

Don't Optimize! - Portfolios with Bayesian Change Point Analytics

Diethelm Würtz^{1,*}, Tobias Setz¹ Venetia Christodouloupoulou¹

1. Swiss Federal Institute of Technology, Zurich, Switzerland

*Contact author: diethelm.wuertz@rmetrics.org

Keywords: Portfolio, Bayesian Change Points, MCMC, Shiny

In this talk we present a new unconventional method based on a predictive Bayesian Change Point (BCP) Stability Analytics [4] and Markov Chain Monte Carlo method ([2] and [3]) to design portfolios. Our approach makes optimization obsolete and comes with many additional advantages compared to standard investment strategies [1]. The portfolios are characterized by a high degree of stability of the underlying price process resulting in a steady increase of returns, low drawdowns, short recovery times, and low volatilities.

Two examples are presented: (i) an Euro based ETF portfolio build from Large and Small Cap Equities, REITS, and Government Bonds, and (ii) an USD based sectorized portfolio of MSCI Emerging Market Equities. All calculations were done in *R* using the **Rmetrics** package family. Furthermore, a real time *R* **shiny** web application which visualizes stability forecasts and portfolio rebalancing will be demonstrated.

References

- [1] Markowitz Harry (1952). Portfolio Selection. Journal of Finance Vol. 7 No. 1, 77-91.
- [2] Barry Daniel, and Hartigan John A. (1993). A Bayesian Analysis for Change Point Problems. Journal of the American Statistical Association 35, 309-319.
- [3] Erdman Chandra, and Emerson John W. (2008). A fast Bayesian change point analysis for the segmentation of microarray data. Bioinformatics 24, 2143-2148.
- [4] Würtz Diethelm, Chalabi Yohan, Ellis Andrew, and Theussl Stefan (2010). Proceedings of the Singapore Conference on “Computational Finance and Financial Engineering”, pp. 205 – 213.