SECTION 3
Microeconomic Strategies Modeling

Room 2618

Chairmen: Professor *Dumitru MARIN*, PhD
Professor *Stelian STANCU*, PhD
Professor *Carmen HARTULARI*, PhD
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Senior Lecturer *Angela GALUPA*, PhD

Secretary: Teaching Assistant *Anamaria ALDEA*, PhD Student

Thursday, April 22, 2004
11.30-11.50   **1. Multidimensional Analysis on the Industry Branch in Romania**
Authors: Professor *Dumitru Marin,* PhD
Teaching Assistant *Sorin M. Vlad*, PhD Student
Academy of Economic Studies, Bucharest, Romania

Abstract

We are focusing to analyse the economic activity from the industry branch in Romania with aggregated data at sectorial level, on the years 2000 – 2001. The main purpose is to reveal aspects related to the implications which could arise because of the relations between a variables set which tries to explain the firms' activity efficiency from a certain industrial sector and a variables set which tries to describe the competition degree into and out of the industry sectors .Our researches are based on data analysis techniques, especially: Principle Components Analysis and Taxonomy Objects. The paper it would be a great source of information when the governmental authority would want to take decisions on applying certain increasing efficiency policies in economic activity from industry, especially these years when our country tries to make significant progresses on the adhering to European Union.

11.50-12.10   **2. Efficiency estimates through stochastic production frontier for Swedish banks with exogenous influence of IT expenditure**
Author: Constantin Belu, PhD Candidate, School of Economics and Commercial Law, Gothenburg, Sweden

Abstract

The purpose of the paper is to analyze whether there is an influence of Information Technology (IT) on banks technical efficiency. For this, we estimate technical inefficiency among Swedish banks, using a stochastic frontier production function that allows for time varying technical inefficiencies. The inefficiency effects are assumed to be positive, independent distributed variables, following a truncation of a normal distribution with the mean assumed to be linear function of observable variables *IT expense*s.

12.10-12.30 3. Performance analysis in a reduced space of inputs and outputs

Author: Professor *Liliana Spircu*, PhD, Academy of Economic Studies, Bucharest, Romania

Abstract

Factorial techniques of data analysis to obtain a virtual reduced space of inputs and outputs are utilised. Then, using DEA techniques, performance scores in this reduced space are computed.

12.30-12.50 4. Finding a fuzzy optimal sequence for the flow- shop problem using the derivation.

Authors: Professor *Marcel Stoica*, PhD
Professor *Carmen Hartulari*, PhD
Senior Lecturer *Angela Galupa*, PhD
Senior Lecturer *Crişan Albu,* PhD
Academy of Economic Studies, Bucharest, Romania

Abstract

The flow shop problem for industrial applications has a nonpolinomial character, and for this reason the authors propose to find a fuzzy- optimal solution to solve it efficiently by using a new way, namely the derivation.

To attain this objective it is necessary to generate a set of sequences, using an initial solution founded by a heuristic and further improvements are obtained applying the directive simulation technique. For each sequence, the value of performance function must be evaluated, and the set of points obtained in this way, is graphically drowned, where on the ordinate the value of performance is represented and on abscissa, the corresponding sequence (a permutation of jobs).

In the second stage, on approximate the sets of points previously obtained by a function, using in this propose clustering techniques and statistics methods.

An important and difficult problem is to find the number of points that must be generated, in order to obtain a representative sample and to find an efficient fuzzy- optimal solution.

The number of generations depends on the number of machines, of jobs and the degree of error accepted by the customer for the fuzzy optimal solution obtained in this way.

In order to minimize the computing time and the number of generation it is able to use the directive simulation technique in heuristics algorithms that find the solution for the flow shop scheduling problem.

The fuzzy optimality must be considerate taking into account many points of view.

To localize the sequence witch corresponds to the derivation of the function that approximates the value of performances, the Hamming distance is used.

The experimental results confirm the validity of the function found for the values of performances, for the number of generations taking into account, and for the confidence degree of the fuzzy optimal solution obtained.

12.50-13.10 5. Aspects about the Improved Use of Waste Products from Leather and Shoes Industry

Authors: Senior Lecturer *Virginia Ciobotaru*, PhD
Professor engineer *Sanda Vişan*, PhD
Professor *Anca Angelescu*, PhD
Academy of Economic Studies, Bucharest, Romania
Engineer *Gheorghe Coară*, PhD
Engineer *Margareta Florescu*, PhD
The Leather and Shoes Research Institute, Bucharest, Romania

Abstract

The compatibility between the rubber and plastic materials mixture and waste of finite cromated leather was investigated in order to obtain products necessary in various industries or specifically in the leather and shoes industry. The physic-chemical properties of the samples with different concentration of the row materials were determined to emphasize the above compatibility.

13.10-13.30   6. Using Indirect Distance Functions in Evaluating Technical Efficiency

Authors: Lecturer ***Ciumara Roxana***, PhD
           Assistant ***Marinescu Daniela***, PhD Student
           Academy of Economic Studies, Bucharest, Romania

Abstract

The indirect input distance functions were introduced by Shephard (1974). Later, Fare, Grosskopf and Lovell (1988, 1990) established the framework for computing the indirect efficiency scores for both input and output orientation using distance function approach. Application on indirect efficiency measures are due to Fare, Grosskopf and Lovell (1988), Grosskopf, Hayes, Taylor, Weber (1999).

Direct efficiency measure of the observed output is judged relative to technology with fixed inputs. Measures of indirect output –based technical efficiency take input prices and planned cost as given and measure efficiency as proportional expansion of all ouputs. In this latter case, inputs are restricted, but not fixed; they may vary as long as their cost does not exceed a specified value.

In this paper we compare the properties of these two output-oriented measures of technical efficiency, analyzing their common characteristics and underlying the dissimilarities. One of the most appealing properties of both of them is that they make no a priori behavioral assumption.

At the end of the paper, we compute the direct and indirect efficiency scores for a number of firms and we compare the results obtained.

15.30-15.50   7. Evaluating the performances of the firms listed on the stock exchange using DEA techniques

Authors: Assistant ***Daniela Marinescu***, PhD Student
           Teaching Assistant ***Anamaria Aldea,*** PhD Student
           Academy of Economic Studies, Bucharest, Romania

Abstract

The present paper uses the efficiency measurement techniques to evaluate the performances of the firms listed on the stock exchange during 1998-2002. We obtain efficiency scores which allow us to classify the firms that are analyzed at individual and industry level.

15.50-16.10   8. Industry and Air Pollution Modeling

Author: Professor engineer ***Georgeta Cuculeanu,*** PhD, Academy of Economic Studies, Bucharest, Romania

Abstract

An essential element of a healthy environment is clean air. In spite of recent advances and some good improvements, air pollution matters, particularly those related to industry transportation and residential heating, are becoming more severe in many parts of the world, especially, in the urban zones. Any successful strategy for controlling or countering these matters must be based on reliable air quality monitoring data for management to make informed decisions on air pollution state and its control. The ultimate purpose of the monitoring is not merely to collect data, but to provide the information necessary for scientists, policy makers and planners to make sound decisions on managing

and improving the environment. Main pollutants released in the atmosphere by industry include suspended particles-organic and inorganic-with content of metals, SO_2, NO_x, CO, CO_2, NH_3, HCl, organic solvents, ash, etc. Once emitted into the atmosphere any pollutant is subject to a diffusion process which is described by the diffusion equation. Solutions of the diffusion equation under different approximations underlie the air quality models used to design the air monitoring networks.

In this paper a model for estimation of the air pollution, derived from the diffusion equation under different physical assumptions and with adequate boundary conditions, is discussed. The model can be used to estimate the pollution state in an impact area of an industrial source using as input data the meteorological data (wind speed, wind direction, air temperature, air temperature gradient, precipitation rate) provided by a meteorological station usually located near the pollutant source.

In order to obtain the mathematical expresion of the pollutant concentrtaion in the atmosphere the three-dimensional diffusion equation is solved with the following physical assumptions: steady state atmospheric conditions, the vertical advection is neglected as against the horizontal one, the source is considered as a point and the turbulent diffusion coefficients are supposed to be constant.The following boundary conditions are used: the pollutant concentration is vanishing at infinity and there is no pollutant absorption at the ground level. With the above mentioned physical assumptions the diffusion equation is solved by means of the Fourier transform method and a non-Gaussian expression for pollutant concentration is obtained. An application to an industrial source will be presented.

16.10-16.30   9. Financial Investment and the Problem of Verifying Costly Estate

Authors: Professor ***Chiriță –Mihail Nora***, PhD, Academy of Economic
Studies, Romania
Professor ***Faghiura Hanzi Georg ,*** Austria
Lecturer ***Mihalcescu Cezar,*** Romanian- American University,
Bucharest, Romania

Abstract

In this paper we will examine the implications of verying costly estate on financial markets. On the first part we illustrate that the income is optimal intermediate through banking system and standard borrowing contract is obtain as an optimal contract. It is possible that the credit market has proportionality characteristics at the equilibrium point and we will discuss the political implications of this result. The second part of the paper shows how the problem of verying costly estate can be used as a base of a macroeconomic model that offers an explication of persistent shocks in the economic cycle. This section is used to show that informational asimetry has very important macroeconomic implications.

16.50-17.10   10. Auctions – an alternative to the acquisitions process

Author: Teaching Assistant ***Anamaria Aldea***, Ph.D. Student, Academy of Economic
Studies, Bucharest

Abstract

The paper presents the most important, widely used auctions types: the ascending-bid auction (open or English auction), the descending bid-auction (Dutch auction), the sealed bid first-price auction and the sealed second price-auction. We analyze the impact over the Revenue Equivalence Principle if we relax some of the following principles: the independence principle, the risk neutrality principle, the "no budget constraints" principle and the informational symmetry principle.

17.10-17.30   **11. Sustainable Development of the Energetic Sector in Conditions of E.U. Integration**

Authors: Professor **Dumitru Marin**, PhD
Mioara Băncescu, Student
Academy of Economic Studies, Bucharest, Romania

Abstract

The paper presents a general equilibrium model in the Romanian energy system. Regulations related to environment are introduced in the model in the form of constraints: those specific to the actual context and those Romania will face due to the clear option to join the European Union. During the characterization of the triplet demand, supply and prices at equilibrium, the motto is 'Romania vs. European Union'.

Friday, April 23, 2004

14.30-14.50   **12. Using the Subtle Sets in Determining the Diagnosis of a System**

Authors: Professor **Marcel Stoica**, PhD, Academy of Economic Studies, Bucharest
Physician **Corina Grigoriu**

Abstract

In order to diagnose a case, a subtle dependence is defined, conditioned by the expert hypothesis. Further on, a series of adjustments upon this type of dependence for several kinds of diagnoses (economic, social, technical, psychological etc. ones) are made. To diagnose a case supposes at least two stages: hypotheses and to confirm the hypotheses. The hypotheses consist in explaining from a causal point of view, the abnormality condition of the system. To confirm the hypotheses involves different methods: more rigorous means of investigating, applying certain therapeutics, monitoring the effects etc. A certain confidence degree is associated to each method. This confidence degree increases to the extend to which the experts hold a richer prize list.

The presented methods allow establishing the diagnosis, even in the case when the system pathology is weakly defined or even not defined. To the extend to which the suggested method is applied, we can reach the situation of a progressively better defined pathology and therapeutics.

14.50-15.10   **13. About Reputation in Principal-Agent Models**

Authors: Economist **Corina Nicoleta Irimiea**, PhD Candidate, Romanian Commercial Bank, Bucharest
Lecturer **Ovidiu Vegheş**, PhD, Academy of Economic Studies, Bucharest

Abstract

The concern for reputation can explain a wide range of anomalies in comparison with the behavior specified by Principal – Agent standard model. Under risk, the distorted perception of a situation, by loss aversion decision makers or by those who care about their image, is present especially in the case of probabilities having values close to extremes (low odds or high odds). For instance, the children or teenagers often take risky actions only as a challenge, in order to prove that they are not afraid. The modeling of this behavior is to be made by means of an extension of the Principal – Agent model. When skill shakes hands with chance, the success or failure provides information on the decision maker's behavioral endowment. In addition, we underline some aspects of psychological kind and some limitations of the model.

15.10-15.30 14. Algorithms of conduct the in net

Author: Assistant ***Ioana Mureşan,*** PhD Candidate, University of Oradea

Abstract

The IT-related firms do have the necessary expertise and motivation to intensively use the corporate web-site. The often provide specialized services over the Internet, which requires a fully functional and highly interactive web site. On the other hand, the manufacturing firms are slow to adopt this new Information channel, because of a business environment without many online ramifications. The poor development of the Romanian online market, many of the commercial firms do not fully invest in the interactive capabilities of the corporate web site.

The foundations of the informational civilization are based on the availability and accessibility of information. The production of information is, nowadays, more than the equivalent of the yesterday's manufactures, as information does not end. More than 125 million computers are interconnected by complex terrestrial webs or by satellite and savings amounting to 6 trillion dollars depend on the accuracy and quickness of the operations performed by them. The data published last year reveal that for the first time, the world exports of services and intellectual properties equaled those of electronic products and cars together. The explanation is simple: information and the economic value have become almost synonymous. Consequently, information has become a vital national property with a strategic value and, if it is not protective, it may be conquered or destroyed.

But the stored information has no value itself. Its value becomes obvious when you use it or, even worse, you lose it by not using it quickly and efficiently. Hence, the permanent effort to reorganize the production and distribution of information as well as the symbols used to communicate the information. Thus, information has to be protected also when it is launched in webs in order to be restructured in larger and larger, models, in architectures of knowledge.

How can we protect information? On the international level, the great powers interpret differently the agreements regarding the nuclear weapons and especially those concerning information; thus, the informational war has become a real possibility, having as its targets the computers and other means of information. One of the battle fields is the Internet, whose open character enables the states (whether they admit it or not) to sponsor hackers who enter the computers of other states or intercept digital communications.

Concluding remarks: He who controls information also controls the money, and the impact upon the economic growth.

15.30-15.50 15. Aplication of DEA model for measuring the intra industrial productive efficiency

Author: Professor ***Stelian Stancu***, PhD, Academy of Economic Studies, Bucharest, Romania

Abstract

The paper presents the problem of using DEA model for measuring the intra industrial productive efficiency.

The DEA techniques provide a large efficiency analysis in the multiple-input/ multiple-output situations, by evaluating each decision unit and by measuring its performance over the envelopment surface described as the decision units set.

The paper will present essential aspects concerning the DEA model, the variable returns to scale, the DEA model and the constant returns to scale.

The conclusions will enforce the presentation.

15.50-16.10   **16. Existence of Contingent Market Equilibrium**

Author: Teaching Assistant ***Sorin M.Vlad,*** PhD Student, Academy of Economic Studies, Bucharest, Romania

Abstract

In this paper we are interested in studying the qualitative properties of the allocations that arise when different market structures are adjoined to a basic exchange economy. Two such market structures will be studied: a system of contingent markets and a system of financial markets. An equilibrium defines the outcome of a treading process when agents behaves as postulated in the trading environment described by a certain model. However it is useful for predicting the consequence of such trading only if it has a well-defined outcome, for example if it can be shown that an equilibrium exists (at least for a broad class of characteristics).

16.10-16.30   **17. The trade politics and their implications in obtaining the regional markets equilibrium**

*Author: **Marilena Stancu***, PhD Student, Academy of Economic Studies, Bucharest, Romania

Abstract

The present paper presents some strong arguments for the free trade, showing that the practice of a protecting trade, especially on regional markets, will bring multiple disadvantages. In this way, the economic advantages of integration will be point out. The paper also analyses the impact of the using the subsidies over the equilibrium in the Cournot competition as well as the influence of the exchange rate fluctuations on the equilibrium point.

17.00-17.20   **18. Data Envelopment Analysis efficiency scores**

Author: Economist ***Tache Jurubescu,*** PhD Student, Ministry of National Defense, Bucharest, Romania

Abstract

The evaluation of human resources performance is one of the main tasks for any organization. The empirical methods are now abandoned in favor of the new, modern and efficient ones, which make the whole process easier, attractive and affordable for most of the organizations. Being a matter of existence in a competition-based environment, it is very important to know and implement a system that covers all the needs of the organization in the field of measuring the efficiency of human resource as a whole, and of every employee as individual.

The paper's goal is to adapt the efficiency scores generated by the DEA (Data Envelopment Analysis) models to the human resources system, and demonstrates how the inherent dependency of DEA efficiency scores can be overcome using a Bootstrap method. It tries to put in place an accurate method of estimation in a military organization, a host system that provides simulated examples for demonstration. Quantification of a human subject effort and efficiency can be a challenge for those interested in finding an objective method, in order to eliminate as much as they can the influence the estimator induce as human being.

17.20-17.40   19. Envelopment techniques used for measuring the intra industrial productive efficiency
Author: Professor ***Stelian Stancu***, PhD, Academy of Economic Studies, Bucharest, Romania

Abstract

The paper presents the essential aspects concerning the productive efficiency measurement. The technique is based on the study of the production possibilities set, which represents the convex envelop of the input-output vectors from the production processes, the mono-output case as well as the multiple-output case.

The analyze is usual known as the input oriented efficiency measurement.

In this context, we present two situations: the input oriented efficiency measurement and the output oriented efficiency measurement.

Each data envelopment analyze model tries to determine which one of the n decision units generates an envelopment surface.

This surface is known as the empiric production function or as the efficiency frontier.

The DEA techniques provide a large efficiency analysis in the multiple-input/multiple-output situations, by evaluating each decision unit and by measuring its performance over the envelopment surface described as the decision units set. The decision units which form the envelopment surface are considered efficient, according to the DEA terminology.

The units which are not on the envelopment surface are called inefficient, but this inefficiency can be determined.

17.40-18.00   20. The Green-Lucas equilibrium and the social welfare analysis
Authors: Lecturer ***Mihaela Turmacu***, PhD Student
Lecturer ***Ion Cristian***, PhD Student
Constantin Brâncoveanu Uiversity, Piteşti, Romania

Abstract

The economic science, maybe more then any other social science, is in a continuous movement, both on horizontal as well as on vertical line.

We analyze the convexities implications over the general equilibrium and we present the sufficiency conditions for a q-equilibrium to be an equilibrium price.

18.00-18.20   21.Insurance Claim and Risk Aversion
Authors: Assistant Professor ***Nora Chiriţă – Mihail***, PhD – Academy of Economic Studies, Romania
Economist ***Poenaru Mircea***, PhD Student – Military Forces Ministry
Lecturer ***Mihălcescu Cezar***, PhD- Romanian- American University
Bucharest, Romania

Abstract

In this paper we will examine the problem of adverse selection in the insurance field. The first part put the basement of informational symmetry for using this further in the paper. The second part examine the common contract as a mix contract which implies spending for a client with risk aversion and benefits for those who love to risk, in comparison with an symmetrical information equilibrium. This happens because mix contract is not feasible (in the way that no firm could offer this contract and avoid losses in the same time) and so, adverse selection exists only in the case of client with risk aversion. Even it is or not feasible we will demonstrate that the mix contract can produce NASH equilibrium.