

AKSOE 7 Financial Markets and Risk Management II

Time: Tuesday 14:00–15:30

Room: BAR 205

AKSOE 7.1 Tue 14:00 BAR 205

Nonlinear Dynamics of Housing Prices — ●YURI YEGOROV — Institute for Advanced Studies, Stumpergasse 56, A-1060, Vienna, Austria

The housing price dynamics differs across countries and regions, but two patterns dominate: positive trend (with tendency to long run asymmetric cycle) and stable price pattern. The goal of this paper is to find its typical features at least for a subset of cases, to suggest the factors that might be responsible for such behaviour and to suggest a model explaining the possible persistence of positive price trends. The pricing of real estate is a complex process, which has both temporal and spatial patterns. Contrary to financial asset, housing is a durable good, which can be used both for consumption and investment. Housing has much lower liquidity and much higher transaction cost. This leads to different time scale in pricing pattern, eliminates high-frequency volatility and leads to the dominance of two main patterns: constant pricing and positive trend. Each of these market states can persist for some time period. Chartist models in finance are more applicable than fully rational models. In the very short run the dynamics of financial markets has both dynamic and stochastic components, and the same is true for real estate markets. Spatial homogeneity of country's income makes equilibrium state more likely.

AKSOE 7.2 Tue 14:30 BAR 205

Mathematical method for quantitative evaluation of the equity portfolio market risk — ●ZHDANOVA TATIANA — tatiana.zhdanova@accenture.com

We discuss a mathematical method for quantitative evaluation of the equity portfolio market risk in a Bank. We implement developed mathematical model in the automated subsystem RC&M to provide estimation of the maximum permissible losses for the equities portfolio on the regular basis as a one of the risk management procedures. We use VaR (Value-at-Risk) characteristic to evaluate quantitatively the market risk. We perform the advantages of the developed method relative to the other existing VaR estimation methods. The developed method allows getting more accurate estimation of losses than parametric methods (which are based on profit distribution function parameterization) and the information about each portfolio component weight is performed in difference with the nonparametric methods (these methods use approximation assumptions). An effective risk management system provides the financial company's stability and optimization of capital usage and investing.

AKSOE 7.3 Tue 15:00 BAR 205

Dynamics of Warsaw Stock Exchange index as analysed by the Mittag-Leffler function — ●MARZENA KOZLOWSKA and RYSZARD KUTNER — Division of Physics Education, Institute of Experimental Physics, Department of Physics, Warsaw University

We studied the historical Warsaw Stock Exchange (WSE) index (WIG) at a daily time horizon; we expect that its dynamics is typical for an emerging financial market of moderate size. We found that the well developed maxima of the index can be fitted (up to its fluctuations) by an intermediate part of the Mittag-Leffler (ML) function which is a natural generalisation of the exponential one.

Note that the ML function has two characteristic limits: (i) the stretched exponential form or Kohlrausch-Williams-Watts (KWW) law for the initial times, and (ii) the power-law or the Nuttig law for the asymptotic time. These decays are typical for the relaxation of disorder systems.

In other words, the relaxation of the WIG local maxima can be described by the fractional (non-Debye) relaxation equation which has indeed the solution given by the ML function.

Since we found that most of the empirical WIG maxima are well covered by the intermediate part of the ML function, this means that the WSE is a complex system lying between two different types of disordered ones created by stock market investors and described, correspondingly, by two types of relaxation functions (i) and (ii). Unfortunately, this observation does not uniquely define the microeconomical (or microscopic) model which constitutes its basis.