COMPARISON ANALYSIS OF INDEX IDX30 OPTIMAL SHARE PORTFOLIO WITH INDONESIAN EQUITY FUND PORTFOLIO PERFORMANCE

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Abstract

Based on the results of the study, the conclusions that can be drawn are as follows. The optimal portfolio calculation results on the Single Index Model method for stocks show that stocks with UNVR issuers are the only ones that are optimal. Whereas in Mutual Funds there is no optimal portfolio calculation results. The results of calculations using the Markowitz method for all stock issuers obtained a return value of 0.000634 with a risk of 0.036057, namely at alpha 0.9. Meanwhile, for all stock mutual fund issuers, a return value of 0.003195 was obtained with a risk of 0.033629, namely at alpha 0.9. Compared to calculations using the Single Index Model Method for all stocks, a return value of 0.0050 is obtained with a risk of 0.0218, while for Equity Mutual Fund issuers a return value of 0.0072 is obtained with a risk of 0.0194, in this case the calculation of the optimal portfolio in stocks and mutual funds using the Markowitz Method produces a smaller return and greater risk than the Single Index Model method. The Single Index Model method which produces stock return calculations is superior to the Markowitz method. This is obtained from the results of the return value obtained on the Single Index Model which is greater than the Markowitz model so that stock investment will be more profitable if using the Single Index Model method. The Single Index Model method is superior to the Markowitz method in calculating mutual fund returns. This is obtained from the results of the return value obtained in the Single Index Model which is greater than the Markowitz model so that mutual fund investment will be more profitable if using the Single Index Model method. The Single Index Model method is superior to the Markowitz method in calculating stock risk. This is obtained from the results of the stock risk value obtained in the Single Index Model which is smaller than the Markowitz model so that stock investment will be riskier if using the Markowitz method. The Single Index Model method is superior to the Markowitz method in calculating mutual fund risk. This is obtained from the results of the mutual fund risk values obtained in the Single Index Model which are smaller than the Markowitz model so that mutual fund investments will be riskier if using the Markowitz method.

*Keywords: **Optimal Share Portfolio Comparison, Idx30 Index, Equity Fund Portfolio Performance***

INTRODUCTION

The capital market is a meeting place for companies and other institutions (eg the government) that need funds from the public for business development, expansion, additional working capital, etc., with the public wishing to invest their funds. To obtain funding, these companies or institutions issue stocks or bonds, and the public (investors) finance these companies or institutions by purchasing these instruments on the capital market either directly or in the form of mutual funds. Therefore the capital market has an important role for the economy of a country. Apart from stocks, bonds and mutual funds, the capital market also trades other forms such as warrants, rights and other derivative products (Mar'ati, 2010). Capital Market Law No.

There are several investment instruments in Indonesia that provide various investment options for investors in Indonesia. Investment is the purchase of financial assets to obtain greater profits in the future. One of the investment instruments that can provide a high return is stock investment. Investment in shares or commonly called stock investment is the purchase or participation or ownership of shares of other companies with the aim of gaining profit and others (Mudjiyono, 2012). The stock price reflects the wealth of the company that issued the shares, where changes or fluctuations are largely determined by the forces of supply and demand that occur on the exchange (secondary market). The more investors who want to buy or hold a stock, the higher the price. conversely, the more investors who want to sell or release a stock, the more the price will move down (Sihombing

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& Munthe, 2011). The advantages gained through investing in stocks are capital gains (increase in stock prices on the stock exchange) and dividends given by the company to investors. On the other hand, risks can occur in stock investment, namely stock price fluctuations on the stock exchange caused by demand and sales as well as declining company performance.

Apart from investing in stocks, investments in the capital market that also provide high returns are mutual fund investments. Mutual Funds have different proportions and based on the type of Mutual Funds are divided into five types, namely money market Mutual Funds, fixed income Mutual Funds, Mixed Mutual Funds, Equity Mutual Funds and Protected Mutual Funds (OJK, 2015). Mutual Fund performance can be described through the net asset value per unit or total Mutual Fund portfolio value which is calculated on the basis of market price divided by the number of Mutual Fund participation units (UP). NAV is the amount of assets that have been deducted by the related liabilities. The obligations referred to in Mutual Funds are investment manager fees, custodian bank fees, broker fees, taxes and securities purchases that have not been paid (Darmadji, 2012). According to Rofiq and Santoso (2015) say that "Equity mutual funds are mutual funds that place at least 80% of the public managed funds in equity securities and the potential for equity mutual funds has high returns and risks." This shows that Equity Funds have a proportion of 80% in equity and relatively high returns but are also accompanied by high risks compared to other types of Mutual Funds.

The problem that is often faced by investors is the attitude of doubt in choosing stocks that are formed to be their preferred portfolio. This relates to the type of investor who avoids risk and investors who like high enough risk. A rational investor, of course, will choose the optimal portfolio. Stock risk is generally divided into 2 parts, namely risks that affect all investments and cannot be reduced or eliminated by diversification. Meanwhile, unsystematic risk is the risk inherent in certain investments due to the unique conditions of a particular company or industry. The relative measure of systematic risk known as the Beta coefficient shows the relative risk size of a stock to the market portfolio (Hartono, 2017).

LITERATURE REVIEW
2.1 Portfolio Theory

According to Jogiyanto (2017), that Markowitz's portfolio theory is based on the mean (average) and variance (variance) approaches, where the mean is a measure of the rate of return and variance is a measure of the level of risk. Markowitz's portfolio theory is also known as the mean-variant model, which emphasizes efforts to maximize the expected return (mean) and minimize uncertainty or risk (variance) to select and develop optimal portfolios. According to Tandelilin (2017: 156), in forming a portfolio to maximize the expected return at the level of risk borne by investors, the index model or factor model assumes that the rate of return of an effect is sensitive to changes in various factors or indexes. As a process of calculating the rate of return, an index model attempts to capture the major economic forces that can systematically move stock prices for all securities. Implicitly, in the construction of the index model there is an assumption that the rate of return between two or more securities will be correlated (Halim, 2018: 82).

2.2 return

One of the goals of investors investing is to get a return. Without the level of profit enjoyed from an investment, of course investors will not invest. So all investments have the main goal of getting a return. According to Jogiyanto (2015: 107), return is the result obtained from investment. According to Samsul (2015: 111), return is income expressed as a percentage of the initial investment capital. Investment income in these shares is the profit obtained from buying and selling shares, where if a profit is called a capital gain and if a loss is called a capital loss. According to Brigham and Houston (2016: 215), return or rate of return is the difference between the amount received and the amount invested, divided by the amount invested.

2.3 Risk

Risk according to Hanafi (2014: 1), Risk is a hazard, result or consequence that can occur as a result of an ongoing or ongoing or future process. Risk can be interpreted as a state of uncertainty, where if an unwanted condition occurs it can cause a loss. According to AS/NZS Standard 4360:1995 risk is the chance of something happening that has an impact on goals that are measured in terms of consequences and probabilities.

2.4 Investment

Investment is a delay in current consumption to be included in productive assets for a certain period of time in the future (Jogiyanto, 2015: 5). Meanwhile, according to Tandelilin (2017: 2) Investment is a commitment to a number of funds or other resources that are carried out at this time, with the aim of obtaining a number of benefits in the future. Based on some of the definitions above, it can be interpreted that investment is the placement of funds in an asset by sacrificing current consumption for a certain period of time with the aim of obtaining profits in the future.

2.5 Share

Shares are certificates that show proof of ownership of a company, and shareholders have claim rights to the company's profits and assets. Shares are securities that show part of the company's ownership, if investors invest by buying shares it means that the investor buys part of the ownership of the company, and the investor is entitled to the profits the company gets in the form of dividends. According to Tandelilin (2017: 31) a share is a certificate that shows proof of ownership of a company, if an investor owns 1 million shares of a company out of a total of 100 million shares, the investor owns 1% of the company.

2.6 mutual funds

Mutual Funds are a forum and pattern of fund or capital management for potential investors to invest in investment instruments available on the Capital Market by purchasing a mutual fund participation unit (UP). These funds are then managed by the Investment Manager into investment portfolios, either in the form of stocks, bonds, derivatives, money markets or others. Mutual funds are also an investment alternative for investors, especially small investors and investors who don't have much time and expertise to calculate the risk of their investment. Referring to Capital Market Law No. 8 of 1995, article 1 paragraph 27 defines that mutual funds are a vehicle used to raise funds from public investors to be invested in portfolio securities by investment managers. There are three things that are related to this definition, namely, First, there are funds from the financier community. Second, the fund is invested in a securities portfolio, and Third, the fund is managed by an investment manager. Thus, the funds in mutual funds are shared funds with investors, while the investment manager is the party entrusted with managing the funds.

RESEARCH METHODS

In addition to processing the results of previous research, exploratory research is also needed to formulate problems and identify for further research. Then quantitative research is used to explain problem analysis, to explain the basic theoretical concepts and results of previous research, and to reveal the hypothesis to be tested. Mutual fund research was conducted at the Financial Services Authority (OJK) which is located at Jalan Lapangan Banteng Timur 2-4, Jakarta 10710. The population is a generalization area (read: generalization) which consists of: objects/subjects that have certain qualities and characteristics determined by the researcher to be studied and then conclusions drawn (Sugiyono, 2012: 90). Population can also be defined as a collection of data that may be observed or recorded by a researcher. The population in this study are all IDX30 index companies in 2019-2021 The sample is part of the number and characteristics possessed by the population (Sugiyono, 2012: 91). The sample is determined with the criteria that the stock is consistently at IDX 30 in a row from 2019 to 2021. This data can be obtained from the company's annual report and financial statements. Data collection was carried out by determining sample companies and then downloading the company's annual report on the website www.idx.co.id and the respective company's website. In this study the data used is time series data.

DISCUSSION
4.1 Calculation of Optimal Portfolio with Single Index Model
1. **Share**

Table 1 Alpha, Beta, and Variance Error Residual (Shares)

No	Share	Year	Alpha	Betas	Unsymmatic Risk
1	ADRO	2019	0.0218	2.2833	0.0152
2	ANTM		0.0105	3.6345	0.0292
3	ASII		-0.0181	0.8872	0.0040
4	BBCA		0.0123	0.3159	0.0007
5	BBNI		-0.0100	1.5369	0.0062
6	BBRI		0.0142	1.3445	0.0037
7	BMRI		0.0027	0.9893	0.0030
8	CPIN		-0.0040	0.0831	0.0098
9	ICBP		0.0066	0.1384	0.0029
10	INDF		0.0064	0.4657	0.0043
11	INKP		-0.0276	2.4204	0.0242
12	KLBF		0.0052	1.1437	0.0050
13	PGAS		0.0015	2.4900	0.0135
14	PTBA		-0.0381	1.5690	0.0093
15	SMGR		0.0034	2.2555	0.0118
16	TLKM		0.0045	0.5214	0.0016
17	UNTR		-0.0183	0.6853	0.0056
18	UNVR		-0.0064	-0.0134	0.0034
19	ADRO	2020	0.0022	0.9538	0.0205
20	ANTM		0.1052	2.7102	0.1086
21	ASII		0.0017	1.5035	0.0334
22	BBCA		0.0056	0.8703	0.0104
23	BBNI		0.0020	2.0744	0.0538
24	BBRI		0.0061	1.3926	0.0261
25	BMRI		-0.0022	1.6097	0.0336
26	CPIN		0.0073	0.8416	0.0155
27	ICBP		-0.0091	0.1497	0.0067
28	INDF		0.0073	0.4298	0.0094
29	INKP		0.0464	1.8489	0.0556
30	KLBF		-0.0034	0.4974	0.0082
31	PGAS		0.0295	3.5226	0.1510
32	PTBA		0.0109	0.6753	0.0133
33	SMGR		0.0154	1.4917	0.0318
34	TLKM		-0.0094	0.9062	0.0135
35	UNTR		0.0250	0.7120	0.0158
36	UNVR		-0.0085	-0.0048	0.0049
37	ADRO	2021	0.0416	0.8475	0.0241

No	Share	Year	Alpha	Betas	Unsymmatic Risk
38	ANTM		-0.0018	2.5368	0.0188
39	ASII		-0.0030	0.0503	0.0040
40	BBCA		0.0001	0.8793	0.0029
41	BBNI		-0.0089	2.6275	0.0174
42	BBRI		-0.0111	1.6895	0.0066
43	BMRI		0.0074	0.3464	0.0034
44	CPIN		-0.0059	0.0362	0.0041
45	ICBP		-0.0057	-0.1475	0.0020
46	INDF		-0.0054	-0.0175	0.0020
47	INKP		-0.0252	1.1084	0.0165
48	KLBF		0.0063	0.3380	0.0038
49	PGAS		-0.0356	3,2500	0.0225
50	PTBA		-0.0095	1.4295	0.0138
51	SMGR		-0.0449	0.7844	0.0118
52	TLKM		0.0084	1.2228	0.0049
53	UNTR		-0.0147	0.6037	0.0123
54	UNVR		-0.0540	-0.0563	0.0050

Source:www.idx.co.id(Data processed, 2023)

Based on Table 1, shows the value of alpha, beta, and also the residual error variance of the issuers studied. From these data will then be used in calculations in determining stocks that match the criteria for forming an optimal portfolio.

Table 2 Excess Return to Beta (ERB) Per Share

No	Share	Year	E(Ri)	Rf	Betas	ERB
1	ADRO		0.0259	0.0018	2.2833	0.0093
2	ANTM		0.0170	0.0018	3.6345	0.0034
3	ASII		-0.0165	0.0018	0.8872	-0.0239
4	BBCA		0.0129	0.0018	0.3159	0.0260
5	BBNI		-0.0072	0.0018	1.5369	-0.0078
6	BBRI		0.0166	0.0018	1.3445	0.0088
7	BMRI		0.0045	0.0018	0.9893	-0.0002
8	CPIN		-0.0039	0.0018	0.0831	-0.1032
9	ICBP	2019	0.0068	0.0018	0.1384	0.0156
10	INDF		0.0072	0.0018	0.4657	0.0054
11	INKP		-0.0233	0.0018	2.4204	-0.0116
12	KLBF		0.0072	0.0018	1.1437	0.0022
13	PGAS		0.0060	0.0018	2.4900	0.0005
14	PTBA		-0.0353	0.0018	1.5690	-0.0255
15	SMGR		0.0075	0.0018	2.2555	0.0012
16	TLKM		0.0054	0.0018	0.5214	0.0014
17	UNTR		-0.0170	0.0018	0.6853	-0.0317
18	UNVR		-0.0048	0.0018	-0.0134	0.7088
19	ADRO	2020	0.0008	-0.0015	0.9538	-0.0029

No	Share	Year	E(Ri)	Rf	Betas	ERB
20	ANTM		0.1011	-0.0015	2.7102	0.0360
21	ASII		-0.0006	-0.0015	1.5035	-0.0027
22	BBCA		0.0043	-0.0015	0.8703	0.0008
23	BBNI		-0.0012	-0.0015	2.0744	-0.0023
24	BBRI		0.0039	-0.0015	1.3926	0.0003
25	BMRI		-0.0047	-0.0015	1.6097	-0.0051
26	CPIN		0.0060	-0.0015	0.8416	0.0029
27	ICBP		-0.0093	-0.0015	0.1497	-0.0857
28	INDF		-0.0079	-0.0015	0.4298	-0.0267
29	INKP		0.0436	-0.0015	1.8489	0.0216
30	KLBF		-0.0041	-0.0015	0.4974	-0.0154
31	PGAS		0.0241	-0.0015	3.5226	0.0058
32	PTBA		0.0099	-0.0015	0.6753	0.0094
33	SMGR		0.0131	-0.0015	1.4917	0.0064
34	TLKM		-0.0108	-0.0015	0.9062	-0.0158
35	UNTR		0.0239	-0.0015	0.7120	0.0286
36	UNVR		-0.0086	-0.0015	-0.0048	2.5288
37	ADRO		0.0487	0.0084	0.8475	0.0540
38	ANTM		0.0195	0.0084	2.5368	0.0065
39	ASII		-0.0026	0.0084	0.0503	-0.1102
40	BBCA		0.0075	0.0084	0.8793	0.0052
41	BBNI		0.0131	0.0084	2.6275	0.0039
42	BBRI		0.0031	0.0084	1.6895	0.0001
43	BMRI		0.0104	0.0084	0.3464	0.0214
44	CPIN		-0.0056	0.0084	0.0362	-0.2360
45	ICBP		-0.0070	0.0084	-0.1475	0.0672
46	INDF	2021	-0.0056	0.0084	-0.0175	0.4869
47	INKP		-0.0159	0.0084	1.1084	-0.0170
48	KLBF		0.0092	0.0084	0.3380	0.0184
49	PGAS		-0.0083	0.0084	3,2500	-0.0035
50	PTBA		0.0025	0.0084	1.4295	-0.0003
51	SMGR		-0.0383	0.0084	0.7844	-0.0525
52	TLKM		0.0186	0.0084	1.2228	0.0128
53	UNTR		-0.0096	0.0084	0.6037	-0.0208
54	UNVR		-0.0447	0.0084	-0.0563	0.8460

Source:www.idx.co.id(Data processed, 2023)

Based on the ERB calculation, the highest ERB value was obtained from UNVR shares in 2020 which was 2.5288 and the lowest ERB from CPIN shares in 2021 which was -0.2360. There is a negative ERB value because the E(Ri) value owned is smaller than the existing Risk Free value so that it influences the formation of the ERB value of each stock.

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Table 3 Comparison of ERB and Cut of point Values (Shares)

No	Share	Year	ERB	ci	Cut of Points	Decision
1	ADRO	2019	0.0093	0.2747	0.3926	Not optimal
2	ANTM		0.0034	0.3602	0.3926	Not optimal
3	ASII		-0.0239	0.1513	0.3926	Not optimal
4	BBCA		0.0260	0.1085	0.3926	Not optimal
5	BBNI		-0.0078	0.2985	0.3926	Not optimal
6	BBRI		0.0088	0.3926	0.3926	Not optimal
7	BMRI		-0.0002	0.2550	0.3926	Not optimal
8	CPIN		-0.1032	0.0005	0.3926	Not optimal
9	ICBP		0.0156	0.0053	0.3926	Not optimal
10	INDF		0.0054	0.0403	0.3926	Not optimal
11	INKP		-0.0116	0.1901	0.3926	Not optimal
12	KLBF		0.0022	0.2089	0.3926	Not optimal
13	PGAS		0.0005	0.3662	0.3926	Not optimal
14	PTBA		-0.0255	0.2052	0.3926	Not optimal
15	SMGR		0.0012	0.3443	0.3926	Not optimal
16	TLKM		0.0014	0.1393	0.3926	Not optimal
17	UNTR		-0.0317	0.0643	0.3926	Not optimal
18	UNVR		0.7088	0.0001	0.3926	Optimal
19	ADRO	2020	-0.0029	0.2370	0.3926	Not optimal
20	ANTM		0.0360	0.3759	0.3926	Not optimal
21	ASII		-0.0027	0.3625	0.3926	Not optimal
22	BBCA		0.0008	0.3917	0.3926	Not optimal
23	BBNI		-0.0023	0.4283	0.3926	Not optimal
24	BBRI		0.0003	0.3981	0.3926	Not optimal
25	BMRI		-0.0051	0.4118	0.3926	Not optimal
26	CPIN		0.0029	0.2451	0.3926	Not optimal
27	ICBP		-0.0857	0.0165	0.3926	Not optimal
28	INDF		-0.0267	0.1028	0.3926	Not optimal
29	INKP		0.0216	0.3370	0.3926	Not optimal
30	KLBF		-0.0154	0.1584	0.3926	Not optimal
31	PGAS		0.0058	0.4434	0.3926	Not optimal
32	PTBA		0.0094	0.1859	0.3926	Not optimal
33	SMGR		0.0064	0.3783	0.3926	Not optimal
34	TLKM		-0.0158	0.3217	0.3926	Not optimal
35	UNTR		0.0286	0.1770	0.3926	Not optimal
36	UNVR		2.5288	0.0001	0.3926	Optimal
37	ADRO	2021	0.0540	0.0232	0.3926	Not optimal
38	ANTM		0.0065	0.2545	0.3926	Not optimal
39	ASII		-0.1102	0.0004	0.3926	Not optimal
40	BBCA		0.0052	0.1955	0.3926	Not optimal
41	BBNI		0.0039	0.2934	0.3926	Not optimal
42	BBRI		0.0001	0.3184	0.3926	Not optimal
43	BMRI		0.0214	0.0264	0.3926	Not optimal
44	CPIN		-0.2360	0.0002	0.3926	Not optimal
45	ICBP		0.0672	0.0086	0.3926	Not optimal
46	INDF		0.4869	0.0002	0.3926	Optimal
47	INKP		-0.0170	0.0540	0.3926	Not optimal
48	KLBF		0.0184	0.0226	0.3926	Not optimal
49	PGAS		-0.0035	0.3451	0.3926	Not optimal
50	PTBA		-0.0003	0.1093	0.3926	Not optimal

No	Share	Year	ERB	ci	Cut of Points	Decision
51	SMGR		-0.0525	0.0365	0.3926	Not optimal
52	TLKM		0.0128	0.2274	0.3926	Not optimal
53	UNTR		-0.0208	0.0215	0.3926	Not optimal
54	UNVR		0.8460	0.0009	0.3926	Optimal

Selection of stocks in accordance with the optimal portfolio category can be done with the condition that ERB > C*. Based on Table 4.3, there are only two stocks with ERB values > C* and included in the optimal portfolio, namely UNVR and INDF stocks.

2. mutual funds

Table 4 Alpha, Beta, and Residual Variance Error (Mutual Funds)

No	mutual funds	Year	Alpha	Betas	Unsymmatic Risk
1	Eastspring Investments Alpha Navigator Class A	2019	0.0218	2.2833	0.0152
2	Eastspring Investments Value Discovery Class A		0.0105	3.6345	0.0292
3	TRIM Kapital Plus		-0.0181	0.8872	0.0040
4	TRIM Capital		0.0123	0.3159	0.0007
5	Schroder Dana Prestasi Plus		-0.0100	1.5369	0.0062
6	Batavia Optimal Stock Fund		0.0142	1.3445	0.0037
7	Batavia Stock Fund		0.0027	0.9893	0.0030
8	TRAM Consumption Plus Class A		-0.0040	0.0831	0.0098
9	BNI-AM Inspiring Equity Fund		0.0066	0.1384	0.0029
10	Mandiri Invest Smart Nation		0.0064	0.4657	0.0043
11	Eastspring Investments Alpha Navigator Class A	2020	0.0022	0.9538	0.0205
12	Eastspring Investments Value Discovery Class A		0.1052	2.7102	0.1086
13	TRIM Kapital Plus		0.0017	1.5035	0.0334
14	TRIM Capital		0.0056	0.8703	0.0104
15	Schroder Dana Prestasi Plus		0.0020	2.0744	0.0538
16	Batavia Optimal Stock Fund		0.0061	1.3926	0.0261
17	Batavia Stock Fund		-0.0022	1.6097	0.0336
18	TRAM Consumption Plus Class A		0.0073	0.8416	0.0155
19	BNI-AM Inspiring Equity Fund		-0.0091	0.1497	0.0067
20	Mandiri Invest Smart Nation		-0.0073	0.4298	0.0094
21	Eastspring Investments Alpha Navigator Class A	2021	0.0416	0.8475	0.0241
22	Eastspring Investments Value Discovery Class A		-0.0018	2.5368	0.0188
23	TRIM Kapital Plus		-0.0030	0.0503	0.0040
24	TRIM Capital		0.0001	0.8793	0.0029
25	Schroder Dana Prestasi Plus		-0.0089	2.6275	0.0174
26	Batavia Optimal Stock Fund		-0.0111	1.6895	0.0066
27	Batavia Stock Fund		0.0074	0.3464	0.0034
28	TRAM Consumption Plus Class A		-0.0059	0.0362	0.0041
29	BNI-AM Inspiring Equity Fund		-0.0057	-0.1475	0.0020
30	Mandiri Invest Smart Nation		-0.0054	-0.0175	0.0020

Based on Table 4, shows the value of alpha, beta, and also the residual error variance of the mutual funds studied. From these data will then be used in calculations in determining stocks that match the criteria for forming an optimal portfolio.

Table 5 Excess Return to Beta (ERB) Per Mutual Fund

No	mutual funds	Year	E(Ri)	Rf	Betas	ERB
1	Eastspring Investments Alpha Navigator Class A	2019	0.0259	0.0018	2.2833	0.0092
2	Eastspring Investments Value Discovery Class A		0.0170	0.0018	3.6345	0.0033
3	TRIM Kapital Plus		-0.0165	0.0018	0.8872	-0.0242
4	TRIM Capital		0.0129	0.0018	0.3159	0.0252
5	Schroder Dana Prestasi Plus		-0.0072	0.0018	1.5369	-0.0079
6	Batavia Optimal Stock Fund		0.0166	0.0018	1.3445	0.0087
7	Batavia Stock Fund		0.0045	0.0018	0.9893	-0.0005
8	TRAM Consumption Plus Class A		-0.0039	0.0018	0.0831	-0.1061
9	BNI-AM Inspiring Equity Fund		0.0068	0.0018	0.1384	0.0138
10	Mandiri Invest Smart Nation		0.0072	0.0018	0.4657	0.0049
11	Eastspring Investments Alpha Navigator Class A	2020	0.0008	-0.0015	0.9538	-0.0044
12	Eastspring Investments Value Discovery Class A		0.1011	-0.0015	2.7102	0.0355
13	TRIM Kapital Plus		-0.0006	-0.0015	1.5035	-0.0037
14	TRIM Capital		0.0043	-0.0015	0.8703	-0.0007
15	Schroder Dana Prestasi Plus		-0.0012	-0.0015	2.0744	-0.0029
16	Batavia Optimal Stock Fund		0.0039	-0.0015	1.3926	-0.0007
17	Batavia Stock Fund		-0.0047	-0.0015	1.6097	-0.0060
18	TRAM Consumption Plus Class A		0.0060	-0.0015	0.8416	0.0012
19	BNI-AM Inspiring Equity Fund		-0.0093	-0.0015	0.1497	-0.0950
20	Mandiri Invest Smart Nation		-0.0079	-0.0015	0.4298	-0.0299
21	Eastspring Investments Alpha Navigator Class A	2021	0.0487	0.0084	0.8475	0.0517
22	Eastspring Investments Value Discovery Class A		0.0195	0.0084	2.5368	0.0057
23	TRIM Kapital Plus		-0.0026	0.0084	0.0503	-0.1499
24	TRIM Capital		0.0075	0.0084	0.8793	0.0029
25	Schroder Dana Prestasi Plus		0.0131	0.0084	2.6275	0.0031
26	Batavia Optimal Stock Fund		0.0031	0.0084	1.6895	-0.0011
27	Batavia Stock Fund		0.0104	0.0084	0.3464	0.0157
28	TRAM Consumption Plus Class A		-0.0056	0.0084	0.0362	-0.2911
29	BNI-AM Inspiring Equity Fund		-0.0070	0.0084	-0.1475	0.0807
30	Mandiri Invest Smart Nation		-0.0056	0.0084	-0.0175	0.6011

Source:www.ojk.go.id(Data processed, 2023)

Based on ERB calculations, the highest ERB value was obtained from the Mandiri Investa Smart Bangsa mutual fund in 2021 which was 0.6011 and the lowest ERB from the Class A TRAM Consumption Plus mutual fund in 2021 which was -0.2911. There is a negative ERB value because the E(Ri) value owned is smaller than the existing Risk Free value so that it influences the formation of the ERB value of each stock.

Table 6 Comparison of ERB and Cut of point (Raeksadana) Values

No	mutual funds	Year	ERB	Cut of Points	Decision
1	Eastspring Investments Alpha Navigator Class A	2019	0.0092	0.3925	Not optimal
2	Eastspring Investments Value Discovery Class A		0.0033	0.3925	Not optimal
3	TRIM Kapital Plus		-0.0242	0.3925	Not optimal
4	TRIM Capital		0.0252	0.3925	Not optimal
5	Schroder Dana Prestasi Plus		-0.0079	0.3925	Not optimal
6	Batavia Optimal Stock Fund		0.0087	0.3925	Not optimal
7	Batavia Stock Fund		-0.0005	0.3925	Not optimal
8	TRAM Consumption Plus Class A		-0.1061	0.3925	Not optimal
9	BNI-AM Inspiring Equity Fund		0.0138	0.3925	Not optimal
10	Mandiri Invest Smart Nation		0.0049	0.3925	Not optimal
11	Eastspring Investments Alpha Navigator Class A	2020	-0.0044	0.3925	Not optimal
12	Eastspring Investments Value Discovery Class A		0.0355	0.3925	Not optimal
13	TRIM Kapital Plus		-0.0037	0.3925	Not optimal

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No	mutual funds	Year	ERB	Cut of Points	Decision
14	TRIM Capital		-0.0007	0.3925	Not optimal
15	Schroder Dana Prestasi Plus		-0.0029	0.3925	Not optimal
16	Batavia Optimal Stock Fund		-0.0007	0.3925	Not optimal
17	Batavia Stock Fund		-0.0060	0.3925	Not optimal
18	TRAM Consumption Plus Class A		0.0012	0.3925	Not optimal
19	BNI-AM Inspiring Equity Fund		-0.0950	0.3925	Not optimal
20	Mandiri Invest Smart Nation		-0.0299	0.3925	Not optimal
21	Eastspring Investments Alpha Navigator Class A		0.0517	0.3925	Not optimal
22	Eastspring Investments Value Discovery Class A		0.0057	0.3925	Not optimal
23	TRIM Kapital Plus	2021	-0.1499	0.3925	Not optimal
24	TRIM Capital		0.0029	0.3925	Not optimal
25	Schroder Dana Prestasi Plus		0.0031	0.3925	Not optimal
26	Batavia Optimal Stock Fund		-0.0011	0.3925	Not optimal
27	Batavia Stock Fund		0.0157	0.3925	Not optimal
28	TRAM Consumption Plus Class A		-0.2911	0.3925	Not optimal
29	BNI-AM Inspiring Equity Fund		0.0807	0.3925	Not optimal
30	Mandiri Invest Smart Nation		0.6011	0.3925	Optimal

Source:www.ojk.go.id(Data processed, 2023)

Selection of stocks in accordance with the optimal portfolio category can be done with the condition that ERB > C*. Based on Table 6, there is only one stock with an ERB value > C* and included in the optimal portfolio, namely stocksMandiri Invest Smart Nation.

4.2 Optimal Portfolio Calculation with Markowitz
1. Share

Table 7 Expected Return E(Ri) Value of IDX30 Shares

No	Share	Year	E(Ri)
1	ADRO		0.025913895
2	ANTM		0.016988935
3	ASII		-0.016498616
4	BBCA		0.012905183
5	BBNI		-0.007248149
6	BBRI		0.016582914
7	BMRI		0.004461752
8	CPIN		-0.003887314
9	ICBP	2019	0.006843029
10	INDF		0.007221046
11	INKP		-0.023275586
12	KLBF		0.007248963
13	PGAS		0.006003914
14	PTBA		-0.035303322
15	SMGR		0.007498086
16	TLKM		0.005430392
17	UNTR		-0.01703767
18	UNVR		-0.004834715
19	ADRO		0.000777423
20	ANTM		0.10107753
21	ASII	2020	-0.000567095
22	BBCA		0.004279822
23	BBNI		-0.001155076
24	BBRI		0.00394911

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No	Share	Year	E(Ri)
25	BMRI		-0.004670839
26	CPIN		0.005972473
27	ICBP		-0.009289087
28	INDF		-0.007914995
29	INKP		0.043571217
30	KLBF		-0.004119124
31	PGAS		0.024083301
32	PTBA		0.009903986
33	SMGR		0.013086009
34	TLKM		-0.010772294
35	UNTR		0.023908433
36	UNVR		-0.008627782
37	ADRO		0.04873073
38	ANTM		0.01945186
39	ASII		-0.002603317
40	BBCA		0.007467096
41	BBNI		0.013110624
42	BBRI		0.003065416
43	BMRI		0.010355576
44	CPIN		-0.005619535
45	ICBP	2021	-0.006972685
46	INDF		-0.005576746
47	INKP		-0.015931366
48	KLBF		0.00915647
49	PGAS		-0.008290154
50	PTBA		0.00250753
51	SMGR		-0.038273563
52	TLKM		0.018638859
53	UNTR		-0.009641723
54	UNVR		-0.044706955

Source:www.idx.co.id(Data processed, 2023)

Based on Table 7 above, it can be seen that during the research period the highest $E(R_i)$ was generated by ADRO shares in 2021, namely 0.04873. While the lowest $E(R_i)$ was produced by UNVR shares, namely -0.0447.

Table 8 Value of IDX30 Share Proportion

No	Share	Year	Proportion
1	ADRO		-1.74%
2	ANTM		2.76%
3	ASII		-0.15%
4	BBCA		12.85%
5	BBNI		1.31%
6	BBRI		4.19%
7	BMRI		34.39%
8	CPIN		3.43%
9	ICBP		1.29%
10	INDF	2019	6.21%
11	INKP		1.33%
12	KLBF		7.44%
13	PGAS		0.64%
14	PTBA		1.37%
15	SMGR		2.27%
16	TLKM		3.20%
17	UNTR		4.93%
18	UNVR		14.29%
19	ADRO	2020	-1.74%
20	ANTM		2.76%

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No	Share	Year	Proportion
21	ASII		-0.15%
22	BBCA		12.85%
23	BBNI		1.31%
24	BBRI		4.19%
25	BMRI		34.39%
26	CPIN		3.43%
27	ICBP		1.29%
28	INDF		6.21%
29	INKP		1.33%
30	KLBF		7.44%
31	PGAS		0.64%
32	PTBA		1.37%
33	SMGR		2.27%
34	TLKM		3.20%
35	UNTR		4.93%
36	UNVR		14.29%
37	ADRO		-1.74%
38	ANTM		2.76%
39	ASII		-0.15%
40	BBCA		12.85%
41	BBNI		1.31%
42	BBRI		4.19%
43	BMRI		34.39%
44	CPIN		3.43%
45	ICBP		1.29%
46	INDF	2021	6.21%
47	INKP		1.33%
48	KLBF		7.44%
49	PGAS		0.64%
50	PTBA		1.37%
51	SMGR		2.27%
52	TLKM		3.20%
53	UNTR		4.93%
54	UNVR		14.29%

Source:www.idx.co.id(Data processed, 2023)

Based on Table 8 above, it shows that the proportion of each selected stock is a number of stocks forming an optimal portfolio, but there are also several stocks that do not form an optimal portfolio.

2. Mutual funds

Table 9 Mutual Fund Expected Return E(Ri) Value

No	mutual funds	Year	E(Ri)
1	Eastspring Investments Alpha Navigator Class A		0.0259
2	Eastspring Investments Value Discovery Class A		0.0170
3	TRIM Kapital Plus		-0.0165
4	TRIM Capital		0.0129
5	Schroder Dana Prestasi Plus		-0.0072
6	Batavia Optimal Stock Fund	2019	0.0166
7	Batavia Stock Fund		0.0045
8	TRAM Consumption Plus Class A		-0.0039
9	BNI-AM Inspiring Equity Fund		0.0068
10	Mandiri Invest Smart Nation		0.0072
11	Eastspring Investments Alpha Navigator Class A		0.0008
12	Eastspring Investments Value Discovery Class A		0.1011
13	TRIM Kapital Plus	2020	-0.0006
14	TRIM Capital		0.0043
15	Schroder Dana Prestasi Plus		-0.0012

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No	mutual funds	Year	E(Ri)
16	Batavia Optimal Stock Fund		0.0039
17	Batavia Stock Fund		-0.0047
18	TRAM Consumption Plus Class A		0.0060
19	BNI-AM Inspiring Equity Fund		-0.0093
20	Mandiri Invest Smart Nation		-0.0079
21	Eastspring Investments Alpha Navigator Class A		0.0487
22	Eastspring Investments Value Discovery Class A		0.0195
23	TRIM Kapital Plus		-0.0026
24	TRIM Capital		0.0075
25	Schroder Dana Prestasi Plus	2021	0.0131
26	Batavia Optimal Stock Fund		0.0031
27	Batavia Stock Fund		0.0104
28	TRAM Consumption Plus Class A		-0.0056
29	BNI-AM Inspiring Equity Fund		-0.0070
30	Mandiri Invest Smart Nation		-0.0056

Source:www.ojk.go.id(Data processed, 2023)

Based on Table 9 above, it can be seen that during the research period the highest E(R$_i$) was generated by the Class A Eastspring Investments Value Discovery mutual fund in 2020, namely 0.1011. While the lowest E(R$_i$) is produced by TRIM Kapital Plus, which is -0.0165.

Table 10 Mutual Fund Proportion Value

No	mutual funds	Year	Proportion
1	Eastspring Investments Alpha Navigator Class A		-1.43%
2	Eastspring Investments Value Discovery Class A		2.26%
3	TRIM Kapital Plus		-0.12%
4	TRIM Capital		10.55%
5	Schroder Dana Prestasi Plus	2019	1.07%
6	Batavia Optimal Stock Fund		3.44%
7	Batavia Stock Fund		28.23%
8	TRAM Consumption Plus Class A		2.82%
9	BNI-AM Inspiring Equity Fund		1.06%
10	Mandiri Invest Smart Nation		5.10%
11	Eastspring Investments Alpha Navigator Class A		-1.43%
12	Eastspring Investments Value Discovery Class A		2.26%
13	TRIM Kapital Plus		-0.12%
14	TRIM Capital		10.55%
15	Schroder Dana Prestasi Plus	2020	1.07%
16	Batavia Optimal Stock Fund		3.44%
17	Batavia Stock Fund		28.23%
18	TRAM Consumption Plus Class A		2.82%
19	BNI-AM Inspiring Equity Fund		1.06%
20	Mandiri Invest Smart Nation		5.10%
21	Eastspring Investments Alpha Navigator Class A		-1.43%
22	Eastspring Investments Value Discovery Class A		2.26%
23	TRIM Kapital Plus		-0.12%
24	TRIM Capital		10.55%
25	Schroder Dana Prestasi Plus	2021	1.07%
26	Batavia Optimal Stock Fund		3.44%
27	Batavia Stock Fund		28.23%
28	TRAM Consumption Plus Class A		2.82%
29	BNI-AM Inspiring Equity Fund		1.06%

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No	mutual funds	Year	Proportion
30	Mandiri Invest Smart Nation		5.10%

Source:www.ojk.go.id(Data processed, 2023)

Based on Table 10 above, it shows that the proportion of each selected mutual fund is a number of stocks forming an optimal portfolio, but there are also several stocks that do not form an optimal portfolio.

3. Comparison Test Results

Table 11 Return and Risk

Method	Type	return			Risk		
		2019	2020	2021	2019	2020	2021
Single Index Model	Share	0.0042	0.0078	0.0043	0.0102	0.0420	0.0129
	mutual funds	0.0055	0.0086	-0.006	0.0073	0.0299	0.0092
Markowitz	Share	0.0031	0.0013	-0.002	0.0210	0.0526	0.0253
	mutual funds	0.0042	-0.002	-0.003	0.0181	0.0506	-0.021

Source: Secondary Data (Processed), 2023

Based on Table 11, the single index model method is superior to the Markowitz method because the Single Index Model method has a greater return and smaller risk. The following are the results of the independent sample t test.

Table 12 Comparison Test Results Between the Single Index Model and Markowitz

Method	Share				mutual funds			
	return		Risk		return		Risk	
	Means	Sig.	Means	Sig.	Means	Sig.	Means	Sig.
Single Index Model	0.2174	0.000	0.0009	0.000	0.2366	0.000	0.0015	0.000
Markowitz	0.0108		0.0943		0.0067		0.0922	

Source: Secondary Data (Processed), 2023

Based on the results of the comparative test using the independent sample T test in Table 12, it is known that the Single Index Model method has a greater return value than the Markowitz method on stocks and mutual funds with a significance of less than 0.05. Furthermore, in the risk analysis, the Single Index Model method also has a lower risk value than the Markowitz method with a significance of less than 0.05. Thus it can be concluded that the Single Index Model method is better than the Markowitz method.

Result

The results of the study show that there are differences in the value of returns between mutual funds and stocks formed by the Single Index Model where stock returns are greater than mutual fund returns. The results of this study are not in line with Oktaviani's research (2016) where it was found that there was no difference in the return value of mutual funds and LQ45 stocks. This also occurs in the Markowitz model where there is a difference in returns between stocks and mutual funds with stock returns greater than mutual fund returns. The results of the study show that there is a difference in the value of risk between Mutual Funds and stocks formed by the Single Index Model where the stock risk is greater than the mutual fund risk. This also occurs in the Markowitz model where there is a difference in risk between stocks and mutual funds with the risk of stocks being greater than the return on mutual funds.

The results showed that the Single Index Model is better than the Markowitz model both in calculating returns and risks in stocks and mutual funds. In line with research conducted by (Azizah et al., 2017) which states that the risk of the Single Index Model portfolio is lower than the risk of the Markowitz portfolio. However, it is different from research conducted by (Azizah et al., 2017) which states that neither portfolio return nor portfolio risk formed using Markowitz and the Single Index Model are no different. (Yuwono & Ramdhani, 2017). Furthermore, research by Rachmatullah et al. (2021) which aims to determine the optimal portfolio composition in stocks that are consistently listed on the Jakarta Islamic Index (JII) from the period 2018 – November 2020. Using

the analysis of the Markowitz method and the Single Index Model, and then looking at the portfolio performance of the two methods . The results showed that the Single Index Model is superior to the Markowitz model with a large return calculation and a small risk.

CONCLUSION

Based on the results of the study, the conclusions that can be drawn are as follows.

1. The optimal portfolio calculation results on the Single Index Model method for stocks show that stocks with UNVR issuers are the only ones that are optimal. Whereas in Mutual Funds there is no optimal portfolio calculation results.

2. The results of calculations using the Markowitz method for all stock issuers obtained a return value of 0.000634 with a risk of 0.036057, namely at alpha 0.9. Meanwhile, for all stock mutual fund issuers, a return value of 0.003195 was obtained with a risk of 0.033629, namely at alpha 0.9. Compared to calculations using the Single Index Model Method for all stocks, a return value of 0.0050 is obtained with a risk of 0.0218, while for Equity Mutual Fund issuers a return value of 0.0072 is obtained with a risk of 0.0194, in this case the calculation of the optimal portfolio in stocks and mutual funds using the Markowitz Method produces a smaller return and greater risk than the Single Index Model method.

3. The Single Index Model method which produces stock return calculations is superior to the Markowitz method. This is obtained from the results of the return value obtained on the Single Index Model which is greater than the Markowitz model so that stock investment will be more profitable if using the Single Index Model method.

4. The Single Index Model method is superior to the Markowitz method in calculating mutual fund returns. This is obtained from the results of the return value obtained in the Single Index Model which is greater than the Markowitz model so that mutual fund investment will be more profitable if using the Single Index Model method.

5. The Single Index Model method is superior to the Markowitz method in calculating stock risk. This is obtained from the results of the stock risk value obtained in the Single Index Model which is smaller than the Markowitz model so that stock investment will be riskier if using the Markowitz method.

6. The Single Index Model method is superior to the Markowitz method in calculating mutual fund risk. This is obtained from the results of the mutual fund risk values obtained in the Single Index Model which are smaller than the Markowitz model so that mutual fund investments will be riskier if using the Markowitz method.

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