

ANALYSIS OF DECISION MAKING INVESTMENT IN SHARES OF NON-BUMN BANKING COMPANIES USING THE CAPITAL ASSET PRICING MODEL (CAPM) METHOD

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Abstract

A stock investment depends on the potential investor's accuracy in finding and processing information to help make investment decisions and determine how much risk and profit can be obtained in the future. The aim of this research is to analyze stock risks and returns as well as stock investment decisions using the CAPITAL ASSET PRICING MODEL (CAPM) method on shares in the banking sector listed on the Indonesia Stock Exchange in 2020-2022. This research uses a type of descriptive research with a quantitative approach using secondary research data in the form of monthly closing stock prices (Closing Price), monthly Composite Stock Price Index (IHSG) and monthly SBI interest rate (BI Rate). The population in this research are companies in the banking sector listed on the Indonesia Stock Exchange in 2020-2022. The number of samples in this study was 37 shares. The sampling technique in this research used purposive sampling. The data collection method in this research uses the documentation method. The data analysis technique used is the CAPITAL ASSET PRICING MODEL (CAPM) method. The research results show that of the 37 companies sampled, there are twenty-five (25) stocks that are classified as efficient or undervalued because they have an individual rate of return (R_i) that is greater than the expected rate of return. Shares that are classified as efficient are: AGRO, AGRS, ARTO, BABP, BBKA, BBHI, BBKP, BBYB, BGTG, BINA, BJTM, BJBR, BKSW, BMAS, BNBA, BNGA, BNII, BNLI, BRIS, BSIM, BVIC, INPC, PNBS, PNBK, NOBU, then the recommended decision for investors is to buy shares and there are twelve (12) shares which are classified as inefficient or overvalued shares because the individual return (R_i) is smaller than the expected rate of return. Shares that are classified as inefficient are: BBMD, BDMN, BEKS, BTPN, BTPS, DNAR, MAYA, MCOR, SDRA, NISP, MEGA, BACA, so the investment decision recommended to investors is to sell shares.

Keywords: *Indonesian Stock Exchange, CAPITAL ASSET PRICING MODEL (CAPM), Return and Risk*

1. INTRODUCTION

In the current era of globalization, investment has become a trend which is called the era of investment without limitations of time and space. Aulia & Ahmad(2023)describes investment as delaying current consumption into productive assets over a certain period of time with the aim of increasing profits in the future. Investors in the stock market or capital market have a tendency to choose shares with high returns with low risk. However, the greater the risk of an asset, the higher the return obtained with the principle of "high risk, high return". The investments made definitely have different levels of risk and return.Funds originating from the public that will be invested are collected in one investment forum called the capital market. Chindrianti(2021)explains that investment activities are used as a forum to bring together those who need them (issuers) and those who provide funds (investors). Aprianlinita(2019)explains that investors in the stock market or capital market have a tendency to choose shares with high returns, but with low risk. The capital market is a means of meeting buyers and sellers to exchange financial instruments in the form of shares, bonds, mutual funds, Exchange Traded Funds (ETF), and derivatives.

What differentiates the capital market from other markets lies in the profits or benefits obtained in the future from assets purchased today.(Sukardi, 2020). Banking operations during the pandemic were hit by various credit risks, liquidity risks and other risks that affected banking itself(Ardhaswara & Suarjaya, 2023). From 2019 to 2020, commercial banks experienced a decline in profits of Rp. 46,863 billion. The government then launched various policies such as liquidity and credit restructuring to help banks survive this pandemic. These measures have enabled the banking sector to survive and recover gradually during the pandemic, which is reflected in an increase in net interest of IDR. 5,805 billion and an increase in operating income of Rp. 19,414 billion in banks starting from 2019 to December 2020. This phenomenon can occur because in general investment activities are buying and selling financial instruments in the form of securities on the capital market, especially shares (www.ojk.go.id).

Investing in shares can indeed bring big profits for investors. Investors choose to create portfolios that reduce risk and optimize profits achieved. Tandelilin(2017)describing returns is one of the factors that motivate investors to invest, as well as a reward for the investor's courage to bear the risks of the investment they make. Risk (β) can be interpreted as a form of uncertainty regarding situations that will arise in the future due to decision making based on various current considerations.Indonesia Stock Exchange (BEI), the Bisnis-27 index is a stock index officially launched by the Indonesia Stock Exchange in collaboration with the Bisnis Indonesia daily which consists of 27 company shares. The Equilibrium Model is essential for accurately estimating security returns. Methods that can help investors in making investment decisions, such as using the CAPITAL ASSET PRICING MODEL (CAPM) balance model. Fahmi(2015) describes the CAPITAL ASSET PRICING MODEL (CAPM) model explaining the relationship between return and risk (β). Susanti(2021)explains this model connecting the expected level of return with the return of a risky asset in balanced market conditions (market equilibrium).

2. RESEARCH METHODS

The population in this research is banking sector companies listed on the Indonesia Stock Exchange in 2020-2022. This research took samples using the Purposive Sampling method, namely determining samples using certain criteria. Based on these criteria, the total research sample was 37 company shares and the total number of research data was 111. The type of research used is descriptive with a quantitative approach. The data collection method in this research is the documentation method. The data sources used in this research are secondary data in the form of monthly closing stock prices (Closing Price), monthly Composite Stock Price Index (IHSG) and monthly SBI interest rate (BI Rate). The calculations used are using the Microsoft Excel program. The data analysis technique used in this research is the CAPITAL ASSET PRICING MODEL (CAPM) by:

Calculating the Rate of Return on Individual Stocks (R_i)

$$R_i = \frac{(P_t - P_{t-1})}{P_{t-1}} \quad 1)$$

Information:

R_i = Individual stock rate of return

P_t = Stock price in the current period

P_{t-1} = Share price in the previous period

Calculating Market Rate of Return (R_m)

$$R_m = \frac{IHSG_t - IHSG_{t-1}}{IHSG_{t-1}} \quad 2)$$



Information:

R_m = Average market rate of return

$IHSG_t$ = Composite stock price index for the current period

$IHSG_{t-1}$ = Composite stock price index for the last period

Calculating the Risk-Free Rate of Return (R_f)

$$R_f = \frac{\sum_{j=1}^n \text{Tingkat Suku Bunga SBI}}{n} \quad 3)$$

Information:

R_f = Risk-free rate of return

n = Number of periods

Calculating Systematic Risk (β)

$$\beta_i = \frac{\sigma_{im}}{\sigma_m^2} \quad \beta_i = \frac{n(\sum RiRm) - (\sum Ri)(\sum Rm)}{n(\sum Rm)^2 - (\sum Rm)(\sum Rm)} \quad 4)$$

Information:

β_i = Benchmark risk that cannot be diversified away from securities/systematic risk.

σ_{im} = Covariance between stock i's income and market income

σ_m^2 = Market Variance

n = Research period (months)

$\sum Ri$ = Total individual stock returns

$\sum Rm$ = Friday returns market

$\sum RiRm$ = The sum of individual stock returns times the market return.

Calculating the expected Rate of Return $E(R_i)$

$$E(R_i) = R_f + [E(R_m) - R_f] \beta_i \quad 5)$$

Information:

$E(R_i)$ = Expected rate of return

R_f = Risk-free rate of return

$E(R_m)$ = Expected market rate of return

β_i = Systematic risk

3. RESULTS AND DISCUSSION

The individual rate of return is income received by investors in the form of dividends when investing in shares. The dividend return rate can be calculated by calculating the adj close price this month, denoted by "Pt" minus the adj close price last month, denoted by "P_{t-1}". Then divided by Adj close last month which is denoted by "P_{t-1}".

The calculation results show that there are 8 shares that have an average returns negative, namely BACA, BBMD, BEKS, BTPN, MAYA, MCOR, NISP, and SDRA shares with R_i values of -0.00387, -0.00172, -0.01869, -0.00191, -0.06063 respectively, -0.00588, -0.00080, and -0.00079. PT Bank Mayapada Internasional Tbk (MAYA) has the lowest average individual stock return of -0.06063, while PT Bank Nationalnoba Tbk (NOBU) has the highest average individual stock return, namely 0.24899.

Table 1. Individual Stock Return Rates

NO	COMPANY NAME	STOCK CODE	RI
1	PT Bank Raya Indonesia Tbk	AGRO	0.06890
2	PT Bank IBK Indonesia Tbk	AGRS	0.01078
3	PT Bank Jago Tbk	ARTO	0.05392
4	PT Bank MNC Internasional Tbk	BABP	0.04363
5	PT Bank Central Asia Tbk	BBCA	0.01036
6	PT Bank Capital Indonesia Tbk	READ	-0.00387
7	PT Allo Bank Indonesia Tbk	BBHI	0.14047
8	PT Bank KB Bukopin Tbk	BBKP	0.00653
9	PT Bank Mestika Dharma Tbk	BBMD	-0.00172
10	PT Bank Neo Commerce Tbk	BBYB	0.07491
11	PT Bank Danamon Indonesia Tbk	BDMN	0.00040
12	PT Banten Regional Development Bank Tbk	BEKS	-0.01869
13	PT Bank Ganesha Tbk	BGTG	0.05248
14	PT Bank Ina Perdana Tbk	BUILD	0.08039
15	PT West Java Regional Development Bank Tbk	BJBR	0.01537
16	PT East Java Regional Development Bank Tbk	BJTM	0.01185
17	PT Bank QNB Indonesia Tbk	BKSW	0.00963
18	PT Bank Maspion Indonesia Tbk	BMAS	0.05749
19	PT Bank Bumi Arta Tbk	BNBA	0.10850
20	PT Bank CIMB Niaga Tbk	BNGA	0.01536
21	PT Bank Maybank Indonesia Tbk	BNII	0.01195
22	PT Bank Permata Tbk	BNLI	0.00467
23	PT Bank Syariah Indonesia Tbk	BRIS	0.06716
24	PT Bank Sinarmas Tbk	BSIM	0.02482
25	PT Bank BTPN Tbk	BTPN	-0.00191
26	PT Bank BTPN Syariah Tbk	BTPS	0.00048
27	PT Bank Victoria International Tbk	BVIC	0.03277
28	PT Bank Oke Indonesia Tbk	DNAR	0.00608
29	PT Bank Artha Graha Internasional Tbk	INPC	0.03859
30	PT Bank Mayapada Internasional Tbk	MAYA	-0.06063
31	PT Bank China Construction Bank Indonesia Tbk	MCOR	-0.00588
32	PT Bank Mega Tbk	MEGA	0.00295
33	PT Bank OCBC NISP Tbk	NISP	-0.00080
34	PT Bank Nationalnobu Tbk	NOBU	0.24899
35	PT Bank Pan Indonesia Tbk	PNBN	0.01504
36	PT Bank Panin Dubai Syariah Tbk	PNBS	0.19044
37	PT Bank Woori Saudara Indonesia 1906 Tbk	BANK	-0.00079

Source: Processed Data (2023)

3.2 Calculating the Market Rate of Return (R_m) PT Bank Woori Saudara Indonesia Tbk

The market rate of return is a stock return that can be seen from the development of the stock price index. The stock price index used in this research uses the Composite Stock Price Index (IHSG) because it represents all stock trading activities listed on the Indonesia Stock Exchange (BEI). The return of a stock can be measured by measuring the difference between the current month's composite stock price index which is symbolized "" and the previous month's stock price



index which is symbolized $'''$. Then divided by the previous month's composite stock price index, denoted by $'''$. $IHSG_t IHSG_{t-1} IHSG_{t-1}$

Based on the calculation of the market rate of return (R_m), it can be seen that the average rate of return $returns_{market}$ during the 2020-2022 period is equal to 0.00340. These results were obtained by dividing the market rate of return, namely 0.12581, with a period of 37 months. The highest market return rate occurred in November at 0.09442, while the lowest market return rate occurred in March 2020 with a value of -0.16758

3.3 Calculating the Risk-Free Rate of Return (R_f)

Risk-free rate of return (R_f) is the risk-free rate of return on an investment using BI interest rate data. The risk-free rate of return can be measured by dividing the average number of Bank Indonesia Certification (SBI) interest rates by the length of the research period (monthly). The 2020-2022 average risk-free rate is 0.003270. From these calculations, the result " R_f " is 0.003270. In December 2022 the SBI interest rate will be at the highest level, namely 5.50% or 0.055. The lowest SBI interest rate with a value of 3.50% or 0.035 occurred in February 2021- July 2022.

3.4 Calculating Systematic Risk (β)

Beta is the systematic risk of a stock. Beta shows the relationship between stock returns and market returns because it is the quotient between stock covariance and market variance. The CAPITAL ASSET PRICING MODEL (CAPM) method explains that investors must consider the systematic risk (β) of a stock because it influences changes in the price of a stock and also the size of the expected return. The calculation results show that of the 37 shares used as research samples, there are 13 shares that have a beta value of less than one ($\beta < 1$) or are often called defensive shares, these shares are classified as shares with a low level of risk and there are 24 shares that have a beta more than 1 ($\beta > 1$) or is often called aggressive. PT Allo Bank Indonesia Tbk (BBHI) shares have the highest beta value of 4.18407, while the lowest beta is owned by PT Bank Panin Dubai Syariah Tbk (PNBS) which has the lowest beta value of 0.06413.

Table 2. Systematic Risk

NO	COMPANY NAME	STOCK CODE	BI
1	PT Bank Raya Indonesia Tbk	AGRO	3.81921
2	PT Bank IBK Indonesia Tbk	AGRS	0.83632
3	PT Bank Jago Tbk	ARTO	2.88605
4	PT Bank MNC Internasional Tbk	BABP	0.92094
5	PT Bank Central Asia Tbk	BBCA	0.92195
6	PT Bank Capital Indonesia Tbk	READ	4.18407
7	PT Allo Bank Indonesia Tbk	BBHI	3.25577
8	PT Bank KB Bukopin Tbk	BBKP	1.03920
9	PT Bank Mestika Dharma Tbk	BBMD	2.04640
10	PT Bank Neo Commerce Tbk	BBYB	1.98217
11	PT Bank Danamon Indonesia Tbk	BDMN	0.12823
12	PT Banten Regional Development Bank Tbk	BEKS	2.39417
13	PT Bank Ganesha Tbk	BGTG	0.39053
14	PT Bank Ina Perdana Tbk	BUILD	1.54820
15	PT West Java Regional Development Bank Tbk	BJBR	1.73070
16	PT East Java Regional Development Bank Tbk	BJTM	0.42372
17	PT Bank QNB Indonesia Tbk	BKSW	1.60112
18	PT Bank Maspion Indonesia Tbk	BMAS	2.90141
19	PT Bank Bumi Arta Tbk	BNBA	1.45710
20	PT Bank CIMB Niaga Tbk	BNGA	1.72559
21	PT Bank Maybank Indonesia Tbk	BNII	1.53802

22	PT Bank Permata Tbk	BNLI	2.78095
23	PT Bank Syariah Indonesia Tbk	BRIS	0.68686
24	PT Bank Sinarmas Tbk	BSIM	1.43895
25	PT Bank BTPN Tbk	BTPN	2.02566
26	PT Bank BTPN Syariah Tbk	BTPS	2.08915
27	PT Bank Victoria International Tbk	BVIC	0.18272
28	PT Bank Oke Indonesia Tbk	DNAR	2.06671
29	PT Bank Artha Graha Internasional Tbk	INPC	1.37962
30	PT Bank Mayapada Internasional Tbk	MAYA	1.59531
31	PT Bank China Construction Bank Indonesia Tbk	MCOR	0.34711
32	PT Bank Mega Tbk	MEGA	0.06413
33	PT Bank OCBC NISP Tbk	NISP	1.68984
34	PT Bank Nationalnobu Tbk	NOBU	2.56839
35	PT Bank Pan Indonesia Tbk	PNBN	0.32645
36	PT Bank Panin Dubai Syariah Tbk	PNBS	0.30698
37	PT Bank Woori Saudara Indonesia 1906 Tbk	SDRA	0.22212

Source: Processed Data (2023)

3.5 Calculating the expected rate of return E(Ri)

The expected rate of return [E(Ri)] is the amount of profit that investors expect from the stock investment that has been made. Method *CAPITAL ASSET PRICING MODEL* (CAPM) itself is used to calculate the expected rate of return using the variables risk-free rate of return (Rf), average market rate of return [E(Rm)], and also the systematic risk of each stock (β). Based on the calculations carried out, the total expected value *returns* for all shares in the research sample is 0.12847 with an average of 0.00347. The company whose shares have the highest level of expected return is PT Allo Bank Indonesia Tbk (BBHI) at 0.00381, while the company whose shares have the lowest expectation is PT Bank Panin Dubai Syariah Tbk (PNBS) at 0.00328. The data is obtained by calculating the expected rate of return according to the formula:

$$E(R_i) = R_f + [E(R_m) - R_f] \beta_i$$

Example of calculating expected profit:

$$E(R_i) = 0.003270 + [0.00340 - 0.003270] 3.81921 = 0.00377$$

Table 3. Efficient Stock Classification and Investment Decisions

STOCK CODE	RI	E(RI)	INFORMATIO N	DECISION
AGRO	0.06890	0.00377	Efficient	Buy
AGRS	0.01078	0.00338	Efficient	Buy
ARTO	0.05392	0.00365	Efficient	Buy
BABP	0.04363	0.00339	Efficient	Buy
BBCA	0.01036	0.00339	Efficient	Buy
BBHI	0.14047	0.00381	Efficient	Buy
BBKP	0.00653	0.00369	Efficient	Buy
BBMD	-0.00172	0.00341	Not efficient	Sell
BBYB	0.07491	0.00354	Efficient	Buy
BDMN	0.00040	0.00353	Not efficient	Sell
BEKS	-0.01869	0.00329	Not efficient	Sell



BGTG	0.05248	0.00358	Efficient	Buy
BUILD	0.08039	0.00332	Efficient	Buy
BJTM	0.01185	0.00347	Efficient	Buy
BJBR	0.01537	0.00349	Efficient	Buy
BKSW	0.00963	0.00333	Efficient	Buy
BMAS	0.05749	0.00348	Efficient	Buy
BNBA	0.10850	0.00365	Efficient	Buy
BNGA	0.01536	0.00346	Efficient	Buy
BNII	0.01195	0.00349	Efficient	Buy
BNLI	0.00467	0.00347	Efficient	Buy
BRIS	0.06716	0.00363	Efficient	Buy
BSIM	0.02482	0.00336	Efficient	Buy
BTPN	-0.00191	0.00346	Not efficient	Sell
BTPS	0.00048	0.00353	Not efficient	Sell
BVIC	0.03277	0.00354	Efficient	Buy
DNAR	0.00608	0.00329	Not efficient	Sell
INPC	0.03859	0.00354	Efficient	Buy
MAYA	-0.06063	0.00345	Not efficient	Sell
MCOR	-0.00588	0.00348	Not efficient	Sell
SDRA	-0.00079	0.00332	Not efficient	Sell
PNBS	0.19044	0.00328	Efficient	Buy
PNBN	0.01504	0.00349	Efficient	Buy
NOBU	0.24899	0.00360	Efficient	Buy
NISP	-0.00080	0.00331	Not efficient	Sell
MEGA	0.00295	0.00331	Not efficient	Sell
READ	-0.00387	0.00330	Not efficient	Sell

Of the 37 companies used as research samples, there are twenty-five (25) shares that are classified as efficient or undervalued, namely AGRO, AGRS, ARTO, BABP, BBKA, BBHI, BBKP, BBYB, BGTG, BINA, BJTM, BJBR, BKSW, BMAS, BNBA, BNGA, BNII, BNLI, BRIS, BSIM, BVIC, INPC, PNBS, PNBK, NOBU, then the recommended decision for investors is to buy shares and there are twelve (12) shares that are classified as inefficient or overvalued shares, namely BBMD, BDMN, BEKS, BTPN, BTPS, DNAR, MAYA, MCOR, SDRA, NISP, MEGA, BACA, then the investment decision recommended to investors is to sell shares.

4. CONCLUSION

Based on the research results, of the 37 shares used as research samples, it shows that PT Bank Nationalnoba Tbk (NOBU) shares have the highest average individual share return, namely 0.24899. Apart from that, based on the calculation of the expected stock rate of return $[E(R_i)]$, the total value of the rate of return for all stocks in the research sample is 0.12847 with an average of 0.00347. The company whose shares have the highest expected return on shares is PT Allo Bank Indonesia Tbk (BBHI) of 0.00381. After comparing the rate of return of each share (R_i) with the expected rate of return of shares $[E(R_i)]$, of the 37 companies used as research samples, there were twenty-five (25) shares that were classified as efficient or undervalued, namely AGRO, AGRS, ARTO, BABP, BBKA, BBHI, BBKP, BBYB, BGTG, BINA, BJTM, BJBR, BKSW, BMAS, BNBA, BNGA, BNII, BNLI, BRIS, BSIM, BVIC, INPC, PNBS, PNBK, NOBU, then the

recommended decision to investors is to buy shares and there are twelve (12) shares which are classified as inefficient or overvalued shares, namely BBMD, BDMN, BEKS, BTPN, BTPS, DNAR, MAYA, MCOR, SDRA, NISP, MEGA, BACA, then the recommended investment decision to investors is to sell shares. This research has limitations, namely that it only uses the Capital Asset Pricing Model (CAPM) method, so it is hoped that future researchers will use other methods such as Arbitrage Pricing Theory (APT), a method used to determine investment decisions so that there is a comparison between the method used by researchers and the method used by researchers. other. Based on the results of the research that has been carried out, there are several contributions to this research, including the following:

a. Theoretical Contributions

It is hoped that this research can increase insight and knowledge related to investment in the capital market, as well as about the CAPITAL ASSET PRICING MODEL (CAPM) which has been studied in lectures, and can be used as information material for future researchers.

b. Practical Contribution

This research is expected to increase knowledge in the field of financial management, especially for investors and potential investors in making decisions to invest in the capital market, as well as provide material for consideration for investors and potential investors in making investments, apart from that it can provide an overview of the calculation of share prices with capital. CAPITAL ASSET PRICING MODEL (CAPM), so that you can maximize investment in the capital market. It is hoped that the results of this research can become reference material regarding business or methods to be taken if a company experiences financial difficulties and become input for the company to improve its performance, so that the company does not go bankrupt, and is always the target of investors in making investments.

Based on the conclusions above, there are several suggestions that can be put forward as follows:

- a. Future researchers are expected to be able to use different research objects, research time periods and be able to use different methods, namely Arbitrage Pricing Theory (APT).
- b. For investors and potential investors, it is hoped that the results of this research can be used as a reference for information before making investment decisions, especially for companies in the banking sector listed on the Indonesia Stock Exchange in 2020-2022.

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