Replication Results

H. Peter Boswijk, Roger J. A. Laeven, Andrei Lalu and Evgenii Vladimirov

This document accompanies the GitHub repository[1] that illustrates and provides code for the estimation procedure developed in the paper *Jump Contagion among Stock Market Indices: Evidence from Option Markets* written by Peter Boswijk, Roger Laeven, Andrei Lalu and Evgenii Vladimirov.

The code illustrates the estimation procedure developed in the paper given a synthetic, simulated data-set. In particular, the code reads the simulated options data and estimates the parameters of the bivariate model proposed in the paper based on the partial-information implied-state C-GMM procedure. The estimation procedure minimizes the criterion function `./code/mSVhatHJ_crit_inst4.m`, which in turn involves the implied state procedure (function `./code/mSVhatHJ_ImpIntens.m`) and four numerical integrations of criterion functions based on the marginal states (function `./code/mSVhatHJ_int_inst4.m`). Given the estimated parameters, the standard errors are calculated using the function `./code/mSVhatHJ_std4.m`.

The estimated parameters are displayed as the result of the optimization and provided in Table 1 below. Additionally, the figure with the implied intensities is displayed and is duplicated in Figure 1 below.

Table 1: Parameter estimates based on simulated data

	$\mu^{\mathbb{Q}}$	σ	κ	$\overline{\lambda}$	δ^s	δ^c	μ	η
index-1	-0.127	0.027	5.627	0.944	3.201	1.151	-0.035	2.986
	(0.0005)	(0.0009)	(0.0158)	(0.0030)	(0.0181)	(0.0096)	(0.0118)	(4.7736)
index-2	-0.122	0.031	4.568	0.788	2.135	3.288	-0.036	4.182
	(0.0008)	(0.0030)	(0.0075)	(0.0024)	(0.0116)	(0.0126)	(0.0102)	(4.7159)

This table reports bivariate model parameter estimates of the partial-information implied-state C-GMM procedure using simulated data. Standard errors are reported in parentheses.

[1] `https://github.com/evladimirov/Jump-Contagion`

Figure 1: Implied intensities based on simulated data