



ANALYSIS OF RISK AND RETURN USING THE CAPM METHOD ON INVESTMENT DECISIONS IN THE IDX30 INDEX FOR THE PERIOD 2020-2024

Lailatus Sa'adah ¹
Nayla Nur Abidah ²
Binti Luthfiyatul ³
Kholifatul Nur Indrayana ⁴
M. Abid Salsabilah B ⁵

ABSTRACT

Problem: This study addresses the issue of stock risk and return in the banking sector companies listed on the Indonesia Stock Exchange (IDX), specifically focusing on the IDX30 index, during the 2020-2024 period. **Objective:** The objective of this study is to analyze the risk and return of banking stocks using the Capital Asset Pricing Model (CAPM) to assess their investment potential. **Method:** A descriptive quantitative approach is used, utilizing secondary data such as stock prices, the Composite Stock Price Index (IHSG), and the BI-7 Day Repo Rate as the risk-free rate. The sample includes four IDX30 banking stocks: BBCA, BBRI, BBNI, and BMRI. **Results:** The results show that all sample stocks have beta values below one, indicating lower systematic risk than the market. However, the realized returns of all stocks are lower than their expected returns based on CAPM, suggesting that the stocks are inefficient or overvalued and therefore not recommended for investment during the study period.

Keywords : CAPM, systematic risk, stock return, banking stocks

Submission : 10 October 2025
Received : 29 November 2025
Accepted : 08 December 2025
DOI: <https://doi.org/10.58222/sdgs.v2.i1.1787>

1. INTRODUCTION

Investing in the capital market requires investors to understand the relationship between risk and return in order to make rational investment decisions. In a dynamic and uncertain market environment, an analytical

¹ Program Studi Manajemen, Universitas KH. Wahab Hasbullah, Indonesia. E-mail: lailatus@unwaha.ac.id

² Program Studi Manajemen, Universitas KH. Wahab Hasbullah, Indonesia. E-mail: naylanurabidah017@gmail.com

³ Program Studi Manajemen, Universitas KH. Wahab Hasbullah, Indonesia. E-mail: lutfib1q16@gmail.com

⁴ Program Studi Manajemen, Universitas KH. Wahab Hasbullah, Indonesia. E-mail: kholifahnurindrayana@gmail.com

⁵ Program Studi Manajemen, Universitas KH. Wahab Hasbullah, Indonesia. E-mail: abidtok98@gmail.com

model is needed to objectively measure risk and determine the expected return. The Capital Asset Pricing Model (CAPM) is one of the most widely used models because it explains the relationship between systematic risk, measured by beta, market return, and the risk-free rate. Previous studies have shown that CAPM remains relevant for evaluating the feasibility of stock investments, including in the banking sector, although its results have not always been consistent in periods of market volatility.

The banking sector, as a key pillar of the national financial system, experienced significant stock price fluctuations during the 2020-2024 period due to the impacts of the pandemic and the economic recovery process. This condition presents a research gap regarding the need for risk and return analysis of banking stocks during this period, particularly those consistently listed in the IDX30 index. The novelty of this research lies in its use of the post-pandemic economic recovery period and its focus on large-cap, highly liquid banking stocks. Therefore, this study aims to analyze the systematic risk and return of banking stocks, calculate expected returns using the CAPM method, and determine investment decisions for banking stocks listed on the Indonesia Stock Exchange.

The capital market is a part of the financial system that relates to public offerings and securities transactions, investment management, issuers, publicly traded companies associated with the securities they issue, and institutions and professions related to securities. According to Sunariyah (2010), investment is the placement of capital in one or more assets that are typically long-term, with the expectation of gaining profits in the future.

According to the Indonesia Stock Exchange (IDX), stocks are a form of capital participation in a company or limited liability corporation. Stocks are also defined as units of book value in various financial instruments that refer to a portion of ownership in a company. Stock return is defined as the income received during the investment period per amount of money invested in the form of stocks (Boediono, 2000). Risk is the opportunity that causes deviations or undesirable events that arise and occur, leading to losses for the company (Addara, 2020).

According to Tandelilin (2010:195), the Capital Asset Pricing Model (CAPM) is an equilibrium model that simplifies the relationship between risk and return, as it uses only one variable (beta) to represent risk.

The following is the formula used in the CAPM method to obtain the value of $E(R_i)$:

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

Where:

$E(R_i)$: Expected rate of return

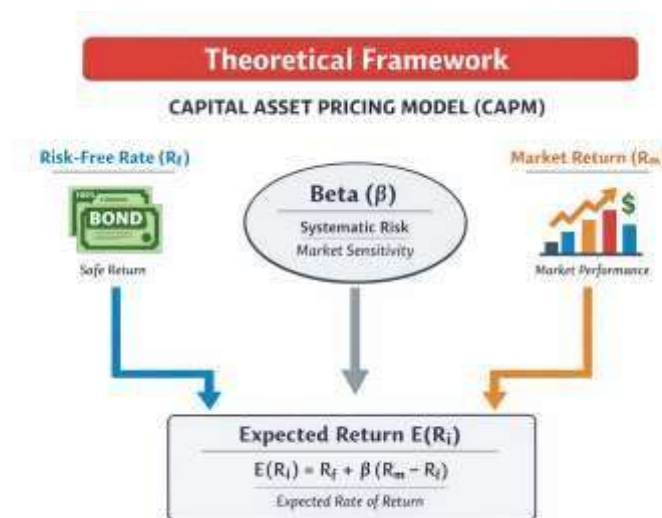
R_f : Risk-free rate

β_i : Systematic risk of each stock

$E(R_m)$: Expected return of the portfolio

2. THEORETICAL FRAMEWORK

The theoretical framework for this study is based on the Capital Asset Pricing Model (CAPM), which provides a foundational approach for understanding the relationship between risk and return in financial markets. CAPM suggests that the expected return of a stock or portfolio is determined by the risk-free rate, the stock's beta (which measures its systematic risk relative to the overall market), and the expected market return. This model helps in evaluating whether a stock's return is sufficient in relation to its risk, considering the broader economic environment and market conditions. By incorporating factors such as the risk-free rate and market return, CAPM assists in assessing the attractiveness of investment options, which is crucial for making informed investment decisions, especially in dynamic sectors like banking and finance. The framework also emphasizes the importance of risk management in investment strategies, particularly when evaluating stocks within an index like IDX30.



3. METHODOLOGY

This study is classified as descriptive research with a quantitative approach because it aims to describe investment decision-making using the Capital Asset Pricing Model (CAPM) on the IDX30 index on the Indonesia Stock Exchange. According to Arikunto (2019), descriptive research is a type of study that aims to examine a specific condition, situation, or event and then present the results in a quantitative report. According to Sugiyono (2019), quantitative methods are research methodologies based on positivism and are considered scientific methods because they adhere to the principles of being systematic, objective, measurable, rational, and concrete. In this study, the research object consists of all companies categorized in the banking sector of the IDX30 index during the period from 2020 to 2024, with a population of 6 companies.

4. RESULTS AND DISCUSSIONS

Individual Stock Return Rates

Table 1. Individual stock return rate (R_i) for the period 2020-2024

No	Stock Code	Company	R_i
1	BBCA	PT Bank Central Asia Tbk	0.00932
2	BBRI	PT Bank Rakyat Indonesia (Persero) Tbk	0.00800
3	BNRI	PT Bank Negara Indonesia (Persero) Tbk	-0.01667
4	BMRI	PT Bank Mandiri (Persero) Tbk	0.01406
R_i Lowest (BNRI)			
R_i Highest (BMRI)			

Source: Excel data processed, 2025.

Based on the table, BBNI shares have the lowest R_i value of -0.01667 , while BMRI shares have the highest R_i value of 0.01406 . Meanwhile, BBCA and BBRI shares show positive R_i values of 0.00932 and 0.00800 , respectively, indicating that these shares provided positive average returns during the research period.

Market Return Rate

In the period from 2020 to 2024, the average market return rate was 0.04069 or 4.07% . The highest market return rate during the research period from 2020 to 2024 occurred in November 2020 with a value of 0.0944 or 9% . This situation indicates that trading on the stock exchange was very active. Meanwhile, the lowest market return rate during the 2020 to 2024 period occurred in March 2020 with a value of (-0.16758) or (-17%) . This situation indicates that trading on the stock exchange experienced a slowdown or decline. The closing price of the IHSG during the period from 2020 to 2024 reached its highest value in August 2024 at IDR $7,671$ and reached its lowest value in March 2020 at IDR $4,539$.

Risk-Free Rate of Return

Table 2. Calculation Results of the Risk-Free Rate of Return

TOTAL	2.8425
Monthly average	0.2369
Annual average	0.5685
R_f Highest	0.0625
R_f Lowest	0.0350

Source: Data processed by the author, 2025

Based on the data presented in Table 4.3, the average annual risk-free rate of return in Indonesia is 0.5685 or 56.85% , while the average monthly rate is 0.2369 or 23.69% . During the research period, interest rates fluctuated. This picture shows that the national economy also experienced ups and downs after the pandemic.

Systematic Risk

Table 3. Systematic Risk or beta (β_i)

No	Stock Code	Beta (β_i)
1	BBCA	0.9078
2	BBRI	0.6353
3	BBNI	0.4644
4	BMRI	0.5626

Source: Data processed by the author, 2025

Based on the data presented in Table 4.4, each stock shows a different beta value. BBCA shares owned by PT Bank Central Asia show a beta value of 0.9078, which is less than one ($B < 1$), so they can be said to be stocks with lower systematic risk. The same applies to BBNI, BBRI, and BMRI shares.

Table 4. Expected return rate in the research sample

NO	STOCK CODE	COMPANY	E(Ri)	E(Ri)%
1	BBCA	PT Bank Central Asia Tbk	1.15801	116
2	BBRI	PT Bank Rakyat Indonesia Tbk	1.20546	121
3	BNRI	PT Bank Negara Indonesia Tbk	2.16985	217
4	BMRI	PT Bank Mandiri Tbk	1.55749	156
Average			1.52270	152%

Source: Data processed by the author, 2025

Table 4 presents the calculation of $E(R_i)$ based on the CAPM method from the four sample companies in this study. From the calculation results of the four sample companies, the average expected rate of return is 1.52270 or 152%. The lowest $E(R_i)$ value is 1.15801 or 116% with a systematic risk (B_i) value of 0.4644, which is owned by PT Bank Negara Indonesia with the stock code BBNI. while the highest $E(R_i)$ value is 2.16985 or 217% with a beta value of 0.9078, which is owned by PT Bank Central Asia with the stock code BBCA. This situation shows that the size of the expected rate of return depends on the size of the expected systematic risk.

Classification of Efficient and Inefficient Stocks

Table 5. Stock classification, evaluation, and investment decisions

No	Code	Company	R_i	$E(R_i)$	$[R_i - E(R_i)]$	Evaluation	Investment Decision
1	BBCA	PT Bank Central Asia Tbk	0.00932	1.15801	-1.14869	Inefficient	Sell
2	BBRI	PT Bank Rakyat Indonesia Tbk	0.00800	1.20546	-1.19746	Inefficient	Selling
3	BMRI	PT Bank Mandiri Tbk	0.01406	1.55749	-1.54343	Inefficient	Sell
4	BBNI	PT Bank Negara Indonesia Tbk	0.01667	2.16985	-2.18652	Inefficient	Selling

Source: Data processed by the author, 2025

Table 5 shows that all four stocks are inefficient (*overvalued*) stocks, because the individual rate of return (R_i) for each stock is lower than the expected rate of return $E(R_i)$ based on the Capital Asset Pricing Model (CAPM) method. This condition indicates that the actual rate of return obtained by investors has not been able to meet the rate of return that should be received in accordance with the systematic risk borne.

The criteria for determining efficient stocks are based on a comparison between individual returns and expected returns, i.e., if the individual return is greater than the expected return ($R_i > E(R_i)$), then the stock is categorized as an efficient stock (*undervalued*). Conversely, if the individual rate of return is less than the expected rate of return ($R_i < E(R_i)$), then the stock is categorized as inefficient (*overvalued*).

Based on the results of the study, all sample stocks have a value (R_i) that is smaller than the value of $E(R_i)$, so the investment decision is not to recommend purchasing these stocks. The investment decision that investors can make for stocks in the inefficient category is to sell the stocks at the current highest price or postpone the purchase until the stock price adjusts in the future. Thus, the CAPM method can be used as a tool for investors to make rational investment decisions in accordance with the expected level of risk and return.

DISCUSSION

Description of Expected Return $E(R_i)$

The expected rate of return is the amount of profit expected by investors from their investment activities. From the four companies sampled in this study, the expected rate of return $E(R_i)$ was calculated to be positive. PT Bank Central Asia Tbk. with the stock code BBCA generated a stock rate of return of 1.15801 or 116%. Then, PT Bank Mandiri Tbk. with the stock code BMRI produced a stock return rate of 1.55749 or 156%. Then PT Bank Rakyat Indonesia Tbk. with stock code BBRI produced a stock return rate of 1.20546 or 121%. Finally, PT Bank Negara Indonesia Tbk. with stock code BNRI produced a stock return rate of 2.16985 or 217%.

Classification of Efficient and Inefficient Stocks and Investment Decisions

When investing, it is essential for investors to have the knowledge to classify stocks as efficient or inefficient in order to obtain maximum returns. Efficient stocks are stocks with an individual rate of return greater than the expected rate of return [$(R_i) > E(R_i)$]. Meanwhile, stocks are considered inefficient because their individual rate of return is lower than the expected rate of return [$(R_i) < E(R_i)$]. This is presented in Table 5 Classification of efficient and inefficient stocks and investment decisions.

5. CONCLUSION

Based on the results of the research and discussion, it can be concluded that the systematic risk (beta) of the four sample stocks is below one, indicating that the banking sector stocks listed on the IDX30 index during the 2020-2024 period have lower systematic risk than the overall market risk. BBCA's beta is 0.9078, BBRI's is 0.6353, BBNi's is 0.4644, and BMRI's is 0.5626, meaning these stocks are less sensitive to market fluctuations. However, when comparing realized returns (R_i) with expected returns ($E(R_i)$) using the

Capital Asset Pricing Model (CAPM), it is evident that the actual returns are lower than the expected returns for all the stocks. This suggests that the stocks are overvalued or inefficient, as investors are not receiving returns proportional to the risks they are bearing.

Based on these findings, it is recommended that investors carefully assess the risks and returns of banking stocks before making investment decisions, especially in light of the underperformance of realized returns compared to the expected returns. Additionally, companies should focus on improving their performance to align actual returns with the expected ones, possibly by addressing factors contributing to inefficiency or overvaluation. For future research, it would be useful to explore additional factors influencing the performance of stocks in volatile market conditions, such as external economic events or changes in government policy, which might provide a more comprehensive understanding of stock behavior. Furthermore, expanding the research to include other sectors or regions may help validate the findings and offer broader insights into investment strategies.

ACKNOWLEDGEMENTS

We would like to express our deepest gratitude to all parties who have contributed to the success of this study. We also extend our thanks to the Indonesia Stock Exchange (IDX) for providing access and information related to capital market data, which has been very helpful in this research.

REFERENCES

- Abdillah, A., Putra, A. K., Manajemen, J., Ekonomi, F., & Karawwang, U. S. (2021). Comparative Analysis of the Accuracy of CAPM and APT in Investment Decision Making for Banking Sector Stocks. 7(1), 42-50. <https://doi.org/10.31289/jab.v7i1.43364>
- Agung, A., & Suarjaya, G. (2023). APPLICATION OF THE CAPITAL ASSET PRICING MODEL IN. 12(09), 1718-1728.36
- Analisis, D., & Pasar, I. (2023). Pocket book on capital markets.
- Andalas, U., Optimal, P., Asset, C., & Model, P. (2023). CAPITAL ASSET PRICING MODEL (CAPM) IN THE FORMATION OF AN OPTIMAL PORTFOLIO OF JAKARTA ISLAMIC INDEX (JII) STOCKS. 12(4), 299-308.
- Maulana, A. R., & Pontianak, P. N. (2023). CAPM ANALYSIS IN BANKING INVESTMENT DECISION MAKING (CASE STUDY OF PT. BANK RAKYAT INDONESIA Tbk). 12, 186-195. <https://doi.org/10.26418/jaakfe.v12i2.67101>
- Purnamasari, E. D., & Kunci, K. (2024). CAPITAL ASSETS PRICING MODEL (RISK LEVEL AND RETURN) IN STOCK INVESTMENT DECISIONS. 7(2), 1493-1505.
- Lailatus Sa'adah, SE.M.M. (June, 2020). FINANCIAL MANAGEMENT. Jombang: LPPM UNWAHA.
- Lailatus Sa'adah, SE.M.M. (September, 2025). ECONOMIC AND BUSINESS Jombang: LPPM UNWAHA.
- Shafly, M. (2025). Analysis of the CAPM (Capital Asset Pricing Model) Method in Determining Stock Investment (in General Insurance Sub-Sector Companies on the Indonesia Stock Exchange). 5. <https://doi.org/10.51903/jupea.v5i2.4870>
- Sudarmadji, R. (n.d.). INVESTMENT ANALYSIS TEXTBOOK.

- Urwah, K. N., Farida, I., & Faozi, A. Z. (2024). Analysis of the Capital Asset Pricing Model (CAPM): Basis for Stock Investment Decision Making in the Banking Sector. 8, 333-344.
- Widjanarko, H. (2020). Stock investment.
- Yusri, A., & Dewi, A. K. (2025). ANALYSIS OF THE APPLICATION OF THE CAPITAL ASSET PRICING MODEL (CAPM) IN INVESTMENT DECISION-MAKING FOR STOCKS IN THE FOOD AND BEVERAGE SUBSECTOR FOR THE PERIOD 2019-2023. 11(1), 23-36.