The University of Chicago
Department of Statistics

Master's Seminar

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Copula, Co-integration and Regression Methods in Mean-reversion Stock-Option Trading Strategies

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ABSTRACT

We observe a co-dependency between stock prices and option prices in the US equity market by sampling nine different issuers. We seek to assess three different statistical approaches for characterizing the joint movement of stock and option: regression, copula methods and co-integration. We find that all three strongly support the mean-reversion hypothesis. We observe a clear order in the usefulness of these techniques: copulas perform best with regards to both return and risk profile and are easily implemented but do not easily accommodate market micro-structure features. Co-integration exhibits a lower performance but shows greater potential for improvement when tweaking the strategies. Ordinary regression, though still showing an acceptable risk profile has the lowest potential as a trading strategy. We conclude that copulas should have a bigger role than they currently have in trading strategies.

Information about building access for persons with disabilities may be obtained in advance by calling Karen Gonzalez (Department Administrator and Assistant to Chair) at 773.702.8335 or by email (karen@galton.uchicago.edu).