A Test of Asymmetric Comovement for State-Dependent Stock Returns

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Abstract

I propose a test of asymmetric stock return comovement across states. The test can be viewed as a variation of Kendall’s $\tau$ conditional on the state and has an asymptotic $\chi^2$-distribution. A refined version of the test is derived based on the Markov chain theory of regenerative cycles which substantially improves its finite sample size and power properties. The test has power against local alternatives, which is nonetheless compromised due to a finite sample convergence bound put on the implied local alternative data generating process. I evaluate the new test against traditional correlation-based measures and demonstrate power attrition in the presence of nuisance parameters when states are ignored. It is shown that asymmetric tail dependence can be a natural result of regime switching. A list of related tests is given as an extension at the end.

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