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Editorial

The statistical information for tourism economics. The National Accounts perspective

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Abstract: Statistical information strengthening in tourism sector is recommended by the United Nations World Tourism Organization (UNWTO). Economic-statistical information is basic for carrying out effective quantitative economic analysis of tourism. Tourism Satellite Account (TSA) is not a suitable source of information for econometric analysis. National Accounts (NA), in the form of Input-Output (I-O) Tables, Computable General Equilibrium (CGE) models or Social Accounting Matrices (SAMs) represent a good source of economic-statistical information and of economic impact analysis. This paper shows how it is appropriate to focus on the definition of tourists and tourism enterprises, overcoming the uncertainties and distortions in the analyses and results that the current leaning on a generic definition of tourism entails. Furthermore, it is argued that the best impact analysis can be conducted through the use of a SAM, which in addition to being structurally consistent with the choice of defining and implementing tourists and tourist enterprises, confirming its usefulness, allows to analyse fully and, from a theoretical point of view, more correctly than I-O Tables and CGE models, the impact of inbound tourism expenditure on production structure represented by branches, on factors and therefore on GVA/GDP produced by the branches themselves and on households expenditure. Furthermore, the suggested approach offers actual possibilities for assessing the economic sustainability of tourism development. Regional and national impact analyses carried out with the use of SAMs confirm the positions claimed in the paper.

Keywords: tourists; tourist enterprises, tourism; TSA; I-O Tables; SAMs; NA

Galileo Galilei, to the philosopher and the mathematician who refuse to take a look at the telescope and recall the universe of the divine Aristotle with the crystal caps:
"Gentlemen, trust your eyes, it was really enough that you looked into the telescope".
From 'Leben des Galilei', by Bertolt Brecht

Preamble

In our capacity as guest editors of this NAR Special Issue (SI) on tourism, we wish to draw up a closing document to comment on the work done by the scholars who participated with their papers and the results they achieved, and in turn to discuss an economic issue concerning tourism and the statistical information for tourism economics, which, "inter alia" concerns tourism ability to act as a driving force to fuel the economy of a country.

But, in order to be able to do it with the best effectiveness, we should first retrace the reasons why we felt that the launch of a SI on tourism was absolutely useful and could lead to interesting results and keep alive a profitable discussion. These reasons will be intertwined with further reflections which aim to broaden and strengthen them.

Tourism is such an important issue that it has assumed the guise of a mantra, with a so varied and full-bodied content, to make it useful for any proposal and solution, in almost all fields of activity and discussion.

Several clichés contribute to feed this belief, which has now become, in the common feeling, a no longer questionable acquisition. Suffice it to mention, as an example, the abused refrain of nearly all Italian politicians, firmly shared by common thinking, that tourism, mostly the cultural and the landscape ones, is the real oil of Italy, which can provide the country with widespread well-being.

According to Stainton (2020), the tourism industry is argued to be the largest industry in the world, providing more employment than any other industry. Perhaps a slightly exaggerated statement, but which provides a measure of the importance gained by the sector and the attention it aroused in scholars.

To use the words of Walton (2009), tourism has become, on many measures, the world's most powerful and pervasive cluster of commercial and industrial activities, so much that there is no straight-cut answer to the question on what is tourism. This is precisely the point from which it seems reasonable to start in order to try to go deeper into its definition.

It is probably not a coincidence that the custom of indicating the sector as a tourism industry, or better, tourism industries (hotels, restaurants, transports, tourist operators, etc.) has now become widespread, testifying the complexity of a phenomenon that is characterized by production units offering commercial and industrial services to visitors who request those services.

Unfortunately, tourism doesn't have a universally accepted definition, and consequently, a precise identification, because of the uncertainties that characterize it, not so much on the supply side, that is, that of the industries, but on the demand one, caused by the complexity and individualism of the travellers and the activities that they choose to undertake. Actually, the word tourism essentially refers to the activities undertaken by visitors, also known as the visitor economy. And the tourism industry encompasses all activity that takes place within the visitor economy.

This includes activities that are directly related to the tourist, such as staying in a hotel, ordering a meal or visiting a tourist attraction. It also includes indirect activities, such as the transport company which delivers the food to the restaurant in which the tourist eats or the laundry company that has a contract with the hotel for cleaning bed sheets. Indirect contributions to tourism industry contribute to complicate further the definition.

The definition of tourism delivered by the United Nations World Tourism Organization (UNWTO), which sounds "Tourism comprises the activities of persons traveling to and staying in places outside their usual environment for not more than one consecutive year for leisure, business and other purposes" seems somewhat restricted and inaccurate, if regarded with the eyes and the tools of a statistician. Restricted, because after all it appears a little too summarized in relation to the complexity of the phenomenon. Inaccurate, as it includes business among the purposes, which widens the definition too much and gives it a too general and therefore indefinite character, not to mention the vagueness of that "other purposes" that adds uncertainty to the definition and leaves it in the limbo of definitions hardly operational from a statistical point of view. They do not add much the countless other only slightly different definitions to which international statistical and economic institutions, such as Eurostat and OECD, as well as the fertile imagination of the stakeholders, has given birth to.

For instance, the Cambridge Dictionary defines tourism quite simply as 'the business of providing services such as transport, places to stay or entertainment for people who are on holiday'.

Walton (2020) defines it as the act and process of spending time away from home in pursuit of recreation, relaxation, and leisure, while making use of the commercial provision of services. Definition that seems even better than the official one.

We should not forget the cautions of the European Commission itself, when it expressly complains that the complexity of tourism and the heterogeneity of the activities deployed to satisfy tourists "explain the apparent paradox between the widespread perception of the important role which tourism plays at world level and the imprecise vision of its identity, which has not helped tourism to gain its legitimate place as an industry in its own right" (Commission of the European Communities, 1995).

All this may lead us to think, without feeling too reckless, that after all it might be better to shift the focus and to be more specific, if only for the advantages that can derive from it with regard to a more precise compilation of statistical information and to the consequent measurement needs -in particular those concerning the evaluation of tourist economic activities -and, instead of defining the tourism, defining the tourists and the tourism enterprises. As for the former, drawing attention to them seems in a certain sense almost to be suggested by the aforementioned UNWTO definition of tourism, when it mentions "the activities of persons traveling".

Indeed, on the side of the demand for tourist services, it must be reiterated that tourists are the observation units on which the data are, or better, should be, collected, that is, whose characteristics are intended to be measured.

Unfortunately, it must be immediately noted that even the definition of tourist is not free from drawbacks, nonetheless much less serious than those raised by the definition of tourism.

We should thank Oscar Wilde, the prince of aphorists, who offers us the way to come into play with a smile: "Of all unbearable human beings -and God knows how many there are! —tourists are the worst. If they are British, they colonize the hotel staff, if they are Italian, they immediately think of entering your room and if they are German well, as long as they are". Certainly, playful and witty, but how illuminating! And then, let's resort to the Tacitian concision of a verse of the Italian poet Giuseppe Ungaretti, "The goal is to leave", for a fulminant metaphor of the tourist, to close with the melancholic view of another Italian poet, Giorgio Caproni, "I reached the calm despair without dismay. I get off. Good continuation", for the interpretation of the end of life as the conclusion of the train journey of a tourist.

These definitions, far from scientific, are nothing more than a way to enter the subject; it takes much more. Not even, since tourists have so cheerful eyes, are so colourful, rowdy and equipped with tourist guides, backpacks and bottles of water, it can be helpful to assert, by paraphrasing Joan Robinson in her

definition of an elephant, "I don't know how to define a tourist, but I recognize him if I see one".

Fortunately, there is a widely accepted definition of tourist, as "a person travelling to another location, away from his usual social environment, for business, pleasure or social reasons", which, on the other hand, intertwine and identify with those of tourism, extend it and provide us with a more comprehensive interpretation. This definition is what it takes.

In our opinion, this setting is what we should focus on, which would give us a way to give a more appropriate economic evaluation of tourism industry. In fact, it would thus be possible to estimate the value of tourist spending in all those cases in which it is impossible to distinguish between non-tourists and tourists, simply by registering the status of tourist in the most appropriate ways when paying the bill or ticket, for example of: meals in restaurants, overnight stays and stays in hotels, spas, seaside and mountain holiday resorts, visits to museums, transport used.

On the supply side of those same services, there are tourism industries and the enterprises that are part of them. These include transportation, such as airlines, car rental, etc., accommodation (hotels, bed and breakfasts, etc.), food and beverage (restaurants, catering, etc.), entertainment (casino, tourist information, shopping, etc.), and connected industries (financial services, travel agents, tour operators, etc.).

Sinclair and Stabler (1997) have defined the tourism enterprise as "a composition of products involving transport, accommodation, catering, natural resources, entertainment and other facilities and services, such as shops and banks and other tour operators".

This definition of tourism enterprise, like any other that can be devised if one remains within the official definition of tourism, does not seem satisfactory from an operational point of view, because it refers to generic products, and does not allow to precisely identify the part of the activity of the enterprises that is aimed at satisfying the services requested by tourists. In fact, with the exception of some types of enterprises in the connected industries sector, such as travel agents, tour operators, or tourism organizations, specifically tourism oriented, the activities of transport enterprises, as well as those of accommodation, food and beverage, and entertainment are offered to everybody, tourists. and not. This makes it very difficult to discern and estimate the value of the services produced for tourism and the solutions that are devised are far from giving completely satisfactory results. A decisive help in solving the problem, which is not possible by circumscribing within the current definition of tourism, can come precisely from the above claimed identification of the tourist. In fact, it is by focusing on tourists and their identification that a specific satisfactory solution can be found.

Therefore, despite the uncertainties and some inconveniences that may arise, it is certainly advisable to shift the focus from the generic definition of tourism, difficult and of little utility in terms of economic evaluation of the activity, to that of a tourist and a tourist enterprise.

Thus, a statistician definitely is attracted by tourism, fascinated by it because of the intriguing challenges it puts on data collection, measurement, estimation and evaluation, and tries to understand its role and meaning in the light of his own mentality, with the tools that are most familiar to him, almost with the ardor of a neophyte. Because there is a mine of data that, precisely due to the nature and the peculiarities of the sector, are collected in a way that is sometimes not sufficiently clear, sometimes questionable, and analysed and interpreted with tools and methods that are not rarely equally disputable, not being regarded in a reference general framework.

Returning to this SI, the papers presented lead us to believe that it, as a whole, has contributed to shedding new light on the issue and to outline ways for new achievements.

As a matter of fact, they touched upon general tourism issues, such as the perceived crowding and the physical distance rules in a national accounting perspective, the evaluation of the public expenditure on tourism, the unbalanced development and trends of China's regional tourism, the relationship between mobile phone data and tourism statistics, the talent reward and gender wage gap in the hospitality industry, the evolution and new trends of China's tourism industry, and the strategic policy modelling of Vietnam's sustainable tourism and growth. All topics of great and current relevance, whose discussion has brought new achievements useful for a better understanding of tourism and the most suitable policies to strengthen its economic and social role.

The statistical-economic and econometric estimation made use of data concerning countries such as China, Spain, Italy and Vietnam, all countries with a high or very high tourist vocation; therefore, the analyses made it possible to understand the condition of relevant tourist activities in those countries, the problems solved and those still open, also providing indications and guidance for their future solution, as well as a vision which, albeit in the heterogeneity of the issues addressed, made it possible to grasp elements of general commonality.

For our part, we wish to contribute to the debate and close the SI, by highlighting the importance, for the economic analysis of tourism, of a theme that we believe crucial, namely, that of the statistical information for tourism, and particularly the economic-statistical one, a topic that has seen its relevant importance recognized by the World Tourism Organization (WTO), has been and is still being much discussed and offers ideas for deepening the analysis of the interrelationship among tourism, economy and society, with all the implications that derive from it in terms of the economic, social and environmental sustainability of the tourism itself.

1. Introduction

Are there the economic-statistical bases for the economic analysis of tourism and for modelling? Can we look through the telescope, as a metaphor for statistical data, for seeing the economy of tourism?

There is certainly a great deal of statistical information consisting of arrivals, departures, overnight stays, hotel presences, etc., useful for the analysis of the structural and operational aspects of the sector. There is much less information regarding the economic aspects of tourism.

It must be recognized that the WTO decidedly postulates and supports the statistical information for tourism analysis by recommending the compilation and the implementation of the Tourism Satellite Account (TSA), as the tool for suitably collecting the quantitative information of sustainable tourism in its various dimensions (economic, environmental and social) and at the relevant spatial levels (global, national, sub-national).

Actually, following the conclusions that emerged at the European States Conference (ESC) held in Neuchâtel on14–16 June 1999, the resolutions of the Nice conference, held on 15–18 June 1999, as well as the interest of many countries to have, at the international level, a guiding structure for the development of a TSA, WTO, OECD and Eurostat propose the formulation and the implementation of a joint action plan aimed at the development of a "Common Conceptual Tourism Satellite Account framework (CCTSA) ". (https://www.istat.it/it/files//2018/07/2001_3.pdf)

Thereafter, the United Nations (UN) produced the document "International Recommendations for Tourism Statistics (IRTS) "(UN, 2008).

The first meeting of the Working Group of Experts on Measuring Sustainable Tourism (MST), held in Madrid, Spain, in 2016, agreed that developing a statistical framework for sustainable tourism

is a priority to support integrated policy responses at national and destination level, and urged UNWTO to lead this effort. This solicitation found concrete outlet in the document by the United Nations, 'Statistical Framework for Measuring the Sustainability of Tourism Department' (UN, 2018).

2. The economic-statistical information and its use

2.1. The TSA

According to OECD (2000), TSA is internationally recognized as the best approach to measuring the economic significance of tourism and as an important information base for tourism analyses. It provides a means of quantifying the size of tourism within a NA framework. As such, it represents the 'official methodology' that enables tourism activity to be compared with other major industries in terms of size of VA, output and employment contributed to the national economy. TSA also facilitates international comparisons of destination tourism industry performance.

TSA, as a tool for assessing the economic dimension of tourism, contains a great deal of economic-statistical information of NA origin, as it is a joint representation of tourism on both the demand and supply side. Of the 10 tables of which it is composed, the first 6 contain: Tables 1 to 4, the tourism expenses, including consumption by product; Table 5, the supply, that is the production of the tourism enterprises; Table 6 contains the Added Value (VA).

But this information is not suitable for elaborating comprehensive economic analyses of tourism.

2.2. The econometric framework

Several papers used statistical information concerning tourism demand to estimate its triggering on economic growth through the impact on Gross VA (GVA) or even, equivalently, on GVA at market prices, that is, the Gross Domestic Product (GDP). To this aim, in an econometric framework, they conducted regression analyses in which tourism demand was regressed on the global or per capita GDP. Obviously, they did not use data from the TSA, but cross-section or time series data, since the statistical-economic information contained in such a document does not lend itself to econometric analysis. Much less, they can be used for impact analysis and/or economic modelling.

In their paper, Brida et al. (2016) presented an exhaustive review of approximately 100 peer-reviewed published papers on the Tourism-Led Growth Hypothesis (TLGH) to provide an assessment in terms of econometric methods used, focusing on regression analysis Granger causality.

They referred to the contribution of foreign demand for tourist services, generated by the inbound tourism, a theme of undoubted relevance, as some believed that it is high in economic terms as the international openness can trigger returns to scale, private investment and efficiency gains; while others argued that it is not particularly significant, at least in the most developed tourist areas, being characterized by low productivity, and that in addition it can displace other more technologically progressed industries, such as manufacturing, by ultimately harming economic growth. Not to say that tourism booms can cause congestion, thus generating problems of excessive use and management of cultural heritage and natural resources.

More recently, Bronzini et al. (2019) estimated the effect of foreign tourists' spending on GVA per capita growth for the Italian provinces (a proxy of the unavailable provincial per capita GDP) over the period 1997–2014.

An empirical analysis was conducted by using a unique sub-regional data set to estimate the effect of foreign tourists' spending on per capita GVA growth for the 95 Italian provinces over the period 1997–2014, to verify whether the provinces with a higher initial level of per capita tourist expenditure, grow faster than the others in the subsequent period. The authors used a model in which the per capita GVA, as the arithmetic mean of the difference between the logarithm of the GVA 2014 and that of 1997 over the 17 years, is regressed on its value at 1997, on the per capita 1997 tourist expenditure and on a set of variables fixed at 1997. Alternatively, they check slight variants of this model.

Using the above model specification, the effect of foreign tourist expenditure is modest: a 10% increase in the initial per capita tourist expenditure increases annual growth of per capita GVA by 0.02 %.

Econometric research provides useful but aggregate, estimates of the impact of the inbound tourism demand on the economic growth, while it would be interesting to be able to assess in more detail to what extent the tourism demand has effects on the macro subjects of the economic system, namely, institutional sectors and industries, including factors, in a multiplicative perspective, and to measure these effects.

However, econometric analyses at a sub-national level are making headway, which shed further light on the issue. They allow to go deeper in the details and highlight finer aspects.

OECD (2016) conducted a review of statistical initiatives measuring tourism at sub-national level for 10 OECD countries that, although not focused on the impact of tourism on economic growth, provided information by region on the direct and total impact of the tourist expenditure on GDP (Canada) and on GVA (Denmark), as well as on the relative importance of the tourism industries in terms of contributing to GVA within each of the regions.

Although the TSA cannot represent a database of NA origin and the econometric analyses have been performed without deliberate use of NA data, quite a lot has already been done in the direction of using the NA as a statistical support for the economic analysis of tourism. As highlighted by Song et al. (2012), Input-Output (I-O) based impact multiplier analysis, Computable General Equilibrium (CGE) models and Social Accounting Models (SAMs) based impact multiplier analysis have been used to study the contribution of tourism to the economic growth.

A comprehensive analysis of the research on the multiplying impact based on I-O Tables, SAMs and CGE models is contained in Ferrari et al. (2018). We refer the reader to this exhaustive review.

Here, we will discuss only the contribution that are congruent with the aims of this paper, consisting of the enhancement of the statistical approach and of the most suitable use of NA data as a support to quantitative analysis.

2.3. The I-O framework

Indeed, many methodological advancements have been recorded in tourism economics, represented by a considerable number of I-O impact multiplier studies, the majority of which, however, were principally applications of existing techniques to particular countries and regions. Only a small number of studies contained advances in methodology and/or critical insights into the technique. Archer and Fletcher (1996) used an I-O model with a consumption feedback mechanism in order to measure separately the effects of consumer spending induced by the increased direct and indirect economic activity, to study the economic impact of tourism in the Seychelles. Frechtling and Horvath (1998) a RIMS II regional input-output model to estimate the multiplier effects of visitor expenditures in Washington, D.C.

Many other studies have presented estimates of the multiplier impact of tourism expenditures: the total sales, output or other measure of economic benefits generated once the initial visitor spending has worked its way through the economy under study through inter-industry transactions (the indirect impact) and through employee consumption expenditures (the induced impact). A great deal has been published about the contributions of tourism to national, regional and local economies (e.g., Bull, 1995; Fletcher, 1994b; Frechtling, 1994a).

2.4. The CGE framework

Many methodological advancements have been recorded in tourism economics, represented by the modeling approach that has made its way in the last decades, with the use of CGE models. Dwyer et al. (2006) highlighted that the multipliers calculated based on CGE models are much more modest, while the I-O method tends to overestimate the economic effects.

Although the relationship between TSAs and CGE models is not always clear, models have been developed which integrate information from TSAs into a CGE modelling framework, to provide a leading edge technique for modelling the economic impact of tourism and travel (Blake et al., 2001).

Much care has been devoted to the application of CGE models to the estimation of the economic impact of the demand generated by disparate events. Among these, it is worth mentioning some related to sport events such as such as the World Cup (Lee et al., 2010), and the Beijing 2008 Olympic Games (Li et al., 2011). Likewise, Blake et al. (2004), applied to Scotland a model that combined tourism indicators with structural time-series forecasting and CGE impact analysis, to take account of multiple events that affect tourism destinations, Dwyer et al. (2006), used a CGE model of the Australian economy to simulate the impact of the SARS crisis on tourism to Australia; and Yang and Chen (2009), utilized a CGE model to investigate the tourism implications of the SARS epidemic in Taiwan.

A greater deal of attention was paid to the use of CGE models in estimating the impact of tourism demand on the economic activity: Dwyer et al. (2003), who used a multi-regional GE model to estimate the effects of increased tourism on the economy of New South Wales, Australia's largest state; similarly, Adams and Parmenter (2006), who used a CGE to project the effects of tourism on the industrial and regional structures of the Australian economy; Blake (2009), who used a dynamic CGE model to examine these effects; Pratt (2011) who made resort to a CGE model to highlight the fact that welfare is maximised at the zenith of tourism growth; and Ferrari et al. (2009), who used a CGE model to estimate the impact of tourism on the Sardinia island economic system.

2.5. The SAM framework

The economic-statistical support that the NA can give to the quantitative analysis in tourism through the use of SAMs is sharply relevant, as, the SAM multiplying impact analysis has several advantages, both with respect to the I-O impact analysis, and with respect to the CGE one.

First of all, a SAM, which incorporates an I-O framework, is the best logical framework to implement the use of tourists and tourism enterprises definitions, advocated above, when we have motivated and supported the opportunity to analyze demand and supply of tourist services, instead of focusing on a generic definition of tourism. Indeed, being the most complete and comprehensive representation of an economic system, a SAM includes the institutional sectors, so designing a more accurate model of exogenous consumption behaviour than the I-O model, and providing a fuller

representation of external income sources. Moreover, a I-O model returns an incomplete representation of the macro economic activity, not being able, unlike a SAM, to grasp the process of redistribution of income, which plays a very important role in the tourism economics.

Regarding CGE models, they allow to take account of the crowding-out effect that an expanding tourism industry has on other sectors of the economic activity, depending on factor constraints, exchange rate changes, the working of labour markets and the macroeconomic policy context. The extent of these "crowding out" effects depend on factor constraints, changes in the exchange rate, the workings of labour markets, and the macroeconomic policy context. Nevertheless, standard CGE models often strictly assume constant return to scale in production functions and ignore market failures, as stressed by Croes and Severt (2007). Moreover, the possibility of incorporating alternative conflicting but equally plausible assumptions, such as fixed real wages and flexible unemployment versus fixed unemployment and flexible wages, can introduce unwanted crowding-out effects (Dwyer et al., 2006). A SAM does not suffer from this inconvenience.

Moreover, CGE models present serious weaknesses in calibration, as the elasticities of substitution of the production functions, basic for the computation, are usually imputed and not estimated, thus introducing a bias in estimated impact. Only quite recently, Ferrari and Secondi (2017) have shown that these elasticities can be estimated using the SAM itself.

Wagner (1997) used a SAM to examine the economic effects of tourism in a Brazilian region. He found that, since most of the inputs, commodities, and capital used in the region are imported, money tourists spend is used to pay for these imports and will generate only a small economic impact. Consequently, there is little incentive to stop current economic activities that are probably counter to ecosystem-based tourism.

Akkemik (2012) analysed the contribution of international tourism to the Turkish economy using two SAMs for 1996 and 2002, respectively, and used the SAM impact model to: (i) estimate sectoral comparison of GDP elasticities, and (ii) conduct impact analysis of international tourism on output, value-added, and employment. The results show that the GDP elasticity of international tourism is relatively low and the impact of foreign tourist expenditures on domestic production, VA/GDP, and employment in Turkey is modest.

Incera and Fernández (2015) used the SAM impact model to study the ways in which tourism consumption affects income distribution. Results showed that the positive effects on all income groups are significant. However, high-income households benefit more than low-income ones, contributing to a slight increase in income inequality within the region.

Therefore, overall, the impact is rather limited, both in the case of Brazil, where however the effect of imports could obscure the relationship between tourism spending and economic activities, and in that of Turkey, where the impact is measured only on the income distribution.

All this seems to confirm the doubts have been raised by many about the real contribution of the tourism industry to countries' economic growth that have fuelled a debate, which is still alive, not so much on the real existence of the contribution, which seems undeniable, as on its magnitude.

The SAM based multiplier impact that the tourism exogenous demand has on a regional economic system, regarded from both the supply and the demand side, i.e., on industries, institutional sectors and factors was analysed by Ferrari et al. (2018). A SAM 2011 for Tuscany elaborated by IRPET (the Institute for Economic Planning of Tuscany) in the framework of the European System of Accounts 1995 (ESA 95) was used.

This SAM consisted of 28 branches (industries), three institutional sectors, i.e., Households, Firms, Government, and capital accounts for two of these sectors. In turn, Households were subdivided into Producer and Consumer, with the latter also classified by quintiles. Firms were subdivided into Financial and Non-Financial. In all, 36 factors and institutions that, along with branches, formed a (64×64) SAM.

To design the impact multiplier model, the exogenous account was identified by aggregating: (i) government expenditure, (ii) capital accounts, and (iii) the Rest of Italy (RoI) accounts. Specifically, in all, 14 accounts.

The endogenous accounts were: (i) value of goods and services produced, (ii) output from activities, (iii) payment from factors, and (iv) households' income totalling 50. The branch "Hotels & Restaurants" represented the policy objective of the analysis.

In other words, the tourism sector has been necessarily identified with the branch Hotels & Restaurants. This is but a confirmation of our proposal to focus on the definition of tourism enterprises or, industries, on the supply side.

The analysis allowed measuring the direct and indirect impact of the inbound tourism demand on the above branch, and the indirect impact on the other 27 branches, that is, on the production structure of Tuscany. Similarly, as for the impact on VA/GDP produced by each branch, that is, on factors: labour income, which in this SAM for Tuscany is referred to as "Wages and salaries", and capital income, denoted as "Gross operating surplus". Finally, the impact on households' expenditure for the products of each branch was measured as well, and evidence was grasped that tourism expenditure stimulates income transfers that in turn determine the disposable income for consumption.

Overall, it emerges that, although there is evidence of quite high direct and indirect multipliers, the response of the region's productive structure to inbound tourism expenditure is, in terms of absolute values, perhaps not as high as one might have expected, or at least not uniformly high, with some positive exceptions such as food. This would seem to confirm the doubts raised about the not so high effect of external tourism demand on economic growth.

Different is the case of labour and capital factors, as well as that of household expenditure, whose elasticity with respect to the exogenous demand for tourism is very high.

This detailed evidence that the use of a regional SAM allows to grasp is confirmed by the analysis that can be carried out on a SAM at national level.

Indeed, Ferrari et al. (2021) have used the same Keynesian theory based macro-accounting methodology on a (44×44), 2015 SAM for China including 19 industries elaborated at the Shanxi University of Finance and Economics, with the collaboration of the Department of Statistics of the University of Florence (Ma et al., 2018). It is based on a 2012, I-O Table for China with 42 industries at producers' prices, and on the Flow of Funds Accounts (Physical Transactions), both elaborated by the National Bureau of Statistics of China.

3. Conclusions

There is a basic idea that permeates the whole paper: that of statistics as a basis for tourism economics, therefore, specifically, of economic-statistical data as a support for the economic analysis of tourism.

Before discussing this idea, and indeed, to better support it, we focused on a basic misunderstanding that we believe contributes to creating not a few problems and to spreading uncertainties that reverberate on the economic analysis of tourism. This misunderstanding consists in

accepting that to identify the 'tourism sector' we focus on a rather vague meaning of tourism, whose definition is very problematic and absolutely not univocal and leads to drawbacks that are reflected in the analyses and results that derive from it.

To overcome these drawbacks, we suggest starting from the supply and demand of tourist services and focusing on the subjects who are in charge of the related transactions, that is, on tourists on the demand side, and on tourism enterprises, on the supply side.

We have shown how the definition of these two types of subjects is more adequate and easier to implement to define the scope of tourism activity and how it is possible to carry out economic analyses of tourism, which are not affected by uncertainties, inconsistencies and errors that are unfortunately traceable in current analyses, which use overall data that are not exactly referable to the activities of tourists and tourism businesses, since they also include the activities of non-tourists.

We have seen how the economic analysis of tourism can be based on the TSA, and that indeed this tool is recommended by the UNWTO. However, as it is easy to see at once, this document is suitable for economic analysis of the structure of the industry only, both on the supply and demand side, but does not allow analysis that aim at measuring its impact on the growth of an economic system, either regional or national.

To this aim, some studies have made use of data on VA/GDP of cross-section or time series origin, and have used a basically regressive econometric approach, in which the VA/GDP is regressed on the inbound demand for tourism. The results obtained are interesting but aggregated. Conversely, it would be extremely useful to be able to measure the impact that the exogenous demand for tourist services has at the level of the detailed economic system, on the supply side, at the level of production of the branches (or industries), and of the remuneration of factors, and on the demand side, at the level of the institutional sectors, primarily households and their income.

To illustrate our idea, we have shown how, for economic analysis of tourism, the NA can provide a crucial help represented by a SAM, whose structure is consistent with the identification of tourists and tourism enterprises suggested by us, providing a database that allows measuring the above mentioned detailed impact and to identify the tourism industry through a specific branch, that of Hotels & Restaurants.

As an economic-statistical database, a SAM, as happens with an I-O Table or a CGE model, has the characteristic of allowing to measure: (i) the degree of integration of tourism with the rest of the production activities, which implies synergies and related cost saving, reflecting in turn on the efficiency of the operations and the quality of its offer; and (ii) the share of VA/GDP, in the form of labour income and capital income, produced by tourism, and therefore, its ability to create jobs and wealth.

On the other hand, a SAM provides a number of advantages compared both to an I-O Table and to a CGE model. In fact, unlike an I-O Table, it includes the institutional sectors and therefore, it models more accurately the exogenous consumption behaviour and returns a fuller representation of external income sources. Indeed, the I-O, besides not taking into account the institutional sectors, returns an incomplete representation of the macroeconomic activity, not being able to grasp the redistribution of income process, which plays a very important role in tourism.

Unlike a CGE model, a SAM does not present the risk of introducing unwanted crowding-out effects, and, while CGE models has a bias in estimated impact, due to the imputation of the elasticity of substitution of the production functions, a SAM does not.

The use of a SAM as a database allows, therefore, to measure better than an I-O Table or a CGE model, the direct and indirect effect of the exogenous demand for tourism services on the branch that represents tourism, in our case, the Hotels & Restaurants branch, and the indirect one on the production

structure, i.e., the other branches, the direct one on the VA/GDP of the tourism branch and the indirect one on the VA/GDP of the other branches, as well as the indirect one on household income. Which is what we believe is appropriate to do in tourism economics, to measure in a detailed and consistent way the effect of the exogenous demand for tourism on economic growth.

However, the mists that still permeate the tourism economics and the great research area opened up by the vigorous developments in the sector, pave the way for further and in-depth economic analyses based on the use of SAM.

Indeed, we should wonder whether the tourism growth is sustainable. The damage caused to the environment by tourism should not be neglected, particularly regarding air pollution and industry waste production. Indeed, the noteworthy multiplier effect of tourists' demand on highly environmentally damaging industries such as food, beverage, coke, chemicals, pharmaceuticals, computers, electronics, and activities such as energy supply, transport, and waste treatment, implies increases in energy consumption and emissions into the atmosphere and water pollution by the concerned enterprises, as well as increases in waste disposal. In turn, such increases create problems that the policy makers should address, such as environmental protection.

All this strengthens the use of SAM in tourism economics analysis, because a SAM, with its representation of the production system, allows to derive indirectly the implicit costs and benefits underlying the impact of inbound tourism demand on the branches, and definitely, to provide useful answers to the evaluation of the economic sustainability of tourism.

Without forgetting that, while all the studies discussed in this paper focus on the inbound demand for tourism, there is also a domestic demand, which, being endogenous, cannot be considered by them, but which, like the inbound one, produces heavy environmental damage, the costs of which should be added to the previous ones for a global evaluation of economic sustainability.

Conflict of interest

All authors declare no conflicts of interest in this paper.

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