Témavezetők:

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Abstract:

A new regulatory framework, called Solvency 2, is going to be introduced for all insurance companies based in the European Union. This framework puts a lot of emphasis on – as part of day-to-day risk management – proper model testing. It requires companies to evidence that they have tested all their models which they use for regulatory reporting. ING RAS is responsible for developing and maintaining such models for the entire NN Group. These models constitute the core of NN Group's internal model and are used to measure market risk exposures such as credit spread risk, interest rate risk, equity risk and implied volatility risk. ING RAS has developed a tool which performs the following steps:

- Prices different assets based on observed market data
- Calibrates appropriate risk drivers
- Runs Monte-Carlo simulation based on different distributions
- Evaluate the results

This tool has been developed in Microsoft Excel. The assignment would be about testing if the asset pricing and the implemented distributions work correctly and document the models implemented.

Given the project should cover 3 semesters therefore the plan is as follows. During the first semester the candidate should familiarize him/herself with the model, understand the concept and the functionalities. Second semester would be focused on performing the tests. Lastly the documentation can be planned. The expected outcome after the first semester is a presentation on the main ingredients of the model and overview of different assets and their pricing formulas. At the end of second semester an excel tool should be built by the candidate with implemented pricing formulas. During the third semester the pricing tool should be documented. After this assignment the candidate should have insight into how market risk models work at an insurance company which could be a basis for a thesis on this subject.

Szükséges előismeretek:

Microsoft Excel felhasználó szintű ismerete, középfokú angol nyelvtudás szóban és írásban, statisztikai programcsomagok ismerete (pl R) hasznos lehet. Továbbá erős sztochasztikus folyamatok és pénzügyi matematikai háttér és érdeklődés is fontos.

Irodalom:

John C. Hull - Options, Futures and Other Derivatives

D. Brigo & F. Mercurio - Interest Rate Models - Theory and Practice: With Smile, Inflation and Credit (Springer Finance)