Newsletter

International Input-Output Association (IIOA)

Number 13; February, 2011

Editorial

The Dutch 1938 input-output table: start of the input-output tradition

Gert den Bakker
Statistics Netherlands

Statistics Netherlands

Dear IIOA member,

During and shortly after the Second World War a 1938 input-output table for the Netherlands was compiled by Statistics Netherlands. This was the basis of the Dutch input-output tradition: the annual compilation of input-output tables and later supply and use tables. These tables are the core of the Dutch national accounts. In due course the input-output table would assume a life of its own as a tool for analysis. However, initially the development at Statistics Netherlands had no other purpose than to serve as an integration framework.

The original 1938 input-output table, which was one of the first ever made in the world, was not published until the table, written by hand, was 'rediscovered' in the archives of Statistics Netherlands in 1984. On that occasion the table was adapted to modern national accounts. Later, the table played an important role in the revision of the Dutch national accounts figures for the period between the First and Second World War.

The Great Depression in the first half of the 1930s has ultimately led to the system of national accounts and the required source data to fill the system. In 1936 Jan Tinbergen, who later received the Nobel Prize, presented his famous macroeconometric model for the Dutch economy. His model gave the development of national accounting in the Netherlands a head start. Tinbergen desperately needed more and better data for his model, so a project was set up for that purpose in 1937. Johan Derksen, later head of the National Income Unit of the United Nations, was responsible for the estimates.

A Statistics Netherlands report of the mid 1930s already mentioned that business cycle research required the construction of a "tableau économique" reflecting the major goods and money flows statistically. The activities should be directed at obtaining a closed, if need be rough and ready, system providing an overview of the generation and expenditure of the national income without major gaps. After this a plausibility check would be possible. And in 1936 Tinbergen wrote that a comprehensive system for the registration of transactions was needed, simplified by taking together groups of persons and institutions into sectors and restrict the transactions to those between the sectors. The first steps towards an integration framework and input-output table were taken.

The outbreak of the Second World War and the ensuing occupation of the Netherlands greatly influenced the work of Statistics Netherlands. During the war the development of national accounts at Statistics Netherlands continued, isolated from the rest of the world, including statisticians in other countries by the war conditions. After the war it became clear that research in the Netherlands had mainly concentrated on the statistical aspects, while research in the English-speaking countries was more theoretically oriented.

The scarcity of statistical information played a major role in reflections of how to compile consistent, reliable data for the Dutch economy. There was a tremendous run on figures; the available information had to be fully exploited. The war conditions brought an expansion of data sources, which would prove of great importance for the development of the input-output framework.

The International School of Input-Output Analysis: objectives and activities (see p. 3)

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The supply of raw materials and later the distribution of finished products were regulated by the government. Several government offices were established for this purpose, each controlling a group of raw materials. In order to perform their tasks these offices made a large number of inquiries among the business community. The results, starting with pre-war year 1938 as the basis, were summarised together with estimates for the near future in so-called exploration schemes. These often contained extensive information about raw materials and semi finished products.

The template for the data was straightforward: a resources and uses approach. On the one hand the availability of goods: opening stock plus production plus imports. On the other hand the destination: industrial use plus other use plus exports plus closing stock.

In some cases the use was broken down by industry. However, the figures sometimes showed considerable bias, deviating substantially from the real situation. For example, enterprises often underestimated their stocks of raw materials, especially after the German occupation of the Netherlands in May 1940. The figures gathered by the government offices were made available to Statistics Netherlands as well.

The information collected made it possible to link statistical data for individual industries: the output from one industry was the input of another industry or a final expenditure category. These links were used to fill the gaps in the basic data. Gradually, the idea to utilise this approach systematically for the whole production process gained a firm foothold: the input-output table as integration framework for the national accounts.

The driving force behind the input-output approach was Kees Oomens who played a distinguished role in the development of international guidelines for the system of national accounts in the first decades after the war. Oomens developed the input-output technique as a tool for the compilation of a consistent set of national accounts data for the Netherlands. Oomens was unfamiliar with the work of Wassily Leontief who developed the same types of tables for the United States. For years, the Netherlands, together with Norway, were unique in the application of the input-output approach in the national accounts.

As there was a lack of data for the pre-war years, the number of surveys was limited. Moreover, they were not designed for use in input-output tables. In addition, the statistical knowledge of the technical aspects of the production process was less advanced then today. On the other hand, in 1938 the economy and the production process were less complicated so less statistical information was needed to arrive at a reliable picture.

The design of the original 1938 input-output table was in essence the same as the modern tables: 28 industries were distinguished, 2 in agriculture, 15 in manufacturing and 11 in services. Final expenditure categories were broken down into: exports of goods and services, final consumption expenditureof households, government expenditure, gross fixed capital formation of enterprises, changes in inventories of enterprises.

Government expenditure was not split into consumption and gross fixed capital formation. The original table included changes in financial balance sheets: consumption of fixed capital and savings and credit facilities against fixed capital formation and changes in inventories. The classification into industries differed from recent classifications and counts less industries.

After the liberation in 1945, work on national accounting continued, but the effects of the final war years on the statistical organisation had been so devastating that it was not until 1950 that the 1938 figures, estimated within the framework of the unpublished input-output table, could be completed and published. The 1938 table was the basis for the compilation of an input-output table for 1947. This table was made with the same definitions, classifications etc. as the 1938 input-output table. This made it possible bridge the war years.

Job position

Research Assistant in Environmental Systems Analysis

CICERO Further details can be found at:
http://www.cicero.uio.no/about/ledigestillinger_e.aspx

NEW and improved IIOA Message Board !!!

Would you like to organize a session for the next Input-Output Conferences but don't know who else is going and interested in joining a session?
Are you trying to find a SAM for Mongolia but don't even know if such a thing exists?
Would you like to know more about the price model or about tables in physical units?
... or for similar questions, use the NEW and improved IIOA Message Board.
Signing up is easy ... go to
http://messageboard.iioa.org/

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The International School Of Input-Output Analysis: objectives and activities

The School of Input-Output Analysis aims at training scholars in the use of standard tools of input-output analysis in a broad sense, both from the perspective of the producer and the user of input-output tables. The School will also encourage direct communication and/or collaboration between scholars and renowned researchers/lecturers in the field.

The School will attempt to achieve its objectives through the organization of teaching sessions on core topics in input-output analysis at the annual International Input-Output Conference (hereafter IO conference). The School will also organise international workshops for groups of scholars and/or researchers coming from areas in the world with a low tradition in input-output related studies and with manifested interest in advancing the field in a broad sense.

The teaching activities of the School will revolve around modules. At each annual IO conference, at least three modules will be offered. Each module is led by one lecturer. Each module consists of four teaching sessions of 1.5 hours each. As examples of modules, one may think of topics such as: Environmentally Extended Input-Output Analysis; Construction of NAMEA Accounts; Construction of Supply-Use and Input-Output Tables; Tourism Satellite Accounts; Structural Decomposition Analysis, etc. Participants will be awarded with a "Certificate of Studies in Input-Output Analysis" after having attended all four sessions of a single module and after having completed and submitted to the lecturer and to the director of the school the assignment about which the participant will be notified at the start of the module. In general, the assignment will take the form of a scientific paper, which may be co-authored by no more than three people (i.e. including the participant) and may be published in the WPIOX Series of the IIOA and/or submitted for presentation at next year's annual IO conference.

Exceptions are those cases where the topic addressed in the module recommends a different task (e.g. the construction of an input-output table), about which the participant will be notified at the start of the teaching sessions. Registration to the modules will be opened preferably by the beginning of March of each year and will be announced through the website of the IIOA. Attendants should apply by sending an e-mail (including a short motivation and his/her CV) to the Director with a copy to the Sub-Director and the chair of the SPC indicating the module that (s)he wants to attend. Observers do not need to apply.

Next to the above described activities, the School plans to engage in the organization of international workshop. We may take the recent experience of the Scientific International Workshop "Current Input-Output Studies in Post-Soviet Countries", see IIOA Newsletter n. 12, as a starting point. The workshop was organized by the IIOA in collaboration with the Russian Academy of Sciences, the Siberian Branch of the Russian Academy of Sciences, (Novosibirsk, Russia) and the Council of Studies on Productive Forces (Moscow, Russia). The purpose of the workshop was to increase contacts with scholars from Russia and other Post-Soviet countries such as Ukraine, Kazakhstan or Belarus. The form adapted consisted of focused presentations where scholars from Post-Soviet countries and IIOA invited scholars presented papers. In addition, time was reserved for discussing possible follow-up activities. The IIOA contributed on a small scale, basically by providing travel support for a number of participants.

There may be other countries or groups of countries where this type of workshop may be useful to establish or extend contacts. The Directorate of the School will consist of José M. Rueda-Cantuche, Erik Dietzenbacher and Albert E. Steenge.

The IIOA could continue supporting the organization of such international scientific workshops with the aim to reduce perceived or existing gaps in scientific contacts with those (groups of) countries. Workshops could be centred on one or two topics and have participants discussing their papers with IIOA-based researchers during a couple of days.

Programme of the International School of Input-Output Analysis at the next IIOA Conference in Alexandria

Opening and welcoming
(Saturday, June 11 – 17:00)

Modules Programme
(Sunday, June 12 – 9:30)

Multi-Regional Input-Output Analysis
(Lecturers: J. Murray (coord.), K. Kanemoto, A. Geschke, D. Moran)

Construction of Social Accounting Matrices
(Lecturer: Susana Santos)

Supply and Use Tables and links to Symmetric Input-Output Tables
(Lecturer: Sanjiv Mahajan)

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The number of participants is limited to 15, but observers are allowed, after the registration, without any commitment regarding the module certificates. Registration can be done by sending an e-mail to: José M. Rueda-Cantuche (jose.rueda-cantuche@ec.europa.eu), with a copy to Erik Dietzenbacher (h.w.a.dietzenbacher@rug.nl) and Klaus Hubacek (hubacek@umd.edu). Indicate in your e-mail:

- The module you want to apply for (and if you are interested in more than one module the order of your preference)
- A short motivation
- A short CV

The deadline for the submission an application is April 15, 2011. The final list of attendants will be published one month prior to the conference on its website (mid May 2011). In order to be eligible for the final list, participants should have paid the registration fee for the conference by April 30, 2011.

Registration as a member at Regional Science Association International gives free online access to the Journal:

Papers in Regional Science.

http://www.rsai-members.org/register.asp

Published papers in Input-Output Analysis and related methods.

In the next ESR issue

Economic Systems Research –

Journal of the IIOA

Volume 23, Issue 1 (March 2011)

http://www.tandf.co.uk/journals/titles/09535314.asp

TSUJIMURA M. and TSUJIMURA K. *BALANCE SHEET ECONOMICS OF THE SUBPRIME MORTGAGE CRISIS*

As Copeland (1947, 1952) demonstrated with his money-flow accounts more than half a century ago, the balance sheets of economic entities are closely interrelated through lender/borrower relationship. This paper is an attempt to describe the U.S. subprime mortgage crisis in the framework of 'balance sheet economics', which was originally proposed by Stone (1966) and Klein (1977, 1983). Since it is almost impossible to collect all the balance sheets of economic entities, we use flow-of-funds accounts instead to simulate the negative consequences resulting from home mortgage delinquencies. We show that the pass through sequence converges when the original delinquency is made up by loss of net worth in any of the economic entities. Most of the eventual loss is incurred by 'Households and Nonprofit Organizations' and 'Rest of the World'. A portion of pass through loss is eventually incurred by foreign countries with excess external assets such as Japan, Ireland, etc.

HERTWICH E. *THE LIFE CYCLE ENVIRONMENTAL IMPACTS OF CONSUMPTION*

This paper reviews assessments of environmental impacts arising from consumption, taking into account the production and disposal of goods consumed. Assessments have mostly focused on understanding household consumption, but there is an increasing interest in understanding government consumption, as well as in the treatment of gross capital formation and trade. National economic and environmental accounts are the most frequently used data source for such studies and input-output techniques are usually applied.

SMITH N. and McDONALD G. *ESTIMATION OF SYMMETRIC INPUT-OUTPUT TABLES: AN EXTENSION TO BOHLIN AND WIDELL*

This paper presents two optimisation models for use in the production of symmetric input-output tables (SIOTs) based on data contained within supply-use tables (SUTs). The first model produces commodity-by-commodity SIOTs derived from the selection of appropriate technology assumptions, while the second produces industry-by-industry SIOTs derived through the selection of appropriate sales structure assumptions. Both models address the problem of negative coefficients and also permit the use of rectangular SUTs as base input data. Additionally, this paper explores the development of a 'comprehensive model' enabling production of both commodity-by-commodity and industry-by-industry SIOTs that are conceptually and mathematically consistent.

LENZEN M. *AGGREGATION VERSUS DISAGGREGATION IN INPUT-OUTPUT ANALYSIS OF THE ENVIRONMENT*

Analysts carrying out input-output analyses of environmental issues are often plagued by environmental and input-output data existing in different classifications, with environmentally sensitive sectors sometimes being aggregated in the economic input-output database. In principle there are two alternatives for dealing with such misalignment: Either environmental data have to be aggregated into

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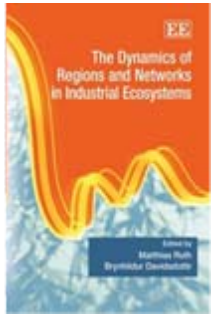
the input-output classification which entails an undesirable loss of information, or input-output data have to be disaggregated based on fragmentary information. I show that disaggregation of input-output data, even if based on few real data points, is superior to aggregating environmental data in determining input-output multipliers. This is especially true if the disaggregated sectors are heterogeneous with respect to their economic and environmental characteristics. The results of this work may help analysts in understanding that disaggregation based on even a small amount of proxy information can improve the accuracy of input-output multipliers.

TEMURSHOEV U., YAMANO N. and WEBB C. *PROJECTION OF SUPPLY AND USE TABLES: METHODS AND THEIR EMPIRICAL ASSESSMENT*

In this paper we present and perform the relative performance test of eight existing updating methods for the projection of Supply and Use tables (SUTs) for the Netherlands and Spain. Some of the presented methods are less (or not) known in the literature, and have been slightly revised in projecting negative elements and preserving the signs of the original matrix entries. It has been found that (G)RAS and two other methods proposed, respectively, by Harthoorn and van Dalen (1987) and Kuroda (1988) produce the best estimates for the data at hand. Their relative success also suggests stability of transactions' ratios for larger deliveries.

BOOK REVIEW

RUTH M. and DAVIDSDOTTIR B. (Eds.), *The Dynamics of Regions and Networks in Industrial Ecosystems, Edward Elgar, 2009*



Highlights in journals

ROMERO I. and TEJADA P. A Multi-level Approach to the Study of Production Chains in the Tourism Sector. *Tourism Management*, vol. 32, pp. 297-306

This paper proposes a multi-level approach to analyse the production chains in which two characteristic tourism activities - the hotel and travel agency industries - participate. Firstly, from a macroeconomic perspective, input-output techniques are used to identify the most significant tourism production chains from the regional input-output table of Andalusia (Spain). Secondly, from a microeconomic perspective, a different approach is taken based on the concept of Global Value Chains (GVC). In this respect, the structure and main agents participating in the tourism GVC are presented, and the role of small and medium-sized enterprises (SMEs) in the hotel and travel agencies industries in Andalusia is put forward. Finally, these two approaches are compared and connected, exploring some characteristics of these tourism production chains at the mesoeconomic level of analysis.

FISHER E.O.N. and MARSHALL K.G. The Structure of the American Economy. *Review of International Economics*, vol. 19, pp. 15-31.

We explore the relationship between input-output accounts and the national revenue function. The generalized inverse of an economy's technology matrix carries information relating changes in endowments with changes in outputs; its transpose relates output prices and factor prices. Our primary theoretical contribution is to derive an economy's revenue function for an arbitrary Leontief technology. Our main empirical contribution is to compute the national revenue function for the American economy in 2003 and to describe its properties. We implement our ideas using two different models: one where all factors are mobile and another with sector-specific capital.

KURZ H.D. Who is Going to Kiss Sleeping Beauty? On the 'Classical' Analytical Origins and Perspectives of Input-Output Analysis. *Review of Political Economy*, vol. 23, pp. 25-47.

The paper argues that input-output analysis existed long before it received its name and Wassily Leontief made it popular as a tool of empirical analysis and a foundation of economic policy. It grew out of an attempt to ascertain the capacity of an economic system to reproduce itself and generate a surplus that can be used for various purposes. Primitive pronouncements are encountered in early civilizations, for example Mesopotamia, in terms of the ratio of the amount of grain produced and the amount of it used up, directly and indirectly. These ideas reappeared in a more sophisticated form at the time of the inception of systematic economic analysis in the 17th and 18th centuries in Europe and found a two-sector expression in Fran ois Quesnay's Tableau conomique. The material input-output structure was then considered the core of the economic system that contained one of the keys to basically all other important economic phenomena and magnitudes. The way in which the potentialities embodied in the input-output structure, conceived as a system of production, have, or have not, been exploited over time define both the problems and perspectives of contemporary input-output analysis. Three aspects will be scrutinized more closely: the problem of value added, the treatment of fixed capital and the problem of technical change. Happily enough, while the problems are huge, the prospects are encouraging. There is no fear that input-output analysts will soon have to look for new fields of research because the old ones have been exhausted.

GUERRA A.I. and FERRAN S. Rethinking economy-wide rebound measures: An unbiased proposal" *Energy Policy*, 38 (2010) pp. 6684–6694.

The level and direction of the possible rebound effects from energy efficiency improvements is still an open question in the economic literature. This paper contributes to the existing research on this issue proposing an unbiased measure for

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economy-wide rebound effects. The novelty of this economy-wide rebound measure stems from the fact that not only actual energy savings but also potential energy savings are quantified under general equilibrium conditions. Our findings indicate that the use of engineering savings instead of general equilibrium potential savings downward biases economy-wide rebound effects and upward-biases backfire effects. To distinguish and isolate price and income effects, we rely and use the equilibrium conditions from the input-output quantity model as a basis for the new measure. The discrepancies between the traditional indicator and our proposed measure are analysed in the context of the Spanish economy.

BAHRIYE I. and HAKAN Y. A Comparative Input-Output Analysis of the Construction Sector in Turkey and EU Countries. *Engineering, Construction and Architectural Management, v*ol. 18

Purpose - The aim of this paper is to analyse and compare the performance of the construction sector in Turkey and selected European Union (EU) countries using input-output (IO) tables for the years 1998 and 2002.
Design/methodology/approach - IO tables are used to analyze and compare the construction sector. First the input-output analysis and the construction sector are briefly introduced. Then, the data and methodology is specified. A set of indicators obtained from the data is used for the comparative analysis.
Findings - The construction sector of the selected thirteen countries is examined in terms of Gross National Product (GNP) and National Income (NI) shares; direct and total construction backward and forward linkage indicators and direct and total construction inputs from manufacturing and services reflecting the technologies used in construction. The key findings are pointed out in the conclusion.
Research limitations/implications - The lack of data from Turkey relating to recent years and incompatibility of new and old data limit this study's scope to the two years. Originality/value - The concept of using IO analysis for comparing the construction sector has been around for a considerable period of time. This paper has an importance for comparing the construction sector in Turkey and some selected EU countries; being the first study in that field in Turkey, and is therefore of direct importance for the Turkish construction sector.

ALBUQUERQUE P.C. and LOPES J.C. Economic impacts of ageing: an inter-industry approach", *International Journal of Social Economics*, vol. 37, pp. 970 - 986.

The purpose of this paper is to quantify the impact of the evolution of consumption patterns associated with ageing on the relative importance of industries in Portugal. It uses data from the Family Spending Survey to disaggregate the Household column of the Portuguese Input-Output Table in different age groups, projecting their consumption, using the latest demographic projections made by Statistics Portugal (INE). The study identifies the industries that are likely to be stimulated by the ageing of the Portuguese populations, as well as the industries that will most likely become disadvantaged by the process. The task of identification of growing and declining industries due to ageing is important to help the design of employment, environmental, and social policies. The contemporary demographic trends in western societies have added to the importance of studying the economic and social consequences of ageing. Previously, the main issues have been the labour market effects, the sustainability of social security systems, and long-term care. In this paper, we address a different research topic, quantifying the sectoral impact of the evolution of consumption patterns associated with ageing.

Check the IIOA website!

The videos of the teaching sessions held at the Sidney IIOA Conference have been uploaded.

http://www.iioa.org/flv/videos18.php

Book Review

Murray, J. & Wood, R. (Eds) *The Sustainability Practitioner's Guide to Input-Output Analysis,* Common Ground Publishing LLC, Champaign Illinois, 2010

From the Preface: This book has been written for the non-expert reader. It covers the basics of what IOA is and what it can do; why you might choose to use this methodology and the differences between input-output (IO) and other ways of undertaking life cycle analyses. It looks at the strengths and limitations of IOA and its application in business, industry, government and non-government organizations. Part one introduces input-output analysis, providing background to its development as well as a description of what it is and what it can and cannot do. Part two provides a series of case studies from around the world. They have been chosen to demonstrate IOA's contribution towards accounting for the environmental effects of doing business. They range from use of IOA at a national, state and local government level in Australia and England, to company use in Australia, Scotland and the USA. They demonstrate the use of IOA in Triple Bottom Line accounting as well as in Carbon and Ecological Footprinting. Part three provides a sample of the tools, from the USA, Australia, Europe and the UK, that are available to help input-output (IO) practitioners. Part four provides insights from Japan and New Zealand into the nature and use of multi-regional input-output analysis. Developments in multi-regional IO show how input-output methodology can be applied to uncover trade effects across a range of time and space scales. And part five provides some resources that may assist in further learning or in teaching others about life-cycle analysis and assessment and input-output analysis. Together these five sections are designed to assist the development of a broad understanding of input-output analysis and the ways in which it can be applied to support our progress towards sustainability.

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In Memory of András Bródy

András Bródy belonged to the great generation of Hungarian mathematical economists who have put their country on the map of international economics. In one of his first papers, he investigated the end-of-month rush (1955), transcending the vulgar Marxist political-economy approach of the day.

In his next significant paper, he analysed the mathematical issues of a centralized price reform together with mathematical titan Alfréd Rényi. This was a direct road to input-output modeling.

In his *Planning, Prices and Proportions* (1970), Bródy analysed Marxian economics with input-output models. He showed that the labor theory of value can be formulated mathematically and then proceeded in the direction of Ricardo's prices of production. The great impact of his opus magnus is demonstrated by the number of citations: above 100 in Google Scholar. Several world famous economists admitted that in their Marxist periods, they learned the basics from Bródy.

He did not betray the input-output approach during his long life. With its help, he studied the cycles, the slowdown and the recent world economic crisis. He was an outstanding member of the International Input-Output Association, and edited several of its proceedings. His free spirit prevented him from teaching in his own country, while he had taught at various universities in the USA and Africa. Notwithstanding his superior achievements, he was never elected as a member of the Hungarian Academy of Sciences.

It is worth discussing András's personality. He came from an affluent family, he learned German and English as a child. His papers were crystal clear; his witty essays were popular at home. He was a good pianist, and he recognized every classic piece in the radio. He bequeathed his literary and musical talents to one of his sons, János Bródy. His professional talents he delivered to his other son, Mihály Bródy.

András did not like bounds. He had no students in the strict sense of the word, but he had so many foreign and domestic followers that two Festschrifts celebrated his 70th anniversary: one in English (with a foreword by Wassily Leontief), the other in Hungarian.

We shall miss you!

András Simonovits

Upcoming conferences

Universidad Rey Juan Carlos

shaio

IV SPANISH CONFERENCE ON INPUT OUTPUT ANALYSIS
Strategic sectors for a new economic model

Madrid, 28-30 September, 2011
Facultad de Ciencias Jurídicas y Sociales

The Hispanic-American Input-Output Society (SHAIO) and the II Accounting and Finance Department of the Rey Juan Carlos University announce the fourth conference on Input-Output analysis. It will be held from the 28th to the 30th of September 2011 at the Rey Juan Carlos University in Madrid. The organizing committee would like to encourage Input-Output framework researchers to present their work at this conference in order to promote the meeting, exchanging ideas and finding solutions, both methodological and applied to the problems of today's economic reality. The abstracts should not exceed 500 words and must be submitted in Spanish and English using the template that can be downloaded from the website of the conference. The submission guidelines can be found on the website. The works are to be included in any of the following topics:

- Construction and adjustment of input-output tables
- Methodological aspects in the input-output analysis
- Social Accounting Matrices
- Applied general equilibrium models
- Analysis of monetary and physical flows
- International Trade
- Structural Change
- Sector Analysis

Abstract deadline: March the 31st, 2011.

http://www.4jornadasio.fcjs.urjc.es/presentacion/presenta_en.htm

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