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Research article

The Tourism Satellite Account: definition and estimation problems

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Abstract: In this paper we conduct a theorethical-methodological analysis of the Tourism Satellite Account (TSA), having regard to its implementation, and helped by the exegesis of its characteristics. The discussion on its theoretical assumptions leads us to stress how, in the debate that has florished around it, the analysis of the structure of the TSA has been neglected and to propose to deeply investigating it to assess the situation. To this respect, we highlight the weakness of the United Nations World Tourism Organization (UNWTO) definition of tourism, having as a reference the TSA of Italy, because of the excessive breadth of the meaning in which tourism is seen, suggesting that it can be ameliorated, with positive repercussions at operational level, simply adopting a narrower definition, which does not include travel for business and other purposes. In the meantime, we demonstrate that the demand for accommodation and catering is overestimated due to the use of the "presences" in the estimation methodology. Indeed, the presences that are used to estimate domestic expenditure improperly include both residents who are not outside their usual environment and non-residents, resulting in the overestimation of the internal tourist consumption for characteristic tourist services accommodation excluding second homes and catering. Regarding supply, we stress some problems of reconciliation between the branch "Accommodation services; catering service activities" of the Input-Output Table (IOT) and the whole of the tourist accommodation and catering industries of the TSA that should be made explicit. Moreover, we point

[1] We would like to thank Dr. Ilaria Piscitelli and Istat for the availability shown in the illustration of the methodology used for the construction of the TSA. Needless to say, what is written is the sole responsibility of the authors.

out the nature as a lagged document of the TSA. This makes it difficult to use it to get a picture of the current tourism situation, without resorting to hypotheses that are very little, if not at all, sustainable, as well as to take it as a basis for econometric analysis.

Keywords: Tourism Satellite Account; tourism definition; tourist presences; tourist demand; internal tourism consumption; tourist supply; Input-Output table

JEL Codes: C82, E01, Z32, D57

1. Introduction

It was during the International Conference on Travel and Tourism Statistics, held by the United Nations World Tourism Organisation (UNWTO) in Ottawa in 1991, that Statistics Canada presented a scheme based on a project to examine the feasibility of applying the principles of satellite accounting to tourism. This scheme aimed at establishing a credible and comparable means for assessing tourism-related economic activities in relation to other industries in a domestic economy, as well as to develop a framework for relating other relevant data regarding tourism in an organized and consistent manner[2].

Following this scheme, in 1993the UNWTO and the Organisation for Economic Cooperation and Development (OECD) began to set up a first frame of reflections for the elaboration of a Tourism Satellite Account (TSA).

At the Nice conference, held in June 1999 and originated at the European States Conference (ESC) held in Neuchâtel in the same month, the UNWTO presented its recommendations for the compilation of a TSA on the basis of the work developed by the different entities (UN Tourism, 1999). In parallel, the conference stimulated the interest of many countries in establishing, at the international level, a guiding structure for the development of a TSA.

The updating during the early 2000s of the above document included the incorporation of changes to reflect updated and new recommendations that materialized in the important reflections about the main steps that have led to this historical achievement, as well as to outline the steps still to go, contained in UNWTO (2001). In parallel, EUROSTAT published the *European Implementation Manual on Tourism Satellite Accounts (EIM)*, aiming at providing guidelines on how to implement

[2] This project can be regarded in the framework of the quantitative approach to tourism, the first idea of which can be traced back to 1982, when the UNWTO supported the preparation of a document illustrating how tourism could be described in relationship to the recommendations on national accounts existing at that time, stated in the System of National Accounts (SNA) 1968 (UNWTO, 1982). This document stressed the importance of such a description of tourism as a uniform and comprehensive means of measurement and comparison of tourism with other sectors of the economy. In this framework, the Tourism Committee of the OECD has developed important research in advance recognition of the scope, nature and role that tourism performs in the OECD economies. This research activity first found an outlet in the "Third International Forum on Tourism Statistics" held in 1997 (OECD, 1997), in which the OECD examined several of the thornier problems related to the measurement of tourism and its linkages with national accounts and subsequently in the development of its *Manual on Tourism Economic Accounts* published in 2000 (OECD, 2000).

TSA, with concrete reference to the harmonised statistics available in the European Statistical System, in particular in the domain of tourism statistics.

In the subsequent years, the Directorate-General Enterprise and Industry (DG ENTR) of the European Commission offered grants to the Member States to support feasibility studies and/or the actual implementation of TSA. These projects have fostered the work on TSA in most member states; however, the state of the exercise and the level of harmonization differs largely from country to country. As an answer to this observation, EUROSTAT launched a project which ran in the period 2008–2009 with two main objectives: (1) to make a comparative assessment of the methodologies applied and of the results of the earlier national projects; and (2) to offer a forum for the collection and the exchange of best practices for TSA compilation through multi-country workshops, individual technical assistance missions to member states and a cookbook discussing good practices for the compilation of TSA.

All the above reflections and activity led to the publication in 2010 of *Tourism Satellite Account: Recommended Methodological Framework 2008* (UNWTO, OECD, UNSD, and Eurostat, 2010), which provides an up-to-date, shared conceptual foundation for constructing a TSA.

According to this methodological framework, the TSA is a standard method where tourism's contribution to the major economic aggregates (gross domestic product (GDP), employment, value added, and consumption) is calculated (Eurostat, 2009). Its purpose is to analyze 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.

As a method, it is strictly inserted in the conceptual scheme of the System of National Accounts 2008 (SNA, 2008), which should permit greater internal consistency of tourism statistics with the rest of the statistical system of a country, as well as increased international comparability.

In this framework, the TSA takes shape as a document that is developed to translate into operational terms the awareness of the need for a quantitative approach to tourism, as mentioned above. It represents an information tool for enterprises and public decision-makers that is useful for describing the role and importance of tourism in the economy, as well as for its economic analysis.

The TSA immediately sparked widespread debate, both on its internal structure and its responsiveness to the needs of stakeholders, as well as on its function as a tool for knowledge, analysis and decisions.

In this paper, an analysis of the TSA will be conducted, both from the theoretical-methodological point of view and from the applied one. We will begin with an exegesis of the characteristics of the TSA, breaking down it and showing how it should be interpreted (Section 2). We continue with the illustration of the current state of the debate on its theoretical assumptions, discussing the different points of view, stressing how the analysis of the structure of the TSA is neglected and proposing to deeply investigating it (Section 3). Consequently, in Section 4 the analysis of the structure will be performed, highlighting the weakness of the UNWTO definition of tourism and, with reference to the case of the TSA of Italy, suggesting to ameliorate it and demonstrating that the demand for accommodation and catering is overestimated. Furthermore, we will pause for a moment to reflect on the usefulness of the TSA and then we show how the Input-Output Table (IOT) is an alternative source of information, albeit only concerning accommodation and catering, and that there is a problem of inconsistency with the TSA related data. In Section 5, the conclusion will be drawn.

2. The TSA: an exegesis of its characteristics

From the above 2010 UNWTO, OECD, UNSD, and Eurostat document, the TSA, as is implied by its very name, immediately emerges as an accounting document, both because it is formalized to a large extent as supply and demand that interfaces in the structure of an account and because it is included in the rules and paradigms of the SNA 2008.

It fulfills the wishes of disposing of a means of measurement expressed since the beginning in the 1982 UNWTO document to set up a quantitative approach to tourism[3]. Indeed, it is such a measurement tool because it intends to record, in quantitative terms, the economic activity relating to tourism that occurred in a certain period in a country. In other words, it measures the direct contribution of tourism consumption to a national economy (Frechtling, 2010).

Therefore, it is typically an ex-post document, supported by Keynesian theory that gives it a theoretically justified economic representation.

It is a source of information for economic analyzes that are deemed useful to be carried out, particularly for assessing the economic-social impact of tourism. More specifically, for comparing the economic aggregates generated by tourism with those of the country. To this respect, for example, the EU was interested in estimating, for a sample of 10 EU countries, the direct and indirect impact of tourism, in terms of total consumption, value added and employment, in the framework of the TSAs combined with the IOT compiled by the National Statistical Institutes (Figini et al., 2022).

Furthermore, it is a document that can be useful for tourism policy. Indeed, it is recommended by the WTO itself to be used as a basic tool in designing policies to increase the credibility of tourism as a tool of economic development.

And again, according to the OECD (2010), it can be potentially useful for choices, investments and analysis made by different public and private stakeholders: national tourism administrations, national tourism organizations, tourism associations, regional and public authorities, research institutes, universities, etc.

TSA can also be indirectly used in a sort of policy scenario and in this regard, Computable General Equilibrium (CGE) modelling has been proposed to be the technique that uses it as a data source for the calibration of the model and evaluates, for instance, the impact an increase in inbound tourism will have on GDP and other macroeconomic aggregates (Dwyer et al., 2004).

Last but not least, its data, regarded in a comparative time frame, can be used to *monitor* the tourism development in a country or a region.

[3] The need for a quantitative approach has been reaffirmed in the first meeting of the Working Group of Experts on Measuring Sustainable Tourism (MST) that was held at World Tourism Organization headquarters in Madrid in 2016, when the concept of sustainable tourism took shape and established itself. The meeting agreed that developing a statistical framework for sustainable tourism was a priority to support integrated policy responses at national and destination level, and urged UNWTO to lead this effort. The goal was to support the measurement of sustainable tourism in its various dimensions (economic, environmental, and social) and at the relevant spatial levels (global, national, sub-national) by providing a common language and organizing structure for exploiting the richness of data already available and for identifying additional data that may be needed.

3. The state of the art

To assess how TSA is seen in literature, we take a comparative look at the papers that have dealt with it. In the mare magnum of the many contributions that have flourished, we will focus on those that have analyzed its uses at country's level to assess the state the art of the discussion.

While there is agreement among the international agencies that TSA is the most appropriate way to measure the economic contribution of tourism, the research, as is normal, also goes beyond and looks at it in its ability to be used as a tool for tourism economic analysis and modelling.

The development of the TSA, as a tool to provide consistent and comprehensive measurements across nations, through time, and with country's own SNAs, and for analyzing the economic impact of tourism is outlined by Frechtling (1999). He explains the concepts and coverage of the TSA and how it expands the scope of traditional tourism impact analysis, exploring its foundations, potential, and measurement techniques. This study clearly clarifies the nature of the TSA as an accounting document measuring the direct economic contribution to the formation of GDP, expenditure, and the creation of employment, referred as impact of tourism on the economy as a whole.

These concepts are subsequently reiterated by Frechtling himself (2010), who explains TSA's basic purpose, that's, to measure the direct impact of tourism concepts, structure, and features, intending to make the currently defined TSA system accessible to those not versed in the SNA and to reduce misunderstanding and misuse of the TSA in economic and other analyses.

David BcA (2013) agrees that the TSA is a basic tool to document the direct GDP and employment contributions of tourism to national economies, and uses it to examine the main economic benefits and costs associated with tourism in the Asian Pacific region. He highlights the difficulties associated with their measurement, underscoring that there are some deficiencies in the information base, which will need to be addressed, to advance the use of TSAs in the Asian Pacific region.

Dwyer et al. (2007) show that the TSA can estimate tourism's economic contribution to a destination (nation or region) better than assessing tourism's economic impacts. However, they go further by entering the field of impact modelling and, discussing TSAs' uses in estimating the economic contribution of tourism, critically examine the validity of TSAs in providing realistic estimates of the economic impacts on the destination of shocks to tourism demand. There is evidence from their analysis that TSA provides an important basis for CGE modelling to estimate the economic impacts of tourism shocks and that both the TSA, in its capacity to estimate the economic contribution of tourism, and CGE models, with their capacity to estimate economic impacts of tourism shocks, are important tools for policy making.

This distinction just confirms that the TSA is a measurement and information tool and not a model. Moreover, the authors show that the TSA can be used as a database for the calibration of CGE models and the estimation of the direct and indirect impact of increases in demand for tourism services on the economic system.

The above arguments find application in the paper by Pham et al. (2013). These authors outline the nature and importance of TSAs as a measure of the economic contribution of tourism to an economy and provide TSA based estimates of the direct contribution of tourism in Australia. Additionally, they provide CGE–based estimates of the economic impacts of increased inbound tourism to Queensland. The analysis is expected to enhance stakeholder's understanding of the separate roles that TSAs and CGE modelling can play in determining the economic significance of tourism to an economy.

Sacco et al. (2019) analyze the first TSA compiled for the Maltese economy with reference year 2010 in the framework of the European System of Accounts (ESA) 2010, with the aim of measuring the economic impact of tourism on the country's economy, namely to GDP and employment.

Munjal (2013) attempts to incorporate the tourism industry as a separate industry within the Input-Output Transactions Table (IOTT) framework using the relevant ratios of India's first TSA 2002–2003. The purpose is that of analyzing the inter-linkages of the tourism industry with other industries of the economy through input–output analysis and estimating the economic impact of tourism on other industries through simulations conducted using the input–output multiplier model.

Using the case of Austria and two of its Länder (states), Smeral (2006) demonstrates that, in measuring the TSA-based contribution made by the tourism industry to national or regional GDP, ignoring the indirect effects of tourism demand produces an underestimation of regional and national tourism GDP, as well as that this downward bias is not compensated even when business trips by residents are included in the estimation. But the TSA by its nature is a tool for measuring direct contributions and cannot catch indirect effects, which can only be captured with an impact analysis through I-O, SAM, or CGE modelling. This is what is done by Ferrari et al. (2021) who, based on a SAM, analyze the role of tourism in China's economic system and growth. The importance of using I-O, SAM and CGE modelling is then reiterated by the same authors in Ferrari et al. (2022).

Meis et al. (2004) describe the Canadian TSA, a tool whose first results have been released in 1994, and some of its significant features, including the approach used, the basic concepts, methodological challenges, the results obtained, and their uses. They underscore that in its basic form, this new tool has the ability to measure the economic activity generated by tourism in a country, the demand for commodities created by tourism in that country and the production required to meet that demand.

In Statistics New Zealand (2016) the structure of the TSA 2016 is presented and described, regarding the results for the years ended March 2014–2026 at the aggregated final and provisional estimate level in current prices. The supply and use framework provides a detailed picture of the economy broken down by industry, product, primary input, and final demand categories.

Frent (2018) puts forward several general considerations on the TSA of Iceland usage, including a number of clarifications of the conceptual and methodological framework. He presents some recent developments of TSA for Iceland referring particularly to both tourism gross fixed capital formation (TGFCF) of 'tourism industries and other industries' (referring to investments) and 'tourism collective consumption (TCC) by products and level of government' (referring to governmental expenditure for some collective services) and their possible usage for tourism policy.

Moreover, he stresses that the "TSA measures only the direct effects of tourism upon an economy, leaving aside the indirect and induced effects which can also be estimated but using other methods (i.e. Input–Output analysis, multipliers, SAM, and CGE models). In any case, TSA should not be seen as a modelling instrument for the economic impact assessment. TSA is just a statistical instrument that documents the macroeconomic importance of tourism in a certain period of time, usually on a yearly basis."

Extending its application, Calvin et al. (2007) demonstrate that using a TSA, and an environmental module associated with an input-output framework, makes it possible to quantify selected environmental consequences of tourism consumption relating to carbon emissions and waste.

Calvin et al. (2008), while agreeing to consider the TSA as a tool for impact and policy assessment, find that a reengineering of the TSA framework could represent a basis for complementary modelling techniques, including that of CGE and SAMs.

The work by Rossouw et al. (2011) is on the border between measurement and modelling, confirming, as other works reviewed above, that the only use that a TSA can be made for modelling is to do it in a CGE context. They demonstrate the relevance and need for applied general equilibrium (AGE) models to be completed and extended through an integration with TSAs as a tool for policymakers (especially tourism ones) in South Africa. Since the authors claim that the integration of TSAs with AGE models is a relatively new development in tourism, the integrated model represents an innovative and noteworthy means of combining TSAs, IOTs, and economic modelling.

None of the above papers critically studies TSA structure, as we do instead, except partially the above quoted Statistics New Zealand, which describes the composition of the TSA but does so in a supply and use context.

Therefore, we now look at structure and estimation problems of the TSA, both in general and using the concrete example represented by the TSA of Italy.

4. The TSA

4.1. An overview

As just mentioned in passing in the Introduction, the idea underlying the construction of a TSA is threefold:

1. analyzing in detail all the aspects of demand for goods and services that might be associated with tourism,
2. establishing the actual interface with the supply of such goods and services within or outside the economy of reference, and
3. describing the way in which this supply (from domestic or imported origin) interacts with other economic activities, using the Supply and Use Tables as a reference (Eurostat, 2009).

The TSA serves as a valuable information tool for understanding what happens in tourism, encompassing both its monetary and non-monetary aspects. This includes macroeconomic aggregates such as tourism gross value added and tourism gross domestic product, tourism consumption and expenditure, non-monetary information such as employment, number of trips (or visits) and overnight stays, modes of transport, and more.

4.2. The case for Italy

In Italy, four TSAs have been elaborated to date: the first for 2010, the second for 2015, the third for 2017, and the fourth and last for 2019. They offer statistical-economic information related to both tourist demand (i.e., the tourist internal expenditure and consumption) and supply (i.e., the tourist enterprises production presented in the first six tables of the 10 that comprise them)[4].

The TSA 2019 of Italy is developed strictly following the guidelines contained in the aforementioned Recommended Methodological Framework of 2010, and explained in points (a)–(c). Specifically, the approach adopted for its compilation is described in Maresca et al. (2014).

[4] Curiously enough, in the TSA 2019, Istat mentions 10 tables (Istat 2022a), as on the other hand is stated in UNWTO, OECD, UNSD and Eurostat (2010); however, actually only 8 tables are presented; Tables 8 and 9 are missing and Table 10 is divided into 4 very heterogeneous sub-tables.

For fully understanding the meaning and scope of the statistical-economic information concerning tourism contained in the TSA 2019, it is crucial to begin with the definition of tourism given by the 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*".

This definition, which identifies the tourism through the tourist, significantly, and in our opinion, negatively, affects the research activity set up for the elaboration of the TSA 2019 and the underlying results[5].

In fact, it seems to us that it is too all-encompassing: if we refer to the widespread people's perception of tourist activity, which is that of leisure and relaxation, which can be seaside or mountain, cultural, landscape, spa, etc. but always leisure, there is not, in common feeling, the idea that going to places outside one's usual environment for business and other purposes can be making tourism.

Making business involves an onerous activity, which has nothing to do with leisure or relaxation. As if that wasn't enough, the insertion in the definition of that generic "other purposes", makes the meaning of tourism completely general. As a matter of fact, "all those who move are tourists" if one gives the vagueness of "other purposes" and could not do otherwise, a correct interpretation. In other words, "everything is tourism" whatever the reason for the movement.

Instead, we believe that only those movements which are made by people for their own enjoyment in leisure should be considered tourism and that the statistical information resulting from the above definition reflects too broad a reality.

In fact, attending a statistical conference in a city other than your own, staying overnight, eating in some restaurant and using public transport in that city cannot be considered a tourist activity. Likewise, someone who goes on a business trip to a city other than his own, sent by his company and stays overnight there, is not "doing tourism".

After all, it is precisely from the Grand Tour, that is, the tour of the main cities and areas of artistic and cultural interest in Europe, considered, in the 18th and 19th centuries, an essential part of the education of young people from good families, that the term "tourism", as we understand it, derives: a way of traveling as an end in itself, characterized by the desire of travellers to learn new things and exchange opinions on their experience. Its fundamental destination was Italy, with its cities of art, and especially Rome, with its archaeological remains and its collections of art and antiques.

The cautions of the Commission of the European Communities (1955) seem to indirectly confirm the above sentiments, 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". Words from many decades ago, it's true, but which maintain their warning content intact.

Without neglecting that the Cambridge Dictionary defines tourism referring only to leisure as "the business of providing services such as transport, places to stay or entertainment for people who are on holiday."

Thus, it would seem appropriate to reconsider the official definition of tourism and adjust it; for example, in accordance with the guidelines suggested by Walton (2020), who defines the tourism "as

[5] A critical review of the UNWTO definition of tourist is carried out in Ghanem (2017).

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".

The economic role of tourism would certainly be altered if the definition did not take into account "business and other purposes". Indeed, the values of all macroeconomic aggregates relating to tourism, starting with value added and GDP, would be affected and would be quantitatively smaller.

4.2.1. The tourist demand

The tourist demand is contained in the first 4 tables of the TSA 2019.

Table 1 reports, by row, the expenditure of the inbound tourism by characteristic tourist products, i.e., 10 service items (1- Reception services for visitors,..., 10- Sports and recreation services), plus Shopping and Other, and by column, the type of visitors. The latter are divided into overnight stayers (tourists) and non-overnight stayers (hikers).

In Table 2, the expenditure for domestic tourism is reported, always by characteristic tourist products and type of visitors, while Table 3 reports the expenditure for the outbound tourism, again for the same classification as in Tables 1 and 2. Tables 1 and 2 are not reported in the paper because, as we will see immediately, they are summarized in Table 4. Table 3 is not reported because it is of no specific interest for the subsequent development of the discussion.

Table 4, shown below, is very important. In it, the classification of expenditure by type of visitor is abandoned and substituted by that by expenditure and consumption, the first two tables are synthesised to obtain internal tourist expenditure, and the transition is made from this to internal tourist consumption, adding to the former the "Other components of internal tourist consumption" of the fourth column, that's, the tourist services that the tourist does not pay for (i.e. use of second homes, tourist consumption supported by public administrations and business travel expenses paid by employers). This step is crucial because what is of interest to estimate is the tourist consumption on an internal basis.

We note, in the margin, that the table contains the internal tourist consumption by the same characteristic tourist products of the three previous tables, but not, as just said, by type of visitor, even if the title says so, but by expenditure and consumption. This choice is difficult to understand, since without weighing down the table, it would be possible to report overnight stays and non-overnight stays in the first two columns and obtain the "Internal tourism expenditure" divided into these two categories. For the last two columns of the table nothing would change. In this way a greater homogeneity of the four tables would be preserved and the comprehensibility of the table itself would benefit.

The estimation of tourist expenditure and consumption makes resort of the combined use of internal and external surveys at Istat, as well as specific internal calculations within national accounting.

We can, for convenience, divide these sources into two groups: (i) data that come from direct tourist surveys and (ii) data of indirect origin, that is, that are obtained from tourist indicators.

The data that come from direct tourist surveys are those that are provided by:

1. the monthly sample survey conducted by the Bank of Italy (BI), called "Survey on international tourism in Italy", mainly, but not only, for estimating the inbound and outbound components of tourist expenditure;
2. the Istat monthly survey on "Movement of customers in hospitality establishments" (Istat Supply);
3. the Istat quarterly sample survey "Travel and holidays" (Istat Demand).

The second and third sources are used to estimate a part of the domestic component of expenditure and the "Other components of tourist consumption".

The indirect data come from the National Accounting (CN) source and are mainly represented by:

1. specific data processing on "Household consumption" from the National Accounts by means of non-monetary data on tourist presences, mainly but not only, for the estimate of the domestic component of tourist expenditure and for the "Other components of tourist consumption " of the different tourist products: accommodation, catering and other products. In the case of accommodation, for example, knowing the accounting data of the average daily expenditure by type of accommodation, this can be multiplied by the daily presences and obtain the daily expenditure for accommodation services other than second home ownership. It should be considered that this methodology leads to estimates of the domestic component of tourism expenditure, and not of the inbound component, which results from the aforementioned direct survey on international tourism in Italy by the BI and which contributes to estimating internal tourism consumption.
2. processing of expenditure data from non-profit institutions and public administrations and data on intermediate consumption of economic activities, for the estimate of part of the "Other components of tourism consumption".
3. minor sources of little significance.

The values of household consumption, which are processed together with tourist presences, play a fundamental role in the estimation of the expenditure and consumption of the various tourist products. The result of the processing depends, equally crucially, on tourist presences[6]. These record movements in places other than the usual environment for business and other purposes, which, as we have seen, should not be considered tourism, but are, given the overly broad definition of tourism. But they also record people who do not move to places other than the usual environment for business and other purposes, but within their place of residence, which the definition does not include. For example, it may happen that a person stays overnight in a hotel in his own city, therefore without traveling or leaving his natural environment, for some reason. This person is recorded as a presence and inappropriately enters the number of presences that contribute to forming the estimation of domestic tourism expenditure.

But there's more and even more significant. The presences also record non-residents, who thus improperly become part of domestic expenditure, while they should be part of inbound expenditure.

As a consequence of these two erroneous registrations, the value of Domestic tourist expenditure (2.3), and therefore, of those of Internal tourism expenditure (4.1) and Internal tourist consumption (4.3) for the characteristic tourist product "Reception services for visitors other then 1.b" and "Catering services" reported in Table 4 are overestimated. To try to improve the understanding of the issue, the following visual representation may help.

Recorded domestic tourist expenditure

By presences of domestic tourists	By presences of domestic non-tourists. (Inappropriate).	By presences of non-domestic tourists. (Inappropriate):

[6] Istat defines presences as: "number of nights spent by customers in accommodation establishments in the reference period".

For the time being, quantitative estimates of this overestimation are not possible. Only the agency compiling the TSA can proceed in this way, as it possesses all the tools and information necessary to determine the amount of the overestimation. It is therefore suggested that ISTAT conduct a monthly sample survey of hotels and restaurants to provide a measure of the aforementioned overestimation.

Eliminating the overestimation of domestic tourist expenditure would have an obvious positive effect on tourism policy, because this would be based not on biased information, but on the true extent of the expenditure.

4.2.2. The tourist supply

The tourist supply is that which is headed by the industries that produce goods and services that are also demanded by tourists and are called "tourist industries".

The estimation is based on the Supply and Use Tables (SUT); therefore, it is expressed in the form of a production account, for the estimation of the total product, intermediate costs and value added of the tourist industries.

Since the information in the SUT refers to the branches and not to the tourism industries, it is necessary to reconcile the two classifications. This is done using microdata relating to the economic results of the companies, available up to the class level of the ATECO 2007 Classification, which allow, with the help of working hypotheses, to bring the data from the branch level to that of the tourism industries.

Tourism industries are those reported in Tables 5 and 6. The first one shows the production account of each tourist industry (13 in total). In the second one, for each of these industries, the production account is reported with the respective tourist share.

Since it records the production account of each industry, Table 5 reports, again for characteristic tourist products, for the 13 tourist industries and the "Other industries", and for the sum of 14 industries:

- the "Total output (basic prices)",
- the "Total intermediate consumption (purchasing prices)", and
- the "Total added value (basic prices)".

This information is reported in full in Table 6, where the outputs of the characteristic tourist products for the tourist industries and for the other industries are shown alongside their respective "tourist shares". In addition, "Imports", "Taxes less subsidies (net indirect taxes) on domestic and imported products" and "Trade and transport margins" are shown, again with the outputs accompanied by their respective tourist shares.

These three aggregates, added to the "Domestic producers output (basic prices)", transform it into "Domestic supply (purchase prices)" of which only the output is reported and not also the tourist share, which, for the total of the "Characteristic tourist products" would be 116,827, compared to the output equal to 440,024.

This "Domestic supply", for which obviously only the "Total output (at basic prices)" is reported, is interfaced with the "Internal tourism consumption".

The tourist share is estimated by applying to the output the tourist coefficient obtained from the comparison between the demand and supply data, i.e. from the ratio between the internal tourist consumption data and the domestic supply (last and penultimate column of Table 6). This coefficient is applied specifically to each tourist industry and for each product. Table 6, which is missing column 12, makes Table 5 completely redundant.

4.3. What is the TSA for?

After this analysis of the methodology underlying the TSA and its concrete implementation, the question remains as to what its practical utility could be for decision-makers, entrepreneurs, and households and any other stakeholders.

It should be recognized that TSA is a wealth of very in-depth and detailed economic information on tourism. Nonetheless, it might hardly be used for the analysis of the structure of the sector and for decisions, as it gives us a 4-year-old snapshot, which may perhaps have some historical value, but little more. It is also impossible to make short-term analyses or significant time comparisons.

The same applies to modelling, economic, or econometric analyses, because it is a point-in-time document that does not allow the elaboration of significant parameters that can be used in a given time frame, as instead happens for the IOT, which we will immediately talk about.

4.4. Alternative information for accommodation and catering services

Information on accommodation and catering can be found in the IOT also. Let's refer to the 2019 IOT for Italy, symmetrical, branch by branch, 69 branches, with branch technology, at basic prices, values at current prices (Istat, 2022b), and focus on the "Accommodation services; catering service activities" branch, often also called "Hotels and Restaurants".

Here too we have a supply-demand pattern. The row vector provides the demand for "Accommodation services; catering service activities" by the other 68 branches, (therefore used as intermediate services) and the final demand for the same services. The column vector provides the supply of the same services, expressed in production costs (intermediate costs) and costs of production factors, that is, the value added produced by the branch, divided into its components, labor income (wages and salaries), and capital income (gross operating surplus).

Regarding the value added, as well as the total intermediate consumption and the total output, it should be noted that, in Table 6 of the TSA, by summing up the outputs of "Visitor accommodation", "Visitor accommodation services excluding 1.b", "Accommodation services associated with any type of home ownership", and "Catering", we should have a set of aggreegates equal to those included in the "Accommodation services; catering service activities" branch of the IOT 2019. But if we consider the resulting aggregates:

- Total intermediate consumption (purchasing prices) = 77.517,
- Total value added (basic prices) = 128.830,
- Total output (basic prices) = 206.347.

we see that they are totally different from those of the IOT for the branch in question, which are:

- Total intermediate consumption/final uses at purchasing prices = 58.792,
- Value added at basic prices = 63.686,
- Total output at basic prices = 122.477.

These very different values can cause serious uncertainty. In fact, the sum of the 4 tourism industries in Table 6 can only result in a group that must be equal to the branch in the IOT. One could argue that the classification of tourist industries in the TSA is not the same as in the IOT, notwithstanding the source of information for both is represented by the SUT.

If this were not the case, it would seem strange and should be clearly specified, illustrating the elements for reconciling the two aggregates.

5. Conclusions

It follows from what has been discussed that the concept of tourism is an all-encompassing and also vague concept, which, on the demand side, materializes in tourists' requests for goods and services, called characteristic tourist products that satisfy their needs, and, on the supply side, in all industries that produce those goods and services.

In our opinion, tourists are defined in an unsatisfactory way because the purposes for which the movements are carried out are designated as too broad, with the consequence that any trip and stay of people in places outside their usual environment for no more than a consecutive year is considered tourism. We believe that it would be appropriate to adopt a narrower definition that does not include travel for business and other purposes.

With regard to the 2019 TSA for Italy, it should be noted that the presences that are used to estimate domestic expenditure improperly include both residents who are not outside their usual environment and non-residents. As a result, for characteristic tourist services accommodation excluding second homes and catering, internal tourist consumption is overestimated.

The estimation of the supply based on the SUTs in turn puts some problems of reconciliation between the "Accommodation services; catering service activities" branch of the IOT and the whole of the tourist accommodation and catering industries of the TSA that should be made explicit. Likewise, the tourist share estimated with the tourist coefficient does not seem adequately clarified.

The 2019 TSA is a lagged document in regards to the present. This makes it difficult to use it to get a picture of the current tourism situation without resorting to hypotheses that are very little, if not at all, sustainable, and it cannot be used for econometric analyses.

The IOT and, by extension, the SAM, despite being macroeconomic documents of a completely different kind, have the advantage that the information contained therein may be updated and may be used for economic analyses through impact and CGE models.

Use of AI tools declaration

The authors declare they have not used Artificial Intelligence (AI) tools in the creation of this article.

Conflict of interest

All authors declare no conflicts of interest in this paper.

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