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The Weight of Tourism in the Balearic Islands: 1983-1997-2004*

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ABSTRACT

The input-output tables for 1983, 1997 and 2004 indicate that the Balearic Islands is a service oriented economy, highly specialized in the production of services for tourists. The main purpose of this paper is to provide an assessment of the weight of tourism in the Balearic economy using input-output techniques to uncover indirect and induced effects. The results obtained confirm the view that tourism has played a fundamental role in the development of the islands during the second half of the twentieth century, although there are indications that the impulse has lost intensity since the turn of the century.

Key words: Input-Output Table, Input-Output Model, Tourism Impact.

El peso del turismo en las Islas Baleares: 1983-1997-2004

RESUMEN

Las tablas input-output de 1983, 1997 y 2004 indican que las Islas Baleares es una economía terciarizada, altamente especializada en la producción de servicios turísticos. El principal objetivo de este artículo es calcular el peso del turismo en la economía balear usando técnicas input-output que recojan los efectos indirectos e inducidos. Los resultados obtenidos confirman el papel fundamental del turismo en el desarrollo de las islas durante la segunda mitad del siglo XX, aunque también muestran indicios de que dicho impulso ha perdido intensidad a principios de este siglo.

Palabras clave: Tabla input-output, modelo input-output, impacto turístico.

JEL Classification: D57, R11

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1. INTRODUCTION

The main aim of this paper is to provide a first assessment of the weight of tourism in Balearic Islands since 1983. Although everybody agrees that tourism has played a key role in the process of growth of the Balearic economy during the second half of the twentieth century, it is surprising the lack of attention that has been paid to both data collection and analysis of this key development (Martorell and Mulet, 2009). In 1950, just a handful of curious travellers, 758 to be exact, visited the islands while 10.2 millions international tourists did it in 1999, the highest figure ever. In the meantime, the population of the Islands increased from 422.089 to 821.820 at the turn of the century. The rapid pace of growth led one of the most backward Spanish regions up to the third position in the per capita ranking in 1999.

An inspection of the input-output (IO) tables available for 1983, 1997 and 2004 confirm the view that the Balearic Islands turned into a service oriented economy during the second half of the twentieth century, becoming highly specialized in the production of tourists' services (Capó, Riera and Rosselló, 2007). Sectors, conventionally classified as tourists' sectors, account for more than 40 percent of value added and around 30 percent of employment, although the data points towards a decrease in the last years. It is, however, difficult to infer from the value added and employment figures of sectors conventionally classified as tourists the real importance of tourism in the Balearic economy. Tourists' sectors also produce services for residents and non tourists' sectors produce commodities required by tourists' sectors.

Despite the well known limitations of the IO model (see, Dwyer, Forsyth and Spurr (2004) and Polo and Valle (2008)) to analyse economy impacts, IO framework can profitably be used to provide more accurate estimates of both, indirect and induced effects of non residents demand. Polo and Valle (2009) used IO as well as extended linear (SAM) models to estimate the weight of tourism in the Balearic economy in 1997. Here, estimates of the weight of tourism in 1983, 1997 and 2004 are presented using the standard IO model and an IO model with endogenous residents' consumption. The models are also used to rank production sectors by the proportion of value added and employment generated by non residents' demand over the sectors totals in the reference year. It appears that many sectors not conventionally classified as tourists' sectors (Wine and Spirits, Chemical products, Energy, Wholesale trade, etc.) are highly dependent on non residents' demand.

The rest of the paper is divided in four sections. An informal analysis of tourism using the figures of the three available IO tables of the Balearic economy is presented in Section 2. Next, we outline the standard IO model and the version with endogenous consumption used to estimate the weight of

tourism. The results obtained for 1983, 1997 and 2004 are discussed in Section 4. The main findings and conclusions are summed up in the last section.

2. AN INFORMAL ASSESSMENT OF THE IMPORTANCE OF TOURISM IN THE BALEARIC ECONOMY

As it is well known, the input-output framework provides a detailed description of the production process (intermediate inputs and gross value added) and the way produced commodities supplemented with imports of equivalent products are used to satisfy intermediate and final demands (private and public consumption, gross capital formation and exports). Therefore, the information included in the input-output tables of an economy constitutes an interesting departing point to analyse sectoral interrelations, detect structural changes and draw policy conclusions. In particular, the input-output framework can be used to asses the weight of any subset of sectors in the economy like the so called tourists' sectors that conventionally include lodging, food, renting, transport and cultural and recreational services provided to tourists.

From the supply side, a rough estimate of the importance of tourism can be obtained calculating the weight of production, value added and employment in the tourists' sectors over the corresponding figures for the entire economy. The weight of non-residents consumption in final demand provides an alternative estimate of the importance of tourism from the demand side. Neither of them is, however, completely satisfactory. On the one hand, the so called tourists' sectors produce services for other sectors (intermediate consumption) and final uses (domestic consumption and exports). On the other hand, a share of non-tourists' sectors production and value added is absorbed by tourists' sectors to satisfy non-residents demand.

Table 1
Conventional estimates of the weight of tourists' sectors in the Balearic economy

	1983	1997	2004
Gross output	40.71	43.43	44.78
Intermediate inputs	36.90	40.09	48.38
Gross value added	43.21	45.39	40.95
Compensation of employees	32.20	31.29	27.58
Gross operating surplus	54.86	56.62	54.24
Note: Tourists' sectors differ from year to year due to changes in sector classifications (see, Table 4) and methodology in the European Accounting System.			

Source: Own elaboration.

The figures in Tables 1 and 2 were calculated using the input-output tables of the Balearic economy for 1983, 1997 and 2004[1]. Gross output as well as gross value added generated by all tourists' sectors[2] account for more than 40 percent of the economy totals, although the figures point to a sharp fall in the share of value added from 1997 to 2004 in spite of a slight increase in the share of output during the same period.[3] The different evolution of output and value added is accounted for the sharp increase in the share of intermediate inputs and the fall in the shares of both, Compensation of employees and Gross operating surplus, in the tourists' sectors. Notice also that tourists sectors generate more than 50 percent of the gross operating surplus in the economy.

Table 2 presents the contribution of different components of the final demand to the regional economy's total final demand in 1983, 1997 and 2004. As expected, the share of non-residents consumption is quite large, although it has fallen since 1983 and especially from 1997 till 2004, a trend in line with the aforementioned decline of tourists' sectors share. One of the most striking traits of Table 2 is the sharp increase in exports share in 1997-2004, a clear indication that the Balearic economy is less dependent on non-residents consumption and more dependent on other type of exports.[4]

[1] The *1983 Input-Output Tables for the Autonomous Community of the Balearic Islands* and the *1997 Input-Output Tables for the Autonomous Community of the Balearic Islands* were elaborated by two faculty teams of the University of the Balearic Islands for the regional Government. The *2004 Input-Output Framework for the Balearic Islands* was elaborated by a private company for the Department for the Economy, Treasury and Innovation of the regional Government in 2007.

[2] A list with the sectors included under this heading each year can be found in Table 4. Unfortunately, there are important differences in the sectoral classification and methodology used to elaborate the three input-output tables. Therefore, data comparisons among the three tables have to be taken with caution.

[3] As indicated methodological changes may distort comparisons across tables. In particular, one has to take into account that 1983 and 1997 tables were valued at purchaser prices while the symmetric 2004 table is at basic prices.

[4] New export sectors have emerged, displacing traditional ones. In 1983, the footwear industry accounted for 28.29 percent of all Balearic exports, followed by the fashion jewellery sector with a share of 10.55 percent and metal products with 10.17 percent. In 1997, the metal manufacturing sector accounted for 39.50 percent of all exports, while footwear accounted for a bare 8.65 percent. However, if we look at 2004, the structure changed completely, with Real estate services, property sales and auxiliary activities accounting for 12.05 percent, Air passenger transport accounting for 9.10 percent, the Construction sector 8.35 percent, Footwear, leather and finishes 7.32 percent, Auxiliary services for passenger transport sector (which includes travel agencies) 6.68 percent and other business services 6.06 percent.

Table 2
Final demand shares

	1983	1997	2004
Residents private consumption	39.01	42.38	38.44
Non-residents private consumption	34.06	31.42	25.24
Public consumption	6.61	6.61	8.90
Non-profit organizations	-	-	1.23
Gross capital formation	14.58	14.61	14.95
Exports	5.73	4.79	11.13

Source: Own elaboration.

The intermediate consumption matrix also provides information on the interrelations among tourists and non-tourists sectors. In 1983, the strongest links appear with Energy (13.71 %), Non-alcoholic beverages (12.41 %), Livestock slaughter and meat processing (6.70 %), Other food industries (6.02 %) and Spirits and wine manufactures (4.94 %). In 1997, three of those sectors (Energy, 12.47 %, Food industries and tobacco, 10,74 % and Spirits and wine manufactures, 6.02 %) were still among the five major provider of tourists' sectors and Construction (8,57 %) and Services to business (7,86 %) join this select club. Lastly, in 2004, the tourists' sectors major suppliers were Ancillary services for passenger transport (8.14 %), Construction (6.56 %), Air passenger transport (6.53 %), Financial intermediation (5.71 %), and Other business services (5.43 %).

The inspection of the available input-output tables for 1983, 1997 and 2004 confirm the Balearic Islands has turned into service oriented economy, highly specialized in the production of tourists' services. Tourists' sectors account for over 40 percent of output and value added and 50 percent of gross operating surplus. Although these sectors also produce services for residents, it is incontestable that tourism has played a major role in the development of the islands during the second half of the last century. There are, however, some indications that tourism may have lost weight since 1997 as a result of population, per capita income and other exports growth have gained ground.

The 1983 and 1997 input-output tables classified companies as belonging to a specific sector, depending on their main activity. This means that the hotel sector's output in 1983 and 1997 cannot be compared with its output in 2004. In 1983 and 1997, the hotel sector encompassed output by hotels in terms of accommodation, catering and other secondary activities. The 2004 symmetrical table, which works with uniform fields of activity, only takes into account the output of products within that specific field and so the hotel sector only encompasses accommodation, while all secondary output is classified under the

corresponding field of activity. To overcome this problem, the tourist sector as a whole was analysed.

3. THE INPUT-OUTPUT MODEL

A more in depth analysis of the Balearic economic structure can be accomplished by using the IO tables to specify numerically the parameters of the IO model with N sectors. The numerous different studies that use input-output analyses to assess the economic impact of tourism on different national and regional economies, like those of Archer (1985, 1995), Fletcher (1989), Johnson and Moore (1993), Payeras and Sastre (1994), Archer and Fletcher (1996), Freeman and Sultan (1997), Henry and Deane (1997), Manente (1999), Frechtling and Horvath (1999), Crompton et al. (2001), Tyrrell and Johnston (2001), Kim et al. (2003), Chhabra et al. (2003), Gelan (2003), Daniels et al. (2004), Lee and Taylor (2005), Tohmo (2005), Mules (2005) and Hodur et al. (2006), all highlight how very useful this tool is**.** The IO model allows one to calculate the production vector y that satisfies a predetermined $Nx1$ final demand vector d. Since all IO tables available for this study distinguish flows by origin, the equilibrium condition among domestic production and uses by sector is set as follows

$$y^I = A^I y^I + d^I \tag{1}$$

where A^I is the matrix of domestic intermediate input coefficients and d^I the vector of domestic final demand. The solution to equation (1) is given by

$$y^I = \left(I - A^I\right)^{-1} d^I = M^I d^I \tag{2}$$

where M^I is the $N \times N$ matrix of fix-price multipliers and its element m_{ij} indicates the increase in the i output caused by a unit increase in final demand directed to the j sector.

The model can be used to calculate the share of production, value added, employment, etc. required to satisfy tourists' demand and asses the real weight of tourism in the economy considering both its direct as well as indirect effects. Denoting by d_T^I the non-residents demand vector equation (2) provides the output vector

$$y_T^I = M^I d_T^I = d_T^I + \left(M^I - I\right) d_T^I \tag{3}$$

required to satisfy non-residents demand, d_T^I, as well as the intermediate commodities, $\left(M^I - I\right)d_T^I$, required to produce it. Then, intermediate domestic and imported matrices, X_T^I and X_T^Q, respectively, and the sector value-added and employment vectors, V_T' and E_T', respectively, due to tourism can be calculated multiplying the corresponding intermediate matrices, A^I and A^Q, and row vectors, v' and l', of technical coefficients by the activity levels. In symbols,

$$\begin{aligned} X_T^I &= A^I \hat{Y}_T^I \\ X_T^Q &= A^Q \hat{Y}_T^I \\ V_T' &= v' \hat{Y}_T^I \\ E_T' &= l' \hat{Y}_T^I \end{aligned} \tag{4}$$

where

$$\hat{Y}_T^I = \begin{pmatrix} Y_1 & 0 & \ldots & 0 \\ 0 & Y_2 & .. & 0 \\ \ldots & & \ldots & 0 \\ 0 & 0 & \ldots & Y_N \end{pmatrix},$$

$$v' = \begin{pmatrix} v_1 & v_2 & \ldots & v_N \end{pmatrix}$$

$$l' = \begin{pmatrix} l_1 & l_2 & \ldots & l_N \end{pmatrix}.$$

The standard IO model can be modified to make endogenous residents' consumption. The equation system (1) is modified to include an additional activity that produces a consumption bundle in fixed proportions and an extra row to express labour requirements in consumption units. In symbols,

$$\begin{pmatrix} y_T^I \\ C \end{pmatrix} = \begin{pmatrix} A^I & c \\ l'\overline{c} & 0 \end{pmatrix} \begin{pmatrix} y_T^I \\ C \end{pmatrix} + \begin{pmatrix} d_T^I \\ 0 \end{pmatrix} \tag{5}$$

where C stands for the aggregate residents consumption, c is a vector of residents consumption shares, $l^{'}$ is row vector of labour coefficients and $\overline{c}$ the average consumption per unit of labour. The IO tables provide all the informa-

tion required to specify numerically the matrices and vectors of technical coefficients and the consumption shares required to implement the model.

4. THE WEIGHT OF TOURISM IN THE BALEARIC ISLANDS

In this section, we present the results obtained with both the standard IO model and the extended model with endogenous resident consumption stated in Section 3. The tables include the results obtained in 1983, 1997 and 2004. As pointed out above, changes in sectoral classifications, prices and methodologies employed to elaborate the IO tables may be behind some swift changes observed in the data, especially when one compares the 1997 and 2004 results.

4.1. Standard IO model

The first two rows in Table 3 allow to compare the value added and employment estimates presented in Section 2 of tourists' sectors with those obtained with equations (3) and (4) of Section 3 that provide value added and employment estimates generated by all sectors of the economy needed to meet non-residents demand.

Table 3
Comparison of IO and conventional estimates of the weight of tourism in the Balearic economy

	1983		1997		2004	
	Value added	Employment	Value added	Employment	Value added	Employment
(1) Conventional estimates	43.21	27.09	45.39	31.15	40.95	27.16
(2) Standard IO model	38.24	29.30	36.23	30.12	26.64	22.00
(2)-(1)	-4.97	2.21	-9.16	-1.03	-14.31	-5.16
(3) IO model with endogenous residents' consumption	54.75	46.91	53.76	49.05	36.59	32.65
(3) - (1)	11.54	19.82	8.37	17.09	-4.36	5.49
(3) - (2)	16.51	17.61	17.53	18.93	9.95	10.65

Source: Own elaboration.

In all but one case, the figures obtained with the standard IO model are lower than the rough estimates obtained by aggregating the sectoral figures of the tourists' sectors. One can infer from this that the value added and employment required to satisfy non-residents demand in non tourists' sectors are lower than

the value added and employment required to satisfy residents' demands in the tourists sectors. The only exception found is the employment share in 1983, slightly higher when estimated with the standard IO model. It is also interesting to notice that the difference between both estimates has increased throughout the period, an indication of the growing importance of residents' demand for tourists' sectors. Therefore, it seems fair to conclude that population and per capita income growth has made sectors conventionally classified as tourists' less and less dependent of non-residents demand. Nevertheless, non-residents demand still accounts for 26.64 percent of value added and 22 percent of employment in 2004.

Table 4
Standard IO model: Value added and employment accounted for non residents' consumption (In percentage of economy totals)

1983			1997			2004		
	Value Added	**Employ-ment**		**Value Added**	**Employ-ment**		**Value Added**	**Employ-ment**
Tourists' sectors	**29.93**	**19.07**	**Tourists' sectors**	**29.19**	**21.90**	**Tourists' sectors**	**19.93**	**14.35**
Hotels	17,13	11,32	4-5 stars	4,37	2,83	Lodging services	6,59	5,09
			1-3 stars	11,87	8,32			
			Inn's and other	0,94	0,84			
Tourists' apartments	3,40	1,28	Tourist apartments	2,75	1,61	Holiday home lodging	1,97	0,00
Renting (Non real estate)	0,32	0,34	Renting (Non real estate)	1,01	1,02	Renting (Non real estate)	0,85	0,73
Travel agencies	0,82	0,62	Travel agencies	0,81	0,84	Passengers supporting services	2,40	1,71
Bars and coffee shops	0,95	1,42	Bars and coffee shops	1,21	1,93	Food serving services	4,02	4,15
Restaurants	1,41	1,92	Restaurants	1,36	1,55			
Disco bar night clubs	0,62	0,70	Disco bar night clubs	0,54	0,39	Market recreational, cultural and sporting	0,53	0,92
			Sport activities	0,03	0,03			
						Non-market recreational, etc.	0	0
						Non-market tourism	0	0
Real Estate	3,46	0,12	Real estate	2,06	0,02	Real estate: selling	0,03	0,01
						Real estate: renting	1,61	0,26

Table 4 (continue)
Standard IO model: Value added and employment accounted for non residents' consumption (In percentage of economy totals)

1983	1997	2004	1983	1997	2004	1983	1997	2004
	Value Added	Employ-ment		Value Added	Employment		Value Added	Employ-ment
Internal transport	0,65	0,69	Land transport	1,03	1,24	Passengers: scheduled	0,01	0,01
						Passengers: non scheduled	0,48	0,62
						Freight	0,19	0,24
External transport	0,58	0,33	Sea transport	0,12	0,18	Passengers	0,34	0,14
						Freight	0,06	0,03
			Air transport	0,50	0,60	Passengers	0,62	0,31
						Freight	0,01	0
Related transport activities	0,59	0,33	Related transport activities	0,59	0,50	Freight supporting services	0,22	0,13
Non-tourists' sectors	**8.31**	**10.23**	**Non-tourists' sectors**	**7.04**	**8.22**	**Non-tourists' sectors**	**6.71**	**7.65**
Total	**38,24**	**29,30**	**Total**	**36,23**	**30,12**	**Total**	**26,64**	**22,00**

Source: Own elaboration.

Table 4 presents the results for the tourists' and non-tourists' sectors. An inspection of Table 4 makes clear that changes in classifications difficult the comparisons over time. For instance, Hotels in 1983 comprises all kind of lodging except Tourists apartments, while in the 1997 Hotels are classified by number of stars. The difficulty is even greater in 2004 since the value added generated by, let us say, Hotels is valued at basic prices instead of at purchasers' prices and broken down into several 'homogeneous' sectors such as Lodging services, Food serving services, etc.[5] At any rate, tourists' sectors included in the table account for between 75 and 80 percent of all value added generated to satisfy non-residents demand depending on the year. That interval is 65-70 percent in the case of employment.

How important is non-residents' demand for different sectors? Table 5 presents the percentage of value added[6] generated by non-residents demand over the total value added of the sector. As expected, the highest percentages occur in some of the sectors classified as tourists' sectors, such as Hotels,

[5] Notice also that the figures for 2004 underestimate the total value added and employment generated by non-residents demand, the reason being that Non-market recreational, cultural and sporting services and Non-market tourism services provided at no charge by public administrations and included in Public consumption.

[6] For individual sectors the percentage of employment coincides with that of value added.

Tourist apartments, Renting (non real estate), Travel agencies Bars and coffee shops or their corresponding 'homogeneous' sectors in 2004. However, the percentages are considerably lower in Transport services, conventionally classified as Tourists' sectors too. On the contrary, although the percentage for all Non-tourists' sectors, 14.68 percent, is pretty low, the figures are quite high in some sectors like Wine and Spirits, Non-alcoholic beverages Energy, Chemical, Wholesale trade, Fishing, Communications, Slaughtering and Meat Processing, etc.[7] These results suggest that whether a sector should be included in the class of tourists' sectors can not be decided *a priori*.

4.2. IO model with endogenous residents' consumption

All results analysed up until now take into account both direct and indirect effects of non-residents demand in the Balearics. However, what has not been captured so far is the induced effect on consumption and investment expenditures. As explained in Section 3, the induced effects of tourism on other final demand operations can partially be taken into consideration making residents' consumption expenditures endogenous. In this way, to satisfy tourist's demands the economy has to produce in addition to the required intermediate commodities consumption goods for labourers. The results presented in this section have been obtained solving the equation system (5) stated in Section 3.[8]

Table 5
IO standard model: Value added and employment accounted for non residents' consumption (In percentage of sector totals)

1983		1997		2004	
	Value added and employment		**Value added and employment**		**Value added and employment**
Tourists' sectors					
Hotels	99,75	4-5 stars	99,33	Lodging services	89,62
		1-3 stars	98,46		
		Inn's and other	98,28		
Tourists' apartments	83,86	Tourist apartments	98,69	Holiday home lodging	69,47
Renting (non real estate)	85,72	Renting (non real estate)	95,78	Renting (non real estate)	69,77
Travel agencies	69,81	Travel agencies	73,83	Passengers supporting services	89,90

[7] Tables with detailed data for all sectors included in the three IO tables are available on demand.

[8] Polo and Valle (2009) present results considering endogenous both residents' consumption and investment for 1997.

Table 5 (continue)
IO standard model: Value added and employment accounted for non residents' consumption (In percentage of sector totals)

1983		1997		2004	
	Value added and employment		**Value added and employment**		**Value added and employment**
Bars and coffee shops	56,16	Bars and coffee shops	56,40	Food serving services	41,64
Restaurants	53,89	Restaurants	39,90		
Disco bar night clubs	51,54	Disco bar night clubs	49,0	Market recreational, cultural and sporting	51,09
		Sport activities	14,04		
				Non-market recreational, etc.	0
				Non-market tourism	0
Real Estate	43,15	Real Estate	19,98	Real estate: selling	1,08
				Real estate: renting	20,46
Internal transport	25,58	Land transport	40,33	Passengers: scheduled	3,78
				Passengers: non scheduled	67,75
				Freight	17,93
External transport	29,53	Sea transport	16,68	Passengers	79,32
				Freight	17,94
		Air transport	47,08	Passengers	48,86
				Freight	3,26
Related transport activities	24,04	Related transport activities	38,45	Freight supporting services	27,11
Non tourists' sectors	**14.68**	**Non tourists' sectors**	**12.90**	**Non tourists' sectors**	**11.37**
Note: For individual sectors Value added and employment shares are the same. For Tourists, Non tourists' sectors and total the figure reported is value added share.					

Source: Own elaboration.

The aggregate results appear in the last rows of Table 3. As expected, the share of value added and employment required to meet non-residents demand go up considerably when residents' consumption is endogenous. Although the absolute increases in percentage points (see, row (3)-(2) in Table 3) of value added and employment are much greater in 1983 (16.51 and 17.61 points) and 1997 than in 2004 (9.95 and 10.65 points), the relative changes are quite big too in 2004 (37.34 and 48.40 percent value added and employment, respectively).The last two rows in Table 3 show that value added and employment figures for tourists sectors (1) are far away from the figures estimated with either the standard or the endogenous consumption version of the IO model. In other words, using models is the only sensible way to asses the weight of tourism in the economy.

Table 6
IO model with endogenous residents consumption: Value added and employment accounted for non residents' consumption (In percentage of economy totals)

1983			1997			2004		
	Value Added	**Employ-ment**		**Value Added**	**Employ-ment**		**Value Added**	**Employ-ment**
Tourists' Sectors	**35.60**	**22.66**	**Tourists' sectors**	**25.92**	**25.47**	**Tourists' Sectors**	**24.09**	**17.04**
Hotels	17,14	11,33	4-5 stars	4,39	2,84	Lodging services	6,68	5,16
			1-3 stars	11,95	8,38			
			Inn's and other	0,95	0,85			
Tourists' apartments	3,71	1,4	Tourist apartments	2,77	1,62	Holiday home lodging	2,24	0
Renting (Non real estate)	0,33	0,36	Renting (Non real estate)	1,03	1,03	Renting (Non real estate)	0,89	0,76
Travel agencies	0,98	0,74	Travel agencies	0,91	0,96	Passengers supporting services	2,42	1,73
Bars and coffee shops	1,31	1,96	Bars and coffee shops	1,65	2,63	Food serving services	5,70	5,89
Restaurants	1,97	2,69	Restaurants	2,32	2,64			
Disco bar night clubs	0,90	1,02	Disco bar night clubs	0,80	0,58	Market recreational, cultural and sporting	0,66	1,13
			Sport activities	0,11	0,12			
						Non-market recreational, etc.	0	0,01
						Non-market tourism	0	0
Real estate	5,52	0,18	Real estate	5,73	0,07	Real estate: selling	0,07	0,02
						Real estate: renting	3,17	0,51
Internal transport	1,30	1,39	Land transport	1,55	1,86	Passengers: scheduled	0,05	0,07
						Passengers: non scheduled	0,53	0,68
						Freight	0,32	0,41
External transport	1,00	0,57	Sea transport	0,22	0,31	Passengers	0,36	0,14
						Freight	0,08	0,04
			Air transport	0,71	0,87	Passengers	0,66	0,33
						Freight	0,01	0,01
Related transport activities	1,44	0,82	Related transport activities	0,83	0,71	Freight supporting services	0,25	0,15
Non tourists' sectors	**19.15**	**24.25**	**Non tourists' sectors**	**17.84**	**23.58**	**Non tourists' sectors**	**12.50**	**15.61**
Total	**54,75**	**46,91**	**Total**	**53,76**	**49,05**	**Total**	**36,59**	**32,65**

Source: Own elaboration.

The shares of value added and employment required to meet non-residents demand over the economy totals are presented in Table 6. The shares of non-tourists' sectors double when residents' consumption is endogenous (see, Table 4) and as expected the shares of tourists' sectors register more modest increases. Consumption patterns of residents and non-residents are quite different and conventional tourists' activities (Lodging, Non real-estate renting, Travel agencies, Bars, restaurants, etc.) are less affected than other sectors whose production is more domestically oriented.

Table 7 reports the shares of value added generated by non-residents demand over the sector total value added. For sectors highly specialized in producing services for tourists (Hotels, Tourists apartments' and Non real estate renting) the changes respect to those reported in Table 5 are quite insignificant. However, the impact of residents consumption appears to be quite significant (20-25 percentage points) for other tourists' sectors (Travel agencies, Bars, Restaurants, etc.) more intensively used by residents. As expected, the largest increase is in the value added share of Non-tourists sectors that increases from 14.68 up to 33.72 percent.

Table 7
IO model with endogenous residents consumption: Value added and employment accounted for non residents' consumption (In percentage of sector totals)

1983		1997		2004	
	Value added and Employment		**Value added and Employment**		**Value added and Employment**
Tourists' sectors					
Hotels	99.80	4-5 stars	99.63	Lodging services	90.86
		1-3 stars	99.14		
		Inn's and other	99.09		
Tourists' apartments	91.65	Tourist apartments	99.29	Holiday home lodging	78.86
Renting (Non real estate)	90.56	Renting (Non real estate)	97.51	Renting (Non real estate)	73.26
Travel agencies	83.62	Travel agencies	83.82	Passengers supporting services	90.81
Bars and coffee shops	77.25	Bars and coffee shops	76.90	Food serving services	59.06
Restaurants	75.61	Restaurants	67.90		
Disco bar night clubs	74.74	Disco bar night clubs	73.02	Market recreational, cultural and sporting	63.05
		Sport activities	53,67		
				Non-market recreational, etc.	1.16
				Non-market tourism	0.00
Real estate	68.84	Real estate	55.68	Real estate: selling	2.54
				Real estate: renting	40.21

Table 7 (continue)
IO model with endogenous residents consumption: Value added and employment accounted for non residents' consumption (In percentage of sector totals)

1983		1997		2004	
	Value added and Employment		**Value added and Employment**		**Value added and Employment**
Internal transport	51.12	Land transport	60.86	Passengers: scheduled	28.22
				Passengers: non scheduled	74.75
				Freight	29.78
External transport	51.23	Sea transport	29.35	Passengers	83.20
				Freight	25.03
		Air transport	67.57	Passengers	51.99
				Freight	5.33
Related transport activities	59.24	Related transport activities	54.62	Freight supporting services	30.91
Non tourists' sectors	**33.72**	**Non tourists' sectors**	**32.64**	**Non tourists' sectors**	**21.15**
Note: For individual sectors Value added and employment shares are the same. For Tourists, Non tourists' sectors and total the figure reported is value added share.					

Source: Own elaboration.

5. CONCLUSIONS

The fast pace of tourism growth into the Balearic Islands since 1950 has left is imprint in their economy highly specialized in the production of services for tourists. A rough estimate of the weight of tourism in the economy can be obtained calculating the value added and employment shares of all sectors conventionally classified as tourists'. Although there are important differences in sectors classification, prices and methodology in the 1983, 1997 and 2004 IO tables, the results indicate that the share value added in the tourists' sectors is over 40 percent and that of employment over 27 percent.

An alternative and preferable way to measure the weight of tourism in the economy is to calculate the value added and employment required to satisfy non residents' demand using the IO model. The advantage of using IO models is that they capture output and employment generated in non tourists sectors to meet non residents demand but leave aside output and employment generated in the tourists' sectors to satisfy residents' demand. Moreover, in the IO model with endogenous residents' consumption the labour income generated in the production of services for non residents increases consumption demand of the recipients of that income. Another advantage of using IO models is that they one can calculate for each sector the proportion of value added and employment generated by non residents' demand.

Value added and employment estimates obtained with the IO models indicate that the rough estimates obtained adding up the figures for tourists' sectors are way off the mark. Value added shares obtained with the standard IO model are well below the rough estimates, a clear indication that a sizable share of their production is devoted to satisfy residents' demand. Moreover, it seems the gap has increased from 1983 till 2004. In the case of employment, the rough estimate is below the IO estimate in 1983, an anomaly reversed in 1997 and 2004. On the contrary, the value added and employment shares obtained with the IO model with endogenous residents' consumption are significantly higher that the rough estimates, except for value added in 2004.

These results obtained suggest that population and per capita income growth has made some sectors conventionally classified as tourists' less and less dependent upon non residents' demand. Nevertheless, our estimates using the standard IO model indicate that non residents' demand still accounts for 26.64 percent of total value added and 22 percent of total employment in 2004. These figures are substantially higher, 36.59 and 32.65 percent for value added and employment, respectively, when residents' consumption is made endogenous. Of course, there is no need to stop here and investment could also be made endogenous using the IO framework. Or even construct a social accounting matrix to obtain estimates with extended linear (SAM) models as in Polo and Valle (2009).

Tourism has been the main 'industry' and the engine of growth of the Balearic economy during the second half of the twentieth century and all the estimates presented suggest that it will continue playing an important role in the next decades. It is therefore surprising the little attention regional authorities have paid in the past to collect reliable information about non residents' consumption expenditures on a yearly basis and elaborate regularly sound IO tables designed to single out all tourism flows, not just non residents' consumption. They seem crucial steps to study the interaction of tourism with the rest of the economy and design better public policies.

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