

Testing the rank of the volatility process:
A random perturbation approach.

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Abstract: We present a new test for the rank of the matrix-valued volatility process of a diffusion model. Our approach is based upon a random perturbation of the original high frequency data, which opens a way to construct a valid test statistic. We develop the asymptotic theory for the test statistic and discuss some of the most interesting applications.

Keywords: high frequency data, random perturbation, rank estimation, stable convergence, volatility process.