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Parametric efficient portfolio rebalancing incorporating transaction costs

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The purpose of this study is to choose an efficient portfolio and rebalance it with transaction costs to enable account holders who desire to invest in the financial markets to achieve their goals in the most convenient way. Rebalancing is the process of restoring the asset allocation values of a portfolio back to the levels specified by an investment strategy. These levels are meant to correspond to an investor's risk tolerance and rewards. The Modern Portfolio Theory (MPT) reduces portfolio risk by choosing and balancing assets based on statistical methods that measure the level of diversity by computing expected returns and standard deviations of individual securities to assess their risk. When a portfolio is expected to produce the maximum return at the lowest risk, or at a specific level of risk, it is said to be efficient. Here, we contrast the results of the three major efficient portfolios by considering a portfolio of 10 stocks randomly selected from the FTSE100 index (Financial Times Stock Exchange) and closing stock prices of the stocks over the preceding five years. By using MATLAB software the parametric efficient portfolio is found to be more appropriate and the investment was more diversified than with the variance efficient and expected return efficient portfolios. Using optimized weights and the traded quantities of each investment, the quadratic programming model was developed to rebalance the portfolio while accounting for transaction costs. Risk and returns are investigated using the developed model while accounting for transaction costs and rebalancing the parametric efficient portfolio.

Keywords: Portfolio optimization, Efficient portfolio, Expected return, Risk, Rebalance, Transaction cost

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