PRICING ARITHMETIC AVERAGE OPTIONS AND BASKET OPTIONS USING MONTE CARLO AND QUASI-MONTE CARLO METHODS

Maria Giuseppina Bruno¹
Antonio Grande²

ABSTRACT

In the present paper, we address the evaluation problem of multidimensional financial options. We apply in particular the Monte Carlo and Sobol Quasi-Monte Carlo numerical integration for pricing asian arithmetic average options and basket options and we show some numerical exemplifications in 4 and 12 dimensions. The paper is the occasion to furtherly test the algorithm for computing the quantile function of the standard gaussian distribution proposed by the authors in a previous publication.

Classification JEL: C020, C630, C650, G130.
Keywords: Monte Carlo and Quasi-Monte Carlo numerical integration, Multidimensional financial options, Sobol low discrepancy sequences, Quantile function.

Working Paper n° 143
Dicembre 2015

¹ Department of Methods and Models for Economics, Territory and Finance – Sapienza University of Rome – via del Castro Laurenziano, 9, 00161 ROMA (e-mail: giuseppina.bruno@uniroma1.it).
² Department of Methods and Models for Economics, Territory and Finance – Sapienza University of Rome – via del Castro Laurenziano, 9, 00161 ROMA (e-mail: antonio.grande@uniroma1.it).