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Evaluating Investment Returns and Risks in the Financial Industry

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Abstract

This study aims to provide insights for investors in making informed decisions regarding the allocation of their investment funds. Investment risk arises from the discrepancy between expected returns and actual returns, as uncertainty in economic conditions may lead to unfavorable outcomes. Investors generally perceive investments as less risky when macroeconomic indicators are stable, characterized by controlled inflation, a stronger exchange rate, and lower interest rates. In making investment decisions, investors seek returns in the form of dividends and capital gains, while their choices are largely influenced by their individual risk preferences. This research classifies economic conditions into five categories: (1) recession, (2) moderate recession, (3) normal, (4) good, and (5) excellent. The findings indicate that under all economic scenarios, shares of BNGA (PT CIMB Niaga Tbk) offer the highest expected returns, whereas BBCA (PT Bank Central Asia Tbk) presents the lowest level of risk. Consequently, investors with a high tolerance for risk are more likely to choose BNGA, while risk-averse investors tend to prefer BBCA due to its relatively safer investment profile.

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INTRODUCTION

The primary objective for investors is to optimize returns while duly accounting for investment risk. Return not only serves as a key motivator for investing but also acts as a reward for the investor's willingness to bear risk. Beyond merely calculating returns, investors must evaluate the level of risk inherent in an investment as a foundational element of their decision-making process. Risk is defined as the potential deviation between the actual return and the expected return; the greater the likelihood of this deviation, the higher the investment's risk exposure.

According to data from the Indonesia Stock Exchange (IDX) and Bank Indonesia (BI), as of January 2023, there were 833 companies listed on the domestic exchange. This raises the critical question of which specific stocks to purchase from such a vast pool. Even if investors are prepared to accept risk, their investment decisions must strive to minimize various potential

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risks, both in the short and long term. Consequently, investors must be adept at identifying alternatives that offer the highest expected return at a given level of risk, or alternatively, that deliver a specific return at the lowest possible risk level.

Optimal investment selection ultimately depends on the investor's ability to effectively measure both the risk level and the corresponding profits (Atarmono, 2001; Hariyanto, 2008; Risman et al., 2021). Research conducted by Hariyanto (2008) confirms that investor rationality does play a role in stock selection on the Indonesia Stock Exchange. As posited by Mao (1970, cited in Wahyudi, 2002), realistic investors do not confine their capital to a single asset type; instead, they diversify their investments with the expectation of minimizing risk while maximizing returns.

Precision in stock selection is crucial; otherwise, investors may incur losses. According to Fauzi (2020) and Risman et al. (2021), stock investment decisions involve determining whether to buy, hold, or sell ownership stakes. These decisions are expected to yield long-term profits. In this context, specific indicators are essential for guiding investment choices: risk is measured using standard deviation, while return is measured using total return. This research focuses specifically on investments in the banking sector, analyzed through the framework of risk and return.

LITERATURE REVIEW

Investment Decisions

According to Achmad and Amanah (2014: 4) investment decisions are one of the financial management functions that involve allocating funds, both funds sourced from inside and outside the company, to various forms of investment decisions with the aim of obtaining greater returns than the cost of funds in the future. In essence, the investment decision process is to understand the relationship between expected return and risk, because the relationship between the two in investing is unidirectional and linear. That is, the greater return, the level of risk also needs to be considered. Some of the things that underlie investment decisions are:

a. Return

One of the things that underlies investment decisions is seen from the return or profit on an instrument. In addition, return or rate of return is also the main reason for an investor to invest. In this case, investors expect high return when allocating funds for a certain period of time. In the context of investment management, there are two types of returns, which is:

- Expected return, highly anticipated by investors in the future
- Actual return or (realized return), which is rate of return that has been obtained by investors in the past

b. Risks

As explained earlier, investment decisions are not only about return, but also looking at the risks. Therefore, the risk underlying investment decisions is when an investor incurs a loss, this is caused by various factors and is usually unexpected. As examples when an investor is wrong in analyzing and calculating, or because the strategy preparation is not mature enough.

c. Relationship Between Risk Level and Return

Then, the relationship between the level of risk and return. In this case, before getting the right investment decision, usually investors will make thorough considerations. Generally, these considerations focus more on the basic part of the investment decision, because even there is a minimal error, it will provide a fairly fatal loss.

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Securities Return

The sources of investment return consist of two main components, yield and capital gain (loss). Yield is a component of return that reflects the cash flow or income earned periodically from an investment. Meanwhile, capital gain (loss) as the second component of return is an increase (decrease) in the price of a security that can provide profit/loss for investors. In other words, capital gain (loss) can also be interpreted as a change in security prices. According to Tandelilin (2017) mathematically the total return of an investment can be written as follows:

$$\boldsymbol{Return\ Total} = \boldsymbol{Yield} + \boldsymbol{Capital\ gain}\ (\boldsymbol{loss})$$

The method of calculating return is very simple, that is, the price of this month minus last month's price and then divided by the previous month's price. It can also also use the price of this month divided by the price of the previous month then the result is subtracted by 1. Calculation of returns can be by arithmetic or geometric mean. If you want to estimate future performance, an arithmetic mean is chosen, while if you want to get a picture of past performance, the geometric returns are used. The geometric return can provide a fairly real level of return. In this paper, the return calculation uses the geometric mean. Mathematically, the formula is as follows:

Rerata Geometrik: = ((1 + Rerata1) x (1 + Rerata2) x (1 + RerataN)) ^ (1 ÷ N) – 1

Expected Return

To estimate the return of a security as a single asset (standalone risk), investors must take into account every possibility of realizing a certain level of return, or better known as the probability of occurrence. Meanwhile, the result of estimating the return that will occur and its probability is referred to as the probability distribution. In other words, the probability distribution shows the specification of what rate of return will be obtained and what is the probability of the return occurring.

The estimated return of a security is done by calculating the expected return on the security. The calculation of expected return can be done by calculating the average of all possible returns, and each return that may occur first has been weighted based on the probability of its occurrence. According to Jogiyanto (2000) mathematically, the formula for calculating the expected return of a security can be written in the following equation:

$$\boldsymbol{E}\ (\boldsymbol{R}) = \sum^{\boldsymbol{n}}\ \boldsymbol{Ri\ x\ pri}$$

$E\ (R)$ = the expected return on the security,
Ri = return at-i,
pr_i = Probability return at-i, & n= the number of returns

Securities Risk

Risk can be interpreted as a form of circumstances that will occur later with decisions taken based on various considerations at this time. The discussion of risk has a strong potential loss incurred because the expected investment returns are not in line with expectations.

Every investment decision has a strong relationship with the occurrence of risk, because investment decision tools are not always complete and can be considered perfect, but there are various weaknesses that are not analyzed properly and perfectly. Therefore, risk is always used as the main barometer to be analyzed if investment decisions are made.

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To calculate risk, formulas with standard deviation approaches are often used, and variance, which is a measure of the magnitude of the spread of the probability distribution, which shows how much the spread of ramdom variables among the average. To calculate both variance and standard deviation, first calculate the distribution of expected return using formula 3. According to Tandelilin (2017) mathematically the formula for calculating variance and standard deviation can be written as follows:

$$\textbf{Variance return} = \boldsymbol{\sigma^2} = \sum[\boldsymbol{R_i} - \boldsymbol{E(R)}]^2 \; \boldsymbol{x} \; \boldsymbol{pr_i}$$
$$\textbf{Deviasi Standar} = \boldsymbol{\sigma} = (\boldsymbol{\sigma^2})^{1/2}$$

Risk and Return Relationship

According to Tandelilin (2017) the basis of investment decisions consists of the expected rate of return, the level of risk and the relationship between return and risk. In general, the form of the risk and return relationship is as follows:

- Linear or unidirectional or the higher the return, the higher the risk. And these linear relationship conditions are only possible in a normal markets, because in abnormal market conditions all of this may change or not as expected.
- The greater the assets placed in the investment decision, the greater the risk posed from the investment.

METHOD

The design in this study uses a quantitative perspective approach in descriptive form, to find out which banking sector stocks are worthy of investment. This research uses five issuers of the banking sector based on the largest and most liquid market capital traded.

RESULTS AND DISCUSSION

Results

Researchers used secondary data, namely the monthly adjusted closing price from January 2022 to June 2023, obtained from the yahoo.finance.com. Here is the data in question.

Table 1. Closing Price Adjustment

Date	BBCA	BBRI	BBNI	BNGA	BMRI
01/01/2022	7334.10	3683.76	6894.92	727.56	3394.18
01/02/2022	7742.89	4118.21	7530.29	807.97	3496.34
01/03/2022	7670.75	4217.77	7765.61	853.92	3587.16
01/04/2022	7934.80	4582.57	8843.59	815.63	4257.68
01/05/2022	7568.58	4356.74	8795.66	866.12	4043.61
01/06/2022	7080.28	3905.07	7525.44	841.14	3770.07
01/07/2022	7177.94	4102.67	7525.44	870.29	3936.57
01/08/2022	8008.04	4083.85	8172.53	945.24	4210.11
01/09/2022	8349.85	4225.00	8603.93	891.11	4483.65
01/10/2022	8594.00	4375.56	9011.35	949.40	5018.83
01/11/2022	9082.29	4686.08	9490.68	970.22	5006.94
01/12/2022	8349.85	4648.44	8843.59	986.88	4721.51
01/01/2023	8308.92	4309.69	8771.69	982.71	4733.40

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Date	BBCA	BBRI	BBNI	BNGA	BMRI
01/02/2023	8578.53	4449.63	8412.20	1032.68	4757.19
01/03/2023	8578.53	4506.80	8963.42	1057.67	4911.79
01/04/2023	9050.00	5100.00	9425.00	1032.68	5175.00
01/05/2023	9050.00	5575.00	9050.00	1440.00	5050.00
01/06/2023	9150.00	5425.00	9150.00	1585.00	5200.00

Source: Yahoo.com/finance

The stages of data processing are: (1) calculating the actual rate of return using the geometric average formula (formula 2). The calculation results are as follows (Tabel 1.2):

Tabel 2. Return Geometrik

Date	BBCA		BBRI		BBNI		BNGA		BMRI	
	Return	Return +1 (Geometrik)	Return	Return +1 (Geometrik)	Return	Return +1 (Geometrik)	Return	Return +1 (Geometrik)	Return	Return +1 (Geometrik)
01/01/2022	-	1.00000	-	1.00000	-	1.00000	-	1.00000	-	1.00000
01/02/2022	0.05574	1.05574	0.11794	1.11794	0.09215	1.09215	0.11053	1.11053	0.03010	1.03010
01/03/2022	- 0.00932	0.99068	0.02418	1.02418	0.03125	1.03125	0.05687	1.05687	0.02597	1.02597
01/04/2022	0.03442	1.03442	0.08649	1.08649	0.13881	1.13881	- 0.04484	0.95516	0.18692	1.18692
01/05/2022	- 0.04615	0.95385	- 0.04928	0.95072	- 0.00542	0.99458	0.06190	1.06190	- 0.05028	0.94972
01/06/2022	- 0.06452	0.93548	- 0.10367	0.89633	- 0.14441	0.85559	- 0.02885	0.97115	- 0.06765	0.93235
01/07/2022	0.01379	1.01379	0.05060	1.05060	-	1.00000	0.03465	1.03465	0.04416	1.04416
01/08/2022	0.11565	1.11565	- 0.00459	0.99541	0.08599	1.08599	0.08612	1.08612	0.06949	1.06949
01/09/2022	0.04268	1.04268	0.03456	1.03456	0.05279	1.05279	- 0.05727	0.94273	0.06497	1.06497
01/10/2022	0.02924	1.02924	0.03563	1.03563	0.04735	1.04735	0.06542	1.06542	0.11936	1.11936
01/11/2022	0.05682	1.05682	0.07097	1.07097	0.05319	1.05319	0.02193	1.02193	- 0.00237	0.99763
01/12/2022	- 0.08065	0.91935	- 0.00803	0.99197	- 0.06818	0.93182	0.01717	1.01717	- 0.05701	0.94299
01/01/2023	- 0.00490	0.99510	- 0.07287	0.92713	- 0.00813	0.99187	- 0.00422	0.99578	0.00252	1.00252
01/02/2023	0.03245	1.03245	0.03247	1.03247	- 0.04098	0.95902	0.05085	1.05085	0.00503	1.00503
01/03/2023	-	1.00000	0.01285	1.01285	0.06553	1.06553	0.02419	1.02419	0.03250	1.03250
01/04/2023	0.05496	1.05496	0.13162	1.13162	0.05150	1.05150	- 0.02362	0.97638	0.05359	1.05359
01/05/2023	-	1.00000	0.09314	1.09314	- 0.03979	0.96021	0.39443	1.39443	- 0.02415	0.97585
01/06/2023	0.01105	1.01105	- 0.02691	0.97309	0.01105	1.01105	0.10069	1.10069	0.02970	1.02970
Average	**0.01340**		**0.02362**		**0.01793**		**0.04811**		**0.02571**	
Geomean		**0.01237**		**0.02174**		**0.01584**		**0.04421**		**0.02398**

Source: processed by the author

The next stage is: calculate the expected return using formula 3. The next stage calculates the level of risk, using the formula of variance and standard deviation (formulas 3 and 4). The results of calculating expected return and risk are as follows (Tabel 1.3):

Table 3. Expected Return and Standard Deviasi

Condition	Probability	BBCA		BBRI		BBNI		BNGA		BMRI	
		Exp. Return	Std. Dev.	Exp. Return	Std. Dev.	Exp. Return	Std. Dev.	Exp. Return	Std. Dev.	Exp. Return	Std. Dev.
Recession	0.15	2.736	2.832	2.764	2.861	2.748	2.845	2.830	2.932	2.769	2.867
Moderate Recession	0.2	3.648	5.000	3.685	5.051	3.665	5.023	3.773	5.174	3.693	5.061
Normal	0.3	5.472	10.362	5.528	10.467	5.497	10.409	5.660	10.719	5.539	10.489
Good	0.25	4.560	7.525	4.606	7.601	4.581	7.559	4.716	7.784	4.616	7.617
Very Good	0.1	1.824	1.089	1.843	1.102	1.832	1.096	1.887	1.132	1.846	1.104

Source: processed by the author

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Discussion

In this research divided five economic conditions, namely; (1) recession, (2) moderately recession, (3) normal, (4) good, (5) excellent. Then the probability of occurrence is estimated at 15% for recession conditions, 25% for moderately recessionary conditions, 30% for normal conditions, 20% for good conditions, and 10% for excellent conditions. The following are expeted returns and risks from each issuer based on economic conditions.

Recession Condition

The calculation results show that the relationship between expected return is linear to risk (Standard deviation). In recessionary economic conditions, it is assumed that the chance of occurrence is 15%, the highest expected return is BNGA shares (2.829%), the second highest is BMRI shares (2.769%). If the investor is a risk taker, he will buy BNGA shares (the highest return) and the second choice is BMRI shares. However, if the investor is a risk aver, then the investor buys BBCA shares with the smallest risk of 2.831%, and the second choice is BBNI shares (2.845%). As in the table below:

Table 4. Expected Return and Standard Deviation on Recession

Stock	Probability	Expected Return	Standard Deviation
BBCA	0.15	2.7362	**2.8318**
BBRI	0.15	2.7638	2.8612
BBNI	0.15	2.7484	2.8454
BNGA	0.15	**2.8299**	2.9320
BMRI	0.15	2.7694	2.8669

Source: processed by the author

Moderately Recessionary Conditions

In economic conditions of sufficient recession it is assumed that the chance of occurrence is 25%. In this condition, risk taker investors will buy BNGA shares (3.773%) as the highest return, and the second choice is BMRI shares (3.692%), while the choice for risk avers investors, then should buy shares with the smallest risk which is BBCA shares (5%), and the second smallest risk which is BBNI shares (5.023%). As in the table below:

Tabel 5. Expected Return and Standar Deviation on Moderate Reccession

Stock	Probability	Expected Return	Standard Deviation
BBCA	0.25	3.6483	**5.0000**
BBRI	0.25	3.6850	5.0510
BBNI	0.25	3.6645	5.0231
BNGA	0.25	**3.7732**	5.1737
BMRI	0.25	3.6926	5.0613

Source: processed by the author

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Normal Economic Conditions

In normal economic conditions, the chance of occurrence is assumed to be 30%, if the investor is a risk taker, the shares purchased are BNGA with the highest expected return (5.659%), and the second choice is BMRI shares with an expected return of 5.538, while if the investor is a risk avers, then the shares purchased are the least risk, so the choice, is BBCA shares (10.362%), and the second choice is BBNI shares with a risk of 10.409%. As in the table below:

Table 6. Expected Return and Standar Deviation on Normal

Stock	Probability	Expected Return	Standard Deviation
BBCA	0.30	5.4724	**10.3623**
BBRI	0.30	5.5275	10.4671
BBNI	0.30	5.4968	10.4090
BNGA	0.30	**5.6598**	10.7189
BMRI	0.30	5.5389	10.4885

Source: processed by the author

Good Economic Conditions

In good economic conditions, a 20% chance of occurrence is assumed. In this condition, risk taker investors will buy BNGA shares (4.716%) as the highest return, and the second choice is BMRI shares (4.615%), while the choice for risk avers investors, then should buy shares with the smallest risk, which is BBCA shares (7.5248%), and the second smallest risk, which is BBNI shares (7.558%). As in the table below:

Table 7. Expected Return and Standar Deviation on Good Condition

Stock	Probability	Expected Return	Standard Deviation
BBCA	0.20	4.5603	**7.5248**
BBRI	0.20	4.6063	7.6011
BBNI	0.20	4.5807	7.5589
BNGA	0.20	**4.7165**	7.7845
BMRI	0.20	4.6157	7.6165

Source: processed by the author

Excellent Economic Conditions

In excellent economic conditions, it is assumed that the chance of occurrence is 10%. In this condition, risk taker investors will buy BNGA shares (1.886%) as the highest return, and the second choice is BMRI shares (1.846%), while the choice for risk avers investors, then

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should buy shares with the smallest risk, which is BBCA shares (1.089%), and the second smallest risk, which is BBNI shares (1.095%). As in the table below:

Table 8. Expected Return and Standar Deviation on Excellent Condition

Stock	Probability	Expected Return	Standard Deviation
BBCA	0.10	1.8241	**1.0894**
BBRI	0.10	1.8425	1.1018
BBNI	0.10	1.8323	1.0959
BNGA	0.10	**1.8866**	1.1323
BMRI	0.10	1.8463	1.1039

Source: processed by the author

CONCLUSION

1. If economic conditions are experiencing a recession, risk takers decide to buy BNGA with an expected return of 2.7694%; the second choice is BMRI with an expected return of 2.8299%. While investors are risk averse, the choice to buy is BBCA with a risk of 2.8318%, the second choice is BBNI with a risk of 2.8454%.
2. If the economy is in a moderate recession, risk takers decide to buy BNGA with an expected return of 3.773%; the second choice is BMRI with an expected return of 3.692%. However, if the investor is risk averse, then the choice to buy is BBCA with a risk of 5%, the second choice is BBNI with a risk of 5.231%.
3. If economic conditions are normal, risk takers decide to buy BNGA with an expected return of 5.659%; the second choice is BMRI with an expected return of 5.538%. However, if the investor is risk averse, the choice to buy is BBCA with a risk of 10.362%, the second choice is BBNI with a risk of 10.409%.
4. If economic conditions are good, risk takers decide to buy BNGA with an expected return of 4.716%; the second choice is BMRI with an expected return of 4.615%.However, if the investor is risk averse, then the choice to buy is BBCA with a risk of 7.524%, the second choice is BBNI with a risk of 7.558%.
5. If economic conditions are excellent, risk takers decide to buy BNGA with an expected return of 1.886%; the second choice is BMRI with an expected return of 1.846%. However, if the investor is risk averse, then the buying choice is BBCA with a risk of 1.089%, the second choice is BBNI with a risk of 1.095%.

Suggestion

1. Investors determine the right asset allocation and understand economic conditions.
2. Investors determine the risk profile of conservative investors (risk avers) versus aggressive (risk takers).
3. Investor buys according to risk profile

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