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Numerical Methods versus Bjerksund and Stensland Approximations for American Options Pricing

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Abstract : Numerical methods like binomial and trinomial trees and finite difference methods can be used to price a wide range of options contracts for which there are no known analytical solutions. American options are the most famous of that kind of options. Besides numerical methods, American options can be valued with the approximation formulas, like Bjerksund-Stensland formulas from 1993 and 2002. When the value of American option is approximated by Bjerksund-Stensland formulas, the computer time spent to carry out that calculation is very short. The computer time spent using numerical methods can vary from less than one second to several minutes or even hours. However to be able to conduct a comparative analysis of numerical methods and Bjerksund-Stensland formulas, we will limit computer calculation time of numerical method to less than one second. Therefore, we ask the question: Which method will be most accurate at nearly the same computer calculation time?

Keywords : Bjerksund and Stensland approximations, computational analysis, finance, options pricing, numerical methods
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