# Determining The Optimal Portfolio Markowitz Model on Moving Stock Prices Using Brown Motion Geometry

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| **Title** | Determining The Optimal Portfolio Markowitz Model on Moving Stock Prices Using Brown Motion Geometry |
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| **Abstract** | Stock price movements that fluctuate and follow a stochastic process will make it difficult for investors to start investing. For that, we need a stochastic mathematical model. The Brownian geometry motion model is one of the stochastic models that can be used to display the condition of a stock's price movement. Investment is related to the rate of return (return) and the risk obtained. The higher the rate of return obtained, the higher the risk obtained. Therefore, a portfolio calculation is needed, one of which is using the Markowitz model. The Markowitz model can be used to determine the optimal portfolio. The purpose of this study is to model stock prices and form an optimal portfolio. The stock price data used are BBRI, TLKM, and ADRO for the period from 1 July 2021 to 31 August 2022. The results obtained from this study are that there are three portfolio preferences. If investors like high risk to get high returns, then the combined allocation of funds for BBRI, TLKM and ADRO shares is 10.51%, 42.05% and 47.44% respectively. If investors do not like high risk but still want to get a return that is balanced with risk, then the combination of fund allocation for shares of BBRI, TLKM and ADRO is 22.62%, 46.63% and 30.75%, respectively. If the investor chooses minimum risk, the combined allocation of BBRI, TLKM and ADRO shares is 34.73%, 51.21% and 14.06%, respectively. |
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| **Author** | AGUNG PRABOWO, S.Si, M.Si |