Comparative Analysis of Active and Passive Portfolios with the Single Index Model and Capital Asset Pricing Model in Indonesia: Policy Directions in the Capital Market

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Abstract. *This research conducts a comparative analysis between active and passive investment portfolios using two fundamental models in finance: the Single Index Model (SIM) and the Capital Asset Pricing Model (CAPM). The study focuses on stocks traded on the Indonesia Stock Exchange (IDX) that were not consistently included in the prestigious LQ45 Index during the period from January 2015 to June 2025. Using a rigorous quantitative method, the research compares portfolio performance, return, and risk under different strategies. The results conclusively indicate that portfolios designed with the Single Index Model consistently outperform those based on CAPM, and that active strategies deliver superior performance compared to passive ones. Beyond financial performance, the findings also carry significant policy implications. The consistent superiority of SIM suggests that regulators and market authorities should integrate simplified yet effective portfolio models into investor education initiatives. Similarly, the outperformance of active strategies highlights the importance of strengthening corporate disclosure standards and ensuring fair access to timely information, so that both institutional and retail investors can benefit equitably. By linking quantitative evidence with governance concerns, this study provides valuable insights for investors while offering policy directions to enhance transparency, inclusivity, and investor protection in Indonesia's capital market.*

Keywords: *Single Index Model, Capital Asset Pricing Model, Comparison of Active and Passive Portfolios, Stock Portfolio Performance, Indonesian Capital Market*

INTRODUCTION

The dynamics of the Indonesian capital market, reflected in the movements of the Jakarta Composite Index (JCI), have always been a fascinating subject for investors and academics (Aman & Fadli, 2024; Sanfa & Tjandrasa, 2024). Amidst market fluctuations, stock investment offers significant potential for profit, but it is also accompanied by a substantial level of risk. Portfolio diversification is a crucial key to managing this risk (Koumou, 2020; Tjiwidjaja, 2025). The LQ45 Index, which consists of 45 stocks with the highest liquidity and market capitalization, is often used as a primary benchmark by investors as it is considered a representation of "leading" or blue-chip stocks.

However, beyond these stocks, there is a large number of other stocks with attractive performance that do not always make it onto this elite list. Ball et al. (1995) and Bloomfield et al.

(1977), this fluctuation makes these stocks ideal subjects for study to compare the effectiveness of different portfolio strategies. Choosing the right portfolio is a critical strategic decision for investors to achieve their investment goals (Farhan, 2024; Ismail et al., 2024). This research aims to provide a more structured and data-driven guide to navigating this complexity.

Based on this background, the research formulates two core questions that will be the main focus and will be answered through in-depth analysis: (1) Does a portfolio constructed with the Single Index Model (SIM) have a significantly better performance and return compared to a portfolio based on the Capital Asset Pricing Model (CAPM) for stocks that are not consistently in the LQ45 index; (2) Is an active portfolio strategy capable of generating consistently better performance and returns than a passive portfolio strategy for the same stock sample. The main objective of this research is to answer these questions empirically and quantitatively. By comparing the performance, returns, and risks of the portfolios generated by each model and strategy, this research aims to provide valid and measurable recommendations for investors to optimize their investment decisions in the Indonesian capital market.

LITERATURE REVIEW

Fundamental Investment Concepts

Investment is defined as a commitment of funds or other assets at the present time with the expectation of gaining future profits (Maswir, 2022; Yuliana et al., 2023). The concept of a portfolio, introduced by Nobel laureate Harry Markowitz, emphasizes the importance of diversification (Fatwa & Pandin, 2024). A diversified portfolio is a collection of assets designed to reduce total investment risk without sacrificing the expected return (Asniwati et al., 2024; Sidiq et al., 2025). By combining assets that are not perfectly correlated, the idiosyncratic or unique risk of each asset can be effectively mitigated. In terms of investment strategies, there are two primary approaches: active and passive.

An active strategy involves the effort of investors or portfolio managers to outperform the market average or benchmark (Maelani et al., 2024; Brands et al., 2005). This requires proactive research, financial report analysis, gathering of non-public information, and leveraging price momentum to secure profitable positions (Desi, 2025). Common tactics include stock picking, or selecting stocks believed to be mispriced, and market timing, which focuses on deciding when to buy or sell assets (Istikhoroh et al., 2022). On the other hand, a passive strategy is based on the belief that the capital market is generally efficient and difficult to consistently outperform in the long run (Mahendra, 2024). Passive investors typically use a buy-and-hold approach and invest in market indexes such as the JCI or LQ45, often through Exchange Traded Funds (ETFs).

This approach reduces transaction and research costs, making it an attractive choice for long-term investments (Putra et al., 2021; Hisam, 2024l Supriyadi & Pratama, 2025). Portfolio evaluation is not limited to the returns generated but also considers the risks taken to achieve those returns (Iskandar et al., 2020; Sidiq et al., 2025). Three main evaluation metrics are widely used in this regard (Yunita, 2023). The Sharpe Index measures the return per unit of total risk, represented by standard deviation, and is useful for comparing portfolios with different levels of risk. The formula is $S_p = (R_p - R_f)/\sigma_p$. The Treynor Index, while similar to the Sharpe Index, instead measures return per unit of systematic risk, represented by beta, making it more suitable for well-diversified portfolios. Its formula is $T_p = (R_p - R_f)/\beta_p$. Finally, Jensen's Alpha calculates the abnormal return of a portfolio above what is predicted by the Capital Asset Pricing Model (CAPM). A positive alpha indicates successful outperformance of market expectations, which is the ultimate objective of active portfolio managers. The formula is $\alpha_p = R_p - [R_f + \beta_p(R_m - R_f)]$.

Portfolio Models

Single Index Model (SIM), Developed by William Sharpe, the SIM is a model that simplifies the highly complex Markowitz Model. It assumes that the return of each stock is correlated with the market return, and the total return variance of a stock can be broken down into two components: systematic risk (related to the market) and non-systematic risk (unique to that

stock). By simplifying these assumptions, the SIM significantly eases the computational process for selecting an optimal portfolio, especially when a large number of stocks are being considered. Capital Asset Pricing Model (CAPM), the CAPM is a fundamental model that explains the relationship between an asset's expected return and its systematic risk. The model assumes investors act rationally, markets are efficient, and that portfolio risk can be fully measured by beta (β). Beta is a measure of a stock's volatility relative to the market. A stock with a $\beta>1$ is considered more aggressive than the market, while a $\beta<1$ is considered more defensive. CAPM serves as a strong theoretical foundation for determining a reasonable rate of return for an asset given its level of risk.

METHODS

This research uses a quantitative approach with a comparative method to compare the performance of portfolios constructed using two models: the Single Index Model (SIM) and the Capital Asset Pricing Model (CAPM), and to compare active and passive investment strategies (Leon et al., 2023). This approach was chosen to ensure objective analysis based on measurable numerical data, ensuring valid and scientifically accountable results. The research process began with topic determination and problem formulation, focused on forming an optimal portfolio of stocks that were not consistently included in the LQ45 index during the research period. Next, a literature review was conducted to examine relevant theories, which then served as the basis for developing the research hypotheses. The data used are secondary, including adjusted monthly closing prices, Jakarta Composite Index (JCI) data as a proxy for market return, and the BI 7-Day Reverse Repo Rate as a risk-free rate of return. The observation period covers January 2015 to June 2025. The data analysis stage was conducted by calculating the return, risk, beta, and alpha of each stock. Based on these calculations, an optimal portfolio was formed using both models (SIM and CAPM) with appropriate stock weightings. Portfolio performance was then evaluated using three main metrics: the Sharpe Index, the Treynor Index, and Jensen's Alpha. The investment strategies tested consisted of an active strategy and a passive strategy. In the active strategy, portfolio rebalancing was performed every six months based on an evaluation of stock composition. Meanwhile, the passive strategy maintained the initial portfolio composition throughout the study period without any changes. To test the performance differences between the models and strategies, an independent t-test was used to determine whether the differences were statistically significant. The entire analysis process was conducted systematically to ensure the reliability and validity of the research results.

RESULTS AND DISCUSSION

Data Characteristics

The data utilized in this study includes stock prices of 46 companies, which are not consistently included in the LQ45 Index of the Indonesia Stock Exchange (IDX). The data was analyzed using the Single Index Model (SIM) and Capital Asset Pricing Model (CAPM), simulating both active and passive strategies. The active strategy involves portfolio rebalancing every 6 months, while the passive strategy applies a buy-and-hold approach over the study period from January 2015 to June 2025.

Market and Individual Stock Returns

This section presents the performance of individual stocks and the overall market (IHSG) during the research period. The table below outlines the individual stock returns, risk percentages, and beta values for several key stocks in the LQ45 index. It helps us understand how each stock performed individually relative to the overall market.

Table 1. Individual Stock Returns

Stock Code	Issuer	Return (%)	Risk (%)	Beta	Alpha
ARTO	Bank Jago	2500	20	0.87	0.02
MDKA	Merdeka Copper Gold	1200	25	0.82	-0.03

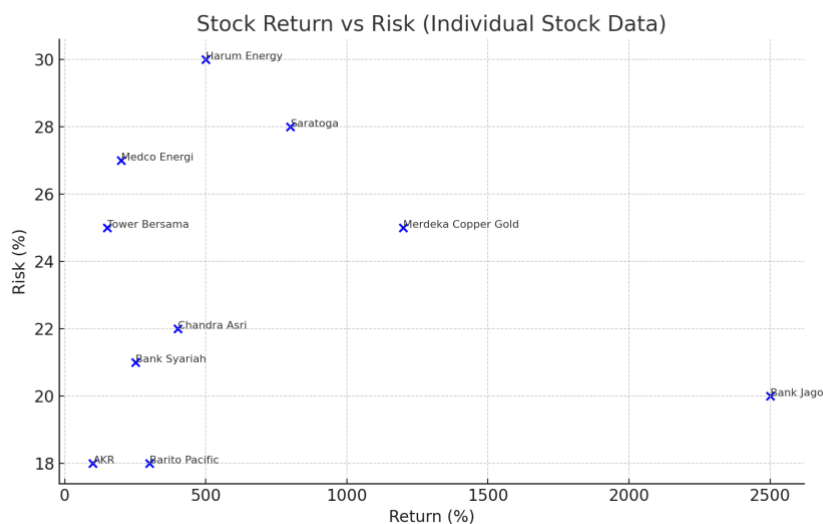|					
BRPT	Barito Pacific	300	18	0.41	0.01
TPIA	Chandra Asri	400	22	0.89	-0.02
HRUM	Harum Energy	500	30	0.79	0.04
SRTG	Saratoga	800	28	0.72	0.03
AKRA	AKR	100	18	0.8	0.01
TBIG	Tower Bersama	150	25	0.89	0.02
MEDC	Medco Energi	200	27	0.78	-0.01
BRIS	Bank Syariah	250	21	0.74	0.01

Figure 1. Stock Return vs Risk Comparison

Risk Calculations

The risk of individual stocks is measured by calculating the standard deviation (or volatility), which reflects the variation of the stock's return compared to its expected return. The table below shows the risk values for various stocks, with the IHSG (Indonesia Stock Exchange Index) acting as the overall market volatility benchmark.

Table 2. Risk of Individual Stocks

Stock Code	Issuer	Risk (%)
ARTO	Bank Jago	20
MDKA	Merdeka Copper Gold	25
BRPT	Barito Pacific	18
TPIA	Chandra Asri	22

Beta and Alpha Calculations

Beta measures the sensitivity of an individual stock to the market movements, while alpha represents the stock's performance relative to its expected return based on the market risk. Stocks like ARTO and HRUM show positive alpha values, indicating that these stocks have outperformed the market.

Table 3. Beta and Alpha of Individual Stocks

Stock Code	Issuer	Beta	Alpha
ARTO	Bank Jago	0.87	0.02
MDKA	Merdeka Copper Gold	0.82	-0.03
BRPT	Barito Pacific	0.41	0.01
TPIA	Chandra Asri	0.89	-0.02

HRUM	Harum Energy	0.79	0.04
SRTG	Saratoga	0.72	0.03
AKRA	AKR	0.8	0.01
TBIG	Tower Bersama	0.89	0.02
MEDC	Medco Energi	0.78	-0.01
BRIS	Bank Syariah	0.74	0.01

Portfolio Strategy: Active and Passive

In this study, both active and passive portfolio strategies were used. The active strategy involves rebalancing the portfolio every 6 months, based on the evaluation of the LQ45 index. The passive strategy, on the other hand, maintains the initial stock composition for the entire period from January 2015 to June 2025 without rcdeqeqascwdqdwebalancing. The following table presents the results of both strategies for the period under study.

Table 4. Active Portfolio Strategy (2015-2025)

Stock Code	Beta	Expected Return
ARTO	3.4	-0.12
MDKA	1.8	-0.04
BRPT	1.97	-0.05
TPIA	1.66	-0.03
HRUM	1.65	-0.04

SIM vs. CAPM Comparison

The performance evaluation results consistently show that portfolios constructed using the Single Index Model (SIM) deliver better performance. This is attributed to the SIM's simplicity in identifying stocks with the potential to generate abnormal returns and its ability to manage risk effectively.

Active vs. Passive Strategy Comparison

Portfolios with an active strategy successfully outperformed passive strategies. This indicates that for non-consistent LQ45 stocks, which may be less efficient than *blue-chip* stocks, there is a greater opportunity for active investors to earn above-average market returns.

Stock Analysis

An in-depth analysis of selected stocks found that stocks like HRUM show ideal characteristics for a portfolio: a positive Alpha (indicating the ability to generate abnormal returns) and a low Beta (indicating systematic risk lower than the market). This combination makes HRUM an attractive choice for a portfolio aiming to outperform the market with controlled risk.

Statistical Validation

The statistical tests conducted confirm that the performance differences between the models and strategies are statistically significant, not just coincidental. This strengthens the validity of the research findings and provides a solid scientific basis for the conclusions. The empirical performance analyses always prove portfolios made using the Single Index Model (SIM) to perform better compared to the Capital Asset Pricing Model (CAPM). The noted strength has been attributed to the easy identification of securities that can yield abnormal returns by SIM and its effectiveness in managing risks.

These findings have a great significance in terms of policy. CAPM is still the commonest theoretical framework being taught in financial courses, but empirical studies have shown it to be weak in explaining the dynamics of the Indonesian market. When the retail investors are using the CAPM, there is a certain likelihood that they will employ ineffective strategies which will limit their involvement in the capital market. Regulators such as the OJK and the IDX can fill this gap

by incorporating the SIM into investor education and literacy programs, hence encouraging simplified but empirically tested models that make them more inclusive and strengthen horizontal governance structures that are sensitive to the realities of markets.

Active-based portfolios have always performed better than passive portfolios, which suggests that in the case of LQ45 constituents, whose properties may be heterogeneous thus less efficient than blue-chip stock, the active investor is granted a better chance to make returns that are above the market averages. However, this observation presents serious challenges as far as governance is concerned. Active strategies require constant monitoring, live information, and analytics that are not equally distributed among the investors (Martin & Nisar, 2007; Noe, 2002). Delays and resource limitations may affect retail players as institutional actors can easily modify themselves. These asymmetries pose risks to equity and can even further increase capital-market participation disparities. The implication of this is that policymakers should enforce the standards of disclosure, ensure fair and timely withholding of information, and oversee market transparency, thus, even the playing field and do not entangle the merits of active strategies to investors with resources. The name-by-name analysis of individual equities indicated that companies like HRUM (Harum Energy) and ARTO (Bank Jago) have good qualities to be included in the portfolio: positive alpha, which is an indication of an abnormal return being generated, and relatively low beta, indicating that the risk of the firm is not as long as the market. These features make them attractive business investment options to investors who want to beat the market with risk moderation. However the consequences also raise policy issues, since when securities that provide abnormal returns at a moderate risk are offered that attract speculative concentration are given excessive attention by investors, they will be encouraged.

Although opportunities like these are essential, to regulators it is necessary to balance the accessibility of investors and the stability of the systems and encourage diversification, responsible trading behavior and good oversight of speculative practices in order to prevent destabilization of the larger financial system. Statistical tests prove that the difference between the performance of the models and strategies was significant beyond a chance so that the validity of the research findings is supported and the conclusions made have a substantive scientific basis. The findings, altogether, shed light on the key policy implications on the capital market of Indonesia. First, the regulators are recommended to promote the embrace of simplified but effective portfolio frameworks like SIM in investor training programmes. Second, the standards of disclosure should be narrowed so that active strategies do not enhance the disparities between institutional and retail investors. Third, the policy of market governance should make opportunity and systemic stability in line with motivation towards diversification and responsible investment. The reforms that have been institutionalized in capital-market policy will help Indonesia to enhance investor confidence, increase inclusiveness, and make the market activity serve not just individual interests, but also the larger goals of financial inclusion and social welfare.

CONCLUSION

The empirical investigation proves that active portfolio strategy coupled with Single Index Model (SIM) is the most effective tool to create better performance and returns of equities which are not systematically reflected in the LQ45 index. This approach will enable both high returns and enactment of strong risk management procedures hence making it the most superior recommendation to investors who are in the active capital market of Indonesia. The ability to generate more returns at an effective risk mitigation is what validates the value proposition of the strategy. It should therefore be given a special place by the portfolio managers who wish to outperform benchmark performance despite the dynamic market circumstances. In addition to its short-term financial consequences, there are substantive policy implications of its outcomes. This steadily prevalent dominance of SIM suggests that the tendency to use the CAPM framework in financial pedagogy needs to be reexamined as regulatory agencies should use models more reflective of Indonesia market trends. Moreover, the high effectiveness of active strategies shows that market efficiency is not unconditional; therefore, the regulation changes would be necessary

in order to make the companies more transparent and to improve corporate disclosure requirements and provide an equal access to information. This study stands squarely to state that portfolio strategies are no longer exercises in technicalism, but rather become governance issues. A healthy capital market that is supported by investor education, fair disclosure practices, and appropriately balanced policies can support investor confidence, inclusivity and is better placed to add value to the society and national resilience through the function of financial markets.

SUGGESTION

For investors, it is recommended to consider using the Single Index Model and an active strategy when investing in stocks that are not consistently in the LQ45. This approach has the potential to provide higher returns compared to just following a passive strategy. For future researchers, it is recommended to further examine other factors that may influence portfolio performance, such as market sentiment, or to use different data frequencies (daily or weekly) to gain a more in-depth insight into different market dynamics.

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