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Research Paper

Using the Fundamental Analysis Method to Create a Matrix of Investor Views in the Black Literman Optimization Model and Comparing its Performance with Existing Modelss[1]

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INTRODUCTION

Although the Markowitz-mean-variance model and other classical optimization models seem theoretically quite logical and rational, in the practical use of these models, there are drawbacks, the most important of which is not paying attention to investor views and relying entirely on historical information. Following this issue, the Black-Litterman model was formed, which in addition to using historical estimates, also takes into account a wide range of investor views.

Although the Black Literman model was able to eliminate one of the most important drawbacks of the Markowitz model, namely the lack of attention to investor views, it did not provide a clear framework on which the matrix of investor views was measured and added to the model. In fact, if we accept that these views are added to the model without any principles and methods, not only will this model lose its usefulness, but also its behavioral financial risks and errors will be added to it. What this study seeks to solve is to provide a systematic approach to estimating the matrix of investor views. In other words, in this study, the expected return on stocks is calculated using a formula based on fundamental analysis, then enters the model as a matrix of investor views to be implemented in a larger structure and to eliminate behavioral financial risks. The performance of the model is then compared with the Markowitz model, semi-variance, and conditional value at risk using the Sharp and Trainer criteria.

MATERIALS AND METHODS

The period of study in this research is from April 2016 to October 2021, and Excel software has been used to classify the data. MATLAB software has been used to optimize

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models and statistical tests. The mentioned models were created using the time data from April 2016 to March 2021, and then the time period of May to the end of October 2021 was considered as the sample period to evaluate the performance of the models and compare them.

To test the significance of the difference between the results and the test of research hypotheses in general the weight of assets in the optimal tangent portfolio for the period is determined, then the performance appraisal ratios for the optimal portfolios are calculated, resulting in six Sharp ratios and six trainer ratios for each model. All models are measured, resulting in six returns for each model; then, to evaluate the models, the evaluation ratios obtained for the tangent portfolio and the returns generated at the market risk level are compared. Due to the abnormality of the data distribution as well as their dependence on the nonparametric Friedman test for ranking and then for the significance of the results, the models are compared in pairs by the Will Coxon test.

RESULTS AND DISCUSSION

The results show that the optimal tangential portfolio of the basic Black Literman model is more successful than the other three models in the Sharp and Trainer evaluation criteria. So, the average performance evaluation ratios of the Black Literman model are 60% better than the other three models. Also, the average return generated by the Black Literman model at the market risk level was on average 30% higher than the other three models and 200% higher than the market return, which is an extraordinary performance. In addition to the Black Literman model, all three other models at the level of market risk have yielded higher returns than the average of the total market return, which makes it more important to address optimization methods. The maximum efficiency generated by the Black Literman model was also higher than the other three models; For example, in the six months, the model was able to generate a maximum return of 60 percent, while the mean-variance model, which is in second place, achieved a return of 48 percent, which is a 12 percent difference with the Markowitz model in six months. Black Literman is a powerful model for stock portfolio optimization, and most importantly, the maximum return created for the Black Literman model is exactly in the tangible optimal portfolio, which also shows the model's efficiency in diversification.

CONCLUSION

According to the results of the study, which show that the performance of the basic Black Literman model has been better than the average market performance in all periods, portfolio companies and mutual funds are recommended to use the Black Literman model to optimize their portfolio.

Keywords: Black Literman Model, Markowitz Model, Fundamental Analysis, Stock Portfolio Optimization.
JEL Classification: G11, G3, C11.