Newsletter
Number 43, February-March 2020

INTERNATIONAL INPUT-OUTPUT ASSOCIATION

Welcome from the Editor

Dear IIOA member,

I am pleased to release the latest issue of the *International Input-Output Newsletter*. I thank all contributors.

This issue features information about the next IIOA Conference.

It also contains information about Latest ESR articles, Highlights in Journals and books.

You can also find Call for Conferences. Check all the conference links to be sure about the schedule. The conference organizers are actively monitoring the COVID-19 outbreak.

I hope you enjoy it! Any feedback, comments or suggestions are greatly appreciated. I also welcome contributions to future issues.

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Check the update about 2020 IIOA Conference here.

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

In this issue

Newsletter
Number 43, February-March 2020
INTERNATIONAL
INPUT-OUTPUT ASSOCIATION

Next IIOA Conference

Dear valued members of the IIOA,

As you all know, the spread of COVID-19 has gripped the world over recent weeks. As of now, it is still uncertain if the pandemic can be contained. Many countries have resorted to measures aimed at confining the spread of the virus by, for instance, restricting travel across borders or prohibiting the organization of larger events. Numerous private companies and academic institutions are limiting business travel movements or calling off/postponing international meetings.

The IIOA Council, in close consultation with the members of the Local Organizing Committee (LOC) of the 2020 Malaysia conference, has carefully evaluated the situation with respect to the upcoming conference. First and foremost our concern focuses on the safety of our members. But it also will undoubtedly affect the success of the conference since attendees typically prepare travel arrangements over the next month or so. Thus, while the pandemic might be contained by July, it will clearly lower the number of members able to attend the conference, especially from nations relatively close to Kuala Lumpur. We have, therefore, decided to postpone the conference, which was planned for July 6-10, 2020. A new schedule shall be announced in due course.

All abstracts/papers that have been submitted remain in the system, which will be reopened once the new timetable has been fixed.

If you have any questions concerning the conference please do not hesitate to get back to us.

Oliver FRITZ
on behalf of the IIOA-Council

Newsletter
Number 43, February-March 2020
INTERNATIONAL INPUT-OUTPUT ASSOCIATION

Published papers and books in IOA and related methods

Latest ESR articles

Economic Systems Research
Journal of the IIOA
Volume 32, Issue 1, 2020

Boer, P. and Rodrigues, J.F.D. Decomposition analysis: when to use which method?. *Economic Systems Research, 32(1): 1-28.*

Structural and index decomposition analyses allow identifying the main drivers of observed changes over time of energy and environmental impacts. These decomposition analyses have become very popular in recent decades and, many alternative methods to implement them have become available. Several of the most popular methods have been developed earlier in index number theory, a context in which each particular method is defined by adhering to a set of properties. The goal of the present paper is to review the main results of index number theory and discuss its connection to decomposition analyses. By doing so, we can present a decision tree that allows users to choose a decomposition method that meets desired properties. We report as hands-on example an empirical case study of the carbon footprint of the Netherlands in the period 2004–2005.

Sommer, M. and Kratena, K. Consumption and production-based CO2 pricing policies: macroeconomic trade-offs and carbon leakage. *Economic Systems Research, 32(1): 29-57.*

This paper applies a DYNK (Dynamic New Keynesian) model to compare the traditional environmental tax reform for greenhouse gas (GHG) emissions with a taxation scheme that taxes GHG emissions embodied in consumption within the framework of a unilateral policy of the EU-27. The embodied emissions of different commodities are taxed independently of their origin. The GHG tax rates applied are identical and new revenues are in both cases recycled via lower social security contributions of employers. The results show the macroeconomic results, driven by the different impact of the taxation schemes on price competitiveness of EU-27 firms. These differences drive the leakage and show negative leakage in the case of taxing embodied GHG emissions. Both taxation schemes are also regressive for household incomes emphasizing the importance of the choice of revenue recycling. In terms of emission reduction, we find the taxation of emissions embodied in consumption less effective.

Faturay, F., Sun, Y., Dietzenbacher, E., Malik, A., Geschke, A. and Lenzen, M. Using virtual laboratories for disaster analysis – a case study of Taiwan. *Economic Systems Research, , 32(1): 58-83.*

Due to its geographic location, Taiwan frequently experiences severe natural disasters (for example earthquakes and typhoons) that significantly interrupt business operations and subsequently cause extensive financial losses. Prior work on economic losses resulting from such natural disasters in Taiwan has not considered regional and sectoral spillover effects. In this work, we estimate the economic impacts resulting from the 1999 Chichi earthquake, the 2009 typhoon Morakot, the 2016 Tainan earthquake, and the 2016 typhoon Megi. We do so in the new TaiwanLab, a collaborative virtual laboratory that is capable of generating a time-series of subnational multiregional input–output (MRIO) tables, capturing interregional transactions among 267 sectors across Taiwan's 22 city-counties. We identify critical economic sectors in regions of high vulnerability to natural disasters. Our research is, thus, a credible reference to decision-making that determines regional and sectoral prioritisation for damage mitigation, improved resiliency, and faster recovery schedules.

Newsletter
Number 43, February-March 2020
INTERNATIONAL INPUT-OUTPUT ASSOCIATION

Ulrich, P. and Lehr, U. Economic effects of an E-mobility scenario – input structure and energy consumption. *Economic Systems Research, 32(1): 84-97.*

The development of a strong domestic market for E-mobility is given a high priority and it is counted as an impulse for the transformation towards a Green Economy in Germany. Replacing the combustion engine by alternative drives can trigger a variety of macroeconomic effects. The paper presents the results of a model-based analysis. In particular, effects on the value chain of the automotive industry and the demand for consumer goods are explicitly modelled. An E-mobility scenario that meets the six million E-vehicles by a 2030 target is compared with a reference scenario. Assuming a substitution of inputs within the automotive industry by inputs from the electrical engineering sector, negative effects in vehicle production are offset by positive effects in energy technology production. For the macroeconomic effects, the development of imports and exports is crucial. In the scenario comparison presented here, short- to medium-term employment effects are slightly positive.

Dávila-Fernández, M. J. and Punzo, L. F. Financialisation as structural change: measuring the financial content of things. *Economic Systems Research, 32(1): 98-120.*

In this article, we present a multi-sectoral treatment of financialisation based on input–output analysis. Our main innovation introduces financialisation as an increase in financial content per unit of output produced. In this way, we may investigate changes in relative importance of financial activities, taking into account direct and indirect interactions among sectors. Although methods focusing on the disaggregation of input–output tables have been largely explored in past decades, they have received limited attention in the literature on financialisation. We aim to refocus on multi-sectoral issues by offering a simple structure of analysis to assess the interconnections between the real and financial sides of the economy. Using a 15 and 14-sector level of aggregation, we study the experiences of the United States and Brazil for the period 1947–2015 and 1995–2011, respectively.

Vercalsteren, A., Christis, M., Geerken, T. and Van der Linden, A. Policy needs (to be) covered by static environmentally extended input–output analyses. *Economic Systems Research, 32(1): 121-144.*

There exists little evidence in the literature of the extent to which static environmentally extended multiregion input–output (EE-MRIO) studies actually contribute to political decision-making and policy formulation. This paper provides an overview of the reported applications of EE-MRIO analysis in an environmental context, either initiated by questions from policy makers or demonstrated by researchers. The applications are structured according to their scope and scale, the coverage of the DPSIR environmental policy framework (driving forces/ pressures/ state/ impact/ response), and the type of application (problem analysis/agenda setting, ex ante and ex post/monitoring). Results from interviews with policy makers (Belgium) show both their interest in IO-modelling and specific needs they have to make it more useful in their own context. The more experimental EE-IO models serve well for the early policy phase of problem analysis and agenda setting. Also, their use can prove the importance of strengthening international collaboration to develop internationally recognized EE-IO models.

Newsletter
Number 43, February-March 2020

INTERNATIONAL INPUT-OUTPUT ASSOCIATION

Rueda-Cantuche, J. M., Amores, A. F. and Remond-Tiedrez, I. Can supply, use and input–output tables be converted to a different classification with aggregate information?. *Economic Systems Research, 32(1): 145-165.*

Every change in the product and/or industry classifications and/or methodology of supply, use and input–output tables makes any medium- to long-term policy analysis impossible unless appropriate conversions are provided by national statistical institutes using more detailed data. However, can these tables be reasonably converted to a different classification of industries and products using aggregate information? We develop a conversion method that allows changes in classification that are independent of the number of industries and products. In addition, we provide evidence about its empirical performance compared with projection methods. We find projection methods perform better than conversion methods, at least when using aggregate information. Nonetheless, unlike conversion methods, projection methods generally require supply, use and input–output tables in the new classification that might not always be available. In their absence, we recommend using more detailed and sophisticated data.

Manresa, A. and Sancho, F. A follow-up note on the plausibility of the Leontief and Ghosh closed models. *Economic Systems Research, 32(1): 166-172.*

Herein we consider Leontief and Ghosh models that partly endogenize both part of final demand and part of value-added. We use Osterhaven's [(2012) Adding Supply-driven Consumption Makes the Ghosh Model Even More Implausible. Economic Systems Research, 24, 101–111] numerical three-sector example to show that anomalies of the sort he finds for a Ghosh closed model can also be found in the closed version of a Leontief model. By assuming, as Oosterhaven did, that aggregate exogenous resources are fixed, we obtain mirror results to his in a Ghosh setting, albeit in the more-traditional Leontief instance. Such numerical anomalies for the three-sector case turn out to be generic to both partially closed models for any 2×2 input–output model. A proof for the general n×n case remains to be uncovered.

Economic Systems Research
Journal of the IIOA
Latest articles (up to 28-Feb.)

Steenge, A. E. and Reyes, R. C. Return of the capital coefficients matrix. *Economic Systems Research.*

A core ingredient of post-disaster input–output recovery models is the reconstruction of lost production capacity. Therefore, one would expect a set of models endowed with capital coefficients matrices to be available for analysis. However, this is not the case, possibly due to earlier negative experiences with such models. Nevertheless, in this paper, we aim to show that there is a class of problems that can be addressed successfully with a dynamic input–output model with a fully functioning capital coefficients matrix. We put forward that if reconstruction is tightly planned, investment and therewith gross output essentially become pre-determined. This also means that traditional final demand becomes an endogenous residual, with the model being transformed into a distribution and allocation model. We begin with a reordering of variables and equations as proposed in Leontief's dynamic inverse, and then move on directly to the newly proposed model. Suggestions for further work are given.

Newsletter
Number 43, February-March 2020
INTERNATIONAL INPUT-OUTPUT ASSOCIATION

Miroudot, S. and Ye, M. Decomposing value added in gross exports. *Economic Systems Research.*

Several papers using intercountry IO tables have developed frameworks to decompose value added in gross exports and to remove potential double-counting in intermediate inputs. But these papers rely on different definitions for the domestic value added, foreign value added and double-counting terms, depending in particular on the perspective from which gross exports are decomposed (world level, country level or bilateral level). At this stage, it is very difficult for any user of value-added trade statistics to know what is calculated and which type of decomposition should be used. In this paper, we provide a general framework that relies on extraction matrices to unambiguously and consistently define domestic and foreign value-added terms in the world, country and bilateral perspective. This framework allows us to classify existing decompositions based on the perspective taken and their definition of double-counting. We also indicate the most relevant decompositions for different types of trade analysis.

Severini, F. et al. The suggested structure of final demand shock for sectoral labour digital skills. *Economic Systems Research.*

International data seem to confirm that countries with a relative abundancy of highly-skilled labour with digital competences grow faster than others. For this reason, digital competences and skills in general are progressively assuming a central role in labour market policies. In this article, we show the potential of the disaggregated multisectoral analysis with the macro multipliers approach as a tool of economic policy. Such analyses allow identifying a set of endogenous policies in which specific objectives do not clash with growth objectives. The identification and the quantification of the macro multipliers is based on an extended multi-industry, multi-factor and multi-sector model, which accounts for the representation of the income circular flow as in the social accounting matrix (SAM). The SAM constructed for this exercise allows for a proper disaggregation of the labour factor by formal educational attainment, digital competences and gender for the case of Italy.

Cai, J. and Leung, P. A note on linkage between gross value added and final use at the industry level. *Economic Systems Research.*

Gross value added (GVA) is a common indicator of an industry/sector's economic performance. While an economy's total GVA is always equal to its total final use, an individual industry/sector's GVA is usually not equal to its final use. Yet an accounting identity between an industry/sector's GVA and the final use of multiple industries/sectors can be established by a gross value added-final use (GVA-FU) matrix. This paper derives the GVA-FU matrix in the Leontief demand-driven model and its equivalence in the Ghosh supply-driven model and interprets the matrix from different perspectives. The GVA-FU matrix can help policymakers and practitioners better understand an industry/sector's percentage of gross domestic product (GDP) – the underlying measure behind the United Nations Sustainable Development Goals (SDGs) Indicator 14.7.1 – from the demand-side perspective and facilitate its proper use for policy and planning. The GVA-FU matrix can become a standard component of the input–output apparatus for multiple applications.

Newsletter
Number 43, February-March 2020
INTERNATIONAL INPUT-OUTPUT ASSOCIATION

Attary, N. et al. The economic effects of financial relief delays following a natural disaster. *Economic Systems Research.*

In the U.S. the economic damages of natural disasters have increased substantially over time. While private insurance payouts tend to arrive relatively quickly, federal recovery monies are often allocated unevenly, with some communities waiting years to receive previously designated funds. We examine the costliness of delay by linking an economic model of the Joplin, Missouri economy to a civil engineering model that replicates the damage from a tornado that devastated the community in 2011. Building damage estimates from the natural hazard and engineering models are translated into capital stock losses, which subsequently impact the local economy through lost output. We examine several different recovery paths, with a focus on differences in the timing of recovery assistance. Our results show that delaying financial assistance can have important, irretrievable adverse outcomes in the short run.

Tsionas, M. G. Bayesian input–output table update using a benchmark LASSO prior. *Economic Systems Research.*

We propose updating a multiplier matrix subject to final demand and total output constraints, where the prior multiplier matrix is weighted against a LASSO prior. We update elements of the Leontief inverse, from which we can derive posterior densities of the entries in input–output tables. As the parameter estimates required by far exceed the available observations, many zero entries deliver a sparse tabulation. We address that problem with a new statistical model wherein we adopt a LASSO prior. We develop novel numerical techniques and perform a detailed Monte Carlo study to examine the performance of the new approach under different configurations of the input–output table. The new techniques are applied to a 196 × 196 U.S. input–output table for 2012.

Tiziano, D. et al. Tools for reconstructing the bilateral trade network: a critical assessment. *Economic Systems Research.*

This study critically assesses the performances of the Gravity Model (GM) and of the RAS algorithm for the bilateral flow intensity estimations and link prediction. The main novelty is the application of these methodologies to reconstruct the network topology with a minimum amount of information. Moreover, we implement a multi-layer analysis to provide a comprehensive and robust framework, by testing several food commodities, over the period 1986–2013. The main outcomes suggest that the RAS algorithm outperforms the Gravity Model in the estimations of the bilateral trade flows, importantly guaranteeing the balance constraints (i.e. global import equals global export), while GM generates lower relative errors, but it underestimates total global flows. Both RAS and GM can be applied to accurately recover the network architecture. The implications of our study encompass a wide range of applications: systemic-risk assessment, creation of new databases, and scenario analyses to support policy decisions.

Newsletter
Number 43, February-March 2020
INTERNATIONAL INPUT-OUTPUT ASSOCIATION

Miroudot, S. and Ye, M. Multinational production in value-added terms. *Economic Systems Research.*

Micro-level evidence has emphasised that firms that produce across countries are responsible for a large share of international exchanges of goods, services, capital and knowledge. At the aggregate level, quantitative studies that look at multinational production generally rely on the concept of sales of foreign affiliates, which is a gross concept that includes the value of intermediate inputs. In the case of trade, the literature has recently shifted to a value-added approach that can distinguish in exports the contribution of the different economies supplying inputs. In this paper, we propose a framework that decomposes value-added in domestic sales in order to trace its origin and remove any double-counting. We find that an intercountry input–output table split on ownership can yield an analysis of activities of foreign affiliates of multinational firms in value-added terms.

Cazcarro et al. Water and production reallocation in the Spanish agri-food system. *Economic Systems Research.*

Multiregional input–output (MRIO) and computable general equilibrium (CGE) models have greatly facilitated approaches to environmental and economic problems in recent years. This paper examines regional reallocation criteria intended to reduce water constraints in the Spanish economy. Our goal is to assess the impact of alternative allocation scenarios for regional production on the country's agriculture and agri-food industries, and the associated effects on water resources along the whole length of food supply chains, which display significant asymmetries between regions caused by imbalances in the availability of water resources. We design a CGE model using an MRIO database for Spain. Our scenarios are based on increases in the production of water-intensive crops in regions with more abundant water resources and the development of more sustainable food supply chains between farms and the agri-food industry. Our findings point to a series of policy options that could be applied to ensure successful outcomes in both directions.

Fullemann, Y. et al. Hire fast, fire slow: the employment benefits of energy transitions. *Economic Systems Research.*

The transition towards decarbonized and efficient energy systems has broad socio-economic implications. We estimate the potential impacts on employment from efforts in energy efficiency in industry, transport and buildings as well as substituting local renewable energy sources for fossil fuels. Both energy supply and demand are accounted for. We use a hybrid approach that combines national energy transition scenarios with input–output tables, adjusted for new energy and non-energy activities. We conclude that the transition has a net positive impact on employment as illustrated by the case of Switzerland. The local and decentralized nature of energy efficiency and renewables retains a greater share of value-added domestically than does a supply chain of fossil fuels. Moreover, we find that more jobs are created in demand-side activities, such as building renovation, than in renewable energy generation. Positive impacts on jobs from spillover effects in all non-energy activities are also found.

Newsletter
Number 43, February-March 2020
INTERNATIONAL INPUT-OUTPUT ASSOCIATION

Mardones, C. and Lipski, M. A carbon tax on agriculture? A CGE analysis for Chile. *Economic Systems Research.*

This paper evaluates the implementation of a tax on CO_2 equivalent (CO_2eq) emissions produced by the agricultural sector. Computable general equilibrium (CGE) simulations consider tax rates ranging from $5 to $131 USD/ton CO_2eq with sensitivity analyses. We find that a tax applied only to agricultural emissions makes agriculture less competitive and, thus, reduces its production. Real GDP falls from 0.00–0.01% to 0.12–0.40% as a result, and total emissions decline from 0.07–0.10% to 1.79–2.25%. The tax is slightly regressive. We conclude that the tax on just agriculture does not substantially reduce emissions. Indeed, we find it is more efficient to apply the tax across the board, while subsidizing the forestry.

Nakamoto, Y. Spatial structural decomposition analysis with a focus on product lifetime. *Economic Systems Research.*

This study estimates the carbon footprint associated with global final demand for automobiles and petroleum of the U.S.A., Germany, and Japan, which accounted for 31% of the global stock of passenger cars in 2009, during 1995 to 2009. I develop a comprehensive new method to more clearly illuminate the structural change in automobiles' global final demand. Based on the results, I discuss how a circular strategy with a focus on vehicle lifetime extension contributes to the automobile carbon footprint in each country. While the environmental burden from automobile manufacturing has decreased globally, the Leontief production structure countered carbon reduction and completely canceled out the effects of technological changes to reduce emission intensities. The results showed that suppressing demand for new cars through lifetime extensions greatly reduced the carbon footprint, in a similar or even greater way than that from changes in industrial technology.

Ferreira, J.P., Lahr, M., Ramos, P. and Castro, E. Accounting for global migrant remittances flows. *Economic Systems Research.*

Migrant remittances are important to some countries. According to the World Bank, they comprise more than 30% of the GDP of Kyrgyzstan, Tonga, Tajikistan, Haiti and Nepal. Compared to official development aid or foreign direct investment, remittances have lately become a prime income stream for less-developed nations. In this paper, we analyze the net spillover and feedback effects from the consumer demand generated in migrants' home countries. We use World Bank estimates of remittances and the World Input-Output Database (WIOD) for the investigation with so-called 'hypothetical insertion' as the tool of choice. We find that even some developed nations, like the US, likely benefit from remittances (the largest global path for remittances is that from the US to Mexico), but that not all do (e.g. Canada does not). We stop short of making strong policy recommendations. Instead, we suggest that more attention be paid to the veracity of remittance estimates.

Newsletter
Number 43, February-March 2020
INTERNATIONAL INPUT-OUTPUT ASSOCIATION

Rodrigues, J.F.D., Yuan, R. and Xiang, H. The expectations of and covariances between carbon footprints. *Economic Systems Research.*

Carbon footprints and other environmentally extended input–output indicators are obtained as aggregations of emissions embodied in supply chains (EESCs), which express the emissions occurring in a specific production activity to satisfy a given volume of final demand. Here we derive theoretical approximations of the expectations of and covariances between EESCs, as a function of the expectations of and covariances between source data (technical coefficients, emission coefficients and final demand volumes) through a Taylor expansion. We report an empirical test of those approximations, using a sample of 5 global multi-regional input–output models in the year 2007, of which we extract 22 single-region input–output systems with 17 sectors. We find that approximations of multipliers perform better than those of EESC, and approximations of expectations perform better than those of covariances.

Ito, K., Deseatnicov, I. and Fukao, K. Japan's participation in global value chains: splitting the IO table into production for export and domestic sale. *Economic Systems Research.*

This paper examines Japan's participation in global value chains (GVCs). To this end, we use plant-level data for Japan to split output in each industry in Japan's manufacturing sector into output for export or domestic sale and create an extended multi-country input–output table (MIOT). We then compute trade in value added (TiVA) indicators to examine the participation of Japanese manufacturing plants in GVCs. Our estimates suggest that Japan's forward participation in GVCs is lower than suggested by estimates computed from a traditional MIOT. We infer that this result is due to high cross-border production fragmentation as well as the large presence of Japanese multinational companies in global manufacturing and the high volume of intra-firm trade in Japan's manufacturing sector. We conclude that considering firm heterogeneity in production for export and domestic sale in MIOTs provides a more accurate understanding of global production fragmentation.

Ahmed, I., Socci, C. Severini, F., Pretaroli, R. and Al Mahdi, H. K. Unconventional monetary policy and real estate sector: a financial dynamic computable general equilibrium model for Italy. *Economic Systems Research.*

This study investigates the effects of an expansionary monetary policy on the Italian economy and, in particular, on real estate (RE) as a commodity. RE is a key sector for the Italian economy. It has strong interactions with the other sectors, especially with the financial markets. Therefore, we develop a financial dynamic computable general equilibrium model to analyze the response of RE sector to a shock on money supply. The parameters of the model are calibrated on the financial social accounting matrix for Italy that identifies the economic and financial flows in the economic system in a well-defined time period. Our findings confirm that the policy has a positive impact on real economy and on the RE output, value added and pricing.

Newsletter
Number 43, February-March 2020

INTERNATIONAL INPUT-OUTPUT ASSOCIATION

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Highlights in journals

Lucas, P. L. Et al. (2020) Allocating planetary boundaries to large economies: Distributional consequences of alternative perspectives on distributive fairness. *Global Environmental Change.*

The planetary boundaries (PBs) framework proposes global quantitative precautionary limits for human perturbation of nine critical Earth system processes. Together they define a global safe operating space for human development. Translating the global limits to the national level increases their policy relevance. Such translation essentially divides up the global safe operating space. What is considered fair distribution is a political decision and there is no globally agreed principle that can be applied. Here, we analyse the distributional consequences of alternative perspectives on distributive fairness. We scale the global limits of selected PBs to resource budgets for the EU, US, China and India, using three allocation approaches from the climate change literature. Furthermore, we compare the allocated budgets to 2010 environmental footprints of the four economies, to assess their performance with respect to the selected PBs. The allocation approaches are based on (1) current shares of global environmental pressure ('grandfathering'); (2) 'equal per capita' shares, and (3) 'ability to pay' to reduce environmental pressure.

The results show that the four economies are not living within the global safe operating space. Their 2010 environmental footprints are larger than the allocated budgets for all approaches and parameterisations analysed for the PBs for climate change and biogeochemical flows, and, except for India, also for the PB for biosphere integrity. Grandfathering was found to be most favourable for the EU and US for all PBs, and ability to pay as least favourable. For climate change and biogeochemical flows, ability to pay even resulted in negative resource budgets for the two economies. In contrast, for China and India, equal per capita allocation and ability to pay were most favourable. Results were sensitive to the parameterisation. Accounting for future population growth in the equal per capita approach benefits India, with lower budgets for the EU, US and China, while accounting for future economic growth in ability to pay benefits the EU and US, with lower budgets for China and India. Our results underline the need for all four economies to act, while hinting at diverging preferences for specific allocation approaches. The methodology and results may help countries to define policy targets in line with global ambitions, such as those defined by the Sustainable Development Goals (SDGs), accounting for differences in countries' circumstances and capacities. Further attention is required for PB-specific allocation approaches and integration of biophysical and socioeconomic considerations in the allocation.

Newsletter
Number 43, February-March 2020
INTERNATIONAL INPUT-OUTPUT ASSOCIATION

Li, M., Wiedmann, T. and Hadjikakou, M. (2020) Enabling Full Supply Chain Corporate Responsibility: Scope 3 Emissions Targets for Ambitious Climate Change Mitigation. *Environmental Science Technology.*

There is building consensus that nonstate actors have the potential to drive more ambitious action toward climate targets than governments, thus driving the necessary transition to ensure that humanity remains within a safe operating space. These bottom-up mitigation activities, however, require individual targets on both direct and indirect (upstream) greenhouse gas (GHG) emissions in order to reconcile trade-offs between global and local sustainability goals. Here we use a scenario-driven approach based on a global multiregional input–output (GMRIO) model to develop scope 3 emission reduction targets for individual economic sectors, comparable across countries and geographies. Under an ambitious carbon mitigation scenario for 2035 (that follows a trajectory of 1.75 °C total warming by 2100), global upstream scope 3 emission intensities need to be reduced by an additional 54% compared to a baseline scenario with reference technology. On a sectoral basis, this is equivalent to a 58–67% reduction in energy, transport, and materials, a 50–52% reduction in manufacturing, services, and buildings, and a 39% reduction in agriculture, forestry, and other land use. By aligning indirect supply chain targets with ambitious carbon mitigation scenarios, our approach can be used by nonstate actors to set actionable scope 3 targets and to build climate-compatible business models.

Rahman, M.D.A., Saari, M.Y., Lenzen, M. and Malik, A. (2019) Skills and ethnics wage inequalities within the global value chain: an evidence from Malaysia. *Policy Studies.*

This paper examines and compares wage inequality effects of trading with Transpacific Partnership Agreement (TPPA), BRICS and ASEAN economies in Malaysia. A combination of MRIO model and inequality accounting framework has been exploited to quantify skills (i.e. low, medium, high) and ethnics wage inequality. The results show that Malaysia could have significantly experienced high wage inequality at different skill categories and across ethnic groups when trade with TPPA, suggesting the mega trade deal potentially risks existing efforts for equitable distribution. In particular, Chinese ethnics, who are commonly employed in high productive sectors, benefit the most compared to Malays and Indians. In contrast, exports to the BRICS and ASEAN countries have minimal effects on wage inequality, where regional trade could be more effective in reducing inequalities.

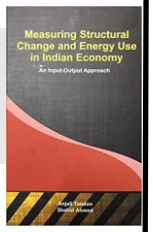
Tsujimura, K. and Tsujimura, M. (2019) Flow of funds analysis: A combination of Roman law, accounting and economics. *Statistical Journal of the IAOS.*

The 1920s was a decade of great inventions and of substantial productivity growth; people found it difficult to understand why the Great Depression could follow a decade of unprecedented prosperity. Wesley Mitchell and Morris Copeland, who have initiated the flow of funds analysis, urged a better understanding of the circulation of funds between the financial and nonfinancial economy. Since funds, which is the sole currency in the pure credit economy we live today, exist only in the bank's balance sheets, accounting is a necessity for the virtual currency. Furthermore, the assets and liabilities in the bankers' accounts mean claims and obligations so that law is another prerequisite for the existence of funds. The present paper is an attempt to detail the historical background of the 'flow of funds' analysis tracing back to ancient Rome to clarify the interdependence between law, accounting and economics; and to revive the original idea of Mitchel and Copeland – to understand the interactions between the financial and nonfinancial economy.

Newsletter
Number 43, February-March 2020
INTERNATIONAL INPUT-OUTPUT ASSOCIATION

Highlights in Books

Measuring Structural Change and Energy use in Indian Economy: An Input-Output Approach



Anjali Tandon

Shahid Ahmed

This book focuses on the link between changing structure of the Indian economy and energy use, which is of immense importance in view of the possible substitutions, across different fuel types within industries and processes, to cleaner fuels which are efficient or less emitting. The book analyses various aspects related to energy use such as the changing sectoral interdependence of energy sectors in the economy, sources of change in energy use over time, and the implications in terms of changing basket of goods and services traded internationally by India. Through an application based approach, using tools for economic analysis to study energy related issues, the book studies the impact of policy reforms with the help of transaction flows across sectors in an economy-wide framework. The time frame of analysis in the book covers policy changes implemented during the first and second generation reforms which had focus on output expansion and efficiency improvement in the Indian economy, respectively. The authors make a qualification to consider electricity generated from primary energy sources, particularly the hydroelectricity, as a separate source of energy use. This methodological consideration in the analysis contributes not only through a wider coverage of energy sources but also improves the precision of computations used to evaluate change in energy intensity of different sectors and the overall economy. Analysis in the book underpins the technological changes resulting from inter-fuel substitution. The analysis in the book also provides insights on energy embodied in the consumption and trade basket of India. The book notes that foreign trade of an economy can have unintended implications on energy use through transfer of energy manifested indirectly in the non-energy transactions, thus emphasising on the energy deficit of the Indian economy due to imports of energy embodied in non-energy sectors. The book serves readers across academia, research and policy makers through informed reading from the quantified facts based on economic models. It assists scholars to strengthen their understanding, learning and application of a technique. It is also helpful for the reader to apply the theory into practice.

Events

Next workshop

7th Permanent Workshop on Input-Output Analysis

September 24-25, 2020

León, Spain

The Hispanic-American Input–Output Analysis Society (SHAIO), in collaboration with the University of León, will organize the 7th SHAIO Permanent Workshop on Input-Output Analysis on September 24-25, 2020 in one of the most beautiful cities in Spain, León.

The Faculty of Economics and Business of the University of León and the Department of Economics and Statistics are pleased to invite you to participate in this event.

Newsletter
Number 43, February-March 2020

INTERNATIONAL INPUT-OUTPUT ASSOCIATION

Key Dates

Abstract submission deadline: June 15, 2020

Notification of acceptance: June 30, 2020

Full paper submission deadline: July 15, 2020

Registration deadline: August 15, 2020

Spanish School of IOA: September 11, 2020

Workshop: September 24-25, 2020

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Sociedad Hispanoamericana de Análisis Input-Output

Next conferences

13th World Congress of the RSAI

June 2-5, 2020

AMSR Association Marocaine des Sciences Régionales

RSAI REGIONAL SCIENCE ASSOCIATION INTERNATIONAL

The Regional Science Association International (RSAI) and the Moroccan Regional Science Association invite regional scientists, economists, economic geographers, urban planners, policy makers, and researchers of related disciplines to participate in the 13th World Congress of the Regional Science Association International, with the main theme "*Smart Regions – Opportunities for sustainable development in the digital era*". The Congress will be hosted by the Moroccan Regional Science Association

The 13th World Conference of the Regional Science Association International will be held from 2 to 5 June, 2020, at the Mogador Palace Agdal hotel in Marrakech, Morocco. It will be locally organized by the Moroccan Regional Science Association (AMSR) and its partners.

RSAI is closely monitoring the status of the coronavirus outbreak all over the world. At this stage, the RSAI has no plan to postpone or cancel its world congress. More information here.

Important Dates

02 DEC 2019 | Registration opens

21 JAN 2020 | Deadline abstract submission and Special Sessions proposals (NEW DATE)

01 FEB 2020 | Notification of acceptance of abstracts

02 MAR 2020 | Deadline registration at reduced fee

27 APR 2020 | Deadline registration for being included in the program

04 MAY 2020 | Draft program

26 MAY 2020 | Program for the Congress book

26 MAY 2020 | Final Program in electronic version

2-5 JUN 2020 | Conferences & meetings

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INTERNATIONAL INPUT-OUTPUT ASSOCIATION

International Interindustry Macroeconomic Conference

August 24-28, 2020

The International Interindustry Macroeconomic Conference will be held this year in Xi'an, China, from August 24 to 28, 2020. The local organizer is the School of Management of Xi'an Jiaotong University. The focal topic is "China and the World Economy", but we welcome papers and presentations on other aspects of interindustry macroeconomic modeling. This conference will also include the annual Inforum conference, which was held last year in Sochi, Russia.The venue of the conference will be the Xi'an Jiaotong University.

Each year since 1993, Inforum has held an annual world conference. The aim of these conferences is to advance the work of empirical input-output modeling, analysis, and data development techniques through the presentation and publication of papers representing the work of INFORUM activities worldwide. The conference in Xi'an will address itself to a wider membership of economists who are interested in input-output and policy issues relevant to China.

The conference organizers are actively monitoring the COVID-19 outbreak. If you have any questions concerning the conference please get back to Organizing Committee.

Organizing Committee:

Chen Pan and Chen Chen
iimmc2020@outlook.com

Key Dates

Preliminary conference registration: 30 April 2020

Registration confirmation: 15 June 2020

Deadline for final paper submission: 10 Aug 2020

60th ERSA Congress

August 26-29, 2020

Key Dates

2020
March 2 Deadline abstract (and paper) submission
March 30 Notification of acceptance and registration opens
May 18 Deadline registration at early bird fees
June 15 Deadline registration for being included in the programme
Early July Final Programme

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