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A Simple and Accurate Approximation to the Early Exercise Boundary for American Put Options

Consider an American put option in the Black-Scholes framework, and suppose that the option is exercised at the first hitting time of the stock price to a given exponential barrier. Omberg (1987) shows that the value of such a strategy can be computed in closed form, and suggests that the option price can be approximated by optimizing this value over all possible exponential barriers. In this talk we show how the Omberg formula can be used as the starting point for an approximation to the optimal exercise barrier. The approximation is remarkable for both its simplicity and accuracy, as well as its intuitive content.