Universidad Pontificia Comillas (ICADE)

The economic impact of international tourism in Spain: An Input-Output analysis

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1. Introduction

1.1 Main aim of the dissertation

The aim of this project is to assess the impact of international tourism in Spain based on fixed price – infinite supply general equilibrium model also known as the Leontief Input-Output model (Miller and Blair, 2009). This model enables us to analyse the impact of a demand sock in a specific sector in the whole economy thanks to the sector interdependence and multiplier effects. Therefore, the purpose of this project is to analyse the basis of international tourism and simulate demand socks into the future to assess the potential impact in the economy given certain scenarios.

1.2 Description of the work

This analysis would be composed of three parts:

- First, a data-driven analysis of the tourism sector would be conducted to examine the evolution of international tourism in Spain so as the components of its contribution to the Spanish economy.
- Secondly, the input-output model will be built, based on the Spanish IO table of the year 2019 provided by the Instituto Nacional de Estadistica
- Finally, demand shocks would be modelled, and conclusions would be drawn

1.3 Motivation

The motivation behind this project comes from the critical importance of international tourism on the Spanish economy and my personal interest in macroeconomics. With Spain being one of the world's leading tourist destinations, it is crucial to comprehensively analyse how this sector influences various aspects of the economy. By employing the Leontief Input-Output model, we aim to delve deeper into the relationships between international tourism and other sectors, uncovering the multiplier effects and interdependencies that shape the economy. Through this analysis, we seek to provide valuable insights into potential future scenarios, allowing policymakers and stakeholders to make informed decisions regarding the sustainable development of the tourism industry and its broader implications for Spain's economic well-being.

2. Data-driven analysis of the tourism sector

2.1 Background

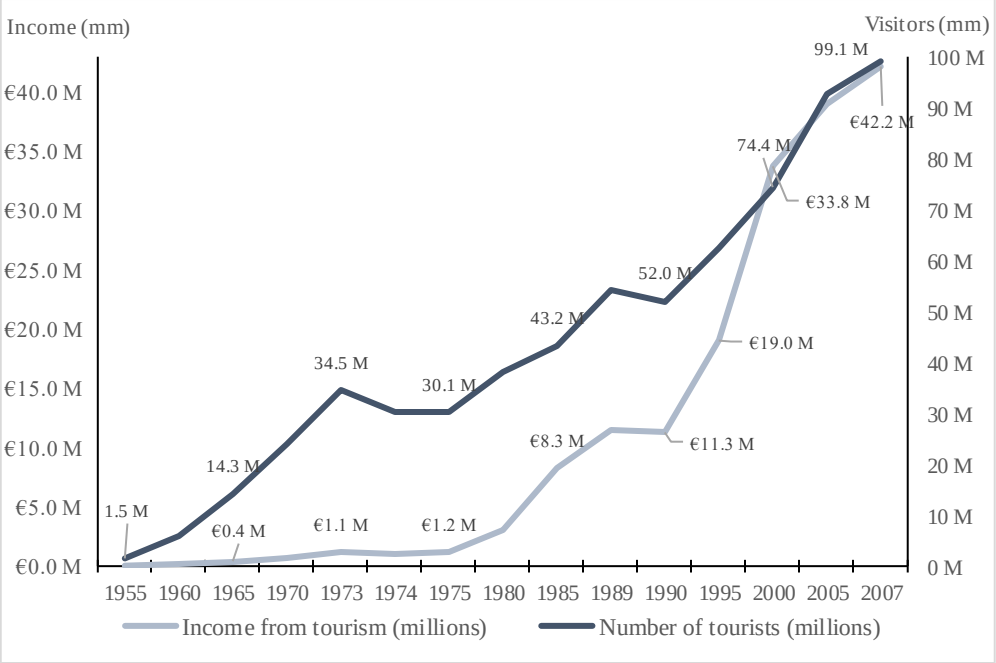
The World Tourism Organisation defines tourism as travel and stays that people make in places other than their everyday environment, lasting a minimum of one night and a maximum of 365 days, whether for pleasure, work, or other purposes (Ponferrada, 2015).

The tourism sector in Spain stands out as one of the main activities that contribute to the GDP. This activity, which is part of the services sector, is the most exported service abroad, generating around 160 billion euros in 2022, 12,2% of the GDP. On this part of the analysis, we are going to focus on the evolution of the tourism sector in Spain over the years.

From the 1960s onwards, tourism in Spain has undergone a significant evolution. In the 1960s, tourism in Spain began to expand rapidly, but it was a low purchasing power tourism so, as the number of tourists increased considerably, the same did not happen with the amount of tourist expenditure. From the beginning of the 1970s and up to a decade later, the number of tourist and its expenditure began to grow in parallel, especially from 1975 (after the first oil crisis) (Rodriguez, 2012).

But it wasn't until the 1980s when the tourist boom started to have strong economic effects in Spain. In this decade, Spain experienced and economic prosperity that lasted until the early 1990s, which set perfect conditions for tourism travel and expenditure. Additionally, globalization took place worldwide, particularly among members of the European Economic Commission (EEC). Given that a considerable number of tourists came from Europe, this development produced even more benefits for Spain in terms of tourism.

Figure 1 – Evolution of the number of visitors and tourism income in Spain



Source: Ponferrada (2015)

Figure 1 relates the evolution of the number of visitors with the income they generated for the country.

As we can see, until the 1980s we can see a considerable increase in the number of tourists, but with a low level of income coming from them. From the 1980s onwards, as a result of economic prosperity and globalization, income and tourism started to grow in parallel. One of the most remarkable developments at this time, alongside the tourist boom in Spain – especially for sun and beach tourism –, was the introduction of marketing. This played a crucial role in bolstering tourism and attracting more foreign travellers to our shores and coastal regions. This fact, together with other variables, made Spain consolidate as a premier tourist destination both domestically and internationally. In short, the tourism boom of the 1980s had a significant economic impact on Spain, contributing to the economic boom of the time and establishing Spain as a key player in the global tourism landscape (Ponferrada, 2015).

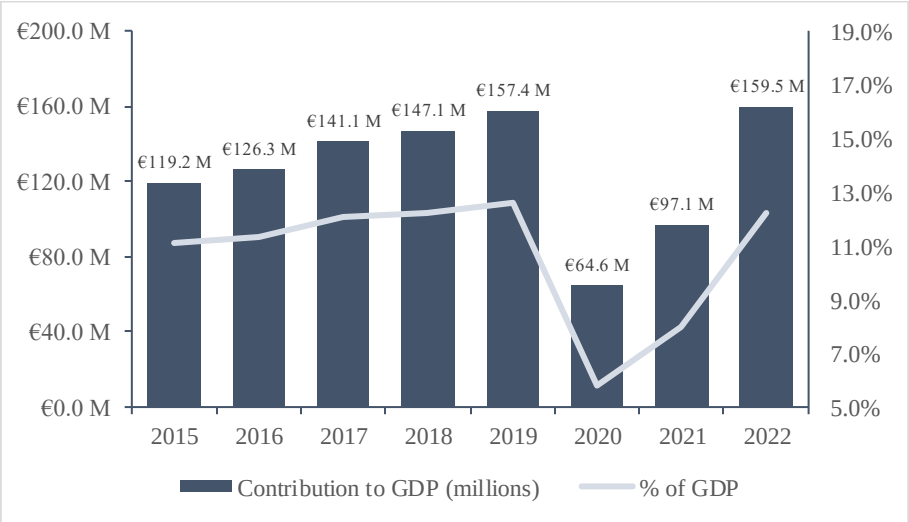
From 1990s, tourism in Spain has continued to evolve. In the 1990s, new destinations emerged in Europe and in the Mediterranean area, while the supply of Spanish tourism became more expensive. This last phase has lasted up to the present day. In 2007, Spain, in terms of the number of tourists, was the second largest tourist destination in the world,

after France. It also ranked second in the world in terms of revenue, behind the United States.

Comparing the evolution of the number of tourists and the revenue they bring in, we can see that the beginning of the 1990s, revenue has increased at a slower rate than tourists. This has been the result of higher prices in the sector, which has made our country less attractive as a tourist destination.

Over the past decade, Spain has continued to grow its tourism sector, regarding its contribution to the national GDP.

Figure 2 – Evolution of tourism contribution to GDP 2015-2022



Source: Instituto Nacional de Estadistica – own elaboration

In Figure 2 we can see the evolution of tourism contribution to GDP since 2015, both in nominal (current prices) and relative terms.

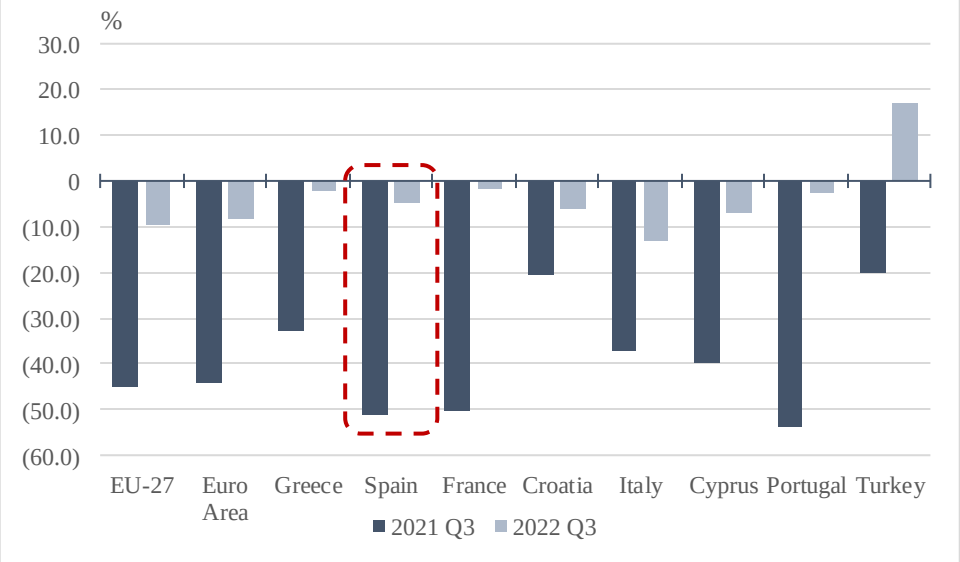
From 2015 until the 2020, Spain has successfully increased its tourism contribution to its GDP with an average contribution of 11.9%. From there on, we can see how the COVID crisis impacted the figures in 2020 and 2021 primarily due to mobility constraints. However, the rapid recovery experienced in 2022, has proven the tourism sector in Spain to be very resilient.

As we said previously, international tourism is one of the key determinants in the Spanish economy. Therefore, as the tourism exports account for a higher share of the national GDP than other mayor tourism destinations, such as France or Italy, the pandemic had a larger impact in Spain and its consequent recovery was far more abrupt (Banco de España, 2022)

According to an analysis made by the Banco de España in 2022, international tourism saw a steady recovery towards pre-pandemic levels in 2022, but not 100% as Asian tourism remained low due to mobility constraints. Also, they state that this pre-pandemic recovery has brought changes in the tourism demographics, as Spain is attracting more high-spending tourist given the rise in high-quality hotel stays continues.

As of the end of 2022, short-term prospects and air traffic trends look good. However, risks are tilted to the downside due to worsening economic conditions and rising prices which impact directly in household consumption. Long-term success, according to the Banco de España, relies on the ability to attract high-spending tourists, requiring quality improvements and diversification of tourism offering.

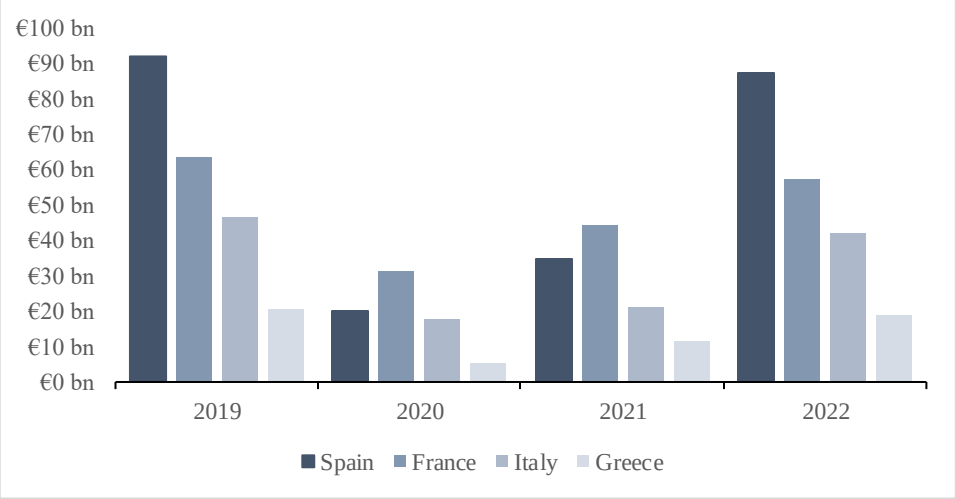
Figure 3 – International comparison: non-resident overnight hotel stays vs 2019



Source: Garcia Esteban (2023) – own elaboration

As we can see in Figure 3, compared to the European Union and to the Euro Area, Spain suffered a higher impact in overnight stays but experienced a quicker recovery versus 2019. France and Portugal, two of the most popular tourism destinations, followed the same dynamics as Spain: abrupt impact and quick recovery.

Figure 4 – International benchmark of international expenditure 2019-2022



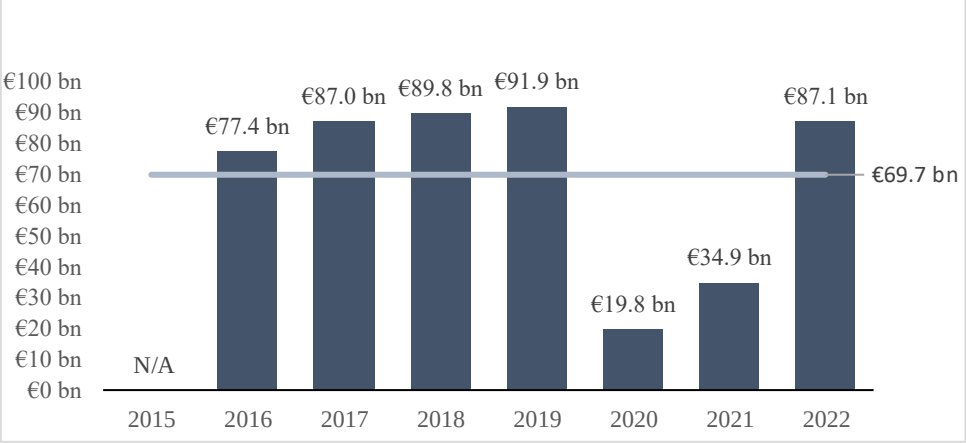
Source: Statista, INE, OECD

In figure 4, we can see a benchmark of Spain's tourism expenditure against the most popular destinations in Europe: France, Italy, and Greece. As we can observe, Spain's tourist expenditure is at the top of the leader board in Europe. Spain suffered the most significant COVID impact in 2020 and 2021, but it quickly recovered to pre-pandemic levels in 2022, reaching a tourist expenditure of €87bn. The other countries have followed similar dynamics in response to the pandemic, albeit on a different scale. France, the second country with the highest tourist expenditure, reached levels of €63bn in 2019.

2.2 Data and stylized facts

This section will be dedicated to analysing tourism expenditure in Spain based on historical data. The aim of this analysis is to break down the total expenditure into its components to later simulate the impact of international tourism on the Spanish economy using the input-output model. In the model, once the IO table is created, we will need to simulate demand shocks resulting from tourism expenditure to assess the overall impact on the economy. Therefore, given this aim, it's worth analysing the evolution of tourism expenditure in Spain.

Figure 5 – Evolution of tourist expenditure in Spain 2015-2022



Source: Instituto Nacional de Estadística – own elaboration

As we can see in Figure 4, tourist expenditure in Spain has been very significant for the Spanish economy, contributing an average of €70bn per year for the last 6 years. We can see the abrupt impact of the pandemic in 2020 and 2021, and its impressive recovery in 2022. This graph is a good reference to understand the magnitude of the annual contribution. However, to forecast and assess the impact on the economy, we have to dig into these numbers and understand their composition.

Therefore, to analyse these data, I'm going to base the analysis on tourism data disclosed by the Instituto Nacional de Estadística over the years. First of all, for the sake of transparency, there are several definitions that we have to clarify before digging into the numbers. The Instituto Nacional de Estadística breaks down the total expenditure of international tourists into several components that are worth defining prior to their analysis as they could lead to misunderstandings.

When talking about tourism expenditure, the INE breaks down the expenditure into two main categories: tourist package and non-tourist package. It refers as tourist package "the prior reservation of the trip that includes at least accommodation and transport. However, one of these two elements can be replaced by another service that represents a significant part of the total cost of the trip, such as organized visits or car rental. This package is sold at an indivisible total price through a travel agency or tour operator".

Therefore, everything that is booked in advance of the trip, is categorized into this group and it is not further disaggregated into its components. Other than the tourist package, we have the non-tourist package, which is everything that is not fully booked in advance and

in this case, this block is broken down into five components: international transport, accommodation, activities, maintenance, and other expenses.

Figure 6 – Breakdown of total expenditure

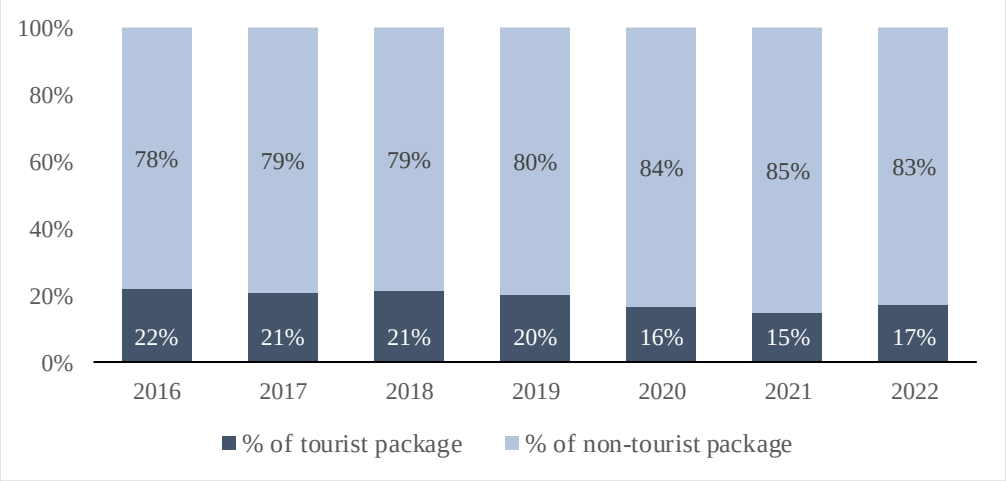


Figure 6 explains the how the tourist expenditure represented in Figure 5, is split into the two main categories that the INE analyses. Given that the total expenditure of 2022 was €87.1bn, €14.9bn were allocated to the tourist package and €72.2bn to the non-tourist package. As we can see, the tourist package represents a small portion of the total expenditure and it seems that since the pandemic, people more likely to spend more on the actual trip, rather than booking it in advance.

For the purpose of this analysis, we are going to focus on the non-tourist package composition to assess how much of the total expenditure is allocated into the different sectors of the economy. As stated previously, the non-tourist package is divided into five components:

- International transport expenditure: International transport expenditure, according to the INE, refers to the costs associated with the transport of international tourists. This may include, for example, the costs of international flights or other means of transport used to reach the tourist destination.
- Accommodation expenditure: Accommodation expenditure, according to the INE, refers to the costs associated with the accommodation of tourists. This may include, for example, the costs of hotels, tourist flats, campsites, among others.
- Maintenance expenditure: maintenance expenses, refers to costs associated with food and other essential expenses incurred by tourists during their trip. This may

include, for example, the costs of restaurant meals, supermarket shopping, among others.

- Activity expenditure: Activity expenditure, according to the INE, refers to the costs associated with the tourism activities in which tourists engage during their trip. This may include, for example, the costs of entrance fees to museums, theme parks, excursions, sporting events, among others.
- Other expenses: Other expenses, refers to costs incurred by tourists that do not fall into the main categories explained above. These can include a variety of expenditures, such as souvenir purchases, medical expenses, etc.

Figure 7 – Breakdown of non-tourist package expenditure

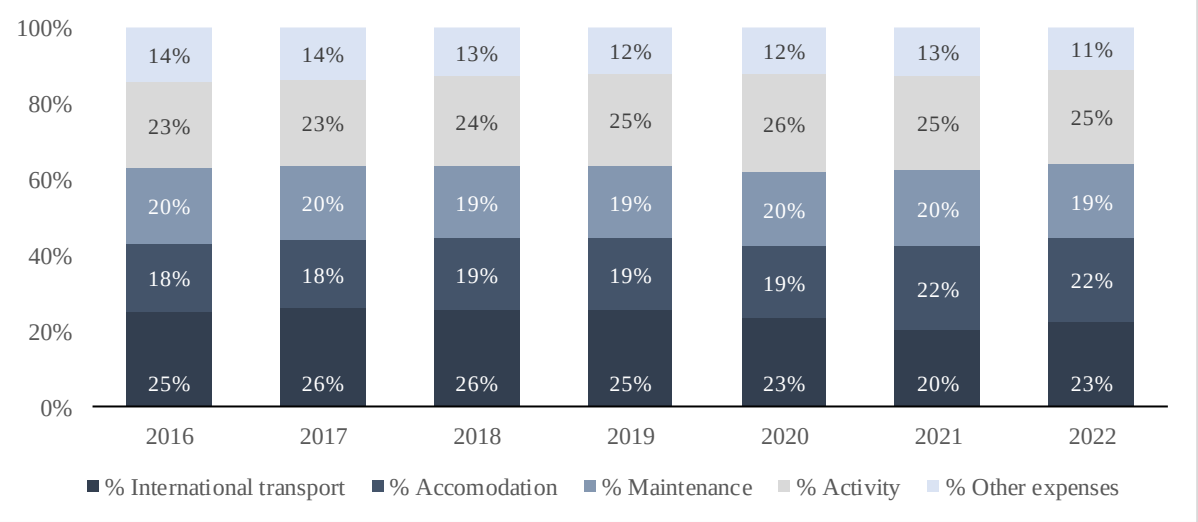


Figure 7 illustrates the expenditure allocation among the categories that compose the non-package tourist expenses. In the previous chart, we saw how tourist behaviour changed towards trip organization. Tourists started to adopt a more conservative way of spending, shifting their expenditure from prior reservations to on-the-go expenses. As we can see in Figure 7, expenditure is evenly distributed among these blocks, but we can also observe different trends arising from the pandemic. From 2016-2019, the share of each of the categories remained unchanged or with very little variation (1%). However, from there on, we can see how tourists started saving money on transport and additional expenses to spend it on accommodation and activities. This relative variation might seem irrelevant, but if we convert it to absolute terms, it's billions of euros.

Figure 8 – 2022 Tourism expenditure composition in absolute terms

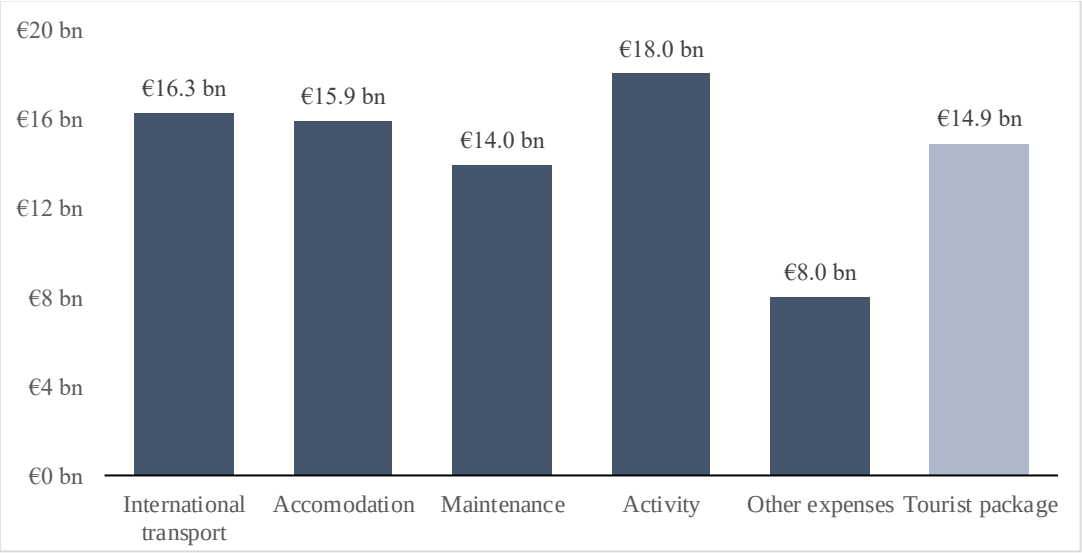


Figure 8 represents the absolute composition of tourism expenditure in 2022. As we can see, tourist package is a small portion of the total expenditure and contains the money that has been spent on transport, accommodation, and activities prior to the trip, which according to Figure 7, will be distributed in the same way: 23%, 22%, and 25% respectively.

This data will be our starting point for analysing the economic implications of international tourism in Spain. Our objective is to utilize this composition as a standard for simulating the direct effects on various economic sectors. By doing so, we aim to gain a deeper understanding of how tourism impacts these sectors. The output from our model will then be analysed to derive conclusions. This analysis will provide valuable insights into the economic influence of international tourism on Spain's economy, thereby giving a clear understanding of its contribution and impact on the overall economy.

3. Methodology

3.1 The input-output table

The input-output table (IOT) is an accounting framework that captures economic transactions between disaggregated branches of economic activity (economic sectors), usually for a given agent´s economic transaction for a single or multiple economies, including as well primary inputs and final demanders. From this point of view, IOT offers a quantitative view of some of the interdependencies that take place in an economic system.

Three main blocks can be distinguished on the IOT: intermediate consumption, final demand, and primary inputs.

Compared to other national account components, the most significant portion of an IOT is block I (intermediate consumption block), which displays the interindustry links between each branch and the others. The table breaks down a nation's (or region's) economy into a specific number of branches (economic sectors) and shows the economic interindustry transactions of the economy.

Therefore, each branch corresponds to a column and a row of the IOT, reading in columns the inputs and, in rows, the outputs or destinations of the productions of each branch. A sector demand from other sectors, is normally related to the amount of goods produced by that sector over the same period due to the interdependencies. For example, the amount of cars produced in an economy, would be positively correlated with its demand from the output of the steel sector due to its economic interdependency (Miller, 2009)

Table 1 – Intermediate consumption block

Branches	1	2	3	$\sum_j$ IC$_{ij}$: Intermediate demand
1.Agriculture	$z_{1,1}$	$z_{1,2}$	$z_{1,3}$	$\sum_j z_{1,j}$
2.Industry	$z_{2,1}$	$z_{2,2}$	$z_{2,3}$	$\sum_j z_{2,j}$
3.Services	$z_{3,1}$	$z_{3,2}$	$z_{3,3}$	$\sum_j z_{3,j}$
$\sum_i$ IC$_{ij}$: Intermediate consumption	$x_{1.}$	$x_{2.}$	$x_{3.}$	$\sum x_{n=} \sum_i \sum_j z_{ij}$

As we can see in Table 1, where a skeletal interindustry matrix is reported, 1, 2 and 3 are the branches of activity of a country (e.g. agriculture, industry and services), the columns represent the products that each branch uses from the others to obtain its production. Therefore, in order to carry out its production, agriculture utilizes goods from other branches that are valued at $z_{1,1}$, $z_{1,2}$, and $z_{1,1}$monetary units, respectively. The

consumption or intermediate inputs used by industry are similarly expressed in column 2 ($z_{1,2}$, $z_{2,2}$, and $z_{3,2}$ monetary units, respectively). The services-related column is read in the same way. Thus, $x_{1.}$ m.u. of intermediate consumption have been consumed by agriculture, x_2 by industry, and x_3 by services. In total, this economy has used intermediate consumption worth $\sum x_n$ m.u., which, read in the other way, as this is a symmetric table, will be the same as $\sum_i \sum_j z_{ij}$ m.u.

By definition, the total intermediate consumption used by all the branches (sum of the totals by columns) coincides with the total selling (sum by rows) of products for intermediate use of the rest of the branches. In other words, the total intermediate consumption coincides by rows and by columns. But this equality does not necessarily occur branch by branch; the amount of products used by agriculture, such as seeds, fertilisers, energy and others, does not necessarily equal the agricultural products used for intermediate consumption by other branches, such as the food industry or restaurants.

Besides interindustry demand, there are also other external purchasers that constitute the total production of the economy. Part of the industry production is sold for final uses: household consumption (C), government expenditure (G), gross capital formation (GFCF) and exports (X). The needs of these organizations—and, by extension, the degrees to which they acquire from every industrial sector—are generally impacted by variables that are largely unrelated to the volume of production. For example, changes in defence requirements, budgetary constraints, or national policy are all linked to changes in government demand for aircraft. The demand for small cars among consumers is influenced by various factors such as the availability of gasoline. It is commonly referred to as final demand because the majority of the demand from these external entities is for goods meant for direct use rather than as inputs to an industrial production process (Miller, 2009) . These destinations are included in block II of the IOT.

Table 2 – Final demand block (block II)

Branches	$\sum_j IC_{ij}$	C	G	GFCF	X	Total demand	Total Output
1.Agriculture	6	10	-	1	2	13	19
2.Industry	24	20	-	8	6	34	58
3.Services	12	15	5	1	1	22	34
Total	42	45	5	10	9	69	111

In Table 2, this time with monetary examples, we can see that services delivers an output worth 12 m.u. of intermediate consumption. Besides that, it allocates 15 to individual consumption, 5 to collective consumption, 1 to gross capital formation (e.g., services embodied in the installation of capital goods) and 1 to exports. In total, their destinations to final demand are worth 22 m.u. If intermediate destinations are added, total output of services is 34 m.u.

Besides intermediate consumption, there are other inputs embedded in the economy activity related with labour and capital. These two, compose the primary factors of production and are remunerated, respectively, by wages and gross operating surplus. All this is recorded in block III of the IOT.

The symmetric input-output table, which has been presented so far for the sake of simplicity, corresponds to a country that does not import, but does export. As imports are usually also made in an open economy, both for use in production processes and for end users (consumer or capital goods), the IOT takes this into account by adding a row for imports at the bottom of the column corresponding to each branch. That is, imports similar to the products of each branch. For example, if tomatoes and papayas are imported into Spain, both imports are included in the imports row in the box corresponding to the crossing with the column of the agriculture branch.

Table 3 – Primary inputs block (block III)

Branches	1	2	3	Total
$\sum_I IC_{ij}$	8	17	17	42
Employee compensation	3	25	10	38
Gross economic surplus	4	8	4	16
Imports	4	8	3	15
Total primary inputs	19	58	34	111

Therefore, if we aggregate these three blocks, we will have a complete input-output table simulating the economic activity of a country. So, being *EC* employee compensation, *GOS* gross economic surplus, *M* imports, *PI* primary inputs, *C* consumption, *G* government expenditure, *GFCF* gross capital formation, *X* imports, and *f* final demand, we can simulate the structure of an input -output table of *n* sectors:

Table 4 – Simplified input-output table structure

Branches	1	2		n	$\sum_i IC_{ij}$	C	G	GFCF	X	Total demand	Total Expenditure
1.Agriculture	$z_{1,1}$	$z_{1,2}$		$z_{1,n}$	$z_{1,2}$	C_1	G_1	$GFCF_1$	X_1	f_1	x_1
2.Industry	$z_{2,1}$	$z_{2,2}$		$z_{2,n}$	$z_{2,2}$	C_2	G_2	$GFCF_2$	X_2	f_2	x_2
3.Services	$z_{3,1}$	$z_{3,2}$		$z_{3,n}$	$z_{3,2}$	C_3	G_3	$GFCF_3$	X_3	f_3	x_3
n	$z_{n,1}$	$z_{n,2}$		$z_{n,n}$	$\sum_j z_{n,j}$	C_n	G_n	$GFCF_n$	X_n	f_n	x_n
$\sum_i IC_{ij}$	$\sum_i z_{i1}$	$\sum_i z_{i2}$		$\sum_i z_{in}$	$\sum_i \sum_j z_{ij}$	$\sum_i C_i$	$\sum_i G_i$	$\sum_i GFCF_n$	$\sum_i X_i$	$\sum_i f_i$	$\sum_i x_n$
Employee compensation	EC_1	EC_2		EC_n							
Gross economic surplus	GOS_1	GOS_2		GOS_n							
Imports	M_1	M_2		M_n							
Total primary inputs	PI_1	PI_2		PI_n							

3.2 Algebraic considerations

Once we have explained the theory of the input-output table and its dynamics, there are several algebraic considerations that must be explained before we can transform the set of data into an IO model. First, we should transform the IO table into algebraic equations to understand and operate with the matrix.

One essential set of data for the model is the matrix of intermediate inputs generated by the transactions between pairs of sectors. These transactions in monetary units, are often denoted as z_{ij} (transaction from each sector i to each sector j). This will correspond to block I of the IO table.

In addition, as previously explained, in any economy, besides the interindustry demand, there are other exogenous purchasers that constitute the producers in the economy – for example, households, government and foreign trade. These three, constitute the final demand and are expressed together as f_i. This will correspond to block II of the IO table.

Therefore, if we assume that the economy is categorized into n sectors, and we denote x_i as the total output, and f_i as the final demand, we can write a simple algebraic equation given that the total output is equal to the intermediate consumption (z_{ij}) plus the final demand (f_i). Thus, this equation represents the way each sector i distribute its products through sales to other sectors and to final demand (Miller, 2009).

$$x_i = z_{i1} + \cdots + z_{ij} + \cdots + z_{in} + f_i = \sum_{j=1}^{n} z_{ij} + f_i$$

This equation reflects the total output corresponding to one sector (sector i). The term z_{ij} represents the monetary interaction between industries, from each sector i to each sector j (including itself when $i = j$). So, given that there are n sectors, we can extrapolate this equality and rewrite the same expression but for the whole production of the economy (Miller and Blair, 2009):

$$x_n = z_{n1} + \cdots + z_{nj} + \cdots + z_{nn} + f_n$$

In matrix notation, let

$$\mathbf{x} = \begin{bmatrix} x_1 \\ \vdots \\ x_n \end{bmatrix}, \quad \mathbf{Z} = \begin{bmatrix} z_{11} & \cdots & z_{1n} \\ \vdots & \ddots & \vdots \\ z_{n1} & \cdots & z_{nn} \end{bmatrix} \text{ and } \quad \mathbf{f} = \begin{bmatrix} f_1 \\ \vdots \\ f_n \end{bmatrix}$$

It´s worth noting that lowercase letters will be used for vectors, and uppercase letters for matrices. Thus, x will be the vector containing the total output of the n sectors, f the vector of final demands, and Z the intermediate consumption matrix. With this notation, the equation could be restated in matrix notation as

$$\mathbf{x} = \mathbf{Zi} + \mathbf{f}$$

Based on this equation and given that the IO table constitutes structural relationships within the economy, we can calculate certain relationships that will help to understand dependencies among sectors. In a summary manner, these relationships can be presented in a mathematical way by calculating, for each sector, the proportion of each input in its production. This was presented by Leontief as the matrix of technical coefficients (Briassoulis, 1991).

These coefficients are presented as a_{ij} and are defined as the utilization that the sector j makes of the products of the sector i per unit of production. These are stated in monetary terms and relate the value of the products from sector j to the total value of the production of sector i. The full system of equations can this be represented as follows:

$$
\begin{aligned}
x_1 &= a_{11}x_1 + \cdots + a_{1i}x_i + \cdots + a_{1n}x_n + f_1 \\
&\vdots \\
x_i &= a_{i1}x_1 + \cdots + a_{ii}x_i + \cdots + a_{in}x_n + f_i \\
&\vdots \\
x_n &= a_{n1}x_1 + \cdots + a_{ni}x_i + \cdots + a_{nn}x_n + f_n
\end{aligned}
$$

Therefore

$$\mathbf{x} = \mathbf{A}\mathbf{x} + \mathbf{f}$$

This equation takes us a step closer to the primary objective of input-output analysis. With a specific forecast for the exogenous demand in the coming year, we should be able to evaluate the required output from each sector to meet these final demands. From the point of view of this equation, the vector *f* and matrix *A* are known, and *x*, the vector of final outputs, is to be found. Therefore, bringing the *x* to the left,

$$\mathbf{x} - \mathbf{A}\mathbf{x} = \mathbf{f}$$

and, grouping the *x* together

$$(\mathbf{I} - \mathbf{A})\mathbf{x} = \mathbf{f}$$

For a given set of *f*'s, this is a linear equality of *n* equations where $x_1, x_2, \ldots, x_n$ are unknown. Therefore, this may or may not have a unique solution. This depends on whether or not (I – A) is singular, in other words, that $(I - A)^{-1}$ exists. Therefore, if $(I - A)^{-1}$ can be found, the unique solution to this equation is given by:

$$\mathbf{x} = (\mathbf{I} - \mathbf{A})^{-1}\mathbf{f} = \mathbf{L}\mathbf{f}$$

Where $\mathbf{(I - A)^{-1} = L}$ is known as the Leontief inverse (Tanaka, 2011).

The Leontief inverse matrix, or multiplier matrix, considers that the overall impact on output will vary depending on the sectors influenced by shifts in final demand. The total output multiplier for a sector measures the sum of the cumulative direct and indirect input requirements needed from all sectors to satisfy the demand of a given sector. In practical terms, the output multiplier of a given sector *i* will be calculated as the sum of the column where $i = j$.

Assuming final demand components are treated exogenously, the output multiplier is the ratio of direct and indirect effects to the initial direct change. Therefore, if we assume a direct effect of 100 m.u. on a sector with a multiplier of 2, the total effect on the economy (direct and indirect) will be 200 m.u. In the same way, a hypothetical isolated sector that does not require any inputs from other industries to deliver its production will have an output multiplier equal to 1. Likewise, if we assume a direct effect of 100 m.u. on this fully self-sufficient sector, the overall effect on the economy will be 100 m.u.

4. Model construction

4.1 Data

The data used for the analysis, comes from the input-output tables disclosed by the Instituto Nacional de Estadística in 2019. The table corresponds to the annual Spanish accounts of 2016 but was published 3 years later, on the 17th of December 2019.

For the purpose of this project, we are assuming that the interdependencies among sectors will always remain the same, or with very little variance. Therefore, the fact that our data is not the most recent, does not detract from the accuracy of our analysis as the multipliers, the main variable that we will be working with, are relative measures and are presumed to maintain their constancy over time.

This set of data is composed of 4 different tabs: input-output table at basic prices, the technical coefficient matrix, the Leontief inverse and the NACE correspondences. For this analysis, I have set as a starting point the input-output table at basic prices and worked my own way through the algebraic operations.

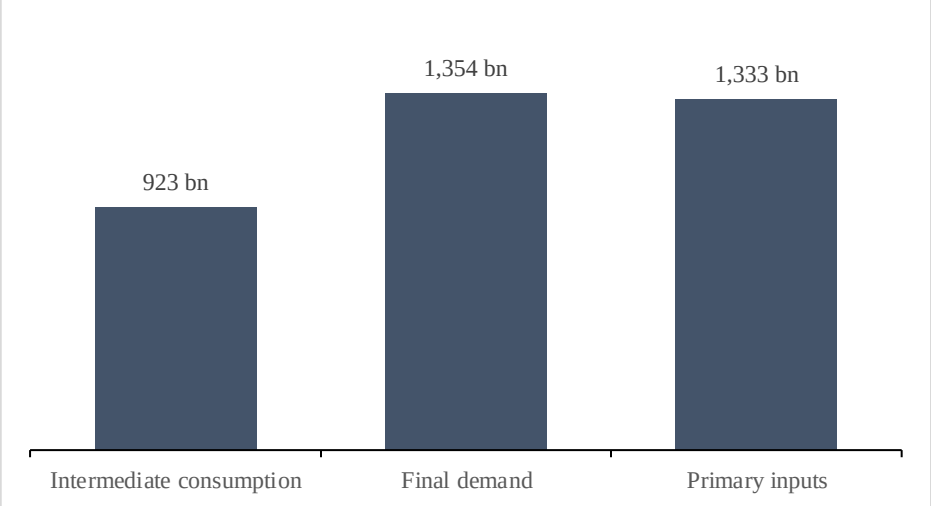
In the first block of the IO table, the INE has structured the Spanish economy into 64 sectors. These branches come from the aggregation made by the National Classification of Economic Activities who classifies and groups the economic activities into different sectors. This aggregation is shown in a table of correspondences (provided by the INE) in which each sector includes the number of economic activities considered in it. In our case, for modelling purposes, I have not further aggregated the table as the impact of tourism is spread across various separate industries and an aggregated table could harm the granularity of the analysis and generate aggregation bias.

Block II, final demand, is aggregated into three subtotals, but showing a breakdown of each of the components. Firstly, it includes final consumption expenditure, which is further divided into three categories: households, public administration, and non-profit institutions. Secondly, it comprises gross capital formation. This is a composition of gross fixed capital formation and changes in inventories and acquisitions. Gross fixed capital formation refers to the net increase in physical assets, while changes in inventories and acquisitions reflect the variations in a company's stock of goods. Lastly, it reflects the total sum of exports, categorizing intra-EU and extra-EU exports.

Block III, primary inputs, is broken down in the same way. It encompasses 4 subtotals categorizing their components when necessary. It includes compensation of employees (wages and social contributions), gross operating surplus, imports (intra-EU and extra-EU) and, finally, other net taxes on production.

These three blocks add up to a total of 2,276,453 million euros of inputs which, by definition, is equal to the total output of the economy. This number is broken down into 943,479 million of intermediate consumption, 1,332,974 million primary inputs and 1,353,737 of final demand as shown in Figure 9.

Figure 9 – Input-output table distribution

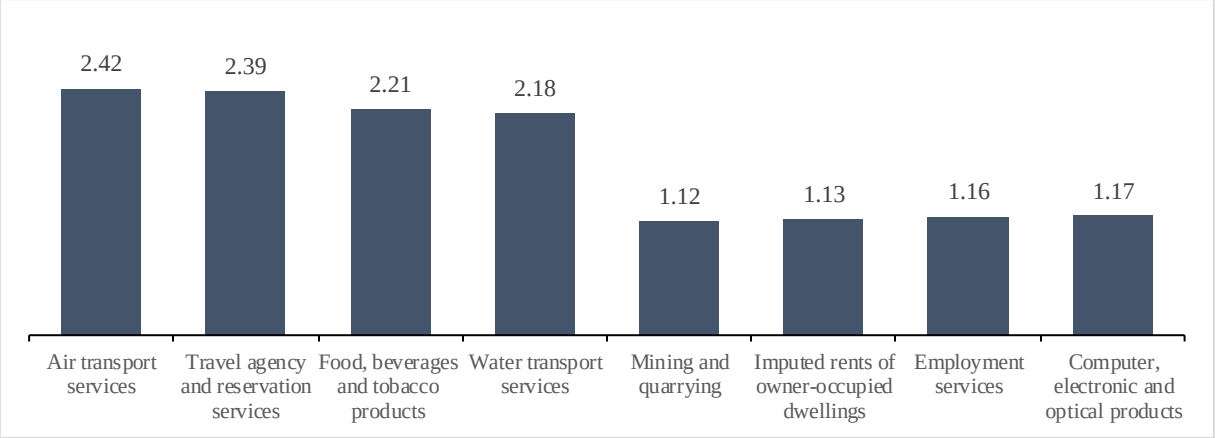


4.2 Multiplier analysis

As we explained previously, the multiplier of an industry quantifies the combined direct and indirect input needs from all sectors that are necessary to meet the demand of a specific sector. Given that, not all sectors have the same multiplier, and it varies depending on its characteristics. The size of the Leontief multiplier for a specific industry may vary depending on several factors. One of them is the marginal propensity to consume of individuals. When the final demand for a good increases, the total output of that sector must increase by a larger proportion, as it must satisfy the increase in final demand and simultaneously cover the increase in intermediate demands through all the value chain. Therefore, one industry may have a higher multiplier than another if it has a higher interdependence with other industries. If it uses more inputs from other industries or if its products are used as inputs by a larger number of industries.

Besides industry multipliers, there are other type of multipliers that illustrate the marginal sensitivity of employment, GDP and income to a given change in output. These are called Type I multipliers and express how many FTE employments, € of GDP and income from employment is generated or lost from a unit change in demand.

Figure 10 – Top and bottom multipliers



In Figure 10 we can see a brief summary of the sectors that have the highest and lowest multipliers.

In this case, air transport services has the highest multiplier given the nature of the sector. Its role in transporting goods and people between different sectors and regions intensifies the interdependency between this sector and the others. This sector may require inputs from a wide range of other sectors, such as petroleum for fuel, aircraft manufacturing for aircraft maintenance and repair, and catering services for on-board food. In turn, its services can be used by a multitude of other sectors, from tourism to the export of goods. The same dynamics are applied to food, beverages and products. The food supply chain is one of the largest and more diverse. This sector requires inputs from the agricultural, manufacturing and transport sectors, and its products are used by almost all the other sectors.

On the contrary, there are other sectors that do not require much from others. In this case, sector with the lowest multiplier is mining and quarrying. This sector has a low multiplier because most of its inputs come from within the sector itself, such as mining machinery.

Also, its outputs, such as extracted minerals, are primarily exported rather than used by other sectors of the Spanish economy.

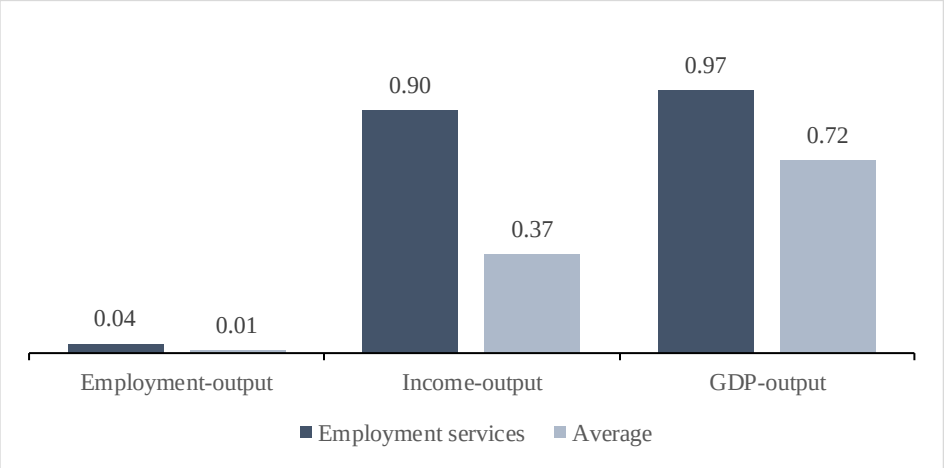
Besides the normal industry multipliers, there other types of multipliers related to employment, income and GDP. These multipliers measure the effect on the economy of an increase in employment, investment and government expenditure so, in that sense, they follow the same dynamics as the industry multipliers, but its calculations are slightly different.

In our case, to calculate them, we need to construct a 3x64 matrix of coefficients in which the rows correspond to employment, income, and GDP, and the columns correspond to each of the sectors. These coefficients measure the proportion of wages, FTE employment, and GDP over the total input of each sector. Therefore, they are calculated as a simple division. In the case of income, the numerator is the compensation from employment of an industry, and the denominator is the total inputs of that same industry. For GDP, the numerator consists of the sum of the gross operating surplus and the compensation from employment, as these two components contribute to GDP. Once we have this basic matrix of coefficients, we can calculate the multipliers by multiplying this matrix of coefficients (3x64) by the Leontief Matrix (64x64). This will yield the matrix of employment, income, and GDP multipliers (3x64) for each of the sectors.

The interpretation of these multipliers is similar to the industry multipliers. For example, the Type I Employment-output multiplier, "is the ratio of direct plus indirect (plus induced if Type II multipliers are used) employment changes to the direct employment change. In other words, if you have the change in FTE employment for the industry the employment multiplier can be used to calculate the change in FTE employment for the economy as a whole" (Scottish Government, 2024). Therefore, if there is an increase in the output of an industry, the employment multiplier can be used to calculate the change in FTE employment for the economy as a whole.

The same interpretation applies to the income and GDP multipliers. In the case of GDP, it measures the effect that a change in the final demand of a sector has on the overall GDP. Hence, if the GDP-output multiplier of a sector is 2, an increase of €100,000 in final demand will result in an increase of €200,000 in the overall GDP of the country.

Figure 11 – Analysis of output multipliers (Employment services vs average)



As we can see in Figure 11, the sector with the highest multipliers is the employment services sector. Employment services in Spain encompass recruitment agencies, public employment, and other support services across all sectors of the economy. Therefore, it has a significant impact on the employment and income from employment aspects of the economy. This is reflected in the multipliers, as they indicate a much higher influence than all other sectors on the employment levels of the economy. On the GDP side, it also has a higher conversion of demand to GDP than all other sectors. 97% of the increase in demand translates into additional GDP for the economy. This means that the employment services sector is very efficient with very few 'leakages.' The term 'leakages' refers to the portion of income that is not passed on through the supply chain (e.g., savings, taxes, spending, etc.). Therefore, we can conclude that this is the most efficient sector in terms of relative influence on employment and gross value added. The influence is relative given that the absolute intermediate consumption of this sector is low compared to the average, but its relative influence is very high.

Table 5 – Tourism-related sectors: multipliers and its contributions

Sector	Multiplier	Contribution	% of Total inputs
Food products; beverages; tobacco products	2.2	€135,273.6	5.9%
Land transport services and transport services via pipelines	1.9	€52,644.8	2.3%
Air transport services	2.4	€9,150.0	0.4%
Accommodation and food services	1.8	€110,101.5	4.8%
Travel agency, tour operator and other reservation services and related services	2.4	€16,402.1	0.7%
Creative, arts and entertainment services; library, archive, museum and other cultural services	1.6	€17,461.1	0.8%
Sporting services and amusement and recreation services	1.6	€17,927.4	0.8%
AVERAGE	**2.0**	**€51,280**	**2.3%**

Coming back to the tourism sector, Table 5 reflects the multipliers, nominal contribution (in terms of total inputs) and shares of the tourism-related sectors in Spain. Due to the aggregation made by the NACE, not all the contribution comes from international tourism, as it is impossible to disaggregate it, but it gives us a fair image of the sectors in which tourism plays a significant role and its multipliers. On average, these sectors have a multiplier of 2, which is on the higher end of the economy and have an average contribution of around €51bn which is 2.3% of the total inputs of the economy.

4.3 Limitations of the model

IOTs, like any tool, have certain limitations inherent to their design, such as the initial assumptions or the characteristics of the technical coefficients to which we will refer below.

In order to evaluate the extent of the Input-Output model's applications, it is critical to emphasize its underlying presumptions. Leontief begins with the general equilibrium scheme of Walras. To model the general equilibrium that exists in goods and factor markets, Walras created a system of equations. It was an appropriate system for comprehending how a price system is established through the competitive demands that activities make on factors of production and the substitutability that exists in the final consumption of their products. Competition would lead to equilibrium prices.

To apply this scheme and make it workable, Leontief limits and streamlines it. The most significant simplification is the removal of all price effects from input substitution; this is achieved by fixing production coefficients and eliminating limited factors, which prevents substitution between intermediate or primary inputs and, consequently, many of the

adjustments that define the Walrasian concept of general equilibrium. Considering this inability to be substituted by price or technology, the three main hypothesis of the Walrasian concept of general equilibrium are as follows:

- Homogeneity hypothesis: each product (or group of products) is provided exclusively by one sector.
- Proportionality hypothesis: the inputs used are a function of the level of output of each sector. This assumption excludes the existence of economies of scale.
- Activity hypothesis: the total effect of carrying out various types of production is the sum of the individual effects; there are no external economies or diseconomies.

Input-output analysis is a simplified version of general production theory, which focuses on the relationships between different activities through mutual exchanges. Hence the need for simplifying assumptions. It is important to remember these assumptions when trying to draw practical conclusions from an IOT. The aggregation of activities could break the homogeneity assumption and, therefore, the natural input substitution that happens in the economy is also altered. Also, technical coefficients are evaluated in monetary terms, so they are not strictly technical, as Leontief pretended (Miller and Blair, 2009).

The Leontief model is a fixed price model that completely disregards capacity constraints. This implies that the supply side is infinitely elastic, or passive, meaning it can adjust without limit to changes in demand. In this model, firms are not sensitive to price changes, and input substitutions are modelled with fixed coefficients. This is somewhat unconventional in economic models, where input substitutions play a crucial role in impact analysis. Input substitution refers to the ability of firms to alter their use of inputs in response to changes in prices or technology. For example, if the price of labour increases, a firm might substitute capital for labour to minimize costs (Miller and Blair, 2009).

However, in the Leontief model, this kind of substitution is not possible due to the assumption of fixed coefficients. This means that the ratio of inputs used in production is fixed and does not change with variations in output or input prices. As a result, the model assumes a very specific form of production technology where inputs must be used in fixed proportions.

An isoquant shows all the combinations of inputs that yield the same level of output. The isoquants in the Leontief model are L-shaped. This reflects the fixed coefficients assumption, indicating that inputs must be used in fixed proportions and substitution is not possible. If you want to increase output, you have to increase all inputs by the same proportion.

While the Leontief model's simplicity makes it a useful tool for certain types of analysis, such as input-output analysis, its assumptions limit its applicability. In particular, the lack of price sensitivity and the inability to substitute inputs can make the model's predictions less accurate in situations where these factors play a significant role.

5. Simulation strategy

5.1 Rationale of the simulations

In order to simulate the impact of international tourism, we would need to make several assumptions. The goal is to forecast the overall expenditure of Spain and distribute it among the sectors of the economy in which international tourism has an impact. This distribution is crucial because, has we have seen, not all the sectors have the same impact in the economy has they have different multipliers. Therefore, two countries with the same overall expenditure but distributed in a different way would produce a totally different impact. That is what we would try to assess with our input-output model.

As we have previously seen in the data from the Instituto Nacional de Estadística, tourist expenditure is categorized into two main categories: tourist package and non-tourist package. The first thing we must do is estimate the percentage of the total expenditure that corresponds to each category as they would come from different sectors. For that analysis, I have taken an average of the last 6 years excluding 2020 and 2021. These two years are excluded as COVID broke all the tourist expenditure patterns due to mobility constraints.

Table 6 – Breakdown of total expenditure in its categories (excluding 2020 and 2021)

(excl. 2020/2021)	**Tourist package**	**Non-tourist package**	**Total**	**% of tourist package**	**% of non-tourist package**
2016	16,971.00 €	60,444.00 €	77,415.00 €	22%	78%
2017	18,136.00 €	68,868.00 €	87,004.00 €	21%	79%
2018	18,889.00 €	70,861.00 €	89,750.00 €	21%	79%
2019	18,509.00 €	73,403.00 €	91,912.00 €	20%	80%
2022	14,918.00 €	72,220.00 €	87,138.00 €	17%	83%
Average	**17,484.60 €**	**69,159.20 €**	**86,643.80 €**	**20%**	**80%**

In Table 6 we can see a breakdown of the total tourism expenditure into its categories from 2016 to 2022. I have excluded from the average 2020 and 2021 as the year we are forecasting is not affected by COVID and would bias the analysis. In this table we can see that the non-tourist package takes the most part of the expenditure summing and average of 80% per year. The rest would be allocated to the tourist package. This 20%, would be fully allocated to sector 52 of our list that is *Travel agency, tour operator and other reservation services and related services.* The tourist package refers to the amount that is booked and paid in advance of the trip that is normally done through travel agencies and tour operators. Therefore, 20% of our estimated expenditure would be allocated to this sector.

The other 80% of our expenditure, non-tourist package, is further disaggregated into more categories depending on the nature of the expenditure. The 5 subcategories are: international transport, accommodation, maintenance, activity and other expenses. These subcategories don't have an exact match with one of our sectors as these are more general and can be related to more than one. So, following the same rationale as with the tourist package, I have taken an average from the last 6 years (excluding 2020 and 2021) to assess the percentage of the non-tourist package that corresponds to each subcategory.

Figure 12 – Average non-tourist package breakdown

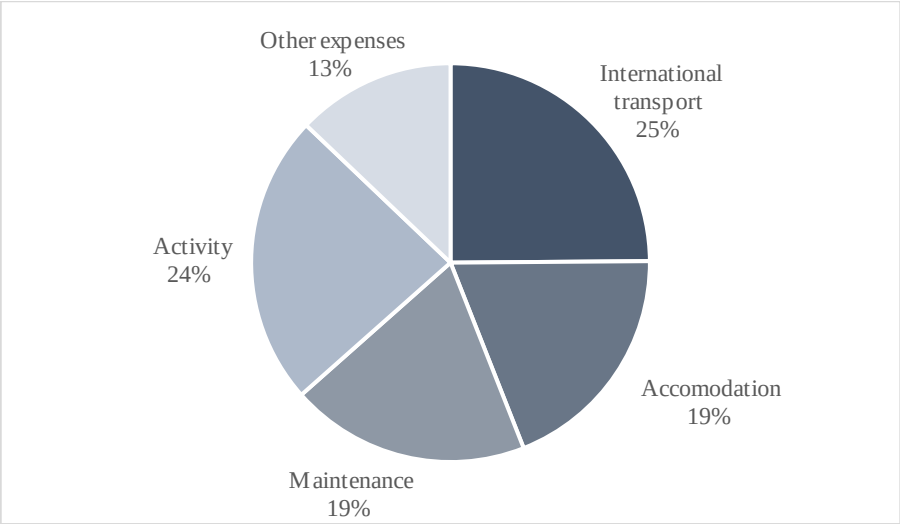


Figure 12 illustrates the average percentage of each of the non-tourist package subcategories. These percentages will be applied to the expenditure corresponding to the non-tourist package to assess the expenditure of each of the subcategories. The expenditure of these subcategories would be then allocated to different sectors.

Table 7 – Subcategory allocation

Subcategory	Nº Sector	% allocated	Corresponding sector name
International transport	33	50%	Land transport services
	31	50%	Air transport services
Accommodation	36	100%	Accommodation services
Maintenance	5	100%	Food, beverages, and tobacco
Activity	58	80%	Entertainment and cultural services
	59	20%	Sporting, amusement, and recreation
Other expenses	28	50%	Retail trade
	56	50%	Human health

In Table 7 we can see how the expenditure of each of the sectors is allocated into each of the sectors. As expected, it is not an exact match as these are generic categories so, in more than one case, I had to split the allocation into 2 sectors.

So, given this rationale, the estimated tourism expenditure would be divided into tourist package (20%) and non-tourist package (80%). The tourist package would be fully allocated to sector 52, which accounts for travel agency reservations, and the non-tourist package expenditure would be divided into its categories (according to the historical percentages) and allocated to the corresponding sector according to the correspondences stated in *table 7*.

In 2019, the total expenditure of international tourists visiting Spain was 92,278 million euros (Instituto Nacional de Estadistica, 2019). The average expenditure per tourist was €1,102 and the average daily expenditure was €1,542 (El economista, 2019). In 2023, the total expenditure of international tourists visiting Spain increased significantly. In the first nine months of 2023, total expenditure was 84,608 million euros. The average expenditure per tourist was 1,271 euros, 7.9% more than last year and 16.9% more than in 2019. Average daily expenditure also reflected this growth, reaching 185 euros, 21% more than in 2019 (La Moncloa, 2023).

Given this data, we can assume that the 2023 was a very good year for Spain regarding tourism expenditure. According to Turespaña estimates, Spain will close the year with a total tourism expenditure over €92,000 million (Europa press, 2023). So, for my analysis, given that the 9-month data was very encouraging and significantly above 2019's expenditure, I would estimate a total tourism expenditure of €92,500 million for 2023 (Europa Press, 2023).

5.2 Dynamics of the model

For the purpose of the analysis, I am going to model the economic impact of international tourism in 2019, 2020 and 2023 to assess the impact and recovery of COVID-19. Therefore, to standardize the modelling, I have created an exel modelling template in which calculations are automated

which are only dependent on the assumptions. Therefore, by copying and pasting the excel tab, I can just change and make my own assumptions for the year and the direct and indirect effects will be calculated automatically. This way we ensure transparency and reliability when comparing the results like-for-like.

Screenshot 1 – Expenditure assumptions

Input-Output Modelling 2023

Assumptions

Tourism expenditure and split

Total tourism expenditure for the year	92,500
Tourist package	18,500
% of the tourist package	*20%*
Non-tourist package	74,000
% of non-tourist package	*80%*

In this screenshot we can see how the assumptions were set up. The only cells that can be manipulated are input cells (yellow background and blue font). In the case of 2023, I have estimated the total tourism expenditure of 2023 at 92,500 million and the share of tourist package at 20% (average of the tourist package share from 2016-2022 excluding 2020 and 2021). The share of non-tourist package would be simply calculated by: 1 - *share of tourist package*. Therefore, once these assumptions are made, the total expenditure is automatically divided into the two main categories.

Screenshot 2 – Allocation to sectors

Allocation of tourist package to sectors

Subcategory	% of tourist package	Nº Sector	% allocated	€ allocated	Correspondance
Tourist package	100%	53	100%	€ 18.500	Travel agency, tour operator and other reservation services and related services

Allocation of non-tourist package to sectors

Subcategory	tourist package	Nº Sector	% allocated	€ allocated	Correspondance
International transport	25%	33	80%	€ 14.800	Air transport services
		31	20%	€ 3.700	Land transport services and transport services via pipelines
Accomodation	19%	36	100%	€ 14.060	Accommodation and food services
Maintenance	19%	5	100%	€ 14.060	Food products; beverages; tobacco products
Activity	24%	59	80%	€ 14.208	Creative, arts and entertainment services; library, archive, museum and other cultural services
		60	20%	€ 3.552	Sporting services and amusement and recreation services
Other expenses	13%	28	50%	€ 4.810	Wholesale and retail trade and repair services of motor vehicles and motorcycles
		57	50%	€ 4.810	Human health services

In this screenshot we can see how the sector allocation was made. The only input in this section is the category breakdown into the components which the INE has stated, the rest is all automatized and immutable.

I have allocated separately the two expenditure categories. The tourist package is simpler. As it relates to booking expenses and travel bundles made normally through travel agencies, I have allocated 100% of the partition to sector 53: "travel agency, tour operator and other reservation services".

The allocation of the non-tourist package is more complex as there isn't a 1:1 correspondence between the subcategories and the sectors. Therefore, for some subcategories, there is more than one sector of correspondence. I have allocated:

- International transport to the sectors related to transport, both land and air. Between these two, I have allocated 80% to air transport and 20% to land transport assuming that most of the international tourism travel by plane as it is nowadays the more convenient service for long distances.
- Accommodation to the sector related to accommodation and food services.
- Maintenance to the sector related to food, beverages, and tobacco. This will account all the purchases that the tourists make during their stay that relate to food and essential purchases.
- Activity is split into *cultural services* and *amusement and recreation services*. 80% of the split is allocated to cultural services such as cultural visits (museums, palaces, etc.) and other entertainment services (eg. Cinema). The rest is allocated to other recreation activities assuming not all is cultural visiting.
- Other expenses are divided equally between medical (human health) costs and retail purchases. This equal division is a simplified assumption, given that 'other expenses' encompass more than just these two sectors. It is presumed that, following transport, accommodation, food, and entertainment, the primary expenditures are medical costs and retail purchases.

6. Discussion of the results

There are 4 types of impacts that can be analysed when simulating a demand shock in the IO model:

- Output Impact (EUR): This measures the change in total output or production across various sectors of the economy due to changes in demand. It simulates how much additional production or value-added is generated in sectors as a result of the change in demand from tourists. This impact is calculated as the multiplication of the Leontief matrix (nº sectors x nº sectors) times the vector of demand shocks (1 x nº sectors). This would give us a vector (1 x nº sectors) of indirect impacts per sector which, if added, it gives us the total impact of the economy.
- Income Impact (EUR): This reflects the change in total income earned by individuals and businesses within the economy following a change in demand from international tourism. It includes wages, salaries, profits, and other forms of income generated directly or indirectly from tourism-related activities. This impact is calculated multiplying the vector of demand shocks (1 x nº sectors) times the employment-output coefficient of the corresponding sector. This will give us a vector (1 x nº sectors) of indirect impacts per sector which, if added, it gives us the total impact of the economy
- GDP Impact (EUR): This measures the change in the GDP of the economy resulting from international tourism. It provides an overall assessment of the contribution of tourism to the country's economic output and growth. This impact is calculated in the same way as the income impact but, using the GDP-output coefficient instead of the income-output coefficient
- Employment Impact (FTE): This evaluates the change in the level of employment within the economy due to international tourism. It helps understand the direct and indirect job creation or loss across different sectors arising from changes in tourism demand. In terms of calculations, this follows the same dynamics as the others

Figure 13 – Summary of total effects (direct+indirect)

Name	Units	Total 2019	Indirect effect	% of Total
Output	€m	2.379.605	185.481	7,8%
Income	€m	503.724	33.671	6,7%
Gross Domestic Product (GDP)	€m	3.275.996	73.773	2,3%
Employment	# thousands	17.017	1.199	7,0%

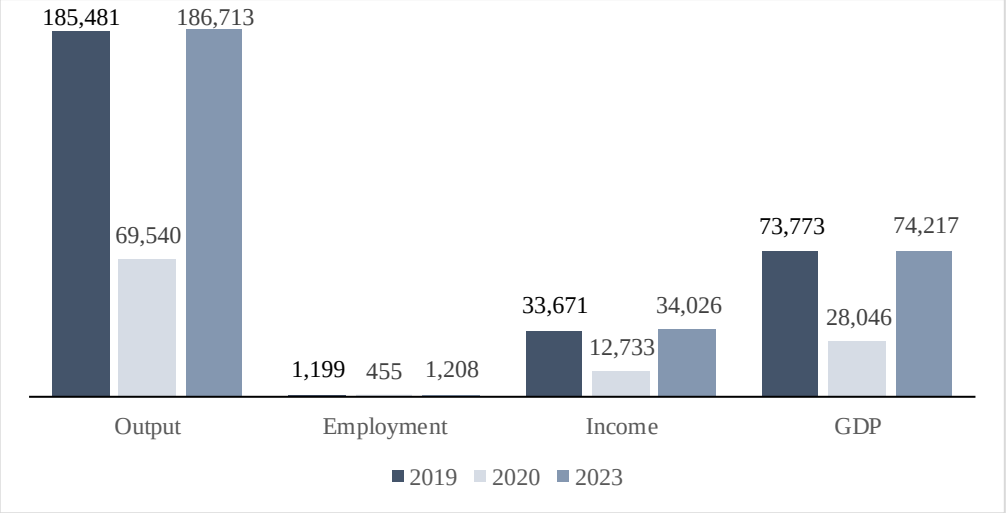
In this table we can see the share of international tourism over the total economy in 2019, decomposed into 4 categories: Output, income, GDP and employment. In 2019, the total output of the economy (intermediate demand + primary inputs + final demand) was €2.379 bn. Given that, we can see that international tourism constitutes ~7,80% of the whole output of the economy. This represents a very high share given that in the 2019 Spanish IO Table, the economy is aggregated into 64 sectors and only 7 of them are affected directly in this simulation. This is due to multiplier effect of the economy. Sectors related to tourism normally have a high dependence on other sectors which causes that, when tourism demand increases, the total output produced has to increase even more to supply this demand.

Table 8 – Multiplier analysis

Name	Output	Employment	Income	GDP	€ Allocated
Travel agency	2,39	0,014	0,373	0,798	18.500
Air transport	2,42	0,010	0,373	0,734	14.800
Land transport	1,87	0,014	0,372	0,794	3.700
Accommodation	1,79	0,016	0,379	0,852	14.060
Food products	2,21	0,011	0,257	0,674	14.060
Culture and entertainment	1,57	0,013	0,309	0,895	14.208
Amusement and recreation	1,58	0,014	0,491	0,905	3.552
Retail trade	1,79	0,016	0,411	0,843	4.810
Human health	1,48	0,015	0,658	0,876	4.810
Weighted average	**2,02**	**0,013**	**0,368**	**0,802**	**10.278**
Economy average	***1,71***	***0,013***	***0,371***	***0,710***	

This Table shows the multipliers of the sectors that have been directly affected by the tourism demand shocks and the money allocated. We can observe how the multipliers of the tourism-related sectors is significantly higher in Output, Income and GDP. This means that any demand increase from international tourism would contribute much more to the whole economy (in terms of output, income and GDP), than the average sector. In other words, a given amount of spending or investment in tourism-related sectors would generate a significantly greater amount of economic activity and income throughout the economy, amplifying its impact beyond the initial injection of funds.

Figure 14 – Summary of direct+indirect effects



In terms of historical evolution, this Figure shows the indirect contribution of international tourism in Spain in 2019, 2020 and 2023. We can see how contribution has exceeded pre-pandemic levels in all 4 categories. International tourism demand has fully recovered from the COVID downturn and even exceeded 2019 levels given the worse economic outlook. This underpins the resilience and recurrence tourism income in Spain.

The impact of COVID 19 on international tourism implied a loss of €115 bn in output, €21 bn in income and €45 bn of GDP and 743.000 FTE jobs.

7. Declaracion del uso de herramientas de inteligencia artificial

Por la presente, yo, Bosco Rodriguez-Arias, estudiante de E-2 Analytics de la Universidad Pontificia Comillas al presentar mi Trabajo Fin de Grado titulado " The economic impact of international tourism in Spain", declaro que he utilizado la herramienta de Inteligencia Artificial Generativa ChatGPT u otras similares de IAG de código sólo en el contexto de las actividades descritas a continuación [el alumno debe mantener solo aquellas en las que se ha usado ChatGPT o similares y borrar el resto. Si no se ha usado ninguna, borrar todas y escribir "no he usado ninguna"]:

1. **Brainstorming de ideas de investigación:** Utilizado para idear y esbozar posibles áreas de investigación.
2. **Estudios multidisciplinares:** Para comprender perspectivas de otras comunidades sobre temas de naturaleza multidisciplinar.
3. **Corrector de estilo literario y de lenguaje:** Para mejorar la calidad lingüística y estilística del texto.
4. **Sintetizador y divulgador de libros complicados:** Para resumir y comprender literatura compleja.
5. **Traductor:** Para traducir textos de un lenguaje a otro.

Afirmo que toda la información y contenido presentados en este trabajo son producto de mi investigación y esfuerzo individual, excepto donde se ha indicado lo contrario y se han dado los créditos correspondientes (he incluido las referencias adecuadas en el TFG y he explicitado para que se ha usado ChatGPT u otras herramientas similares). Soy consciente de las implicaciones académicas y éticas de presentar un trabajo no original y acepto las consecuencias de cualquier violación a esta declaración.

Fecha: 28/02/2024

Firma: ___BR-A___

8. Conclusion

After a deep analysis of international tourism in Spain and its implications on the Spanish economy, we can draw several conclusions:

- Spanish international tourism income has proved to be very resilient and recurrent. COVID-19 had a massive effect on tourism income across the globe. Despite this, Spain remained at the top of the leader board and has been able to recover at a higher pace than other European competitors, surpassing in 2023 pre-covid levels.
- Tourism contribution to the national GDP has gradually increased over the years, becoming a significant driver for economic developement.
- Tourism-related sector tend to have higher output, income, and GDP multipliers than the average sector in Spain. This is because of the length of the tourism-related sectors value chain and its dependence on the rest of the sectors.
- For the Spanish government, investing in increasing tourism demand is more profitable than investing in the average Spanish sector due to the high multipliers of these
- According to our model, the impact of COVID 19 on international tourism implied a loss of €115 bn in output, €21 bn in income and €45 bn of GDP and 743.000 FTE jobs. In the case of FTE employments, a report from Statista shows that "Spain counted over 800 thousand job losses in the tourism sector between April 2020 and March 2021" (Statista, 2024). However, this figures are not discounted with the government measures to retain jobs so they do not represent the actual reality.

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