



Dynamic Covariance Models for Multivariate Financial Time Series

Yue Wu, José Miguel Hernández-Lobato, Zoubin Ghahramani

(Submitted on 18 May 2013 (v1), last revised 2 Jun 2013 (this version, v2))

The accurate prediction of time-changing covariances is an important problem in the modeling of multivariate financial data. However, some of the most popular models suffer from a) overfitting problems and multiple local optima, b) failure to capture shifts in market conditions and c) large computational costs. To address these problems we introduce a novel dynamic model for time-changing covariances. Over-fitting and local optima are avoided by following a Bayesian approach instead of computing point estimates. Changes in market conditions are captured by assuming a diffusion process in parameter values, and finally computationally efficient and scalable inference is performed using particle filters. Experiments with financial data show excellent performance of the proposed method with respect to current standard models.

Subjects: **Methodology (stat.ME)**; Machine Learning (stat.ML)

Cite as: [arXiv:1305.4268](#) [stat.ME]

(or [arXiv:1305.4268v2](#) [stat.ME] for this version)

Submission history

From: José Miguel Hernández-Lobato [[view email](#)]

[v1] Sat, 18 May 2013 14:08:12 GMT (640kb,D)

[v2] Sun, 2 Jun 2013 18:29:10 GMT (640kb,D)

[Which authors of this paper are endorsers?](#)

Link back to: [arXiv](#), [form interface](#), [contact](#).

Download:

- [PDF](#)
- [Other formats](#)

Current browse context:

stat.ME

[< prev](#) | [next >](#)

[new](#) | [recent](#) | [1305](#)

Change to browse by:

[stat](#)

[stat.ML](#)

References & Citations

- [NASA ADS](#)

Bookmark([what is this?](#))

