Newsletter
International Input-Output Association (IIOA)
Number 22; May, 2013

Editorial

Hispano American Society of Input Output Analysis

José M. Rueda
Umiversidad Pablo de Olavide (Seville, Spain)

Dear IIOA member,

The Hispanic-American Society of Input-Output Analysis (SHAIO) was formally constituted at the IIOA's Intermediate Input-Output Conference in 2008 at the Pablo de Olavide University in Seville (Spain). SHAIO was founded with the aim to support, disseminate and promote input-output research, national and regional accounting and other related socio-economic oriented tools to address issues that are currently at the front of worldwide human's concerns: climate change, sustainable economic development, productivity trends, international trade and income distribution, to mention various examples. SHAIO also aims to create a scientific network in order to participate in research projects where these tools might be used for applied research and policy making. The Spanish-speaking input-output (I-O) community is growing fast and one of the main issues will be to promote and disseminate statistical and applied international I-O research among Spanish-speaking researchers, universities and other research institutions. Hopefully, this may contribute to strength the links between Europe and part of the other side of the pond.

Therefore, SHAIO envisages to: (1) promote scientific projects through the associate members; (2) organise (biannual) general scientific meetings and (biannual) workshops on specific matters; (3) consider the publication of monographs; and (4) set up a website as the main communication link between the Society and its members.

SHAIO was founded from a multicountry research group called the Input-Output Group (IOG), which was set up in Oviedo (Spain) in 2003. Currently, the Society consists of institutional members and around 100 researchers from several countries like Mexico, Chile, Portugal, Netherlands, Germany, Turkey and most predominantly from Spain. The SHAIO kindly invites all interested people to join the Society.

Hispanic American Society of Input-Output Analysis

From 2013 onwards, a new Council was elected for four years. José M. Rueda-Cantuche (Pablo de Olavide University of Seville) presides the new Council and Cristina Rovira, from the Institute of Statistics of Catalonia (Spain) holds the vice-presidency. Other Council members are: Monica Serrano (University of Barcelona) as secretary, Ana S. García-Muñiz (University of Oviedo) as treasurer, Rosa Duarte (University of Saragossa) as vocal for the organization of meetings and events, Antonio F. Amores (European Commission's Joint Research Centre) as IT officer, M. Alejandro Cardenete (University Loyola Andalusia, Seville) and Carmen Ramos (University of Oviedo) as appointed council members.

To date, SHAIO has organised four editions of the Spanish Conference on Input-Output Analysis, namely: Oviedo (2005), Saragossa (2007), Albacete (2009) and Madrid (University King Juan Carlos, 2011). These conferences were bilingual (Spanish-English) and had a remarkable success of attendance of researchers from Spain, rest of Europe and American Spanish speaking countries. The next edition will be hosted by the University of Seville (18-20 September 2013). You can access the SHAIO website at www.shaio.es, where you can find all the information about us, how you can become a member of the Society as well as other interesting data on input-output analysis research.

In this issue

Newsletter
International Input-Output Association (IIOA)
Number 22; May, 2013

The new Council have identified four fundamental pillars, which will serve to promote and organize activities during the period 2013-16. SHAIO will be managed with the support of professional legal services and will aim to extend the number of individual and institutional members so as to increase the value added obtained by SHAIO members. And last but not least, it will promote the visibility of the SHAIO among various related academic forums, like the IIOA.

With the purpose of progressively improving our website, we proceeded to update the existing information, simplify its structure, include a new section for the Emilio Fontela Awards, take certain security and optimization measures for different web browsers and made the search of our website much quicker. Besides, we have created a RSS channel available so that you can now subscribe to it in order to get the latest news and updates of our website. We strongly recommend you to do it. The RSS logo appears at the top right corner of the screen, next to the language flag icon.

Without further ado, we encourage you to visit the SHAIO website to get informed about the deadlines for the III Emilio Fontela Award and the next V Spanish Input-Output Conference (www.shaio.es), which will be organized by the University of Seville from 18-20 September 2013. For the very first time, the International School of Input-Output analysis of the IIOA and the SHAIO will jointly organize two training sessions for young scholars on applied general equilibrium models (M. Alejandro Cardenete and Ana I. Guerra) and the construction of supply, use and input-output tables (Agustin Cañada, from the Institute of Statistics of the Community of Madrid, Spain).

Council of the SHAIO 2013-2016

THE UNIVERSITY OF SYDNEY

Postgraduate Scholarships in Global Environmental and Economic Modeling

The ISA group at the School of Physics of the University of Sydney is currently looking to fill three PhD candidatures. Even though the research will be undertaken in the School of Physics, applicants from other backgrounds such as Economics, Accounting, Computing Science, Mathematics, or Environmental Science are welcome to apply. Candidates are expected to commence on 30 August 2013.
Successful applicants will be working with Prof Manfred Lenzen, Dr Arne Geschke, and other PhD students, on the development, implementation and application of large-scale mathematical models of the global economy, its natural resource base, and environmental impacts.
Candidates may be required to travel to Japan, the Netherlands, France or Norway in order to spend up to one month in order to carry out research work together with international collaborators.

Further info at: http://agile2.ucc.usyd.edu.au/

Tales from the I-O world

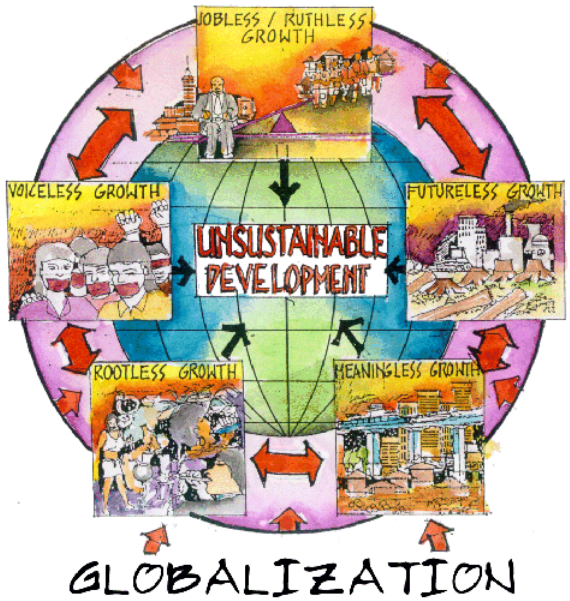
The Wealth of Nations in a Globalizing World

Dear readers,

Globalization has improved the livelihoods of millions of people around the world. The global sharing of technology, knowledge, capital and labor has led to unprecedented increases in GDP per capita. At the same time, this process has large distributional consequences, as exemplified by increasing inequality trends both within and across countries. The separation of production and consumption locations also re-enforced scarcity issues surrounding non-renewable resources and led to deeper questions about the ultimate responsibility of polluting activities. As globalization has entered a second phase, in which production processes are sliced up in geographically dispersed activities, these issues have become more urgent than ever. This two-day workshop aims at exchanging and discussing state-of-the-art knowledge regarding the quantification of various positive and negative aspects of globalization. The emphasis is on macrooriented studies, which got a substantial impetus from the recent availability of databases describing the world production structure, such as the EXIOPOL, WIOD and Eora databases. Concepts like offshoring, inequality, global value chains and environmental (carbon) footprints will be central to this meeting. We also welcome related research on systematically collected microdata. The workshop is aimed at providing bridges between (academic) researchers, employees of statistical agencies and policy-makers. One particular aim is to tackle the challenge of national statistical offices in

The

Newsletter
International Input-Output Association (IIOA)
Number 22; May, 2013



quantifying these effects in a broader measure of welfare. The workshop will be a small-scale event. Next to two keynote speeches (Johannes van Biesebroeck, Catholic University of Leuven, and Manfred Lenzen, University of Sydney will deliver these) a limited number of thematic parallel sessions are envisaged. Grant Agreement 290520 FP7- SSH-2011-3 Adapted timeline and other details Deadline for abstract submissions: June 10, 2013 Notification of acceptance: June 18, 2013 Submission of full papers: July 5, 2013 Researchers interested in presenting a paper at this workshop are invited to submit a title and an abstract (with a maximum of 300 words) by e-mail to b.los@rug.nl. There is no registration fee for this conference. It should be stressed that all participants are required to cover their own costs for travel, hotel and other expenses, as the organizers cannot provide any funding. Lunch and dinner will be provided for free.

Bart Los

Published papers in Input-Output Analysis and related methods.

In the next ESR issue

Economic Systems Research –

Journal of the IIOA

Volume 25, Issue 2 (June 2013)

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

WHICH INDUSTRIES TO BAIL OUT FIRST IN ECONOMIC RECESSION? RANKING US INDUSTRIAL SECTORS BY THE POWER-OF-PULL. LUO J.

There have been intense debates regarding which industrial sectors should be prioritized for receiving bailout in economic recessions. This paper takes a network perspective to rank sectors according to the Power-of-Pull (PoP), i.e. a sector's power to pull the overall economy. An eigenvector method is employed to assess the PoP of sectors in the USA, using input–output data from 1998 to 2010. The results support bailout to the motor vehicle sector, but argue against bailout to public infrastructure, health care and information technologies design and service sectors, and also reveal the continual decline of PoP ranking of computer and electronics manufacturing sector over time. These results confirm some but also show little support to some other economic revival policies of the Obama Administration in the USA.

TESTING ASSUMPTIONS MADE IN THE CONSTRUCTION OF INPUT–OUTPUT TABLES. RUEDA-CANTUCHE J.M. AND TEN RAA T.

Product input–output (IO) tables are mainly constructed on the basis of product and/or industry technology assumptions. The choice is not trivial and deserves empirical analysis using input and output data at the level of establishments. This paper offers input–output compilers econometric tests to facilitate the construction of tailored hybrid technology-based product IO tables. We provide weighted likelihood ratios of the product and industry technology assumptions. Although the proposed econometric tests are aimed to be used ex ante, we construct four variants of hybrid technology-based product IO tables using establishment data from Andalusia (Spain) and contrast them to the official product IO table and the pure product and industry technology-based tables. Our econometric tests are not valid for industry IO tables.

ECONOMIC WELFARE ANALYSIS OF THE LEGALIZATION OF DRUGS: A CGE MICROSIMULATION MODEL FOR COLOMBIA. ATUESTA L. AND HEWINGS G. J.D..

In this paper, a computable general equilibrium (CGE) microsimulation model is used to analyze the effects of an ex ante legalization of drugs on the Colombian economy. The model consists of 11 productive sectors, 3 different labor force categories with unemployment, and 20 households divided by income and location. Changes in wages and migration are estimated using a labor participation model, and a NIDS estimates the demands of the households. Changes in household economic welfare, measured by changes in income and prices (CV and EV measurements), are very sensitive to the reinvestments that the government makes in the economy. By analyzing six different scenarios with different assumptions about changes in drug prices, investments of the government, and the termination of the armed conflict, the results suggest that economic welfare improves when the government reinvests military expenditures in other productive sectors or when the 'economy of war' continues and the legalization does not end the armed conflict.

Newsletter

International Input-Output Association (IIOA)

Number 22; May, 2013

ESTIMATING THE ECONOMIC CONSEQUENCES OF A PORT SHUTDOWN: THE SPECIAL ROLE OF RESILIENCE 212. ROSE A. AND WEI D.

This paper develops a methodology for the estimation of the total economic consequences of a seaport disruption, factoring in the major types of resilience. The foundation of the methodology is a combination of demand-driven and supply-driven input–output analyses. Resilience is included through a series of ad hoc adjustments based on various formal models and expert judgment. Moreover, we have designed the methodology in a manner that overcomes the major shortcomings of the supply-driven approach.We apply the methodology to a 90-day disruption at the twin seaports of Beaumont and Port Arthur, Texas, which is a major port area that includes a petrochemical manufacturing complex. We find that regional gross output could decline by as much as $13 billion at the port region level, but that resilience can reduce these impacts by nearly 70%.

AN INPUT–OUTPUT STUDY OF THE SINGAPORE INFORMATION SECTOR. HENG TOH M. AND MUGAN THANGAVELU S.

The development and use of information and communication technologies is one of the key drivers of the 'knowledge economy.' In this paper, we investigate the impact of information technology on the output growth of the Singapore economy using the input–output framework. The input–output framework allows us to understand the impact of information sector in an integrated framework in terms of its linkages to the manufacturing and service sectors. In particular, we adopt the input–output approach to shed light on both production and diffusion activities of the information sector on the Singapore economy. The results indicate that the ICT sector provided the key linkages for the expansion of high-value added manufacturing activities and electronics export for the Singapore economy.

MAXIMUM-LIKELIHOOD ESTIMATES OF A US MULTIREGIONAL HOUSEHOLD EXPENDITURE SYSTEM. CANNING P.

This paper applies the maximum-likelihood equation to a model that produces US regional household expenditure estimates using national-level data on average expenditures by type of household and regional data on the number of households by type. Empirical results follow the analytical properties of the model and demonstrate an impressive capacity to recover regional statistics. These findings are useful in applied regional studies since they demonstrate a general framework to assess the input data and the overall estimation model.

Highlights in journals

SUA B., ANGA B.W., LOWA M. (2013) INPUT–OUTPUT ANALYSIS OF CO2 EMISSIONS EMBODIED IN TRADE AND THE DRIVING FORCES: PROCESSING AND NORMAL EXPORTS. ECOLOGICAL ECONOMICS, 88, PP. 119–125.

In recent years, energy-related CO2 emissions embodied in international trade and the driving forces have been widely studied by researchers using the environmental input–output framework. Most previous studies however, do not differentiate different input structures in manufacturing processing exports and normal exports. Using China as an example, this paper exemplifies how implications of results obtained using different export assumptions differ. The study posits that the utilization of traditional I–O model results in an overestimation of emissions embodied in processing exports and an underestimation in normal exports. The estimate of CO2 emissions embodied in China's exports drops by 32% when the extended I–O model is used. The choice of export assumption has more impact on the decomposition results for processing exports. The study further highlights that for a country with an export structure similar to China, it is meaningful to look into the impact of export assumption in embodied emission studies.

BORRETT S.R. (2013) THROUGHFLOW CENTRALITY IS A GLOBAL INDICATOR OF THE FUNCTIONAL IMPORTANCE OF SPECIES IN ECOSYSTEMS. ECOLOGICAL INDICATORS 32, PP.182–196

To better understand and manage complex systems like ecosystems it is critical to know the relative contribution of the system components to the system function. Ecologists and social scientists have described a diversity of ways that individuals can be important; This paper makes two key contributions to this research area. First, it shows that throughflow (Tj), the total energy or matter entering or exiting a system component, is a global indicator of the relative contribution of the component to the whole system activity. It is global because it includes the direct and indirect exchanges among community members. Further, through flow is a special case of Hubbell status or centrality as defined in social science. This recognition effectively joins the concepts, enabling ecologists to use and build on the broader centrality research in network science. Second, I characterize the distribution of throughflow in 45 empirically-based trophic ecosystem models. Consistent with theoretical expectations, this analysis shows that a small fraction of the system components are responsible for the majority of the system activity. In 73% of the ecosystem models, 20% or less of the nodes generate 80% or more of the total system throughflow. Four or fewer nodes are required to account for 50% of the total system activity and are thus defined as community dominants. 121 of the 130 dominant nodes in the 45 ecosystem models could be classified as primary producers, dead organic matter, or bacteria. Thus, throughflow centrality indicates the rank power of the ecosystems components and shows the concentration of power in the primary production and decomposition cycle. Although these results are specific to ecosystems, these techniques build on flow analysis based on economic input–output analysis. Therefore these results should be useful for ecosystem ecology, industrial ecology, the study of urban metabolism, as well as other domains using input–output analysis

CHENA Z.M. AND CHEN G.Q. (2013). COMMUNICATIONS IN NONLINEAR SCIENCE AND NUMERICAL SIMULATION 18, PP. 1757–1774

This study presents a network simulation of the global embodied energy flows in 2007 based on a multi-region input–output model. The world economy is portrayed as a 6384-node network and the energy interactions between any two nodes are calculated and analyzed. According to the results, about 70% of the world's direct energy input is invested in resource, heavy manufacture, and transportation sectors which provide only 30% of the embodied energy to satisfy final demand. By contrast, non-transportation services sectors contribute to 24% of the world's demand-driven energy requirement with only 6% of the direct energy input. Commodity trade is shown to be an important alternative to fuel trade in redistributing energy, as import of 2.50E + 19 J. The recent economic fluctuations following the financial crisis accelerate the relative expansions of energy requirement by developing countries, as a consequence China will take over the place of the United States as the world's top demand-driven energy consumer in 2022 and India will become the third largest in 2015.

Newsletter
International Input-Output Association (IIOA)
Number 22; May, 2013

DONGA G., MAOA X., ZHOUA J., ZENGA A. (2013). CARBON FOOTPRINT ACCOUNTING AND DYNAMICS AND THE DRIVING FORCES OF AGRICULTURAL PRODUCTION IN ZHEJIANG PROVINCE, CHINA. ECOLOGICAL ECONOMICS 91, PP. 38–47.

In recent decades, Chinese agriculture has moved towards higher-energy and higher carbon-input systems to increase food production in the country's limited area of croplands. To investigate the environmental impacts of this trend, this study aimed to develop an "Integrated Life Cycle Assessment and Environmental Input-Output Model" (LCA–EIO Model). Using the tri-scope carbon footprint (CF) accounting method, the agricultural carbon footprint of Zhejiang Province, China was calculated for the years from 1997 to 2007, and the categories and structure of carbon emissions sources were analyzed, including patterns of change. In addition, the carbon intensity of crop farming in Zhejiang Province was examined. While an overall reduction in cropland areas has resulted in a substantial decline in direct greenhouse gas emissions from agricultural production, the proportion of carbon emissions caused by energy and chemical consumption has increased dramatically, and this consumption has become the primary source of carbon emissions. A decomposition analysis also identified the key driving forces of energy-related CF dynamics, such as the machinery–labor substitution effect. The results of the decomposition analysis can support decision makers in understanding and promoting low-carbon output

CELLURA M., DI GANGI A., LONGO S. ORIOLI A. (2013). AN ITALIAN INPUT–OUTPUT MODEL FOR THE ASSESSMENT OF ENERGY AND ENVIRONMENTAL BENEFITS ARISING FROM RETROFIT ACTIONS OF BUILDINGS. ENERGY AND BUILDINGS 62, PP. 97–106.

The paper presents an energy and environmental extended input–output model combined with the life cycle assessment, applied to assess the energy and environmental benefits arising from the Italian policy of tax deduction for energy retrofit actions of buildings. The study allowed to assess the advantages due to the above policy, taking into account both direct and indirect energy saving and avoided CO2 emissions obtained with the retrofit actions and indirect energy consumption and related CO2 emissions due to the realization of the above actions. Moreover, the authors defined an original model to assess the indirect rebound effect caused by the energy saving actions. The obtained results showed that a reliable evaluation of the benefits arising from sustainable policies strongly depends on the indirect rate of the energy consumption and energy saving, that in the examined case study has the same order of magnitude of the direct one, and on the rebound effect, that can partially avoid the obtained benefits. The study represents one of the first Italian experiences aimed at assessing the effectiveness of sustainable production and consumption strategies. It can be used to support decision-makers in the selection of policies aimed at reducing energy and environmental impacts caused by final consumptions.

MARKAKI M., BELEGRI-ROBOLI A., MICHAELIDES P., MIRASGEDIS S., LALAS D.P. (2013). THE IMPACT OF CLEAN ENERGY INVESTMENTS ON THE GREEK ECONOMY: AN INPUT-OUTPUT ANALYSIS (2010–2020). ENERGY POLICY 57, PP. 263-275.

The aim of this paper is twofold: first, to calculate the "green" energy investments, by industrial sector, that Greece would need in order to satisfy a number of energy and environmental targets adopted in the context of the European Commission's energy and climate change package; and second, to calculate the macro-economic impacts of these "green" investments on production and employment in the Greek economy. To this end, the input–output analysis has been exploited for estimating the direct, indirect and induced macroeconomic effects associated with the implementation of selected energy conservation measures, the promotion of renewable energy technologies, etc. Our findings show that the required investments would reach the amount of €47.9 billion, over the period 2010–2020. These investments will result in an average annual increase of the national product by €9.4 billion, creating simultaneously 108,000 full-time equivalent jobs for the entire period under consideration. The employment generated per €1 million investment is relatively higher in energy saving projects in buildings and transport in comparison with the development of RES in power generation sector.

TANG X., SNOWDEN S., HÖÖK M. (2013). ANALYSIS OF ENERGY EMBODIED IN THE INTERNATIONAL TRADE OF UK. ENERGY POLICY 57, PP. 418-428.

Interest in the role embodied energy plays in international trade and its subsequent impact on energy security has grown. As a developed nation, the UK's economic structure has changed from that of a primary producer to that of a primary consumer. Although the UK's energy consumption appears to have peaked, it imports a lot of energy embodied in international trade alongside the more obvious direct energy imports. The UK has seen increasing dependency on imported fossil energy since the UK became a net energy importer in 2005. In this paper an energy input–output model is established to calculate not only the amount of fossil energy embodied in UK's imports and exports, but also the sector and country distributions of those embodied fossil energy. The research results suggest the following: UK's embodied fossil energy imports have exceeded embodied fossil energy exports every year since 1997, UK embodied energy imports through the so-called 'Made in China' phenomena are the largest accounting for 43% of total net fossil energy imports. If net embodied fossil energy imports are considered, the gap between energy consumption and production in UK is much larger than commonly perceived, with subsequent implications to the UK's energy security.

JORGENSON D.W., SCHREYER P. (2013). INDUSTRY-LEVEL PRODUCTIVITY MEASUREMENT AND THE 2008 SYSTEM OF NATIONAL ACCOUNTS. REVIEW OF INCOME AND WEALTH 59, PP. 185–211.

The 2008 System of National Accounts recognizes capital services as the conceptually correct way to measure the input of capital into production. This allows setting up an integrated system of industry-level and aggregate productivity accounts that are consistent with the 2008 SNA. The paper discusses the new aspects in the 2008 SNA and sets out such an integrated system, based on Jorgenson's aggregate production possibility frontier and gross output-based industry productivity measures. Recent results for industry productivity measures for the United States complete the picture.

MAGGIA B., MUROB B. (2013). A MULTI-COUNTRY NON-LINEAR DYNAMICAL MODEL FOR THE STUDY OF EUROPEAN GROWTH BASED ON TECHNOLOGY AND BUSINESS SERVICES. STRUCTURAL CHANGE AND ECONOMIC DYNAMICS 25, PP. 173–187.

In this paper we study a model for endogenous growth based on technology diffusion across European countries with respect to the major foreign partners. To that aim we disentangle the dynamics of such a problem by considering the single contribution to growth of each country, arising from every other individual country and for every strategic variable of the model. Among those, business services play a leading role for the link supported

between innovations and production. Moreover technology growth itself fosters the off-shoring process of business services. Our calculations are an outcome of a program we settled for a continuous time estimation which is, in its nature, suitable for the study of the dynamic systems.

Book review

Global Resources Use and Pollution

Volume 1 / Production, Consumption and Trade (1995-2008)

Volume 2 /Country Factsheets

Iñaki Arto, Aurélien Genty, José Manuel Rueda-Cantuche, Alejandro Villanueva and Valeria Andreoni

In the recent decades, the increase in the world population, the economic expansion and the globalization of the economy have led to a dramatic growth in the use of some natural resources and in the levels of pollution. These trends have coincided with a growing concern about some critical questions for the future of humankind such as resource scarcity and depletion, climate change, environmental degradation, the limits of growth or the inequalities in the access to natural resources across countries. This Pocketbook presents a series of indicators describing the evolution of the use of natural resources and the emission of air pollutants around the world, in relation to production, consumption and trade activities. Based on different analysis derived from the World Input-Output Database (WIOD), this publication includes information on 6 environmental dimensions: land use, material extraction, water use, and emission of acid substances, greenhouse gases and ozone precursors. The time frame covered is the period between 1995 and 2008, and the geographical scope includes the EU-27 Member States, Brazil, China, India, Japan, Russia, the United States of America and the Rest of the World.

Upcoming conferences

5th Spanish Conference on Input-Output Analysis

19th-20th September Seville, Spain

It is a pleasure to announce the 5th Spanish Conference on Input-Output Analysis to be hosted by the University of Seville on the 19th and 20th of September 2013, under the auspices of the Hispanic-American Input-Output Society (SHAIO) and the Department of Applied Economics III of the same University. For the first time, two training sessions will be organized next to the conference during the afternoon of September 18th, 2013. They will be about Applied General Equilibrium Models and the Construction of Supply and Use Tables.

April 15th, abstract deadline

May 31st, author notification

June 30th, final paper submission

Further info at: http://www.shaio.es/index_en.htm#meetingsiio

Newsletter Editor:
Ignazio Mongelli