Level crossing analysis of the stock markets

G R Jafari\textsuperscript{1,2}, M S Movahed\textsuperscript{3,4}, S M Fazeli\textsuperscript{3}, M Reza Rahimi Tabar\textsuperscript{3,5} and S F Masoudi\textsuperscript{6}

\textsuperscript{1} Department of Physics, Shahid Beheshti University, Evin, Tehran 19839, Iran
\textsuperscript{2} Computational Physical Sciences Research Laboratory, Department of Nano-Science, Institute for Studies in Theoretical Physics and Mathematics (IPM), PO Box 19395-5531, Tehran, Iran
\textsuperscript{3} Department of Physics, Sharif University of Technology, PO Box 11365-9161, Tehran, Iran
\textsuperscript{4} Institute for Studies in Theoretical Physics and Mathematics (IPM), PO Box 19395-5531, Tehran, Iran
\textsuperscript{5} CNRS UMR 6529, Observatoire de la Côte d’Azur, BP 4229, 06304 Nice Cedex 4, France
\textsuperscript{6} Department of Physics, K N Toosi University of Technology, PO Box 15875-4416, Tehran, Iran

E-mail: g_jafari@sbu.ac.ir, m.s.movahed@mehr.sharif.edu, mahdi@mehr.sharif.edu, rahimitabar@iust.ac.ir and masoudi@kntu.ac.ir

Received 31 January 2006
Accepted 28 April 2006
Published 9 June 2006

Abstract. We investigate the average frequency of positive slope $\nu_0^+$ crossing for the returns of market prices. The method is based on stochastic processes in which no scaling feature is explicitly required. Using this method we define a new quantity to quantify the stage of development and activity of stock exchanges. We compare the Tehran and western stock markets and show that some, such as the Tehran (TEPIX) and New Zealand (NZX) stock exchanges, are emerging, and also that TEPIX is a non-active market and is financially motivated to absorb capital.

Keywords: stochastic processes