

Q-CALCULUS USED IN THE STUDY OF EXCHANGE RATE TIME SERIES FOR CURRENCIES TRADED IN ALBANIA

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Abstract

The use of q-calculus is considered in the analysis of financial observables dynamics in the framework of a practical study of exchange rates for some currencies traded in Albania. The research is limited in the numerical analysis related to the specific behaviour of our time series where the data collected are typically rare compared with similar system. Following our recent observation we use linear and logarithmic coordinates and the q-derivative are considered near to the q-parameter read from the q-distribution evaluated in a preliminary stage. The dynamics of prices is estimated near to the critical points assuming deterministic models, and the calculation have been performed for price, returns and bid-ask values for a theoretical scenario of self-similarity for cycles evaluated using empiric mode decomposition.

Keywords: *financial time series, Jackson derivative, q-algebra, exchange rates*