

Game Options, Risk and Their Binomial Approximations

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Abstract

Game (Israeli) options which I introduced in 2000 extend the setup of American options by allowing their issuer to call them back (cancel) paying certain penalty for that. Pricing of such options leads to Dynkin's optimal stopping games. In a series of papers, alone and with Y.Dolinsky, we studied error estimates for binomial approximations of prices and risks for usual and barrier type game options which provide an effective way of their computations. Similar and sometimes stronger results follow for American options even in a simpler way yet providing new results even in this heavily studied case. The methods rely on the Skorokhod embedding of sums of i.i.d. random variables into the Brownian motion and on the risk representation via the dynamical programming scheme in the discrete time case.

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