Accepted Manuscript

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Please cite this article as: Francq C., Zakoïan J., Estimation risk for the VaR of portfolios driven by semi-parametric multivariate models. *Journal of Econometrics* (2018), https://doi.org/10.1016/j.jeconom.2018.03.018

Estimation risk for the VaR of portfolios driven by semi-parametric multivariate models

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March 30, 2018

Abstract

Joint estimation of market and estimation risks in portfolios is investigated, when the individual returns follow a semi-parametric multivariate dynamic model and the asset composition is time-varying. Under ellipticity of the conditional distribution, asymptotic theory for the estimation of the conditional Value-at-Risk (VaR) is developed. An alternative method - the Filtered Historical Simulation - which does not rely on ellipticity, is also studied. Asymptotic confidence intervals for the conditional VaR, which allow for simultaneous quantification of the market and estimation risks, are derived. The particular case of minimum variance portfolios is analyzed in more detail. Potential usefulness, feasibility and drawbacks of the two approaches are illustrated via Monte-Carlo experiments and an empirical study based on stock returns.

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