

# BERMUDAN OPTIONS BY SIMULATION

L. C. G. Rogers<sup>1</sup> <sup>1</sup>Statistical Laboratory

University of Cambridge

Wilberforce Road

Cambridge CB3 0WB

UK

`l.c.g.rogers@statslab.cam.ac.uk`

## Abstract

The aim of this study is to devise numerical methods for dealing with very high-dimensional Bermudan-style derivatives. For such problems, we quickly see that we can at best hope for price bounds, and we can only use a simulation approach. We use the approach of Barraquand & Martineau which proposes that the reward process should be treated as if it were Markovian, and then uses this to generate a stopping rule and hence a lower bound on the price. Using the dual approach introduced by Rogers and Haugh & Kogan, this approximate Markov process leads us to hedging strategies, and upper bounds on the price. The methodology is generic, and is illustrated on eight examples of varying levels of difficulty. Run times are largely insensitive to dimension.