Metody ilościowe
w ekonomii i zarządzaniu

Pod redakcją naukową

Stefana Forlicza

Spis treści

Summaries

Elżbieta Babula

Stochastic Modeling in Theory of Choice under Risk

The fact that neither under experimental conditions, nor in the real world is choice behavior completely deterministic, has led many researchers to study the properties of stochastic choice functions which specify not a single choice, but the probabilities or frequencies of choosing any of the available alternatives. The paper introduces the genesis and the development of stochastic modeling in the theory of choice under risk. Three groups of models are identified: trembles, constant utility and random preference models. The stochastic transitivity property of described models is considered.

Stanisława Bartosiewicz

The Choice of the Proportions Pattern for Measuring Equitable Socio-economic Growth in Poland

The article presents the characteristics of the good patterns in order to decide that the patterns of equitable socio-economic growth must be sought in the „happy societies" (Denmark, Norway). The case studied was the labour market as an element of socio-economic growth. Variables describing the labour market were chosen and developed and the situation in Poland was presented against the background of the Danish and Norwegian proportional growth path.

Anna Blajer-Gołębiewska

The Usage of Companies' Websites for the Purposes of Investor Relations

The aim of this research was to characterize the usage of companies' websites as information media in order to improve investor relations. The research was conducted for the Polish stock listed companies with the application of a classification tree.

The main thesis is that more information relevant to the shareholders is revealed on the websites of companies with better performance. Moreover, the intensity of the usage of websites for investor relations purposes varies in the different sectors of industry.

Anna Błaczkowska

Changes in the Structure of Polish Household's Expenditure Compared to Other EU Countries in 2001-2008

The aim of this study was to present and evaluate changes in the economic situation of households in Poland compared to changes in the households of other European Union countries. The analysis uses Eurostat data - the income and the household expenditure on individual needs in two periods: 2001-2004 and 2005-2008. The Ward method was used to identify the countries with a similar structure of income and household expenditure. This method was also used to separate the countries, in which the processes of consumption happen in a similar way.

The analysis showed that the structure of household expenditure is similar in the examined periods and the changes in classification are unimportant. It is striking that in the period 2005-2008 in households the percentage of expenditure on food over total expenditure has increased in many countries.

The path of development (pattern), constructed for Polish households compared to households of the EU countries, showed that Polish households in need of "Education" have the biggest arrears in expenditure, together with „Restaurants and hotels" and „Recreation and culture" on which expenditure should increase.

At the same time, expenditure to satisfy the needs of „Health", „Food and nonalcoholic beverages" and „Alcoholic beverages, tobacco and narcotics" should be reduced.

Marcin Błażejowski

Simulational Assessment of Size of the Dickey's Stationarity Test of High-Frequency Time Series

The aim of the paper is to assess the size of the stationarity test for high frequency time series introduced by D.A. Dickey in 2009 verifying null hypothesis that given series is seasonally integrated (is SId(1)). This test extends usage of standard DHF test for seasonal unit root (Dickey, Hasza, Fuller [1984]) for cycles of frequency $d = 5, 6, 7, 21, 24, 26, 31, 48, 52, 168, 365,...$

Małgorzata Borzyszkowska

HEGY Test for Selected Macroeconomic Variables in the Polish Economy in the Period 1996-2009

This work is a continuation of the research undertaken earlier and includes the results of the HEGY test for selected macroeconomic variables of the Polish economy in the period 1996-2009. In the final stage these variables will serve as potential variables for the building of money demand models for the Polish economy. The aim of the study is to determine whether the analyzed quarterly data series contain seasonal unit roots at frequencies other than zero (half-yearly or quarterly). As a result of earlier work it was found that the analyzed series are non-stationary, integrated of the first order (a few tests for unit root were made). The present analysis showed that all analyzed series did not contain seasonal unit roots with a quarterly frequency, while the seasonal unit root with a half-yearly frequency contains only LDBR (description of the signs is in a part of 1.3.). The next stage of the examination, to complement these results, should be cointegration analysis.

Ewa Czapla

Long-run Linkages among Polish, US and Eurocurrency Interest Rates

The main objective for this paper is to study long-run linkages and causal links between Polish, US and Eurocurrency short-term interest rates. Two main methods are used: The Johansen cointegration technique and Toda and Yamamoto's Granger test. The paper employs the one-, three-, six- and twelve-month interest rates of Poland, US and Eurocurrency market and tests the weekly versions of these series. The studied period is 01.01.2005 - 30.06.2010. The findings indicate that the Eurocurrency interest rate is the Granger cause of the Polish interest rate and not vice versa.

Mirosław Dytczak, Grzegorz Ginda

The Synergy Effect in the Economy. Its Application to the Fusion of Enterprises Including Intangibile Assets

Continuous changes in the surroundings of an enterprise force introduction of changes which are aimed at the introduction of functional improvements. The synergy effect is thus obtained. It is also advantageous to include intangible resources to fully utilise the improvement potential of changes. The application of relative linear programming

for evaluation of the synergy effect in the case of the fusion of enterprises and intangible resources is discussed in the paper.

Mirosław Dytczak, Grzegorz Ginda, Tomasz Wojtkiewicz

Identification of a Globally Optimal Schedule of Complex Construction Projects

Construction projects are complex due to high costs, the influence of numerous factors, the nature of outcomes, the engagement of different participants and limited resources, the application of multi-mode technological operations and their succession. Careful preparation of a project course is therefore required. However, locally optimal project structures are usually applied. An approach leading to the identification of a globally optimal project structure is therefore proposed.

Maria Forlicz

The Influence of Inflation on the Perception of Money Value over Time

In order to check how Polish people perceive inflation in everyday life, a survey among 129 young people was conducted. On the basis of this research it was deducted that only 1/4 of people are fully aware of the consequences of the existence of inflation. At least 14% of subjects perceive the value of money only in nominal terms forgetting its real value.

Magdalena Frasyniuk-Pietrzyk

Stochastic Dominance in the Evaluation of the Efficiency of Open Pension Funds

The statutory rate of return used to evaluate the effectiveness of open pension funds investment published by KNF is a controversial issue. It is an incomplete measure of the performance, because it ignores risk. Therefore, to evaluate the effectiveness of investment risk-adjusted performance measures derived from the classical portfolio theory are often used. The paper presents an alternative, non-classical method of portfolio performance – stochastic dominance. This method has been verified on Polish open pension funds market.

Alicja Gębczyńska, Andrzej Bujak

Application of the Capability Maturity Model for Improvement of Quality Management Systems

The notion of a process-based approach has recently become the subject of heated discussion and numerous scientific conferences, this being a result of increasing interest in process management and the continuous development of knowledge and experience in this field.

This article is a discussion on the process-based approach and numerous concepts which apply to it with a special emphasis put on quality management systems. The authors also introduce and explain the notion of process management, thus moving towards the problem of process improvement. Another section of the article is devoted to selected methods which one may apply to process improvement. The paper also includes a detailed analysis of self-assessment based on the Capability Maturity Model as well as a review of its advantages as compared with other methods applied for the sake of process improvement.

Anna Jędrzychowska

The Level of Return on Pension Funds as a Decisive Factor in Decisions about Membership in the OFE

This article attempts to investigate whether members of pension funds in their decisions about membership in the second pillar pension scheme, are driven by rates of return of the OFE in their decisions.

For this purpose, a study was made of the relationship between the published rates of return (24-monthly and 36-monthly since 2004) for each fund and the number of new members of the various pension funds, the number of people who have left the pension funds, the increase in the number of members of the OFE and a fixed number of members of pension funds. The study used a Pearson correlation ratio.

Zdzisław Kes, Łukasz Kuźmiński

Use of Control Cards in Budgeting

The paper outlines the problems of monitoring the implementation of budgets with particular emphasis on methods of determining the control limits for the deviations. The theoretical part describes the different concepts of grid control and the evaluation of their

usefulness for the research problem. The practical part was calculated and plotted against the selected cards for the figures. Data used represent monthly deviations from the absolute and relative costs in the budget including the cost of manufacturing and service companies.

Patrycja Kowalczyk-Rólczyńska

An Analysis of the Polish Home Mortgage Loan Market

The market for home loans has developed in recent years. The quantity of bank products for the real estate market has increased for the past ten years. The credit policy has sharpened for the last few years. The financial situation of potential borrowers has influenced the real estate market. Prices of housing real estate decreased. Important factors influencing the real estate market are: unemployment, running costs of real estate, and monthly average remuneration.

The aims of the article are: analysis of the Polish market of home loans and the analysis of factors influence on that market.

Paweł Kufel

**The Comparison of Non-linear Econometric Models on the Basis
of Validity Tests of Forecasts**

This paper refers to the comparison of models based on different analytical forms (linear and non-linear). All models are built using the dynamic congruent modeling concept. Models are compare by the forecast errors. Differences of forecast errors are calculated using the Diebold-Mariano test. Analysis is based on Monte Carlo simulations.

Tadeusz Kufel

Effectiveness of Congruent Specification for Small Samples

The congruent Specification procedure ensures that the residual process of estimated model (GUM) has white noise properties. The aim of this paper is the presentation of automatic specification based on the dynamic congruent modeling concept available in the GRETL package. An empirical example presents different aspects of reducing the sample from 120 observations to 24 observations.

Paweł Kuśmierczyk

The Experimental Studies of Optimality and Efficiency of the Selected Non-standard Auction Mechanisms in Case of Price-only Procurement Auctions

The paper describes and analyzes some non-standard auction mechanisms, which are sometimes applied in the practice of price-only procurement auctions. Among them are the first-price sealed-bid auction with additional negotiations and a non-binding sealed-bid auction. The analyses of optimality and efficiency are based on the results of the laboratory experiments.

Wiesław Łuczyński

Fractal Nature of Economic Processes

The analysis of Hurst exponents revealed the differences of the fractal dimensions of the time series of economic processes in Germany over the period of 1947-2010. Wavelet analysis established the breakpoints in the dynamics of the examined time series. The Hurst exponents change together with the change in the dynamics of the time series. For all the series (and for their sub-periods) their harmonic structure was established, using the method of spectral analysis. It enables the reconstruction, by use of the Packard-Takens method, of the phase portraits of time series. These portraits indicate that the economic processes are the configuration of non-linear chaotic systems.

Łukasz Mach

Construction of Practical Regression Models Describing Dependencies in the Real-estate Market

This article presents the process of decision-making econometric model construction which parameterises dependencies on the real-estate market. The developed decision-making model is based on the application of multiple regression. The main criterion while choosing an appropriate regression model is the verification of construction correctness and usefulness in practical applications. Moreover, two final decision-making models have been developed. The first model includes real-estate offer data, whereas the second model includes flats transaction data. The application of the aforementioned analytical method is a basis for decision-making construction, whose aim is to support companies operating in the construction industry in the processes of decisions making.

Katarzyna Maruszewska

**The Application of Correspondence Analysis in Research on Determinants
of Migration in Poland**

Correspondence analysis is an exploratory and descriptive technique designed to analyze some measure of correspondence between categorical variables. The results provide information on the structure of relationships between variables organized into two-way and multi-way cross-tabulation tables of frequencies. The paper presents simple Correspondence Analysis (CA) and Multiple Correspondence Analysis (MCA) as methods for identifying the factors which influence migration decisions in Poland and analyzing its spatial differentiation.

Aldona Migała-Warchoł

**Geographical Diversification of Quality of Life and Level of Living Standards
of the Inhabitants of Podkarpackie Voivodeship**

The main subject of researches is the evaluation of the level of living standards and quality of life and its geographical diversification in Podkarpackie Voivodeship. Findings were obtained using data from the Regional Data Bank of the Central Statistical Office and the Statistical Yearbook of the Regions – Poland 2006. However quality of life was worked out using poll research, which was carried in 2006 by the method of direct interviews in the field of districts of Podkarpackie Voivodeship. The synthetic level of living indicator and synthetic quality of life indicator will be presented. The calculation of both indicators will allow the placing of the administrative districts in Podkarpackie Voivodeship in order and then the classification of the similar objects. Showing the results obtained will allow the evaluation of the geographical diversification of the level of living standards and quality of life in Podkarpackie Voivodeship.

Piotr Peternek

Some Remarks on Testing Pearson's Correlation Coefficient

The paper presents the problem of the interpretation of the significance of the results of the test for Pearson's correlation coefficient in conjunction with the regression model. It will be shown that the test is considerably sensitive on the sample size. In this context, the author presents an alternative method of testing and recommends another significant test to achieve the correct interpretation of the results of the test for the correlation coefficient.

Zygmunt Przybycin

Investment Projects and Risk Management

Investments are the main way of building a company's competitive position in the market. Each investment, including material investments, carries a risk. Rational risk management of an investment determines its economic efficiency. Risk management can take place at the stage of planning the investment. This is possible thanks to the models of assessment of the efficiency of investment projects. In the article the models of the assessment of investment projects are presented in the context of risk management.

Jerzy Rembeza, Aneta Kłodzińska

Modeling the Term Structure of Interest Rates

The article deals with modeling the term structure of interest rates. Three estimation methods of yield curve – spline functions, the Nelson-Siegel method and the Svensson method and, for the estimation of interest rates, dynamic models such as: the Vasicek model, CIR model, Brennan-Schwartz model and CEV model have been presented.

Tomasz Rólczyński

**An Attempt to Identify the Risk Connected
with Investment Decisions Taken by Individuals**

Each entity which operates in the economy is at risk. Financial institutions which make transactions on the financial market can often identify and assess risks associated with activities and manage them. The situation is otherwise for individuals, because they are not specialized in risk assessment and are not always able to correctly identify all of its forms.

Zofia Rusnak

Measurement of Poverty and Social Exclusion – Methodological Problems

This paper presents methodological problems, divergences and controversies which occur when the assessment of poverty or the social exclusion sphere is made. These diffe-

rences are illustrated by data concerning the basic indicators that are characteristic for the Polish aspect of both phenomena. The data is taken from official statistics published by EURO-STAT and the Polish CSO.

Jerzy Sacała

Butterfly Effect – Be Careful With the Computer

The article contains a couple of interesting (according to the author) examples of mistakes in numerical calculations. Mistakes of this kind occur in simple calculations even if professional programs like Matlab or Excel are used. The author suggest that it is necessary to inform students about this in order to convince them that Mathematics is a lot more than computer calculations.

Paweł Siarka

Application of Wald-Wolfowitz Test in the Credit Risk Management Process

In the article the author focuses on the issue of credit risk which appears in the early stages of the life of loans. The author analyzes the defaults incurred during the first two installments. In addition to the description of the importance of risk control of early losses in the credit risk management process, the author presents a method of assessing this risk. He also presents a practical example of the use of the Wald-Wolfowitz test in the context of credit risk management process. This example shows the practical use of statistical tests in the process of the minimalization of the risks of early losses.

Katarzyna Sokołowska

Analysis of the Impact of Income and Socio-demographic Characteristics on Satisfaction with Life in Polish Society

This paper presents empirical research into the impact of income on individual life satisfaction. The influence of personal income, the impact of the income of a reference group and the impact of the size of individual income on providing a prosperous life and income sufficient to meet the basic needs of individual well-being is examined. The work also includes a comparison of the results obtained with the results in article [Ferrer-i-Carbonell, 2005], referring to the German people, and with those obtained in other articles

on SWB. The analysis was conducted with the application of an ordered logit model. The data used in the study comes from the Survey Center for Public Opinion Research "The conditions of life of Polish society – problems and strategies" project on a representative random-address sample of adult Polish population, $N = 38,866$ in the period September--November 2007.

Andrzej Stryjek

Utility of Copula in Finance and Insurance

A commonly used measure of dependence between two random variables is the linear correlation coefficient which is a good measure of dependence in the class of elliptical distributions. The dependence among variables used in financial and insurance models is very often nonlinear. One of the possibilities of expressing such correlation is copula function. This paper describes what copula is and shows two different models based on copulas (models of collateralized debt obligations risk estimation and Value at Risk estimation). The author presents some recent results from the literature of the subject and points out that new regulations of risk management (Basel II, Solvency II) encourage the search for better solutions of modeling the dependence of random variables.

Agata Strzelczyk

The Ways of Measuring the Quantity and Value of Information

Information has nowadays a special meaning both in economic, social, political and scientific life. The article takes the subject of measuring information. It presents the general concept of information and shows the ways of measuring quantity and value of information.

Dominika Tomaszewska

Risk Modeling in Heterogenous Portfolios

This article describes a problem of the heterogeneity of insurance portfolios. The main goal of this work is to present an application of probabilistic models taking into account the uncertainty of parameters.

Because there is no homogenous definition of risk in Insurance Theory, the first part of the article contains a few definitions of risk. Those definitions are used for further consideration within the article that focuses on mixed models and the Bayes model and the application of those models in Insurance Risk Theory.

Justyna Zygmunt

The Analysis of the Influence of External Financing on a Company's Investment Activity

The article underlines the issues related to the recognition of the essence of the influence between external financing and a company's investment activity. It provides the main conclusions from the economic literature survey related to the influence in question. The pecking order theory was the principle used to make a hypothesis concerning the significance of factors referring to external financing and investment activity. On the basis of empirical researches the sensitivity of investment activities to external financing in Polish quoted industrial companies were identified.