Welcome from the Editor

Dear IIOA member,

I am pleased to deliver to you the latest issue of the *International Input-Output Newsletter*. I thank all contributors and anyone else who sent us items. I thank José Terán-Vargas for the very nice pictures.

This issue provides a great overview of the Last IIOA Conference in Juiz de Fora, Brazil, by Kirsten S. Wiebe, Fernando S. Perobelli, Christof Paparella, Oliver Fritz and me. This issue features information about the next IIOA Conference in Glasgow, Scotland. We hope to see all of you there.

You can also find abstracts for the latest ESR articles, Highlights of Other Journals and Next Courses and Events (6th Regular Workshop of the Hispanic-American Input-Output Society (SHAIO); NARSC; and the XXXVII

International Congress of the Latin American Studies Association).

I hope you enjoy it! Any feedback, comments or suggestions are greatly appreciated.

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NEXT STOP
GLASGOW

Would you like to contribute to the IIOA newsletter?
Contact us newsletter@iioa.org

In this issue

Presidential Address

"The times they are a-changin'" sang Nobel laureate Bob Dylan more than 50 years ago. In a dynamic respect, times haven't changed. They are still a-changin'. And Bob is still singing (or should I say "moaning and whining"). It's great for us that the times are a-changin'. It means new questions begging for (new?) answers, new perspectives requiring adaptation of existing methods, and new data urging the expansion of and revisit to old applications. We are living in a laboratory. While Brexit is nigh, other countries are knocking at the EU's door to discuss entrance. Some countries are tearing down walls and curtains, whilst leaders of others tweet about raising them. All of this suggests new work for input-output practitioners (indeed, several of us already even have started too work on these issues).

"The times they are a-changin'" … Recently, I saw considerable excitement at an energy conference when panelists discussed the consequences of energy transition for emerging and developing economies. One of the panelists voiced that perhaps developing countries should not follow the route developed nations have taken. Indeed, perhaps in the not too distant future the developed nations might even look to developing countries for inspiration on more sustainable routes—in other words, a textbook example of leapfrogging. Technology to produce and store electricity is getting better and less expensive. A focus on renewable energy resources implies that developing countries will likely invest in new types of energy-related infrastructure. Presumably, the types are very different from (and undoubtedly much more efficient than) current infrastructure in developed nations, which is largely fossil fuel-based. So, it seems that in the future developed nations could follow examples from transitioning countries when becoming more environmentally effective.

Unfortunately, "the times they are a-changin'" doesn't mean times change is for the better. Some changes can induce polarization and lead to a hardening of our world. In 2017, we witnessed travel restrictions to our conference for citizens from certain countries. As far as I remember, it was the first time that we felt we had to publicly respond to a political decision, just because it hindered the exchange of scientific ideas. The IIOA Council made the following statement:

> From its start [in 1988], the IIOA was founded on a philosophy of free speech, freedom of travel, and the freedom to congregate. These freedoms are essential to the free and fair exchange of knowledge that is vital to international scientific organizations like ours. Indeed, the very spirit of our annual International conference is to encourage researchers from all over the world to meet freely, socialize, and exchange information. We, the Council of the IIOA, want to assure all IIOA members that we are doing everything possible to enable the participation of people around the world who want to take part in our conference. Given the above, we have decided to provide some support to those members who are potentially affected by the US Presidential Executive Order so as to encourage, inasmuch as possible, their participation in our conference this year. … As long as the US keeps such travel restrictions in force, the IIOA will not consider the US as a possible future venue for conferences.

"The times they are a-changin' " also in Council. Members come, members leave. Many people have been and remain actively involved in this organization, and I thank them all for their efforts. Two members who left Council deserve special thanks though. Rosa Duarte, not only because she was on Council for several years, but in particular because she devoted a lot of time and effort to the International School of Input-Output Analysis (ISIOA, aka the School). She did an excellent job, most recently as Head of the School. Michael L. Lahr, not only for being Vice-President for five years and organizer of the Atlantic City conference, but in particular for stepping in as Acting President during my hospital stay and subsequent recovery.

Erik Dietzenbacher - President of the IIOA
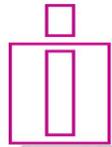
Recent IIOA Conference

26th INTERNATIONAL INPUT-OUTPUT CONFERENCE

JUNE 2018, BRAZIL, JUIZ DE FORA

25 - 29 JUNE 2018

Despite being winter, the IIOA conference summer feeling from the past years definitely continued at this year's **26th International Input-Output conference in Juiz de Fora, Brazil**. The location with a semi-roof terrace for the reception and the coffee breaks and the **friendly Brazilian staff and sun** set the stage for a fruitful conference.

While the Council was locked into a dark room with no windows for the entire Sunday dealing with important Council issues, the IO school participants and some eager early conference participants enjoyed a scenic drive from the airport in Rio de Janeiro in the organized shuttle busses. There was no official outing planned for Sunday night, but somehow everyone met in the Italian restaurant a short 10 minutes' walk from the conference location.

Monday morning, all teachers and, surprisingly, almost all student were on time in the classrooms. This year, students learned about different aspects of IO analysis in five modules the 8th edition of the **International School of Input-Output Analysis**:

1. **Working with OECD's ICIO 2018**
   by Joaquim Guilhoto and Norihiko Yamano

2. **Flow of Funds (FF) and Financial Social Accounting Matrices (FSAM)**
   by Agustín Velázquez Afonso

3. **An Introduction to Building Interindustry Macroeconomic Models Using Interdyme**
   by Douglas Meade

4. **Introduction and applications of hybrid input-output models to analyze greenhouse gas emissions**
   by Weslem Rodrigues Faria, Kênia de Souza and Terciane Sabadini Carvalho

5. **The How and Why of Subnational Multiregional Input-Output Accounting**
   by Michael Lahr and Johannes Többen

The end of the school was not the end of the day. A crowd too large for the available space came to hear **Michael Lahr** talk about "Writing a publishable paper – no guarantees!". His presentation was full of useful tips for writing, starting from the first idea for a paper to the complex editorial process. His promise to share* the slides ended a discussion after his talk than ran 15 minutes later than scheduled. As a result about half of all conference participants arrived late to the **Welcome Reception**.

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*Bart Los has kindly shared two more resources helpful for data visualization: **https://blog.datawrapper.de/category/thoughts-how-to-s/** and Schwabish, J.A. (2014) An Economist's Guide to Visualizing Data. *Journal of Economic Perspectives 28(1), 209–234.*

From Tuesday to Friday, we chose to attend from among **150 presentations in parallel sessions, 3 keynote** and **8 flash presentations**. After the opening of the conference, Carmem Feijo, Professor at UFF in Rio de Janeiro, and Roberto Olinto, President of the Brazilian Institute of Geography and Statistics gave a joint keynote on **"Building bridges between the compilers and users of input-output tables in Brazil"**.

The young researcher's night was organized in the Barbante Brewery. There was more than enough beer, caipirinhas and finger food. Not only was fun by all, but some serious networking was done: teams of 2-5 sought to find out who in the room had met Wassily Leontief personally or was only born after he retired. The full matrix of challenges is included at the end of this piece.

On Wednesday after lunch, eight promising young scholars competed in a **flash session**. The winners of this year's REAL (Regional Economics Applications Laboratory) prize were Oliya Maxudova and Bingqian Yan. Congratulations!

A big thanks to Jiyoung Kim and Rachel Rayes, who organized the flash session.

After the flash session, it was time to see the Brazilian game – the **World Cup Party**!

On Thursday morning we tried something new, the **feedback partner sessions**. In those sessions, the 20 min presentation was followed by 10 min for discussion by a pre-identified discussant, who had the opportunity to read the paper prior to the conference. It seems the feedback was generally perceived to be very constructive and helpful. Good job, everyone!. After that the floor was open for questions from other conference participants. Satoshi Inomata organized these sessions. Thank you, Satoshi-san! We received some feedback from participants and the audience. Still, please contact Satoshi, if you have any further feedback. Such sessions are likely to be a fixture next year.

After lunch, it was easy to stay awake as Narasimha Rao presented findings from his fascinating project **"Decent living emission pathways"**, in which he used input-output analysis to quantify human well-being.

The Faculty of Tourism of Federal University of Juiz de Fora organized two **city tours** during the IIOA Conference. We thank José Terán-Vargas for the very nice pictures.
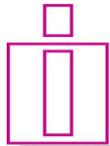

On Thursday night, after a full day of presentations, all the participants got to taste more Brazilian food at the **Conference dinner**. It included entertainment by a live band.

Despite taking place early in the morning after the conference dinner, the IIOA General Assembly had a record attendance.

And a final note: The IIOA is dedicated to reducing the ecological footprint caused by our international conferences. For this reason, please consider offsetting your climate impact (air travel, car travel, increased meat consumption due to delicious food in Brazil). For next year, we will have something more formal in place (if you have experience / ideas / recommendations, please let Sanjiv or Kirsten know). For now, we've done some research and can recommend the following organizations:

- www.sosma.org.br/en/
- www.coolearth.org
- www.atmosfair.de/en
- www.myclimate.org
- www.plant-for-the-planet.org

Matrix of challenges

.. has participated in the IO buddy program Name:	.. will present in the flash session Name:	.. is vegetarian Name:	.. is/was an IIOA council member Name:	.. going to travel around Brazil after the conference Name:
.. was in a group that could not invert the matrix at the young researcher night last year Name:	.. has been to at least 5 IIOA conferences Name:	.. was born after Wassily Leontief retired (younger than 27) Name:	.. has paid emission offset for eating meat or flying Name:	.. speaks 4 languages or more Name:
.. will pay emission offset for eating meat or flying after getting this question Name:	.. has won the Leontief memorial prize Name:	**Who?**	.. has been to a regional IO conference / workshop Name:	.. has written a contribution to the IIOA newsletter Name:
.. has published a paper in Economic Systems Research Name:	.. has stepped foot on 4 continents Name:	.. finishes / has finished her/his PhD in 2018 Name:	.. presents in an organized session Name:	.. has tried (and maybe succeeded in) building an IO table Name:
.. is living in a different country than her/his nationality Name:	.. has personally met Wassily Leontief Name:	.. is participating in the IIOA conference for the first time Name:	.. uses R to invert a matrix and do other IO analysis Name:	.. wants to be a volunteer for the young researcher events in 2019 Name:

Kirsten S. Wiebe
Fernando S. Perobelli
Vinicius A. Vale
Christof Paparella
Oliver Fritz

26th INTERNATIONAL INPUT-OUTPUT CONFERENCE
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Organized by **ufjf**

LATES
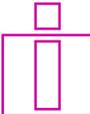LABORATÓRIO DE ANÁLISES TERRITORIAIS E SETORIAIS

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Next IIOA Conference

NEXT STOP GLASGOW

27th International Input-Output Association Conference
Glasgow, Scotland
30th June to 5th July 2019

The Office for National Statistics in collaboration with the University of Strathclyde, Fraser of Allander Institute, Glasgow Convention Bureau and the Scottish Government will ensure that we make the 2019 IIOA Conference a truly memorable occasion.

We will deliver an inclusive, innovative, accessible, affordable and enjoyable conference for all delegates in a state of the art conference centre in Glasgow, which is one the UK's most vibrant, cultural and friendly cities located at the gateway to the magnificent Scottish Highlands.

The 2019 Conference will build on the successes of previous IIOA Conferences as well as provide a programme to inspire the next generation and encourage partnerships and collaborations in the field of Input-Output and the much wider field of economic statistics.

Mr Sanjiv Mahajan
Chair of Local Organisation Committee
Office for National Statistics

The International Input-Output Association (IIOA) will be holding its annual Conference in 2019, for the first time ever in the UK, in Glasgow, Scotland

Destination appeal

Glasgow is an incredibly friendly, cosmopolitan city with beautiful architecture, numerous cultural attractions combined with some of the world's most breath-taking scenery right on its doorstep. Glasgow has been named by the New York Times in the Top 10 best places to visit in 2018.

Easily accessible destination

Over 170 direct flights to international locations across the globe. Linked to the main European hubs with multiple daily flights from Heathrow, Amsterdam, Frankfurt, as well as direct flights to Dubai, Qatar, Abu Dhabi, Newark, Toronto and Chicago.

Safe, friendly and welcoming destination

Glasgow has been voted the friendliest city in the world and delegates can be assured of a warm welcome from the moment they arrive in the city.

Affordable and vibrant city to enjoy

Glasgow's accommodation is 16% below the UK average and the cost of living is considerably less than other major European cities, meaning delegate's budgets will stretch much further.

Modern, purpose built Convention Centre with room for growth

Situated in the heart of the city centre within walking distance to a range of hotels, bars and restaurants, the TIC provides the perfect setting for IIOD

Sample the Magic of Scotland

100 whisky distilleries, 500 golf courses and countless castles, lochs and mountains for delegates to enjoy, all within easy reach of the centre of Glasgow.

NEXT STOP **GLASGOW**

IIOA 2018 Wall of Fame

Flash Session Award

Oliya Maxudova

RITSUMEIKAN ASIA PACIFIC UNIVERSITY AND MINISTRY OF FINANCE OF REPUBLIC OF TAJIKISTAN, TAJIKISTAN

The Impact of the Extractive Industry on the Economy of Tajikistan

Bingqian Yan

PhD Student at University of Groningen

Emission mitigation potential of low-carbon lifestyles: a global carbon footprint scenario analysis

Fellows

Meeting of two Fellows

Geoffrey Hewings and Chen Xikang, in Beijing in June 2018. The two entered as IIOA Fellows together in 2010.

Published papers and books in IOA and related methods

Latest ESR articles

Economic Systems Research

Journal of the IIOA

Volume 30, Issue 3, 2018

Kajitani, Y., and Tatano, H. Applicability of a spatial computable general equilibrium model to assess the short-term economic impact of natural disasters. *Economic Systems Research, 30(3): 289-312.*

Computable general equilibrium (CGE) models have been widely used to assess the economic impact of natural disasters, but the models have not been fully validated by applying them to real disasters. This study focuses on validating a model for use in a short-run case in which the functional recovery of infrastructure and businesses occurred on a time scale of a few months. A special attempt is made to determine the parameter values of elasticity of substitutions, which play an important role in the effect on supply chains. In this study, a spatial CGE model, in which Japan is divided into nine regions, is constructed and applied to the case of the 2011 Great East Japan Earthquake and Tsunami. Through this application, the best estimates of the elasticity parameters generated relatively consistent estimates of production change compared with the observed change, both in severely affected regions and in other regions.

Guerra, A.I., and Sancho, F. On the need to compensate the compensating variation in CGE modeling. *Economic Systems Research, 30(3): 313-322.*

The message of this research is that in the standard calibrated setting of Computational General Equilibrium (CGE) models, the welfare measures typically used to compare benchmark with counterfactuals are numéraire dependent. This evaluation bias affects the compensating variation and the Konüs index of cost of living. We show that the equivalent variation is neutral regarding the choice of value units in calibrated models but would be affected as well in uncalibrated CGE models. We illustrate with a simple example and propose an even simpler theoretical solution to overcome these biases; all that is required to have correct welfare estimates is to compensate normalizing with a suitable price index. This type of correction is necessary to overcome the sometimes blind implementation of welfare measures in numerical general equilibrium analysis. We show that the induced quantitative errors may be substantial providing biased welfare estimates and misleading results.

Aydoğuş, O., Değer, Ç., Çalışkan, E.T., and Günal, G.G. An input–output model of exchange-rate pass-through. *Economic Systems Research, 30(3): 323-336.*

The impact of the exchange rate on price formation is often debated through a mechanism called the exchange-rate pass-through. Studies of the pass-through generally rely on econometric analysis implemented on time series data. This study examines pass-through to the domestic price level through an input–output model. The proposed model is implemented on a sample of countries, and a number of different variables connected to the pass-through are examined. A comparison across countries and sectors highlights the importance of the construction sector in price formation. National income is negatively related to the pass-through. A high dependence on intermediate imports implies higher pass-through. Price level volatility and pass-through are positively related; whereas a country's monetary policy stance has no apparent effect. The effect of exchange-rate volatility is unclear; it is negative for the real effective exchange rate, the connection is very weak in the case of the nominal exchange rate.
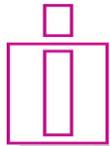
Temursho, U. Intercountry feedback and spillover effects within the international supply and use framework: a Bayesian perspective. *Economic Systems Research, 30(3): 337-358.*

This paper proposes a new framework for the estimation of product-level global and interregional feedback and spillover (FS) factor multipliers. The framework is directly based on interregional supply and use tables (SUTs) that could be rectangular and gives a possibility of taking account of the inherent input–output data uncertainty problems. A Bayesian econometric approach is applied to the framework using the first version of international SUTs in the World Input–Output Database. The obtained estimates of the global and intercountry FS output effects are discussed and presented at the world, country and product levels for the period of 1995–2009.

Thomas, D.S., and Kandaswamy, A.M. An examination of national supply-chain flow time. *Economic Systems Research, 30(3): 359-379.*

The US and other national governments invest in research and development to spur competitiveness in their domestic manufacturing industries. However, there are limited studies on identifying the research efforts that will have the largest possible return on investment, resulting in suboptimal returns. Manufacturers commonly measure production time in order to identify areas for efficiency improvement, but this is typically not applied at the national level where efficiency issues may cross between enterprises and industries. Such methods and results can be used to prioritize efficiency improvement efforts at an industry supply-chain level. This paper utilizes data on manufacturing inventory along with data on inter-industry interactions to develop a method for tracking industry-level flow time and identifying bottlenecks in US manufacturing. As a proof of concept, this method is applied to the production of three commodities: aircraft, automobiles/trucks, and computers. The robustness of bottleneck identification is tested utilizing Monte Carlo techniques.

von Brasch, T., Gjelsvik, M.L., and Sparrman, V. Deunionization and job polarization – a macroeconomic model analysis for a small open economy. *Economic Systems Research, 30(3): 380-399.*

Declining unionization rates and job polarization are two important labor market developments of recent decades. A large body of literature has analyzed these phenomena separately, but little has been done to see whether there is a link between them. We employ a macroeconomic model for a small open economy with a large input–output core to analyze how deunionization may cause job polarization. Our analysis shows that medium-skilled workers are negatively affected by deunionization, mainly as a result of the heterogeneity of the elasticities of substitution between different types of labor. While the elasticities of substitution between high- and medium-skilled labor are relatively low, the elasticities of substitution between medium- and low-skilled are relatively high. As a result, when deunionization leads to increased wage dispersion, we find that demand for low-skilled increases at the expense of medium-skilled labor, thus yielding a more polarized labor market.

Madariaga, R. Factors driving sectoral and occupational employment changes during the Spanish boom (1995–2005). *Economic Systems Research, 30(3): 400-421.*

Spain's economy grew at a real annual average rate of over 3.5% between 1995 and 2005. Total employment increased by more than five million. This process altered the sectoral and occupational structure of employment. The dynamics of final demand, technology and labour requirements linked to technology and labour market institutions mostly drive shifts in the structure of employment. We analyse their effects and relative weights on private employment growth in an input–output framework, by means of structural decomposition. The analysis of the occupational structure is a novelty. Sectoral and occupational structures of employment are receiving a great deal of attention: the productivity growth and economic prospects of service economies and the debate between skilling and polarization are, respectively, the main issues. This paper provides useful insights on the dynamics of the structure of employment during a process of vigorous job growth.
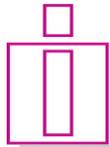
Gunluk-Senesen, G., Kaya, T. and Senesen, U. Promoting investment in the Turkish construction sector: a structural path analysis. *Economic Systems Research, 30(3): 422-438.*

The construction sector in Turkey boomed in the period between the turn of the millennium and the onset of the global crisis. This paper studies the employment generation effects of growth of this sector, taking into account that it not only depends on domestic production factors but also on imported inputs. In order to unravel the interactions of the construction sector with the rest of the economy, structural path analysis of both labour and imported intermediate input demand generation is used based on the 2002 and 2009 WIOD data for Turkey. The findings indicate that labour linkages weakened between 2002 and 2009, while import linkages became slightly stronger. The sectors that have played key roles in this are identified, as are the linkages between these. The findings have implications for the persistent unemployment and current account deficits in Turkey.

See all volumes and issues

Get access

Economic Systems Research

Journal of the IIOA

Latest articles (up to 21-Aug.)

Kanemoto, K., Hanaka, T., Kagawa, S. and Nansai K. Industrial clusters with substantial carbon-reduction potential. *Economic Systems Research.*

To successfully reduce environmental emissions, companies need to expand the scope of their emissions accounting to include entire supply chains. A clustering approach has been used to find emission-intensive industry clusters. However, this approach did not include entire direct and indirect supply chains when forming high emission industry clusters. We propose a new method based on a modified normalized cut function with Leontief's input–output model and basic clustering algorithms to find industry clusters with high levels of embodied within-cluster emissions that are well separated in the supply chain network. We use this method to identify 58 carbon-intensive clusters of Japanese industries and visualize the within-cluster supply chains in terms of embodied carbon flows. We recommend that companies collaborate within clusters to reduce environmental emissions. Our results provide new insights on where to target emissions reduction actions and technology development within industrial supply chains.

Lin, C. and Nakamura, S. Approaches to solving China's marine plastic pollution and CO2 emission problems. *Economic Systems Research.*

Global contamination of the oceans by waste plastics is of increasing concern. Besides being the largest emitter of CO_2 in the world, China is suspected of being the largest contributor to marine plastic waste pollution. Responsible for the latter is the still inadequate management of waste in China, a significant improvement of which is necessary for addressing the issue of marine plastic pollution. Since plastics are hydrocarbons, submitting them to appropriate waste treatment/recycling technologies could contribute to mitigating the emission of CO_2, indicating the possibility of addressing the two environmental issues simultaneously. Based on the combined use of waste input–output and linear programming, we investigated options for mitigating CO_2 emissions under consideration of alternative waste treatment/recycling processes applied to waste plastics of China. It was found that of the nine processes considered, four could result in a net reduction in the emission: a win-win situation.

Monsalve, F., Zafrilla, J., Cadarso, M. and García-Alaminos, A. Is the emperor wearing new clothes? A social assessment of the European Union 2007–2013 financial framework. *Economic Systems Research.*

Over the years, European leaders have proudly waved a social flag as one of the European Union's (EU) constituent and differentiating elements. This commitment is assessed here through the social footprint of the European 2007–2013 multiannual financial framework among the EU countries and, worldwide, using an extended multiregional input–output model. The focus is on the quantity and the quality of income and jobs generated. We find that well-known differences among its northern, southern and eastern regions threaten the EU's intentions for high social standards, enabling first- and second-class winners. Core EU countries account for the most of the Funds and, thus, most of the positive economic and social impacts, mainly through spillovers from peripheral regions. Beyond the EU borders, Funds expenditures induce capital compensation boosts in emerging countries not balanced by a similar labor compensation impulse. Indeed, China captures the bulk of low-skilled and temporary employment.

Hawkins, J. and Hunt, J.D. Development of environmentally extended social accounting matrices for policy analysis in Alberta. *Economic Systems Research.*

This paper outlines the development of inputs to an integrated land use and transportation model

based on a series of environmentally extended social accounting matrices (SAMs) for the Canadian province of Alberta. A novel form of industry disaggregation is employed, based on aggregate iterative proportion and a unique formulation of location quotients. Social accounts are extended via the inclusion of detailed household consumption broken down by income quintiles. The SAMs are developed from *supply-use matrices*. Physical flow accounts are framed as derived demands, acting as necessary inputs to the production of downstream goods and services. Applications to regional economic modeling are considered, as planning authorities increasingly seek to model the environmental impacts of policy. The SAMs are then applied to the assessment of two technology change scenarios: a shift in the provincial electricity generation mix and a transition to a fully electric private automobile fleet.

Hongsakhone, S., and Ichihashi, M. Measurement of reciprocity in a village through social networks. *Economic Systems Research.*

This paper examines measuring of interdependency among households through their transactions by using information of individual villagers in a disadvantaged area in a developing country. To obtain the information, we created a village input–output table (VIOT) from household survey data conducted in a rural village in Lao PDR in 2015 and 2016. Because each household in the village is not only a producer but also a consumer who is trading products and consuming them, the VIOT is a simple but useful tool to know the economic transactions among villagers. The main findings are that four higher-income families, which mainly trade rice very frequently, are playing

key roles in the village economy, and the interdependency among higher-income households is stronger than among lower/middle-income households. Additionally, this method can be used to form an economic policy such as poverty reduction because of informing households playing a key role in the village.

Álvarez-Martínez, M. T., and López-Cobo, M. WIOD SAMs adjusted with Eurostat data for the EU-27. *Economic Systems Research.*

This paper provides a new set of Social Accounting Matrices (SAMs) for the EU-27 and describes their construction process. The World Input–Output Database (WIOD) has been used as the main data source, and it has been completed with information from National Accounts in Eurostat. The SAMs include a disaggregation of labour by skills and the disaggregation of the foreign sector into the EU and Rest of the world. It is described how to elaborate a symmetric Input–Output table product by product at purchasers' prices using supply and use tables and applying the industry technology. It is also described the reallocation of social contributions needed to properly assign tax revenues to government and avoid the usually overlooked problems generated by the second redistribution of income. The description of the SAMs and their availability for the EU-27 can be very useful to researchers in applied economics using CGE and SAM models.
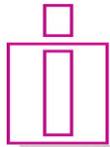
Duarte, R., Pinilla, V., and Serrano, A. Factors driving embodied carbon in international trade: a multiregional input–output gravity model. *Economic Systems Research.*

Concerns about the effects and consequences of climate change have notably increased in recent decades. Despite large advances in the understanding of this phenomenon, further research into the determinants of gas emissions is necessary, to shed light on the responsibilities of producers and consumers, and their potential contribution to mitigation strategies. This paper studies the trajectories and determinants of carbon embodied in world trade during a period of 15 years. Our methodology relies on a multiregional input–output model, environmentally extended. Drawing on data from the World Input–Output Database, we estimate embodied emissions in bilateral flows. Then, we assess the determinants of $CO2$ emissions embodied in trade, combining input–output modelling with trade gravity panel data analysis. This paper offers a methodological approach that explains and quantifies the underlying factors of carbon trade, integrating the production and consumption perspectives and considering the geographical, structural and institutional context of countries.

Bardazzi, R., and Ghezzi, L. Trade, competitiveness and investment: an empirical assessment. *Economic Systems Research.*

The Eurozone crisis has exposed several weaknesses of the European Monetary Union economies. This paper aims to assess the impact on external competitiveness of an expansionary capital stock policy that could contribute to reduce the trade balance asymmetries within the EU and help European exporters to recover their competitive role in international markets. A policy action to increase capital stock accumulation through investment in selected European countries could generate a double dividend: increasing both price and nonprice competitiveness, so stimulating their competitive position as exporters, and consolidating the growth path of EU economy. The analysis employs a bilateral trade model built at INFORUM with several distinguishing characteristics: a comprehensive bilateral data set, econometric estimation of key parameters, and emphasis on sectoral details. Our findings show that a capital stock increase is effective in narrowing trade imbalances within EU. Heterogeneous effects are estimated for commodities in China and the US.

Walmsley, T., Narayanan, B., Aguiar, A., and McDougall, R. Building a global database: consequences for the national I–O data. Economic Systems Research. *Economic Systems Research.*

Global economic analysis requires consistent and balanced data, which necessitates the reconciliation of datasets from both national and international sources. In the case of the Global Trade Analysis Project Data Base, datasets supplied by international sources are considered preferable to national input–output (I–O) tables. As a result, the national I–O data can experience significant adjustments during the reconciliation process due to differences between the national and international datasets. The purpose of this paper is to examine the extent to which national I–O data change during reconciliation. The results demonstrate that the I–O data are altered by the construction process, particularly from the reconciliation of the national I–O data to the international trade and energy datasets. Closer examination reveals potential issues with both the trade and energy datasets, as well as the national I–O data – illustrating the challenges associated with reconciling data from multiple sources.

Reich, U-P. Accounting for international trade in value added: a comment on the OECD–WTO project. *Economic Systems Research.*

In the global economy of today, global value-added chains allow firms and countries to take apart the production process and do the part they are best at. In response to this new reality, OECD and WTO have launched a common statistics project of the 'OECD–WTO Trade in Value-Added (TiVA) Database'. The database links national input–output tables with bilateral trade data to develop inter-country input–output tables that allow compiling, and revealing such chains. Its data are actual nominal values compiled at current exchange rates. The paper takes issue with that choice. Recalling that elsewhere in the United Nations national accounting figures are transformed to purchasing power parity before being compared internationally the paper suggests to follow suit and compile international value-added chains at real exchange rates, as well, and it sketches an introductory outline of how to do so.

Pereda, P., Lucchesi, A., Garcia, C., and Palialol, B. Neutral carbon tax and environmental targets in Brazil. *Economic Systems Research.*

We evaluate the effects of a carbon tax in the Brazilian economy using an input–output framework. First, we consider the impacts of a carbon tax of US$ 10 and US$ 50/metric ton of CO2 equivalent. As usual, the adoption of the carbon tax generates adverse effects on GDP, wages and jobs in the short term, but reduces emissions and generates new government revenues, especially in the case of the greater tax. Second, we consider a broader tax system reform. In this reform, we replace distortionary taxes by a tax on value added. To compensate for the loss of government revenue, we assume a carbon tax with equivalent revenue. We find that the net effect is a GDP increase of 0.47%, the creation of 533 thousand jobs and reduction of 1.6 million tons of CO2 emissions. Both scenarios exempt exports and levy imports to correct adverse effects on the country's competitiveness.

Kim, K., and Hewings, G. Bayesian estimation of labor demand by age: theoretical consistency and an application to an input–output model. *Economic Systems Research.*

Extended input–output models require careful estimation of disaggregated consumption by households and comparable sources of labor income by sector. The latter components most often have to be estimated. The primary focus of this paper is to produce labor demand disaggregated by workers' age. The results are evaluated through considerations of its consistency with a static labor demand model restricted with theoretical requirements. A Bayesian approach is used for more straightforward imposition of regularity conditions. The Bayesian model confirms elastic labor demand for youth workers, which is consistent with what past studies find. Additionally, to explore the effects of changes in age structure on a regional economy, the estimated age-group-specific labor demand model is integrated into a regional input–output model. The integrated model suggests that ceteris paribus ageing population contributes to lowering aggregate economic multipliers due to the rapidly growing number of elderly workers who earn less than younger workers.

Severini, F., Felici, F., Ferracuti, N., Pretaroli, R., and Socci, C. Gender policy and female employment: a CGE model for Italy. *Economic Systems Research.*

The gender integration in all areas of policy choices and at all stages of the decision-making process is strongly recommended by the European Union and represents an achievement that the Member States should accomplish when implementing policy measures. In a country like Italy, where the level of female labour participation is among the lowest in Europe, policy maker decisions should encourage and stimulate the demand for female labour without neglecting the global employment rate and income growth. The multisectoral analysis offers the possibility to bridge gender disaggregation within income formation and distribution from the production phase to the demand formation. In this perspective, this paper develops a gender-aware CGE model based on the gender-aware SAM for the Italian economy to evaluate the impact of different fiscal policies aimed to reduce female labour cost and trigger woman hiring in those sectors with high gender disparity.

Cadarso, M., Monsalve, F., and Arce G. Emissions burden shifting in global value chains – winners and losers under multi-regional versus bilateral accounting. *Economic Systems Research.*

International trade leads to emissions burden shifting and threatens mitigation targets. Multiregional input–output (MRIO) and bilateral trade input–output (BTIO) models are widely used to analyse emissions embodied in trade and global value chains. Especially, the last one is used in analysing border tax adjustment (BTA) on the carbon content of imports. The model choice is not trivial. The analysis shows BTIO's inability to capture the consumer-principle throughout the production chain and its inadequacy as an option for consumption-based accounting, because it allocates emissions to the first importing country and to the sector of production, instead to the consumer (both country and region). Regarding the BTA assessment, BTIO tax domestic carbon content of direct imports, but not indirect imported carbon content. MRIO does provide incentives for mitigation in third countries. The differences in allocation of emissions and taxes' burden of both models have different consequences for developed and undeveloped regions.
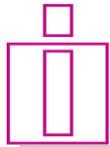
ten Raa, T. The use–make framework and the derivation of functional forms in production theory. *Economic Systems Research.*

The use–make framework is employed to explain functional forms in production theory, including Cobb–Douglas and Leontief. Productivity and efficiency are interrelated by augmenting the framework with a linear program that determines the frontier output.

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Highlights in journals

Moran, D., Kanemoto, K., Jiborn, M., Wood, R., Többen, J. and Seto, K.C. (2018) Carbon footprints of 13 000 cities. *Environmental Research Letters.*

While it is understood that cities generate the majority of carbon emissions, for most cities, towns, and rural areas around the world no carbon footprint (CF) has been estimated. The Gridded Global Model of City Footprints (GGMCF) presented here downscales national CFs into a 250 m gridded model using data on population, purchasing power, and existing subnational CF studies from the US, China, EU, and Japan. Studies have shown that CFs are highly concentrated by income, with the top decile of earners driving 30%–45% of emissions. Even allowing for significant modeling uncertainties, we find that emissions are similarly concentrated in a small number of cities. The highest emitting 100 urban areas (defined as contiguous population clusters) account for 18% of the global carbon footprint. While many of the cities with the highest footprints are in countries with high carbon footprints, nearly one quarter of the top cities (41 of the top 200) are in countries with relatively low emissions. In these cities population and affluence combine to drive footprints at a scale similar to those of cities in high-income countries. We conclude that concerted action by a limited number of local governments can have a disproportionate impact on global emissions.

Project website

http://citycarbonfootprints.info/

Zhang, H. and Lahr, M.L. (2018) Households' Energy Consumption Change in China: A Multi-Regional Perspective. *Sustainability.*

As China's economy enters the "new normal" phase, its growth model has gradually changed to focus more on domestic consumption. In this paper, we examine regional disparities in households' total (direct and indirect) energy use in China from 2002 to 2012. Using a structural decomposition approach, we examine how changes in China's technology, economic structure, urbanization, lifestyle, and interregional trade affect household energy use across different regions. We find that rising income levels contributed most to energy usage. Improved energy efficiency offset the rising effects of heightened household consumption in most regions. Rural-to-urban migration played an important role in enhancing energy use in all regions from 2002 to 2012. Moreover, households started to rely more heavily on interregional trade of final goods and services to meet their consumption demands. Based on this multi-regional and multi-angle study, we provide some regional-specific policies that would help curb household energy demand and promote sustainable consumption in China.

Itsuoa, S., Masakob, T. and Kazusuked, T. The value added and operating surplus deflators for industries: The right price indicators that should be used to calculate the real interest rates. *Statistical Journal of the IAOS.*

After the global financial crisis of 2008–2009, many advanced economies are suffering from a dearth of domestic investment opportunities. It has been said that lowering real interest rate is the best policy to boost the capital investment. The problem is what inflation rate they have in their mind when the entrepreneurs make investment decisions. Not only the output prices, but also the composition of inputs differ from one industry to another. Therefore, the value added deflator or even the operating surplus deflator for each industry are better alternative to calculate the real interest rate. In the first half of the paper, we examine the theoretical meaning of the value added deflators using a highly simplified symmetric input output table. In the latter half, we will use so-called SNA-IO, the input-output table published as a part of Japanese SNA, to experimentally estimate both value added and operating surplus deflators. The study reveals that if lowering interest rate depreciate the local currency, it will depress value added deflators, and in turn, will discourage capital investments. In this sense, lowering interest rate is a double-edged sword; the governments and central banks should think twice before taking such a policy.

Flegg, A.T., and Tohmo, T. (2018) The regionalization of national input-output tables: A study of South Korean regions. *Papers in Regional Science.*

This paper uses survey-based data for 16 South Korean regions to refine the application of Flegg's location quotient (FLQ) and its variant, the sector-specific FLQ (SFLQ). These regions vary markedly in terms of size. Especial attention is paid to the problem of choosing appropriate values for the unknown parameter δ in these formulae. Alternative approaches to this problem are evaluated and tested. Our paper adds to earlier research that aims to find a cost-effective way of adapting national coefficients, so as to produce a satisfactory initial set of regional input coefficients for regions where survey-based data are unavailable.

Jackson, R.W., Ferreira Neto, A.B., and Erfanian, E. (2018) Woody biomass processing: Potential economic impacts on rural regions. *Energy Policy.*

This paper estimates the economic and environmental impacts of introducing woody biomass processing (WBP) into a rural area in central Appalachia. WBP is among the most promising additions to energy generation portfolios for reducing import dependency while at the same time providing economic opportunity to stimulate regional economies, especially in rural regions where economic development options are often limited. We use an input-output framework to assess WBP under three different pathways, fast pyrolysis, ethanol and coal-biomass to liquids. We find that the

proposed WBP will increase regional output by 0.5–1.3% of gross regional product; it will increase income by $17.32 to $51.31 million dollars each year, and regional employment by 218.1–1127.8 jobs, depending on the chosen pathway. Of these impacts, the direct portions are 63–77% of the total impact, depending on the chosen pathway. The economic analysis and the results from the accompanying environmental assessment show that only the ethanol pathway has both economic and environmental benefits. We conclude that because long-run economic development strategies in rural regions are limited and negative impacts do not alter dramatically the regional environmental profile, regional policymakers should include WBP among their development portfolio options.

Alvarez, S., Tobarra, M.A., and Zafrilla, J.E. (2018) Corporate and Product Carbon Footprint under Compound Hybrid Analysis: Application to a Spanish Timber Company. *Journal of Industrial Ecology.*

The European Union (EU) is advancing steadily toward the stabilization of atmospheric greenhouse gas concentrations. Various sectors are now obliged to make reductions, and new policies based on the carbon footprint are being encouraged. However, voluntary reporting of so-called scope 3 emissions is hindering successful implementation of these policies. In this

study, we present a tiered hybrid analysis to report emissions according to the ISO/TR 14069 standards and to obtain complete measures of scope 3 emissions. A process analysis for scope 1 and scope 2 emissions is complemented with a multiregional input-output analysis for upstream scope 3 emissions. This novel approach is applied to the case study of a Spanish timber company. Its total carbon footprint in 2011 was 783,660 kilograms of carbon-dioxide equivalent, of which 88% correspond to scope 3 emissions. These emissions are globally distributed; 71% are from European countries, followed by 8% from emerging economies (Brazil, Russia, India, Indonesia, Australia, and Turkey), 5% from China, and, finally, 16% from the rest of the world. We identify and discuss the advantages and disadvantages of this novel approach, the European implementation of which could be highly effective in reducing global carbon emissions.

Lenzen, M., Sun, Y., Faturay, F., Ting, Y., Geschke, A., and Malik, A. (2018) The carbon footprint of global tourism. *Nature Climate Change.*

Tourism contributes significantly to global gross domestic product, and is forecast to grow at an annual 4%, thus outpacing many other economic sectors. However, global carbon emissions related to tourism are currently not well quantified. Here, we quantify tourism-related global carbon flows between 160 countries, and their carbon footprints under origin and destination accounting perspectives. We find that, between 2009 and 2013,

tourism's global carbon footprint has increased from 3.9 to 4.5 GtCO2e, four times more than previously estimated, accounting for about 8% of global greenhouse gas emissions. Transport, shopping and food are significant contributors. The majority of this footprint is exerted by and in high-income countries. The rapid increase in tourism demand is effectively outstripping the decarbonization of tourism-related technology. We project that, due to its high carbon intensity and continuing growth, tourism will constitute a growing part of the world's greenhouse gas emissions.

Kaplan, L.C., Kohl, T., and Martínez-Zarzoso, I. (2017). Supply-chain trade and labor market outcomes: The case of the 2004 European Union enlargement. *Review of International Economics.*

The structure of international trade is increasingly characterized by fragmentation of production processes and trade policy. Yet, how trade policy affects supply-chain trade is largely unexplored territory. This paper shows how the accession of 10 Central and Eastern European Countries (CEECs) to the European Union affected European supply-chain trade. We find that accession primarily fostered CEECs' integration in global value chains of other entrants. Smaller integration benefits stem for East–West trade in services for lower-skill activities. These increases in value-added exports translate into sizeable job creation.

Wiedmann, T., and Lenzen, M. (2018) Environmental and social footprints of international trade. *Nature Geoscience.*

Globalization has led to an increasing geospatial separation of production and consumption, and, as a consequence, to an unprecedented displacement of environmental and social impacts through international trade. A large proportion of total global impacts can be associated with trade, and the trend is rising. Advances in global multi-region input-output models have allowed researchers to draw detailed, international supply-chain connections between harmful production in social and environmental hotspots and affluent consumption in global centres of wealth. The general direction of impact displacement is from developed to developing countries—an increase of health impacts in China from air pollution linked to export production for the United States being one prominent example. The relocation of production across countries counteracts national mitigation policies and may negate ostensible achievements in decoupling impacts from economic growth. A comprehensive implementation of the United Nations Sustainable Development Goals therefore requires the inclusion of footprint indicators to avoid loopholes in national sustainability assessments.

Pomfret, R., and Sourdin, P. (2018). Value chains in Europe and Asia: Which countries participate?. *International Economics.*

The paper starts by reviewing the evolution and current status of value chains, and by assessing alternative measures of their significance. The value chains centred on North America, the European Union and East Asia are contrasted. North American value chains tend to be limited to the three NAFTA members under negotiated rules. In the European Union and East Asia value-chain formation has been largely a bottom-up process with free entry supported by low trade costs. To identify which countries have joined value chains, we calculate two measures of value-chain participation by European and Asian emerging market economies. The measures highlight (1) the rapid growth of value-chain activity in the twenty-first century, (2) the greater value-chain participation by East Asian emerging market economies than by EU emerging market economies, and (3) the cross-country variation in participation, with value-chain participation dominated by a handful of countries in both continents. The final section draws conclusions about the nature of international value chains and the policy implications.

Picek, O., and Schröder, E. (2018). Spillover effects of Germany's final demand on Southern Europe. *The World Economy.*

We use data from the World Input-Output Database to fit a closed multiregional input–output model in order to estimate the size of spillover effects of Germany's final demand on GDP, employment and the trade balance in Southern European countries. We find that spillover effects are rather small. Germany alone will hardly make a significant contribution to the external adjustment process in the European South.

Backer, K., Lombaerde, P., and Iapadre, L. (2018). Analyzing Global and Regional Value Chains. *International Economics.*

This paper introduces a Special Issue on Analyzing Global and Regional Value Chains. It presents a state-of-the-art of the literature and explores the frontiers of our knowledge on GVCs with a double focus: on the one hand, we will further investigate to what extent the phenomenon of GVCs is also a regional phenomenon (i.e. RVCs) and how it interacts with regional policies and processes of regional economic integration. On the other hand, we will deepen our understanding of the measurement aspects of GVCs and their scope, including at the regional level.

Del Prete, D., Giovannetti, G., and Marvasi, E. (2018). Global value chains: New evidence for North Africa. *International Economics .*

This paper analyzes the participation and the position of North African countries in global value chains (GVCs). Exploiting the recently released Eora multiregional Input-Output tables, we describe regional and country GVC involvement. North African countries have not so far been able to fully integrate into international production networks. However, a large part of their (low) trade is due to value added related activities, mainly in the upstream phases, and the importance of foreign linkages has been increasing over time. We complement the Input-Output analysis with sectoral evidence from selected case studies and policy experiences. Overall, our results suggest that enhancing the GVC participation of North African countries has potential to substantially benefit local industries, countries and indeed the whole area. However, the ability to retain such benefits relies on specific local conditions, such as a favorable environment for foreign investments, and lower trade barriers, thus leaving room for policy intervention.

Events

Next conferences

6th Permanent Workshop Hispanic-American Input-Output Society (SHAIO)
September 27-28, 2018

Madrid, Spain

The Hispanic-American Input–Output Analysis Society (SHAIO) in collaboration with the Universidad Autónoma de Madrid and the Institute "Lawrence R. Klein" of Economic Forecast, will organize the 6th Permanent Workshop of the SHAIO on September 27-28, 2018, in Madrid, Spain.

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KEY DATES:

Abstract submission: June 1, 2018

Full paper submission: June 29, 2018

Notification of acceptance: July 27, 2018

Registration: September 21, 2018

Workshop: September 27-28, 2018

65th Annual North American Meetings of the Regional Science Association International
November 7-10, 2018

San Antonio, Texas, USA

The 65th Annual North American Meetings of the Regional Science Association International will takes place in San Antonio, Texas. The meetings will be held at the Hyatt Regency Hotel from Wednesday November 7th to Saturday November 10th, 2018. Paper sessions will be scheduled from Thursday morning through Saturday afternoon.
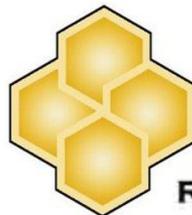
Important dates:

September 7, 2018 - Preliminary Program
October 16, 2018 - End of Discounted Hotel Rate
October 20, 2018 - Manuscripts Must Be Sent to Discussants
October 27, 2018 - Late Registration Fees Apply
November 7-10, 2018 - Conference in San Antonio

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Special panel discussions on Implementing the Paris Agreement and Carbon footprint and Environmental humanities.

Track chairs on Biodiversity, Climate Change, Environment and Natural Resources: Pablo Ruiz Nápoles (UNAM, Mexico) and María Ángeles Cadarso (UCLM, Spain).

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