

Technical Analysis of Stocks; Using the Capital Asset Pricing Model (CAPM) To Assess Banking Share on the Indonesia Stock Exchange (2019-2021)

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ABSTRACT: Stock are proof of ownership of the value of a company, stock are also one of the securities traded in the capital market. In addition, stocks are one of the investment instruments that have a high risk and return, however, they are still the most popular. This is evidenced by the increasing number of Indonesian investors every year. The purpose of this research is to assess efficient banking stocks and classify them. The analytical method in this research is used descriptive analysis method with a quantitative approach. The analytical tool used the Capital Asset Pricing Model (CAPM). The results showed that of the forty two banking stocks that became the research sample, there were thirty one efficient stocks and eleven inefficient stocks.

KEYWORDS: Stock, Capital asset pricing model, investment

1. INTRODUCTION

Stocks are one of the most popular investment instruments. Shares are also one of the securities traded in the capital market which are ownership in nature. Shares can be interpreted as proof of ownership of the capital of a person or group in a company. Stock is an investment that has a high level of risk and *return* (*high risk and high return*).

Risk and *return* factors are things that need to be considered in buying a stock. Risk is a condition where the rate of return does not match the expected rate of return. While *return* is the profit obtained from an investment. Therefore, the need for analysis to see efficient stocks. Efficient stocks are stocks with returns greater than expected returns.

Efficient stock valuation can be done using the *Capital Asset Pricing Model* (CAPM) method. CAPM is an analytical method introduced by *Treynor*, *Sharpe* and *Litner*. This model is an increase in the portfolio theory popularized by *Markowitz* by bringing a new designation namely systematic risk (systematic risk). *risk*) and specific/unsystematic risk (*specific risk / unsystematic risk*). CAPM application aims to determine the expected rate of return (*expected return*) in minimizing risky investments. CAPM can also assist investors in calculating risk with the variable β (beta) which is a measure of risk in the CAPM. If the stock's β is high, then the stock has a high risk as well.

The advantages of CAPM are: 1) CAPM is a model that describes the expected rate of *return* from a risky *asset* with the risk of that *asset* when the market is in a balanced condition. 2) CAPM is the development of modern portfolio

management. 3) CAPM can be used to estimate the *return* of a security. 4) CAPM helps simplify the realistic picture of the relationship between *return* and risk in the real world which is sometimes very complex.

This research was conducted at the Indonesia Stock Exchange (IDX) by focusing on banking stocks listed on the IDX for the 2019-2021 period. The selection of research objects is based on an increase in the number of investors in the Indonesian capital market. The IDX noted that the number of capital market investors reached 6.7 million investors by the end of October 2021, an increase of more than 68% from the end of 2020. The Investment Coordinating Board (BKPM) recorded investment realization data in the third quarter (July-September) of 2021 amounting to IDR 216.7 trillion, an increase of 3.7% compared to the same period in 2020, which was IDR. 209 trillion. Where are the banking shares of PT. Bank Central Asia Tbk. (BBCA) and PT. Bank Rakyat Indonesia Tbk (BBRI) occupies the first and second positions in the ranks of *blue chip stocks* beating the number of shares that are included in *blue chip stocks*. *Blue chip* stocks are stocks with stable income and have relatively small liabilities and have a national reputation in terms of quality, and the ability to operate in various economic situations, both in good and bad conditions.

Based on the description above, the researcher is interested in conducting further research on efficient shares. Therefore, the author raises the title "*Using the Capital Asset Pricing Model (CAPM) to Assess Efficient Shares (Studies on Banking Shares Listed on the Indonesian Stock Exchange Period 2019 - 2021)*"

2. LITERATURE REVIEW

2.1. Capital market

According to Tandelilin (2017: 25) the capital market is a meeting between investors and recipients of capital by trading securities. The capital market is also referred to as the securities market which usually has a maturity of more than one year

2.2. Share

According to Fahmi (2015: 80) Shares are proof of ownership of capital or funds in a company. Stock is in the form of sheets of paper on which the nominal value is clearly written, the name of the company and followed by the rights and obligations explained to each holder.

2.3. Return and Risk

According to Fahmi (2015: 208) *return* is the profit obtained by companies, individuals and institutions from the results of investment policies carried out. According to Tandelilin (2017: 114) *risk* is the potential difference between the actual return received and the expected return. The greater the possibility of the difference, the higher the risk of the investment. So risk is defined as a condition in the future where there is a mistake between the expected rate of return and the actual rate of return achieved.

2.4. Capital Asset Pricing Model (CAPM)

According to Tandelilin (2010: 293) *the Capital Asset Pricing Model (CAPM)* is a balancing model that describes the relationship of risk and return more simply, and uses only one variable (also known as the beta variable) to describe risk. Meanwhile, according to Fahmi (2015: 186) *the Capital Asset Pricing Model* explains the relationship between returns and beta.

2.5. Capital Asset Pricing Model (CAPM) equation

2.5.1. Rate of Return on Individual Shares (Ri)

According to Hartono (2015: 256), the rate of return on individual shares is the profit received in the form of dividends or changes in market prices from stock trading transactions calculated within one month. To calculate the rate of return on individual stocks, the following formula is used:

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

Hartono (2015:256)

2.5.2. Market Rate of Return (Rm)

It is a *return* that originates from an increase in the Jakarta Composite Index (IHSG) Hartono (2017: 589). The Rm formula is:

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

(Hartono, 2017:589)

2.5.3. Risk Free Rate of Return (Rf)

The risk-free rate of return is a measure of the minimum rate of return when the beta risk (β) is zero. The

risk-free rate of return is the same as the interest rate for Bank Indonesia Certificates (SBI) set by Bank Indonesia (Husnan 2008:176). The formula for calculating the risk-free rate of return is:

$$R_f = \frac{\sum R_f}{N}$$

(Husnan, 2008:176)

2.5.4. Expected Rate of Return (E(Ri))

Is the expected level of profit from the investment to be made (Hartono, 2015 : 572). The formula used to calculate the expected rate of return is:

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

(Hartono, 2015:572)

2.5.5. Systematic Risk (beta)

Beta (β). Beta is a measure of the *return* volatility of a security or portfolio return on *market returns* (Hartono, 2015: 443). The formula for beta is:

$$\beta_i = \frac{\sigma_{iM}}{\sigma^2 M}$$

(Hartono, 2015:572)

2.6. Efficient Stock Valuation Based on the Capital Asset Pricing Model (CAPM)

According to Hartono (2015: 326), efficient stocks are stocks with an individual rate of return (Ri) higher than the expected return (E(Ri)). So efficient stocks can be described as $(R_i) > E(R_i)$. Conversely, inefficient stocks can be described by $(R_i) < E(R_i)$.

3. RESEARCH METHODS

3.1. Research design

The design of this study aims to determine efficient banking stocks using the *Capital Asset Pricing Model (CAPM)* method. The type of research used is descriptive. According to Sugiyono (2019), the descriptive research method is a method used to determine the value of an independent variable, either one variable or more (independent) without making comparisons or connecting with other variables.

Judging from the method of analysis and data sources which emphasize more on numbers, this study uses a quantitative approach. According to Sugiyono (2019: 17) quantitative research is defined as a research method based on positivism (concrete data), research data in the form of numbers that will be measured using statistics as a measuring tool to produce a conclusion

3.2. Population and Sample

According to Sugiyono (2019: 126), the population is a general area consisting of objects or subjects that have a certain number and characteristics set by the researcher to study and then draw conclusions. The population in this study are banking stocks listed on the Indonesia Stock Exchange (IDX) with a total population of 44 . According to Sugiyono

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(2019: 127), the sample is part of the number and characteristics possessed by this population. The selection of the sample used in this study is a *nonprobability technique sampling* especially *purposive sampling*, namely the sample selection method used with certain considerations with the aim of obtaining a sampling unit that has the desired characteristics. In this study, several criteria were used as the basis for the consideration of researchers in sampling, namely:

1. Companies that are regularly listed on the Indonesia Stock Exchange (IDX) for the 2019-2021 period.
2. Companies that have conducted an IPO (*Initial Public Offering*) during the 2019-2021 period.

Based on the sampling technique above, the number of samples for this study were 42 banking stocks.

3.3. Data and Data Collection Methods

The type of data used in this research is secondary data. According to Sugiyono (2019: 194), secondary data, namely researchers do not directly receive from data sources.

Documentation is done as a secondary data collection technique. The data were obtained from publication data sourced from the official B EI website, namely *idx.co.id* and the official website of Bank Indonesia (BI), namely *bi.go.id*

3.4. Data analysis technique

Data analysis was performed using the CAPM equation by performing the following calculations:

- a) Rate of Return on Individual Shares (Ri)
- b) Market Rate of Return (Rm)
- c) Risk Free Rate of Return (Rf)
- d) Expected Rate of Return (E(Ri))
- e) Systematic Risk Level (Beta)
- f) Efficient Stock Valuation

4. RESULTS AND DISCUSSION

4.1. Rate of Return on Individual Shares (Ri)

The results of the Ri calculation of 42 IDX banking shares for the 2019-2021 period are:

Table 1. Rate of Return on Individual Shares (Ri)

No	Stock code	Ri	ri (%)
1	AGRO	0.09439	9.44%
2	AGRS	0.01687	1.69%
3	ARTO	0.24623	24.62%
4	BABP	0.05637	5.64%
5	READ	0.01275	1.27%
6	BBCA	0.01216	1.22%
7	BBHI	0.14383	14.38%
8	BBKP	0.02866	2.87%
9	BBMD	0.01832	1.83%
10	BBNI	0.00318	0.32%
11	BBRI	0.00951	0.95%
12	BBTN	0.00685	0.68%
13	BBYB	0.10582	10.58%
14	BCIC	-0.04795	-4.80%
15	BDMN	-0.01697	-1.70%
16	BEKS	-0.01663	-1.66%
17	BGTG	0.07300	7.30%
18	BINA	0.08764	8.76%
19	BJBR	0.00248	0.25%
20	BJTM	0.01316	1.32%
21	BKSW	0.03076	3.08%
22	BMAS	0.06778	6.78%
23	BMRI	0.00655	0.65%
24	BNBA	0.14417	14.42%
25	BNGA	0.01067	1.07%
26	bnii	0.02403	2.40%
27	BNLI	0.04174	4.17%
28	BSIM	0.02549	2.55%
29	BSWD	0.00000	0.00%
30	BTPN	-0.00358	-0.36%
31	BVIC	0.03207	3.21%

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32	DNAR	0.01886	1.89%
33	INPC	0.05456	5.46%
34	MAYA	-0.04705	-4.70%
35	MCOR	0.00194	0.19%
36	MEGA	0.02257	2.26%
37	NISP	-0.00589	-0.59%
38	NOBU	0.00044	0.04%
39	PNBN	-0.00387	-0.39%
40	PNBS	0.03369	3.37%
41	SDRA	-0.00226	-0.23%
42	BRIS	0.06267	6.27%

Source: Processed data (2022)

Based on table 1 above, it shows that of the 42 stocks selected to be the research sample, there are 8 stocks that have an average negative return ($R_i < 0$), while the other 34 stocks have an average positive return ($R_i > 0$). The highest average return was achieved by PT. Bank Jago, Tbk (ARTO) with an acquisition (R_i) of 0.24623 (24.62%) and the shares with the lowest average return are shares owned by PT. Bank JTrust Indonesia, Tbk (BCIC) with a gain (R_i) of -0.04795 (-4.80%).

4.2. Market Rate of Return (R_m)

The rate of market returns stems from an increase in the Jakarta Composite Index (IHSG). The average market rate of return (R_m) is positive at 0.00289 (0.29%), the highest market rate of return is in November 2020 of 0.09442

(9.44%), and the lowest market rate of return falls on March 2020 with a negative value of -0.16758 (-16.76%).

4.3. Risk Free Rate of Return (R_f)

This rate of return is the same as the Bank Indonesia Interest Rate (SBBI) set by Bank Indonesia with an annual average of 0.0447 (4.47%) , and for a monthly average of 0.0037 (0.37%)). Whereas the highest risk-free rate of return (R_f) is in January 2019 - June 2019 of 0.0600 (6.00%) , and the lowest risk of return (R_f) is in February 2021 - December 2021 of 0.0350 (3, 50%).

4.4. Systematic Risk Level (Beta)

The results of the beta calculation of the 42 banking stocks that became the research sample are as follows:

Table 2 Summary of Stock Beta

No	Stock code	(β_i)
1	AGRO	4.09148
2	AGRS	1.20385
3	ARTO	2.64930
4	BABP	0.03859
5	BACA	0.17570
6	BBCA	0.87687
7	BBHI	3.71077
8	BBKP	3.41644
9	BBMD	1.08799
10	BBNI	1.99834
11	BBRI	1.36187
12	BBTN	2.56030
13	BBYB	1.71356
14	BCIC	-0.98371
15	BDMN	2.32053
16	BEKS	0.12269
17	BGTG	2.48109
18	BINA	0.15242
19	BJBR	1.80985
20	BJTM	1.50852

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21	BKSW	0.61012
22	BMAS	1.45789
23	BMRI	1.32152
24	BNBA	2.72367
25	BNGA	1.62954
26	BNII	1.85938
27	BNLI	2.07437
28	BSIM	0.71243
29	BSWD	0.00000
30	BTPN	1.46532
31	BVIC	1.46965
32	DNAR	0.32808
33	INPC	2.23632
34	MAYA	1.15121
35	MCOR	1.63237
36	MEGA	0.26698
37	NISP	0.32793
38	NOBU	0.16406
39	PNBN	1.87381
40	PNBS	1.22855
41	SDRA	0.36365
42	BRIS	2.85335
Average		1.42968

Source: Processed data (2022)

Based on table 2 , the average beta is 1.42968 ($\beta_i > 1$), meaning that banking stocks have an active response and are sensitive to changes in market prices. Meanwhile, beta less than 1 tends to be passive and less sensitive to changes in market prices. The highest beta (β_i) is owned by PT. Bank Raya Indonesia, Tbk. (AGRO) of 4.09148, otherwise PT.

Bank Jtrust Indonesia, Tbk. (BCIC) has the lowest stock beta of -0.98371.

4.5. Expected Rate of Return (E(Ri))

The results of the calculation of E(Ri) on the 42 banking stocks that are the research samples are as follows:

Table 3. Expected Rate of Return

No	Stock code	E(Ri)	E(Ri)%
1	AGRO	0.00032	0.03%
2	AGRS	0.00272	0.27%
3	ARTO	0.00152	0.15%
4	BABP	0.00369	0.37%
5	BACA	0.00357	0.36%
6	BBCA	0.00299	0.30%
7	BBHI	0.00063	0.06%
8	BBKP	0.00088	0.09%
9	BBMD	0.00282	0.28%
10	BBNI	0.00206	0.21%
11	BBRI	0.00259	0.26%
12	BBTN	0.00159	0.16%
13	BBYB	0.00229	0.23%
14	BCIC	0.00454	0.45%
15	BDMN	0.00179	0.18%
16	BEKS	0.00362	0.36%

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17	BGTG	0.00166	0.17%
18	BINA	0.00359	0.36%
19	BJBR	0.00221	0.22%
20	BJTM	0.00247	0.25%
21	BKSW	0.00321	0.32%
22	BMAS	0.00251	0.25%
23	BMRI	0.00262	0.26%
24	BNBA	0.00145	0.15%
25	BNGA	0.00236	0.24%
26	BNII	0.00217	0.22%
27	BNLI	0.00199	0.20%
28	BSIM	0.00313	0.31%
29	BSWD	0.00372	0.37%
30	BTPN	0.00250	0.25%
31	BVIC	0.00250	0.25%
32	DNAR	0.00345	0.34%
33	INPC	0.00186	0.19%
34	MAYA	0.00276	0.28%
35	MCOR	0.00236	0.24%
36	MEGA	0.00350	0.35%
37	NISP	0.00345	0.34%
38	NOBU	0.00358	0.36%
39	PNBN	0.00216	0.22%
40	PNBS	0.00270	0.27%
41	SDRA	0.00342	0.34%
42	BRIS	0.00135	0.13%
Average		0.00253	0.25%

Source: Processed data (2022)

Based on table 3, the average E(Ri) is 0.25% with PT. Bank Jtrust Indonesia, Tbk. (BCIC) as the highest expected rate of return, namely 0.00454 or 0.45%, while PT.

Allo Bank Indonesia, Tbk. (BBHI) has the lowest expected rate of return of 0.00063 or 0.06%.

4.6. Valuing Efficient Stocks

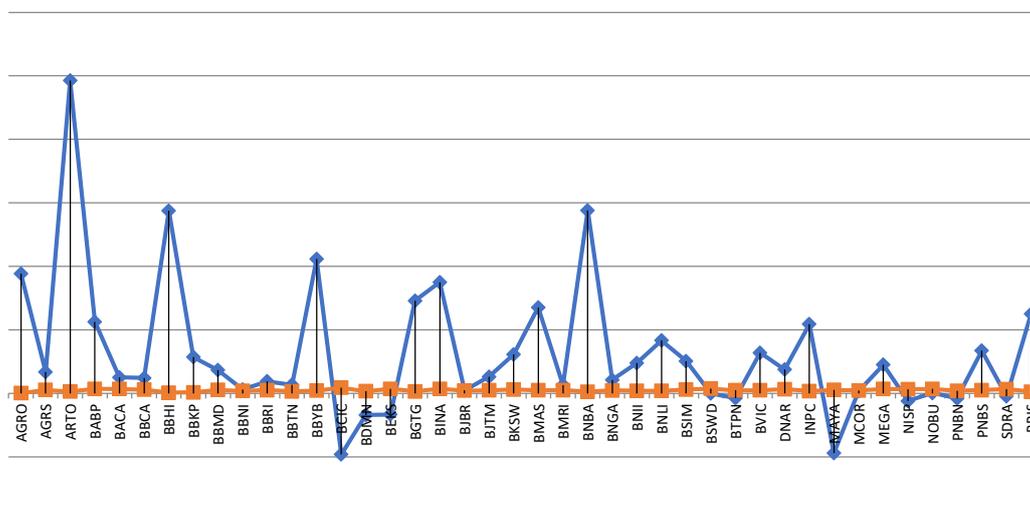


Figure 1 Efficient Stock
Source: data processed in 2022

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Based on Figure 1, there are 31 banking stocks whose R_i value is greater than the $E(R_i)$ value ($R_i > E(R_i)$), and 11 stocks whose R_i value is less than the $E(R_i)$ value

($R_i < E(R_i)$) The following is the grouping of efficient banking shares on the IDX for the 2019-2021 period

Table 4. Efficient Shares

No	Stock code	Level Efficiency
1	AGRO	9.41%
2	AGRS	1.41%
3	ARTO	24.47%
4	BABP	5.27%
5	BACA	0.92%
6	BBCA	0.92%
7	BBHI	14.32%
8	BBKP	2.78%
9	BBMD	1.55%
10	BBNI	0.11%
11	BBRI	0.69%
12	BBTN	0.53%
13	BBYB	10.35%
14	BGTG	7.13%
15	BINA	8.40%
16	BJBR	0.03%
17	BJTM	1.07%
18	BKSW	2.75%
19	BMAS	6.53%
20	BMRI	0.39%
21	BNBA	14.27%
22	BNGA	0.83%
23	BNII	2.19%
24	BNLI	3.97%
25	BSIM	2.24%
26	BVIC	2.96%
27	DNAR	1.54%
28	INPC	5.27%
29	MEGA	1.91 %
30	PNBS	3.10%
31	BRIS	6.13%
Average		4.63%

Source: data processed in 2022

Based on table 4, the average efficiency of banking shares is 4.63%, with the highest efficiency being 24.47% PT. Bank Jago Tbk (ARTO). While the lowest efficiency is 0.03% PT. West Java and Banten Regional Development Bank Tbk (BJBR).

5. CONCLUSIONS AND RECOMMENDATIONS

5.1. Conclusion

Based on the results of the analysis that has been done, it can be concluded as follows:

- a) Based on the results of data analysis carried out for 36 months, starting from January 2019 to December 2021, it can be concluded that of the 42 stocks used as research

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samples, there were 34 stocks with positive individual returns, and there were 8 stocks with negative returns during the period study. The stock with the highest systematic risk (beta) is PT. Bank Raya Indonesia, Tbk. (AGRO) of 4.09148 with E(Ri) of 0.00032 (0.03%). Meanwhile the stock with the lowest beta is PT. Bank Jtrust Indonesia, Tbk (BVIC) of -0.98371 with E(Ri) of 0.00454 or 0.45%.

- b) Of the 42 banking stocks that became the research sample, there were 31 efficient banking stocks. Efficient stocks are stocks that have a greater rate of return on individual shares than the expected rate of return. These stocks can be a reference for investors to buy banking shares.

5.2. Suggestion

Based on the conclusions above, there are suggestions given by researchers to interested parties:

- a) For companies

With the results of research on efficient stocks, companies that have not obtained good results or are not yet efficient in terms of stocks can be used as motivation to be even better in the future. Meanwhile, stocks that have been efficient can be maintained and better improved so as to provide maximum returns.

- b) For Investors and Prospective Investors

This research is expected to be information as well as a reference before investing in stocks, especially banking stocks.

- c) For further researchers

As for some suggestions that need to be considered for future researchers who are interested in researching about the CAPM and stocks are:

- 1) Future researchers are expected to examine more sources and references related to the CAPM and stocks.
- 2) Future researchers are expected to try to assess efficient stocks using other methods such as *Arbitrage Pricing Theory* (APT).

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