

Accepted Manuscript

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PII: S0378-4371(16)30886-X

DOI: <http://dx.doi.org/10.1016/j.physa.2016.11.080>

Reference: PHYSA 17736

To appear in: *Physica A*

Received date: 15 August 2016



Please cite this article as: B.E. Baaquie, M. Yu, Option price and market instability, *Physica A* (2016), <http://dx.doi.org/10.1016/j.physa.2016.11.080>

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Option Price and Market Instability

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December 24, 2016

Abstract

An option pricing formula, for which the price of an option depends on both the value of the underlying security as well as the velocity of the security, has been proposed in [2]. The FX (foreign exchange) options price was empirically studied in [5], and it was found that the model in general provides an excellent fit for all strike prices with a fixed model parameters – unlike the Black-Scholes option price [11] that requires the empirically determined implied volatility surface to fit the option data. The option price proposed in [2] did not fit the data during the crisis of 2007-2008. We make a hypothesis that the failure of the option price to fit data is an indication of the market's large deviation from its near equilibrium behavior due to the market's instability. Furthermore, our indicator of market's instability is

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