

Pricing Multi-Asset Options with Hyperplane Barrier

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This work contributes, theoretically, in the multi-asset scenario with closed-form expressions of no-arbitrage prices, as well as estimates, for two types of up-and-out call barrier options, namely, hyperplane type barriers placed on the collection of stock prices. For the estimates we combine ideas of convex analysis with tools of stochastic theory. We consider uncorrelated risky assets and deterministic time dependent volatilities. Quoting [2], we have that deriving prices in the multi-asset case poses significant difficulties that do not appear in the single-asset case. A preliminary version of these results was presented in [1].

References

- [1] ROSALINO, E. AND BACZYNSKI, J. AND LEO, D., *Pricing Multi-asset Barrier Options*, IEEE 56th Annual Conference on Decision and Control (CDC), 2017.
- [2] MUIRHEAD, S., *Pricing multi-asset barrier options using the generalised reflection principle*, University of Melbourne, Department of Mathematics and Statistics, 2011.