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Dynamic portfolio choices by simulation-and-regression: revisiting the issue of value function vs portfolio weight recursions

Michel Denault* and Jean-Guy Simonato†

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Abstract

Simulation-and-regression methods have been recently proposed to solve multi-period, dynamic portfolio choice problems. In the constant relative risk aversion (CRRA) framework, the “value function recursion vs portfolio weight recursion” issue was previously examined in van Binsbergen and Brandt (2007) and Garlappi and Skoulakis (2009). We revisit this issue in the context of an alternative simulation-and-regression algorithmic approach which does not rely on Taylor series approximations of the value function. We find that, in this context and for the CRRA example examined here, both approach are capable of obtaining precise results, but that the portfolio weight recursion variant of the algorithm provides more accurate results for a similar level of computational complexity, especially for problems with long maturities and large risk-aversion levels.

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