TIME-VARYING CONDITIONAL DEPENDENCE IN NAIROBI STOCK MARKET

Research project leading to the award of a Masters of Science in Mathematical Statistics at the University of Nairobi

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ABSTRACT

This study explores the dependence between the shares traded at the Nairobi stock Exchange and the prices for which the various companies' shares were selling. Using simulated time-series of financial asset returns, the results show that market dependence is not generally conditional on volatility regimes and that a bias in dependence measures occurs only for particular assumptions about the time-series dynamics. Since real world data may often not be characterized by homoskedasticity, a correction of estimated unconditional correlations during market crises may not always be needed.

Consequently, if the return data generating process is invariant but displays conditional heteroskedasticity, a conditioning bias exists that cannot be distinguished from a fundamental change in market dependence. While the marginal behaviour of each stock index is modelled by an asymmetric Student-t distribution, the nature of the dependence is captured through a copula representation.

The results also confirm the already documented time-varying pattern of the dependence structure.