

Dynamic modeling with copulas

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In this talk I will review some recent advances in the use of copulas in time series models. In particular I will discuss the use of vine copulas to model contemporaneous and intertemporal dependence in stationary multivariate discrete time Markov processes. With a particular vine structure called the M -vine, it is simple to ensure that the process described by the vine copula is stationary and Markovian. As I will show, patterns of dependence that are common in economic and financial series can be modeled with a suitable assignment of copulas to the edges of the M -vine; for instance, nonexchangeable copulas can be used to induce time irreversible dynamics such as Edgeworth price cycles or asymmetric business cycle fluctuations, while lower tail dependent copulas can be used to capture the tendency of market crashes to affect many asset prices simultaneously.

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