

Accepted Manuscript

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Javier de Frutos, Víctor Gatón

PII: S0377-0427(17)30034-1

DOI: <http://dx.doi.org/10.1016/j.cam.2017.01.015>

Reference: CAM 10980

To appear in: *Journal of Computational and Applied Mathematics*

Received date: 28 June 2016

Revised date: 30 December 2016

Please cite this article as: J. de Frutos, V. Gatón, A spectral method for an Optimal Investment problem with transaction costs under Potential Utility, *Journal of Computational and Applied Mathematics* (2017), <http://dx.doi.org/10.1016/j.cam.2017.01.015>

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A spectral method for an Optimal Investment problem with Transaction Costs under Potential Utility*

Javier de Frutos[†] and Víctor Gatón[‡]

December 30, 2016

Abstract

This paper concerns the numerical solution of the finite-horizon Optimal Investment problem with transaction costs under Potential Utility. The problem is initially posed in terms of an evolutive HJB equation with gradient constraints. In [12], the problem is reformulated as a non-linear parabolic double obstacle problem posed in one spatial variable and defined in an unbounded domain where several explicit properties and formulas are obtained. The restatement of the problem in polar coordinates allows to pose the problem in one spatial variable in a finite domain, avoiding some of the technical difficulties of the numerical solution of the previous statement of the problem. If high precision is required, the spectral numerical method proposed becomes more efficient than simpler methods as finite differences for example.

Keywords: Optimal Investment, Potential Utility, Transaction costs, Spectral method.

1 Introduction

This paper concerns with the numerical solution of the finite horizon optimal investment problem with transaction costs under Potential Utility.

*Research supported by Spanish MINECO under grants MTM2013-42538-P and MTM2016-78995-P. The first author acknowledges the support of European Cooperation in Science and Technology through COST Action IS1104.

[†]Instituto de Matemáticas (IMUVA), Universidad de Valladolid, Paseo de Belén 7, Valladolid, Spain. e-mail:frutos@mac.uva.es

[‡]Instituto de Matemáticas (IMUVA), Universidad de Valladolid, Paseo de Belén 7, Valladolid, Spain. e-mail:vgaton@mac.uva.es

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