

The Impact of Transaction Costs on Rebalancing an Investment Portfolio in Portfolio Optimization

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Abstract : Constructing a portfolio of investments is one of the most significant financial decisions facing individuals and institutions. In accordance with the modern portfolio theory maximization of return at minimal risk should be the investment goal of any successful investor. In addition, the costs incurred when setting up a new portfolio or rebalancing an existing portfolio must be included in any realistic analysis. In this paper rebalancing an investment portfolio in the presence of transaction costs on the Croatian capital market is analyzed. The model applied in the paper is an extension of the standard portfolio mean-variance optimization model in which transaction costs are incurred to rebalance an investment portfolio. This model allows different costs for different securities, and different costs for buying and selling. In order to find efficient portfolio, using this model, first, the solution of quadratic programming problem of similar size to the Markowitz model, and then the solution of a linear programming problem have to be found. Furthermore, in the paper the impact of transaction costs on the efficient frontier is investigated. Moreover, it is shown that global minimum variance portfolio on the efficient frontier always has the same level of the risk regardless of the amount of transaction costs. Although efficient frontier position depends of both transaction costs amount and initial portfolio it can be concluded that extreme right portfolio on the efficient frontier always contains only one stock with the highest expected return and the highest risk.

Keywords : Croatian capital market, Markowitz model, fractional quadratic programming, portfolio optimization, transaction costs

Conference Title : ICBFEM 2015 : International Conference on Business, Finance, Economics and Management

Conference Location : Madrid, Spain

Conference Dates : March 26-27, 2015