

Title:

Exercise Boundaries and Efficient Approximations to American Option Prices and Hedge Parameters

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Abstract:

This paper presents a new numerical method to solve the integral equation defining the early exercise boundary of an American option. It is shown that the early exercise boundaries of standard American options are well approximated by linear splines with a few knots, implying that the new solution method can actually be carried out on a coarse grid of time points with reasonable accuracy. This leads to a fast and reasonably accurate method to compute the early exercise boundaries, values and hedge parameters of American options. In this connection, a brief survey of recent developments in approximations to American option prices and hedge parameters are also given.