Estimating a basket option price via a RBF approach under a multi-assets Heston model

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Finite difference schemes are classical numerical techniques to price an exotic option, but suffer a loss of performance in some boundaries cases, i.e. when the option price approaches the strike price. In order to address this issue, in this work we propose a Radial Basis Function (RBF) framework to estimate the price of a multi-assets exotic option, basket option, under a multi-assets Heston model. Our procedure can be summarized as follows: the time-dependent linear Heston PDE is solved using a collocation scheme and, successively, this solution is approximated by a combination of multi-quadratic functions. The numerical tests confirm that our RBF sheme has a higher degree of accuracy than finite difference schemes.

References

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