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A Nonlinear Measurement of Adjustment of Stock Price towards Equilibrium : Estimation of an ESTECM Model

The aim of this paper is to study the adjustment nature of stock price towards its long term equilibrium value. More specifically, we propose in this paper to model the deviation of stock price to its equilibrium value defined as the fundamental value which corresponds to the updated sum of the anticipated incomes in the future. In such a context, we are interested in the various trajectories allowing the stock price to return towards the equilibrium value when it deviates some durably and privileges a threshold adjustment. We try, in particular, to reconcile rationality of agents and observed deviation of stock price towards fundamental value in order to show if this deviation is the result of a rational behaviour (rational bubble) or the fruit of the irrationality (effects of modes and manias). For this purpose, we justify initially the reject of the linear adjustment and the inherent linearity to the dynamics of adjustment of the price, at least partly, by the presence of transaction costs, information costs which allow a certain inertia in the course when it tries to join its equilibrium value. Then, we propose to use techniques of nonlinear cointegration, which make possible the exploitation of nonstationnarity of the courses, to deduce some characteristics and properties of the long term deviations of stock price towards equilibrium. Nonlinearity is introduced thanks to a nonlinear cointegration process which is integrated into a STAR model (Smooth Transition Autoregressive Model). Estimation results of an ESTECM (Exponential Smooth Transition Error Correction Model) on American stock price (S&P 500) reveal that threshold cointegration appears being the adequate conceptual framework to describe the variability of stock price and its discontinuous adjustment towards the long term equilibrium value.