

Editorial

The input-output analysis of water: New tools for policy-makers



Peter Daniels,
Griffith University

Steven Kenway,
University of Queensland

will offer comprehensive, geographically-specific and cost-effective information on resource use and embodied resource flows linked to economic activity – from production sites to final demand. The recent wave of development of global MRIO databases (e.g. EXIOPOL and EORA) will enable the identification of water-intensities and footprint consequences associated with specific countries and regions. It will also provide coverage of much of international trade necessary for thorough analysis in a globalised economy. The approach has excellent potential for complementing and integrating with process-based based methods.

In acknowledgement of the rich development in methodology and data systems, a Special Issue of *Economic Systems Research* will be published, in December 2011, on the role of MRIO and water



footprints. The Special Issue covers a wide range of activities on the water MRIO area including empirical studies, new methods and the systematic analysis of applications for policy.

While MRIO is already accepted as a vital tool for carbon accounting, policy analysis and strategic planning, its potential strengths for water are even more pronounced. Most of the advantages of MRIO for water relate to the fact that the impacts of water extraction and use are very much tied to specific places. Unlike trans-boundary issues such as greenhouse gas emissions, “oils ain’t oils” when it comes to water. The location of extraction

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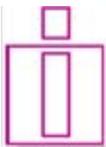
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Dear IIOA member,

Water is one of the most precious natural resources. Its efficient and sustainable management has become critical in a world of relentless growth in human population and consumption. Coupled with impending marked climate change, the growing demands and competing pressures for water mean greater vulnerability in terms of secure and adequate supply.

For policy-makers concerned with ensuring water supply security, the simple matching of direct water use to available supplies is no longer a sufficient basis for making effective decisions. As with most resources, much water use is embodied in the goods and services traded in the global economy. To properly understand the drivers behind water consumption and the efficiency of its use, and hence plan optimal and sustainable patterns of economic use, it is now necessary to accurately “map” the complex patterns of trade within and between regions. This requires the measurement of the demands upon water from initial production sources, cascading and accumulating through the supply chain, and into and beyond final consumption.

To date, most “virtual water” information has come from process-based approaches. Early studies typically focused upon a limited range of agricultural products and their major processes responsible for substantial regional water use. However, multiregional input-output (MRIO) analysis methods have developed rapidly in recent years to the point where they



Newsletter

International Input-Output Association (IIOA)

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will play a key role in the sustainability of water use. Process-based water footprints now recognise this and have moved from very generalised notions of “virtual” water use to clearly linking products to the water stress conditions of relevant source regions. This is being enshrined in the new ISO 14046 water footprinting standards. Another major strength of MRIO is its economic system-wide framework and ability to map the detailed pathways of embodied water flows from initial production sites to consumption. These pathways include the value-adding and intermediate output chain for an extensive range of sectors and regions. The result is information supporting a bevy of policy influence options and areas for decision-makers at local to global levels. Policy and information can guide individual “consumers”, production organisations and governments about a diversity of the key water-related issues.

They include the consequences of consumption and production choices for water stress across specific (bio-) regions, vulnerability to changing supply conditions, cross-resource issues such as the water-energy link, and overall system demands and sustainability. Water extended MRIO will also provide a tangible, biophysical basis for computable general equilibrium models and other approaches for the effective design and environmental and economic assessment of relevant policy such as water pricing or trading, education, institutional change and demand management. MRIO data will not just underpin the conventional use of “footprints” for the individual consumer concerned about their water impacts, but will also feed impact, vulnerability and likely economic cost information to: regional governments analysing and planning for reducing the impact of water demands upon their own locale and other regions productive enterprises and organisations, including the full range of private, public and community organisations that have their own water footprints but are not located at the end of the chain of final demand (and hence, must be considered as an integrated part of regional supply chains and economies) major public and



private-sector infrastructural choices and design (that inevitably have on-going operational and other life-cycle footprint implications) regional governments concerned with creating sustainable and resilient economic production activities within their purview in terms of water and other key resources. This is appropriate in view of the profound interdependence, or “economic ecology” linking production activity through to consumption, across sectors and regions. Combining process and input-output information could further strengthen the detail and accuracy of water footprint and virtual water analysis. Current developments in the area promise a wealth of useful information for a diverse set of water planning and policy objectives across public- and private-sector activity.

Tales from the I-O world

International recognition of I-O analysis with prestigious science awards

Dear readers,

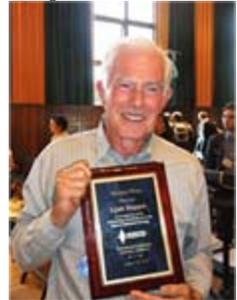
Many of you have witnessed the steep growth of the number and relevance of scientific contribution and articles based in Input-Output analysis and Input-Output modelling that occurred during the last ten years. Both the proliferation of data and tools as well as a shift toward a more multidisciplinary discipline contributed. This was explained by Bart Los at the recent IIOA Conference in Alexandria. In the recent months the growing interest of the academic arena for I-O analysis has been recognized via the awarding of three prestigious prizes in Australia, US, and China. The first of the international scientific prize I would like to mention is the one awarded to the research team of Professor Manfred Lenzen,



Dr. Chris Dey, Prof. Manfred Lenzen, and Dr. Joy Murray

Dr Christopher Dey, and Dr Joy Murray of the School of Physics at the University of Sydney. It won the 2011 Eureka Prize for Innovative Solutions to Climate Change, one of the most prestigious scientific prizes in the of country, for their efforts in developing tools and methods to address sustainability issues. In this case, their pioneering work in the field on carbon footprint analysis was the explanation.

In other “prize news,” Dr. Gjal Huppkes of the University of Leiden in The Netherlands by the International Society for Industrial Ecology. The Prize is awarded every two years for outstanding contributions to the field of industrial ecology and during the 2011 meeting at University of California Berkeley, the Awards Committee of ISIE awarded the 2011 Society Prize to Gjal Huppkes for his achievements in the field of Industrial Ecology and in particular



Dr. Gjal Huppkes

his pioneering work in Life Cycle Assessment, Substance Flow Analysis and environmentally extended Input-Output analysis. To give some idea of the calibre of this award, it has been bestowed previously to Robert U. Ayres.

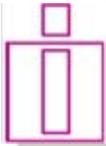
Last but not least of the three scientific prizes awarded in this last months is the National Science Fund for Distinguished Distinguished Young Scholars won by Yang Cuihong for her



Dr. YANG Cuihong

contribution with the title Input-Occupancy-Output Technique and Policy Analysis on Economy, Society and Environment.

We hope that as conveyed here in this short note in the IIOA Newsletter our sincere congratulations to each winner suffices for each winner since they have granted both added momentum and recognition to all of us in the IIOA through their affiliation with our organization and work with I-O techniques and tables.



International School of Input-Output Analysis at the 20th IIOA Conference

Bratislava (Slovakia) 24/25 June 2012

Dear readers,

At the next 20th IIOA Conference in Bratislava the International School of Input-Output Analysis will have the following programme:

Opening and welcoming to the School
(Sunday, June 24, 2012)

Modules Programme
(Monday, June 25, 2012)

Module H-IOA

Historical roots and Theoretical background of Input-Output Analysis

Lecturers: *Christian Lager* and *Heinz D. Kurz*
University of Graz (Austria)

Module DEIO

Dynamic Econometric Input-Output Modelling

Lecturer: *Kurt Kratena*
Austrian Institute of Economic Research, WIFO
(Austria)

Module IOT

The construction of Symmetric Input-Output Tables

Lecturer: *Jaroslav Sixta*
Czech Statistical Office (Czech Republic)

For further details on the registration and submission deadlines, please check frequently the website of the conference at:

http://www.iioa.org/Conference/20th/school_of_io.html

Training Sessions of the 12th Workshop of the APDR

(Leiria, Portugal) - 14 February 2012

Programme

Module SAM

Construction of Social Accounting Matrices

Lecturer: *Susana Santos*
School of Economic and Management (ISEG) -
Technical University of Lisbon (Portugal)
(Tuesday, February 14 - 16:00 - Conference Venue)

Module SIOT

Updating Symmetric Input-Output Tables

Lecturer: *Joerg Beutel*
Constance University of Applied Sciences
(Germany)
(Tuesday, February 14 - 16:00 - Conference Venue)

Submission!!

For further details on the registration and submission deadlines, please check frequently the website of the conference at:

http://www.apdr.pt/evento_12/ISIOA.html

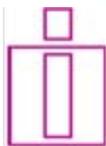
Call for Nominations for IIOA Fellows

Faye Duchin

Secretary of the IIOA Fellows Nominations Committee

Nomination of IIOA Fellows is now open. The nomination and election are regulated by IIOA bylaws as revised and accepted at the Sao Paulo July 2009 IIOA Council meeting. These specify:

1. Aim. The aim of electing Fellows of the IIOA is to honor appropriate members for their scientific contributions to the field of input-output analysis broadly defined.
2. Number. During each International Input-Output Conference a maximum of two members may be designated as new Fellows of the IIOA. The overall maximum number of Fellows is twenty.
3. Secretary. After each election round, one of the Fellows will be chosen by the Fellows as Secretary and will be responsible for organizing the subsequent election.
4. Nomination. In the calendar year preceding each International Input-Output Conference, members of the IIOA, not themselves Fellows, will be invited by the Secretary to nominate other members for election before December 31. Two additional IIOA members, excluding the nominee and the Fellows, must support each nomination. Each nominee must have been a member of the IIOA for at least six years. Each nomination will include: name, current address, current email, current institution, brief curriculum vitae, list of up to ten key publications, and a description of the candidate's contribution to input-output analysis of 100-200 words.
5. Election. All Fellows are eligible to vote and will be invited to deliver their votes on the election of the new Fellows. The Secretary will inform the newly elected Fellows, the President of the IIOA, the Chair of the scientific program committee and the Chair of the local organizing committee of the next International Input-Output Conference of their election at least four months before the conference.
6. Installation. New Fellows of the IIOA will be installed as such during a plenary event of the conference. If a new Fellow is unable to attend the event in person, a representative will receive



the decorations that go with the Fellowship Award on her/his behalf at the conference.

7. Rights. Fellows have the right to call themselves Fellows of the IIOA and to free memberships in the IIOA.

8. Obligations. Fellows have the obligation to further promote the development and to advocate suitable application of input-output analysis, broadly defined.

In Istanbul, 2007, the first lifetime Fellows were announced: Andrew Bródy, Anne P. Carter and Karen R. Polenske.

In Sao Paulo, 2009, the following additional lifetime Fellows were announced: Clopper Almon, Ronald E. Miller and Graham Pyatt. In Sydney, 2010, Geoffrey J. D. Hewings and Chen Xikang were added as lifetime Fellows. In Alexandria, 2011, Faye Duchin and Edward N. Wolff, became life-time Fellows. We now call for nominations for up to two additional Fellows. Current members may nominate any members of the association according to the guidelines outlined in paragraphs 1 and 4 above. For consideration during the current nomination process, I must receive all nomination materials (duchin@rpi.edu) no later than Saturday, December 31, 2011. I will confer with the nine other Fellows after receiving the nominations, and we will select up to two new Fellows to join our group. Announcement of new Fellows will be made at the 20th IIOA conference, June 26–29, 2012, in Bratislava, Slovakia.

Published papers in Input-Output Analysis and related methods.

In the next ESR issue

Economic Systems Research -

Journal of the IIOA

Volume 23, Issue 4 (December 2011)

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



INPUT-OUTPUT AND WATER: INTRODUCTION TO THE SPECIAL ISSUE. DUARTE R. AND HONG Y.

This editorial constitutes the introduction to the Special Issue of Economic Systems Research on Input-Output and Water. We provide a general overview of current water problems and the role that input-output analysis can play in the research of different water issues and their relationship with the economic activity. We also introduce the five papers in this Special Issue.

THE INS AND OUTS OF WATER USE - A REVIEW OF MULTI-REGION INPUT-OUTPUT ANALYSIS AND WATER FOOTPRINTS FOR REGIONAL SUSTAINABILITY ANALYSIS AND POLICY. DANIELS P. L., LENZEN M. AND KENWAY S. J.

This paper reviews current knowledge about water footprints (WFs) and the role of input-output techniques. We first provide an overview of the prevailing 'bottom-up', process-based methods and their strengths and limitations. This overview leads to discussion of the benefits of combining process-based water footprints with information from input-output techniques. The central theme and proposition is that environmental multi-region input-output analysis (E-MRIO) has a powerful capacity to establish the geography of embodied water, and to complement process-based approaches to WF by expanding

their supply-chain coverage. Combining process and input-output information provides valuable information for a diverse set of water planning and water policy objectives. A comprehensive and systematic outline of potential policy applications of E-MRIO (and process analysis methods) is presented.

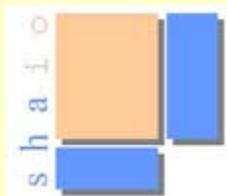
COMPARISON OF BOTTOM-UP AND TOP-DOWN APPROACHES TO CALCULATING THE WATER FOOTPRINTS OF NATIONS. FENG K., CHAPAGAIN A., SUH S., PFISTER S. AND HUBACEK K.

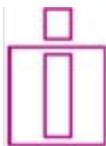
The water footprint has been introduced as a potential sustainability indicator for human-induced water consumption, and has frequently been studied at local, national and international scales during the last decade. While water footprints are sometimes understood as a measure that includes environmental impact assessment, the water footprint as used in this paper refers to volumes of water consumed, without including weighting procedures to allow for the assessment of impacts. Two types of approaches have been applied to calculate the water footprint in the literature: bottom-up and top-down approaches. This study compares and discusses advantages and limitations of the water footprint of nations based on two input-output top-down approaches (Water Embodied in Bilateral Trade (WEBT) and Multi-regional Input-Output Analysis (MRIO)) and of the existing national water footprint accounts from the literature based on the bottom-up approach. The differences in the bottom-up and WEBT approaches are caused by inter-sectoral cut-off, because bottom-up approaches do not consider the entire industrial supply chains, while the WEBT method covers the water footprint by tracing the whole domestic supply chain of each country. The differences in the WEBT and MRIO approaches are due to an inter-regional cut-off effect, as the WEBT approach only traces domestic supply chains whereas the MRIO approach traces entire global

II Premio Emilio Fontela for young researcher.

The prize was awarded during the social dinner of the IV Jornadas de Análisis Input-Output held in the University

Rey Juan Carlos in Madrid (Spain), to Francisco Navarro Gálvez y Cristina Madrid López for their work "Analysis of the Virtual Water associated to trade between Andalucía and the rest of Spain through a Multi-Regional Input-Output (MRIO)".





supply chains. We found that both bottom-up and top-down approaches are heavily dependent on the quality of existing datasets, and differ substantially. The total water footprints of nations based on different approaches vary by up to 48%, and this variation is even larger at the sector level.

POLICIES AND TECHNOLOGIES FOR A SUSTAINABLE USE OF WATER IN MEXICO: A SCENARIO ANALYSIS. *LÓPEZ-MORALES C. AND DUCHIN F.*

Water stress in Mexico is intimately linked to agriculture, as irrigation claims 75% of national water withdrawals. The Mexican mix of irrigation technologies is dominated by flood techniques, utilized on 93% of irrigated land, while drip and sprinkler systems, both with higher application efficiencies, are utilized on only 7% of irrigated land. This paper examines the extent to which government policies can induce the adoption of alternative irrigation technologies to promote a sustainable pattern of water withdrawals. The framework is an inter-regional input-output model formulated as a linear program that solves for cost-minimizing allocations of output that are constrained by regional factor availability. The model features endogenous choice among alternative agricultural technologies and determines commodity prices based on factor costs and on scarcity rents for limiting factors of production. The study defines and quantifies sustainable endowments of water at the regional level and analyzes scenarios that combine fees or caps on water withdrawals with the availability of alternative irrigation technologies. We find that water policies can induce technology adoption to achieve water sustainability, although the national price of agricultural output rises 5% to 8% relative to baseline levels. Furthermore, pricing water for irrigation can generate enough public revenue for the government to cover the full costs

WATER RATES AND THE RESPONSIBILITIES OF DIRECT, INDIRECT AND END-USERS IN SPAIN. *CAZCARRO I., DUARTE R., SANCHEZ CHOLIZ J. AND CRISTINA SARASA.*

Irrigation is the main user of water in Spain, and the price paid for this resource has long been lower than its cost. The recent EU Water Framework Directive requires that all costs be recovered, but application has had perverse effects. In some cases, farms have become economically unviable, while in others, cultivation has intensified and water consumption has increased. This paper

applies a slightly modified version of the computable general equilibrium model developed by the International Food Policy Research Institute (Lofgren et al., 2002), to a SAM (Social Accounting Matrix) of the province of Huesca in north-eastern Spain. The model disaggregates the agricultural sectors into irrigated and unirrigated farming, taking into account the improvements in irrigation efficiency. Within this framework, we analyse different payment scenarios affecting direct users, exporters and end-users in order to examine user responsibilities, the impact of international markets and macroeconomic effects on agriculture and industry in Spain.

AN INPUT-OUTPUT ANALYSIS OF TRENDS IN VIRTUAL WATER TRADE AND THE IMPACT ON WATER RESOURCES AND USES IN CHINA. *ZHANG Z., SHI M., YANG H., AND CHAPAGAIN A.*

This study investigates the impacts of China's international trade on its water resources and uses between 2002 and 2007. The results show a significant increase in water use efficiency in most sectors, especially the manufacturing sectors. However, the total net virtual water exported increased by about 75%, from 39.0□109 m3 to 68.2□109 m3. The ratio of net virtual water exports to the total water resources of the country increased from 1.8% to 3.1%. In water-scarce North China, the ratio increased from 3.6% to 5.1%, which indicates a growing water resources pressure. The share of the net virtual water exports in the total water use in China increased from 7% to 12%. The results suggest that China's economic gains from intensifying international trade came with high costs regarding its water resources.



August Lösch Prize 2012

The City of Heidenheim an der Brenz and the August Lösch Society jointly grant the prestigious August Lösch Prize 2012. Further info. at <http://www.aecr.org/view/index.php>

Post-Doc at the Regional and Global Modeling of Combined Eco-System and Economic Scenarios



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Two grants from the U.S. National Science Foundation support the economic component of interdisciplinary research on the interactions between consumption and production activities on the one hand and eco-system services on the other. Eligible candidates will have a recent Ph.D. in economics or a related field with a focus on ecological economics, resource economics, or regional policy analysis. The applicant should possess excellent verbal and written communication skills for working as part of an interdisciplinary team. Experience with modeling is required, especially with input-output models and databases of the economy for environmental applications; experience with GIS is desirable. Send curriculum vitae, statement of research interests, and contact information for three references to Professor Faye Duchin (duchin@rpi.edu), Department of Economics, Rensselaer Polytechnic Institute, Troy, NY USA. Search will continue until positions are filled.

Highlights in journals

WIEDMANN, T., WILTING, H. C., LENZEN, M., LUTTER, S. AND PALM, V. (2011). QUO VADIS MRIO? METHODOLOGICAL, DATA AND INSTITUTIONAL REQUIREMENTS FOR MULTI-REGION INPUT-OUTPUT ANALYSIS. *ECOLOGICAL ECONOMICS*, 70(11), 1937-1945.

In order to understand wider sustainability impacts of consumption and to successfully promote and implement sustainable consumption and production policies, there is a need to capture the whole life-cycle impact of products and services across international supply chains. Multiregion input-output (MRIO) databases are a well described and suitable foundation for global sustainability analyses addressing a wide range of policy and research questions. In this paper we reflect on the reasons for the recent boom in MRIO compilation, summarise the current state of development and discuss future options for MRIO analysis. We list in detail the requirements for efficient and effective MRIO research and propose systemic and institutional changes. We deliberately try to go beyond existing ambitions for MRIO compilation and thus intend to stimulate discussion and to lay out the options for the future of MRIO research.

WIEDMANN, T. AND BARRETT, J. (2011). A GREENHOUSE GAS FOOTPRINT ANALYSIS OF UK CENTRAL GOVERNMENT, 1990–2008. *ENVIRONMENTAL SCIENCE & POLICY*, 14(8), 1041-1051.

This paper presents the results of a study that established a complete account of scope 1, 2 and 3 GHG emissions associated with UK Central Government activities from 1990 to 2008. This is the first study of its kind where a national government has published a time series of its total greenhouse gas (GHG) footprint. The work is unprecedented in detail, completeness and robustness with respect to GHG accounting as well as relevance for policy making. We present and discuss the results by type and origin of GHG, by GHG Protocol scope, by Central Government activity, by broad product category and by detailed commodity groups. Also for the first time, this paper presents a full carbon footprint estimate of defence activities in the UK from 1990 to 2008. Environmental input-output analysis was used as the calculation method in this study.

SU BIN, ANG B.W. (2011). MULTI-REGION INPUT-OUTPUT ANALYSIS OF CO2 EMISSIONS EMBODIED IN TRADE: THE FEEDBACK EFFECTS. *ECOLOGICAL ECONOMICS* 71 (1), 42-53.

Energy-related CO2 emissions embodied in international trade have been widely studied by researchers using the environmental input-output framework. Despite the increasing interest in using the multi-regional input-output (MRIO) model by researchers, few studies have looked into the mechanism of feedback effects. We introduce a method called the stepwise distribution of emissions embodied in trade (SWD-EET) to reveal how the emissions embodied in trade are absorbed by a country's final demands through a series of allocation steps. A country's indirect absorption patterns and its indirect trade balance of emissions from bilateral trade with other countries are also studied based on the proposed method. An empirical study using the data of Asian economies shows significant differences in the "consumption-based" emission estimates for some economies due to feedback effects through international trade. The differences can be largely captured by the first step or the first two steps of the adjustment procedure in the SWD-EET analysis. Other findings and

FENG K., SIU Y.L., GUAN D., HUBACEK K. (2012). ASSESSING REGIONAL VIRTUAL WATER FLOWS AND WATER FOOTPRINTS IN THE YELLOW RIVER BASIN, CHINA: A CONSUMPTION BASED APPROACH. *APPLIED GEOGRAPHY* 32(2), 691-701.

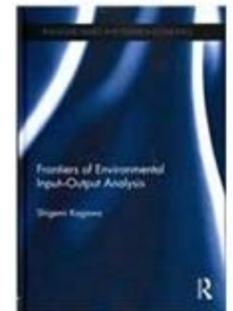
The Yellow River, the second longest river in China, is facing increasing water scarcity due to rising water consumption of a fast growing economy and an increasingly urbanized population with water-intensive consumption patterns. The Yellow River Basin (YRB) is divided into three regions: the upper, middle and lower reaches; each with very different characteristics in terms of water resources, economic structure and household income and consumption patterns. Virtual water has been recognised as a potentially useful concept for redistributing water from water-rich to water-poor regions. In this study, we develop a multiregional input-output (MRIO) model to assess the regional virtual water flows between the three reaches of the basin and the rest of China distinguishing green and blue water, as well as rural and urban household water footprints. Results show that all three reaches are net virtual water exporter, i.e. production and consumption activities outside the basin also put pressure on the water resources in the YRB. The results suggest a reduction of the export of virtual blue water that could

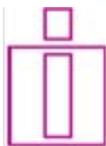
instead be used for producing higher value added but lower water-intensive goods. In particular, the lower reach as the most water scarce region in the basin should increase the import of water intensive goods, such as irrigated crops and processed food products, from other more water abundant regions such as the South of China. Thus, trading virtual water can help sustain the economic growth of the regions within the basin thus easing the pressure from water shortage. In addition, there is a huge gap between urban and rural household water footprints in the basin. The average urban household's water footprint is more than double the water footprint of a rural household in the basin. This is due to the higher urban household consumption of water-intensive goods and services, such as processed food products, wearing apparel and footwear, hotel and catering services and electricity.

New book!

SHIGEMI KAGAWA: *FRONTIERS OF ENVIRONMENTAL INPUT-OUTPUT ANALYSIS. ROUTLEDGE STUDIES IN ECOLOGICAL ECONOMICS, 2011.*

Input-output (I-O) analysis is widely used in the field of ecological economics, industrial ecology, and environmental sciences. Industrial Ecology (IE) and Ecological Economics (EE) are promising and growing fields. I-O plays a crucial role in analyzing the related environmental and resource issues and providing quantitative information to many research questions and policy implications. The major aim of this book is to provide not only a comprehensive overview of environmental I-O from 1930s





to the present but also the frontiers of environmental I-O including energy structural decomposition analysis, spatial energy structural decomposition analysis, multi-regional waste make-use analysis, augmented waste input-output analysis, dynamic structural decomposition analysis with product lifetime distributions, and endogenous input-output analysis with product lifetime distributions to professionals, practitioners, and students. This book presents a novel dynamic structural decomposition analysis to evaluate the effects of the product lifetime shifts and structural changes such as technological changes and final demand shifts on the life cycle energy consumptions. It also contributes to modelling a simple social accounting method with cumulative product lifetime distributions and argues how product lifetime extension affects energy consumptions and income flow throughout the entire economic system. The book demonstrates the author's expertise in I-O and is an essential read for students and scholars in the field.

Shigemi Kagawa

Upcoming conferences

20th International Input-Output Conference

26th - 29th June, 2012, Bratislava, Slovakia



The goal of the conference is to promote and stimulate the worldwide exchange of ideas among economists between them and government officials, policy makers, engineers, national accountants and managers with interests in input-output analysis and related methods.

Submission of abstracts

Please submit abstracts for papers before **January 15, 2012** through the new online abstract submission system COPASS: <http://copass.iioa.org>. Please, fill in the requested data (title, abstract, names of all authors, e-mail address, preferred day of presentation, etc.) and select an appropriate topic for the abstract. The length of the abstract should not exceed the maximum allowed by the system.

Submission of full papers

A paper with more than 2,000 words shall be considered a full paper for the submission. The full paper should be sent in PDF format using <http://copass.iioa.org>. To secure a spot on the final program please submit a completed electronic version of the paper not later than **April 30, 2012**.

Travel Grants

The IIOA has limited funds to encourage young experts from non-OECD member countries to attend the conference. As many as ten awards in amounts of up to US \$2,500 each are available. Applicants must be IIOA members born after 1971. They must also present an unpublished paper and have not received travel grants in any of the three previous International I-O Conferences.

Program and book of abstracts

The final program and the book of abstracts will include only papers for which at least one author has registered the conference and sent the full paper (of at least 2,000 words) by April 30, 2012. After this date, only co-authors of already registered and accepted papers and other participants without presentations will be allowed to register. Please, be aware that conference fees are not be reimbursed if any author decides not to attend.

Further information at:

<http://www.iioa.org/Conference/20th/conference.html>



9th World Congress of the Regional Science Association International

Timisoara, Romania, on 9-12 May 2012.

Founded in 1954, RSAI is an international community of scholars interested in the regional impacts of national or global processes of economic and social change. The work of RSAI draws on the expertise of many different disciplines and this multi-disciplinary approach helps to facilitate new theoretical insights for tackling regional problems. In turn this provides an increasing opportunity for academics within the Association to engage more fully with planners and policy makers. Building on a strong foundation of quantitative methods, regional science is at the cutting edge of research into new model design for regional analysis and impact assessment. The Association fosters the exchange of ideas and research within regional science through its publications and the international scientific conferences it hosts.

Abstract deadlines: **November 30th, 2011**

Notification of abstract acceptance: **January 15th, 2012**

Further information at: <http://www.rsai2012.uvt.ro/>

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