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The Effective Trading Strategy for High Dividend Stocks on the Jakarta Stock Exchange

Yudhia Mulya[a*], **Sri Hartini**[b], **Chaerudin Manaf**[c], [a,b,c]Department of Management. Faculty of Economics. the University of Pakuan. West Java. Indonesia, Email: [a*]yudhiamulya@unpak.ac.id

****The Following Article is For Academic Purposes only and Should not be used as a Trading Guide****

Companies with the ability to consistently share dividends would be an attractive investment to most investors. The Jakarta Stock Exchange released a new, high dividend index in the middle year of 2018. This study examines the most appropriate trading strategy for high dividend yield stocks, by comparing equally weighted Dogs and Dows (DoD) and minimum variance optimal portfolio strategies. The result of ANOVA testing shows that the DoD strategy provides significantly higher returns and risks in all periods of investment. Semi-annual portfolio rebalancing provides significant differences in performance among investment periods, in terms of the Sharpe ratio. It implies that dividend information allows investors to receive higher returns, which does not support the semi-strong form of the efficient market hypothesis.

Key words: *Stock Trading, Jakarta Stock Exchange, Dividend Return*

Introduction

Gordon and Lintner argue that return will decrease as the dividend payout increases, because investors value receiving a dividend more, which is less risky than the expected capital gain from retained earnings (Brigham et al., 2005). A widely known investment strategy in high dividend yield stocks is called the Dog and Dows strategy. Its superior performance has been confirmed in many academic studies. A study of investing in high dividend stocks in the Japanese stock market between 1981-2010 shows that the Dogs and Dows strategy outperforms the Japan's Nikkei 225 Stock Average, known as the NIKKEI 225 index (Qiu et al., 2013). A similar study of the Taiwan stock market found that the Dogs and Dows strategy outperformed both the Taiwan 50 Index, and the Taiwan Stock Exchange Capitalisation Weighted Stock Index (TAIEX), on average (Yan et al., 2015). In Canada, high dividend stocks portfolio strategies show higher returns from the market index, returning over 50-63% of the time (Kapur et al., 2002). However, a more recent study of the Dogs of the Dows, using companies from Dow Jones Industrial Average (DJIA) index from 2000 through to 2017, shows that the strategy does not robustly outperform the equally weighted investment strategy over the long run, when fee rebalancing is considered (Kim, 2019).

The Jakarta Stock Index released a high dividend stock index recently in May 2018. It is called the High Dividend 20 (HIDIV20). It consists of 20 companies that consistently distributed dividend for three consecutive years. Most HIDIV20 companies have been listed on the Jakarta Stock Exchange for no less than 8 years, and up to 30 years. The market capitalisation of the HIDIV20 index contributes 52% to the total market capitalisation of the Exchange. This study examines the best suited trading strategy of the equally weighted Dog of the Dows strategy compared, with the optimal minimum variance portfolio strategy. The study also further examines the performance of high dividend yield companies in terms of their returns, standard deviations, and Sharpe ratios in various horizon investment periods and calendar rebalancing methods.

Literature Review

The Dogs of the Dow (DoD) is widely known as the investment strategy of holding the ten highest dividend yielding stocks listed in the Dow Jones market index, as a portfolio and as rebalanced, annually. Its implementation has been tested in many stock market indices around the world. Ahmad et al. (2017) found that the DoD strategy has superior performance than the market, in developed Asian markets and developing markets. Chong et al. (2010) finds that DoD performs better for blue-chip stocks in Hong Kong. Tissayakorn et al. (2013) found the strategy also effective in the Thai stock market which outperforms the SET Index and SET50 Index. A modified version of DoD has been conducted in Lin (2017) which constructed a portfolio of five stocks of highest dividend yields, and a portfolio of five lowest price stocks in the Dow 10; the “Small of the Dogs” strategy. The result shows that the modified DoD strategy outperforms the benchmark DJIA portfolio, especially in more recent years, between 2009 to 2016. This finding also shows information about temporary market mispricing and inefficiency.

The minimum-variance portfolio has a standard deviation smaller than that of individual component assets (Zvi et al., 2014). For a given expected portfolio return, the optimal weight provides the lowest variance (Stewart et al., 2019). Bakke (2014) compared the performance of minimum-variance and mean-variance optimised portfolios, in addition to equally weighted and value weighted market portfolios. The study finds that the optimised portfolios generally deliver higher Sharpe ratios, and the minimum variance portfolio is found to be the best strategy. It produces increasing standard deviation, while mean portfolio return and Sharpe ratios decreases as the portfolio period increases.

A study of how the length of an investment period affects risk, across nations, shows that the uncertainty of stock returns declines more rapidly than the uncertainty of bond returns, when the holding period lengthens (Estrada, 2013). Li et al. (2012) find that portfolios of large market capitalisation stocks require long investment horizons of 19 years, to exceed the risk-free rate of return.

Methodology

Our study uses monthly returns for companies listed in a high dividend stock index, released by the Jakarta Stock Index. The sample period covers from October 2009 to September 2019, for a total observation of 120 months. The observation period is divided into four periods; observations which consist of three sub-period investment horizon of 12 months, 36 months, and 60 months respectively, and a full observation period of 120 months.

In each investment period, portfolios are constructed by using two strategies which weight equally the Dogs of the Dows (DoD) and the minimum variance optimisation. Under the DoD strategy, portfolios are constructed of ten stocks with the highest returns, equally weighted. The minimum variance method also applied to the same ten highest return stocks, to obtain the optimal weights. The process of each strategy is repeated by rebalancing the portfolio annually and semi-annually.

The portfolio weights are rebalanced every year (annually) and six-months (semi-annually). The rebalancing method uses the time strategy, where the portfolio is rebalanced at a pre-determined interval (Zilbering et al., 2015). The portfolio optimisation is estimated over a rolling window of T months, where T is set to 12 months, 36 months. and 60 months. If portfolio optimisation rebalanced every year, then the rolling window of T=12 months will be based on the observation period of October 2009 to September 2010. The period for the next optimisation portfolios weight will be rolled one year forward. It will be T+12 months, discarding the first 12 months. Thus, the new portfolio optimisation will be conducted every year, and the weights of new portfolios updated. The portfolio optimisation process continued from October 2009 until September 2019. This is the procedure of annual rebalancing**.** The annual rebalancing process produces 10 portfolios of T=12 months, eight portfolios of T=36 months, and six portfolios of T=60 months.

The portfolios are also rebalanced every six months using a rolling window of T=12 months, based on the observation period of October 2009 to September 2010. The period for the next portfolios optimisation will be rolled six months forward to12 months, discarding the first six months. Thus, the new portfolio optimisation will be conducted every 6 months and the weights of new portfolios will be updated. The semi-annual rebalancing produces 19 portfolios with an investment period of 12 months, 15 portfolios of 36 months' investment period, and 11 portfolios of 60 months' investment period.

Under each weighting and rebalancing of portfolio strategy, the portfolio performance is measured in terms of annualised return, annualised standard deviation, and Sharpe ratio. The portfolio return is a weighted average of average returns on an individual stock return. The monthly portfolio return is calculated using the formula as follows:

$$\bar{r}_p = \sum_{i=1}^{N} (w_i \bar{r}_i) \tag{1}$$

The annualised portfolio return is calculated from realised monthly portfolio return using the following formula:

$$\bar{r}_p = \hat{r}_p 12 \tag{2}$$

The standard deviation of the monthly return is the square root of portfolio's variance with the following formula:

$$\sigma_p = \sqrt{\sigma_p^2} \tag{3}$$

The variance of equal weight portfolio is calculated using the following formula:

$$\sigma_p^2 = \sum_{j=1}^{N} (\frac{1}{N})^2 \sigma_j^2 + \sum_{j=1}^{N} \sum_{\substack{k=1 \\ k \neq j}}^{N} (\frac{1}{N})(\frac{1}{N}) \sigma_{jk} \tag{4}$$

The variance of equal weight portfolio is calculated using the following formula, subject to minimum value. The minimum value of variance in each portfolio is calculated by using Solver in Excel program.

$$Minimum\ \sigma_p^2 = \sum_{j=1}^{N} \left(w_j^2 \sigma_j^2\right) + \sum_{j=1}^{N} \sum_{\substack{k=1 \\ k \neq j}}^{N} (w_j w_k \sigma_{jk}) \tag{5}$$

The monthly portfolio standard deviations from the above equation are then converted into an annual basis using the following formula:

$$\bar{\sigma}_p = \hat{\sigma}\sqrt{12} \quad (6)$$

The performance of each portfolio is measured by Sharpe ratio (S_p) which measures the excess return of portfolio return (r_p) over the risk free rate (r_f) per unit of risk (σ_p). The Sharpe ratio is calculated using the following formula:

$$S_p = \frac{r_p - r_f}{\sigma_p} \quad (7)$$

We compare the return, standard deviations, and Sharpe ratio of each portfolio strategy using Anova testing. A Welch test is conducted to find any statistically difference among investment horizon periods, in either trading strategies or calendar rebalancing methods. All of the statistic differences tests in this study are performed by running the Statistical Package for the Social Sciences (SPSS) 24 version.

Results and Discussion

As the portfolio horizon period increases, both equal weight and minimum variance portfolio strategy are decreasing in returns and Sharpe ratios whether it rebalances annually or semi-annually. The Welch test shows that portfolio returns among horizon periods have significant difference, when it rebalances semi-annually on the equal weight strategy. The Welch test also shows that Sharpe ratios among horizon periods have significant difference, when portfolios rebalance semi-annually both in equal weight and minimum variance portfolio strategy.

An Anova test is applied, in testing whether there are any significant differences between annual and semi-annual rebalancing method on portfolios return, standard deviation, and Sharpe ratio. The result of the Anova test in Table 1 shows no significant difference in returns, standard deviation, or Sharpe ratio whether the portfolios are rebalanced annually or semi-annually and in both equal weight and minimum variance portfolio strategy.

The equal weight portfolio strategy shows that average returns of annual rebalancing portfolios are greater than semi-annual rebalancing portfolios, for investment horizons of 12 months and 36 months. At the longer investment horizon of 60 months, the average return of semi-annual rebalanced portfolios is higher than the annual rebalanced portfolios. According to Black and Scholes' study, increasing a corporations' dividend will have no definite effect on its stock price. However, the price may change temporarily due to change in dividend,

because the market may believe that the changes indicate something about probable future earnings (Black et al., 1974). It implies that shorter term portfolios capture the price change, in response to dividend changes which in turn produce higher returns.
The optimal minimum variance portfolios show that the annual rebalancing portfolio returns are higher than semi-annual rebalancing portfolios, for all of the investment horizon. This result is similar to a prior study of Daryanani (2008) and Dayanandan et al. (2015), that on calendar rebalancing, annual rebalancing portfolio returns are higher than semi-annual rebalancing portfolios returns. It is also supports Wang et al. (2011) study, that portfolio returns are negatively and significantly affected by the number of stocks included, and the holding period of the portfolios, which means lowering the balancing frequency can increase risk adjusted returns.

An Anova test was also conducted to find whether there are any significant performance differences between the strategies of equal weight and minimum variance portfolio. As shown in Table 1, there is a significant difference in portfolio return on each horizon period when the portfolios are rebalanced semi-annually. Both strategies show that shorter investment horizons provide higher returns, in which the 12 months portfolio period has a highest return than other periods. The study of Abramov et al. (2015) suggests that decision criteria for investors, with short and medium investment periods using less than a 17 year investment horizon, should be based mainly on the optimised, desired return. Based on return criteria, the equal weight strategy with semi-annual rebalancing and 12 months investment horizon, provide the highest return.

In terms of risk, the minimum variance portfolio strategy delivers lower standard deviation than equal weighting, and the difference is statistically significant at an alpha level of 1%, using both annual and semi-annual rebalancing methods. Under an equal weight portfolio strategy, semi-annual rebalancing portfolios produce greater risk than annual rebalancing portfolios, for all investment horizon periods. The differences in risk among investment horizon periods are not statistically significant, as shown by a Welch test. The risk between annual and semi-annual rebalancing methods does not show any significant difference either, as displayed by Anova testing.

The minimum variance optimal portfolios strategy has significant risk differences among investment horizon periods, both on an annual and semi-annual rebalancing method. That strategy produces greater risk as the investment period lengthens. Portfolios of 12 months show the lowest risk, on both annual and semi-annual rebalancing methods. A similar result of risk profile, from minimising standard deviation optimal portfolio, appears in Choi et al. (2010). This shows that standard deviation rises as the investment horizon lengthens, except that the mean of portfolio return also rises.

Table 1: Performance of Different Portfolios Strategy

Portfolios Performance	Strategy	Rebalancing	Investment Period (months)				Welch test (p-value)
			T=12	T=36	T=60	T=120	
Return	Equal Weight (EW)	Annual	48.73%	38.05%	33.58%	30.33%	0.117
		Semi-annual	47.83%	37.06%	33.80%		0.015[b]
		Anova (p-value)	0.909	0.808	0.922		
	Minimum variance (MV)	Annual	35.22%	30.94%	28.37%	21.48%	0.497
		Semi-annual	35.00%	27.85%	26.95%		0.089
		Anova (p-value)	0.970	0.300	0.562		
	EW-MV Anova (p-value)	Annual	0.136	0.100	0.130		
		Semi-annual	0.025[b]	0.004[a]	0.001[a]		
Standard deviation	Equal Weight (EW)	Annual	18.77%	19.71%	18.27%	17.34%	0.454
		Semi-annual	18.87%	20.01%	18.62%		0.246
		Anova (p-value)	0.963	0.792	0.660		
	Minimum variance (MV)	Annual	10.76%	14.81%	15.09%	14.21%	0.006[a]
		Semi-annual	10.77%	14.74%	15.43%		0.002[a]
		Anova (p-value)	0.993	0.929	0.880[c]		
	EW-MV Anova (p-value)	Annual	0.001[a]	0.000[a]	0.003[a]		
		Semi-annual	0.000[a]	0.000[a]	0.000[a.c]		
Sharpe ratio	Equal Weight (EW)	Annual	2.22	1.59	1.46	1.31	0.171
		Semi-annual	2.31	1.51	1.44		0.017[b]
		Anova (p-value)	0.840	0.672	0.888		
	Minimum variance (MV)	Annual	2.92	1.63	1.40	0.98	0.116
		Semi-annual	3.04	1.41	1.29		0.002[a]
		Anova (p-value)	0.878	0.165	0.410		
	EW-MV Anova (p-value)	Annual	0.394[d]	0.852	0.758		
		Semi-annual	0.167	0.439	0.146		

[a]Sig. at 1% [b]Sig. at 5%
[c]Mann-Whitney. [d]Welch Test

The Sharpe ratio in both equal weight and minimum variance portfolio strategy shows that semi-annual rebalanced portfolios perform better for the shorter investment period of a 12 month investment horizon. As the investment period widens, the annual rebalanced portfolios outperform the semi-annual rebalanced portfolios. A prior study by Dayanandan et al. (2015) also found that the annual rebalancing strategy has a higher Sharpe ratio than a semi-annually rebalancing strategy.

Both annual and semi-annual portfolios decrease in performance, as the investment horizon lengthens. Decreasing Sharpe ratios in semi-annual rebalanced portfolios are statistically distinguishable, based on a Welch test of both trading strategies. Decreasing Sharpe ratios as the investment horizon widens were also found in Fugazza et al. (2010), under the equal weighting portfolio strategy.

The equal weight strategy shows higher Sharpes ratio than optimal minimum variance portfolios, for the investment period of 36 months and 60 months on the semi-annual rebalancing method. On that method, the equal weight strategy also shows a higher Sharpe ratio than the minimum variance portfolio strategy, but for the longer investment period of 60 months and the entire period of 120 months. However, the difference of Sharpe ratio between equal weight and minimum variance strategy does not appear statistically significant. The comparison between equal weight and minimum variance strategy also found in DeMiguel et al. (2009), that the Sharpe ratio difference between both strategies is not statistically significant in their Industry, International, and Market/Small Minus Big/High Minus Low datasets.

From Table 1, it can be concluded that a semi-annual rebalancing method in constructing portfolios of high dividend yield stock would deliver significant differences in terms of its return, risks, and performance. A shorter investment horizon of 12 months would be preferred because it provides higher returns and higher Sharpe ratios.

Multiple comparisons of Games-Howell test were conducted with the statistics software of SPSS2 24 version. Thus, Table 2 shows significant differences in standard deviation of minimum variance portfolios between T=12 months portfolio and T=36 months portfolio, and between T=12 months and T=60 months portfolios. The negative signs of mean differences imply that shorter investment periods for high dividend stocks portfolios are less risky than the T=36 months and T=60 months investment period portfolios, and the difference is statistically distinguishable. Meanwhile. portfolio returns show no significant mean difference among different investment periods in both weighting strategies, except in equal weighting portfolios that semi-annually rebalance, which have a significant mean return difference between a 12 months portfolio and a 60 months portfolio. It implies that in using an equally weighted portfolio strategy, returns of 12 months portfolios outperform 60 months portfolios, and the difference is significant when rebalanced semi-annually.

The significant mean differences are also shown in Sharpe ratios of semi-annual rebalancing portfolio, between T=12 months and T=36 months, and between T=12 months and T=60 months. It implies that the shorter period of investment (12 months) in a high dividend portfolio outperforms the longer period portfolio of T=36 months and T=60 months, and that the difference is statistically distinguishable.

Table 2: Mean Difference and p-values of Portfolio Performance

Portfolio performance	Horizon Period		Rebalancing	Mean difference (sig)	
				Equally weighted	Minimum Variance
Return	T=12 months	T=36 months	Annual	0.1067 (0.361)	0.0428 (0.751)
			Semi-annual	0.1077 (0.098)	.07148 (0.146)
		T=60 months	Annual	0.1515 (0.126)	0.0685 (0.500)
			Semi-annual	0.1403* (0.016)	0.0805 (0.072)
	T=36 months	T=60 months	Annual	0.0447 (0.512)	0.0257 (0.723)
			Semi-annual	0.0326 (0.444)	0.0091 (0.905)
Standard Deviation	T=12 months	T=36 months	Annual	-0.0094 (0.872)	-0.0405* (0.008)
			Semi-annual	-0.0114 (0.696)	-.0397* (0.003)
		T=60 months	Annual	0.0050 (0.957)	-0.0433* (0.005)
			Semi-annual	0.0025 (0.980)	-0.0465* (0.002)
	T=36 months	T=60 months	Annual	0.0144 (0.410)	-0.0028 (0.929)
			Semi-annual	0.0139 (0.215)	-.0068 (0.727)
Sharpe ratio	T=12 months	T=36 months	Annual	0.624 (0.269)	1.285 (0.232)
			Semi-annual	0.7952* (0.030)	1.6382* (0.005)
		T=60 months	Annual	0.7573 (0.148)	1.515 (0.144)
			Semi-annual	0.8678* (0.014)	1.7497* (0.003)
	T=36 months	T=60 months	Annual	0.1333 (0.785)	0.230 (0.472)
			Semi-annual	0.0726 (0.841)	0.1115 (0.583)

[a]Sig. at 1%
[b]Sig. at 5%

The trading strategy that can be concluded from Table 2 is semi-annual rebalancing method in equal weight strategy would result a statistically distinguishable returns between 12 months and 60 months periods. In terms of risk, there would be a significant difference in risks among all of the investment periods and all rebalancing methods when minimum variance strategy is used. In terms of portfolio performance, there would be significant difference among all the investment periods when semi-annual rebalancing method is used in both equal weight and minimum variances strategy.

Conclusion

A portfolio using DoD strategy in semi-annual rebalancing methods provides significantly higher returns, than the minimum variance portfolio strategy in all investment periods. Higher returns of DoD strategy are also followed by higher risk, and the difference in risk is statistically significant from the minimum variance portfolio. The optimal portfolio strategy of minimum variance provides the lowest risk and the risk is significantly different with the length of investment period. The short investment period of 12 months has the lowest risk. The portfolio performance between the two trading strategies does not show any significant differences in all investment periods. But differences in portfolio performance significantly exist among all investment periods, as to semi-annual rebalancing methods in both portfolio strategies. The performance of 12 month periods shows better Sharpe ratios in both strategies.

Implications

An implication is that there is little evidence that an investor could receive a significantly higher return in short period investment, in all investment periods, with a semi-annual portfolio rebalancing method. Thus, the information about dividends will provide the benefit of a higher return to investors. It implies that the result does not support the semi-strong form of the efficient market hypothesis.

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REFERENCES

Abramov, A., Radygin, A., & Chernova, M. (2015). Long-term Portfolio Investmens: New Insight into Return and Risk. Russian Journal of Economics , 1, 273-293.

Ahmad, N., Ghouse, S. M., & Salamuddin, N. (2017). Empirical Analysis od the Dogs of the Dow (DoD) Trading Strategy in Developed and Developing Asian Markets. Pertanika Journals Social Sciences & Humanities , 25, 75-84.

Bakke, A. (2014). How Good is the Out-of-Sample Performance of Optimized Portfolios? An Empirical Comparison of Optimal Versus Naive Diversification. University of Agder School of Business and Law.

Black, F., & Scholes, M. (1974). The Effects of Dividend Yield and Dividend Policy on Common Stock Prices and Returns. Journal of Financial Economics , 1-22.

Brigham, E. F., & Ehrhardt, M. C. (2005). Financial Management Theory and Practice. Thomson-Southwestern.

Choi, B. P., & Mukherji, S. (2010). Optimal Portfolios For Different Holding Periods. Journal of Business & Economics Research , 8 (No. 10), 1-6.

Chong, T. T.-L., & Luk, K. K. (2010). Does the “Dogs of the Dow” Strategy Work Better in Blue Chips? Applied Economics Letters , 17 (12), 1173-1175.

Daryanani, G. (2008). Opportunistic Rebalancing: A New Paradigm for Wealth Managers. Journal of Financial Planning , 48-61.

Dayanandan, A., & Lam, M. (2015). Portfolio Balancing - Hype or Hope? The Journal of Business Inquiry , 14 (2), 79-92.

DeMiguel, V., Garlappi, L., & Uppal, R. (2009). Optimal Versus Naive Diversification: How Inefficient is the 1/N Portfolio Strategy? The Review of Financial Studies , 22 (9), 1915-1953.

Estrada, J. (2013). Stocks, Bonds, Risk, anf the Holding Period: an International Perspective. The Journal of Wealth Management , 25-44.

Fugazza, C., Guidolin, M., & Nicodano, G. (2010, December). 1/N and Long Run Optimal Portfolios: Results for Mixed Asset Menus. Carlo Alberto Notebooks , pp. 1-44.

Kapur, R., & Suryavanshi, S. (2002). Dividend Yield Strategies: Dogs of The Dow and Hounds of The Bay. Simon Fraser University.

Kim, D.-K. (2019). The Dogs of the Dow Theory - Is It Valid? International Journal of Economics and Finance , 11 (No. 5), 43-49.

Li, B., Liu, B., F Fin, R. B., & Su, J. J. (2012). Stock Return and Holding Periods. The Finsia Journal of Applied Finance (2), 43-48.

Lin, E. C. (2017). Investment Performance of the “Dogs of the Dow” Strategies: The Latest Evidence. International Journal of Trade, Economics and Finance , 8 (No. 15), 231-234.

Qiu, M., Song, Y., & Hasama, M. (2013). Empirical Analysis of The Dogs of The Dow Strategy: Japanese Evidence. International Journal of Innovative, Computing, Information, and Control , Vol. 3 No. 3 (ISSN 349-198), 3677-3684.

Stewart, S. D., Piros, C. D., & Heisler, J. C. (2019). Portfolio Management Theory and Practice. Wiley.

Tissayakorn, K., Song, Y., & Akagi, F. (2013). A Study on Performance Evaluation of The “Dogs of The Dow” Investment Strategy for The Thai Stock Market. European Modeling and Simulation Symposium.

Wang, C., Larsen, J. E., Ainina, M., Akhbari, M. L., & Gressis, N. (2011). The Dogs of the Dow in China. International Journal of Business and Social Sciences , 2 (18), 70-80.

Yan, H., Song, Y., Qiu, M., & Akagi, F. (2015). An Empirical Analysis of the Dog of the Dow Strategy for The Taiwan Stock Market. Journal of Economics, Business and Management , 2 No. 4, 435-439.

Zilbering, Y., Jaconetti, C. M., & Kinniry, F. M. (2015). Best Practices for Portfolio Rebalancing. Vanguard Research.

Zvi, B., Kane, A., Marcus, A. J., & Jain, R. (2014). Investment. McGraw Hill.