Senior Lecturer Adrian COSTEA, PhD
Department of Statistics and Econometrics
The Bucharest Academy of Economic Studies
Tomas EKLUND, PhD
Department of Information Technologies
Åbo Akademi University, Turku, Finland
Jonas KARLSSON, PhD
Statistics and Research Åland, Mariehamn, Finland
Professor Vergil VOINEAGU, PhD
Department of Statistics and Econometrics
The Bucharest Academy of Economic Studies

FINANCIAL PERFORMANCE ANALYSIS OF SCANDINAVIAN TELECOMMUNICATION COMPANIES USING STATISTICAL AND NEURAL NETWORK TECHNIQUES

Abstract. *In this paper we apply a new methodology presented in our previous work to classify telecom companies in respect to their financial performance. We have two goals: to validate our methodology and, using it, to gain insights in a turbulent period in the telecommunications sector. We have obtained higher accuracy rates for the classification models than in our previous studies, and smaller differences between training and test dataset accuracy rates. The two classification techniques have performed similarly in terms of accuracy rates (decision tree, slightly better) and class predictions (multinomial logistic regression, slightly more optimistic). We have analyzed the movements of Scandinavian telecommunications companies. The results are similar to previous findings and show a strong connectivity with what had really happened to Scandinavian telecommunication companies during the second part of the last decade.*

Keywords: *self-organizing-map, logistic regression, decision trees, financial performance, telecom companies.*

JEL Classification: C45, C49, C81, D83

Tatiana Corina DOSESCU, PhD
"Dimitrie Cantemir"Christian University, Bucharest
Constantin RAISCHI, PhD
Department of Mathematics
The Bucharest Academy of Economic Studies

THE ECONOMETRIC MODELING OF A SYSTEM OF THREE RANDOM VARIABLES WITH THE β DEPENDENCE

Abstract*. Within classical econometric modelling, because of the complexity of „data – generating process" we have chosen it to be presented with the help of a set of assumptions, where the random is as controlled as possible, so that the activity should be monitored and even dosed.*

This paper has chosen a systemic and cybernetic approach of the display of the „data – generating process". The first stage of the „data – generating process" decoding, the authors study a system made of three random variables defined on different probability space between which there is a special a priori dependence, called β dependence. The research includes setting a probabilistic model of such a system and making a representative example. The research ends with an analysis of the systemic and cybernetic repercussions corresponding to the β dependence.

Key words*: probability spaces, product of probability spaces, stochastic processes, time series, economic variables, econometric model.*

JEL CLASSIFICATION: C51 AMS2000: 60G9

Associate Professor Cristinca FULGA, PhD
Lecturer Silvia DEDU, PhD Candidate
Lecturer Florentin ŞERBAN, PhD
Department of Mathematics
The Bucharest Academy of Economic Studies

PORTFOLIO OPTIMIZATION WITH PRIOR STOCK SELECTION

Abstract. *We consider the problem of a decision maker, who is concerned with the management of a single-period portfolio that consists of holdings in n risky assets and is adjusted at the beginning of the time-period. The portfolio optimization problem consists in choosing the optimal rebalancing decisions in response to new information on market future prices (returns) of the risky assets in the portfolio in order to maximize the expected value of the end of period wealth in the presence of transaction costs, while satisfying a set of constraints. Rebalancing decisions are manifested in the revision of holdings through sales and purchases of assets. We assume that the assets are sufficiently liquid that market impacts can be neglected.*

We propose to solve the portfolio optimization problem in two steps: first, the phase of stock selection and second, the asset allocation phase. For the stock selection, we use principal component analysis to reduce the number of characteristics that will be taken into account. After that, applying clustering techniques, we find the similarities between the assets and we obtain a partition of the set of assets in clusters. Taking one element from each class, we get the set of assets that will be used to build the optimal portfolio. Once the stock selection completed, the optimal portfolio is obtained using an algorithm that combines the specific features of the convex programming with approximation techniques.

The unique nature of our work is the combination of the classification theory with the portfolio optimization techniques and the study of this approach.

To illustrate the behaviour of the proposed method, we consider the case of a portfolio of assets from Bucharest Stock Exchange.

Keywords: *portfolio optimization, stock selection, clustering.*

JEL Classification: C02, C61, G11.

Associate Professor Daniela MARINESCU, PhD
Professor Dumitru MARIN, PhD
The Bucharest Academy of Economic Studies

THE INFLUENCE OF THE ABSOLUTE RISK AVERSION COEFFICIENT ON CHOOSING THE OPTIMAL PORTFOLIO

Abstract. *The paper examines changes in the optimal proportions of income or wealth invested in a safe active and in a risky active by an expected utility maximizing economic agent (investor). We will use some local measures of risk aversion to derive the necessary and sufficient conditions for the problem of choosing the optimal portfolio. We will present the relationship between the coefficient of absolute risk aversion and the return of the safe asset and we will derive some results concerning this relationship. We will show that, if the absolute risk aversion coefficient is an increasing function of income, then the return of the safe asset and the amount invested in the risky asset change in opposite directions. Finally, we will present an alternative way of analyzing agent's behavior toward risk, the non-neutrality measure of risk aversion and we will derive a measure of the global approach to the neutrality.*

Keywords: *uncertainty, risk aversion, absolute risk aversion, optimal portfolio, risky and safe assets, non-neutrality measure of risk aversion.*

JEL Classification: D 81, G 11

Professor Gheorghe RUXANDA, PhD
Smaranda STOENESCU (CIMPOERU), PhD Candidate
The Bucharest Academy of Economic Studies

BIVARIATE AND MULTIVARIATE COINTEGRATION AND THEIR APPLICATION IN STOCK MARKETS

Abstract. *The purpose of this article is to introduce the basic elements of what is considered to be the missing piece in the time series puzzle, cointegration. We begin by defining the spurious regression and the notion of nonstationary, the departure point for cointegrated series. We explain the meaningful core of cointegration, as equilibrium process, as well as the connection with the error correction model and with the Granger Representation Theorem. As the proof of the mentioned theorem offers a deeper understanding of the mechanisms lying behind the presented phenomena,, we decided to also provide a sketch of the proof. The article continues with procedures used to test for the existence of cointegration and to estimate the cointegration vectorial space. In order to support this, we will revise, as methodology and as well as logical deduction, the Engle Granger two stage procedure, mainly utilized in bivariate systems, and the Johansen procedure, utilized in multivariate systems. As an applicative study, we have chosen to set up a study on the stock market. The capital market having the stock exchange series evolving as Random Walk processes proves itself being an excellent candidate in testing the cointegrated systems. We have chosen three series of stock exchange indexes, from Romania, France and US, series with daily frequencies. Using unit root tests ,Dickey Fuller, we find that the three series are nonstationary, moreover each of the series is integrated of first order. Afterwards we test the existence of cointegration with the Engle Granger procedure. We find that the series BET and CAC40 are cointegrated, thus we can estimate an error correction model, and we find that about 2% of the distance between the two series is corrected daily, as we have daily observations. Eventually we run the Johanses procedure – the three series form a cointegrated system, the dimension of the cointeration space is one.*
Key Words: *cointegrated systems, spurious regression, Engle Granger two stages procedure, multivariate cointegration, Johansen procedure.*

JEL Classification: **C01, C59**

Lecturer Marius GIUCLEA, PhD
Lecturer Costin Ciprian POPESCU, PhD
Department of Mathematics
Academy of Economic Studies Bucharest

ON STATISTICAL PATTERN WITH FUZZY DATA

Abstract. *In this paper, a general regression model with input-output trapezoidal fuzzy data, derived from a previous algorithm for triangular data [5], is discussed. Finally, an implementation of these results with application in estimating the efficiency of a decision making units model is presented.*
Key words: *fuzzy number, fuzzy set, estimator, forecasting.*

JEL classification: **C61, C81.**

Professor Iulian Viorel BRAŞOVEANU, PhD
Professor Laura Obreja BRASOVEANU, PhD
Department of Finance
The Bucharest Academy of Economic Studies

CORRELATION BETWEEN CORRUPTION AND TAX REVENUES IN EU 27

Abstract. *The aim of this paper is to analyse the evolutions and the correlation between corruption and overall tax burden. This analysis is realized for UE 27 members, for the period 1995-2008. Corruption is measured by corruption perception index (CPI) and the overall tax burden is measured by fiscal revenues over the gross domestic product.*

Key words: *corruption, corruption perception index, overall tax burden, correlation coefficient*

JEL Classification: H2, H3

Professor Ion LUNGU, PhD
The Bucharest Academy of Economic Studies
Professor Maria Teresa PAZIENZA, PhD
University of Rome, Italy
Alexandra TUDORACHE, PhD Candidate
The Bucharest Academy of Economic Studies

ORGANIC TOPIC RECOGNITION IN ONLINE DOCUMENTS

Abstract. *In this paper we describe our study on organic topic recognition and knowledge extraction from online documents. Firstly we will introduce the current state of information extraction with ontology support then we will present our approach, corpus, theoretical background, algorithm, experiments and research goals. At the end we will draw some conclusions and show some future research directions.*

Keywords: knowledge management, knowledge extraction, document classification**,** *support vector machines, Sequential Minimal Optimization, organic agriculture, AGROVOC ontology.*

JEL Classification: C10, C31, D80, Q16

Professor Ionel SINESCU PhD
"Carol Davila" University of Medicine
and Pharmacy", Bucharest
Primary Doctor Calin CHIBELEAN, PhD
Eng. Cristian SURCEL
Professor Maria Viorica STEFANESCU PhD
Department of Mathematics
The Bucharest Academy of Economic Studies
Professor Massimiliano FERRARA, PhD
University of Reggio, Calabria

PRINCIPAL COMPONENT ANALYSIS AND CLASSIFICATION WITH APPLICATIONS IN MEDICINE

Abstract. *PCA and a classification algorithm are summarized. These are then used for processing data collected by GfK Romania on urinary incontinence.*

For urology, the study conducted by GfK Romania is a premiere, it is a beginning helping doctors to familiarize with the condition of patients in Romania.

The study may also be useful to a drug company for an optimal distribution upon regions of products needed for treatment. Results obtained by GFK Romania were processed with data analysis techniques and presented further

Key words: *classification, urology, urinary incontinence.*

JEL Classification C02, C61, C62

Assistant Professor AMIR ABBAS NAJAFI, PhD
Department of Industrial Engineering,
Qazvin Islamic Azad University, Qazvin, Iran
E-mail: aa_najafi@yahoo.com
NIMA ESFANDIARI, M.Sc. Student
Qazvin Islamic Azad University, Iran
FATEMEH AZIMI, M.Sc.
Department of Mathematics,
Qazvin Islamic Azad University, Qazvin, Iran

MAXIMIZING THE NET PRESENT VALUE OF A PROJECT UNDER INFLATIONARY CONDITIONS

Abstract. *Project scheduling to maximize the net present value of the cash flows has been a topic of recent research. These researches assume that activities cost or price for materials and service in the marketplace remain relatively unchanged over the lifecycle of the project. Unfortunately, due to the increasing prices of goods in most countries during the project, it is not generally a realistic assumption. In this paper, we consider project scheduling problem with discounted cash flows under inflationary conditions. We propose two different situations due to the type of contract between contractor and client as fixed-price contract and cost-reimbursement contract. To interpret the situation, we use a lemma which shows the importance of entering inflation for both sides of a project clients and contractor. Finally, an example is solved and the proposed procedure is applied to interpret the solution.*

Keywords: *Net Present Value; Scheduling; Project; Inflation; Discounted Cash Flows.*

JEL Classification: C44, E31

Assistant professor Grzegorz MICHALSKI, PhD
Wroclaw University of Economics,
Department of Corporate Finance and
Value Management
PL53345 Wroclaw, Poland
E-mail: michalskig@ue.wroc.pl

INVENTORY MANAGEMENT OPTIMIZATION AS PART OF OPERATIONAL RISK MANAGEMENT

Abstract: *The basic financial purpose of an enterprise is maximization of its value. Inventory management should also contribute to realization of this fundamental aim. The enterprise value maximization strategy is executed with a focus on risk and uncertainty. This article presents the consequences for the recipients firm that can result from operating risk that is related to delivery risk generated by the suppliers. The present article offers a method that uses portfolio management theory to chose the suppliers.*

Keywords: *Corporate liquidity, firm value, delivery risk.*

JEL Classifications: G39, G32, G11, M11, D81

Professor Marcel Dragoş STOICA, PhD
Professor Ioan FRĂSINEANU, PhD
The Bucharest Academy of Economic Studies
Mariane YARKONI, PhD, Tel- Aviv, Israel

COMPARISON BETWEEN ROMANIA AND ISRAEL USING SPECIFIC ECONOMIC INDEXES

Abstract. *The state of the knowledge based economy in a country can be estimated by some specific indexes. They take into account the level of development of economy, innovation, education and IC technology (information and communication technologies). To illustrate these indexes, we used them for a comparative study of the state of knowledge based economy in Romania and Israel.*

Key words : *knowledge based economy, Knowledge Assessment methodology, Knowledge Indexes.*

JEL Classification: P 51

Professor Nicolae DARDAC, PhD
Assistant Iustina Alina BOITAN
The Bucharest Academy of Economic Studies

STATISTICAL MODELS FOR MONITORING THE LIKELIHOOD OF CREDIT PORTFOLIO IMPAIRMENT

Abstract. *Academic literature and the studies of international financial institutions are the field of a wide debate on the best suited financial indicators and econometric models for predicting, in real time, a wide series of adverse events (credit institutions' rating downgrade, capital adequacy, banking or currency crises). Our empirical approach consists in combining PCA, as a factor analysis technique, with binary logistic regression, in order to forecast the likelihood of a credit portfolio impairment for the whole Romanian banking system. We distinguished several types of financial indicators, related to macroeconomic climate and bank specific data, that are likely to contribute to the determination of the probability of credit portfolio quality impairment. We have applied PCA and identified three principal components. The significance of each component and its predictive power was then tested in a binary logistic model.*

Key words *: banking system; probability of credit portfolio impairment; early warning system; principal components analysis (PCA); binary logistic regression.*

JEL Classification : C 23, G 01, G 21.

Professor Daniel ARMEANU, PhD
Faculty of Finance, Insurance, Banks and Stock Exchange
The Bucharest Academy of Economic Studies
Economist Leonard LACHE

THE NPV CRITERION FOR VALUING INVESTMENTS UNDER UNCERTAINTY

Abstract. *Corporate finance theory has established four criteria for the valuation and selection of investments: the net present value (NPV) criterion, the internal rate of return (IRR) criterion, the payback period (PP) criterion, the profitability index (PI) criterion and the excess return (ER) criterion. Each of them has its advantages and disadvantages, which we will not insist upon in this paper. Instead, we shall emphasize some interesting properties of these indicators, based on the hypothesis of the (almost) normal probability distribution of the free cash flows generated by the investment. For this purpose we have considered 15 scenarios and we have simulated possible free cash flows generated by a 10-year investment project. Our study has led to the conclusion that the indicators NPV, IRR, PP, PI and ER are approximately normally distributed, which simplifies substantially the analysis of investments under uncertainty conditions and enables us to build confidence intervals and to estimate probabilities for the lower limits of the aforementioned indicators. At the same time, our study addresses the controversial issue of computing the expected value and the standard deviation of the net present value of an investment under conditions of uncertainty.*

Keywords: *net present value, cash flow, discount rate, uncertainty, normal distribution, confidence interval, expected value, standard deviation of the net present value.*

JEL Classification G32

Professor Ioan TALPOS, PhD
Associate Professor Bogdan DIMA, PhD
Senior Lecturer Mihai MUTASCU, PhD
Senior Lecturer Cosmin ENACHE, PhD
Faculty of Economics and Business Administration
West University of Timisoara

EMPIRICAL EVIDENCES FOR THE BUDGET DEFICITS CO-INTEGRATION IN THE OLD EUROPEAN UNION MEMBERS: ARE THERE ANY INTERLINKAGES IN FISCAL POLICIES? (PART TWO)

Abstract. *In the last years, the fiscal harmonization among the European Union members has become a pillar of economic integration and of fiscal and financial stability in the European area. The institutional changes, the semi-failure of the "old" Stability and Growth Pact as well as the recent waves of enlargements all these were put a greater emphasis on this issue inducing a higher pressure for fiscal discipline.*
In this context, the objective of the paper is to examines recent empirical evidences for bilateral and multilateral integration between fiscal policies, as this are synthesised by budget deficits, of old European Union members in the framework of the Johansen co-integration procedure with a preliminary appliance of the principal component analysis. The study finds that the dynamic of European fiscal policies takes place under the impact of some common driving forces which leads to a differentiate behaviour of two sub regional-groups individualized by the budget deficit series evolutionary patterns. Overall, it concludes that there could be find empirical evidences to support the thesis that a process of fiscal integration is currently running at least at the level of old European Union countries.
Key words : *Fiscal policies in E.U., budget deficits, co-integration, Johansen Test.*

JEL Classification: F15, H00, H61

Senior Lecturer Radu LUPU, PhD
The Bucharest Academy of Economic Studies
Scientific Researcher Iulia LUPU, PhD Candidate
" Victor Slavescu" Financial and Monetary
Research Centre, Bucharest

CONTAGION ACROSS CENTRAL AND EASTERN EUROPEAN STOCK MARKETS: A DYNAMIC CONDITIONAL CORRELATION TEST

Abstract. *Economic literature suggests that contagion can occur because of trade links, both direct trade among countries and competition in third markets; similar initial conditions, whereby countries co-move insofar as they have similar macroeconomic (or other) characteristics; and financial linkages. While contagion can take many forms, this paper tests for stock market contagion during recent financial crises among CEE economies, comparing with some Western European countries, USA and Japan markets and test for the existence of contagion. It defines contagion as a significant increase in market co-movement after a shock to one country (or group of countries). We found that the correlations become more statistically significant as we go from the early stages of our sample towards the end of it. Our test takes into account the fact that the correlations can change from one day to another and it can provide powerful evidence in the support of the phenomenon of contagion.*
Key words: *contagion, dynamic conditional correlations, GARCH models*

JEL classification: C22, G15, P59