

WWZ Reseach Seminar

Tuesday, October 22, 2019, 12:30pm, S 15, HG

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"Sustainable Investing and the Cross-Section of Maximum Drawdown"

ABSTRACT

We use supervised learning methods, including ordinary least squares, penalized linear regressions, dimension reduction methods, tree-based models, and neural networks, to predict the cross-section of maximum drawdown for stocks in the US equity market. We rely on a quantile transform and focus on rank ordering of firms by maximum drawdown. Our data set runs from January 1972 to December 2018 and accounts for 98 firm characteristics, including size, book-to-market, beta, volatility, and earnings-to-price. We add ESG indicators from two data providers.

We make three contributions: 1) an investigation of the predictability of maximum drawdown across stocks and a comparison of the performance of different supervised learning methods for the task, 2) an inspection of whether ESG scores improve the accuracy of maximum drawdown prediction, 3) an analysis of feature importance, which determines the contribution of each characteristic to the forecast.

Based on a 4-year out-of-sample period from January 2015 to December 2018, we found that volatility characteristics were the main drivers of maximum drawdown, but not the exclusive drivers. Momentum, and liquidity improved accuracy, but the inclusion of ESG indicators did not. We found a slim association between some ESG indicators and low maximum drawdown. However, our test period is short, and the results should be interpreted with caution. On a more extensive test set from January 2002 to December 2018, which necessarily excludes ESG indicators, we validate the importance of volatility, momentum, and liquidity as predictors of maximum drawdown. However, our prediction accuracy suffered in periods of high volatility, and the performance of drawdown-based quintile portfolios exhibited severe period dependence.

This research is in collaboration with Saad Mouti.