

Numerical Methods for Pricing Bermudan Barrier Options

by

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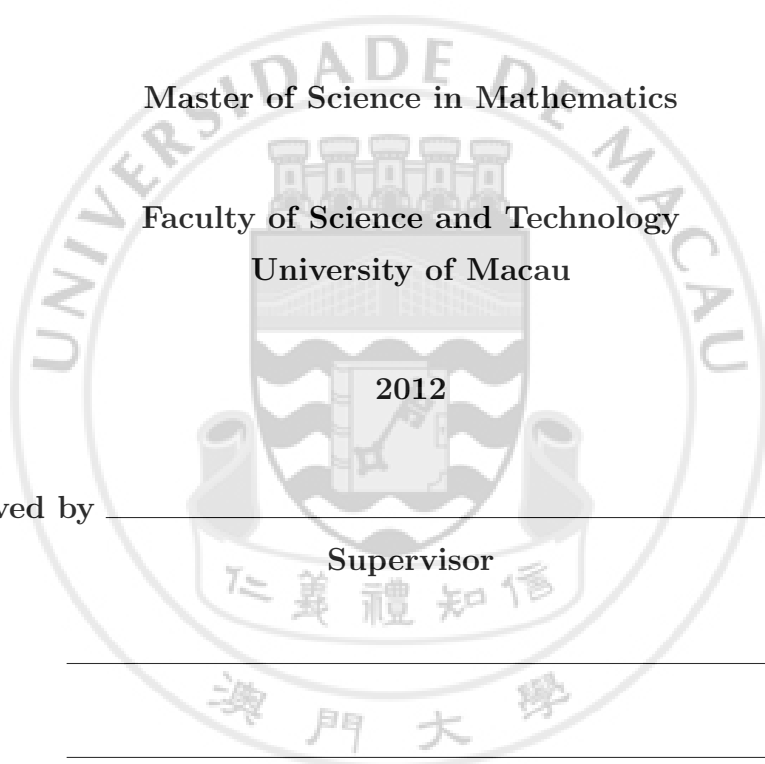
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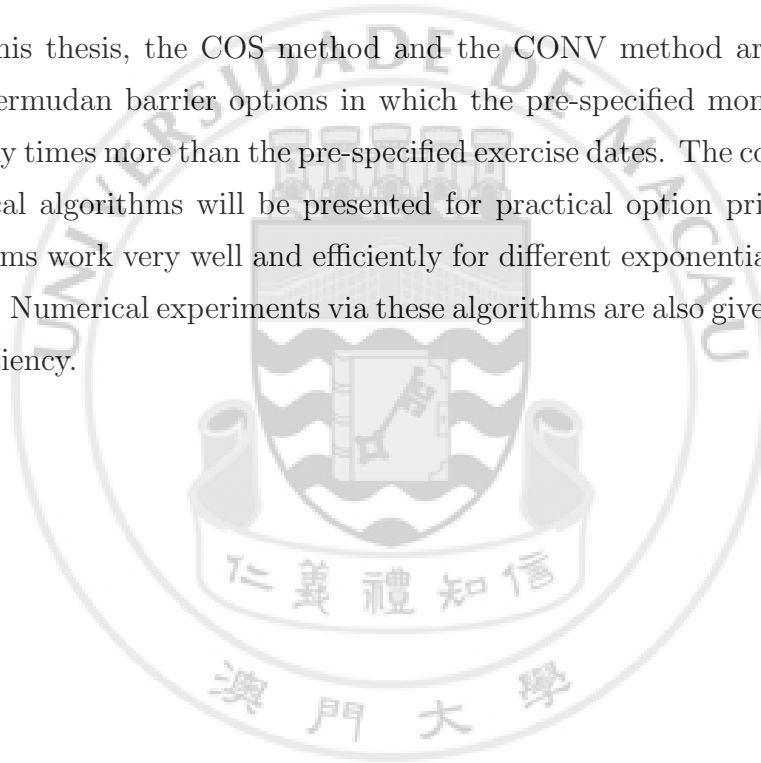
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Abstract

There are many efficient numerical methods for option pricing. Recently, some new numerical integration methods based on Fourier transforms are proposed, such as, the convolution (CONV) method presented by Lord et al (2008, [28]), the fast Hilbert transform approach considered by Feng and Linetsky (2008, [20]), the quadrature (QUAD) method introduced by Andriopoulos *et al* (2003, [1]), and the cosine (COS) method proposed by Fang and Oosterlee (2008, [18]), etc..

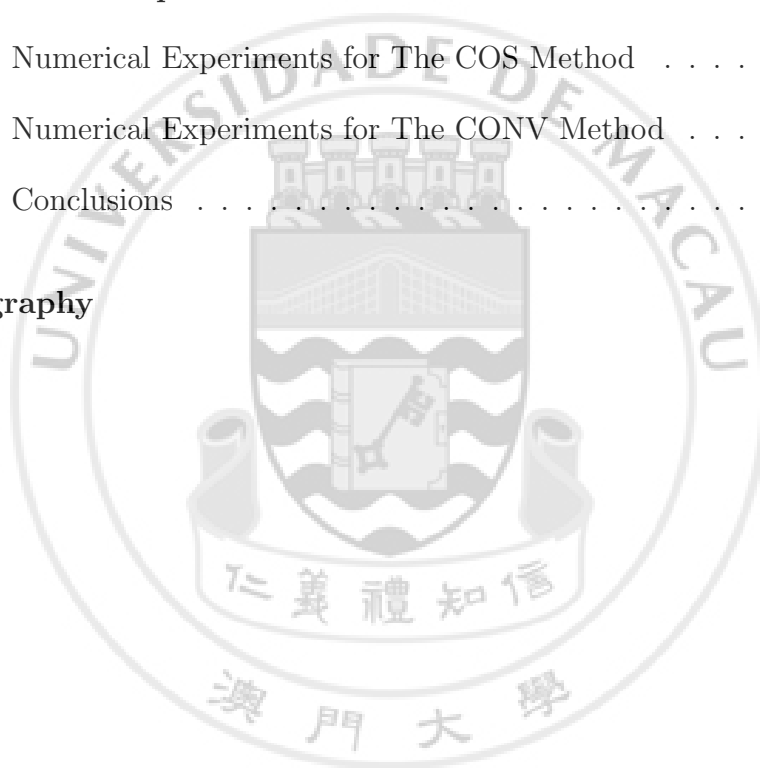
In this thesis, the COS method and the CONV method are applied to price Bermudan barrier options in which the pre-specified monitored dates are many times more than the pre-specified exercise dates. The corresponding numerical algorithms will be presented for practical option pricing. These algorithms work very well and efficiently for different exponential Lévy asset models. Numerical experiments via these algorithms are also given to support the efficiency.



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DECLARATION

The author declares that this thesis represents his own work with Professor Deng DING, the author's supervisor. All the work is done under the supervision of Professor DING during the period 2010-2012 for the degree of Master of Science in Mathematics at the University of Macau. The results in this thesis, unless otherwise stated or indicated, have not been previously included in any thesis, dissertation or report submitted to any institution for a degree, diploma or other qualification, or for publication by the author, and to the author's knowledge, by anyone else.



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