

## COMPARATIVE ANALYSIS OF STOCK PORTFOLIO RISK & RETURN WITH SINGLE INDEX METHOD

**Maria Yovita R. Pandin**

Universitas 17 Agustus 1945 Surabaya  
[yovita\\_87@untag-sby.ac.id](mailto:yovita_87@untag-sby.ac.id)

**Tiara Marcella Ruskito**

Universitas 17 Agustus 1945 Surabaya  
[1222100043@email.untag-sby.ac.id](mailto:1222100043@email.untag-sby.ac.id)

**Tasya Nurhalyza**

Universitas 17 Agustus 1945 Surabaya  
[1222100044@email.untag-sby.ac.id](mailto:1222100044@email.untag-sby.ac.id)

**Yaohan Ad'nnia Jannah**

Universitas 17 Agustus 1945 Surabaya  
[1222100049@email.untag-sby.ac.id](mailto:1222100049@email.untag-sby.ac.id)

**Rr Adiati Trihastuti**

Universitas 17 Agustus 1945 Surabaya  
[adiarti\\_tri\\_hastuti@untag-sby.ac.id](mailto:adiarti_tri_hastuti@untag-sby.ac.id)

### ***ABSTRACT***

This study aims to compare the return and risk of investment in blue chip stocks (first liner) and second liner stocks of manufacturing companies listed on the Indonesia Stock Exchange (IDX) during the 2022 period. The method used is qualitative with single index theory, and closing price data is used for analysis. The results show that a portfolio of second liner stocks provides higher expected returns and lower risk compared to first liner stocks. Nonetheless, this research provides insights for investors and the public about the investment alternatives of first liner and second liner stocks, and shows the importance of portfolio diversification in managing investment risk. Future research can expand the scope of industry sectors and other analytical methods to explore a deeper understanding of stock investment on the IDX.

***Keywords: second liner, blue chip, single index, risk & return***

## INTRODUCTION

In current economic conditions, entrepreneurs must be prepared when managing their company funds because economic conditions are not always stable. However, investing in shares is an alternative way to earn profits. Investment also has its own risks.

When investing in stocks, investors often hope to earn dividends or capital gains. Each investment strategy has a different return pattern. Risk is a part of financial investing, and investors seek to maximize profits while reducing risk.

There are various methods that can be used to form a portfolio. One of them is by comparing the optimal portfolio against blue chip and second liner stocks and can then be formed using one of the methods, namely the Single Index Method. The calculation results of the Single Index Method do have quite good returns, but they still have risks. The calculation of the optimal portfolio can be used as a strong consideration for investment decisions that investors want to make, because it can estimate the extent of risk they can bear, as well as how much profit they want to get.

Investment is never free from risk. Risk cannot be eliminated, but risk can be minimized. Investors will choose investments according to the nature of the investor himself. A risk taker will take an investment even though the risk to be taken is quite large. Meanwhile, a risk averse person will take safe or risk-free investments. However, investors also still calculate whether the risk can be minimized to a minimum. So that the investment taken can be considered beforehand and investors are not careless in taking investments. If investors want high returns, the risk will also be high. Inversely, if the desired return is low, the risk will also be low. Investment processing is very necessary because it determines the profits from the investment. There are several ways to reduce the risk in investing. One way is by diversifying shares. It is asserted that there is a positive correlation between expected returns and risk because investors often face ambiguity about the trade-off between the risk they will experience and their expected returns. A single index model is a single method or model that describes how “expected returns and risks” related to the Single Index Model (SIM).

The second-line/development board index (DBX) and first-line/blue-chip/main-board index (MBX) can be represented by indices on the Indonesian Stock Exchange. Both groups are divided based on net real assets as well as company reputation as a reference. The stock market and its performance did experience a decline, but this decline was less significant and could be recovered easily. The stock market is vital to a country's economic growth because it provides companies with a source of capital to increase trading activities.

Based on the background of this research, researchers are interested in carrying it out Research on Comparison of Risk & Return of Stock Portfolios By Method Single Index On Shares of Manufacturing Companies Listed in Indonesia stock exchange Year 2022.

There are several questions in research These are: (1) How is the investment performance of blue chip shares and second liner shares from manufacturing companies listed on the Indonesian Stock Exchange (BEI) during 2022? (2) What is the level of risk associated with blue chip shares and second liner shares from manufacturing companies listed on the Stock Exchange Indonesia (BEI) during 2022?

Objective from this research namely: (1) To identify the comparison of investment returns between blue chip shares and second liner shares“from manufacturing companies listed on the Indonesian Stock Exchange during the year”2022. (2) To assess the comparative risk associated with blue chip stocks and second liner stocks“from manufacturing companies listed on the Indonesian Stock Exchange during the year”2022.

## **LITERATURE REVIEW**

### ***Single Index Method (Single Index Model)***

Model this is a concept of security price movements following the direction of the market price index. In general, when stock prices rise, it corresponds to an increase stock price index, and when the stock price index falls, stock prices tend to fall as well. In other words, security price movements are likely related to each other because there is a similar response to changes in market value. To calculate the estimated return and risk of a portfolio, you can use this method. The advantage of the single index approach is that it can reduce the

complexity of portfolio risk calculations as proposed by Markowitz. In fact, in research conducted by Varjan (1993), Sharpe's single index approach was proven to be very effective in reducing the complexity of portfolio problems and making portfolio calculations simpler.

### *Individual Securities Returns*

1. Realized Return (return that has occurred), is the return that investors have obtained. The following is the security return formula:

$$R_i = \alpha_i + \beta_i \cdot R_m + e_i$$

which :

$R_i$  = Return shares  $i$

$\alpha_i$  = Mark "expectations of stock returns" independent of market returns

$\beta_i$  = Beta "which is a coefficient that measures change" Return Securities resulting from changes in Market Returns

$R_m$  = Return markets

$e_i$  = Error residual which is a random variable with its expected value "equal to zero"

2. Expected Return (expected return), is the return "which are expected" will be achieved by investors in the future. The following is the formula expected return:

$$E(R_i) = \alpha_i + \beta_i \cdot E(R_m)$$

which :

$E(R_i)$  = Expected return shares  $i$

$\alpha_i$  = Mark expectations of stock returns independent on market returns

$\beta_i$  = Beta which is a coefficient that measures changes in  $R_i$  as a result of changes in  $R_m$

$E(R_m)$  = Expected return market

### *Individual Securities Risk*

There are 2 risks in securities risk, namely:

a) Systematic Risk or general risk

When diversifying, this risk cannot be eliminated, it is related to macroeconomic variables that influence the market. Such as exchange rates, government policies, interest rates, and inflation.

b) Unsystematic Risk“or Company risks”

Diversification eliminates risk,”because it only exists in one industry or a particular business. The following are:“formula for calculating stock risk:

$$\sigma_i^2 = \beta_i^2 \cdot \sigma_m^2 + \sigma_{e,i}^2$$

Where :

$\sigma_i^2$  = Variance of stock return i

$\beta_i^2$  = Stock beta

$\sigma_m^2$  = Market variance

$\sigma_{e,i}^2$  = Residual variance

### *Portfolio Theory*

Harry Markowitz introduced Modern Portfolio Theory in early 1956, known as Markowitz Portfolio Theory, as explained in Husnan's 2015 book. This theory provides important insights into how to measure risk, return, and how to build an investment portfolio. A portfolio is a collection of diverse types of stocks invested in with the goal of intelligently combining these stocks to reduce risk as much as possible and maximize returns for investors. This portfolio can consist of various combinations of stocks which is listed on the Indonesian Stock Exchange (BEI) or stock exchange other.

### *Portfolio Expected Return*

The following are return formula portfolio expectations:

$$E(R_p) = \alpha_p + \beta_p \cdot E(R_m)$$

which:

$E(R_p)$  = Expected return portfolio

$\alpha_p$  = The weighted average of the alphas of the stocks that make up the portfolio

$\beta_p$  = The weighted average of the betas of the stocks that make up a portfolio

$E(R_m)$  = Expected return market

### ***Portfolio Risk***

Variation portfolio can be expressed in the equation:"

$$\sigma_p^2 = \beta_p^2 \cdot \sigma_m^2 + \sum_{i=1}^n x_i^2 \sigma_{e,i}^2$$

which:

$\sigma_p^2$  = Portfolio variance

$\beta_p^2$  = Portfolio beta

$\sigma_m^2$  = Market variance

$\sum_{i=1}^n x_i^2$  = Share weight i

$\sigma_{e,i}^2$  = Residual variance i

### ***First Liners (Blue Chip)***

Shares that are often known as Blue chip shares are also known as shares with the highest level. These stocks often serve as benchmarks movement of the Composite Stock Price Index (IHSG) because it has a large market capitalization, as explained in the Securities source in 2023. Therefore, shares of this type it is generally included in the LQ45 index, which includes 45 shares that are most actively and liquidly traded on the stock exchange during certain periods.

### ***Second Liner Shares***

Shares in this category are often known as mid cap shares, and their prices tend to fluctuate, while their level of liquidity is relatively good, according to Securities sources in 2023. The risk of shares of this type is usually higher than "blue chip stocks, both from" in

terms of fundamental performance and liquidity. In fact, developing companies with a lot of growth potential have the potential to issue these shares to become blue chip shares in the future. Because the price is more affordable compared to blue chip shares, many investors are interested in these shares. However, because the risks are higher, it is necessary to carry out a more in-depth analysis to determine which mid cap shares should be chosen. One reason is that the financial performance of the company issuing the shares has not been well tested.

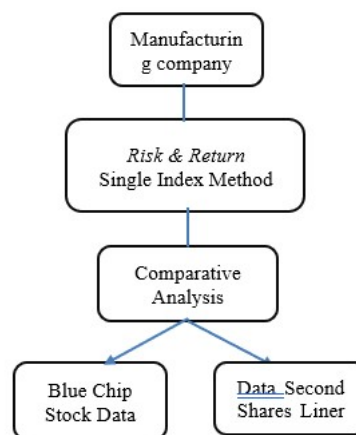
### ***Previous Researchers***

Based on research conducted by Anggraeni in 2020 regarding comparative analysis of returns over a three year period“in companies listed in the SRI-KEHATI index”(during the 2016-2018 period), the following are some conclusions that can be drawn:

1. Based on analysis“single index on the SRI-KEHATI index, In forming the portfolio there are 7 company shares. These shares are JPFA, TINS, BBKA, UNTR, BDMN, BBRI, and BBNI.
2. Allocation proportion funds ( $W_i$ ) in portfolio formation.
3. Return”expected from that portfolio formed with shares listed in SRI-KEHATI index after the period”in 2018 it was 0.02625 or the equivalent of 2.625% per month, while the risk borne by investors was around 0.0015 or 0.15% per month.

### ***Framework of thinking***

The following is the framework for this research



## RESEARCH METHODS

In this research, data was obtained from “official website of the Indonesian Stock Exchange” (BEI), which can be accessed via [www.idx.co.id](http://www.idx.co.id). The data taken for research covers a period of one year, starting from January 1 2022 to December 31 2022. This research has a qualitative approach with the aim of comparing risks and returns between blue chip shares and second liner shares from manufacturing companies as part of the portfolio formation process by utilizing the single index model on the BEI. To analyze the data, the Excel program was used, and the results were interpreted.

Data used in this research”sourced from secondary data. This secondary data includes price closing share daily company manufacturing during 2022. The research population includes 20 companies, including ASII, UNVR, INDV, HMSP, GGRM, TLKM, ADRO, SMGR, WIKA, JSMR, GJTL, INKP, ISSP, MAPI, INCO, DOID, BELL, BRMS, TPIA, and AKR. The sample group consists of 5 blue chip companies and 5 second liner companies, which were obtained through [www.yahoofinance.co.id](http://www.yahoofinance.co.id).

Processing data involves the following steps:

1. Enter IHSG closing price data.
2. Counting returns IHSG and its risks.
3. Enter closing price data individual shares.
4. Counting returns individual stocks and their risks.
5. Counting alpha and beta for individual shares.
6. Form a portfolio of individual shares.
7. Counting returns portfolio and risks.

### *Data Analysis Hypothesis Testing Techniques*

The technique used is the Excel application and then analyzed using existing expert theories, one of which is Beta, which is a relative measure of systematic risk, indicating the extent to which a stock is susceptible to changes in performance. market. The greater the fluctuation in stock returns compared with market returns, increasingly tall beta of the



stock. Conversely, stocks with smaller return fluctuations compared to market returns will have a lower beta. In the context of the capital market, it is explained that the greater the systematic risk of a stock, the higher the return expected by investors compared to the risk-free rate of return (free risk rate/RF). The slope of the capital market line reflects how far an investor is inclined doesn't like risk (risk averse). Therefore, if the stock return ( $R_i$ ) is greater than the expected return ( $E(R_i)$ ), then the shares considered worthy of purchase by investors.

**RESEARCH RESULTS AND DISCUSSION**

**Blue Chip Stock Calculation**

In method portfolio formation by utilizing a single index model. for ten company stock In this manufacturing, there are a number of requirements that must be met when choose shares to enter into the portfolio. The process of forming this portfolio involves special steps, where the initial stage involves calculating the portfolio's alpha and beta, residual variations, and the relative weight of each stock. The results of these alpha and beta calculations will form the basis for calculating portfolio performance, expected results, variations and deviations portfolio standards. Alpha and beta of a portfolio are the average collapsed value (based on proportion) of each security that is part of the portfolio.

**Table 1 Data Processing**

	GGRM	INDF	MAPI	GJTL	BRMS	RM
<b>E(R<sub>i</sub>)</b>	-0,00200	0,00038	0,00338	-0,00061	0,00223	0,00015
<b>σ<sub>i</sub></b>	0,01875	0,01269	0,02896	0,01564	0,04050	0,00816
<b>β<sub>i</sub></b>	0,23190	0,17190	0,76201	0,52166	1,44587	
<b>α<sub>i</sub></b>	-0,00203	0,00035	0,00327	-0,00069	0,00202	
<b>σ<sup>2</sup><sub>ei</sub></b>	0,00035	0,00016	0,00080	0,00023	0,00150	
<b>ERBi</b>	-0,05605	-0,06178	-0,01000	-0,02225	-0,00607	

Source : processed data by researchers

**Table 2 Ci calculations**

PERHITUNGAN NILAI Ci					
<b>A<sub>j</sub></b>	-8,45	-11,48	-7,26	-8,66	-26,73
<b>SIGMA A<sub>j</sub></b>	-8,45	-19,93	-27,19	-35,85	-62,58
<b>B<sub>j</sub></b>	1392,648	185,756	725,732	154,589	1201,202
<b>SIGMA B<sub>j</sub></b>	1392,648	1578,404	2304,137	2458,725	3659,927
<b>C<sub>i</sub></b>	<b>-0,00051</b>	-0,00120	-0,00157	-0,00205	-0,00335

Source : processed data by researchers

Based on the calculation results in Table 3, we can determine the  $C^*$  value which acts as a limit for including assets in the optimal portfolio. This  $C^*$  value is the highest  $C_i$  value found in the analysis. The highest  $C_i$  is  $-0.00051$ , which indicates that the optimal portfolio should consist of INDF, BRMS and MAPI assets. Therefore, the recommended proportions or allocations for these assets are as follows:

**Table 3 Distribution of Share Proportions**

OUTPUT			
	BRMS	INDF	MAPI
<b>Zi</b>	-5,844363905	-66,76492428	-9,525864286
<b>wi</b>	0,071155452	0,812866626	0,115977922
Proporsi			
Aktiva	wi		
BRSM		7%	
INDF		81%	
MAP		12%	

Source : processed data by researchers

Based on the calculation results, the proportion for blue chip shares was 7% for BSM, 81% for Indf and 12% for Map. Therefore, the risk and return calculations for blue chip stocks are produced as follows:

**Table 4 Final Results**

<b><math>\sigma_p</math></b>	0,00081
<b><math>\beta_p</math></b>	0,33099
<b>Risiko Sistemik</b>	0,00001
<b>Riisiko Unik</b>	0,00012
<b>Total Risiko</b>	0,01144
<b>E(Rp)</b>	0,00351

Source: data processed by researchers.

The final result obtained for Blue Chip shares was Total Risk 0.01144 and Return 0.00351.

*Second Liner Stock Calculation*

**Table 1 Data Processing**

	BELL	INKP	ASII	SMGR	JSMR	RM
<b>E(Ri)</b>	0,09688	0,00052	0,00014	-0,00018	0,00134	0,00015
<b><math>\sigma_i</math></b>	0,97306	0,02073	0,01797	0,02142	0,01951	0,00816
<b><math>\beta_i</math></b>	6,52618	0,82336	0,92088	0,97185	-0,13237	
<b><math>\alpha_i</math></b>	0,09594	0,00040	0,00001	-0,00033	0,00135	
<b><math>\sigma_{ei}^2</math></b>	0,94401	0,00012	0,00032	0,00010	0,00038	
<b>ERBi</b>	0,01316	-0,01273	-0,01179	-0,01151	0,07301	

Source: data processed by researchers

**Table 2 Distribution of Share Proportions**

Proporsi	
Aktiva	wi
BELL	0%
INKP	16%
ASII	84%

Source: data processed by researchers

Based on the calculation results, the proportion for Second Liner shares was 16% for INKP and 84% for ASII. Therefore, the risk and return calculations for blue chip stocks are produced as follows:

**Table 3 Final Results**

<b><math>\alpha_p</math></b>	0,00281
<b><math>\beta_p</math></b>	0,66955
<b>Risiko Sistematis</b>	0,00003
<b>Risiko Unik</b>	0,00024
<b>Total Risiko</b>	0,01641
<b>E(Rp)</b>	0,00827

Source: data processed by researchers

The final result obtained for second liner shares was Total Risk 0.01641 and Return 0.00827. Through this research, a comparative analysis has been carried out between two sample segments of manufacturing companies in the 2022 period, namely first liner/blue stock chips and second liner in Indonesia stock exchange. This analysis gives the result that the return from the blue chip/first liner stock portfolio is of 0.00351, while the return from second liner stock portfolio is of 0.00827. Meanwhile, risks of a blue chip/first liner stock portfolio is as big as 0.01144, and the risk of second liner stock portfolio is equal to 0.01641.

Based on the theory of "high return, high risk" and findings from research, second liner stocks are considered more attractive in the context of diversification. Although these stocks offer greater investment returns, they are also exposed to a higher level of risk than blue chip or first liner stocks. As a result, second liner shares can become an attractive additional investment option for investors.

## CONCLUSIONS AND ADVICE

Based on the evaluation and examination that has been carried out to compare investment results and risk levels in shares of first liner and second liner manufacturing companies listed on the Indonesia Stock Exchange (BEI) in 2022, the following conclusions can be drawn:

1. There are five companies that meet the criteria for blue chip stocks, namely GGRM, INDF, MAPI, GJTL, and BRMS. The portfolio formed from these shares provides an expected return of 0.00351 with a risk level of 0.01144.
2. Apart from that, there are five companies that meet the criteria for second liner shares, namely BELL, INKP, ASII, SMGR, and JSMR. A portfolio formed from these shares provide expected returns of 0.00827 with a risk level of 0.01641.

Therefore, it can be concluded that investing in second liner shares of manufacturing companies is a more attractive investment alternative. Even though it has a higher level of risk, it also provides the potential for greater returns, in accordance with the principle of "high return, high risk," compared to investing in first liner shares of manufacturing companies.

There are 3 sugesgestion, likes:

1. The data used are stock prices and the IHSG in research should include more information over a certain period to improve the representation of market conditions.
2. The historical data used needs to be updated according to changes in market conditions, and stock beta analysis should be carried out regularly and in accordance with the latest market situation.
3. For further research, it is recommended to consider a variety of other forms of investment besides first liner and second liner shares, to get a more comprehensive picture of various investment options.

## **BIBLIOGRAPHY**

- Anggraeni, M. (2020). Analysis Of The Formation Of An Optimal Stock Portfolio. Scientific Journal of Management, Business and Accounting Students.
- Hartono, J. (2017). In J. Hartono, Portfolio theory and investment analysis (p. 755). Yogyakarta: Faculty of Economics and Business UGM.
- Husnan, S. (2015). In S. Husnan, Basics of Portfolio Theory and Securities Analysis. Yogyakarta: UPP STIM YKPN.
- Indriantoro, N., & Supomo, B. (2013). In N. Indriantoro, & B. Supomo, Business Research Methodology for Accounting & Management. Yogyakarta: BPF.
- Meutia Handayani, TF (2019). Firm Size, Market Risk, and Stock Return: Evidence from Indonesian Blue. Journal of Accounting and Business Dynamics.
- Mirah, & Wijaya, T. (2012). Analysis of the Single Index Model for Stock Portfolios on the IDX for the 2009-2011 Period, STIE MDP Management Department.
- Putry, Galishia, Sugema, I., & Lubis, D. (2014). Comparative Analysis of the Excess Return of the Jakarta Islamic Index and the Composite Stock Price Index., 121-134.
- Roem, S. M. (2007). Speculation in the Stock Market, 1-7.
- Securities, O. (2023, February 3). Get to know the 3 levels of share levels on the Indonesian Stock Exchange. Retrieved from ocbsecurities.com: <https://www.ocbcsecurities.com/promotion-events/mengenal-3-angkatan-level-saham-di-bursa-effect-indonesia>
- Soebrati, NW, & Astawinetu, ED (2017). Comparative Analysis Of Risk & Return Of First Stock Portfolio. Pages. 303-314.