REVIEW

On graduation project of SPbSU student Miller Anastasiia

Titled "Simulation model of American option"

Graduation project of A. Miller is dedicated to one of the hardest problems of financial mathematics – pricing of American option. In most practically valuable cases it is impossible to get price of American option analytically. That's why numerical methods are used as an alternative. The class of simulation methods is widely spread among those methods. They imply simulation of underling asset behavior in time with further estimation of the price. In Miller's project American option pricing was made by means of simulation methods which makes evident the correspondence between title and project's content.

The project has reasonable structure and consists of introduction, two review chapters, one chapter with new results, chapter with numerical experiments and conclusion.

The project contains review of known methods of American option pricing including method of random tree, stochastic mesh method and least squares method. Quasi Monte Carlo is proposed as a variance reduction technique. Third chapter reveals the method that can be considered as new. This method represents hybrid of random tree method and least squares method. It is proved that proposed estimates are unbiased and consistent.

Large amount of past research and contemporary articles dedicated to pricing of American option makes the project's topic actual and underlines its potential practical use. All mentioned results are followed by necessary bibliographical references. This fact speaks of undertaken study of materials dedicated to project's topic.

All results are well-formulated so that one can judge about project's main points.

Despite the fact that the project is written in a good technical manner and material is given in a clear and consistent form several technical mistakes should be mentioned:

- page 5, first paragraph. "опцион на продаже"

- page 5, formula 2. It should be index n instead of m.

- page 8, formula 1.2. Usage of function h() never mentioned before without index.

- page 8, second paragraph. Limit doesn't have an indication where parameter tends.

- In section 3.1 usage of letter "h" can lead to misunderstanding because it means both tree height and function of underling asset.

Extensive numerical experiments should be definitely considered as a strong side of the project.

Graduation project of A. Miller "Simulation model of American option" is academically finished, contains result with potential practical use in the field of American option pricing and deserves excellent mark.

«29» 05 2017   _____   A. Dmitriev

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