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Fakultas Ekonomi dan Bisnis

Universitas Hasanuddin

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About Madic 8 2023

Management Dynamics Conference (MADIC) ke-8 adalah seminar nasional yang diselenggarakan oleh Fakultas Ekonomi dan Bisnis Universitas Hasanuddin bekerja sama dengan Forum Pengelola Jurnal Manajemen (FPJM). Tema seminar *"**Penguatan Manajemen UMKM sebagai Motor Penggerak Pemulihan Ekonomi Nasional**"*. Konferensi ini bertujuan untuk menghimpun berbagai pandangan dan pengalaman empiris dari para praktisi dan akademisi ekonomi mengenai penguatan UMKM sebagai pilar ekonomi utama serta memberikan solusi untuk tujuan ketahanan keberlanjutan (SDGs) Indonesia. Para akademisi, praktisi, peneliti telah berkontribusi dalam pengembangan penelitian manajemen dengan berpartisipasi dalam MADIC 8.

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Sambutan Dekan Fakultas Ekonomi dan Bisnis Universitas Hasanuddin

Selamat datang di Management Dynamics Conference (MADIC) ke-8 diadakan pada tanggal 16 – 17 maret 20223 di Makassar, Indonesia. Konferensi ini diselenggarakan untuk mempromosikan diskusi antara berbagai pemangku kepentingan tentang, manajemen dan bidang ekonomi. Kali ini, Fakultas Ekonomi dan Bisnis, Universitas Hasanuddin menjadi tuan rumah bekerja sama dengan Forum Pengelola Jurnal Manajemen (FPJM). Melanjutkan tradisi menyatukan penelitian, pembuat kebijakan, akademisi dan berbagai pemangku kepentingan untuk mempresentasikan dan mendiskusikan isu terkini terkait perkembangan ekonomi nasional. Untuk memperkuat pembahasan tentang manajemen, ekonomi dan bidang akuntansi, kami sepakat mengangkat topik konferensi tahun ini berjudul "***Penguatan Manajemen UMKM sebagai Motor Penggerak Pemulihan Ekonomi Nasional***". Untuk memberikan informasi terbaru mengenai topik kepada pembaca dan peserta, kami ingin menyampaikan apresiasi dan terima kasih kepada 3 narasumber dihadirkan dalam acara ini yaitu M. Fankar Umran CEO BRI Insurane, Causa Iman Karana Kepala Perwakilan Bank Indonesia Provinsi Sulawesi Selatan, dan Darwisman Kepala OJK Regional Sulampapua atas wawasan dan dukungan mereka selama konferensi. Kami berharap acara ini sangat mendorong diskusi tentang peningkatan kualitas UMKM di Indonesia. Selain itu kami ingin menyampaikan terima kasih dan dukungan kami kepada

Terakhir, kami ingin mengucapkan terima kasih sekali lagi atas kontribusi dan kerja sama yang sangat baik di antara kami para peserta konferensi. Selain itu, kami mengucapkan terima kasih atas kerjasama semua pihak panitia dalam menyelenggarakan konferensi. Kami berharap dapat bekerja sama dengan semua pemangku kepentingan yang terlibat dalam acara ini. Kami berharap proses ini akan menyediakan berbagai manuskrip unggulan yang dapat memberikan kontribusi besar dalam bidang ekonomi, manajemen dan akuntansi.

Prof.Dr.Abd. Rahman Kadir, M.Si., CIPM
Dekan Fakultas Ekonomi dan Bisnis
Universitas Hasanudin

Sambutan Ketua panitia Management Dynamic Conference ke - 8

Saya sangat senang bahwa acara Management Dynamic Conference ke-8 dengan tema "Penguatan Manajemen UMKM sebagai Motor Penggerak Pemulihan Ekonomi Nasional" telah terlaksana dengan sukses. Semoga acara ini memberikan banyak manfaat dan inspirasi bagi semua peserta yang hadir.

Saya ingin mengucapkan selamat dan mengapresiasi seluruh panitia yang telah bekerja keras dan dedikasi tinggi dalam menyelenggarakan acara ini. Tanpa upaya mereka, acara ini tidak akan mungkin terwujud. Terima kasih atas kerja keras dan komitmen yang telah diberikan.

Selain itu, saya juga ingin mengucapkan terima kasih kepada narasumber yang telah berbagi pengetahuan dan pengalaman mereka dalam mendukung penguatan manajemen UMKM. Kontribusi mereka sangat berharga dan saya berharap peserta dapat mengambil manfaat yang besar dari presentasi dan diskusi yang telah dilakukan.

Saya berharap bahwa acara ini menjadi awal dari langkah-langkah konkret dalam memperkuat sektor UMKM sebagai motor penggerak pemulihan ekonomi nasional. Mari kita terus bekerja sama, berinovasi, dan berkolaborasi dalam mendukung pertumbuhan UMKM dan memajukan ekonomi kita.

Terima kasih kepada semua yang telah berpartisipasi dalam acara ini, termasuk peserta, narasumber, dan semua pihak yang telah memberikan dukungan. Semoga kita dapat melanjutkan semangat dan energi positif ini untuk memperkuat sektor UMKM dan membangun ekonomi yang lebih kuat.

Sekali lagi, selamat atas kesuksesan acara Management Dynamic Conference ke-8. Semoga langkah-langkah yang dihasilkan dari acara ini dapat memberikan dampak yang positif bagi penguatan manajemen UMKM dan pemulihan ekonomi nasional.

Insany Fitri Nurqamar, S.E.,M.M.
Ketua panitia Management Dynamic Conference ke - 8
Universitas Hasanudin

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OPTIMAL PORTOFOLIO IN BULLISH JCI WITH SINGLE INDEX MODEL

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Abstract

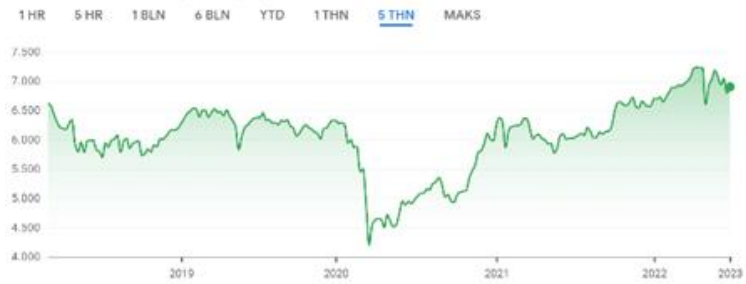
The COVID-19 pandemic has an impact on the capital market, especially stocks. The purpose of this study is to analyze the optimal portfolio of 23 energy sector companies listed on the IDX during the Covid 19 pandemic with a single index model with an observation period from 2021 to 2022. The results of the analysis show that the optimal portfolio is formed from all existing samples with their respective weights, namely HITS (0,25%), RAJA (3,20%), INDY (3,48%), PTBA (3,55%), DSSA (4,28%), ENRG (5,06%), BUMI (5,10%), KKGI (5,11%), MEDC (5,61%), MBSS (5,73%), WINS (6,62%), ADRO (11,29%) ITMG (12,65%), MYOH (13,98%) dan PTRO (14,07%). The final results of this analysis show that during the recovery period of the Covid-19 Pandemic, portfolio formation in the energy sector is still profitable.

Keywords: *Optimal Portfolio, Single Index Model, Return, Risk*

1. Introduction

Investment or the term investment used in English can be interpreted as planting. Investing is a commitment to invest some money now for future gains (Tandelilin, 2010).

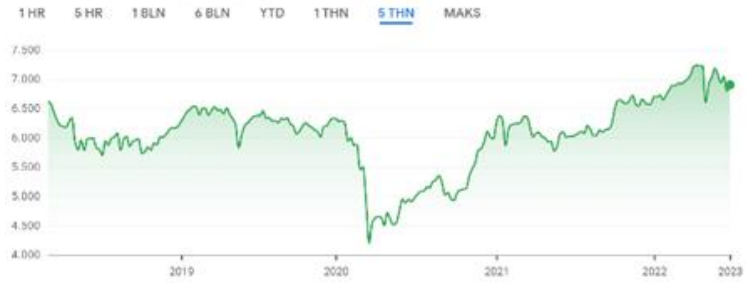
News of the covid-19 pandemic that attacked the world affected the economy in a country including Indonesia. The existence of Covid-19 is a negative sentiment in the investment world, this makes stock investment which is closely related to economic factors to be affected, resulting in the JCI which is an investment indicator in Indonesia falling by 38.02% from the initial closing in 2020. The decline in the JCI certainly made investors panic when owning stock assets that year.



source: www.google.com/finance

Gambar 1. JCI stock price change

Along with the recovery of the Covid-19 pandemic in Indonesia and followed by the bullish trend of the JCI, negative sentiment returned to Indonesia due to the Russia-Ukraine invasion, this caused the economic situation in Indonesia to be affected. Such as the rupiah exchange rate from the beginning of 2021 at Rp. 14,024/Dollar rose 11.22% to Rp. 15,597 and also Bank Indonesia's benchmark interest rate from 3.50% to 5.25%. This made the JCI performance not experience a significant increase. However, the sentiment of Indonesia's weakening economy due to not fully recovering from Covid 19 and in addition to the Russia-Ukraine invasion has actually.



Source: www.minerba.esdm.go.id

Gambar 2. Change in Price Of Coal

The return of Indonesia from the Covid-19 case, which allowed the resumption of exports and imports, as well as the conflict between Ukraine and Russia led to the depletion of energy and natural gas from Russia, where countries in the world returned to using fossil energy, one of which was carbon. Indonesia is one of the largest coal mining countries and one of the coal exporters to various countries, this can be proven by the value of coal exports to Europe, which is 191.2 million dollars or 143.72%. Coal also has many important uses around the world. Coal is used primarily in power generation, steel production, cement manufacturing, and as a liquid fuel. Steam coal - also known as steam coal - is mostly used to generate electricity (www.ekonomi.bisnis.com).

Things that happen in the world economy are closely related to the economy of a country including Indonesia, this causes stock investment to have uncertain risks within a certain period of time. If an investor wants optimal profit, investors must determine a good strategy by diversifying.

Based on this background, the author wants to make research to analyze the formation of optimal portfolios on energy sector stocks listed on the Indonesia Stock Exchange. This paper is expected that investors can determine decisions in investing in the event of unexpected risks that will come.

Investment

Investment or the term investment used in English can be interpreted as planting. Investing is a commitment to invest a certain amount of money now for future profits

(Tandelilin, 2010).... In addition, according to investment, the delay in electricity consumption must be used in efficient production for a certain period of time. Investing means investing a certain amount of money in an asset or assets in anticipation of future results (Jogiyanto, 2010).

Return and Risk

Return is the value of the results achieved by an investment. The investor's goal is to maximize returns. At the same time, risk is the opportunity that can arise when making an investment with expected returns. While many theories point to the relationship between risk and return, that high return means high risk, investors can at least predict what lies ahead for investors based on historical data. This is because asset values are constantly fluctuating based on corporate or macroeconomic news (Bodie, Kane, and Marcus, 2021).

Capital Market

The capital market regulated in Law No.8/1995 has the definition of activities related to the public offering and trading of securities, public companies and institutions related to securities. More than that, the capital market can be interpreted as a place for various financial instruments such as stocks, bonds, investment funds, bonds and other tradable securities issued by the government or private companies.

Shares are a sign of ownership of the investment of a number of funds belonging to individual investors, institutional investors, or traders invested in a company (Aziz et al., 2017: 76).

Optimal Portofolio

An optimal portfolio is an efficient portfolio that offers investors the greatest possible return. The optimal portfolio can be created using a single index model. The optimal portfolio is determined by determining the excess return beta ratio (ERB) which compares the level of profit with the existing risk. Once these securities form the optimal portfolio, the optimal portfolio can be allocated some proportion of assets to invest based on the portfolio's return value in market returns. (Andayani and Anggraini, 2013).

Single Index Method

The single index method developed by William Sharpe in 1963 simplifies the calculation results of the Markowitz model. In addition, this model improves risk analysis by dividing it into systemic and specific components. The model describes a diversification limit, known as a cut-off point, to allow investors to measure the risk component of a particular portfolio. If the stock has an ERB (excess return to beta) value > cut-off point then the stock is included in the optimal portfolio (Tandelilin, 2010).

2. Method

This research uses a quantitative approach with a more descriptive analytical type of research object on the shares of energy sector companies listed on the Indonesia Stock Exchange for the period 2021 to 2022. Secondary data was used in this study. Secondary data is obtained from authorized authorities or institutions and published on the official website www.idx.co.id and research from various books. This method serves as a guide to explain the theory and analyze data in the context of this research discussion.

The sample selection used purposive sampling of shares of energy sector companies during the study period, resulting in the following sample:

Tabel 1. Research Sample of Energy Sector Companies

Code	Company Name
ADRO	Adaro Energy Indonesia Tbk.
BUMI	Bumi Resources Tbk
DOID	Delta Dunia Makmur Tbk.
DSSA	Dian Swastatika Sentosa Tbk.
ELSA	Elnusa Tbk.
ENRG	Energi Mega Persada Tbk.
GEMS	Golden Energy Mines Tbk.
HITS	Humpuss Intermoda Transportasi
INDY	Indika Energy Tbk.
ITMG	Indo Tambangraya Megah Tbk.
KKGI	Resource Alam Indonesia Tbk.
MBSS	Mitrabahtera Segara Sejati Tbk.
MEDC	Medco Energi Internasional Tbk.
MYOH	Samindo Resources Tbk.
PGAS	Perusahaan Gas Negara Tbk.
PSSI	Pelita Samudera Shipping Tbk.
PTBA	Bukit Asam Tbk..
PTRO	Petrosea Tbk.
RAJA	Rukun Raharja Tbk
SHIP	Sillo Maritime Perdana Tbk.
SOCI	Soechi Lines Tbk.
TOBA	TBS Energi Utama Tbk.
WINS	Wintermar Offshore Marine Tbk.

From the 23 samples shown above, data was collected in the form of monthly closing price of each stock, monthly closing price of JCI and monthly 7-Days (Reverse) Repo Rate from Bank Indonesia. The data is then calculated using the Single Index Model method to find the composition of stocks that fall into the optimal portfolio category using Ms. Excel 2013 software. Hartono (2017) The calculated ratios are:

a. Calculating Expected Return

The expected return for each individual stock is calculated with an Excel program using the average formula which is the average percentage of the realized return of stock data divided by the sum of the realized returns of data. Then the result is obtained:

$$E(Ri) = \frac{\sum Rt(i)}{n}$$

b. Calculating Excess Return

Excess return is calculating the rate of return that has a higher rate of return than the risk-free return. Formula: Expected Return - BI Interest Rate.

c. Calculating Variance

The variance of a stock is used to measure the expected return risk of a stock by using the formula "Var" in the Excel program.

$$\sigma 2i = \sqrt{\sum_{i=1}^{n} \frac{(Xi - X2}{n-1}}$$

d. Calculating alpha and Beta

Alpha Is the intercept of realized return of stock i with the realized return of the market (JCI), used to calculate the variance error (σ2 ei)

$$\alpha i = Ri - \beta i * Rm$$

Beta Used to calculate the Excess Return to Beta (ERB) and Cutoff Point (Ci). Can use the slope formula in Exce:

$$\beta i = \left(\frac{\sigma i}{\sigma m}\right) rim$$

e. Calculating Unsystemic risk

The variance of the residual error of stock (i) which is also the unique or unsystematic risk.

$$\sigma 2 \text{ ei } (i) = \sigma 2i - (\sigma 2m * (\sigma i) 2)$$

f. Calculating Ai, Bi, dan Ci

Ai: is calculated by

$$Ai = \frac{[E\,(Ri) - Rf]\,\beta i}{\sigma ei2}$$

Bi: is calculated by

$$Ai = \frac{\beta i2}{\sigma ei2}$$

Ci: is calculated by

$$Rt(i) = \frac{\sigma_m^2 \sum_j^i = 1 \; \frac{(Ri - Rf)\beta i}{\sigma ei2}}{1 + \sigma_m^2 \sum_j^i = 1 \; [\frac{\beta i2}{\sigma ei2}]}$$

g. Calculating ERB (Excess Return to Beta)

Used to measure excess return relative to one unit of undiversifiable risk measured by Beta.

$$ERBi = \frac{E\,(Ri) \; - \; Rf}{\beta i}$$

h. Determining the Cut of Point

The largest Ci value from a series of stock Ci values

i. Determine the companies that fall into the optimal category

Those in the optimal category are companies that have an ERB value greater than the Cut Of Point.Determining the Cut Of Point

j. Determine Zi, Wi, Ap, Bp, Ep and Portfolio division

$Zi = \beta i \ \sigma ei \ x \ (ERBi - C*)$
$Wi = Zi \ / \ Sum \ ZZ$
Ap = alpha x Wi
Bp = beta x Wi
Ep = unsystematix risk x Wi

k. Calculating Single Index Model

3. Result

The initial calculation looks for expected return, excess return, variance, alpha, beta, unsystematic risk, Ai, Bi, Ci and ERB (excess return to beta) according to the formula described earlier. From the existing data, the following results were obtained during the research period:

Tabel 2. Calculating Results ERB (Excess Return to Beta)

No	Code	expected return	excess return	Variances	q	B	unsystematis risk	Ai	Bi	Ci	ERB
1	ADRO	0,0493	0,0463	0,0161	0,0404	1,4896	0,0176	3,9259	126,4252	0,0023	0,0311
2	BUMI	0,0533	0,0502	0,0442	0,0496	0,6178	0,0445	0,6974	8,5813	0,0004	0,0813
3	DOID	0,0090	0,0059	0,0345	-0,0052	2,3496	0,0381	0,3628	144,9294	0,0002	0,0025
4	DSSA	0,0630	0,0599	0,0591	0,0532	1,6393	0,0608	1,6160	44,1991	0,0010	0,0366
5	ELSA	-0,0008	-0,0038	0,0087	-0,0115	1,7853	0,0107	-0,6380	-296,9910	-0,0003	-0,0021
6	ENRG	0,0476	0,0446	0,0280	0,0293	3,0473	0,0340	3,9953	273,1146	0,0022	0,0146
7	GEMS	0,0591	0,0561	0,0421	0,0601	-0,1600	0,0421	-0,2128	-0,6072	-0,0001	-0,3505
8	HITS	0,0150	0,0119	0,0669	-0,0039	3,1443	0,0732	0,5113	134,9832	0,0003	0,0003
9	INDY	0,0232	0,0201	0,0206	0,0144	1,4691	0,0219	1,3465	98,3591	0,0008	0,0137
10	ITMG	0,0509	0,0479	0,0149	0,0422	1,4492	0,0163	4,2586	128,9074	0,0025	0,0330
11	KKGI	0,0349	0,0318	0,0239	0,0257	1,5338	0,0255	1,9160	92,4279	0,0012	0,0207
12	MBSS	0,0553	0,0522	0,0362	0,0438	1,9105	0,0385	2,5893	94,7797	0,0016	0,0273
13	MEDC	0,0323	0,0293	0,0200	0,0237	1,4422	0,0213	1,4422	97,6171	0,0012	0,0203
14	MYOH	0,0090	0,0060	0,0012	0,0053	0,6273	0,0015	2,5636	269,8383	0,0014	0,0095
15	PGAS	0,0083	0,0052	0,0119	-0,0062	2,4170	0,0157	0,8015	371,9670	0,0004	0,0022
16	PSSI	0,0731	0,0700	0,0378	0,0800	-1,1529	0,0386	-2,0886	-34,4055	-0,0013	-0,0607
17	PTBA	0,0166	0,0135	0,0110	0,0072	1,5594	0,0125	1,6784	194,0966	0,0010	0,0086
18	PTRO	0,0393	0,0362	0,0106	0,0335	0,9628	0,0112	3,1154	82,7867	0,0019	0,0376
19	RAJA	0,1009	0,0979	0,1415	0,0994	0,2623	0,1416	0,1814	0,4860	0,0001	0,3732
20	SHIP	0,0273	0,0242	0,0247	0,0301	-0,4760	0,0248	-0,4642	-9,1244	-0,0003	-0,0509
21	SOCI	-0,0114	-0,0145	0,0073	-0,0209	1,5829	0,0089	-2,5638	-280,4791	-0,0014	-0,0091

22	TOBA	0,3222	0,3191	2,4789	0,3969	-12,4511	2,5787	-1,5407	60,1203	-0,0010	-0,0256
23	WINS	0,0624	0,0593	0,0400	0,0578	0,7652	0,0404	1,1231	14,4886	0,0007	0,0775

From the Table 2, the ERB values that have been obtained are sorted from the largest ERB value to the smallest ERB value. The next step is to find the C* value, the cut-off-point (C*) value is the maximum value of a series of Ci values. Furthermore, to find the optimal portfolio candidate, namely if the ERB value> cut-off point. The data processing results obtained are as follows:

Tabel 3. Determining C* and Optimal Portfolio Candidates

Company	ɑ	β	unsystematis risk	ERB	Ci	C*	Decision
RAJA	0,0994	0,2623	0,1416	0,3732	0,0001	0,0025	Optimal
BUMI	0,0496	0,6178	0,0445	0,0813	0,0004	0,0025	Optimal
WINS	0,0578	0,7652	0,0404	0,0775	0,0007	0,0025	Optimal
PTRO	0,0335	0,9628	0,0112	0,0376	0,0019	0,0025	Optimal
DSSA	0,0532	1,6393	0,0608	0,0366	0,0010	0,0025	Optimal
ITMG	0,0422	1,4492	0,0163	0,0330	0,0025	0,0025	Optimal
ADRO	0,0404	1,4896	0,0176	0,0311	0,0023	0,0025	Optimal
MBSS	0,0438	1,9105	0,0385	0,0273	0,0016	0,0025	Optimal
KKGI	0,0257	1,5338	0,0255	0,0207	0,0012	0,0025	Optimal
MEDC	0,0237	1,4422	0,0213	0,0203	0,0012	0,0025	Optimal
ENRG	0,0293	3,0473	0,0340	0,0146	0,0022	0,0025	Optimal
INDY	0,0144	1,4691	0,0219	0,0137	0,0008	0,0025	Optimal
MYOH	0,0053	0,6273	0,0015	0,0095	0,0014	0,0025	Optimal
PTBA	0,0072	1,5594	0,0125	0,0086	0,0010	0,0025	Optimal
HITS	-0,0039	3,1443	0,0732	0,0038	0,0003	0,0025	Optimal
DOID	-0,0052	2,3496	0,0381	0,0025	0,0002	0,0025	Not Optimal
PGAS	-0,0062	2,4170	0,0157	0,0022	0,0004	0,0025	Not Optimal
ELSA	-0,0115	1,7853	0,0107	-0,0021	-0,0003	0,0025	Not Optimal
SOCI	-0,0209	1,5829	0,0089	-0,0091	-0,0014	0,0025	Not Optimal
TOBA	0,3969	-12,4511	2,5787	-0,0256	-0,0010	0,0025	Not Optimal
SHIP	0,0301	-0,4760	0,0248	-0,0509	-0,0003	0,0025	Not Optimal
PSSI	0,0800	-1,1529	0,0386	-0,0607	-0,0013	0,0025	Not Optimal
GEMS	0,0601	-0,1600	0,0421	-0,3505	-0,0001	0,0025	Not Optimal

From Table 3, it is known that the C* value is 0.0025, and of the 23 companies that have an ERB value> cut-off and enter the optimal portfolio candidate there are 15, namely RAJA, BUMI, WINS, PTRO, DSSA, ITMG, ADRO, MBSS, KKGI, MEDC, ENRG, INDY, MYOH, PTBA, and HITS. The next step is to determine the proportion of funds for each company, the results of data processing are as follows:

Tabel 4. Determining the Proportion of Fund in the Caital Portofolio Candidat

Company	Zi	Wi	ɑp	βp	unsystematis risk	percent

RAJA	0,6867	0,0320	0,0032	0,0084	0,0045	3,20%
BUMI	1,0938	0,0510	0,0025	0,0315	0,0023	5,10%
WINS	1,4198	0,0662	0,0038	0,0507	0,0027	6,62%
PTRO	3,0183	0,1407	0,0047	0,1355	0,0016	14,07%
DSSA	0,9176	0,0428	0,0023	0,0701	0,0026	4,28%
ITMG	2,7135	0,1265	0,0053	0,1834	0,0021	12,65%
ADRO	2,4209	0,1129	0,0046	0,1682	0,0020	11,29%
MBSS	1,2298	0,0573	0,0025	0,1096	0,0022	5,73%
KKGI	1,0968	0,0511	0,0013	0,0784	0,0013	5,11%
MEDC	1,2025	0,0561	0,0013	0,0809	0,0012	5,61%
ENRG	1,0844	0,0506	0,0015	0,1541	0,0017	5,06%
INDY	0,7472	0,0348	0,0005	0,0512	0,0008	3,48%
MYOH	2,9987	0,1398	0,0007	0,0877	0,0002	13,98%
PTBA	0,7614	0,0355	0,0003	0,0554	0,0004	3,55%
HITS	0,0540	0,0025	0,0000	0,0079	0,0002	0,25%
Total	21,4453	1,0000	0,0345	1,2729	0,0257	100%

From Table 4, it is known that the proportion of funds from each stock that is included in the optimal portfolio candidate. The largest proportion in MYOH shares amounted to 13.98% and the smallest in HITS shares amounted to 0.25%. The next step is to calculate the return and risk using the single index method. The results of data processing are as follows:

Tabel 5. Analisis Single Index Model Method

Single Index Model	
E(Rm)	0,60%
E (Rp)	4,22%
Varians Market	0,06%
Varians Portofolio	2,68%

4. Discussion

The optimal portfolio formation for the single index model is based on a number that can determine whether a stock qualifies for inclusion in the optimal portfolio, namely the excess return to beta ratio (ERB). The optimal portfolio contains stocks with a high ERB ratio. Stocks with a low ERB ratio are not included in the optimal portfolio. The limit of the so-called high ERB value is determined by the cut-off value (C*). If the ERB value is greater than or equal to the C* value then the stock is included in the optimal candidate portfolio.

Based on Table 3 above, it shows that of all the companies sampled in this study, there are 15 stocks, namely RAJA, BUMI, WINS, PTRO, DSSA, ITMG, ADRO, MBSS, KKGI, MEDC, ENRG, INDY, MYOH, PTBA, and HITS which are included in the optimal portfolio candidate. This is due to the increase in benchmark coal prices during the research period, causing the performance of companies in the energy sector to experience a rapid increase and making their share prices also experience a significant increase.

The percentage of optimal investment funds (Wi) describes how much money investors invest in stocks, the weight of the share is calculated from the percentage. Based on Table 4 above, then in the smallest to largest scale (in units of percent) the optimal portfolio weighting order is HITS stock (0.25%), RAJA (3.20%), INDY (3, 48%), PTBA (3.55%), DSSA (4.28%), ENRG (5.06%), BUMI (5.10%), KKGI (5.11%), MEDC (5.61%), MBSS (5.73%), WINS (6.62%), ADRO (11.29%) ITMG (12.65%), MYOH (13.98%) and PTRO (14.07%). For example, assuming an investment of Rp. 1,000,000,000 in HITS shares, the value invested is Rp. 2,500,000.

Return and risk see E(Rp) and variance in this case. The higher the expected return of the portfolio E(Rp) and the expected return of the market JCI E(Rm), the greater the ability of the portfolio and the market JCI to generate returns for investors and vice versa. In describing risk, the value of portfolio variance (Var(p)) and market variance (Var(m)) illustrates that the greater the value, the higher the risk that investors must bear.

Table 5 above shows that investments formed from optimal portfolio candidates generate higher returns and risks when compared to the returns and risks of investment candidates in risk-free and JCI. On a percent scale, the candidate stocks in the optimal portfolio have a return of 4.22% and a risk of 2.68%, which is higher than the performance of the JCI which has a return of 0.30% with a risk of 0.06% and a risk-free investment return of 0.031% with a risk of 0.000%.

5. Closing

A. Conclusion

Investment in stocks is closely related to economic movements both macro and micro, in this study the investment analyzed using a single index model during the Bullish JCI period accompanied by rising coal prices in 23 energy sector companies listed on the IDX produces an optimal portfolio that has a higher return than investing in JCI and risk-free investments, but also accompanied by greater risk in the optimal portfolio candidate than JCI and risk-free investments.

The high return that is in line with the high risk in investing in stocks is highly recommended for the type of investor who dares to take risks (risk taker) because the movement of investment in the stock market is very volatile in a certain period of time

B. Suggestion

Investment in stocks is closely related to economic movements both macro and micro, in this study the investment analyzed using a single index model during the Bullish JCI period accompanied by rising coal prices in 23 energy sector companies listed on the IDX produces an optimal portfolio that has a higher return than investing in JCI

and risk-free investments, but also accompanied by greater risk in the optimal portfolio candidate than JCI and risk-free investments.

The high return that is in line with the high risk in investing in stocks is highly recommended for the type of investor who dares to take risks (risk taker) because the movement of investment in the stock market is very volatile in a certain period of time.

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