A critical analysis of the Weighted Least Squares Monte Carlo method for pricing American options

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Least-squares Monte Carlo generates regression-based continuation value estimators that are heteroscedastic. [1] propose weighted least-squares regression to correct for heteroscedsticity. We show that heteroscedastic-corrected estimators are more accurate than uncorrected estimators far from the exercise boundary and where the exercise decision is obvious. However, the corrected estimators do not translate into improved exercise decisions and hence correcting has little effect on option price estimates. This holds when using alternative specifications for the correction and when implementing an iterative method. We conclude that correcting for heteroscedasticity does not result in more efficient prices and generally should be avoided.

[1] Frank J. Fabozzi, Tommaso Paletta, Radu Tunaru. *An improved least squares Monte Carlo valuation method based on heteroscedasticity.* European Journal of Operational Research.