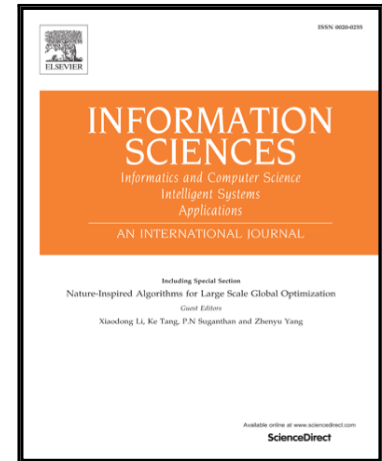


Accepted Manuscript

Time evolutions of copulas and foreign exchange markets

Ivan Kupka, Jozef Kiseľák, Naoyuki Ishimura, Yasukazu Yoshizawa,
Ledys Salazar, Milan Stehlík

PII: S0020-0255(18)30575-9
DOI: [10.1016/j.ins.2018.07.052](https://doi.org/10.1016/j.ins.2018.07.052)
Reference: INS 13819



To appear in: *Information Sciences*

Received date: 28 November 2017
Revised date: 5 June 2018
Accepted date: 24 July 2018

Please cite this article as: Ivan Kupka, Jozef Kiseľák, Naoyuki Ishimura, Yasukazu Yoshizawa, Ledys Salazar, Milan Stehlík, Time evolutions of copulas and foreign exchange markets, *Information Sciences* (2018), doi: [10.1016/j.ins.2018.07.052](https://doi.org/10.1016/j.ins.2018.07.052)

This is a PDF file of an unedited manuscript that has been accepted for publication. As a service to our customers we are providing this early version of the manuscript. The manuscript will undergo copyediting, typesetting, and review of the resulting proof before it is published in its final form. Please note that during the production process errors may be discovered which could affect the content, and all legal disclaimers that apply to the journal pertain.

Time evolutions of copulas and foreign exchange markets

Ivan Kupka^f, Jozef Kiselák^{c,a}, Naoyuki Ishimura^d, Yasukazu Yoshizawa^e,
Ledys Salazar^b, Milan Stehlík^{a,b,*}

^a*Linz Institute of Technology (LIT) and Department of Applied Statistics, Johannes Kepler University in Linz*

^b*Department of Statistics, University of Valparaíso, Valparaíso, Chile*

^c*Institute of Mathematics, Faculty of Science, P.J.Šafárik University in Košice, Slovakia*

^d*Graduate School Of Economics, Hitotsubashi University, Kunitachi, Tokyo, Japan*

^e*Tokio Marine & Nichido Life Insurance Co., Ltd., Tokyo, Japan*

^f*Department of Mathematical Analysis and Numerical Mathematics, Comenius University, Bratislava, Slovakia*

Abstract

Time evolution of copulas is well visible in such a dynamical market as foreign exchange market (ForeX, FX, or currency market). We first show how several families of copulas evolving in time for EURO-JPY and CHF-JPY at ForeX market. Black-Scholes paradigm suggest to apply evolution of copulas with respect to heat equation. Stationary limit of such an evolution is proven to be an independence copula under strong regularity conditions. However, empirical observations of ForeX stock confirm that reality can be more delicate, because of the ForeX market violations. The manuscript shows that under slight changes of topology, the limiting object is not a copula, because the 1-Lipschitzianity continuity is violated. The authors study these kinds of convergences with respect to FEMA (Foreign Exchange Management Act) violations.

Keywords: copula, evolution, Lipschitzianity, convergence, ForeX

2010 MSC: 97K80, 60H30

*Corresponding author

Email addresses: ivan.kupka@fmph.uniba.sk (Ivan Kupka), jozef.kiselak@upjs.sk (Jozef Kiselák), naoyuki@tamacc.chuo-u.ac.jp (Naoyuki Ishimura), y.yoshizawa4416@gmail.com (Yasukazu Yoshizawa), ledys.salazar@uv.cl (Ledys Salazar), Milan.Stehlik@jku.at (Milan Stehlík)

Download English Version:

<https://daneshyari.com/en/article/6856134>

Download Persian Version:

<https://daneshyari.com/article/6856134>

[Daneshyari.com](https://daneshyari.com)