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The economic impact of tourism in the European Union

Final report

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I am indebted to participants to the Workshop on Tourism Statistics held at Eurostat headquarters, Luxembourg, 10 October 2018, for insightful discussion about the reality of tourism data.

Executive summary

This report has four main goals:

- To assess the scientific and policy literature related to the economic impact of tourism (with a specific focus on the European Union), in order to classify and evaluate the different methodologies and approaches used so far;
- To scan data (specially on Tourism Satellite Accounts) for each of the 28 EU countries in order to highlight gaps in data availability and reliability, and to define the minimum common denominator needed for computing the indirect and the total economic impact of tourism;
- To identify and develop a sound methodology to compute indirect and total impacts of tourism (on domestic output, on value added and on employment) using available data from Tourism Satellite Accounts and Input-Output Tables for a pilot set of countries;
- To collect, compare and analyse figures on the economic impact of tourism in the EU to provide a useful statistical tool able to inform stakeholders, practitioners and policy makers and to guide policy analysis in the field of tourism economy.

The main findings can be summarised as follows:

i The recognized standard for estimating the direct economic impact of tourism (the Tourism Satellite Account) has been regularly used and merged with Input-Output models or with Computable General Equilibrium models in the last 20 years, to estimate the total economic impact of the tourism sector.

ii The lack of systematic evidence on the economic impact of tourism, hence, does not stem from theoretical or methodological issues, but is mainly triggered by:
   a. insufficient human and financial resources invested by NSOs in the collection and the processing of tourism data;
   b. lack of a legal framework and of specific technical guidelines at EU level as regards the timing and the approach to be followed in data collection, organization and harmonization; further investigations and analyses related to methodological and conceptual issues in line with TSA:RMF 2008 have to be carried out.
   c. lack of a unique standard procedure used by EU member countries to report and disseminate TSA information.

iii Existing reports and available data identify a group of about 18-20 EU countries for which it is possible to avail of estimates of the direct economic impact of tourism on Domestic Output and / or Gross Value Added. For a subset of them, findings on employment are also available.

iv There are only four countries (Austria, Estonia, Germany and Spain) that also publish reports or data on the indirect and total impact of tourism, to which the routine developed within this project allows to add four other countries (Czech Republic, Italy, Portugal, the United Kingdom).

v Findings suggest a great degree of heterogeneity in the role played by tourism in the EU economies. Countries differ in:
    a. the relative importance of tourism to domestic output (from 1.5% of Poland to 7.3% of Cyprus, see Table 2);
    b. the relative importance of tourism value added to gross value added (from 2.1% of Romania to 7.1% of Spain, see Table 1);
    c. in the share of employment directly generated by tourism (from 3.6% of the UK to 7% of the Netherlands, see Table 3);
    d. in the relative weight of inbound expenditure as compared to domestic expenditure (from 14% of Germany to 90% of Malta, see Table 5);
    e. in the relative importance of the indirect impact of tourism to value added (from 1.8% of Austria to the 5.4% of Italy, see Table 18);
    f. in the total economic impact of tourism to value added (from 5.9% of the Czech Republic to the 11.4% of Spain, see Table 18);
    g. in the value of the tourism multiplier (from 0.58 of Estonia to 1.29 of Italy, see Table 19);
    h. in the estimation of the total employment effect, from as little as 5,000 jobs created per 1 Million additional tourists in the case of domestic tourism in the Czech Republic to the 26,000 jobs created per 1 Million additional inbound tourists in the case of inbound tourism in Portugal.

vi Such findings highlight that the use of statistical techniques to estimate missing data (e.g. econometric modelling) is inefficient, because the diverse economic structures of EU countries are likely to generate partially inconsistent results, and that the way forward is towards the improvement in TSA production and availability for each of the 28 EU countries.

vii It is also likely that a partial explanation of the heterogeneity in results stems from the relevance of global production chains and from foreign trade in tourism value added, as an exploratory research project carried out by OECD and WTO (WIOD – World Input-Output Database) suggests. If foreign trade in value added is considered, total value added generated by tourism increases of about 15-20%, with peaks of 30% as in the case of Ireland and other small and open economies.

viii Future research and statistical effort have thereby to focus on:
    a. Defining a legal framework to produce and publish standardized Tourism Satellite Accounts in each EU member country;
    b. Establishing a clear and complete common template to be used in the preparation of the TSA, in order to facilitate computation of results and further extensions. In this sense, the procedure and the template proposed in this report merges TSA and Input-Output tables to compute, semi-automatically, indirect and total impacts of tourism;
    c. Extending such procedure and template to the FIGARO project (the European Inter-Country Input-Output database) in order to provide an estimation of Foreign Value Added for the 28 EU countries, on top of direct, indirect and domestic value added.

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List of abbreviations with definitions

CGE – Computable General Equilibrium. A system of equations modelling demand and supply in disaggregated sectors of the economy and consistent with the economy's database of inter-sectoral transactions. Differently from IO models, it can take into account price adjustments and is therefore more effective to analyse the long term impact of exogenous shocks, although it is based on very strong assumptions.

DO – Domestic Output. It measures the monetary value of goods and services produced within an economy in a given period of time. It includes the value of IC, hence GDP = DO – IC.

EU – European Union.

FTiVA – Foreign Trade in Value Added. It adds to the traditional concept of (domestic) value added by estimating the value added of each country involved in the production of goods and services that are consumed worldwide.

GDP – Gross Domestic Product. It measures the monetary value of final goods and services (that are bought by the final user, hence net of intermediate consumption) produced in an economy in a given period of time (a quarter or a year). It is linked to DO, as GDP = DO – IC, and to GVA, as GDP = GVA + taxes on products - subsidies on products.

GVA – Gross Value Added. It measures the monetary value of final goods and services (net of intermediate consumption) produced in a region, sector or industry of an economy. It is linked to GDP, as GVA = GDP – taxes on products + subsidies on products.

IC – Intermediate Consumption. The monetary value of goods and services used as inputs in production of other goods and services. It is subtracted from DO to compute VA in order to avoid double counting.

ICIOT – Inter-Country Input-Output Table. An international extension of IOT, where the main block represents (exactly as in the IOT) domestic transaction flows of intermediate goods and services across industries, while the row of imports and the column of exports are broken down showing the inter-country flows of intermediates via imports and exports for each of the considered countries.

IO – Input-Output Model. It is defined as a quantitative economic representation of the interdependencies between different industries in a national economy, based on the IOT. It can be used to estimate overall changes in the economy triggered by exogenous shocks or policy changes in one sector. As it does not consider price variations and since it is based on linear technical coefficients, its effectiveness is limited to the short term.

IOT – Input-Output Table. It describes the sale and purchase relationships between producers and consumers within an economy. It can either show flows of final and intermediate goods and services defined according to industry outputs (*industry × industry* tables) or according to product outputs (*product × product* tables).

NSO – National Statistics Office.

OECD – Organization for Economic Cooperation and Development

SAM – Social Accounting Matrix. It extends the IO matrix by representing the interrelationship between value-added and final expenditures, thus showing the entire circular flow of income at

the macro level. It can also break-down the final sector (i.e. households) by income deciles, showing the impact of an exogenous shock on income distribution.

SNA – System of National Accounts. The international standard for compiling measures of economic activity. The SNA describes a consistent and integrated set of macroeconomic accounts in the context of a set of internationally agreed concepts, definitions, classifications and accounting rules. It is one of the building blocks of macroeconomic statistics forming a basis for economic analysis and policy formulation.

TC – Tourism Consumption. The monetary value of goods and services demanded by tourism in an economy in a given period of time. It is gross of intermediate consumption and sums the contribution of tourism expenditure to other tourism consumption.

TE – Tourism Expenditure. The monetary value of goods and services purchased by tourists in an economy in a given period of time. It is the sum of inbound and domestic tourism expenditure.

TVA – Tourism Value Added. It is the difference between TC and IC of tourism products.

TSA – Tourism Satellite Account. It is the international standard statistical framework used to compute the economic value of tourism by merging data coming from National Accounts with tourism expenditure data coming from tourism surveys.

UN – United Nations.

UNWTO – United Nations World Tourism Organization.

VA – Gross Value Added. See GVA.

1. Introduction and research objectives

This report was prepared by CAST – Centre for Advanced Studies in Tourism for the European Commission – EASME under the procedure GRO-SME-17-C-091-C. According to the original research proposal, the project aimed at addressing the following questions:

1. What is the contribution of tourism to the GDP and to employment in the EU and its member countries? Once this contribution is estimated, it is also possible to predict how much value added and employment is generated for any change in tourism inflows.

2. For each individual country and for the EU as a whole, what is the breakdown of tourism expenditure by type of activity (e.g. accommodation, restaurants, transport, etc.) and by origin market of the visitors (domestic, intra-EU tourism, incoming EU tourism)?

3. What is the direct and indirect impact of tourism on the other economic sectors for each individual country and for the EU as a whole? How important is the multiplier effect of tourism vis-a-vis the multiplier of the other sectors? This task involves the estimation of the domestic direct and indirect value added generated by tourism.

4. How much the value of final tourism demand is an accumulation of value generated by upstream countries and their industries? Is it possible to estimate the Foreign Trade in Value Added (FTiVA) with a breakdown of backward linkages by country and sector of activity?

Given the very rich literature on the economic impact of tourism, and the important work of data identification, collection and analysis to be carried out, it was decided that the research would be organised in four working packages, which constitute the main sections of this report. In Section 2, the literature assessing the different methodologies to be used in measuring tourism impacts is reviewed, together with the most important case-studies of TSA estimation recently published. As specified in the research proposal, no primary data had to be collected for this project: the main goal of Section 3 is then to identify and organize in a meta-dataset all the tourism-related sources of data that are relevant for the statistical analysis carried out in the project. The combined findings of Sections 2 and 3 are key to identify the most appropriate methodology to be applied (which jointly uses the IO model and TSA) and the best countries to be studied according to the quantity and the quality of available data: the Czech Republic, Italy, Portugal and the UK. The main results related to the economic impact of tourism are reported in Section 4, while a general discussion highlighting the policy implications and suggestions for future extensions of this research are carried out in Section 5. The intelligibility of this report is linked to the other deliverables of the project, which are attached in the Appendix Section.

2. Literature review[2]

Many scientific papers and policy reports have tackled the issue of estimating the economic impact of tourism[3]. In this section we collect and summarise such literature, which is not recent, as the main methodologies used for completing this task were introduced and discussed in the 1990s (mainly IOT) and in the 2000s (mainly CGE and TSA). Nowadays, papers using TSA, IOT and CGE to assess the impact of tourism onto the economic system lack the contribution of novelty needed to publish in scientific international journals. Hence, the few recent contributions mainly address methodological issues and experiment innovative approaches.

This literature review has considered 67 publications, mainly scientific papers published by journals in the field of tourism or regional economics. A few important manuals / handbooks published by Eurostat (2008, 2009, 2014, 2016) and by the UN (2010 and 2018) have also been included, for their importance in defining the methodological framework for assessing the impact of tourism. As any other literature review, this is a non-exhaustive list: we excluded papers which have only been presented at conferences or workshops, papers not published on leading international journals or papers that are too old (except for a few seminal papers).

To summarize the methodological discussion, there is an extensive literature analyzing the pros and cons of IO model with respect to alternative approaches (particularly with CGE): see Dwyer *et al*. (2004); Frechtling (2011); Klijs *et al*. (2012) among the many. It is found that both models (IO and CGE) include very restrictive assumptions on the functioning of the economy. The most important limitation of the IO model is that technical coefficients, in both production and consumption are fixed. Moreover, an exogenous shock (for example on incoming tourism) does not have effects on prices; production or employment diversion are thus excluded and only production and employment creation/destruction can be assessed. A useful extension of the IO model is the Social Accounting Matrix (SAM), which allows for distributional consequences and hence a more precise estimation of indirect impacts. However, SAM data are not widely available.

On the other side, CGE relaxes the assumption of non-scarcity of resources and hence includes price changes and crowding out effects into the analysis. However, other heroic hypotheses are needed to build a CGE model. In particular, the assumption of market-clearing prices (which implies full employment of all resources), the reliability of the elasticity estimates to be inserted into the Cobb-Douglas production and utility functions, and the assumption of fixed international prices lead astray from reality and produce results that are highly questionable.

It is generally accepted that the IO model can be used to assess the short-run effect of exogenous shocks, when technology and prices are given, while the CGE model is more precise in determining the full dynamics of shocks in the long run, when price adjustments, change in technology and crowding-out effects need to be taken into consideration. For this reason, it is usually found that CGE multipliers are lower than IO multipliers, when a comparison is made. On a different matter, both methods are time and resource consuming as they require a considerable effort in data

[2] Section 2 is a summary of WP2.D2. The stand-alone document is in Appendix A for easiness of retrieval.

[3] Publications are reported and classified in Appendix B – WP2_D1.xlxs. Each reviewed paper is summarised with its full reference (to facilitate an easy retrieval), its main goals, the methodology and the data used, the most important results with strengths and weaknesses.

collection and organization. Eurostat and the NSOs mainly invest in IOT, while CGE models (which require specific assumptions about economic agents' behaviour) are usually developed by government departments or private research centres. For this reason, the IOT is the most important and reliable base of data, also to be used for computing TSA and for further research on assessing the economic impact of tourism.

Some of the papers evaluate the properties and limitations of TSA (Dupeyras, 2009; Libreros *et al*, 2006; Smeral, 2006) or aim at extending the existing methodologies in ways that allow to tackle their major limitations. For example, they propose methods to decrease the timeliness in TSA building through the use of web-based data (Wu *et al*. 2018); they propose a non-linear IO model to overtake the hypothesis of linearity (Klijs *et al*. 2015; West and Gamage, 2001); they build dynamic CGE models to investigate the economy's path to the new equilibrium (Blake, 2009); they integrate IO models (Kim *et al*. 2015) or CGE models (Li *et al*. 2017) with econometric techniques; they analyse the properties of the new frontier of IO tables: the Inter-Country IO tables (Timmer *et al*. 2015).

Moving to the issue of data availability and comparability, both Eurostat (2009, 2013 and 2016) and the UNWTO (2010) have made important efforts in bringing together estimates produced by national TSAs. However, the lack of TSA data for many countries and some serious statistical issues (both recalled in Section 3 and in Appendix C – WP1_D2) hinder their full comparability and call for further analysis.

Finally, as regards the case-studies, papers can roughly be divided in three groups.

1. The first is a group of papers where TSA data are mixed with either IO or CGE model (in a few cases, with SAM) to produce estimates of the total economic impact of tourism and of the tourism multipliers. Most papers of this type are from the 1990s or the 2000s, as this was the pioneer period for TSA. The value added of these papers is twofold. First, they provide valuable information on the importance of tourism within the economic system; second, they deliver policy indications on the overall impact of tourism shocks under alternative scenarios. Among the many, the most interesting papers dealing with European countries are the ones on Germany (Ahlert, 2008), the UK (Cooper and Wilson, 2002; Blake, 2009), the Netherlands (Heerschap *et al*. 2005) and Austria (Smeral, 2006).
2. The second group of papers deals with regional TSA. See, among the many, Benyon *et al*. (2009); Dwyer *et al*. (2003); Jones *et al*. (2003); Polo and Valle (2008); Zhang *et al*. (2007). These papers are more recent, as they attempt to extend the rationale of TSA to specific administrative regions within countries, a relevant topic for regional economists and for statisticians working in NSOs. These works share the same pros and cons of the first group of papers, with the additional problem of building reliable regional IO tables and TSA through both the breaking-down of existing national data and the collection of data on local tourism demand with ad-hoc surveys.
3. The third group includes a few case studies where TSA has been used to estimate the economic impact of specific events, either at the macro-level as for the impact of the Olympic Games in China (Li *et al*. 2011) or for the lifting of economic sanctions in Iran (Pratt and Alizadeh, 2018), or at the micro-level as for the impact of the Guggenheim museum in Bilbao's economy (Plaza *et al*. 2011) or for the importance of yachting tourism in Greece (Diakomihalis and Lagos, 2008). These papers highlight the richness of information

included in the TSA and the variety of specific applications that can be developed, with very relevant local policy implications.

3. Data and Methodology[4]

This section focuses on the 28 EU member countries and assesses the availability and the quality of data needed to evaluate the total economic impact of tourism and its change over time. As recalled in Section 2 and fully described in Appendix A there are three main approaches to estimate the direct, indirect and induced effect of a change in demand: Input-Output model (IO), Social Accounting Matrix (SAM), Computable General Equilibrium model (CGE). As tourism is not an industry and does not appear in the System of National Accounts (SNA), data used in the above models have to be integrated with specific information collected from the demand side (tourism surveys) and from other industrial and statistical sources, and thus furtherly elaborated in the Tourism Satellite Accounts (TSA). The present section reviews the availability of data for the 28 EU countries in each of the aggregates mentioned above, with particular emphasis on the possibility to directly access the data for further elaboration, and on the issue of international comparability. A table summarising the main findings is reported in Appendix D – WP1_D1.xlxs, attached to this document.

The chapter is organized as follows. In Section 3.1, the main data sources are recalled and described; in Section 3.2 the main shortage in data are highlighted and discussed. Section 3.3 provides some suggestions for improving the availability, use and dissemination of this information for tourism policy and planning.

3.1. Data availability and description

3.1.1 Input-Output Tables

Input-Output Tables (IOT) describe the economic relationship (in terms of sales and purchases) among different economic sectors and between producers and consumers within an economy. There are two types of IOT, showing flows of final and intermediate goods and services defined according either to industry outputs (industry × industry tables) or to product outputs (product × product tables). They constitute the main inputs for computing the technical coefficients used in the IO model[5], in order to estimate the direct impact of an economic activity. IOT are computed and published by National Statistics Offices (NSOs) within the EU statistical framework, hence their availability and comparability for European countries is guaranteed.

As regards European countries, there are two main sources where IOT can be retrieved, the OECD and Eurostat.

3.1.1.1 OECD

In the OECD website: http://www.oecd.org/sti/ind/input-outputtables.htm it is possible to download and use IOT for all OECD countries. The tables consider 34 industrial sectors (coded and

[4] This section is also available, for easiness of retrieval, as a stand-alone document as Appendix C – WP1_D1.pdf.
[5] A quick recall of the IO model, with its advantages and disadvantages, is in Section 2.

described in the file TiVA_2016_ISIC3_Legenda.pdf) and 9 sectors of final demand (households, government, exports, etc.) for the 35 OECD countries, 28 non-OECD partner countries and the Rest Of the World (ROW). Hence, in total, there are 63+1 countries (coded and described in the file TiVA_2016_Countries_Legenda.pdf). All EU countries are included. The dataset includes the Input-Output sectoral values of output, value added and the technical coefficients (that can be computed by inverting the Leontief matrix – Direct Requirements coefficients) for all countries and sectors in the period 1995-2011. The technical coefficients, which are the ones used to compute the multipliers, are also available in the master file **IOTables.csv**, downloadable from OECD website.

The availability of real data is summarised in Appendix D – WP1_D1.xlxs, for each variable and each country. More specifically, the OECD dataset includes: (a) Supply and Use Tables (the basic tables from which IOT are computed) for almost every year and every country (see the sheet "OECD Supply and Use Tables); (b) the IOT and the technical coefficients, which instead are not computed every year: most of the countries publish such data every 5 years (2000, 2005, 2010), which is consistent with the underlying assumption that technical coefficients do not vary much in the short run, as they mainly change as a result of innovation (see the sheet "OECD Input-Output Tables). Only a few countries (Finland, France, Germany, the Netherlands) attempt to publish the technical coefficients every year. At the end of 2018 IO coefficients for 2015 were not available yet.

Another interesting dataset provided by OECD is **TIM2015.csv** and is available online in the above website. It includes the equivalent number of employees, and the respective labour costs, embodied in the export of individual industrial sectors in individual countries in the period 1995-2011. It could be used for estimating changes in employment due to marginal changes in tourism.

3.1.1.2 EUROSTAT

A very rich set of information is provided in the dataset called "ESA Supply, Use and Input-Output Tables", available at https://ec.europa.eu/eurostat/web/esa-supply-use-input-tables/data/database Supply and Use tables are theoretically available from 2005 to 2015 (last year available) for all countries, although most of the values are missing. The only year in which IOT have a complete coverage is, for most countries, 2010. Technically, Eurostat and OECD data come from the same source (NSOs) and are therefore overlapping. For such a reason we do not describe Eurostat data more deeply and we refer to the previous sub-section.

3.1.2 Inter-Country Input-Output Tables

Inter-Country Input-Output Tables (ICIOT) are a natural extension of IOT. They disaggregate exports and imports (which are present as single columns and rows in IOT) by country. Hence, in ICIOT the diagonal blocs represent domestic flows of intermediate goods between industries (they are the IOT), while the off-diagonal blocs represent the inter-country flows of intermediates via exports and imports. ICIOT are the next frontier of inter-sectoral linkages and are the base to measure trade in value added. However, they are very complex and require a lot of computing power: if

there are N sectors and K countries, the ICIOT has N*K dimension, making the matrix inversion needed to compute the technical coefficients very problematic.

3.1.2.1 OECD

ICIOT have been computed and published only recently, through a joint effort of OECD and WTO: data are publicly available here: http://www.oecd.org/sti/ind/measuring-trade-in-value-added.htm and the dataset can be downloaded as multiple files here http://www.oecd.org/sti/ind/inter-country-input-output-tables.htm. Files are named **ICIO2016_XXXX.csv**, where XXXX are years from 1995 to 2011 and 2016 indicates the version of the dataset. The dataset includes the same group of countries as in OECD IOT (63 + the Rest of the World) for 34 industrial sectors, plus some aggregations. The size of the basic matrix is hence 2176 x 2176.

An important use of the ICIO tables is the computation of Trade in Value Added (TiVA). The result of such effort is available on OECD.STAT: https://stats.oecd.org/Index.aspx?DataSetCode=TIVA_2016_C1 where the full dataset is available. The search dimensions are:

- Country: 35 OECD members + 28 non-OECD country partners + Rest of the World are available, together with 15 regional aggregations (as regards Europe, there is EU15, EU28, EU13 (that is, 28-15), EA12 and EA18 (Euro Area of 12 and 18 countries, respectively).
- Partner Country: the same as above.
- Industry: 34 industrial sectors are available, together with some aggregations, for a total of about 50 sectors.
- Indicators: a total of 46 indicators are available.

3.1.2.2 EUROSTAT

Since April 2018 a new rich dataset is also produced and posted by Eurostat: FIGARO. This project mimics the OECD ICIOT but focuses only on EU member countries. At present, 28 EU countries, the US and the Rest of the World are available with data on 64 industries and 64 products for 2010 and (in progress) for subsequent years.

https://ec.europa.eu/eurostat/web/experimental-statistics/figaro

and https://ec.europa.eu/eurostat/web/esa-supply-use-input-tables/overview

3.1.3 Tourism Satellite Accounts

While IOT are generally available, although with a strong delay (of 4-5 years), the availability of TSA data is much more problematic.

1. First, as the compilation of TSA is a voluntary activity and is not included in the legal framework of EUROSTAT, there is no obligation for the NSOs to produce TSA tables or reports; Since 2000, the European Commission has launched a number of initiatives to encourage Member States to compile TSA. Among these initiatives, the Directorate-General for "Internal Market, Industry, Entrepreneurship and SMEs" (DG GROW) conducted three rounds of grants; Eurostat coordinated a two-year project in 2008-09[6]) and the Member States and EFTA countries were invited to submit available TSA data in 2010, 2013 and 2016 that have been published in Eurostat (2016).

2. Second, as a consequence, available information is scattered: for most of the EU countries there are TSA data only for a few years and with a delay of publication of at least 3 years;

3. Third, there is no clear guidelines on how data should be published: only a few countries publish (some of) the 10 tables, while most countries only publish summary reports of the main results, and the complete tables are not available. On top of that, Eurostat does not include TSA in its online database;

4. Fourth, international comparability is strongly jeopardised by the lack of strict guidelines in how to compute TSA. In order to provide further clarification and methodological guidance related to the compilation of TSA, a European version of an "Implementation Manual on TSA" was published in 2002 and reviewed in 2014[7]). Nevertheless, different countries resort to different methodologies to treat, among other things, domestic business tourism, second homes or consumption in non-characteristic products (more specific comments on this point and on how to improve the quality and the availability of TSA data will be provided in Section 3.3).

Just to give an example, Austria, one of the most advanced countries for the quality of tourism statistics in the EU, publishes the overall data on tourism expenditure and on the economic impact of tourism in the dedicated section of its Statistics Institute:

http://www.statistik.at/web_en/statistics/Economy/tourism/index.html

However, data are hidden in separate pages and are not published according to the suggested UNWTO format. Moreover, an estimate of the indirect effect of tourism is published by WIFO – the Austrian Institute of Economic Research:

https://www.wifo.ac.at/en/data/wifo_economic_data_service

but neither sectoral indirect impacts nor microdata about tourism are published for this country.

A summary of the available TSA data for each country is reported in Appendix D – WP1_D1.xlxs, sheet "TSA". According to the quality of posted data (also considering that data might be online

[6] See also "Methodological work on Tourism Satellite Accounts in the European Union": (http://ec.europa.eu/eurostat/web/tourism/methodology/projects-and-studies).
[7] See Eurostat (2014): https://ec.europa.eu/eurostat/documents/747990/748067/TSA_EIM_FINAL_VERSION.pdf/896f9dab-b9fa-45c1-b963-3028a73b71c6.

but difficult to find because of lack of organization in the website or for other reasons), countries can be clustered in this way:

3.1.3.1 Countries producing all the tables (except 8 and 9) for at least one year

Czech Republic, Estonia[8], Italy, Lithuania, Portugal, Romania, Slovenia, UK.

3.1.3.2 Countries with some (incomplete) tables for some years

Austria[9], Bulgaria, Finland, Spain[10]

3.1.3.3 Countries with summary of results presented in reports / press releases

Belgium[11], Denmark, France, Germany, Malta, Poland[12], Sweden, EU

3.1.3.4 Countries with no TSA data online[13]

Croatia, Cyprus, Greece, Hungary, Ireland, Latvia, Luxembourg, Netherlands, Slovakia

The above classification might be evolving, since statistical offices continuously change the way in which data are published and retrieved. Moreover, the lack of TSA data online does not mean that TSA are not computed by the NSO: the main purpose of this recollection is to check which TSA data are available to be used by independent and external researchers for further investigation, without the need of asking data and / or permission to NSO officers. In this respect, TSA data for countries grouped under 3.1.3.1 and 3.1.3.2 can be used (with limits and caveats mentioned in Section 2), while TSA data for countries grouped under 3.1.3.3 and 3.1.3.4 are not fit for further statistical analysis.

3.1.4 Computable General Equilibrium Data

Computable General Equilibrium Models (CGE) are very complex and expensive models to build, both in terms of needed resources and time. As their utility is mainly in the area of forecasting and in estimating the economic impact in alternative future scenarios, NSOs are not interested in their development, also because CGE models rely on underlying economic theories. They are usually developed by private research centres and/or government departments, meaning that the mathematical form of the CGE, the equations used, and the estimated parameters remain private information. Their utility in estimating the overall economic impact of tourism is high and,

[8] The Database has been recently changed, and it is now difficult to retrieve TSA data.
[9] Data are available for all years, but without the typical format specified by UNWTO.
[10] Data are available for all years, but without the typical format specified by UNWTO
[11] Data for the Flemish region only are available.
[12] Data for Poland are not available in the NSO website, but in a working paper.
[13] To the best of our knowledge, these countries do not work on TSA. However, as data might have been produced but not publicly available, we prefer to state that TSA is not available online.

although based on arguable assumptions, they might provide a valid (and sometimes more precise) alternative to IO models, particularly in the medium and long term. While we refer to Appendix A – WP1.D1 and to Section 2 for a critical comparison of CGE and IO models, we here acknowledge the lack of public available CGE data for EU countries.

3.1.5. Operational comments

For the aims of this project the CGE approach cannot be used because of the unavailability of public CGE data, and for the little time and resources available to build specific CGE models for the countries under investigation. The SAM, which is mainly an extended version of the IO, is probably too much detailed, although it might provide useful implications in terms of the distributional impact of tourism. Hence, the IO model, for which IO tables are available for all EU countries, is the preferred methodology. Hence, the joint use of TSA and IO data will be used to estimate the economic impact of tourism in Section 4.

As regards the countries, the Czech Republic, Italy, Portugal and the UK have been selected as pilot studies for two reasons. One, these countries are representative of important big (Italy) and small (Portugal) destinations, of important origin markets (the UK) and of the emerging Eastern bloc (Czech Republic). Two, they present a quasi-optimal structure of TSA data to integrate with IO coefficients: all these countries publish TSA tables in data format (Excel and / or CSV), following the recommended UNWTO output and with a detailed Table 5 and 6, which are fundamental to compute the indirect effects. Hence, they might play a role model in the future development of complete and integrated TSA data.

3.2. Data shortage

The recent effort in developing IOT and Inter-Country IOT has allowed an enormous step forward in the availability of disaggregated sectoral data for most countries. The fact that IO technical coefficients are computed only every five year is not a real problem in the sense that, correctly with the theory, inter-sectoral coefficients are quite stable in the short term. The main issue is instead the timeliness of publication: at the end of 2018 data for the IO wave of 2015 are not available yet for most of the EU countries: this delay risks to endanger the effectiveness of the results, which might be considered already old when they are estimated, particularly in an age of quick societal change.

The real data shortage is not in national accounting but instead in the field of tourism accounting. As already introduced in the previous section, the main problems can be listed as follows:

1. Some countries are not working on building their own national TSA. This is mainly the result of TSA not being included in the legal framework of Eurostat, hence NSOs are investing only marginal and residual time and human resources in their development. The improvement in IT and in statistical tools certainly will be making the collection and

organization of information more efficient in many other sectors of the economic system. Hence, NSOs might soon release human and financial resources to dedicate to TSA development (these countries are listed in Section 3.1.3.4).

2. Some of the countries that have already developed their own national TSA do not however publish tables in data format (csv, xls) or publish only partial results (e.g., only a few tables, or tables without the correct format recommended by the UNWTO) in the official website. In some cases, tables are published in badly-linked pages, making the retrieval of such information very difficult. As the tables are the main output of the TSA exercise, and also an intermediate output in producing the TSA report, the publication of tables should be straightforward, at least for these countries (which are listed in Section 3.1.3.3).

3. None of the countries collects and elaborates information for Tables 8 and 9 (investment and government activity). The availability of such tables would provide useful information to researchers and to policy makers, particularly for the estimation of the super-multiplier, but we acknowledge that this is not a current priority.

4. Although a recommended methodological framework exists (UNWTO, 2008; Eurostat, 2014) and is recalled by all national documents and reports, NSOs often do not use the same approach in dealing with "daily" key problems encountered when elaborating TSA tables. This leads to serious issues of comparability between countries. A few key issues, among the many, are how to record the impact of domestic business tourism (to avoid double counting), of second homes, and of shopping.

3.3. Policy suggestions

This quick overview of TSA statistics, particularly the identification of data shortage carried out in Section 3.2, allows us to suggest a few actions that might help increase the value of data elaborated under the TSA framework, for both policy and research purposes. Suggested actions encompass three main issues: data production, data dissemination / availability and data reliability / comparability.

3.3.1 Data production: further efforts are needed to encourage TSA production

In order to tackle the data shortage recalled in Section 3.2 (sub 1), NSOs should prioritise the computation of TSA, if not every year, with regular intervals (e.g. every 3 / 5 years). TSA production should be synchronised among member countries and with publication of the technical coefficients of the IOT. Hence, each of the 28 EU countries should work at producing a TSA report, say, at least for 2010, 2015, 2020, etc. From the European perspective, Eurostat should consider inserting the production of TSA into the legal framework for European Statistics, provided that all countries are prepared to implement it; hence the capacity building (workshops, trainings) actions

offered by Eurostat should continue as these would help national offices (in particular those of small countries) cover the financial and human resources needed to fulfil this cumbersome task.

3.3.2 Data dissemination: a clear open data policy is needed for TSA data

Eurostat should provide a clear guideline for the dissemination of data elaborated within TSA, including the timing, contents and format of TSA tables. The fostering of further analysis and independent research needs reliable and public TSA tables. Hence, coherently with the general policy of open data for the European statistics system, TSA data should be made publicly available in this way:

1. Each NSO should open a dedicated page named "Tourism Satellite Accounts" in its website, including the following information:

    - A summary report, in PDF format, including the executive summary and a methodological note;

    - A link to a spreadsheet (XLS or CSV format) for each year of TSA. Each file should be composed by 10 sheets, one for each TSA table. It is recommended that the presentation of data in each table closely follows the UNWTO recommendation, always representing the same aggregates in the same cells. This would facilitate the procedure of data harmonisation and integration when tables of different countries are used, both by Eurostat and by independent researchers.

    - The same information should also be available to be retrieved and extracted from the online national database.

2. Moreover, Eurostat should open a section in its website where all the national TSA tables and reports are collected, presented in a way similar to the one described above, and harmonised in terms of format.

This suggestion proves to be really low-cost, especially for countries that already compute TSA and for which those tables have already been prepared and used to publish TSA reports. Some countries would simply have to post existing tables while some others would have to slightly reorganise their tables.

3. Moreover, as TSA data mainly come from the elaboration of tourist surveys, the availability of microdata would be of high value for research purposes, as these data could integrate TSA tables or allow further developments and investigation. Eurostat already allows a partial use of microdata (see https://ec.europa.eu/eurostat/web/microdata/overview) and the publication of microdata behind TSA would be really appreciated. As an example of open-microdata policy as regards tourism, see the Bank of Italy survey on International Tourism: https://www.bancaditalia.it/statistiche/tematiche/rapporti-estero/turismo-

internazionale/distribuzione-microdati/file-dati/index.html?com.dotmarketing.htmlpage.language=1

3.3.3 Data harmonization: a common methodological framework has to be agreed

Although TSA computation closely follows the recommended methodological framework of UNWTO, there are many "tricky" decisions that have to be taken by statisticians in the daily activity of TSA construction and preparation. In some cases, when primary data are not available or when there are inconsistencies, assumptions are made on how to generate missing values or how to compare and aggregate data coming from different sources. As these are very-well known problems, faced by NSOs every day, it is not our intention to propose new solutions. We simply want to call for the publication of precise and defined guidelines in TSA computation in order to harmonise the procedures used and the assumptions made by NSOs when generating TSA. There will always be errors and biases in the estimation of tourism value added, but with common guidelines biases are at least normalised across countries.

As regards estimation and data quality, we just want to recall the most problematic issues from the perspective of an external and independent user of TSA data:

1. An explicit correspondence between the products listed in TSA tables and the official NACE – ISIC classification should be highlighted. This correspondence (which is now hidden in Appendix 4 of Eurostat, 2014) is helpful to exactly understand how data from tourism demand are mixed with IO tables to compute the valued added generated in Tables 5 and 6 of TSA.

2. The harmonisation of how tourism surveys are prepared and submitted (as regards sampling procedures, structure of questions, etc.) is necessary to allow TSA to be built on the same base of microdata. Nowadays this is not the case.

3. More information is needed on what is behind the aggregate of "Other / Non-specific products". As this value is around 20-25% of total consumption in many countries, its understanding is key to the precision of TSA. Moreover, without a more precise description, this share of tourism consumption cannot be imputed to any specific product in the IOT, hence it is lost when indirect effects are generated.

4. Expenditures of business travellers are intermediate costs for their companies. To avoid double counting, domestic business tourism is not considered in Table 2 of TSA. However, this procedure leads to two inconsistencies: a) a different treatment of domestic and inbound business tourism in Tables 1 and 2; b) an underestimation of the economic value generated by domestic business tourism, which is "hidden" in the other components of tourism consumption, in Table 4. To increase precision, spending of domestic business tourists should directly appear in Table 2, and be uncounted in their industrial sectors.

5. Imputation of the service of own homes, or rents for free. The imputation of this variable in TSA is controversial, as there is not explicit spending on this issue and hence no monetary contribution to the economy. Generally, this is done for consistency with the imputation of services provided by residential houses of property in the GDP estimation. However, the value of other services that are used in tourism activities (sport equipment, cars, etc) are not considered in the TSA, generating another inconsistency in the estimation of tourism demand. Moreover, other consequential issues, such as the alternate use of the second home for own personal use and to rent should be carefully treated.

6. Data for completing tables 8 and 9 cannot come from tourist surveys, as they are not stemming from individual consumption decisions (although they are partially dependent on them). Eurostat might organize a task-force for developing a methodology to extract these data from National Accounts or in other ways, although this task is certainly not a priority.

3.3.4 Big data

On top of the three previous policy suggestions, we also highlight that the cooperation between Statistics Institutes and private companies could provide new and rich data, with unknown although promising paths of development for the future. For example, the use of data coming from mobile communication networks could complement the information about movement of people. Similarly, cooperation with credit card companies could improve the precision of expenditure data of the non-resident population. On these and other options, which are not the topic of this Report, Eurostat is already working; let us only highlight the relevance of Big Data for the future improvement of tourism statistics, and hence we solicit Eurostat to keep proceeding on this path.[14]

[14] For an introduction on how Eurostat is working on Big Data, please see https://ec.europa.eu/eurostat/web/tourism/methodology/projects-and-studies and https://ec.europa.eu/eurostat/cros/content/big-data_en.

4. Results

The analysis of the previous literature (carried out in Section 2), jointly with considerations regarding the quality and quantity of available data for the EU member countries (recalled in Section 3), drove us to the combined use of IO and TSA as the methodology for estimating the total economic impact of tourism activities in selected countries. This is done in the present section, which is divided into 4 sub-sections, each one addressing one of the four specific tasks of the report. Section 4.1 provides an overview of the direct contribution of tourism to Output, GDP and employment in the EU and its member countries. Section 4.2 breaks down tourism contribution by product and by origin market (inbound vs. domestic tourism). These two sub-sections mainly aggregate and analyse available results published in national reports or in online datasets, in an effort of systematization which updates Eurostat (2016). Section 4.3 develops and describes a procedure for computing indirect and total effects generated by tourism demand when a minimum set of TSA and IO data are available. Such methodology, which also allows to estimate the economic impact stemming from additional visitors, is herein applied on four pilot countries for which available data are sufficiently precise and reliable: the Czech Republic, Italy, Portugal and the UK. However, the extension of this procedure to other countries at the time figures should become available is straightforward, as long data are presented in the suggested standard format. Finally, Section 4.4 introduces the complex issue of estimating Foreign Trade in Value Added (FTiVA) for the tourism sector.

4.1 The direct contribution of tourism to the Output, GDP and employment in the EU and its member countries

This subsection offers an effort of systematization of the results available in national TSAs and concerning the direct contribution of tourism in generating income and employment in the EU member countries. It expands and updates Eurostat (2016) by collecting, checking and organizing data presented in national reports and in online datasets. In this respect, it is important to highlight two important caveats:

i. one, as recalled in Section 3, there is yet no unique guideline for computing and presenting the direct economic impact of tourism. Hence, the cross-country comparison might be biased by different approaches used by NSOs in addressing some key issues;
ii. Two, within TSA, the different aggregates that can be computed and presented (e.g., domestic output, domestic supply, GDP, Value Added, etc.) often present discrepancies and inconsistencies with SNA data, either because of different approaches used in different departments of the same NSO, or because of mere errors in the computation or in the definition of the variables. It is likely that many errors still lie in the TSA because of its experimentation, of the lack of legal framework and of the insufficient dedicated human resources. It will be outlined in due course when data are considered “suspicious”.

Table 1. Tourism Value Added (in absolute values and as a share of total VA) in the 28 EU member countries, last available figures)

Country	Year	Tourism Value Added (€ M, basic prices)	Gross Value Added (€ M, basic prices)	Tourism Share (% of Tourism VA over GVA)
Austria	2015	24,185	344,499	7.02%
Belgium*	2014	4,800	196,191	2.45%
Bulgaria	..	..	..	..
Croatia	..	..	..	..
Cyprus	..	..	..	..
Czech Republic	2015	4,289	159,888	2.68%
Denmark	..	..	..	..
Estonia	2014	850	17,685	4.81%
Finland	2015	4,477	180,818	2.48%
France	2015	158,600	2,181,000	7.27%
Germany	2015	105,300	2,745,337	3.84%
Greece	..	..	..	..
Hungary	2015	5,713	89,266	6.40%
Ireland	..	..	..	..
Italy	2015	87,823	1,485,086	5.91%
Latvia	..	..	..	..
Lithuania	2015	1,003	37,434	2.68%
Luxembourg	..	..	..	..
Malta	2010	331	5,791	5.72%
Netherlands	2015	24,541	613,525	4.00%
Poland	2005	5,388	228,305	2.36%
Portugal	2015	10,458	156,839	6.67%
Romania	2014	2,621	124,153	2.11%
Slovakia	..	..	..	..
Slovenia	2014	1,182	32,203	3.67%
Spain	2015	69,284	980,992	7.06%
Sweden	2015	9,499	362,654	2.62%
United Kingdom	2015	75,508	1,870,280	4.04%
EU 28		**595,852**	**11,811,946**	**5.04%**

* Belgium estimates only refer to the Flemish region.

Source: Own elaboration based on: Austria (Statistics Austria, 2018); Belgium (De Maesschalck & Weekers, 2016); Cyprus (Republic of Cyprus, 2016); Czech Republic (Czech Republic Statistics Office, 2018); Denmark (Zhang, 2018); Estonia (Estonia Statistics Office, 2018); Finland (Visit Finland, 2018); France (DGE, 2016); Germany (Federal Ministry for Economic Affairs and Energy, 2017); Hungary (Hungary Statistics Office, 2018); Italy (Italian Statistics Office, 2018); Lithuania (Lithuania Statistics Office, 2018); Malta (National Statistics Office, 2017); Netherlands (Dutch Statistics Office, 2018); Poland (Institute of Tourism, 2008); Portugal (Portuguese Statistics Office, 2018); Romania (Romanian Statistics Office, 2018); Slovenia (Slovenian Statistics Office, 2018); Spain (National Institute of Statistics, 2018), Sweden (Swedish Agency for Economic and Regional Growth, 2015), United Kingdom (National Statistics Office, 2018); EU28 (Eurostat, 2016).

Table 1 is a summary of TSA core result: the estimation of tourism direct contribution to the GDP (the full dataset is available in Appendix G – WP3_Task4_1.xlsx). This is usually measured as the ratio between Tourism gross Value Added (TVA) and total Gross Value Added (GVA, or VA) and computed in the TSA after merging demand-side information on tourism expenditure with supply-side information coming from IOT, and subtracting intermediate consumption. When TSA tables

are published, the tourism share is usually reported in the last row of Table. In EU countries the share goes from 2.1% of Romania to 7% of Austria and Spain. The ratio for France is the highest (7.3%) but the original report (DGE, 2016) states that TVA is equal to tourism consumption, and this is probably an error of computation or of reporting. A similar problem applies to Hungary, that has a strangely high tourism share (6.4%). It is also important to recall that the figure of VA recalled in Table 1 is the one reported in the National TSA reports: in a few cases this value is notably different from the figure reported in the Eurostat database (http://appsso.eurostat.ec.europa.eu/nui/show.do?dataset=naida_10_a10&lang=en). When the Eurostat estimate is replaced, the tourism share changes from 7.02% to 7.88% in Austria, from 7.27% to 8.07% in France and from 2.68% to 2.97% in Lithuania.

As regards the absolute contribution of tourism in Euro (excluding the figures of France which are likely to be corrupted) Germany is in the top position, with a TVA equal to € 105.3 Billion, followed by Italy (€ 87.8 Billion) and Spain (€ 66.5 Billion). Given its small size, the last country in this ranking is Malta (€ 331 Million, which however constitute 5.72% of its total VA). For the 18 countries for which data are available (and adding the Flemish region of Belgium), the value added generated by tourism is equal to € 589.3 Billion, which is more or less the size of the Dutch economy. Tourism share is roughly around 5% of the European economy for which data are available. As we do not expect strong differences in the countries with missing data, we can estimate that the direct contribution of tourism in the whole EU in 2017 accounts for roughly € 700 Billion (€ 692 Billion is the 5.04% of total VA for EU-28, which is € 13,743 Billion).

As previously mentioned, figures of Table 1 are usually the last step of the TSA exercise and TVA is computed starting from Internal Tourism Consumption (TC). TC is the sum of inbound tourism expenditure, domestic tourism expenditure and other types of consumption (mainly the value inputted for the services provided by second homes to owners and the value of collective services provided by the public administration). TC is usually reported in the second-last column of TSA, Table 6 and is here presented for the EU countries in Table 2, together with Domestic Output (DO) and with the ratio of TVA out of DO. Domestic Output is gross of intermediate consumption (IC), which has to be subtracted in order to obtain the gross value added already shown in Table 1. Hence, DO is bigger in absolute values than figures of VA, but the ratio between TC and DO should be roughly similar to the share of TVA over VA. It is found that the ratio of tourism consumption to domestic output goes from 1.45% of Poland up to 6.11% of Austria and 7.29% of Cyprus. In some of the national reports, TC is also presented as a share to VA or to GDP: however, as these are improper ratios and imprecise indicators, they are not recalled in the present report.

Table 2. Internal Tourism Consumption (in absolute values and as a share of domestic output) in the 28 EU member countries, last available figures)

Country	Year	Internal Tourism Consumption (€ M, basic prices)	Domestic Output (€ M, basic prices)	Tourism Ratio (% of Tourism Consumption over Domestic Output)
Austria	2015	38,877	635,808	6.11%
Belgium*	2014	22,025	488,632	4.51%
Bulgaria	2015	3,793	78,973	4.80%
Croatia	..	..	..	..
Cyprus	2016	2,363	32,422	7.29%
Czech Republic	2015	9,754	389,832	2.50%
Denmark	2015	13,312	665,753	2.00%
Estonia	2014	1,902	41,109	4.63%
Finland	2015	10,531	415,053	2.54%
France	2015	158,290	3,852,481	4.11%
Germany	2015	278,300	5,367,124	5.19%
Greece	..	..	..	..
Hungary	2015	5,856	221,121	2.65%
Ireland	..	..	..	..
Italy	2015	146,334	3,129,282	4.68%
Latvia	2013	1,211	46,706	2.59%
Lithuania	2015	1,979	64,766	3.06%
Luxembourg	..	..	..	..
Malta	2010	1,150	19,948	5.76%
Netherlands	2014	68,265	1,735,931	3.93%
Poland	2012	13,234	911,640	1.45%
Portugal	2015	21,902	318,313	6.88%
Romania	2014	7,014	283,858	2.47%
Slovakia	2013	4,305	186,830	2.30%
Slovenia	2014	3,587	73,104	4.91%
Spain	2015	115,318	2,021,394	5.70%
Sweden	2015	27,604	1,047,691	2.63%
United Kingdom	2015	159,527	4,461,976	3.58%
Norway	*2013*	*18,589*	1,169,887	*1.59%*
Switzerland	*2011*	*39,451*	..	..
EU 28		**1,116,433**	**26,489,747**	**4.21%**
EU 28 + associated countries**		**1,135,022**	**27,659,634**	**4.10%**

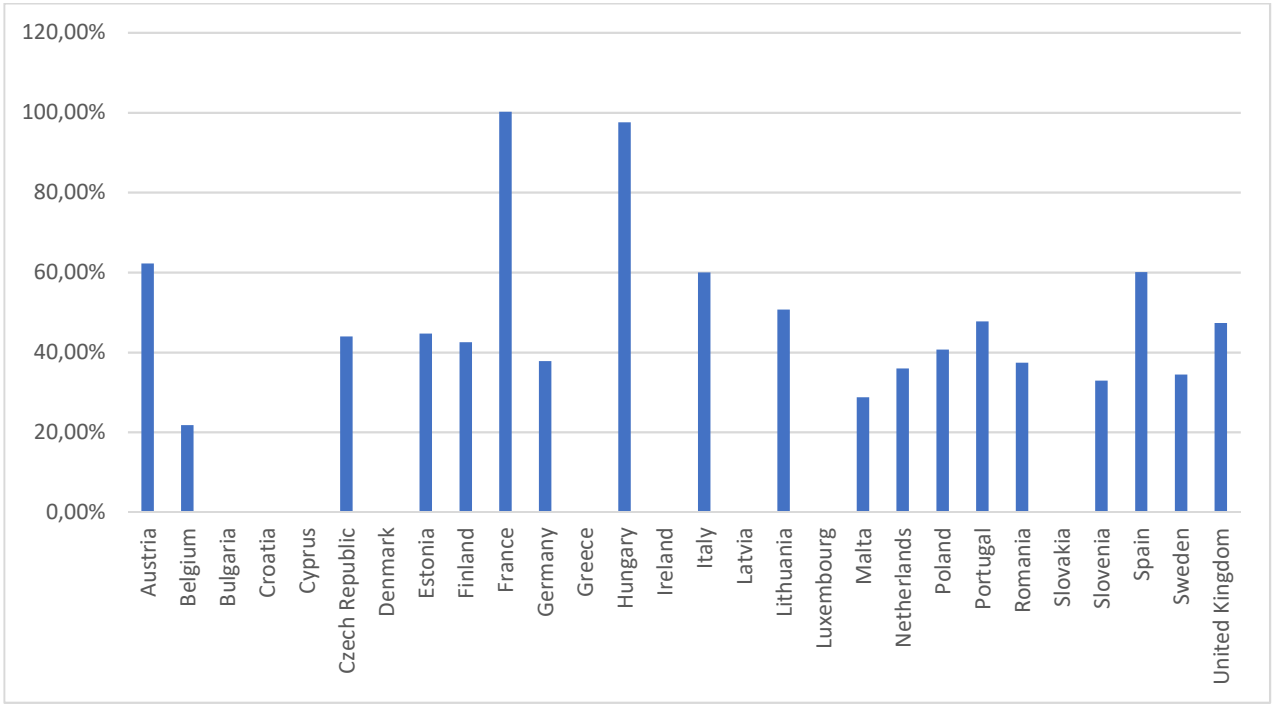
* Belgium estimates only refer to the Flemish region.

** Only Norway has been considered for the associated countries, as for Switzerland non data on Domestic Output could be retrieved.

Source: Own elaboration based on: Austria (Statistics Austria, 2018); Belgium (De Maesschalck & Weekers, 2016); Bulgaria (Eurostat, 2016); Cyprus (Republic of Cyprus, 2016); Czech Republic (Czech Republic Statistics Office, 2018); Denmark (Zhang, 2018); Estonia (Estonia Statistics Office, 2018); Finland (Visit Finland, 2018); France (DGE, 2016); Germany (Federal Ministry for Economic Affairs and Energy, 2017); Hungary (Hungary Statistics Office, 2018); Italy (Italian Statistics Office, 2018); Latvia (Eurostat, 2016); Lithuania (Lithuania Statistics Office, 2018); Malta (National Statistics Office, 2017); Netherlands (Dutch Statistics Office, 2018); Poland (Institute of Tourism, 2008); Portugal (Portuguese Statistics Office, 2018); Romania (Romanian Statistics Office, 2018); Slovakia (Eurostat, 2016); Slovenia (Slovenian Statistics Office, 2018); Spain (National Institute of Statistics, 2018), Sweden (Swedish Agency for Economic and Regional Growth, 2015), United Kingdom (National Statistics Office, 2018); Norway, Switzerland, EU28 and EU28 + associated countries (Eurostat, 2016).

A discrepancy in the two ratios of Table 1 and Table 2 is a relevant economic signal for the country: if the ratio between the two value added is higher than the ratio between the two output, it means that intermediate consumption is lower for tourism than for the rest of the economy, indicating that, ceteris paribus, one Euro spent in tourism generates more value added than one Euro spent in the rest of the economy. Building on this interpretation, Figure 1 represents the ratio (in percentage terms) between TVA and TC: the higher the index (that goes from 0 to 100), the better the sector is able to translate one Euro spent by tourists in one Euro of Income. It is then a rough indicator of the ability of the tourism sector to generate income. The ratio is low (below 40%) in countries such as Belgium, Germany, Malta, Netherlands, Romania, Slovenia, Sweden and quite high (around 60%) in Austria, Italy and Spain. As already mentioned, figures for France and Hungary are suspiciously high and are likely to stem from an incorrect estimate of either tourism consumption or tourism value added. We therefore suggest not to consider them.

Figure 1. Tourism GVA as a share of Tourism Consumption



Source: own elaboration based on Tables 1 and 2

The generation of income and value added is also linked to the creation of job places and employment. Table 3 summarises the contribution of the tourism sector to employment. An extra word of caution is needed when collecting and presenting these figures: while on one hand the TSA framework is very precise in asking countries to separately estimate the number of jobs and the number of full-time equivalent positions generated by tourism, together with the number of total people employed, on the other hand the practical implementation of this task is cumbersome. Only a few countries compute the employment impact of tourism, and figures are often incomplete and generically indicated as “employment” in national reports and datasets, without any further clarification. Moreover, estimates computed in the same country for different years are sometimes very different (as in the case of the Netherlands), implying that comparisons between countries or overtime might be unreliable. Finally, in some countries figures are simply the sum of

employment in the core tourism industries, without any consideration of the share of contribution of tourism demand to those industries.

Table 3. The impact of tourism on the labour market (in absolute values and as a share of total employment) in the 28 EU member countries, last available figures)

Country	Year	Number of Jobs in Tourism	Number of Full Time Equivalent Jobs in Tourism	Number of People Employed in Tourism	Share of Employment in Tourism
Austria	**2014**	334,300	270,500	..	..
Belgium	**2014**	119,377	84,906	..	5.9
Bulgaria	**..**	**..**	..	..	..
Croatia	**..**	**..**	..	..	..
Cyprus	**..**	**..**	..	..	..
Czech Republic	**2014**	225,283	225,446	..	..
Denmark	**2013**	**..**	227,273	..	6.2
Estonia	**2014**	22,400	21,565	..	..
Finland	**2015**	136,500	120,400	137,400	5.5
France	**2014**	..	1,005,500	1,254,234	..
Germany	**2015**	..	..	2,919,000	6.8
Greece	..	..	..	..	..
Hungary	**2015**	356,005	338,049	412,000	10
Ireland	..	..	..	..	..
Italy	**2015**	2,397,000	1,742,000	..	..
Latvia	..	..	..	..	..
Lithuania	**2015**	42,226	..	46,200	..
Luxembourg	..	..	..	..	..
Malta	**2010**	32,919	24,668	..	..
Netherlands	**2015**	718,000	(366000)	616,000	7
Poland	**2012**	..	130,012	..	..
Portugal	**2015**	455,940	397,619	288,546	6.7
Romania	**2013**	388,871	343,224	..	..
Slovakia	**2013**	387,361	373,027	379,167	..
Slovenia	**2014**	..	..	58,327	..
Spain	**2011**	2,323,000	2,009,700	2,270,900	..
Sweden	**2015**	..	134,137	165,400	..
United Kingdom	**2015**	2,758,700	2,484,200	3,272,900	3.6
Norway	***2013***	..	*153,700*	..	..
Switzerland	***2011***	..	*166,935*	..	..
EU 28		**8,300,882**	**8,190,226**	**11,820,074**	..
EU 28 + associated countries		**8,300,882**	**8,510,861**	**11,820,074**	..

Source: Own elaboration based on: Austria (Statistics Austria, 2018); Belgium (De Maesschalck & Weekers, 2016); Czech Republic (Czech Republic Statistics Office, 2018); Denmark (Zhang, 2018), Estonia (Estonia Statistics Office, 2018); Finland (Visit Finland, 2018); France (DGE, 2016); Germany (Federal Ministry for Economic Affairs and Energy, 2017); Hungary (Hungary Statistics Office, 2018); Lithuania (Lithuania Statistics Office, 2018); Malta (National Statistics Office, 2017); Netherlands (Dutch Statistics Office, 2018); Poland (Institute of Tourism, 2008); Portugal (Portuguese Statistics Office, 2018); Romania (Romanian Statistics Office, 2018); Slovakia (Eurostat, 2016); Slovenia (Slovenian Statistics Office, 2018); Spain (National Institute of Statistics, 2018), Sweden (Swedish Agency for Economic and Regional Growth, 2015), United Kingdom (National Statistics Office, 2018); Norway, Switzerland, EU28 and EU28 + associated countries (Eurostat, 2016).

Overall, tourism contributes to around 6-7% of total employment in EU countries, providing more than 1 Million full-time equivalent jobs in France, more than 2 Million in Spain, and employing more than 3 Million people in Germany and in the UK. In terms of share of total employment, tourism contributes to as little as 3% of total employment in the United Kingdom up to 10% in Hungary, although data in this country might not be completely reliable, as already emphasised.

4.2 The breakdown of tourism expenditure by type of activity and by origin markets of the visitors

Tourism Satellite Accounts are built aggregating four main categories of tourism expenditure in the concept of Tourism Consumption (TC): inbound tourism expenditure, domestic tourism expenditure, outbound tourism expenditure and other consumption. Each category of tourism triggers specific economic effects in many different sectors of the economy. It is then possible to identify the products where TC is concentrated and the contribution of each product to overall TC and DO. Three types of ratio, each one providing relevant information, can hence be built: (i) the share of consumption for each product to domestic output; (ii) the share of consumption for each product to total tourism consumption; (iii) the share of tourism demand to total output of the sector, for each product. While this third ratio signals what are the sectors relying more on tourism demand, the first two indicators shed light on where tourism consumption is concentrated. Before introducing and commenting the most relevant figures for EU countries (the complete dataset in in Appendix H – WP3_Task4_2.xlsx), again, a few extra-words of caution are necessary.

- One, these estimates mainly come from Table 6 of TSA and are reported in the last and second-last column. The list of products for which this disaggregation is undertaken is reported in Table 4 below. Although there are slight differences in the classifications proposed by UNWTO and by Eurostat, the two lists at least correspond for the group of characteristic products. Moreover, Eurostat (2014) specifically presents the matrix of correspondence between the list of products included in the TSA, the International Codes of products (CPA) and of industries (NACE) so that is clear what is included in each item.
- Two, the last items in group A.1 (“*7. Miscellaneous”* for Eurostat and “*11./12. Country characteristic goods and services”* for UNWTO) are left “free” in the sense that each country can consider specific products that are particularly relevant for its own tourism product. For example, the UK considers conventions and congresses and Malta includes Language schools. A comparison of this item across countries is hence especially problematic.
- Three, more difficult is the understanding of the items to be included in groups “*A.2”* and “*B”*. While *A.2* should include general shopping of tourists at destination (e.g. clothes, fuel, etc.) and *B* some valuable and other durable goods (e.g. jewellery), on a practical basis the NSO use these two broad categories to reconcile mismatch of data between NSA and tourism surveys, and to correct other statistical errors. In some cases, particularly for countries that publish TSA results in reports, the last category is often named “other” with

no clear indication of what is inside. As this is often a very relevant category (accounting for about 30-40% of total tourism consumption, topping 51% in the case of Lithuania), it would be very important to dig into this group and learn how the computations were carried out.

- Four, information on disaggregated expenditure is not available for countries that do not produce or publish TSA tables (Croatia, Cyprus, Greece, Hungary, Ireland, Latvia, Luxembourg, Netherlands, Slovakia). Moreover, there are a few countries producing TSA tables but not in the proper UNWTO/Eurostat standard (Bulgaria, Denmark, Poland, Slovenia, Spain, Sweden): this means that some items are bounded together and, again, this makes international comparisons more difficult.
- Five, as it comes to inbound tourism, there is no possibility to distinguish between different nationalities of tourists. Hence, although they are likely to have very different expenditure patterns, the impact of EU visitors and non-EU visitors are assumed to be the same.

Table 4 – List of products reported in Table 6 of TSA.

Eurostat classification	UNWTO classification
A. Specific products	**A. Consumption products**
A.1 Characteristic products	***A.1 Characteristic products***
1. Accommodation services	*1. Accommodation services*
1.1 Hotels and similar	1.1 Hotels and similar
1.2 Second homes - own account or free	1.2 Second homes - own account or free
2. Food and Beverage serving	*2. Food and Beverage serving*
3. Passenger transports	
3.1 Interurban railway transport	3 Interurban railway transport
3.2 Long distance road transport	4 Long distance road transport
3.3 Water transport	5 Water transport
3.4 Air transport	6 Air transport
3.5 Transport supporting services	
3.6 Transport equipment rental services	*7 Transport equipment rental services*
3.7 Maintenance and repair of transportation equipment	
4. Travel agencies and other reservation services	*8. Travel agencies and other reservation services*
5. Cultural services	*9. Cultural services*
6. Recreation and other entertainment services	*10. Recreation and other entertainment services*
7. Miscellaneous / Other tourism services	*11. Country specific characteristic goods*
	12. Country specific characteristic services
A.2 Connected products	***A.2 Other consumption products***
B. Non-specific products	**B. Non-consumption products**
	B.1 Valuables
	B.2 Other non-consumption products

Source: own elaboration on Eurostat (2014) and UNWTO (2010).

Table 5 recollects, completes and compares across countries the main figures of Table 6 of national TSAs. Unsurprisingly, accommodation is the most important sector in the tourism product (as well as the only one, together with the travel agency sector, to sell almost exclusively to tourists), accounting for about 20% of total tourism consumption in EU countries on average. A noticeable exception is Belgium (or, to be more precise, the Flemish region), where accommodation is less

than 6% of total consumption, followed by Lithuania (11.2%), Germany (13.7%) and Denmark (14.3%). On the top of the ranking we find Italy (35.9%) followed by Austria (27.9%), Poland (27.6%) and France (27.3%).

The other big group of characteristic products is food & beverage, including restaurants, bars and catering services. The spending pattern is quite homogenous across countries and pivots again around 20% of total consumption. On top of the list we find Bulgaria (29.9%) while at the bottom we find Lithuania with 10.9%.

Transportation is the third big item in tourism consumption, accounting on average for 17% of total spending. The extreme cases, in this product, are Slovenia (9.7% - excluding the 3.1% of Poland, which is probably an error) and Malta (24.9%). The distribution among transport means follows the tourism flows and the geographical characteristics of countries, going to the 24.1% of expenditure in Finland to the 6.1% of Estonia for air transport; Estonia is on the top list for water transport (11%) while Romania is on the top list for road transport (12.7%). Finally, railway is the least important means of transport accounting on average for 1.5% of total spending, with France leading at 5%.

Travel agencies and tour operator services are valued on average 4.4% of total tourism consumption, and most countries stay around that figure. There are a few exceptions though: at the top end we find Belgium (9.9%) and Romania (9%); at the bottom end Austria (0.3%).

Cultural and recreational services are estimated to be about the same size, on average 2.8% for both items in the overall EU. At the bottom end of this ranking we find Italy for cultural services (0.9%) and Lithuania for recreational and sport services (1.2%). At the top end there are Bulgaria for cultural services (5.4%) and Slovenia for sport services (9.5%). Once more, however, it has to be highlighted that different approaches in the collection and in the computation of data make this comparison a futile exercise, to be interpreted in a very broad sense.

This comment is particularly relevant when interpreting the items grouped under the classifications *A.2 Connected Products* and *B. Non-specific products*. The sum of these two groups make 29.2% of overall tourism consumption, which means that almost one third of total consumption goes beyond the typical characteristic products. This share reaches 51.1% in Lithuania and 46.6% in Slovenia, probably discounting also problems in the classification of expenditure, while at the bottom end we find Romania with 12.5%.

The same data on tourism consumption can also be compared with total output in order to build the ratio between consumption and output on single items. This ratio is the last column of TSA Table 6. As the analysis of this indicator becomes tedious and repetitive with respect to the analysis carried out in this Section of the Report, we omit it, and we redirect to the file “Appendix H - WP3_Task4-2.xlsx” for the full presentation of available data for European countries.

Finally, it is also possible to separate the effects generated by inbound tourism, domestic tourism and other forms of tourism consumption. This is reported in the last rows of Table 5. In general, if we don’t consider other consumption (which is a marginal aggregate in most countries, or is not

computed), inbound and domestic tourism are on average equivalent in their contribution to internal tourism consumption. Unsurprisingly though, countries differ a lot in this respect. We go from countries mainly relying on incoming tourism as Malta, where inbound expenditure counts for 89.9% of internal tourism consumption, to Bulgaria (84.8%) to Estonia (74.2%) to countries where domestic tourism is the leading force as Romania (83.1%), the United Kingdom (82.1%) and Germany (78.2%).

	Austria (2015)			*Belgium – Only the Flemish region (2014)*			*Bulgaria (2015)*			*Czech Republic (2015)*			*Denmark (2015)*			*Estonia (2014)*		
	Absolute Value (€ M)	***% of Domestic Output***	***% of tourism output***	***Absolute Value (€ M)***	***% of Domestic Output***	***% of tourism output***	***Absolute Value (€ M)***	***% of Domestic Output***	***% of tourism output***	***Absolute Value (€ M)***	***% of Domestic Output***	***% of tourism output***	***Absolute Value (€ M)***	***% of Domestic Output***	***% of tourism output***	***Absolute Value (€ M)***	***% of Domestic Output***	***% of tourism output***
A. Specific products	**38,508**	**6.06%**	**99.05%**	**22,024**	**4.51%**	**100.00%**	**3,793**	**4.80%**	**100.00%**	**9,754**	**2.50%**	**100.00%**	**13,314**	**2.00%**	**100.00%**	**1,499**	**3.65%**	**74.72%**
A.1 Char. Prod.	***31,272***	***4.92%***	***80.44%***	***17,186***	***3.52%***	***78.03%***	***2,769***	**3.51%**	***73.00%***	***6,443***	***1.65%***	***66.05%***	***7,641***	***1.15%***	***57.39%***	***1,420***	***3.45%***	***70.77%***
Accom. serv.	10,860	1.71%	27.93%	1,305	0.27%	5.93%	795	1.01%	20.96%	1,772	0.45%	18.16%	1,903	0.29%	14.29%	447	1.09%	22.27%
Hotels	10,725	1.69%	27.59%	1,274	0.26%	5.78%		0.00%		1,519	0.39%	15.57%	1,659	0.25%	12.46%	332	0.81%	16.52%
Other		0.00%	0.00%		0.00%	0.00%		0.00%			0.00%	0.00%	244	0.04%	1.83%	35	0.09%	1.74%
Second homes	135	0.02%	0.35%	131	0.03%	0.59%		0.00%		253	0.06%	2.60%		0.00%	0.00%	80	0.20%	4.01%
Restaurants and similar	10,852	1.71%	27.91%	5,798	1.19%	26.33%	1,134	1.44%	29.90%	1,949	0.50%	19.98%	1,924	0.29%	14.45%	346	0.84%	17.23%
Passenger transports	5,781	0.91%	14.87%	4,964	1.02%	22.54%	407	0.52%	10.73%	1,592	0.41%	16.33%	2,372	0.36%	17.82%	407	0.99%	20.29%
Rail	1,129	0.18%	2.90%	898	0.18%	4.08%		0.00%		73	0.02%	0.75%		0.00%	0.00%	7	0.02%	0.36%
Road	629	0.10%	1.62%	1,937	0.40%	8.79%		0.00%		265	0.07%	2.72%		0.00%	0.00%	56	0.14%	2.77%
Water	53	0.01%	0.14%	81	0.02%	0.37%		0.00%		4	0.00%	0.04%		0.00%	0.00%	221	0.54%	11.01%
Air	3,714	0.58%	9.55%	2,048	0.42%	9.30%		0.00%		1,250	0.32%	12.81%		0.00%	0.00%	123	0.30%	6.14%
Transp. support. serv.		0.00%	0.00%		0.00%	0.00%		0.00%		228	0.06%	2.33%		0.00%	0.00%	6	0.01%	0.29%
Rental	256	0.04%	0.66%	1,723	0.35%	7.82%	34	0.04%	0.90%	24	0.01%	0.25%	328	0.05%	2.46%	31	0.08%	1.54%
		0.00%	0.00%		0.00%	0.00%		0.00%		65	0.02%	0.67%		0.00%	0.00%	1	0.00%	0.04%
Travel agencies	122	0.02%	0.31%	2,184	0.45%	9.92%		0.00%		261	0.07%	2.68%	354	0.05%	2.66%	98	0.24%	4.89%
Cultural services	1,951	0.31%	5.02%	372	0.08%	1.69%	294	0.37%	7.75%	367	0.09%	3.77%	723	0.11%	5.43%	55	0.13%	2.74%
Recreation and sport	1,706	0.27%	4.39%	815	0.17%	3.70%	105	0.13%	2.77%	151	0.04%	1.55%	37	0.01%	0.28%	10	0.03%	0.52%
Other tour. services		0.00%	0.00%	25	0.01%	0.11%		0.00%		33	0.01%	0.34%		0.00%	0.00%	19	0.05%	0.95%
A.2 Conn. products	***7,236***	***1.14%***	***18.61%***	***4,838***	***0.99%***	***21.97%***	***1,024***	**1.30%**	***27.00%***	***3,311***	***0.85%***	***33.95%***	***5,673***	***0.85%***	***42.61%***	***79***	***0.19%***	***3.95%***
B. Non-spec. products	**369**	**0.06%**	**0.95%**		**0.00%**	**0.00%**		**0.00%**			**0.00%**	**0.00%**		**0.00%**	**0.00%**	**507**	**1.23%**	**25.28%**
Output (at basic prices)	**38,877**	**6.11%**	**100.00%**	**22,024**	**4.51%**	**100.00%**	**3,793**	**4.80%**	**100.00%**	**9,754**	**2.50%**	**100.00%**	**13,314**	**2.00%**	**100.00%**	**2,007**	**4.88%**	**100.00%**
inbound tourism	18,118	2.85%	46.60%				3,216	4.07%	84.79%	5,781	1.48%	59.27%		0.00%	0.00%	1,489	3.62%	74.21%
domestic tourism	20,624	3.24%	53.05%				576	0.73%	15.19%	3,973	1.02%	40.73%		0.00%	0.00%	203	0.49%	10.12%
other	135	0.02%	0.35%					0.00%		0	0.00%	0.00%		0.00%	0.00%	314	0.76%	15.65%

Table 5 - Tourism consumption in different product categories (absolute values, share of domestic output and share of tourism output)

	Finland (2015)			France (2015)			Germany (2015)			Italy (2015)			Lithuania (2015)			Malta (2010)		
	Absolute Value (€ M)	***% of Domestic Output***	***% of tourism output***	***Absolute Value (€ M)***	***% of Domestic Output***	***% of tourism output***	***Absolute Value (€ M)***	***% of Domestic Output***	***% of tourism output***	***Absolute Value (€ M)***	***% of Domestic Output***	***% of tourism output***	***Absolute Value (€ M)***	***% of Domestic Output***	***% of tourism output***	***Absolute Value (€ M)***	***% of Domestic Output***	***% of tourism output***
A. Specific products	**10,262**	**2.47%**	**97.44%**	**158,500**	**4.11%**	**100.00%**	**287,100**	**5.35%**	**100.00%**	**118,728**	**3.79%**	**81.13%**	**1,981**	**3.06%**	**100.00%**	**1,149**	**5.76%**	**100.00%**
A.1 Char. Prod.	***9,557***	***2.30%***	***90.74%***	***112,000***	**2.91%**	**70.66%**	***227,000***	**4.23%**	**79.07%**	***100,463***	**3.21%**	**68.65%**	***968***	**1.49%**	**48.86%**	***962***	**4.82%**	**83.72%**
Accom. serv.	1,829	0.44%	17.37%	43,200	1.12%	27.26%	39,400	0.73%	13.72%	52,460	1.68%	35.85%	222	0.34%	11.21%	243	1.22%	21.15%
Hotels	1,307	0.31%	12.41%	13,600	0.35%	8.58%	35,800	0.67%	12.47%	30,483	0.97%	20.83%	222	0.34%	11.21%	235	1.18%	20.45%
Other		0.00%	0.00%	10,700	0.28%	6.75%		0.00%	0.00%		0.00%	0.00%		0.00%	0.00%		0.00%	0.00%
Second homes	522	0.13%	4.96%	18,900	0.49%	11.92%	3,600	0.07%	1.25%	21,977	0.70%	15.02%		0.00%	0.00%	8	0.04%	0.70%
Restaurants and similar	2,047	0.49%	19.44%	20,500	0.53%	12.93%	51,200	0.95%	17.83%	19,470	0.62%	13.31%	215	0.33%	10.85%	275	1.38%	23.93%
Passenger transports	4,085	0.98%	38.79%	28,300	0.73%	17.85%	41,500	0.77%	14.45%	17,462	0.56%	11.93%	286	0.44%	14.44%	286	1.43%	24.89%
Rail	286	0.07%	2.72%	7,900	0.21%	4.98%	4,400	0.08%	1.53%	2,242	0.07%	1.53%	18	0.03%	0.91%	0	0.00%	0.00%
Road	926	0.22%	8.79%	2,700	0.07%	1.70%	13,700	0.26%	4.77%	2,909	0.09%	1.99%	60	0.09%	3.03%	26	0.13%	2.26%
Water	409	0.10%	3.88%	500	0.01%	0.32%	1,500	0.03%	0.52%	2,178	0.07%	1.49%	26	0.04%	1.31%	130	0.65%	11.31%
Air	2,464	0.59%	23.40%	17,200	0.45%	10.85%	21,900	0.41%	7.63%	10,133	0.32%	6.92%	182	0.28%	9.19%	130	0.65%	11.31%
Transp. support. serv.		0.00%	0.00%		0.00%	0.00%		0.00%	0.00%		0.00%	0.00%	60	0.09%	3.03%		0.00%	0.00%
Rental	88	0.02%	0.84%	3,400	0.09%	2.15%	1,600	0.03%	0.56%	1,011	0.03%	0.69%	35	0.05%	1.77%	19	0.10%	1.65%
		0.00%	0.00%		0.00%	0.00%		0.00%	0.00%		0.00%	0.00%		0.00%	0.00%		0.00%	0.00%
Travel agencies	482	0.12%	4.58%	7,600	0.20%	4.79%	12,400	0.23%	4.32%	5,332	0.17%	3.64%	75	0.12%	3.79%	80	0.40%	6.96%
Cultural services	299	0.07%	2.84%	2,400	0.06%	1.51%	10,200	0.19%	3.55%	1,357	0.04%	0.93%	51	0.08%	2.57%	13	0.07%	1.13%
Recreation and sport	389	0.09%	3.69%	4,400	0.11%	2.78%	10,200	0.19%	3.55%	3,371	0.11%	2.30%	24	0.04%	1.21%	23	0.12%	2.00%
Other tour. services	338	0.08%	3.21%	2,200	0.06%	1.39%	60,500	1.13%	21.07%		0.00%	0.00%		0.00%	0.00%	23	0.12%	2.00%
A.2 Conn. products	***705***	***0.17%***	***6.69%***	***46,500***	**1.21%**	**29.34%**	***60,100***	**1.12%**	**20.93%**	***18,265***	**0.58%**	**12.48%**	***1,013***	**1.56%**	**51.14%**	***187***	**0.94%**	**16.28%**
B. Non-spec. products	**270**	**0.07%**	**2.56%**		**0.00%**	**0.00%**		**0.00%**	**0.00%**	**27,607**	**0.88%**	**18.87%**		**0.00%**	**0.00%**		**0.00%**	**0.00%**
Output (at basic prices)	**10,532**	**2.54%**	**100.00%**	**158,500**	**4.11%**	**100.00%**	**287,100**	**5.35%**	**100.00%**	**146,335**	**4.68%**	**100.00%**	**1,981**	**3.06%**	**100.00%**	**1,149**	**5.76%**	**100.00%**
inbound tourism	2,747	0.66%	26.08%	46,255	1.20%	29.18%	39,600	0.74%	13.79%	48,148	1.54%	32.90%	1,168	1.80%	58.96%	1,033	5.18%	89.90%
domestic tourism	6,005	1.45%	57.02%	95,368	2.48%	60.17%	224,600	4.18%	78.23%	64,230	2.05%	43.89%	812	1.25%	40.99%	112	0.56%	9.75%
other	1,780	0.43%	16.90%	16,877	0.44%	10.65%	23,000	0.43%	8.01%	33,956	1.09%	23.20%	0	0.00%	0.00%	5	0.03%	0.44%

Table 5 (continued) - Tourism consumption in different product categories (absolute values, share of domestic output and share of tourism output)

	Poland (2005)			Portugal (2015)			Romania (2014)			Slovenia (2014)			Spain (2015)			United Kingdom		
	Absolute Value (€ M)	***% of Domestic Output***	***% of tourism output***	***Absolute Value (€ M)***	***% of Domestic Output***	***% of tourism output***	***Absolute Value (€ M)***	***% of Domestic Output***	***% of tourism output***	***Absolute Value (€ M)***	***% of Domestic Output***	***% of tourism output***	***Absolute Value (€ M)***	***% of Domestic Output***	***% of tourism output***	***Absolute Value (€ M)***	***% of Domestic Output***	***% of tourism output***
A. Specific products	**8,553**	**0.94%**	**100.00%**	**17,959**	**5.64%**	**82.00%**	**7,014**	**2.47%**	**100.00%**	**3,587**	**4.91%**	**100.00%**	**92,564**	**4.58%**	**80.27%**	**159,527**	**3.58%**	**100.00%**
A.1 Char. Prod.	***5,123***	**0.56%**	**59.90%**	***16,854***	**5.29%**	**76.95%**	***6,140***	**2.16%**	**87.54%**	***1,916***	**2.62%**	**53.42%**	***0***	**0.00%**		***99,030***	**2.22%**	**62.08%**
Accom. serv.	2,361	0.26%	27.60%	5,561	1.75%	25.39%	1,787	0.63%	25.48%	556	0.76%	15.50%	0	0.00%		17,050	0.38%	10.69%
Hotels	2,361	0.26%	27.60%	2,694	0.85%	12.30%	1,778	0.63%	25.35%		0.00%	0.00%		0.00%			0.00%	0.00%
Other		0.00%	0.00%	1,767	0.56%	8.07%		0.00%	0.00%		0.00%	0.00%		0.00%			0.00%	0.00%
Second homes		0.00%	0.00%	1,100	0.35%	5.02%	9	0.00%	0.13%		0.00%	0.00%		0.00%			0.00%	0.00%
Restaurants and similar	1,899	0.21%	22.20%	5,276	1.66%	24.09%	1,703	0.60%	24.28%	492	0.67%	13.72%		0.00%		34,692	0.78%	21.75%
Passenger transports	265	0.03%	3.10%	3,166	0.99%	14.46%	1,488	0.52%	21.21%	346	0.47%	9.65%	0	0.00%		32,554	0.73%	20.41%
Rail		0.00%	0.00%	161	0.05%	0.74%	78	0.03%	1.11%		0.00%	0.00%		0.00%		4,853	0.11%	3.04%
Road		0.00%	0.00%	353	0.11%	1.61%	888	0.31%	12.66%		0.00%	0.00%		0.00%		3,013	0.07%	1.89%
Water		0.00%	0.00%	111	0.03%	0.51%	5	0.00%	0.07%		0.00%	0.00%		0.00%		1,173	0.03%	0.74%
Air		0.00%	0.00%	2,541	0.80%	11.60%	517	0.18%	7.37%		0.00%	0.00%		0.00%		23,515	0.53%	14.74%
Transp. support. serv.		0.00%	0.00%	137	0.04%	0.63%		0.00%	0.00%		0.00%	0.00%		0.00%			0.00%	0.00%
Rental		0.00%	0.00%	633	0.20%	2.89%	32	0.01%	0.46%		0.00%	0.00%		0.00%		706	0.02%	0.44%
		0.00%	0.00%	162	0.05%	0.74%		0.00%	0.00%		0.00%	0.00%		0.00%			0.00%	0.00%
Travel agencies	547	0.06%	6.40%	489	0.15%	2.23%	631	0.22%	9.00%	87	0.12%	2.43%		0.00%		3,440	0.08%	2.16%
Cultural services		0.00%	0.00%	301	0.09%	1.37%	94	0.03%	1.34%	93	0.13%	2.59%		0.00%		4,637	0.10%	2.91%
Recreation and sport		0.00%	0.00%	632	0.20%	2.89%	182	0.06%	2.59%	342	0.47%	9.53%		0.00%		5,665	0.13%	3.55%
Other tour. services	51	0.01%	0.60%	497	0.16%	2.27%	223	0.08%	3.18%		0.00%	0.00%		0.00%		286	0.01%	0.18%
A.2 Conn. products	***3,430***	**0.38%**	**40.10%**	***1,105***	**0.35%**	**5.05%**	***874***	**0.31%**	**12.46%**	***1,671***	**2.29%**	**46.58%**		**0.00%**		***60,497***	**1.36%**	**37.92%**
B. Non-spec. products		**0.00%**	**0.00%**	**3,943**	**1.24%**	**18.00%**		**0.00%**	**0.00%**		**0.00%**	**0.00%**	**22,754**	**1.13%**	**19.73%**		**0.00%**	**0.00%**
Output (at basic prices)	**8,553**	**0.94%**	**100.00%**	**21,902**	**6.88%**	**100.00%**	**7,014**	**2.47%**	**100.00%**	**3,587**	**4.91%**	**100.00%**	**115,318**	**5.70%**	**100.00%**	**159,527**	**3.58%**	**100.00%**
inbound tourism	4,434	0.49%	51.84%	13,543	4.25%	61.83%	1,116	0.39%	15.91%	2,408	3.29%	67.13%	59,213	2.93%	51.35%	28,403	0.64%	17.80%
domestic tourism	4,119	0.45%	48.16%	6,851	2.15%	31.28%	5,826	2.05%	83.06%	1,107	1.51%	30.86%	50,342	2.49%	43.65%	130,948	2.93%	82.09%
other		0.00%	0.00%	1,509	0.47%	6.89%	74	0.03%	1.06%	73	0.10%	2.04%	5,763	0.29%	5.00%		0.00%	0.00%

4.3 An estimation of the indirect and the total impact of tourism[15]

In order to compute the economy-wide implications of tourism flows and tourism expenditure, it is necessary to merge data from different sources. In particular, we employ data from: (i) TSA, providing the average spending in each of the (main) product categories (such as different transport modes, accommodation, travel agencies etc.) for each category of visitors (day-trippers, tourists, inbound visitors, domestic visitors); (ii) tourism flows data, providing the number of arrivals and overnight stays for the same categories of visitors; (iii) detailed IOT (as recent as possible), including the submatrix of intermediate consumption. Data related to (i) come from Tables 1, 2, 4 and 6 of the TSA; data related to (ii) come from Table 10 of the TSA, while IOT come from OECD and Eurostat datasets recalled in Section 3.1.1 or from NSOs. Moreover, in order to estimate the employment effects, data on sectoral employment and wages are collected from Eurostat database.

Our approach is aimed at defining a routine for semi-automatically computing the total impact of tourism when a minimal set of data is available. The definition of such a routine, which has been implemented through the use of Microsoft Excel, will allow future researchers to analyse other countries as soon as data will be available and organized accordingly. We redirect to Appendix E for the full description of the routine and to Appendix F for the template of the file while, in the next sub-sections, we describe the main findings for the four pilot countries, that have been selected for two reasons:

- On one hand, these countries are significant from the tourism economics perspective: they can be considered representative of important destinations (a big one, Italy; a small one, Portugal), of important origin markets (for its overall size, the UK; for its emerging nature, Czech Republic).
- On the other hand, these countries publish TSA tables in data format (Excel and / or CSV), following the recommended UNWTO output and with a detailed Table 5 and 6, and have IOT with the sufficient level of disaggregation needed to compute indirect effects. As they present a quasi-optimal structure of TSA data to be combined with IO coefficients, they can be considered role models in the future development of complete and integrated TSA-IOT datasets.

It should be pointed out that a number of hypotheses and simplifications have been considered in the computation of indirect and total effects.

i. Specifically, we assume that additional income generated in the economy by increased tourism demand is not spent within the economy in further consumption or investment. The inclusion of such induced effects would further increase the estimation of the total impact of tourism.
ii. Moreover, as an important share of tourism expenditure reported in the TSA refers to the group “A2 – Other consumption products” and cannot be attributed to core products (it is around 30% of tourism consumption), it cannot be reconducted to the industrial and

[15] This introduction to Section 4.3 is an extract from WP3.D1. The stand-alone document, which describes the technical procedure applied to compute the total impact of tourism, is in “Appendix E – WP3_D1.pdf”.

product classification in the IO tables for the computation of impacts. To avoid a consequent under-estimation of indirect and total impacts, in the proposed computation of indirect effects we assume that the multiplicative effect of characteristic tourism products expands to connected products in the same proportion.

Sub-sections 4.3.1 to 4.3.4 present the main findings for the four pilot countries: for a full analysis of the results we redirect to the Appendix I to L, respectively for the Czech Republic, Italy, Portugal and the UK. Section 4.3.5 compares the main results in a European perspective, while Section 4.3.6 addresses the total employment effects generated by tourism.

4.3.1 Czech Republic

According to 2015 TSA for the Czech Republic, integrated with 2010 IOT, overall tourism consumption is estimated to be around € 9.6 Billion, which is respectively 2.3% of domestic output (at basic prices) and 1.7% of domestic supply (at purchaser prices). The contribution of inbound tourism is 1% of domestic supply (59% of overall tourism consumption) and of domestic tourism is 0.7% of domestic supply (41% of overall tourism consumption). The Czech TSA does not account for other forms of consumption (the value of the services provided by second homes and of the services provided by the public administration). Net of intermediate consumption, the direct contribution of tourism to Value Added is 2.7%.

By applying the proposed routine to Czech data, the indirect and the total effect of tourism demand can be computed. Estimations are presented in Table 7 (on both Total Output and Gross Value Added).

Table 7 – Direct, Indirect and Total Effects of Tourism Demand on Total Output and Gross Value Added, Czech Republic (Kc M).

TOTAL EFFECTS	Reminder (flows)	Direct effect	Indirect effect	Total effect	Share Output	Direct effect, VA	Indirect effect, VA	Total effect, VA	Share VA
Real number of inbound same day visitors	17,985,085	..	..	**..**	**..**	..	..	**..**	**..**
Real number of inbound tourists (trips)	11,618,942	152237	243142	**395379**	**3.72**	58618	93620	**152238**	**3.68**
Real number of inbound overnights	38,340,869	152237	243142	**395379**	**3.72**	58618	93620	**152238**	**3.68**
Real number of domestic same day visitors	49,491,997	..	..	**..**	**..**	..	..	**..**	**..**
Real number of domestic tourists (trips)	28,324,773	104266	142408	**246674**	**2.32**	39707	54232	**93939**	**2.27**
Real number of domestic overnights	102,259,623	104266	142408	**246674**	**2.32**	39707	54232	**93939**	**2.27**
Real number of total tourists	107,420,797	256503	385550	**642053**	**6.04**	98349	147828	**246177**	**5.95**
Real number of total overnight stays	140,600,492	256503	385550	**642053**	**6.04**	98349	147828	**246177**	**5.95**

The last two rows of the table present the overall impact considering, respectively, the number of trips and the number of overnight stays (for inconsistencies in the data, same-day visits have not been considered in the estimation of inbound and domestic tourism impact, hence these two rows present the same figures). The estimated value of the direct effect for all visitors (Kc 256 Billion, equal to € 10 Billion) is in the surrounding of the value estimated in the TSA for tourism consumption, that we remind being Kc 246 Billion, confirming the correctness of the procedure. On top of that, for each category of visitors, Table 7 presents the indirect and the total effect, together with its share in terms of Total Output. Overall, tourism contributes for Kc 642 Billion to Domestic Output (6%).

The same procedure is repeated for estimating the Value Added. The value of the direct effect for all visitors (Kc 98 Billion, equal to € 3.8 Billion) is in the surrounding of the value estimated in the TSA for tourism value added, that we remind being Kc 110 Billion. On top of that, for each category of visitors, Table 7 presents the indirect and the total effect, together with its share in terms of Total Value Added. Overall, tourism value added is equal to Kc 246 Billion, equal to 5.9% of gross value added. We can also highlight that the indirect contribution of tourism more than doubles the direct impact, accounting for 60% of the total impact.

Our estimation procedure also allows the identification of a first, preliminary multiplicative effect. In fact, we can easily compute the ratio of the total impact on domestic output out of the direct tourism expenditure, for each category of visitors. The multiplicative indices are computed by dividing the total effects of Table 7 by the corresponding direct effect and are reported in Table 8. Their economic meaning reads as follow: € 1 spent by inbound tourists generates an increase in domestic output equal to € 2.60, while € 1 spent by domestic tourists generates an increase in domestic output equal to € 2.37. Overall, € 1 spent by tourists generates an increase in domestic output equal to € 2.50.

Table 8 – Multiplicative effects of Tourism Demand, Czech Republic.

CATEGORY OF VISITORS	MULTIPLICATIVE EFFECTS
Inbound same day visitors	..
Inbound tourists	2.60
Inbound visitors*	2.60
Domestic same day visitors	..
Domestic tourists	2.37
Domestic visitors*	2.37
Total visitors*	2.50
Total tourists	2.50

* The category of visitors includes same day visitors and tourists. In the case of the Czech Republic, as data on same day visitors are not available, figures for visitors are equal to figures for tourists.

The algorithm developed for this report also allows to compute the overall economic impact of additional tourism, in total or considering each category of visitors, for any possible scenario. For example, we can check what happens when the number of tourists does not change but the length of stay increases. While we redirect to the Excel file WP3_D2_CZ.xlsx in Appendix I for the setting up of alternative scenarios, in Table 9 we report the effects of a basic scenario with, an exogenous shock bringing 1 Million of extra visitors in each category of tourism. These scenarios allow to fine tune the marginal differences among the impacts of trips or overnight stays.

Table 9 – Direct, Indirect and Total Effects of Additional Tourism Demand on Total Output and Gross Value Added, Czech Republic (Kc M).

TOTAL EFFECTS	Reminder (flows)	Direct effect	Indirect effect	Total effect	Share Output	Direct effect, VA	Indirect effect, VA	Total effect, VA	Share VA
Additional inbound same day visitors	..	..	..	**..**	**..**	..	..	**..**	**..**
Additional inbound tourists (trips)	1,000,000	13102	20926	**34029**	**0.32**	5045	8058	**13103**	**0.32**
Additional inbound overnights	1,000,000	3971	6342	**10312**	**0.10**	1529	2442	**3971**	**0.10**
Additional domestic same day visitors	..	..	..	**..**	**..**	..	..	**..**	**..**
Additional domestic tourists (trips)	1,000,000	3681	5028	**8709**	**0.08**	1402	1915	**3317**	**0.08**
Additional domestic overnights	1,000,000	1020	1393	**2412**	**0.02**	388	530	**919**	**0.02**

In the second row of Table 9, where an extra flow of 1 Million inbound tourists is assumed, each one staying 3.30 days (which is the average length of stay of inbound visitors, see TSA Table 10), the overall impact on Output is Kc 34 Billion (€ 1,326 Million, 0.32% of total output), adding Kc 13.1 Billion to GVA (€ 511 Million, 0.32% of GVA). The third row estimates the impact of 1 Million overnight stays more, which is Kc 10.3 Billion of Output and Kc 4 Billion of GVA. The next three lines repeat the same exercise with domestic visitors. The inspection of Table 9 allows to highlight some important aspects:

i the direct effect of overnights can be read as the per-diem tourism spending: for example the per-diem expenditure of a Czech tourist is much lower than the per-diem expenditure of an incoming tourist (Kc 1020 , which is about € 40 < Kc 3971, about € 155);

ii The direct effect of trips can be read as the per-capita expenditure: the per-capita expenditure of an inbound tourist is much higher than the per-capita expenditure of a domestic tourism (Kc 13102, about € 511 > Kc 3681, about € 144);

iii The triggered indirect effect on the different categories of tourists is about 60% higher than the direct effect for inbound tourism, while it is only 37% higher for domestic tourists, for both total output and GVA.

iv Overall, the total effect of an inbound tourism generates a much higher impact on domestic output (the equivalent of about € 1330 for each additional tourist) than domestic tourism (roughly € 340). This different impact is not due to a different length of stay (which is similar for the two categories of tourism, about 3.30 days) but mainly to a different expenditure structure. This difference is also reflected on total value added generated, which is Kc 13103 (about € 511) for any additional inbound tourist, while it is only Kc 3317 (about € 129) for an additional domestic tourist.

Finally, it is also possible to investigate which sectors gain the most from tourism. In the attached file, Appendix I, the total economic impact of tourism for each sector of the economy can be read in cells G65-G151, while the economic impact of extra 1,000 tourists can be read in cells G154-G239. Not surprisingly, the economic sectors benefitting the most are food & beverage, accommodation and the air transport sectors.

4.3.2 Italy

According to 2015 TSA, overall tourism consumption in Italy is estimated to be around € 146 Billion, which is respectively 4.7% of domestic output (at basic prices) and 3.9% of domestic supply (at purchaser prices). The contribution of inbound tourism represents 1.3% of domestic supply (€ 48.1 Billion, 33% of overall tourism consumption), of domestic tourism is 1.7% of domestic supply (€ 64.2 Billion, 43.9% of overall tourism consumption) while other components of tourism account for 0.9% of domestic supply (€ 34 Billion, 23.2% of overall tourism consumption). Net of intermediate consumption, the direct contribution to Value Added is € 87.8 Billion (5.9% of total VA).

Table 10 – Direct, Indirect and Total Effects of Tourism Demand on Total Output and Gross Value Added, Italy (€ M).

TOTAL EFFECTS	Reminder (flows)	Direct effect	Indirect effect	Total effect	Share Output	Direct effect, VA	Indirect effect, VA	Total effect, VA	Share VA
Real number of inbound same day visitors	30,335,480	4080	4600	**8680**	**0.28**	1871	2110	**3981**	**0.28**
Real number of inbound tourists (trips)	46,692,417	59537	66352	**125889**	**4.04**	27428	30567	**57994**	**4.02**
Real number of inbound overnights	319,392,170	63618	62271	**125889**	**4.04**	29307	28687	**57994**	**4.02**
Real number of domestic same day visitors	65,766,871	9998	10306	**20304**	**0.65**	4806	4954	**9760**	**0.68**
Real number of domestic tourists (trips)	106,582,573	75497	93756	**169253**	**5.43**	32751	40671	**73422**	**5.09**
Real number of domestic overnights	326,844,369	85495	83758	**169253**	**5.43**	37088	36334	**73422**	**5.09**
Real number of total visitors	249,377,341	149112	175013	**324125**	**10.40**	66779	78378	**145157**	**10.06**
Real number of total overnight stays	646,236,539	135779	159363	**295142**	**9.47**	66394	65022	**131416**	**9.11**

By applying the proposed routine to Italian TSA data merged with data coming from the IOT, as done in the attached Appendix J – WP3_D2_IT.xlsx, the indirect and the total effect of tourism demand can be computed. The estimations are presented in Table 10 (on both Domestic Output and on Gross Value Added) for each category of visitors (tourists and day-trippers, inbound and domestic tourists), presenting the indirect and the total effect, together with its share in terms of Total Output and Value Added. The last two rows of the table present the overall impact, of, respectively, all visitors and only tourists. The estimated values of the direct effect for all visitors (€ 149 Billion) is in the surrounding of the value estimated in the TSA, that we remind being € 146 Billion, thereby confirming the correctness of the algorithm. Overall, we highlight that the indirect contribution of tourism roughly doubles the direct impact, bringing the total contribution of tourism around 10.4% of Total Output (from 4.7%) and around 10.1% of Gross Value Added (from 5.9%).

Our estimation procedure also allows for Italy the identification of a first, preliminary multiplicative effect. In fact, we can easily compute the ratio of the total impact on domestic output out of the direct tourism expenditure, for each category of visitors. The multiplicative indices are computed by dividing the total effects of Table 10 by the corresponding direct effect and are reported in Table 11. Their economic meaning reads as follow: € 1 spent by inbound same day visitors generates an increase in domestic output equal to € 2.13, while € 1 spent by inbound tourists generates a slightly lower impact, € 2.11. Each additional overnight stay instead generates € 1.98 of domestic output. The same indices can be computed for domestic tourists, showing that the impact for overnight stay is the same while the multiplicative effect of domestic same day visitors (2.00) is lower than for inbound same day visitors (2.13) while the opposite applies for tourists (2.24 and 2.11). Overall, € 1 spent by tourists generates an increase in domestic output equal to € 2.17.

Table 11 – Multiplicative effects of Tourism Demand, Italy.

CATEGORY OF VISITORS	MULTIPLICATIVE EFFECTS
Inbound same day visitors	2.13
Inbound tourists	2.11
Inbound visitors*	1.98
Domestic same day visitors	2.00
Domestic tourists	2.24
Domestic visitors*	1.98
Total visitors*	1.98
Total tourists	2.17

* The category of visitors includes same day visitors and tourists.

The algorithm developed for this report allows to compute the overall economic impact of additional tourism, in total or considering each category of visitors, for any possible scenario. For example, we can check what happens when the number of tourists does not change but the length of stay increases. While we redirect to Appendix J – WP3_D2_IT.xlsx for the setting up of alternative scenarios, in Table 12 we report the effects of a basic scenario where an exogenous

shock brings 1 Million extra of visitors in each category of tourism. These scenarios allow to fine tune the marginal differences among the impacts of trips or overnight stays.

Table 12 – Direct, Indirect and Total Effects of Additional Tourism Demand on Total Output and Gross Value Added, Italy (€ M).

TOTAL EFFECTS	Reminder (flows)	Direct effect	Indirect effect	Total effect	Share Output	Direct effect, VA	Indirect effect, VA	Total effect, VA	Share VA
Additional inbound same day visitors	1,000,000	135	152	**286**	**0.01**	62	70	**131**	**0.01**
Additional inbound tourists (trips)	1,000,000	1275	1421	**2696**	**0.09**	587	655	**1242**	**0.09**
Additional inbound overnights	1,000,000	199	195	**394**	**0.01**	92	90	**182**	**0.01**
Additional domestic same day visitors	1,000,000	152	157	**309**	**0.01**	73	75	**148**	**0.01**
Additional domestic tourists (trips)	1,000,000	708	880	**1588**	**0.05**	307	382	**689**	**0.05**
Additional domestic overnights	1,000,000	262	256	**518**	**0.02**	113	111	**225**	**0.02**

In the first row, an extra flow of 1 Million same-day trippers is assumed. The overall impact on Output is about € 286 Million, while on GVA is 131 Million. On the contrary, if 1 Million tourists are added, each one staying 6.84 days (which is the length of stay of inbound tourists only, see TSA Table 10) the overall impact on Output is almost € 2.7 Billion (0.09%), adding € 1.24 Billion to GVA. The third row estimates the impact of 1 Million of additional overnight stays, which is equal to € 394 Million of Output and € 182 Million of GVA. The next three lines repeat the same scenario with domestic visitors. Such exercise allows to highlight some important aspects:

i the direct effect of overnights can be read as the per-diem tourism spending: for example the per-diem expenditure of an Italian visitor (€ 262) is higher than the per-diem expenditure of an incoming tourist (€ 199); this counter-intuitive result is well explained by the different lengths of stay of inbound tourism (6.84 days) and domestic tourism (3.07 days). In fact, overall incoming tourists spend more than domestic tourists (see point ii below), but the expenditure is spread on a much higher number of days.

ii The direct effect of trips can be read as the per-capita expenditure: the per-capita expenditure of an inbound tourist, on the contrary, is much higher than the per-capita expenditure of a domestic tourism (€ 1275 > € 708);

iii The triggered indirect effect on the different categories of tourists is about 11% higher than the direct effect for inbound tourism, while it is 24% higher for domestic tourists, for both total output and GVA, indicating that the expenditure pattern of the two categories of tourists are different, and that domestic tourism expenditure has a higher multiplicative effect.

iv The per-diem expenditure of a tourist is higher than the per-diem (which is also per-capita) expenditure of an excursionist, both for inbound visitors (€ 199 > € 135) and for domestic visitors (€ 262 > 152); this is not surprising, as same-day visitors do not pay for accommodation; the same inequality applies for the total impact on domestic output and on value added.

v Overall, the total effect of inbound tourism generates a much higher impact on domestic output (the equivalent of about € 2696 for each additional tourist) than domestic tourism (€ 1588). This different impact is mainly due to a different length of stay, but also the different expenditure structure plays a role. This difference is also reflected on total value added generated, which is € 1242 for any additional inbound tourist, while it is only € 689 for an additional domestic tourist.

Finally, it is also possible to investigate which sectors gain the most from tourism. In the attached file, Appendix J, the total economic impact of tourism for each sector of the economy can be read in cells G65-G126, while the economic impact of extra 1,000 tourists can be read in cells G130-G191. Not surprisingly, the economic sectors benefitting the most are accommodation & catering (with € 330,167) and the retail sector (with € 142,394).

4.3.3 Portugal

According to 2015 TSA, overall tourism consumption in Portugal is estimated to be € 21.9 Billion, which is respectively 6.9% of domestic output (at basic prices) and 5.4% of domestic supply (at purchaser prices). The contribution of inbound tourism represents 3.3% of domestic supply (€ 13.5 Billion, 61.8% of overall tourism consumption), of domestic tourism is 1.7% of domestic supply (€ 6.8 Billion, 31.3% of overall tourism consumption) while other components of tourism account for 0.4% of domestic supply (€ 1.5 Billion, 6.9% of overall tourism consumption). Net of intermediate consumption, the direct contribution to Value Added is € 10.5 Billion (6.7% of total VA).

By applying the proposed routine to Portuguese TSA data merged with data coming from the IOT, as done in the file attached as Appendix K – WP3_D2_PT.xlsx, the indirect and the total effect of tourism demand can be computed. The estimations are presented in Table 13 (on both Domestic Output and on Gross Value Added) for each category of visitors (tourists and day-trippers, inbound and domestic tourists), presenting the indirect and the total effect, together with its share in terms of Total Output and Value Added. Unfortunately, data for domestic same day visitors in Portugal are inconsistent, hence this disaggregation is producing unreliable results in row 4 of the table. For this reason, the last two rows of the table which present the overall impact of, respectively, all visitors and only tourists are the same, as they consider only tourists. The estimated value of the direct effect (€ 21.3 Billion) is in the surrounding of the value estimated in the TSA, that we remind being € 21.9 Billion, confirming the correctness of the procedure. Overall, we highlight that the indirect contribution of tourism is about 40% of the direct impact, bringing the total contribution of tourism around 7.3 % of Total Output (from 5.4%) and around 9.2% of Gross Value Added (from 6.7%).

Table 13 – Direct, Indirect and Total Effects of Tourism Demand on Total Output and Gross Value Added, Portugal (€ M).

TOTAL EFFECTS	Reminder (flows)	Direct effect	Indirect effect	Total effect	Share Output	Direct effect, VA	Indirect effect, VA	Total effect, VA	Share VA
Real number of inbound same day visitors	..	..	..	**..**	**..**	..	..	**..**	**..**
Real number of inbound tourists (trips)	9957000	13738	8532	**22270**	**5.43**	6536	4059	**10595**	**6.76**
Real number of inbound overnights	36417000	13978	8292	**22270**	**5.43**	6650	3945	**10595**	**6.76**
Real number of domestic same day visitors	..	..	..	**..**	**..**	..	..	**..**	**..**
Real number of domestic tourists (trips)	8111000	4674	3026	**7699**	**1.88**	2281	1477	**3757**	**2.40**
Real number of domestic overnights	18193000	7385	314	**7699**	**1.88**	3604	153	**3757**	**2.40**
Real number of total tourists	18068000	21363	8606	**29970**	**7.30**	10231	4121	**14352**	**9.15**
Real number of total overnight stays	54610000	21363	8606	**29970**	**7.30**	10231	4121	**14352**	**9.15**

Our estimation procedure also allows for Portugal the identification of a preliminary multiplicative effect, as done for the other countries. The multiplicative indices are computed by dividing the total effects of Table 13 by the corresponding direct effect and are reported in Table 14. Their economic meaning reads as follow: € 1 directly spent by inbound tourists generates an overall impact on domestic output equal to € 1.62. The same data can be computed for domestic tourists, showing that € 1 spent by a domestic tourist generates an overall increase in Domestic Output equal to € 1.65, so it has a very similar impact. Overall, € 1 spent by tourists generates an increase in domestic output equal to € 1.40.

Table 14 – Multiplicative effects of Tourism Demand, Portugal.

CATEGORY OF VISITORS	MULTIPLICATIVE EFFECTS
Inbound same day visitors	..
Inbound tourists	1.62
Inbound visitors*	1.59
Domestic same day visitors	..
Domestic tourists	1.65
Domestic visitors*	(1.04)
Total visitors*	1.40
Total tourists	1.40

* The category of visitors includes same day visitors and tourists. In the case of Portugal, data about domestic same day visitors are inconsistent, hence the multiplicative effect of domestic overnight stays (which include both tourists and same-day visitors) is not reliable and shown in parenthesis. Consequently, only tourists have been considered for the total multiplicative effect.

The algorithm developed for this report allows to compute the overall economic impact of additional tourism, in total or considering each category of visitors, for any possible scenario. For example, we can check what happens when the number of tourists does not change but the length of stay increases. While we redirect to Appendix K – WP3_D2_PT.xlsx for the setting up of alternative scenarios, in Table 15 we report the effects of a basic scenario where an exogenous shock brings 1 Million extra of visitors in each category of tourism. These scenarios allow to fine tune the marginal differences among the impacts of trips or overnight stays.

In the second row, an extra flow of 1 Million inbound tourists is assumed. The overall impact on Output is € 2.2 Billion (0.54%), adding € 1.1 Billion to GVA (0.68%). The third row estimates the impact of 1 Million of additional overnight stays by inbound tourists, which is equal to € 612 Million of Output and € 291 Million of GVA. The next three lines repeat the same scenario with domestic visitors. Such exercise allows to highlight some important aspects:

i the direct effect of overnights can be read as the per-diem tourism spending: for example the per-diem expenditure of a Portugues visitor (€ 257) is slightly lower than the per-diem expenditure of an incoming tourist (€ 384);
ii The direct effect of trips can be read as the per-capita expenditure: the per-capita expenditure of an inbound tourist is much higher than the per-capita expenditure of a domestic tourism (€ 1380 > € 576), mainly because of the different length of stay (3.66 for incoming tourism and 2.24 for domestic tourism);
iii The indirect effect triggered by the different categories of tourists is about 60% of the direct effect for inbound tourism, while it is 65% of direct effect for domestic tourists, for both total output and GVA, indicating that the expenditure pattern of the two categories of tourists are slightly different, with domestic tourism expenditure showing a higher multiplicative effect;
iv Overall, the total effect of inbound tourism generates a much higher impact on domestic output (the equivalent of about € 2237 for each additional tourist) than domestic tourism (€ 949). This difference is also reflected on total value added generated, which is € 1064) for any additional inbound tourist, while it is only € 463 for an additional domestic tourist.
v The same applies to overnight stays: an additional inbound overnight stay generates a much higher impact on domestic output (€ 612) than domestic tourism (€ 423). This difference is also reflected on total value added generated, which is € 219 for any additional inbound stay, while it is only € 207 for an additional domestic stay.

Finally, it is also possible to investigate which sectors gain the most from tourism. In the attached file, Appendix K, the total economic impact of tourism for each sector of the economy can be read in cells G65-G143, while the economic impact of extra 1,000 tourists can be read in cells G147-G225. Not surprisingly, the economic sectors benefitting the most are accommodation (with € 363,397), food and beverage (with € 333,090) and the air transport sector (with € 203,194).

Table 15 – Direct, Indirect and Total Effects of Additional Tourism Demand on Total Output and Gross Value Added, Portugal (€ M).

TOTAL EFFECTS	Reminder (flows)	Direct effect	Indirect effect	Total effect	Share Output	Direct effect, VA	Indirect effect, VA	Total effect, VA	Share VA
Real number of inbound same day visitors	1,000,000	..	..	**..**	**..**	..	..	**..**	**..**
Real number of inbound tourists (trips)	1,000,000	1380	857	**2237**	**0.54**	656	408	**1064**	**0.68**
Real number of inbound overnights	1,000,000	384	228	**612**	**0.15**	183	108	**291**	**0.19**
Real number of domestic same day visitors	1,000,000	..	..	**..**	**..**	..	..	**..**	**..**
Real number of domestic tourists (trips)	1,000,000	576	373	**949**	**0.23**	281	182	**463**	**0.30**
Real number of domestic overnights	1,000,000	257	166	**423**	**0.10**	125	81	**207**	**0.13**

4.3.4 the UK

According to 2015 TSA for the UK, integrated with 2014 IOT, overall tourism consumption is estimated to be around £ 144 Billion (€ 180 Billion at the average exchange rate of 2015), which is respectively 4.5% of domestic output (at basic prices) and 3.6% of domestic supply (at purchaser prices). The contribution of inbound tourism is 0.65% of domestic supply (18% of overall tourism consumption) and of domestic tourism is 2.7% of domestic supply (76% of overall tourism consumption) while other components of tourism account for 0.2% of domestic supply (6% of overall tourism consumption). Net of intermediate consumption, the direct contribution to Value Added is 4%.

Table 16 – Direct, Indirect and Total Effects of Tourism Demand on Total Output and Gross Value Added, UK (£ M).

TOTAL EFFECTS	Reminder (flows)	Direct effect	Indirect effect	Total effect	Share Output	Direct effect, VA	Indirect effect, VA	Total effect, VA	Share VA
Real number of inbound same day visitors	1,679,000	..	..	**..**	**..**	..	..	**..**	**..**
Real number of inbound tourists (trips)	34,436,000	23389	3648	**27036**	**0.84**	14900	2324	**17223**	**1.02**
Real number of inbound overnights	273,054,000	23389	3648	**27036**	**0.84**	14900	2324	**17223**	**1.02**
Real number of domestic same day visitors	1,525,200,000	..	..	**..**	**..**	..	..	**..**	**..**
Real number of domestic tourists (trips)	124,426,000	70641	15840	**86481**	**2.69**	29311	26366	**55676**	**3.30**
Real number of domestic overnights	377,101,000	70641	15840	**86481**	**2.69**	29311	26366	**55676**	**3.30**
Real number of total tourists	158,862,000	143719	5021	**148739**	**4.62**	90220	3152	**93372**	**5.54**
Real number of total overnight stays	650,155,000	143719	5021	**148739**	**4.62**	90220	3152	**93372**	**5.54**

By applying our routine to UK data collected in the file "Appendix L - WP3_D2_UK.xlsx", the indirect and the total economic impact of tourism demand on the UK economy can now be estimated. The main results are presented in Table 16 (on Total Output and on Gross Value Added).

Unfortunately, the TSA for the UK presents some inconsistency in the data related to same day visitors. Specially, there is an over-estimation of domestic same-day visitors (who would account, according to the TSA, for more than 1.5 Billion visits in the whole year, an average of around 25 excursions per person) which does not match expenditure data. Hence, it has been decided not to compute the separate effects for same day visitors and tourists and to let same-day expenditure be absorbed by tourism. This has the effect of slightly overestimating the impact of overnight tourism, since a part of it would be associated to excursionists, but overall impacts for inbound, domestic and total tourism are reliable.

The estimated value of the direct effect for all tourists (£ 144 Billion, the last two rows of Table 16) is exactly the value estimated in the TSA. On top of that, for both inbound and domestic tourists, Table 16 presents the indirect and the total effect, together with its share in terms of Total Output. The same procedure is repeated for the Value Added. Overall, we highlight that the indirect contribution of tourism is very small in the UK, bringing its total economic impact around 5.5% of Gross Value Added (from a direct impact of 4%). We can also highlight that the indirect contribution of tourism is just 4% of the direct effect, the lowest among the four countries taken into consideration in this report.

As for the other countries, our estimation procedure also allows the identification of a first, preliminary multiplicative effect. In fact, we can easily compute the ratio of the total impact on domestic output out of the direct tourism expenditure, for each category of visitors. The multiplicative indices are computed by dividing the total effects of Table 16 by the corresponding direct effect and are reported in Table 17. Their economic meaning reads as follow: € 1 spent by inbound tourists generates an increase in domestic output equal to € 1.16, while € 1 spent by domestic tourists generates an increase in domestic output equal to € 1.22.

Table 17 – Multiplicative effects of Tourism Demand, the UK.

CATEGORY OF VISITORS	MULTIPLICATIVE EFFECTS
Inbound same day visitors	..
Inbound tourism	1.16
Inbound visitors*	..
Domestic same day visitors	..
Domestic tourism	1.22
Domestic visitors*	..
Total visitors*	1.04
Total tourists	1.04

* The category of visitors includes same day visitors and tourists. Given the inconsistency of data on same day domestic visitors, the resulting multiplicative effect is unreliable and is not reported.

By using the proposed algorithm it is also possible to compute the overall economic impact of additional tourism, in total or considering each category of visitors. For example, in Table 18 the impact of an exogenous shock of 1 Million extra tourists is reported. These scenarios allow to fine tune the marginal differences in the impacts of same-day visitors, tourists or overnight stays. It is also possible to mimic the impact of a change in the length of stay. While we redirect to the Excel file Appendix L - WP3_D2_UK.xlsx for the setting up of alternative scenarios, in here we report the effects of this basic scenario with a change of 1 Million visitors.

In the second row of Table 18 (the first line, together with the fourth has not been considered for the above mentioned inconsistencies in same day visitors' data), an extra flow of 1 Million inbound trippers, each one staying 7.93 days (the average length of stay of incoming tourists) is assumed. The overall impact on Output is about £ 785 Million (€ 981 Million, 0.02% of output), while on GVA is £ 500 Million (€ 625 Million, 0.03% of GVA). The third row estimates the impact of an additional 1 Million inbound stays, which is £ 99 Million (€ 124 Million) of Output and £ 63 Million (€ 79 Million) of GVA. The next lines repeat the same with domestic visitors. The inspection of Table 9 allows to highlight some important aspects:

i the direct effect of overnights can be read as the per-diem tourism spending: for example, the per-diem expenditure of an incoming tourist is much lower than the per-diem expenditure of a UK tourist (£ 86, which is about € 108 < £ 187, about € 234). However, this difference is likely to stem from the expenditure of visitors, which are likely to be over-estimated, and hence it should be considered with care;
ii The direct effect of trips can be read as the per-capita expenditure: the per-capita expenditure of an inbound tourist is higher than the per-capita expenditure of a domestic tourism (£ 679, about € 849 > £ 568, about € 710); this is in part due to the higher length of stay of incoming tourists, which partially outsets the lower per-diem expenditure.
iii The triggered indirect effect on the different categories of tourists is quite low, being around 15% of the direct effect for inbound tourism, while it is 22% of the direct impact for domestic tourists, for both total output and GVA.
iv Overall, the total effect of an inbound tourism generates a similar impact on domestic output (the equivalent of about £ 785, around € 981 for each additional tourist) than domestic tourism (£ 695 roughly € 869). This pattern is also reflected on total value added generated, which is £ 500 (about € 625) for any additional inbound tourist, while it is slightly less, £ 447 (about € 559) for an additional domestic tourist.

Finally, it is also possible to investigate which sectors gain the most from tourism. In the attached file, Appendix L, the total economic impact of tourism for each sector of the economy can be read in cells G65-G192, while the economic impact of extra 1,000 tourists can be read in cells G195-G322. Not surprisingly, the economic sectors benefitting the most are air transport (with £ 20,244) and accommodation (with £ 14,681).

Table 18 – Direct, Indirect and Total Effects of Additional Tourism Demand on Total Output and Gross Value Added, the UK (£ M).

TOTAL EFFECTS	Reminder (flows)	Direct effect	Indirect effect	Total effect	Share Output	Direct effect, VA	Indirect effect, VA	Total effect, VA	Share VA
Real number of inbound same day visitors	1,000,000	..	..	**..**	**..**	..	..	**..**	**..**
Real number of inbound tourists (trips)	1,000,000	679	106	**785**	**0.02**	433	67	**500**	**0.03**
Real number of inbound overnights	1,000,000	86	13	**99**	**0.00**	55	8	**63**	**0.00**
Real number of domestic same day visitors	1,000,000	..	..	**..**	**..**	..	..	**..**	**..**
Real number of domestic tourists (trips)	1,000,000	568	127	**695**	**0.02**	366	82	**447**	**0.03**
Real number of domestic overnights	1,000,000	187	42	**229**	**0.01**	121	27	**148**	**0.01**

4.3.5 A European comparison

Currently there is no standard procedure to compute indirect and total effects of tourism in EU countries. The only available information comes from technical reports and published data for a few countries. Noticeably, according to Statistics Austria (2018), the total contribution of Tourism and Leisure to Austrian GDP in 2016 is around € 31,214 Million, about 8.8% of Austrian GDP. When determining the economic importance of the tourism and leisure industry, the non-tourism leisure consumption by Austrian residents at their place of residence can also be taken into account, and this is estimated to be € 25,230 Million (7.1% of GDP). Therefore, the total contribution of tourism and leisure industries is about 15.9%.

According to DIW, the German Institute for Economic Research (Federal Ministry for Economic Affairs and Energy, 2017), the total value added generated by tourism in 2015 is € 181.4 Billion (6.7% of German GDP): on top of the direct contribution of € 105.3 Billion (3.9% of GDP), the indirect contribution is around € 76.1 Billion (2.8% of GDP). In terms of employment, together with the 2.92 Million people directly employed in the tourism sector (6.8% of total employment), DIW also considers 1.25 Million people whose jobs are indirectly supported by tourism. In total, there are 4.17 Million people employed thanks to tourism activities (9.7% of total employment).

According to the Estonia Statistics Office (2018), the total value added generated by tourism in 2014 is € 1,279 Million (7.3% of GDP): on top of the direct contribution of € 845 Million (4.8% of GDP), the indirect contribution is around € 435 Million (2.5% of GDP).

Finally, according to the National Institute of Statistics Spain (2018), the total value added generated by tourism in Spain in 2014 is € 107.2 Billion (11.4% of GDP): on top of the direct contribution of € 66.5 Billion (7% of GDP), the indirect contribution is around € 40.7 Billion (4.4% of

GDP). In terms of employment, together with the 0.99 Million people directly employed in the tourism sector (5.3% of total employment), the Spanish institute also considers 0.77 Million people who are indirectly supported by tourism. In total, there are 1.67 Million people employed thanks to tourism activities (8.9% of total employment).

Table 18 – A comparison of European countries

COUNTRY	Direct impact (€ M)	Share of direct impact in GVA	Indirect impact (€ M)	Share of indirect impact in GVA	Total impact (€ M)	Share of total impact in GVA
Austria	24,185	7%	7,029	1.8%	31,214	8.8%
Czech Republic	3,836	2.4%	5,765	3.5%	9,601	5.9%
Estonia	845	4.8%	435	2.5%	1,279	7.3%
Germany	105,300	3.9%	76,100	2.8%	181,400	6.7%
Italy	66,779	4.6%	78,378	5.4%	145,157	10.1%
Portugal	10,231	6.6%	4,121	2.6%	14,352	9.2%
Spain	66,502	7%	40,712	4.4%	107,214	11.4%
United Kingdom	112,775	5.3%	3,940	0.2%	116,715	5.5%

Results for these four countries are reported in Table 19, together with the values for the Czech Republic, Italy, Portugal and the UK estimated by our routine in the previous sub-sections. The inspection of Table 19 allows to highlight that:

i. the indirect impact of tourism is indeed very relevant for the European economies, generating value added up to € 76 and € 78 Billion respectively in Germany and in Italy (the low value of the UK – € 4 Billion, is probably due, as already mentioned in the previous sub-section, to some inconsistencies in the data, stemming from the overestimation of domestic same-day visitors: it is likely that the true value is much higher than that);
ii. as a share to GVA, the indirect impact of tourism counts for 5.4% in Italy and 4.4% in Spain, while it is only 2.8% in Germany, which is however in line with the other countries (Estonia, 2.5%, Portugal, 2.6%). The indirect impact is 3.5% in the Czech Republic, while it is below 2% in Austria (1.8%) and in the UK (0.2%, likely to be underestimated);
iii. hence, countries differ a lot in the ratio between indirect and direct effect: in such a small sample of eight countries we find countries where the indirect economic impact is much lower than the direct impact (the UK with 3.5%, Austria with 29.1%; Portugal with 40.3%); countries with intermediate values (Estonia, 51.5%, Spain, 61.2%, Germany, 72.3%); countries with very strong indirect impact (Italy, 117.4% and the Czech Republic, with 150.3%). These differences are probably triggered by the different structure of the tourism product: the better the tourism product is integrated with the rest of the domestic economy, the higher the triggered indirect impact;
iv. overall, the total impact of tourism accounts for 11.4% of GDP in Spain and 10.1% in Italy that are, according to UNWTO, respectively the third and the fifth destination in

the world for number of incoming tourists. The share is quite high in two smaller but important tourism destinations as Austria (8.8%) and Portugal (9.2%) while for countries where tourism is not particularly important the share is around 6-7% (7.3% in Estonia, 6.7% in Germany, 5.9% in the Czech Republic). At the bottom of this ranking we find the UK, with 5.5% although, it is useful to repeat it, this figure is likely to be under-estimated due to data related issues.

The estimation carried out in this report allows to produce a rough estimate of a "textbook" tourism multiplier, which is the amount of income (value added) generated by an additional € 1 spent in tourism. Hence, we consider the total value added (including direct and indirect effect) generated by tourism and we relate it to the original tourism expenditure. Results are presented in Table 19 for, respectively, Inbound tourism, Domestic tourism, Total tourism and the only sum of Inbound and Domestic tourism (hence excluding from the computation of tourism expenditure the other components of tourism consumption reported in TSA, Table 4, Column 4). As regards the total tourism multiplier (second-last column of Table 19) it can be observed that:

i. some of the countries have a multiplier close to 1 (Czech Republic, Italy and Spain). Hence, for these countries we can state that 1 Euro of tourism expenditure translates almost entirely in 1 Euro of income. In other words, tourism's economic benefits spread out in the rest of the economy (through the indirect impact) in a way that roughly compensates what tourism business have to pay in terms of intermediate consumption.
ii. Some other countries have a multiplier around 0.6 – 0.8 (from 0.58, Estonia, to 0.80, Austria). There are two explanations for this result: one, business in these countries are subjects to more leakages (the diversion of funds from the circular flow of money within the economy), probably stemming from a higher share of imports than in countries of the first group. Two, the economic structure is based on a higher than the average share of intermediate consumption, leaving less income in terms of wages (employees compensation) and profits (operational surplus). Usually, this second explanation is relevant for businesses / sectors with low degree of competitiveness.
iii. It is noticeable to see that, excluding the other forms of consumption (second homes and public administration consumption) and hence focusing on real expenditure of inbound and domestic tourism only, the multiplier presented in the last column of Table 19 can be elaborated. Multipliers are now naturally higher and, in the case of Italy, it reaches to value of 1.29 (the lowest ones are now Estonia, Germany and the Uk, at 0.69);

Moreover, it is also interesting to breakdown the multiplier in the two components of inbound and domestic tourism. For four countries out of five for which multipliers can be computed, we see that the multiplier of inbound tourism is higher than the one of domestic tourism, as expected: in fact, inbound tourism is an export, providing "new" currency to the country. On the contrary, domestic tourism is a form of consumption where money cannot be alternatively spent on other forms of domestic consumption: this crowding-out effect is the main reason for a lower multiplier for domestic tourism.

Table 19 – A rough estimate of the tourism multiplier

COUNTRY	Inbound tourism	Domestic tourism	Total tourism	Inbound + Domestic tourism only
Austria	..	..	**0.80**	**0.81**
Czech Republic	1.03	0.96	**1.00**	**1.00**
Estonia	..	..	**0.58**	**0.68**
Germany	..	..	**0.63**	**0.69**
Italy	1.20	1.14	**0.99**	**1.29**
Portugal	0.78	0.55	**0.66**	**0.70**
Spain	0.97	1.22	**0.93**	**0.98**
United Kingdom	0.67	0.51	**0.65**	**0.69**

The only exception to this pattern is Spain, where the domestic multiplier is very high (1.22, similar to Italy) while the inbound multiplier is lower (0.97), although high in absolute terms. It would be very interesting to look more closely into the data of Spain and Italy, two very similar countries in terms of position, size, level of well-being and importance of tourism within the economy. The most likely explanation is the different structure of inbound tourism for the two countries, having Spain a relatively higher number of tourists coming from Northern Europe within package holiday tours organized by international agencies. It is well-known that the "package tourists" generally spend a higher share of their consumption in goods that are imported, as they tend to replicate the standard of living and consumer habits of their own countries. Among the many examples, we can think of the presence of German supermarkets in destinations crowded with German tourists, such as the Balearic Islands. These consumption patterns generally produce leakages from the domestic economy, diminishing the value of the multiplier. In Italy, on the contrary, the share of foreign tourists spending on traditional and local goods is much higher (think of food, wine, fashion), thereby increasing the value of the multiplier. The dependence of tourism consumption from imported goods is also the likely reason for the low values of the multiplier for Portugal (which is a small and open economy) and the UK.

4.3.6 The Employment multiplier

Once data on employment by sector, number of hours worked and total wages are available, the proposed routine described in Appendix E – WP3_D1.pdf also allows the computation of total and multiplicative effects on employment. This elaboration is quite complex, not only for the amount of data to be considered, but also for the lack of precise meta-data, particularly as regards the distinction between employees and self-employed and between number of jobs and number of full-time equivalent positions, which are not always explained clearly in the Statistical sources. Hence, the estimations here presented have to be handled with much care, as there might be important caveats in their computation. The main results are presented in Table 20.

Table 20 – Direct, indirect and total employment effects

	Direct Employment, Nr.	Direct employement share of total employment	Indirect Employment, Nr.	Indirect employement share of total employment	Total Employment, Nr.	Total employement share of domestic employment
Czech Republic						
Inbound tourism	83371	23.10%	133155	36.89%	**216526**	**60.00%**
Domestic tourism	61027	16.91%	83351	23.10%	**144378**	**40.00%**
Total tourism	**144183**	**39.95%**	**216722**	**60.05%**	**360905**	**100.00%**
Italy						
Inbound tourism	598441	23.07%	585778	22.58%	**1184218**	**45.65%**
Domestic tourism	712307	27.46%	697836	26.90%	**1410143**	**54.35%**
Total tourism	**1310731**	**50.52%**	**1283631**	**49.48%**	**2594362**	**100.00%**
Portugal						
Inbound tourism	166940	46.06%	101899	28.11%	**265973**	**73.38%**
Domestic tourism	92558	25.54%	37922	10.46%	**96495**	**26.62%**
Total tourism	**258379**	**71.28%**	**104089**	**28.72%**	**362469**	**100.00%**
UK						
Inbound tourism	358739	14.32%	55951	2.23%	**414689**	**16.56%**
Domestic tourism	942133	37.62%	211257	8.44%	**1153390**	**46.06%**
Total tourism	**2419822**	**96.62%**	**84532**	**3.38%**	**2504354**	**100.00%**

For each country, total and disaggregated figures (by inbound/domestic and by direct/indirect) are presented. In the Czech Republic, the number of jobs directly linked to tourism are estimated to be 144,183. The algorithm built in our routine allows to estimate a further 216,722 positions bringing the total (direct and indirect) employment impact of tourism close to 361,000 jobs. Inbound tourism is the most important contributor of employment, counting for 60% of total jobs. Moreover, in the case of the Czech Republic, the indirect impact is more important (for both inbound and domestic tourism) than the direct impact. It is also possible to estimate that 1 Million more domestic tourists would create 5097 new jobs in the whole economy, while 1 Million more inbound tourists would generate 18,636 new positions.

In Italy, the jobs directly linked to tourism are instead estimated to be 1,310,731. The algorithm built in our routine allows to estimate a further 1,283,631 positions bringing the total (direct and indirect) employment impact of tourism to almost the double (2,594,362 jobs). Inbound tourism and domestic tourism contribute almost equally to employment, the former counting for 46% and the latter for 54% of total jobs. However, this equality stems from a very different structure of flows between inbound and domestic tourism, as the former are less but with a longer length of stay. Hence, it is possible to estimate that 1 Million more domestic tourists would create 13,231 new jobs in the whole economy, while 1 Million more inbound tourists would generate 25,362 new positions.

Moving to Portugal, the number of jobs directly linked to tourism is estimated to be 258,379, to which a further 104,089 indirect positions can be added bringing the total (direct and indirect) employment impact of tourism to 362,469 (9% of total employment). Inbound tourism is the most

important contributor of employment, counting for 73% of total jobs. This relevance stems from both a higher number of tourists and from a longer length of stay. The routine can also estimate that 1 Million more domestic tourists would create 11,897 new jobs in the whole economy, while 1 Million more inbound tourists would generate 26,712 new positions.

Finally, the number of jobs directly linked to tourism in the UK is estimated to be around 2,420,000, to which a further 85,000 indirect positions are added, bringing the total (direct and indirect) employment impact of tourism to more than 2.5 Million jobs. As previously recalled, it is likely that the indirect effect for the UK is under-estimated. It is also possible to estimate that 1 Million more domestic tourists would create 9,270 new jobs in the whole economy, while 1 Million more inbound tourists would generate 12,042 new positions.

This last computation, the employment impact of additional tourists, can be compared across countries in order to assess the different labour intensity of tourism and its production chain. Results are presented in Table 21. Three observations are key to this analysis:

i. These estimates are not employment multipliers, although they are somehow related. We remind that the multiplier starts from a monetary variation in expenditure (e.g. € 1 Million), while in Table 1 we are analysing a variation in the number of tourists that, via their expenditure, impacts on the number of jobs created.
ii. These estimates are not necessarily matching the income multipliers. For both inbound and domestic tourism the employment impact is much higher in the two important tourism destinations (Italy and Portugal), thereby suggesting that tourism is particularly labour intensive in these two countries.
iii. The impact of additional inbound tourism is always much larger than the impact of domestic tourism, mainly because of a longer length of stay. A refinement of the procedure would also permit to analyse the impact per overnight stay, in order to build different scenarios where tourists not only change in numbers, but also in their length of stay. We redirect to the country files (Appendix I, J, K, L) for this analysis.

Table 21 – The impact of 1 Million additional tourists on employment (number of jobs created)

COUNTRY	Inbound tourism	Domestic tourism
Czech Republic	18,636	5,097
Italy	25,362	13,231
Portugal	26,712	11,897
United Kingdom	12,042	9,270

4.4 An estimation of the Foreign Trade in Value Added (FTiVA)

Recently, a joint project of OECD and WTO has been aimed at breaking-down the total amount of value added generated by consumption activities, by adding foreign value added to the typical "domestic" value added stemming from industrial production. The project drove to the generation and dissemination of a rich Inter-Country Input-Output Table (ICIOT) for 63 countries (and, as a

residual, for the rest of the world) and for 34 economic sectors. The database, which has already been introduced and discussed in Section 3, opens up enormous possibilities in the measurement of trade in value-added, in other words, identifying where value added has been triggered by activities of consumption carried out in the reference economy. The Trade in value-added approach traces back the value added by each industry and country in the production chain and allocates it to the source industries and countries. Typically, conventional measures of trade (exports and imports) are not able to fully take into account the interdependence of markets and complex global value chains in contemporary economies. The ICIOT sheds light on how the export of a country A generates value added not only domestically, but also in those countries producing intermediate inputs for such export. The use of ICIOT tables, which is now still in its infant and experimental phase is likely to be one of the most promising issues of research in international trade in the next few years.

The issue of FTiVA is also important for tourism, as in any other economic activity. Let us think about transport modes, for example: by renting a car in country A, the act of consumption generates value added in that country but, in a cascade, to all countries producing parts and components of that car, including financial services like insurance). This foreign trade in value added involves the direct act of consumption, but also has indirect effects: in the same example, if the car needs repairs, the (indirect) value added generated will be domestic (e.g. the mechanic working on the repair) but also foreign (if the needed spare parts are produced abroad).

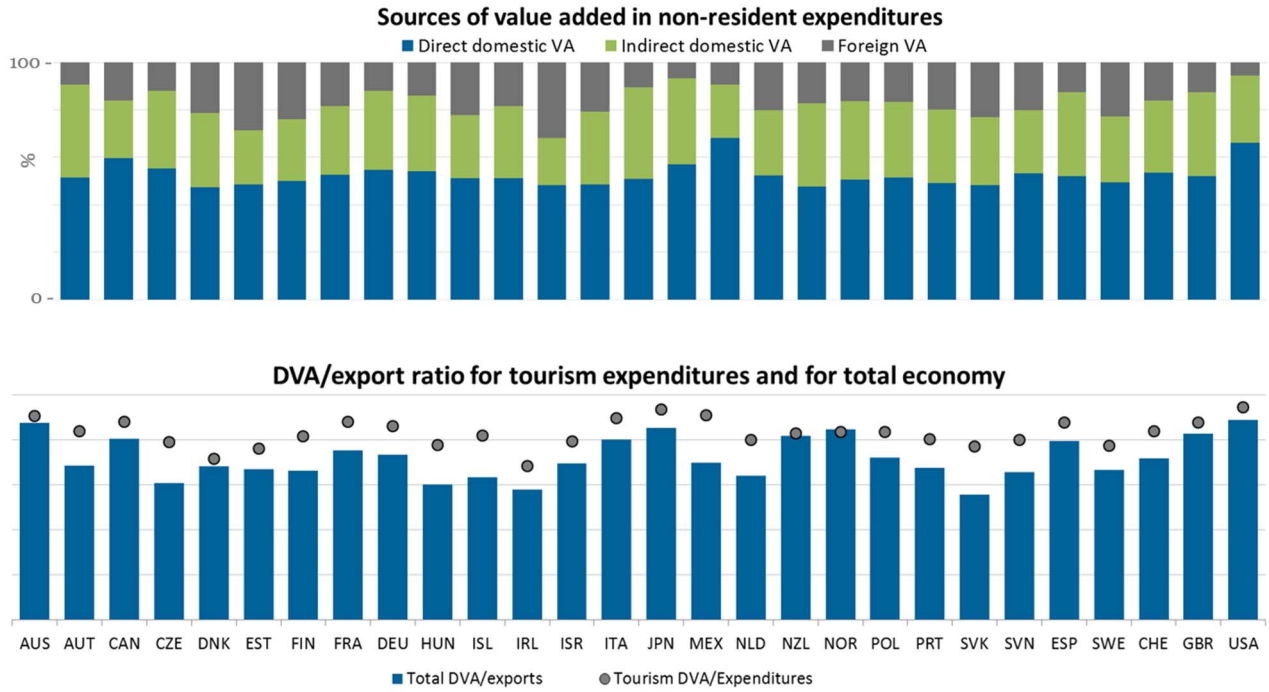
Ideally, the ICIOT, which is disseminated within the WIOD – the World Input-Output Database allows the identification and the estimation of how much and where value added is generated from demand, highlighting the upstream effects of tourism expenditure. The current level of development of the ICIOT, however, only allows for very rough estimates of the impact of non-resident tourism expenditure, due to the insufficient detail of TSA (that are not produced, we remind, in many countries). The only attempt so far to determine the tourism FTiVA has been carried out by the internal research team of OECD: some of their preliminary results (Alsamawi *et al*, 2017; Wistrom, 2017) are reported here below.

One, by adding Foreign Value Added to Domestic Value Added (which is the sum of both direct and indirect Value Added), we can notice that a relevant share of VA, which is roughly around 15-20% of total VA, goes to Foreign VA (Figure 2, top area). This share is higher in small economies (such as the Czech republic, Denmark, Estonia, Ireland) that by nature are more open to global chains. In fact, small countries have less possibility to produce domestically the several intermediate goods needed in the production chain and thereby rely more on imports. Similarly, they tend to specialize in the production of few goods and services that are especially produced for exports, hence depending on foreign demand. In Ireland FTiVA of tourism is more than 30% of total VA.

The bottom area of Figure 2, however, shows that the ratio between domestic VA and tourism expenditure by incoming tourists (which is tourism export) is higher than the average ratio between domestic VA and the value of total exports for the whole economy. This is true for all countries in the dataset: it means that the domestic component of production in tourism is relatively bigger, in each country, than in the other economic sectors. While this is what is typically

expected in a service sector, in some country this "positive gap" is strong (Island, Mexico, Slovakia, among the few) and highlights the positive role that tourism can play in the host economy.

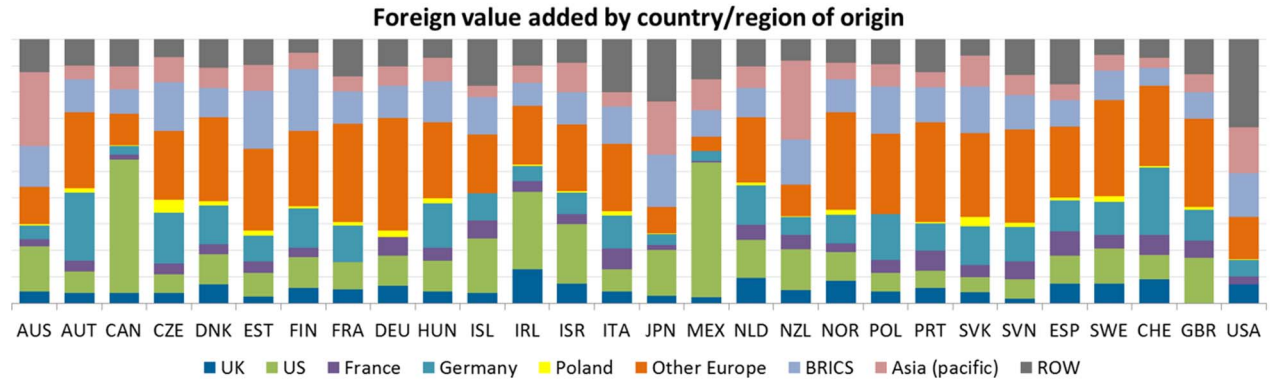
Figure 2 – Domestic and Foreign Value Added in 28 selected countries



Source: Wistrom (2017), p. 7.

If we zoom on the FTiVA, the ICIOT also allows to identify the countries benefitting most from tourism exports of each country. Figure 3 shows the distribution of gains. Not surprisingly, results can be easily interpreted through the gravity theory (a well-known theory in international trade according to which countries tend to trade, ceteris paribus, with adjacent countries). In fact, benefitting countries are above all the neighbour ones: we can spot a high share of trade of value added within the North-American cluster (Canada, Mexico, the US). The Asian-Pacific cluster (Australia, Japan, New Zealand) and the European one are well visible too.

Figure 3 – Breakdown of Foreign Value Added by benefitting countries



Source: Wistrom (2017), p.9

It is important to highlight that the level of precision of these estimates is yet not very high, as the presented figures are not consistent, in many cases, with detailed findings reported by official NSOs and also recalled in sub-sections 4.1 and 4.2 (not to mention our own estimates of direct and indirect VA of sub-section 4.3). It is indeed very important to investigate more deeply the distribution of value added (direct, indirect, foreign by benefitting country) in the European Area, through the integration of the European ICIO project, FIGARO, with available TSA data and with our routine.

5. Discussion and Policy Implications

This report contributes to investigating the economic impact of tourism in the European Union, but a full understanding of tourism's true economic power still lies far away. The complexity of the sector, defined by demand and thereby not included in the System of National Accounts, requires extra dedicated time and resources by part of the NSOs and of the research community to unfold the main issues at stake. Key aspects that still have to be properly addressed and fine-tuned are related to data availability, statistical approaches to estimation, and research topics. In the final discussion of this report the most relevant issues that in our opinion should be at the core of the EU tourism policy agenda to enhance our knowledge of the tourism sector in Europe are brought forward: data availability and dissemination; research methodology; analysis of results. In the end, a few words on the future directions of investigation will conclude the report.

Data availability and dissemination. A complete understanding of tourism in the European Union cannot be achieved without an appropriate step forward in how data are collected, organized and disseminated. While we refer to Section 3.3 for the full discussion, some remarks are here recalled:

1. The production of TSA should be included into the legal framework of Eurostat: the National Statistical Offices of EU countries should be required to produce and publish a full TSA (perhaps excluding Tables 8 and 9, which are less important) at least every 5 years (better, every 3 years), with a delay of no more than 3 years (namely, TSA for 2016 should be available no later than December 2019). Production of TSA should be coordinated with production of IOT, to allow a perfect matching and timing between these two accounting tools. As the IO models are based on the assumptions of constant technical coefficients and of price stability, they are consistent with what economic theory calls the "short run". Innovation and inflation dynamics require that IOT (and TSA, which are built on that) are re-computed no later than 4-5 years in order to provide an updated picture of production relationships.

2. The dissemination of TSA should include:

    i. a report with summary of the main findings;

    ii. a technical file filled using the same template for all EU countries. We suggest the use of Excel format, one file for each annual TSA, each file including 10 sheets, one for each TSA table. The pattern should be as precise as possible. Specifically, we suggest:

        - a full correspondence between the product categories in the file and the official list of tourism products listed in Eurostat and UNWTO TSA methodological framework;

        - A complete rigidity in the template: values reporting a certain economic aggregate should always be inserted in the same cell, if a value is missing, the cell should be left empty, without altering the file structure. This would allow speed of analysis

and facilitate further elaboration, together with easiness of integration with IOT to produce estimates of indirect and total economic impacts;

- an extensive use of formulas in the Excel file, which would simplify the understanding of reported figures, permitting to overcome issues in the definition of aggregates, in the ways of computing variables, and facilitating replication of results. A proposal for such a file is attached to this report (Appendix F – WP3_D2_Template.xlsx);

- The same information included in the Excel file should also be available in the NSO database to be retrieved online (see the Spanish Statistical Office for a good example) and included in the dataset tree of Eurostat, thereby facilitating intra-Europe analysis and comparison.

3. Eurostat should continue in the important work of offering workshops, manuals and other written material to guide NSOs in their work on TSA. A detailed guideline for producing TSA is needed, with the main goal of harmonizing the way data (specifically the ones coming from tourism surveys, which at present do not share a unique structure of the questions, sampling procedures, etc.) are collected and elaborated. An extra effort should be made to decide a unique approach in dealing with some key issues, specifically on:

   i. what is behind the aggregate of "Other / Non-specific / Connected products". As this value is around 20-25% of total consumption in many countries, its understanding is key to the accuracy of TSA interpretation. Moreover, without a more precise description of this aggregate, this share of tourism consumption cannot be imputed to any specific product or industry in the IOT, and hence is either lost or normalized through strong assumptions when estimating indirect effects;

   ii. harmonization on how domestic business tourism is treated and compared to incoming business tourism, on how the item 1.b – services for the use of second homes is estimated, on how aggregate 4.3 – Other tourism consumption is estimated.

Research methodology. To fully capture the economic impact of tourism, many different approaches and methodologies are used in statistical offices and in academia, from IO to CGE to econometric modelling. This report shares with most of the research and statistics community the preference for IO models.

- The IO model has the advantage of being based on IOT, which are already being produced by NSOs, while CGE models are usually developed by private research centres or government departments and are not available to the general research community. The IO model is a very well-known and tested methodology, with strong pros and cons. As a main disadvantage, IO models cannot be used for long-term forecasts and policy scenarios, as they are based on assumptions that are likely to hold in the short-term only (stability of

prices and of technical coefficients of production). Indeed, the short-term forecasts they produce are quite consistent with CGE models. Hence, they are very useful in building scenarios aimed at assessing marginal shocks to present demand (as in tourism), which is exactly what is needed in the great majority of the policy analysis.

- IOT also emphasise in a clear way the distinction between direct and indirect impacts of tourism and can break it down at the sectoral level.
- Finally, and very importantly, IO models are the base for building ICIOT tables, the data frontier for future research in the field of international trade, including tourism. The only future alternative to the use of IO models would be to invest in the development of a full CGE model for the European Union and for its member countries, something that is not in the future agenda for Eurostat.

Analysis of results and future directions of investigation. From the present overview of available data and reports for the 28 EU countries, and from the application to four pilot countries of the routine that has been developed for this report, it can be highlighted that:

a. There is a high degree of variability in the economic impact of tourism, both between and within countries. This can be, at least partially explained by some of the data issues mentioned above, e.g.:
   - differences between countries are likely to be triggered by how TSA data are compiled by NSOs using different statistical approaches to address key issues;
   - inconsistencies within countries sometimes appear in different documents / data produced by the same entity for the same year. This is probably stemming from insufficient time and resources that NSOs can invest in the necessary double checks of the procedures and of the estimates.

b. Given such diversity in the countries that have been investigated, summarising results for the whole European region by simply averaging out countries' findings would be disappointing and likely to introduce biases. Too strong are the differences among EU countries in many fundamental aspects such as: (i) the relative share of tourism within the domestic economy; (ii) the structure of production and of intermediate consumption, driving to different ratios between the direct and the indirect impact and between the share of tourism consumption to domestic output compared to the share of tourism value added to GVA; (iv) the relative importance that the characteristic products in tourism have in tourism consumption.

   Some of these differences stem from the peculiarities of the tourism product in each country, which vary in terms of characteristics of local goods entering tourism consumption and according to the overall industrial structure of the country. Others, we believe, stem from statistical issues related to the heterogeneity in how data are collected and organized.

c. The heterogeneity in the EU is well identified by the rough estimate of the tourism multiplier carried out in Section 4.3.5, which is the ratio between the value added generated in the economy and the initial expenditure that triggered tourism production. The estimated multipliers vary a lot across countries (from 0.58 to 1.29) and also when

comparing the impact of inbound and domestic tourism. The total employment effect varies consistently across countries too: from 5,000 jobs created per 1 Million additional tourists (as in the case of domestic tourism in the Czech Republic) to the 26,000 jobs created as in the case of 1 Million additional inbound tourists in Portugal.

d. Finally, the application of the concept of FTiVA in tourism highlights that, on top of domestic VA, a relevant share of economic benefits (around 15-20%, with peaks of over 30% of the total VA) is transmitted to other countries. Broadly speaking, this is important for two reasons: (i) Global production chains show that the focus on the standard (domestic) value added under-estimates the total generation of value stemming from local production; (ii) FTiVA is generally higher in tourism than in other sectors, showing that tourism is particularly effective in benefitting businesses and workers from neighbour countries and also from the origin market. This positive "territorial spill-over" is calling for more international coordination between national tourism policies, particularly at the EU level.

A last word is dedicated to the future efforts needed to better understand the economic impact of tourism in the EU and to continue in the work carried out in this project. Three are the priorities: (i) the computation of tourism FTiVA for the 28 EU countries, according to the approach developed by OECD and WTO, is certainly the most interesting and promising topic of research to investigate in the near future; (ii) a second priority is undoubtedly the harmonization in data collection, which would also allow the standardization of the routine adopted in this report to compute the total impact of tourism and its extension to all the other EU member countries; (iii) finally, a more thorough investigation of the linkages between tourism and the other economic sectors which indirectly gain form tourism is needed: in this respect the routine develop for this report is promising, as sector multipliers can be computed and compared within and between countries.

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Appendix

A. Bibliography (WP2.D2 – this is the complete version of Section 2): see attached file *Appendix A – WP2_D2.pdf*
B. Critical analysis of the literature (WP2.D1): see attached file *Appendix B – WP2_D1.xlsx*
C. Data analysis (WP1.D2 – this is the standalone version of Section 3): see attached file *Appendix C – WP1_D2.pdf*
D. A meta dataset of tourism for the EU (WP1.D1): see attached file *Appendix D – WP1_D1.xlsx*
E. Technical procedure (WP3.D1): see attached file *Appendix E – WP3_D1.pdf*
F. Template file (WP3.D2): see attached file *Appendix F – WP3_D2_Template.xlsx*
G. Full dataset for Task 4.1: see attached file *Appendix G – WP3_Task4-1.xlsx*
H. Full dataset for Task 4.2: see attached file *Appendix H – WP3_Task4-2.xlsx*
I. Case-Study 1: the Czech Republic: see attached file *Appendix I – WP3_D2_CZ.xlsx*
J. Case-Study 2: Italy: see attached file *Appendix J – WP3_D2_IT.xlsx*
K. Case-Study 3: Portugal: see attached file *Appendix K – WP3_D2_PT.xlsx*
L. Case-Study 4: the UK: see attached file *Appendix L – WP3_D2_UK.xlsx*