

Analysis of How ESG Leader Stocks Performed in the 2024 Election Period Using the Sharpe Method

Renisa Luthfiah Harsono¹, Ulfa Rahmawati², Mukti Prasaja^{3*}

¹²³ Department of Accounting, Accounting Study Program, Politeknik Negeri Madiun

*) Corresponding Author (e-mail: mukti_prasaja@pnm.ac.id)

Abstract

Objective & object:

This study aims to find out how the performance of the optimal portfolio made up of selected ESG Leader index stocks compares over three monthly periods: before, during, and after the 2024 general election. In the era of the 5.0 industrial revolution that prioritizes ESG, the IDX, in collaboration with Sustainalytics, launched a new index, the ESG Leader index, which interestingly outperformed the LQ45 index during the 2023-2024 election period.

Methods:

This study uses a descriptive method with a sample of twenty-nine selected ESG Leader index stocks. The data source used for reference and analysis in this study is secondary data. The data collection method used is documentation. Next, to determine the stocks included in the optimal portfolio, a single index model calculation was performed, and the performance of the optimal portfolio was calculated using the Sharpe method.

Results & Conclusions:

The results of the Sharpe method calculations on the optimal portfolio showed that the Sharpe value improved with each research period. In December 2023, the Sharpe value was 0.0882, followed by a Sharpe value of 1.0609 in January 2024. Furthermore, in February 2024, the Sharpe value of the optimal portfolio was 1.1686.

Limitations:

This study only looks at ESG Leader stocks from December 2023 to February 2024 using the Sharpe method.

Implications:

Single index model method to determine the optimal portfolio and the performance of the portfolio with the Sharpe method can be an option for investors in making investment decisions.

Keywords: ESG Leader Index, Optimal Portfolio, General Election, Sharpe, Single Index Model

Abstrak

Tujuan & obyek:

Penelitian ini bertujuan untuk mengetahui bagaimana kinerja dari portofolio optimal yang terbentuk dari saham-saham pilihan indeks *ESG Leader* melalui perbandingan pengamatan tiga periode bulanan, yakni sebelum, selama, dan setelah pemilihan umum 2024. Di era revolusi industri 5.0 yang mengedepankan ESG, BEI bersama Sustainalytics meluncurkan indeks baru, yaitu indeks *ESG Leader* yang menariknya

memiliki performa yang lebih baik jika dibandingkan dengan indeks LQ45 pada rentang waktu 2023-2024 saat pemilihan umum terjadi.

Metode:

Penelitian ini menggunakan metode deskriptif dengan sampel saham indeks *ESG Leader* yang terpilih sebanyak dua puluh sembilan saham. Sumber data yang menjadi acuan dan analisis dalam penelitian ini adalah data sekunder. Metode pengumpulan data-data yang akan digunakan adalah metode dokumentasi. Selanjutnya, untuk menentukan saham yang termasuk ke dalam portofolio optimal dilakukan perhitungan *single index model* dan kinerja dari portofolio optimal yang terbentuk akan dilakukan perhitungan menggunakan metode *Sharpe*.

Hasil & Simpulan:

Hasil dari perhitungan kinerja dengan perhitungan metode *Sharpe* pada portofolio optimal yang terbentuk, menunjukkan jika setiap periode penelitian nilai Sharpe yang dihasilkan semakin membaik. Pada periode Desember 2023, nilai Sharpe yang terbentuk sebesar 0,0882, kemudian pada periode Januari 2024 memperoleh nilai Sharpe sebesar 1,0609. Selanjutnya, pada bulan Februari 2024, nilai Sharpe dari portofolio optimal yang terbentuk sebesar 1,1686.

Keterbatasan:

Studi ini hanya melihat saham *ESG Leader* pada periode Desember 2023 hingga Februari 2024 menggunakan metode Sharpe.

Implikasi:

Metode *single index model* untuk mengetahui portofolio optimal dan bagaimana kinerjanya dengan metode Sharpe bisa jadi pilihan bagi investor saat membuat keputusan.

Kata kunci: Indeks *ESG Leader*, Portofolio Optimal, Pemilihan Umum, *Sharpe*, *Single Index Model*

1. Introduction

The era of the 5.0 industrial revolution emphasizes environmentally friendly technology and supports sustainability. Sustainability itself has a benchmark, which is ESG (Environmental, Social, Governance). Indonesia has abundant natural resources and a large population. Hopefully, Indonesia can implement Industry 5.0 while still paying attention to ESG. The Financial Services Authority (OJK), as the regulator and supervisor of the Capital Market, Derivatives, and Carbon Exchange, issued OJK Regulation No. 51/POJK.03/2017 on the implementation of sustainable finance for financial services institutions (FSIs) and publicly listed companies. According to Judijanto & Al-Amin (2025), the implementation of a green economy in sustainable development shows great potential for addressing global environmental issues and driving economic growth.

Therefore, as a form of implementing a green economy, the IDX, in collaboration with Sustainalytics, launched an ESG-based stock index, the ESG Leader Index. Interestingly, stocks included in the ESG Leader Index have performed well year after year compared to the LQ45 Index. It should be noted that the LQ45 Index is a collection of stocks with high liquidity. Based on the IDX ESG Leader Fact Sheet (December 2024), the ESG Leader Index showed positive performance throughout 2023, with an 11% gain and a 5.6% decline. Compared to the LQ45, in 2023, stocks rose 3.6% and fell 14.8%.

From the observations above, it can be concluded that stock index movements can be influenced by various factors, including economic conditions, government policies, and the national political situation. One political event that influences stock market movements is the general election (Pemilu). This can be seen in the Composite Stock Price Index (IHSG) which jumped 93.54 points, or 1.30 percent, on its first trading day after the 2024 general election, closing at 7,308.28. On that day, the IHSG even jumped to 7,365.48. A similar phenomenon occurred on July 10, 2014, the day after the election. The IHSG strengthened 73 points, or 1.46 percent, to reach 5,098.01 (Yogatama, 2024). A similar finding was also conveyed in research conducted by Bangun & Arnita (2024), which explained that election events contain information that can influence investors' investment in the capital market, as evidenced by trading volume activity.

Despite the positive performance of the ESG Leader Index, investors still require risk-adjusted return calculations. This calculation is intended to determine the return received relative to the risk involved. Several calculation methods can be used, including the Sharpe method, the Treynor method, reward-to-market-risk, reward-to-diversification, Jensen's Alpha, M2, and the information ratio.

Several studies have described the use of the Sharpe method in calculating risk in a stock portfolio. In a study conducted by Wulan & Satya (2025) with a study entitled "Measuring Stock Portfolio Performance Using the Sharpe, Treynor, and Jensen Approach: A Study on the Jakarta Islamic Index (JII)", which explains that the Sharpe method is better because it measures total risk, both systematic and unsystematic risk, compared to the Treynor method which only measures systematic risk. A similar thing is also explained by Alansjah (2023) in his study entitled Analysis of Stock Portfolio Performance Using the Sharpe Method, Treynor and Jensen (Case Study of the IDX30 Index on the Indonesian Stock Exchange Period 2020-2023) which explains the results of the analysis conducted that the Sharpe method performs better than the Treynor and Jensen methods. This is because the use of the Sharpe method is more appropriate for assessing stock performance on the Indonesia Stock Exchange, especially stocks listed on the IDX30 Index. In a study entitled "Analysis of Stock Portfolio Performance Using the Sharpe, Treynor, and Jensen Methods on the Sri-Kehati Index Group on the Indonesia Stock Exchange," conducted by Susilowati et al. (2020), it was explained that of the three methods for assessing stock portfolio performance, the Sharpe method provided the best performance. The higher the Sharpe index value, the better the stock portfolio performance. Unlike the studies conducted by Wulan & Satya (2025), Alansjah (2023), and Susilowati et al. (2020), this study focuses on the 2024 general election and uses only the Sharpe method to measure optimal portfolio performance.

Furthermore, in measuring optimal portfolio performance using the Sharpe method, it is necessary to determine which ESG Leader stocks are classified as optimal for the portfolio. Therefore, the single index model method can be used to determine these stocks. The single index model method is considered simpler than the Markowitz method and can directly measure the expected return and risk of the optimal portfolio (Rachmatullah et al., 2021).

Based on the above explanation regarding the Industrial Revolution 5.0 era, which prioritizes sustainability with ESG benchmarks through the implementation of an environmentally friendly green economy and to encourage economic growth in an era that prioritizes ESG, the IDX and Sustainalytics launched a new index, the ESG Leader stock index, which has performed well amidst the uncertainty of the 2024 election. Despite its good performance, risk calculations are required, which will be obtained using the Sharpe method. The Sharpe method is considered superior to the Treynor and Jensen's Alpha methods. This is because the Sharpe method is appropriate for assessing stock performance using total risk and not only measuring systematic risk. Therefore, it is hoped that the results of this study will provide investors with an overview of stock performance during the general election.

2. Literature Review

Environmental, Social, and Governance

Environmental, Social, and Governance (ESG) is a fundamental concept applied to a company, focusing on development, sustainability, and investment, with environmental, social, and governance measures. According to Hariyanto & Ghazali (2024), one of the benefits of implementing ESG is that companies can mitigate risks when information imbalances arise between the company and investors.

Companies with high ESG scores tend to have lower costs, are more environmentally friendly, and are better prepared to address environmental and social challenges (Siregar et al., 2025). Therefore, companies that prioritize environmental, social, and governance aspects can be considered investment options, as they have advantages in addressing environmental and social challenges.

ESG Leader Index

An index is an indicator that measures stock price movements (Suwandi, 2020). The ESG assessment of ESG Leader Index stocks is conducted by Sustainalytics (IDX, 2024). Sustainalytics assessments are based on predetermined criteria, including excluding companies listed in sectors including coal production and distribution. Furthermore, companies involved in oil and gas production, refining, storage, and distribution are excluded. Alcoholic beverages, tobacco, weapons, gambling, pornography, and nuclear energy are excluded from the ESG Leader Index. In addition to the aforementioned sectors, the Indonesia Stock Exchange, in collaboration with Sustainalytics, will also exclude companies involved in controversies in categories 4 and 5, and those with high or severe ESG scores. Therefore, companies included in the ESG Leader index are selected based on the lowest ESG score ranking, with a minimum of fifteen stocks and a maximum of thirty stocks.

Companies with good ESG performance tend to have a low cost of capital and high corporate value. This low cost of capital and high corporate value are due to the company's strong commitment to supporting sustainability, which attracts investors and provides better access to finance (Kennedy, 2025). It can be concluded that

companies included in the ESG Leader Index have good corporate value and a low cost of capital, because companies that join the ESG Leader Index are companies that are committed to sustainability and can be considered for investment.

The Impact of Elections on Trading Volume Activity

Research conducted by Bangun & Arnita (2024) explains that election events contain information that can influence investors to invest in the capital market, as can be seen from trading volume activity. Trading volume activity itself is the number of shares traded during a certain period, indicating the level of investor interest in purchasing a company's shares (Triono et al., 2021). Research conducted by Ananta & Darmayanti (2025) also explains that there is a significant difference in trading volume activity, which can be interpreted as a more active and intense market reaction to the presidential election event. Therefore, it can be concluded that the market reacts to the presidential election event because the presidential election event contains information that can influence investor decisions.

3. Research Method

This research falls into the descriptive category. According to Rohanah (2019), descriptive research describes a phenomenon or event occurring currently and is used to obtain information about an object during a specific period. In this study, descriptive research is used to provide an overview of ESG Leader index stocks during the 2024 election by calculating risk using the Sharpe method.

Additionally, this study employed a non-probability sampling technique, which utilizes specific considerations from the researcher (Sumargo et al., 2024). Furthermore, this study employed a purposive sampling technique. According to Nuralim et al. (2023), purposive sampling is a sampling method in which researchers identify individuals who align with the research objectives and are therefore able to respond to the case. Therefore, in this study, several criteria were established for sample selection. The criteria for sample selection include:

- a. Not added to or removed from the index during the major evaluation in September. This criterion ensures data consistency and prevents bias; if such stocks were included, they could compromise the validity and consistency of the analysis throughout the study period.
- b. Not delisted or suspended. This criterion ensures the availability of stock price data and continuous market data.
- c. Listed as a constituent of the ESG Leader index during the observation period.

Based on the criteria mentioned above, 29 stock issuers were identified that met the criteria.

Table 1 Research Sample

NO	STOCK CODE	COMPANY	SECTOR
1	ACES	PT Aspirasi Hidup Indonesia Tbk	Non-Primary Consumer Goods
2	AKRA	PT AKR Corporindo Tbk	Energy

NO	STOCK CODE	COMPANY	SECTOR
3	ASSA	PT Adi Sarana Armada Tbk	Road Transportation
4	BBCA	PT Bank Central Asia Tbk	Finance
5	BBNI	PT Bank Negara Indonesia (Persero) Tbk	
6	BBRI	PT Bank Rakyat Indonesia (Persero) Tbk	
7	BFIN	PT BFI Finance Indonesia Tbk	
8	BMRI	PT Bank Mandiri (Persero) Tbk	
9	BMTR	PT Global Mediacom Tbk	Non-Primary Consumer Goods
10	BRPT	PT Barito Pacific Tbk	Raw Materials
11	BSDE	PT Bumi Serpong Damai Tbk	Property & Real Estate
12	BUKA	PT Bukalapak.com Tbk	Technology
13	CTRA	PT Ciputra Development Tbk	Property & Real Estate
14	EMTK	PT Elang Mahkota Teknologi Tbk	Technology
15	ERAA	PT Erajaya Swasembada Tbk	Non-Primary Consumer Goods
16	GOTO	PT GoTo Gojek Tokopedia Tbk	Technology
17	JSMR	PT Jasa Marga (Persero) Tbk	Infrastructure
18	MAPI	PT Mitra Adiperkasa Tbk	Non-Primary Consumer Goods
19	MIKA	PT Mitra Keluarga Karyasehat Tbk	Health
20	MNCN	PT Media Nusantara Citra Tbk	Non-Primary Consumer Goods
21	MPMX	PT Mitra Pinasthika Mustika Tbk	
22	PWON	PT Pakuwon Jati Tbk	Property & Real Estate
23	RMKE	PT RMK Energy Tbk	Energy
24	SCMA	PT Surya Citra Media Tbk	Non-Primary Consumer Goods
25	SIDO	PT Industri Jamu dan Farmasi Sido Muncul Tbk	Health
26	TBIG	PT Tower Bersama Infrastructure Tbk	Infrastructure
27	TLKM	PT Telkom Indonesia (Persero) Tbk	Infrastructure
28	TOWR	PT Sarana Menara Nusantara Tbk	Infrastructure
29	UNVR	PT Unilever Indonesia Tbk	Primary Consumer Goods

Source: Processed by the author (2026)

The sample selection results above are based on a population of companies selected based on the IDX 80 using ESG assessments by Sustainalytics. These were then narrowed down to thirty stocks that joined the ESG Leaders index, which underwent major and minor evaluations between December 2023 and February 2024, at the time of the general election. Furthermore, a purposive sampling technique was applied to the thirty stocks, resulting in twenty-nine stocks meeting the specified criteria.

This study uses third-party data in the form of daily stock closing data obtained from the Indonesia Stock Exchange. Research that uses third-party data is referred to as secondary data, which is obtained from indirect intermediaries (Ahmad et al., 2024). In addition to daily stock closing data, this study uses ESG Leader fact sheets, news on

IHSG movements, previous research journals on the Sharpe method, and Bank Indonesia interest rates. This data collection uses documentation methods, namely the collection of notes, reports, letters, books, or other documents (Ardiansyah et al., 2023). This study uses a single index model to determine the optimal portfolio and the Sharpe method to assess the performance of the resulting optimal portfolio. The variables determining the optimal portfolio using the single index model are as follows.

Table 2 Single Index Model Variable Formula

No	Formula	Information
1	Return calculation $R_j = (P_t - P_{t-1}) / P_{t-1}$ (Abidah et al., 2024)	R_j : Stock returns P_t : Closing stock price on day t P_{t-1} : Closing stock price on day t – 1
2	Calculation of expected return $E_{Ri} = \sum \frac{R_i}{n}$ (Abidah et al., 2024)	E_{Ri} : Expected Return n : Number of daily observations $\sum R_i$: Total stock return
3	Calculation of standard deviation $\sigma = \sqrt{\frac{\sum (x - \mu)^2}{n - 1}}$ (Rebiman & Waspada, 2022)	σ : standard deviation x : The data values in the sample μ : Average n : Number of daily observations
4	Risk-free return calculation $R_{b, \text{harian}} = \left(1 + \frac{R_{b, \text{tahunan}}}{100} \right) \frac{1}{365} - 1$ (Dionosius et al., 2025)	$R_{b, \text{harian}}$: Daily risk-free return $R_{b, \text{tahunan}}$: Annual risk-free rate (BI-Rate, % per year)
5	Individual beta calculation $\beta_i = \frac{\sigma_{iM}}{\sigma^2 M}$ (Hartono, 2019)	β_i : Individual Beta σ_{iM} : Market portfolio return $\sigma^2 M$: Market portfolio return variance
6	Alpha calculation $\alpha_i = \sum_{i=1}^n w_i \cdot \alpha_p$ (Hartono, 2014)	α_i : Individual alpha w_i : Weight of security i α_p : Portfolio alpha n : Number of securities in the portfolio
7	Calculation of Residual Error Variance $\sigma_i^2 = \beta_i^2 \cdot \sigma_M^2 + \sigma_{ei}^2$ (Hartono, 2014)	σ_i^2 : Total variance of the return of stock i β_i^2 : Squared individual beta σ_M^2 : Variance of market returns (systematic component) σ_{ei}^2 : Residual error variance (unique risk)

Table 2 Single Index Model Variable Formula (Continued)

No	Formula	Information
8	Calculation of excess return to beta a. $ERB_i = \frac{E(R_i) - R_{BR}}{\beta_i}$ (Hartono, 2019)	ERB_i : excess return to beta of individual securities $E(R_i)$: individual expected return R_{BR} : risk-free return β_i : Individual Beta
9	Calculation of A_i and B_i $A_i = \frac{[E(R_i) - R_{BR}] \cdot \beta_i}{\sigma_{ei}^2}$ $B_i = \frac{\beta_i}{\sigma_{ei}^2}$ (Hartono, 2019)	A_i, B_i : Components for calculating the cut-off point $E(R_i)$: Individual expected return R_{BR} : Risk-free return β_i : Individual beta σ_{ei}^2 : residual error variance
10	Calculation of C_i value $C_i = \frac{\sigma_M^2 \sum_{j=1}^i A_j}{1 + \sigma_M^2 \sum_{j=1}^i B_j}$ (Hartono, 2019)	C_i : Cut-off rate of stock i $\sum A_j, \sum B_j$: Cumulative values of A_j and B_j from the first to the i -th stock σ_M^2 : variance of market returns
11	Calculation of proportions Z_i $[Z_1 Z_2 \dots Z_n] \begin{bmatrix} \sigma_1^2 & \sigma_{12} & \dots & \sigma_{1,n} \\ \sigma_{23} & \sigma_{22} & \dots & \sigma_{2,n} \\ \vdots & \vdots & \ddots & \vdots \\ \sigma_{n,2} & \dots & \dots & \sigma_{n,n} \end{bmatrix} = \begin{bmatrix} E(R_1) - R_{BR} \\ E(R_2) - R_{BR} \\ \vdots \\ E(R_n) - R_{BR} \end{bmatrix}$ (Hartono, 2014)	Z_i : Proportion of funds for stock i σ_i^2 : Variance of the return of stock i σ_{ij} : Covariance between the returns of stocks i and j $E(R_i)$: Expected return of stock i R_{BR} : Risk-free return
12	Calculation of security weight value w_i $w_i = \frac{Z_i}{\sum_{i=0}^n Z_i}$ (Hartono, 2014)	w_i : Weight of security i Z_i : Proportion of funds for security i $\sum Z_i$: Total proportion of funds of all securities in the optimal portfolio
13	Calculation of beta, alpha, and residual variance of a portfolio $\beta_p = \sum w_i \cdot \beta_i$ $\alpha_p = \sum w_i \cdot \alpha_i$ $\sigma_{ep}^2 = \sum w_i \cdot \sigma_{ei}^2$ (Rachmatullah et al., 2021)	β_p : Portfolio beta α_p : Portfolio alpha σ_{ep}^2 : Residual variance of the portfolio w_i : Weight of security i $\beta_i, \alpha_i, \sigma_{ei}^2$: Individual beta, alpha, and residual variance
14	Calculation of expected return and risk of optimal portfolio $E(R_p) = \alpha_p + \beta_p \cdot E(R_m)$ $\sigma_{2p} = \beta_p^2 \cdot \sigma_{2m} + \sigma_{2ep}$ (Rachmatullah et al., 2021)	$E(R_p)$: Expected return of the optimal portfolio $E(R_m)$: Expected market return σ_{2p}^2 : Total risk (variance) of the optimal portfolio σ_{2m}^2 : Variance of market returns σ_{2ep}^2 : Residual variance of the portfolio

Source: Processed by the author (2026)

The results of determining the stocks included in the optimal portfolio are then calculated using the Sharpe method. The Sharpe method can be seen below (Hartono, 2019).

$$RVAR = \frac{\overline{TR_p} - \overline{R_{BR}}}{\sigma_p}$$

Information

RVAR : Sharpe ratio (reward-to-variability ratio)

 $\overline{TR_p}$: Average portfolio return for a certain period $\overline{R_{BR}}$: Average return of risk-free assets for a certain period

σ_p : Variability measured by standard deviation

$\overline{TR_p} - \overline{R_{BR}}$: Excess return

4. Results and Discussion

After the optimal stock candidates were identified, the next step is to determine the proportions of Z_i and w_i . Z_i represents the proportion of each asset, while w_i represents the weight of each security. The resulting proportions for December 2023 are as follows.

4.1. Results

Table 3 Recalculation of Fund Proportion for December 2023

Stock Code	Z_i	w_i
BRPT	0.0317	0.7100
PWON	0.0033	0.0733
SCMA	0.0001	0.0032
BBRI	0.0035	0.0783
SIDO	0.0008	0.0168
JSMR	0.0013	0.0282
BFIN	0.0009	0.0202
BBCA	0.0011	0.0252
BUKA	0.0006	0.0145
BMRI	0.0005	0.0116
BMTR	0.0003	0.0071
AKRA	0.0005	0.0109
TBIG	0.0000	0.0006
		1.0000

Source: Processed by the author (2026)

Based on the results above, it can be seen that the BRPT stock has a Z_i value of 0.0317, PWON stock has a Z_i value of 0.0033, SCMA stock has a Z_i value of 0.0001, BBRI stock has a Z_i value of 0.0035, SIDO stock has a Z_i value of 0.0008, JSMR stock has a Z_i value of 0.0013, BFIN stock has a Z_i value of 0.0009, BBCA stock has a Z_i value of 0.0011, BUKA stock has a Z_i value of 0.0006, BMRI stock has a Z_i value of 0.0005, BMTR stock has a Z_i value of 0.0003, AKRA stock has a Z_i value of 0.0005, and TBIG stock has a Z_i value of 0.0000. Furthermore, the proportion calculation for the January 2024 period is as follows.

Table 4 Recalculation of Fund Proportion for January 2024

Stock Code	Z_i	w_i
ACES	24.06	0.40
AKRA	16.58	0.28
MAPI	3.48	0.06
BFIN	0.60	0.01
BBNI	6.50	0.11
GOTO	0.36	0.01
BMRI	8.19	0.14
		1.00

Source: Processed by the author (2026)

Based on the results of the proportion calculation for the January 2024 period, ACES stock obtained a Z_i value of 24.06, AKRA stock 16.58, MAPI stock 3.48, BFIN stock 0.60, BBNI stock 6.50, GOTO stock 0.36, and BMRI stock 8.19. The calculations for the February 2024 period are presented as follows.

Table 5 Recalculation of Fund Proportion for February 2024

Stock Code	Z_i	w_i
JSMR	10.955	0.15
SIDO	17.680	0.23
MPMX	20.691	0.27
ERAA	10.656	0.14
BFIN	15.434	0.20
		1.00

Source: Processed by the author (2026)

After comparing the excess return to beta with the cut-off point, the optimal portfolio performance was calculated using the Sharpe ratio method. The results of the optimal stock calculation using the Sharpe method are presented in the following table.

Table 6 Optimal Portfolio Calculation with Sharpe

Optimal Portfolio	December	January	February
α_p	0.0051	0.0058	0.0059
β_p	0.0096	0.7018	0.7742
Systematic Risk	0.0000	0.0000	0.0000
Unique Risk	0.0033	0.0001	0.0001
Total Risk	0.0572	0.0090	0.0090
$E(R_p)$	0.0052	0.0098	0.0107
Sharpe	0.0882	1.0609	1.1686

Source: Processed by the author (2026)

Consequently, the optimal portfolio formed in February 2024, consisting of five selected stocks with the highest ERBi and positive proportions, demonstrated strong performance amidst political uncertainty surrounding the election. These high-performing stocks are presented in the table below.

Table 7 Portfolio Performance Proportion for February 2024

No	Issuer	β_i	σ_{ei}^2	ERBi	C^*	Z_i	w_i
1	JSMR	0.2900	0.0003	0.0157	0.0026	10.955	15%
2	SIDO	0.8885	0.0005	0.0119	0.0026	17.680	23%
3	MPMX	0.3342	0.0001	0.0077	0.0026	20.691	27%
4	ERAA	1.3454	0.0004	0.0061	0.0026	10.656	14%
5	BFIN	1.1823	0.0003	0.0060	0.0026	15.434	20%

Source: Processed by the author (2026)

Based on Table 7, the stocks listed above exhibit high ERBi values with positive capital allocation proportions. The ERBi value is obtained by subtracting the risk-free rate from the expected return and dividing the result by beta, which represents systematic risk. Therefore, stocks achieving high ERBi values can be considered to offer high expected returns while maintaining systematic risk at a level manageable for investors.

4.2. Discussion

Calculation of Realized Return

The results of the daily realized return calculation for the period December 2023 to February 2024 indicate that the stock experienced fluctuations. The December 2023 period showed a positive realized return of 46%, a negative return of 43%, and a zero return of 11%. It can be said that the stock market in December 2023 was still relatively strong. This is supported by a press release stating that as of December 28, 2023, the JCI was recorded at 7,303.89 points, representing a 6.62% year-to-date growth. Furthermore, market capitalization also grew by 23.82% year-to-date, reaching IDR 11,762 trillion (Financial Services Authority, 2023). This indicates that the stock market is in good condition, resulting in a positive rate of return.

This contrasts with the January 2024 period, which showed a positive realized return of 37%, a negative realized return of 46%, and a zero (stagnant) return for the remaining 17%. It can be concluded that stocks weakened in January 2024. The reason for the weakening was the general election, which prompted investors to wait and see the results of the election, which was held on February 14, 2024, and anticipate a January Effect (Safitri & Sukmana, 2024). At the end of January, the JCI closed 20.08 points higher at 7,157.17. Referring to RTI, as quoted by Safitri & Djumena (2024), 216 stocks were in the green zone, 284 stocks were in the red zone, and 264 stocks remained stagnant. This aligns with research findings that found 37% positive returns, 46% negative returns, and 17% stagnant or zero returns. Therefore, it can be concluded that the January Effect investors expected did not occur, and the JCI's movement in the green zone did not lead to similar movements for all stocks.

Furthermore, the results of the realized return calculation for the February 2024 period showed a positive realized return of 43%, a negative return of 46%, and the remaining 12% at zero or stagnant. This indicates that stock returns began to improve in February 2024 but were not as good as those in December 2023, when the positive realized return was 46% and the negative realized return was 43%. This is in line with the finding that the JCI experienced strengthening with a group of forty-five stocks on February 15, 2024, after the general election (Antara, 2024). However, the JCI experienced a decline on February 23, 2024, at the level of 7,295.10, a correction of 0.61%. This decline could be caused by profit-taking actions carried out by investors after the announcement of the results of the general election and investor concerns about the slowdown in the global economy (Maulana, 2024).

Risk-Free Return Calculation

Calculating the Sharpe Index requires a risk-free return. Risk-free returns can be obtained from government bonds (SUN) or Treasury bills (SPN) and from the BI Rate, which fluctuates monthly. In this study, the BI Rate is used to calculate ERBi, or excess return. The risk-free return obtained from the BI Rate is shown below.

Table 8 List of Risk-Free Returns

Date	BI-Rate (% per year)
November 23, 2023	6.00%
December 21, 2023	6.00%
January 17, 2024	6.00%
February 21, 2024	6.00%
March 20, 2024	6.00%

Source: Bank Indonesia (2025)

Based on the data above, the risk-free return for the period from November 2023 to February 2024 remained stable on average per month. Therefore, this study used a risk-free return of 6.00% per year.

Expected Return Calculation

Expected return is the return investors expect in the future and is inherently uncertain. Due to its uncertain nature, it must be taken into account by investors (Wardono et al., 2023). The calculation of expected return in this study uses the average method. It is assumed that the expected return is equal to the historical average. The use of historical data prevents inaccuracies when calculating expected future returns (Nurnajamuddin et al., 2025).

Therefore, the results of the expected return calculation for the December 2023 period show that the stock with the highest expected return value is BRPT with a value of 0.01615. Meanwhile, the stock with the lowest expected return was ASSA, with a value of -0.00938. The highest expected return value in the January 2024 period was achieved by ACES stock with a value of 0.0077. Meanwhile, the lowest expected return value is EMTK stock with a value of -0.0107. Furthermore, SIDO stock has the highest expected return among the other twenty-eight stocks in the February 2024 period, with an expected return value of 0.0107. Then, the stock with the lowest expected return value is GOTO stock with a value of -0.0115.

It can be concluded that if the stock has the highest expected return among the twenty-nine stocks, then it has the best rate of return based on the historical data used during the study. Conversely, the stock with the lowest expected return among the twenty-nine stocks has the lowest rate of return based on the historical data used during the study.

Risk Calculation

To determine the performance of an optimal portfolio formed using the Sharpe method, it is necessary to calculate the risk of each stock. The results of the calculation

of the highest risk in the December 2023 period were BRPT shares with the highest risk level of 0.0859 and the lowest value was the JCI with a value of 0.0063. This indicates that BRPT shares are stocks with a high level of risk in the December 2023 period with the highest expected return of 0.01615 and the JCI with an expected return value of 0.0014. Therefore, it can be concluded that investors will achieve a high rate of return amid uncertainty with high risk, or what can be called high risk, high return.

In terms of risk, BRPT ranked first among the twenty-nine stocks with the highest risk score in January 2024, with a risk score of 0.0485. Meanwhile, the JCI (Indonesia Composite Stock Price Index) had the lowest risk score at 0.0056, with an expected return of -0.0004. Interestingly, both BRPT and the JCI had low expected returns in January 2024, although BRPT carried the highest risk. This means investors will receive low returns amidst uncertainty and high risk.

Furthermore, the risk analysis for the February 2024 period shows that the stock with the highest risk value was UNVR, with a risk value of 0.0336 and an expected return of -0.0064. Meanwhile, the stock with the lowest risk value was the JCI, with a risk value of 0.0061 and an expected return of 0.0008. It can be concluded that if investors invest capital in both UNVR and the JCI, they will receive a low rate of return amidst uncertainty and high risk.

Individual Beta Calculation

From the beta calculations for the period December 2023 to February 2024, several stocks were found to have beta values ranging from below zero to above one. A beta value of one or more indicates that the stock has experienced a greater change in returns compared to market returns. This indicates that the stock experiences higher return fluctuations, indicating that it is an aggressive stock. As a result, investors will achieve significant returns, but also face a greater level of risk.

Additionally, stocks with a beta of less than one indicate that they experience smaller changes in returns compared to market returns. This means the stock experiences low fluctuations and is categorized as a defensive stock or a stock with a low rate of return (Nugraha, 2025).

The stock with the lowest individual beta value in December 2023 was ACES, with an individual beta of -0.8486. This means the stock has a low rate of return, making it classified as a defensive stock. Furthermore, the stock with the highest individual beta value in December 2023 was GOTO, with an individual beta of 6.1849. This indicates that the stock can be categorized as an aggressive stock, offering high returns and high risk.

Furthermore, in January 2024, several stocks were also found to have individual beta values below zero and above one. SCMA, with an individual beta of -1.2341, had the lowest individual beta among the twenty-nine stocks, indicating a low rate of return and therefore classified as a defensive stock. BRPT, with the highest individual beta of 6.0772 among the twenty-nine stocks, indicated a high rate of return and could be categorized as an aggressive stock, or a stock with a high return but high risk.

In February 2024, RMKE shares had the lowest individual beta, at -0.6843. This indicates a low rate of return for RMKE shares. Furthermore, BBRI shares had the

highest individual beta, above one, at 1.9088. With this beta, BBRI shares have a high rate of return but also high risk.

Individual Alpha Calculation

Based on the results of individual alpha calculations from December 2023 to February 2024, stocks were found with both positive and negative individual alpha values. Alpha itself is a unique return related to micro events, namely events directly related to the company and not affecting the market as a whole (Hartono, 2019).

Based on the individual alpha calculation for the December 2023 period, the stock with the highest individual alpha value among the twenty-nine stocks included in the study sample was BRPT, with an individual alpha value of 0.0126. From these findings, it can be concluded that the company issuing shares with the stock code BRPT has high excess returns due to the impact of a company event.

Furthermore, looking at the January 2024 period, ACES had the highest individual alpha value among the twenty-nine stocks, with an individual alpha of 0.0078. This stock's excess return advantage stemmed from an event at the company holding the ACES ticker during January 2024, unaffected by market events.

Based on the same calculation in February 2024, SIDO shares achieved the highest individual alpha value among the twenty-nine stocks, at 0.0099. This high value was due to a specific company event and was not influenced by market events. Therefore, looking at the results of the individual alpha calculation for the period December 2023 to February 2024, it can be concluded that stocks such as BRPT, ACES, and SIDO have higher returns resulting from certain factors, such as microeconomic factors and company fundamentals, and are not affected by market factors (Labbeik et al., 2023).

Calculation of Residual Error Variance

The residual error variance calculation is a measure of the unique or unsystematic risks associated with a company (Hartono, 2019). Therefore, based on the residual error variance calculation results from December 2023 to February 2024, the stock with the highest value among the twenty-nine stocks in each period has the highest unique risk.

For example, the stock with the highest residual error variance value in December 2023 was GOTO, with a value of 0.0044. Meanwhile, the stock with the highest residual error variance value in January 2024 was BRPT, with a residual error variance value of 0.0012. Furthermore, in February 2024, UNVR was the stock with a value of 0.0011.

Excess Return to Beta Calculation

The excess return to beta (ERBi) calculation uses the stock's expected return minus the risk-free return, divided by beta. This calculation result is used to compare it with the cut-off point to determine whether the stock is included in the optimal portfolio. The higher the ERBi value of a stock compared to the cut-off point, the more likely it is to be included in the optimal portfolio.

The stocks with the highest ERBi values from December 2023 to February 2024 were BRPT, with an ERBi of 0.0161 in December 2023. Then, in January 2024, ACES was the stock with an ERBi of 0.0232. Then, in February 2024, BUKA was the stock with an ERBi of 0.0372.

The ERBi values are then sorted from highest to lowest to facilitate comparison with the cut-off point.

Calculation of A_i and B_i

The A_i calculation itself is the expected return minus the risk-free return, multiplied by beta, and divided by the residual error variance. B_i is beta squared divided by the residual error variance. Based on the results of the A_i and B_i calculations for each month that ranked first in the ERBi as follows: in December 2023, BRPT shares were ranked with an A_i value of 0.1691 and a B_i value of 0.0248. Then, in January 2024, ACES shares were ranked with an A_i value of 8.593 and a B_i value of 370.9. Then, in February 2024, BUKA shares were ranked with an A_i value of 8.680 and a B_i value of 233.3. The A_i and B_i calculations are necessary because they are part of the cut-off point.

Calculation Results of $\sum A_i$ and $\sum B_i$

After calculating A_i and B_i , the $\sum A_i$ and $\sum B_i$ calculations are performed. This calculation is done by accumulating the A_i and B_i values themselves. Based on the results of the $\sum A_i$ and $\sum B_i$ calculations for each month that ranked first in ERBi from December 2023 to February 2024 as follows, BRPT shares have an $\sum A_i$ value of 0.1691 and a $\sum B_i$ value of 0.0248 in the December 2023 period. Then, for the $\sum A_i$ and $\sum B_i$ values in the January 2024 period, ACES shares have an $\sum A_i$ value of 8.593 and a $\sum B_i$ value of 370.9. Next, in the February 2024 period, BUKA shares have an $\sum A_i$ value of 8.680 and a $\sum B_i$ value of 233.3.

Determining Optimal Stock Candidates

The cut-off point calculation is performed after the stocks are arranged based on their highest ERBi value. The cut-off point itself is the boundary point used to determine whether a stock is included in the optimal stock candidate portfolio or not (Avianti & Ratnasari, 2021). The highest cut-off point (C_i) calculation results from December 2023 to February 2024 were MPMX shares with a cut-off point value of 0.0001 in December 2023. Then, in January 2024, ACES shares with a value of 0.0020 and in February 2024, BUKA shares with a value of 0.0026.

Table 9 Determination of Optimal Portfolio Candidates for December 2023

Determination of Optimal Portfolio Candidates for December 2023 (Before the Election)				
Stock Code	ERBi		C^*	Decision
BRPT	0.0161	>	0.0001	Optimal
ERAA	0.0099	>	0.0001	Optimal
PWON	0.0052	>	0.0001	Optimal
SCMA	0.0047	>	0.0001	Optimal

Determination of Optimal Portfolio Candidates for December 2023 (Before the Election)				
Stock Code	ERBi		C*	Decision
BBRI	0.0044	>	0.0001	Optimal
SIDO	0.0029	>	0.0001	Optimal
JSMR	0.0026	>	0.0001	Optimal
TLKM	0.0026	>	0.0001	Optimal
BFIN	0.0025	>	0.0001	Optimal
BBCA	0.0025	>	0.0001	Optimal
BUKA	0.0022	>	0.0001	Optimal
CTRA	0.0021	>	0.0001	Optimal
BMRI	0.0019	>	0.0001	Optimal
BMTR	0.0017	>	0.0001	Optimal
AKRA	0.0016	>	0.0001	Optimal
MAPI	0.0016	>	0.0001	Optimal
BBNI	0.0011	>	0.0001	Optimal
BSDE	0.0011	>	0.0001	Optimal
MIKA	0.0011	>	0.0001	Optimal
TBIG	0.0011	>	0.0001	Optimal
MPMX	0.0011	>	0.0001	Optimal
TOWR	-0.0001	<	0.0001	Not Optimal
MNCN	-0.0008	<	0.0001	Not Optimal
UNVR	-0.0016	<	0.0001	Not Optimal
ACES	-0.0023	<	0.0001	Not Optimal
RMKE	-0.0028	<	0.0001	Not Optimal
GOTO	-0.0032	<	0.0001	Not Optimal
EMTK	-0.0043	<	0.0001	Not Optimal
ASSA	-0.0094	<	0.0001	Not Optimal

Source: Processed by the author (2026)

The results of comparing the ERBi values with the cut-off point indicate that several stocks were categorized as optimal and non-optimal candidates. The optimal stock candidates consist of BRPT, ERAA, PWON, SCMA, BBRI, SIDO, JSMR, TLKM, BFIN, BBCA, BUKA, CTRA, BMRI, BMTR, AKRA, MAPI, BBNI, BSDE, MIKA, TBIG, and MPMX. Meanwhile, the non-optimal candidates comprise TOWR, MNCN, UNVR, ACES, RMKE, GOTO, EMTK, and ASSA.

The comparison between ERBi and the cut-off point for the January 2024 period is presented as follows.

Table 10 Determination of Optimal Portfolio Candidates for the January 2024 Period

Determination of Optimal Portfolio Candidates January 2024 (Before the Election)				
Stock Code	ERBi		C*	Decision
ACES	0.0232	>	0.0020	Optimal
BUKA	0.0183	>	0.0020	Optimal
BSDE	0.0122	>	0.0020	Optimal
PWON	0.0118	>	0.0020	Optimal
AKRA	0.0065	>	0.0020	Optimal
MAPI	0.0043	>	0.0020	Optimal

Determination of Optimal Portfolio Candidates January 2024 (Before the Election)				
Stock Code	ERBi		C*	Decision
BFIN	0.0037	>	0.0020	Optimal
SCMA	0.0035	>	0.0020	Optimal
BBNI	0.0032	>	0.0020	Optimal
GOTO	0.0027	>	0.0020	Optimal
SIDO	0.0026	>	0.0020	Optimal
BMRI	0.0026	>	0.0020	Optimal
BBCA	0.0014	<	0.0020	Not Optimal
TLKM	0.0002	<	0.0020	Not Optimal
BBRI	-0.0003	<	0.0020	Not Optimal
ERAA	-0.0010	<	0.0020	Not Optimal
BRPT	-0.0015	<	0.0020	Not Optimal
MNCN	-0.0029	<	0.0020	Not Optimal
JSMR	-0.0046	<	0.0020	Not Optimal
ASSA	-0.0046	<	0.0020	Not Optimal
BMTR	-0.0050	<	0.0020	Not Optimal
TBIG	-0.0056	<	0.0020	Not Optimal
MPMX	-0.0081	<	0.0020	Not Optimal
RMKE	-0.0088	<	0.0020	Not Optimal
UNVR	-0.0094	<	0.0020	Not Optimal
CTRA	-0.0100	<	0.0020	Not Optimal
TOWR	-0.0122	<	0.0020	Not Optimal
EMTK	-0.0142	<	0.0020	Not Optimal
MIKA	-0.0899	<	0.0020	Not Optimal

Source: Processed by the author (2026)

Based on the comparison between ERBi and the cut-off point for January 2024, it can be concluded that twelve stocks are categorized as optimal stock candidates. These stocks are ACES, BUKA, BSDE, PWON, AKRA, MAPI, BFIN, SCMA, BBNI, GOTO, SIDO, and BMRI. Furthermore, seventeen stocks were categorized as non-optimal, namely BBCA, TLKM, BBRI, ERAA, BRPT, MNCN, JSMR, ASSA, BMTR, TBIG, MPMX, RMKE, UNVR, CTRA, TOWR, EMTK, and MIKA.

The comparison for the February 2024 period is presented as follows:

Table 11 Determination of Optimal Portfolio Candidates in February 2024				
Determination of Optimal Portfolio Candidates in February 2024 (During & After the Election)				
Stock Code	ERBi		C*	Decision
BUKA	0.0372	>	0.0026	Optimal
MIKA	0.0159	>	0.0026	Optimal
JSMR	0.0157	>	0.0026	Optimal
SIDO	0.0119	>	0.0026	Optimal
RMKE	0.0085	>	0.0026	Optimal
MPMX	0.0077	>	0.0026	Optimal
ERAA	0.0061	>	0.0026	Optimal
BFIN	0.0060	>	0.0026	Optimal
ACES	0.0027	>	0.0026	Optimal
BMRI	0.0025	<	0.0026	Not Optimal

Determination of Optimal Portfolio Candidates in February 2024 (During & After the Election)				
Stock Code	ERBi		C*	Decision
BBRI	0.0021	<	0.0026	Not Optimal
TOWR	0.0018	<	0.0026	Not Optimal
ASSA	0.0016	<	0.0026	Not Optimal
BBCA	0.0016	<	0.0026	Not Optimal
BBNI	0.0013	<	0.0026	Not Optimal
EMTK	0.0011	<	0.0026	Not Optimal
TLKM	0.0007	<	0.0026	Not Optimal
CTRA	0.0007	<	0.0026	Not Optimal
BSDE	-0.0011	<	0.0026	Not Optimal
PWON	-0.0014	<	0.0026	Not Optimal
MAPI	-0.0019	<	0.0026	Not Optimal
BRPT	-0.0030	<	0.0026	Not Optimal
MNCN	-0.0049	<	0.0026	Not Optimal
UNVR	-0.0086	<	0.0026	Not Optimal
BMTR	-0.0136	<	0.0026	Not Optimal
TBIG	-0.0609	<	0.0026	Not Optimal
GOTO	-0.0784	<	0.0026	Not Optimal
SCMA	-0.1266	<	0.0026	Not Optimal
AKRA	-3.3651	<	0.0026	Not Optimal

Source: Processed by the author (2026)

Based on the comparison results for the February 2024 period, nine stocks are categorized as optimal stock candidates. These candidates include BUKA, MIKA, JSMR, SIDO, RMKE, MPMX, ERAA, BFIN, and ACES. Furthermore, twenty stocks were categorized as non-optimal, namely BMRI, BBRI, TOWR, ASSA, BBCA, BBNI, EMTK, TLKM, CTRA, BSDE, PWON, MAPI, BRPT, MNCN, UNVR, BMTR, TBIG, GOTO, SCMA, and AKRA. From these comparison results, a different number of optimal stocks was identified each month. These optimal stocks can then be subjected to further calculation using the Sharpe performance measure.

Calculation of Z_i and w_i

Before the performance of the optimal portfolio is calculated using the Sharpe method, stocks with negative Z_i values are removed from the list of optimal stocks. Stocks with positive Z_i values represent long positions (long selling), in which investors buy and hold shares, whereas stocks with negative Z_i values represent short positions (short selling), in which investors borrow shares from a broker and sell them when the price is high (Sen, 2010). This study assumes that all positions are long positions; therefore, the proportion of funds was recalculated using only the stocks with positive Z_i values. The recalculated proportions for December 2023 to February 2024 are presented in Tables 3 to 5, and these stocks form the optimal portfolios whose Sharpe performance is calculated next.

Sharpe Calculation of Optimal Portfolio Each Period

According to Anita et al. (2022), the Sharpe method is known as RVAR (reward-to-variability ratio), which is used to measure portfolio performance using the ratio with standard deviation. The results of calculations using the Sharpe method indicate that the Sharpe value of each optimal portfolio for each research period is as follows: in December 2023, the Sharpe value was 0.0882. Then, in January 2024, the calculated Sharpe value was 1.0609, and in February 2024, the Sharpe value was 1.1686.

The highest Sharpe value was 1.1686 in February 2024. An increase in the Sharpe value indicates improved performance of the optimal portfolio. This aligns with Susilowati et al. (2020), who state that the higher the Sharpe value, the better the stock portfolio performance. Therefore, the optimal portfolio formed in February 2024, consisting of five selected stocks with the highest ERBi values and a positive proportion, performed well amidst the political uncertainty resulting from the election.

Optimal Portfolio with Highest Sharpe Value

Systematic risk is the risk that affects the entire stock market, caused by several factors such as interest rate changes, inflation, economic recession, and political events (Firmansyah & Fathoni, 2025). Therefore, the general election event that took place in February 2024 can be categorized as systematic risk because it affected the stock market. The stocks mentioned above performed well even though the 2024 general election was taking place during that period.

The proportion of funds generated from these five stocks resulted in MPMX holding 27% of the funds, the highest among the five stocks. Stocks with the highest proportion of funds can be an alternative for investors to create an optimal, diversified portfolio, which is expected to provide optimal returns in line with the risk they can bear (Firdaus et al., 2018).

5. Conclusion

The portfolio performance analysis indicates that the portfolio constructed for each observation month yields a distinct Sharpe value, reflecting monthly dynamic rebalancing with changing stock compositions rather than a continuous performance trajectory of a single fixed portfolio. Nevertheless, the portfolio compositions formed across the periods before the general election in December 2023 and January 2024, as well as during and after the election in February 2024, demonstrate how market sentiment and political events surrounding the election influenced investor preferences, ultimately shaping different optimal risk-adjusted portfolios each month. The highest Sharpe value was obtained in February 2024, which was during the general election period.

Therefore, stocks included in the optimal portfolio with good Sharpe performance can be an alternative investment for investors. The stocks with good performance during the general election were JSMR, SIDO, MPMX, ERAA, and BFIN.

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