INTERNATIONAL CENTRE OF EXCELLENCE FOR EDUCATION IN MATHEMATICS

Pricing and hedging of game options
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Options are contracts which enable its holder to buy or sell a specified security for a certain price. Game options are an extension of these traditional type options which additionally allow the issuer of the option to cancel the contract. The advantage of studying game options is that they are generalisations of other simpler types of options. Hence, when we study game options, we are simultaneously studying a whole class of other options, for example, those of the European or American type.

As with all financial products, it is important for us to develop models to correctly price game options, so that they can be properly traded on financial markets. For my vacation project, I studied one pricing model in particular, explained in Yuri Kifer's paper 'Game options' (2000, Finance and Stochastics, Volume 4, 443-463). The approach used is to first adopt a binomial tree model for the value of the underlying security, and then to hedge the game option via investing (or borrowing) cash and selling (or buying) the underlying security. Such an approach eventually requires the utilisation of theories relating to martingales, optimal stopping times and Dynkin games.

I feel that I have gained a great deal through working on this project. The project gave me a chance to experience a mathematical research environment, whilst studying areas in mathematics not covered extensively in undergraduate university courses."

Xin received an ICE-EM Vacation Scholarship in January 2005.
See www.ice-em.org.au/students.html#scholarship.