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EDITORIAL

TOURISM STUDIES AND INPUT–OUTPUT ANALYSIS: INTRODUCTION TO A SPECIAL ISSUE

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1 INTRODUCTION

Tourism is increasingly important as a rapidly globalizing industry, which influences economic growth and development in many countries. This importance is recognized by international agencies such as the United Nations Statistics Division, Eurostat, the OECD and UNWTO (the World Tourism Organization). These institutes cooperated on common conceptual frameworks for the design of so-called Tourism Satellite Accounts (TSAs). According to the foreword of the joint publication *Tourism Satellite Account: Recommended Methodological Framework 2008*:

> The purpose of a Tourism Satellite Account is to analyse in detail all the aspects of demand for goods and services associated with the activity of visitors; to observe the operational interface with the supply of such goods and services within the economy; and to describe how this supply interacts with other economic activities. (United Nations Statistics Division et al., 2008, p. iii)

The last part of this description of goals suggests that a firm link between TSAs and input–output analysis is crucial for the success of TSAs in assessing tendencies in the importance of tourism in countries and regions. United Nations Statistics Division et al. (2008) often refers to input–output analysis as an essential complementary toolkit indeed.

In recent decades, the importance of tourism has been recognized by academic researchers as well. Scientific journals specifically devoted to studies of the causes and consequences of changes in supply and demand of tourism services have been launched to channel the products of these studies into the public domain. Prominent examples of such journals are (in arbitrary order) *Tourism Management*, *Annals of Tourism Research*, *Tourism Economics*, *Journal of Travel Research* and *Current Issues in Tourism*. In each of these journals, studies have been published that use elements from input–output analysis. This is not surprising, since many decisions regarding the development of new zones for hotels, the construction of amusement parks, the extension of existing airports to expand

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the number of passengers and the organization of big cultural or sports events to attract visitors require impact analysis. Irrespective of the type of model that is preferred to predict such impacts (e.g., traditional Leontief models, SAM-based models or CGE-models), input–output tables and related data material are needed to arrive at meaningful conclusions.

As we will illustrate below, 'tourism-IO' is a blossoming field. A few years ago, it struck us that this field and 'IO analysis in general' appear to develop rather independently from each other. The number of scholars in 'tourism-IO' attending the International Input–Output Conferences has been very low, and as far as we can judge from casual observation, only very few of the regular attendees of these conferences ever went to one of the many conferences devoted to the causes and consequences of tourism activities. The independence of the two circles of scholars is also reflected in the outlets they choose for their research papers. As we will show below, hardly any tourism-IO article was published in *Economic Systems Research*, while authors who regularly contributed to the general IO-literature almost never published in the tourism-specific journals we mentioned above.

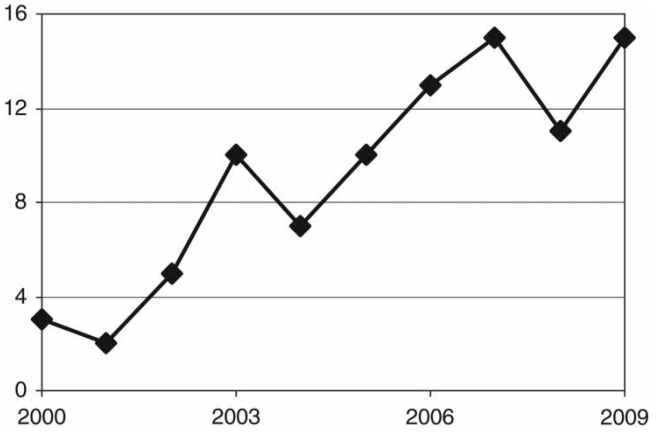
Because we felt that there should be mutual benefits in bringing these groups together, we decided to organize special sessions on tourism-IO at the 2009 and 2010 International Input–Output Conferences in Sao Paulo and Sydney, respectively. For these sessions, we invited authors who had recently published tourism-IO articles, and asked them to pass the invitation on to interested colleagues who were not on our initial list. In general, the reactions we received were positive. In some cases, however, we had to convince scholars that 'input–output analysis' should not be interpreted as 'applications of the static open Leontief model'. Apparently, a number of tourism researchers did not share the idea that input–output analysis covers everything that deals with linkages between industries, which emerges from the diversity of session topics at the input–output conferences and the variety of articles appearing in this journal. Nevertheless, we were able to organize two successful special sessions at both conferences. Some of the articles that appear in this special issue were presented at one of these sessions. The remaining articles were submitted after we sent out an open invitation to the researchers on our list of authors in tourism-IO.

This special issue should further enhance cross-fertilization between the two groups of researchers, showing the vast group of general IO scholars that tourism studies offer a very interesting field to apply many of their advanced methods and ideas to a rapidly evolving topic, and showing to tourism-IO researchers that IO offers a wide array of tools and underlying ideas that could be very useful to further improve the analysis of tourism-related questions. In the remainder of this introduction, we will illustrate the (increasing) importance of tourism-IO and then briefly introduce the articles in the special issue.

2 TRENDS IN TOURISM-IO

The increasing use of input–output tools to address questions related to tourism can be revealed by browsing abstracts of academic articles. We should bear in mind that input–output techniques are powerful empirical tools that are often applied in policy reports as well. Hence, just counting academic articles about tourism issues and applying input–output related methods is likely to substantially underestimate the use of these techniques for studies of this type. Nevertheless, we feel that Figure 1 clearly indicates the increasing popularity of this kind of work.

FIGURE 1. Number of articles addressing tourism issues using input–output analysis.



The vertical axis of this figure indicates the number of articles in the Scopus database (a database comparable to Thomson/Reuter's well-known Web of Science/Social Sciences Citation Index, with, at least until recently, a broader coverage of journals with a focus on economics) about tourism and applying input–output techniques.[1] The coverage of articles in Scopus has been quite stable for the period after 1996, which might justify our idea that the upward-sloping line reflects a 'true' phenomenon: the annual number of articles has been growing considerably over the last decade, from about four in the early 2000s to more than 12 in the most recent years.

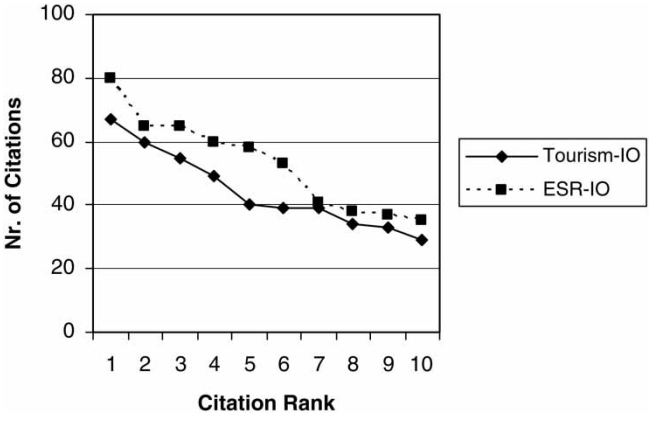
Raw numbers of articles in a (sub)field are an important indicator, but do not give a complete picture. It is also insightful to have some notion of the impact these articles have had on subsequent studies. A noisy but (according to scientometric studies) useful indicator of this impact is the number of citations articles received. These citation frequencies of articles are notoriously skewed to the left, with just a few articles receiving the big chunk of citations. Hence, we feel that an indication of the numbers of citations received by the ten 'tourism input–output' articles that received the highest number of citations should suffice. These papers are (ordered from the highest number of citations to the lowest) Fletcher (1989), Zhou et al. (1997), Dwyer et al. (2004), Blake and Sinclair (2003), Archer and Fletcher (1996), Adams and Parmenter (1995), Johnson and Moore (1993), Tyrrell and Johnston (2001), Dwyer et al. (2000), and Lee and Taylor (2005).[2]

In Figure 2, we compare the numbers of citations of these ten very frequently cited tourism articles to the numbers of citations received by very popular articles belonging to the core of the input–output literature. Hence, we consulted the Scopus database and

[1] These articles have been identified in a relatively rough way. The set consists of those articles that meet two criteria. First, the abstract, keywords and/or title should contain the word 'tourism', and second, the abstract, keywords and/or title should contain at least one of the phrases 'input–output', 'computable general equilibrium' or 'CGE'.

[2] In order to include the influence of 'golden oldies', we maintained the keyword-based search procedure described in footnote 1, but did not confine the analysis to the 2000–2009 period. Note that older articles have had more time to collect citations. We did not correct for this, since we just want to illustrate the importance of the field and are not interested in the impact of specific contributions to it.

FIGURE 2. Citation frequencies of import articles in 'tourism-IO'.



Source: Scopus database, accessed September 2, 2010.

recorded the citation frequencies of the ten most-cited articles that appeared in *Economic Systems Research*. Of course, many influential articles in the input–output literature were published in other journals, but we think that Figure 2 clearly shows that a number of articles in tourism-IO have had an impact that is only slightly below some of the most influential articles on input–output analysis and related techniques in general.

In our view, the rather quick-and-dirty bibliometric analysis shows that tourism-IO is a field that deserves a lot of attention from the input–output community. This attention seems to be lacking, however. This claim can be substantiated by some figures, which, again, only serve illustrative purposes. The set of 91 articles on tourism-IO that appeared in the 2000–2009 period contains only one article (Weisskoff, 2000) that was published in *Economic Systems Research*. Furthermore, only seven authors who ever published in *ESR* also wrote articles contained in our sample of tourism-IO articles. Of course, these findings could also be interpreted otherwise: researchers in tourism-IO are generally less inclined to get their work published in a main general interest-IO journal like *ESR*.[3] Whatever interpretation readers favor, we can safely conclude that there has hardly been any 'paper trail-leaving' exchange of ideas between the two groups of researchers.[4] This special issue could help facilitating such an exchange.

3 THE ARTICLES IN THIS ISSUE

Although it is impossible to cover all topics addressed in present-day tourism IO, we feel that this issue contains studies that give readers a good impression of the diversity of

[3] The results are not caused by our specific choice of *Economic Systems Research* as a general IO-journal. The five tourism-specific journals listed in the first paragraph of this introduction accounted for more than half of the tourism-IO articles and there is no journal regularly publishing general IO-material that published more than one tourism-IO article.

[4] In the period 2000–2009, none of the five journals mentioned in the introduction have published more than two articles citing articles that had appeared in *Economic Systems Research*.

problems tourism researchers are trying to cope with. These relate to data, to methods and to empirical applications with substantial policy relevance.

The first issue that will be addressed is the increasing importance of accounts for the sub-national level. The availability of such regional or local data is essential for applied analysis. Unlike increased emissions of greenhouse gases (another topic studied intensively by input–output researchers), the effects of changes in the volume and composition of tourism remain often confined to a relatively small geographical unit. Hence, tourism-IO often suffers from a well-known problem: having a high-quality *national* accounting system in place is by no means a guarantee that developing accounts for the *sub-national* level will be a straightforward matter. Two papers address this issue, one of which is the paper that opens this special issue. Based on the Danish experience, Bjarne Madsen and Jie Zhang propose a new system for tourism accounting at the regional level. The basic problem addressed is how to retain the consistency of Tourism Satellite Accounts (TSAs) in cases where the geographical unit becomes a regional or local one.[5] The authors propose an extension of existing frameworks to frameworks characterized by the dimensions 'commodity and factor markets', 'geographical aspects', and 'social accounts'. These extensions imply that a number of alternatives must be considered to produce an up-to-date set of accounts. The paper compares four methods and concludes that outcomes can be quite different in terms of outcomes. The article includes a discussion of the accompanying mathematical model.

This paper by Madsen and Zhang shows that imposing an accounting structure that performs well at the macro-level may not be appropriate at the regional level. One major reason is that the link with basic statistics may be lost. In the second article, Max Munday and Calvin Jones take up the same challenge, and propose a so-called Regional Tourism Economic Account (RTEA), as an alternative to more common make-use based frameworks. The authors provide a number of examples that show that data and modeling at the national level often do not provide a good basis for work at the regional level, irrespective of opting for 'top down', 'bottom-up', or mixed strategies. The proposed RTEA has several novel characteristics. Its format is industry-by-kind of tourism, for example. The paper discusses pros and cons of the new account in relation to existing ones in captivating essential elements of tourism economics.

In the third contribution, Albert Steenge and Annemieke van de Steeg discuss a different issue, based on the case of Aruba. Aruba is a small Caribbean island state that is part of the Kingdom of The Netherlands. The island is highly dependent on tourism for income and employment. The paper contains an extensive description of the compilation of the I-O table for Aruba. The table has been extended to include a separate vector of inbound tourism. In addition, multipliers have been calculated for this small island. In this way, estimates of the effects of shifts in international tourism on employment and GDP have been obtained. A foray into induced multipliers has been included. In a related line, the authors signal a potential loss of accuracy in compiling I-O tables and models based on TSA tables. A major reason is that during the compiling process many decisions must be made, the results of which are not always well recorded in reports based on feeding the data to models.

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[5] For a thorough introduction to the concepts underlying Tourism Satellite Accounts, see Frechtling (2010).

Insight in what motivates tourists to visit a certain place or region is most relevant in tourism research. In their contribution, Sarah Cline and Andrew Seidl examine the sensitivity of tourism visits to changes in local environmental attributes for a small region in Colorado, one of the Western states in the US. These attributes include such variables as the amount of open ranch land and local water quality. This type of research usually requires a combination of non-market valuation methodologies (since market prices for such features of regions cannot be observed) and IO-based modeling. For the latter, the authors use the well-known IMPLAN (Impact Analysis for Planning) IO model. IMPLAN uses data from such sources as the Bureau of Economic Analysis and the Bureau of Labor Statistics and allows users to forecast regional economic effects for specific industries. Loss of natural resources in regions like the county studied by Cline and Seidl is likely to decrease their attractiveness, which leads to losses in employment, which are reinforced via intersectoral effects. Like in the article that follows it, this article has direct policy relevance.

Analysis of the scope of policy alternatives available to public authorities in shaping attractiveness to tourists is the central feature of the fifth article, by Mara Manente and Mauro Zanette. They focus on tax policy (and VAT rates in the hotel and restaurant sector in particular) as a policy instrument that can be used to generate revenues caused (both directly and indirectly) by an increase in inbound tourism. Reducing VAT rates may turn out to have unattractive aspects as well. As is also argued in the article by Cline and Seidl, politicians prefer increases in tourism-related tax rates, since these shift tax pressure from residents to non-residents. Manente and Zanette discuss the scope of instruments in an international context. Various scenarios are examined, using a multiregional input–output model.

In the contribution that concludes this special issue, Ya-Yen Sun and Kam-Fai Wong address a very relevant problem in IO-based impact analyses, i.e. the plausibility of assumptions regarding the stability of input coefficients. The main focus of the article is on the assumption of a constant number of jobs required per monetary unit of gross output. The authors argue that this assumption may well lead to biased estimates, in particular in service industries in which these coefficients are determined by organizational choices, rather than on purely technological requirements (which can be argued to dominate in manufacturing industries). Changes in labor input coefficients are especially important if the impacts of short-run events are predictable, such as the timing of big sports events (see, for example, Ahlert, 2001).[6] Differences in capacity utilization (making the number of hours worked per job flexible, for example) are among the main causes of changes in prices of gross output. Ignoring the possibility of such effects may severely affect the quality of impact studies in this particular area. Sun and Wong estimate this type of effects for two Taiwanese industries that are central to tourism, the hotel and airline industry.

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[6] Ahlert (2001) is an illustration of the fact that our set of 'tourism-IO' articles (discussed earlier in this introduction) has been constructed in a rough way and should just be taken as indicative. Although Ahlert's article is the by far most downloaded article published in *Economic Systems Research* (according to download statistics in the RePec database) and clearly belongs to the type of studies we focus on, it did not include the search terms listed in footnote 1. Hence, it is not part of the set of 'tourism-IO' articles.

We hope that this special issue on Tourism and Input–Output Analysis will contribute to an increasing exchange of ideas and best-practice methods between scholars active in the many subfields covered by 'general input–output analysis' and researchers who have written extensively on tourism using input–output techniques.

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