with the cut-off point value (C^*). If the ERB of the stock is greater than C^* the stock is selected for the optimal portfolio. Table 6 shows the results of this comparison, where only BBCA.JK meets the criteria of ERB > C∗ . BBCA.JK has an ERB of 0.0002 which is C^* greater than 0.0001. This shows that BBCA.JK has a higher return compared to the market risk taken, making it a stock that has the potential to provide better results in the SIM optimal portfolio. Furthermore, Jensen's Alpha can be calculated for BBCA.JK stock and see whether this stock is able to provide additional benefits compared to market risk (IHSG).

Table 7 : Jensen's Alpha Single Index Model

Share	Jensen's Alpha (α)
BBCA.JK	0.0108%

Source: data processing

After identifying BBCA.JK as the only stock included in the optimal portfolio based on the MIS criteria, Jensen's Alpha for BBCA.JK is calculated to evaluate its performance. Table 7 shows that Jensen's Alpha for BBCA.JK is positive (0.0108%). This positive value indicates that BBCA.JK is able to generate slightly higher returns than expected based on the risk taken. In other words, BBCA.JK can be said to beat the market based on this Jensen's Alpha calculation. This further strengthens the argument that BBCA.JK is a good choice for an investment portfolio.

5. Conclusion

Based on the analysis using the Capital Asset Pricing Model (CAPM), BRIS.JK and EMTK.JK stocks are worthy of being included in the optimal portfolio. Both stocks show positive expected returns and slightly outperform the market based on a very small positive Jensen's Alpha value. In particular, EMTK.JK has a (83.23%) lower risk than BRIS.JK (382.57%), making it a safer choice in a portfolio that focuses on risk management. These stocks with positive Jensen's Alpha can be maintained or given a greater weight in the portfolio to increase the potential for better returns.

Meanwhile, based on calculations using the Single Index Model (SIM), BBCA.JK stock is the only stock included in the optimal portfolio. This is because BBCA.JK meets the Excess Return to Beta (ERB) criteria which is greater than the cut-off rate (C^*). This condition indicates that BBCA.JK provides greater returns than expected based on the market risk taken. In addition, the positive Jensen's Alpha value for BBCA.JK (0.0108%) also indicates that this stock is able to generate slightly higher returns than expected, so it can be said to beat the market.

For further research, it is recommended to extend the analysis period to capture a more complete market cycle and observe the long-term impact of economic and political policy changes. In addition, it can be considered to use other portfolio formation models, such as Arbitrage Pricing Theory (APT) or multifactor models, to provide a more comprehensive perspective on the risk factors that affect stock returns. Future research can also compare the performance of portfolios formed by SIM and CAPM with other market indices in Indonesia, not only IDX30, or even stock markets in other countries, to test the generalizability of the findings. Finally, further exploration of the reasons behind the uniform Excess Return to Beta values in some cases, as well as qualitative analysis of the fundamental characteristics of stocks with positive Jensen's Alpha, can provide deeper insights.

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