

## Semiparametric Modelling of Local and Conditional Correlations

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Estimating correlation dynamics between different financial return series is a crucial topic in quantitative financial risk management and option pricing. The variances of and cross-correlations between financial return series may all have conditional dynamics caused by past information and slow changes over time in a long period. A multi-step local dynamic conditional correlation model is proposed for simultaneously modelling these components. In particular, the local and conditional correlations are jointly estimated by multivariate kernel regression. A multivariate k-NN method with variable bandwidths is developed to solve the curse of dimension problem. Asymptotic properties of the estimators are discussed in detail. Practical performance of the model is illustrated by applications to foreign exchange rates. Finally, brief discussion on further topics for research in this direction is given.

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