JOURNAL ARTICLE

Pricing by American Option by Approximating its Early Exercise Boundary as a Multipiece Exponential Function

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Abstract

This article proposes to price an American option by approximating its early exercise boundary as a multipiece exponential function. Closed form formulas are obtained in terms of the bases and exponents of the multipiece exponential function. It is demonstrated that a three-point extrapolation scheme has the accuracy of an 800-time-step binomial tree, but is about 130 times faster. An intuitive argument is given to indicate why this seemingly crude approximation works so well. Our method is very simple and easy to implement. Comparisons with other leading competing methods are also included.

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