

1077-60-443

**Martial Longla\*** (martiala@mail.uc.edu), 203 Erkenbrecher ave, Apt. 2, Cincinnati, OH 45229,  
and **Magda Peligrad**. *Some aspects of modelling dependence in copula based Markov Chains*.

Dependence coefficients have been widely studied for Markov processes defined by a set of transition probabilities and an initial distribution. This work clarifies some aspects of the theory of dependence structure of Markov chains generated by copulas that are useful in time series econometrics and other applied fields. The main aim of this paper is to clarify the relationship between the notions of geometric ergodicity and geometric  $\rho$ -mixing; namely, to point out that for a large number of well known copulas, such as Clayton, Gumbel or Student, these notions are equivalent. Some of the results published in the last years appear to be redundant if one takes into account this fact. We apply this equivalence to show that any mixture of Clayton, Gumbel or Student copulas generate both geometrically ergodic and geometric  $\rho$ -mixing stationary Markov chains, answering in this way an open question. We shall also show that a sufficient condition for  $\rho$ -mixing, used in the literature, actually implies Doeblin recurrence. We also provide a new set of theorems to check geometric ergodicity and exponential  $\rho$ -mixing for copula-based Markov chains. These rates are important for the derivation of limit theorems, inference and confidence intervals in large sample studies. (Received September 01, 2011)