Correcting the Monte Carlo Optimal Stopping Bias

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1 Abstract

We present a new method for reducing the bias present in Monte Carlo estimators of the discrete finite-time-horizon optimal-stopping problem. This is done by subtracting an asymptotic expression for the bias, which we derive using large-sample theory, from the estimators at each step in order to produce bias-corrected estimators.

The simple closed form of the derived correction, easily evaluated in the context of a simulation, makes this a work of practical significance. We also present the results of applying this method, and that of a nonparametric bootstrap, to reduce the bias in pricing a well-studied multivariate problem via the stochastic mesh technique.