Analysis of Formation of Optimal Portfolio Single Index Model (Study of Cigarette Sub-Sector Manufacturing Companies Period 2020-2021)

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Article Info	ABSTRACT
	Investors and the general public are becoming increasingly familiar with stock investing. This study aims to establish the appropriate proportion for stock and fund portfolios. Secondary data is the data's source. Cigarette manufacturing businesses served as the research population from January 2020 to December 2021. This study employs sampled four business companies single index model methodologyfirmsia (GGRM), which has a proportion of 33.81%, and PT. Handjaya Mandala Tobacco Tbk, which has an investment value of 66.19%, are the two shares that will be included in the optimal portfolio.

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1. INTRODUCTION

Investing is setting aside money or saving money to reap returns or increase the investment over time. Investors are people who invest. While many investments have nothing to do with business, this is is only so sometimes hese. In order sometimes vavalue, severalnon-business assets have recently attracted people's interest. The goal of investing is not to make someone instantly rich; instead, an investor must maintain patience, firm commitment, and calm even when the market fluctuates. Making short-term investments is still an option.

[1], *Return* and *Capital Gain* are the two main components that make up a return, often known as the return rate. The componen return component yield re, presents the consistent cash flow or income generated from the investment. An increase (decrease) in the price of a security (stock or other long-term security), which results in a gain (loss)

for the investor, is the second component of return, the capital gain (loss). According to the capital market theory, the returns investors receive from shares (company shares) sold in the capital market are referred to as returns.

Investing in the capital market involves a high level of risk. To reduce risk, investors can analyze a company's financial situation through annual reports, analyze inventory values, and calculate inventory returns from the previous year. Potential investors are still determining which stock is best for them because it is so much available on the stock exchange. Investors can reduce the risk involved by investing in the appropriate store stores culate a low-risk portfolio; investors must be involved in portfolio management. Compiling a portfolio can also be an alternative to reduce stock diversification. In compilation, A supply portfolio, that this has been ought togo out by invest need need some complete story deport

analysis. Port analysis created Single Index analysis in 1963 to simplify the theoretical calculations based on the Markowit portfolio construction model onn. Because of the many covariances and variations it contains, the Markowitz model is considered very complex [2]. The data used to determine whether a security is in the optimal portfolio is the basis for calculating the optimal portfolio. The amount that can be calculated using the ratio of *Excess Excess Return to Beta ratisingle index*ex model. Thsingle - factoror model, often known as the single index model, posits that returns are not equal to or related to two or more securities (moving together). It displays a consistent response to a single element or index. The index or coefficient used in a single index is the Composite Stock Index (IHSG)

Based on the information provided above, research questions can be developed, such as which stocks are included in the optimal portfolio of the cigarette business and what percentage of funding will be invested in each of these stocks using a single index model.

2. LITERATURE REVIEW

2.1 Investment

Investing is setting aside money or saving money the reaps or increase of the investment over time. Investors are people who invesi. Investmentan be classi Assetct or indirect, said [3]. Future-oriented goals for investment include improving quality of life, reducing inflationary pressures, and promoting tax savings. The investment decisiodecision-makings should decisiodecision-making determiningvestor decisidecision-makercting a pordecision-makery, selecting assets, identifying investment objectives, deciding on investment policies, and measuring and assessing portfolio performance are all part of the investment decision-making process.

2.2 Capital market

A capital market is an ere various long-term financial securities can be traded and bought and sold using either cash or equity. Financial instruments such as stocks, bonds, warrants, rights, convertible bonds, and various derivative products such as options (put or call) are exchanged in the capital market. Capital markets offer a way to transact in securities, giving them a unique market structure and form compared to other types of needs. Cneedsntly, the capital market exhibits the following characteristics: creates opportunities for future earnings where holders of securities can expect short-term and long-term gains, emphasizes analytical skills, including technical and fundamental analysis, and whether they realize it or not, one of the characteristics of the capital market involves elanelementt of speculation. Have high expectations and great danger and vice versa.

2.3 Share

One of the most commonly exchanged financial commodities in the stock market is shares. Investors anticipate their investment in stocks to generate profits, but there is little doubt that stores also carry some danger. A company can sell its ownership rights in the form of shares. Another type of stock, preferred stock, may also be issued by corporations to attract additional potential investors.

2.4 Return

According to [1], the return has two fundamental components: yield and capital gain (loss). The cash flow or income received on regularly an investment is referred to as yield, which is the component of the ereturnmponent(decrease) in the price of a security (shares or other long-term securities), which can result in a profit (loss) for investors, is referred to as a capital gain (loss) as the second component of return.

2.5 Portfolio

Portfolio Investment in the capital market, one of which is a portfolio, has advantages as well as potential risks. According to [4], the basis of portfolio theory is that usually, securities investors do not allocate all of their capital to one type of stock but instead spread it among several different tostones.

2.6 Single Index Model

William Sharpe created a Single Index analysis in 1963 to simplify the theoretical calculations based on the Markowitz portfolio construction model. Because of the many covariances and variations it contains, the Markowitz model is considered very complex [2]. The data used to determine whether a security is in the optimal portfolio is the basis for calculating the optimal portfolio. The amount calculated using the Excess Return to Beta ratio is based on a single index model. The single-factor single-factor del the single index model posits that returns are not identical related to two or more securities (moving together).

3. METHODS

Types of research

This research uses descriptive quantitative analysis, which is a method that is arranged objectively based on the purpose of numbers. Using a single index model of cigarette sub-sector manufacturing companies, this study seeks to find suitable stocks to form the Optimal Portfolio.

Research sites

Since the research focuses on stock portfolios and other data that can be accessed on the IDX, it will be conducted on the Indonesia Stock Exchange (IDX). Since IDX is a recognized organization, getting the data researchers to neto from it is easy and fast.

Data source

The data in this study were collected from the Indonesia Stock Exchange (IDX) and Yahoo. Finance, and are used in the form of monthly data, namely reports on closing stock prices (Close Price), for the period January 2020 to December. 2021. The data collection method used is the documentation method. Secondary data can be collected by accessing websites such as https://www.idx.co.id/ and to g the closing price of shares (Close *Price)* from 2020 to 2022.

Population And Sfromple

The strategy for selecting the sample for this study, known as the purposive sampling approach, is based on a set of considerations or criteria. The study consisted of five cigarette companies. Which became the

research sample, but only four were selected according to the purpose. Data analysis techniques in this study using the *Microsoft Excel program.*

4. RESULTS AND DISCUSSION

The first study was conducted to answer this objective by collecting stock price data at ca losing price And JCI period from January 2020-December 2022. Then after the data is processed using the Ms. Excel program. The processing results are described as follows:

1. Expected Return value

Table 1. Expected Return Value

ISSUER	ERI	σ i	α_i	β i
GGRM	-0.01966	0.1111095	-0.0683	0.881688
HSMP	-0.02815	0.09404	-0.08108	0.95929
ITIC	-0.04652	0.3097397	0.060543	-1.94066
WIIM	0.092527	0.3416232	-0.10923	3.657074

Source: Data processed 2022

Table 1 above shows that the most significant expected return value is the Wismilak Inti Makmu,r Company, with a value of 0.092527. Gudang Garam Indonesia Tbk has the lowest score, with a standard deviation risk that reflects the investment. General risk means systematic risk (market risk) and portfolio risk. Cigarette The cigarette withwith a t score, Handjaya Mandala Sampoerna Tbk, has a standard deviation of 0.094040. Based on the data mentioned above, PT. Wismilak Inti Makmur Tbk has the largest, most considerable valueth, a value of 3.657073duringile PT. Indonesia Sampoerna Tbk has the lowest value,e, with a value of -1.940657. The only company with a positive alpha value is PT. Indonesia Sampoerna Tbk and three other companies were negative.

2. Calculating Residual Error

Table 2. Residual Error Value and ERB

ISSUER	$\sigma\,ei^2$	ERB
WIIM	0.0099793	-0.022407
ITIC	0.006043	-0.02945
GGRM	0.0844763	0.0240206
HMSP	0.0760014	0.0252747

Source: data processed 2022

PT shares that Gudang Garam Tbk and Handajaya Mandala Sampoerna have positive ERB values. Meanwhile, PT. Wismilak Indonesia Tbk and PT. Indonesia Tobacco Tbk has a negative value. Find *Cuts Off Point* to decide which shares to choose or not to determine which stocks can or cannot be selected to build an Optimal portfolio is the fourth stage. After the ERB value is known, the *Cut Off Point value* must be calculated.

3. Calculating *Cut Off Point Value* and *Cut Off Rate*

Table 3. Ci and C* values

ISSUER	$\sum Aj$	$\sum Bj$	ci	C*
WIIM	3.7731161	298.4533	0.0060176	0.010050
ITIC	-0.7117199	450.7406	-0.0009133	0.010050
GGRM	4.4476584	175.9728	0.0088158	0.010050
HMSP	5.5185533	220.5551	0.010050	0.010050

Source: data processed 2022

The intersection point can be found by calculating the value of Ci. *The Cut Off Point* (C*) value can be determined by setting the Ci value, which functions as a limit. *The Cut Off Point* (C*) value is determined using the most considerable Ci value, 0.010050. The highest Cut off Rate will limit the shares that can be included in the Optimal Portfolio.

4. Determination of Portfolio Candidates

Table 4. Optimal Portfolio

CODE	C_i	C*	Decision
WIIM	0.0088153	0.010050	-
ITIC	0.010050	0.010050	-
GGRM	0.0060176	0.010050	Optimal
HMSP	-0.000913	0.010050	Optimal

REFERENCES

Source: data processed 2022

The table above shows that the cigarette sub-sector manufacturing companies consist of four companies, of which only two, namely PT, are included in the Optimal portfolio. Gudang Garam Indonesia Tbk and PT. Handjaya Mandala Sampoerna Tbk.

5. Share proportion as Optimal Portfolio

Table 5. Share proportion

ISSUER	W_i
GGRM	33.81%
HMSP	66.19%
	100.00%

Source: data processed 2022

Table 5 shows that PT. Gudang Garam Indonesia (GGRM) and PT. Handjaya Mandala Tobacco Tbk has the best portfolio, with a total investment of 33.81% and 66.19%, respectively. Thus, 100.00% should be the Optimal overall Wi portfolio.

5. CONCLUSION

Investors are people who make investments. While many assets have nothing to do with business, this is only sometimes the case. Several non-business investments have recently attracted people's interest to increase the value of wealth based on the calculation above; the two stocks that meet the criteria to be included in the optimal portfolio with their respective weights are supplies that are included in the ideal portfolio according to the calculation above, namely.

1. PT. Gudang Garam Indonesia (GGRM), with a proportion of 33.81%, and PT. Handjaya Mandala Tobacco Tbk with a ratio of 66.19 %

Several things could be improved with this research. This study uses historical data, which has limitations. Namely,y it can change if market conditions change, even though it can be used to determine the stock's beta. The content of the conclusion should be an answer to the question and research objectives. Findings are presented in one paragraph, not bullet points, and are expressed not in statistical sentences.

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