

Inferring Tail Correlation from Option Prices

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We propose a new method (using [2] and [1]) to assess the interaction among assets in the market under the risk-neutral probability. Specifically, we exhibit dependence structures among stocks that are consistent with prices of options written on individual stocks as well as the corresponding index options. We show how the implied dependence obtained with our methodology improves upon the implied correlation index that was recently introduced by the Chicago Board Options Exchange (CBOE). In particular, our approach can measure implied tail correlations (e.g. correlations in a crisis scenario).

- [1] Bernard C., Bondarenko, O. and S. Vanduffel (2015): “Rearrangement Algorithm and Maximum Entropy”, *Working paper*.
- [2] Puccetti, G., and L. Rüschendorf (2012): “Computation of sharp bounds on the distribution of a function of dependent risks,” *Journal of Computational and Applied Mathematics*, 236(7), 1833-1840.