Accepted Manuscript

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PII: S0378-4371(17)31364-X
DOI: https://doi.org/10.1016/j.physa.2017.12.115
Reference: PHYSA 19045

To appear in: *Physica A*

Received date : 11 April 2017
Revised date : 10 November 2017

Please cite this article as: W.O. Sosa-Correa, A.M.T. Ramos, G.L. Vasconcelos, Investigation of non-Gaussian effects in the Brazilian option market, *Physica A* (2018), https://doi.org/10.1016/j.physa.2017.12.115

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ACCEPTED MANUSCRIPT

Investigation of non-Gaussian effects in the Brazilian option market

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Abstract

An empirical study of the Brazilian option market is presented in light of three option pricing models, namely the Black-Scholes model, the exponential model, and a model based on a power law distribution, the so-called q-Gaussian distribution or Tsallis distribution. It is found that the q-Gaussian model performs better than the Black-Scholes model in about one third of the option chains analyzed. But among these cases, the exponential model performs better than the q-Gaussian model in 75% of the time. The superiority of the exponential model over the q-Gaussian model is particularly impressive for options close to the expiration date, where its success rate rises above ninety percent.

Keywords: Option pricing, non-Gaussian option models, power law distribution, exponential distribution

1. Introduction

Options are important financial instruments that can be used for both investment strategies and risk management and they represent nowadays a multi-trillion market. An option is a derivatives contract that gives its

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