Bayesian Analysis of Systemic Risks Distributions

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Abstract

I propose Bayesian Markov Chain Monte Carlo (MCMC) estimation of systemic risks of financial institutions. The used systemic risk measures are MES (marginal expected shortfall) and SRISK (the expected capital shortage of a firm conditional on a substantial market decline). The analysis is performed for top ranked financial instituions using an asymmetric GJR-GARCH and a new generalized threshold conditional volatility model (GTARCH). The latter captures asymmetry in both ARCH and GARCH terms. Overall, I found that the distributions of systemic risks measures are statistically different for major financial institutions in the recent period of low volatility but the MES distributions could be highly overlapping during the financial crisis. Thus, at the time when volatility is high it is hard to rank financial institutions based on MES. The SRISK measure, on the other hand, can be used to rank banks if their leverage ratios are substantially different.

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