Tourism Economics

Tourism Economics:

A Practical Perspective

Edited by

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Cambridge
Scholars
Publishing

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This book first published 2015

Cambridge Scholars Publishing

Lady Stephenson Library, Newcastle upon Tyne, NE6 2PA, UK

British Library Cataloguing in Publication Data
A catalogue record for this book is available from the British Library

ISBN (10): 1-4438-7755-7
ISBN (13): 978-1-4438-7755-8

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INTRODUCTION

METIN KOZAK AND NAZMI KOZAK

Over the last few decades, as an inter-disciplinary, multi-disciplinary or trans-disciplinary field (e.g. Joppe, 2012; Lee, 2015), tourism has become fashionable, and has therefore received an increasing level of attention from politicians, practitioners, and academics. The politicians have found tourism to be a vehicle of transition in moving from an industry–based towards a service–oriented economy. At both the local and national levels, politicians have established close cooperation with industry people and entrepreneurs through the use of government subsidies. Practitioners have tried to integrate their efforts with those of the public, in order to develop an identity for the tourism industry and to facilitate its remarkable progress in becoming one of the most influential economic units in the world. Finally, scholars have focused their efforts on the positive and negative side effects of the remarkable progress and development that has been recorded. Such side effects are generally considered to fall into the following three categories: environmental, social, and political and economic (e.g. Cooper, Fletcher, Gilbert, & Wanhill, 1995; Hall & Lew, 2009; Matias, Nijkamp, & Sarmento, 2011; Wall & Mathieson, 2006). Scholars from different backgrounds have broadened their interests to encompass tourism studies through investigating the consequences of its development.

The economic impact of the development of tourism has been considered from a vast range of different perspectives, and largely as a recipe for developing regions or countries. Some studies have considered its impacts at the business level (e.g. Song, Lin, Witt, & Zhang, 2011), others have focused on the local or national level (e.g. Durbarry, 2004; Schubert, Brida, & Risso, 2011), and others have examined the broader picture of tourism development and its macro influence at the international level (e.g. Antonakakis, Dragouni, & Filis, 2015; Tang & Abosedra, 2014). These impact studies include both the positive and negative consequences that are likely to be observed in tourist destinations. The positive effects include the multiplier effects of tourism-related income (e.g. Archer, 1977), the contribution of tourism to the creation of new employment

opportunities (e.g. Stylidis & Terzidou, 2014), and the contribution of tourism to improvements in standards (e.g. Kim, Uysal, & Sirgy, 2013). Negative observations have been listed as the effects of tourism on the stimulation of migration (e.g. Williams & Hall, 2000), its role in increased inflation rates (e.g. Weaver & Lawton, 2001), its connection with lower quality of life (e.g. Andereck & Nyaupane, 2011), environmental degradation (e.g. Tovar & Lockwood, 2008). Such consequences have both a direct and an indirect influence on visitors (outsiders) and residents (insiders).

Furthermore, in addition to the assessment of the supply side, a number of studies have reported possible changes on the demand side. In specific terms, a much broader literature has emerged, presenting the results of empirical studies on the determinants of tourism demand, namely those factors that encourage or discourage people from participating in domestic or international tourism activities. For instance, various socio-demographic or geographic factors such as age, education, income, distance, and price are likely to influence the decisions of holidaymakers about whether to go on vacation, where to go, how long to stay, how much to spend (e.g. Bernini & Cracolici, 2015; Gokovali, Bahar, & Kozak, 2007; Kozak, Bahar, & Gokovali, 2008), and the influence of perceived risks (e.g. Kozak, Crotts, & Law, 2007). A number of models have been developed and empirically tested in an attempt to forecast any possible changes in tourism demand (e.g. Smeral, 2004, 2007, 2014; Smeral & Song, 2015). The impact of the financial and economic crisis on tourism has also been explored in the literature (Smeral, 2009, 2010).

The coverage of tourism economics is very broad, and a careful consideration of both internal and external and supply and demand-related factors is required. In line with this requirement, this volume includes 10 studies from a group of invited contributors. The first generation of scholars working on tourism had a strong background in economics, such as Hunziker (Akoglu, 2015a), Krapf (Akoglu, 2015b), Kaspar (Vanhove, 2015), Bernecker (Mazanec, 2015), Medlik (Airey, 2014a), and Archer (Airey, 2014b), and over the years tourism has attracted an increasing level of interest, from an economics perspective. On the industrial side, there has been an emphasis on the significance of tourism as an effective tool for contributing, both directly and indirectly to the expansion of local and international economies. From the academic perspective, in addition to its long-standing presence on curriculums at undergraduate and postgraduate levels, many books, research and industry projects, journal articles and conference papers have expanded the literature on tourism economics. Several academic journals (e.g. *Tourism Economics*) and

conference organisations (e.g. *Advances in Tourism Economics Conference*) address tourism economics specifically, as their names reflect.

Papers presented at international conferences have been central to the idea of producing a book as valuable as the present volume, which has been enriched by the inclusion of a range of international case studies. Over the last few decades, it has become traditional to contribute to the existing body of tourism knowledge by selecting a group of papers presented at the *Interdisciplinary Tourism Research Conference* and the *World Conference for Graduate Research in Tourism, Hospitality and Leisure* series. These events take place bi-annually, in a different city in Turkey on each occasion. The fourth series of these two conferences was successfully held in Istanbul on 4–9 June 2014, and attracted the participation of over 260 scholars from across the world. The cluster of papers included in this book address the issue of tourism development. The earlier collections released by Cambridge Scholars Publishing (CSP) focused on other themes, such as sustainability (Kozak & Kozak, 2011), tourist behaviour (Kozak & Kozak, 2013a), and tourism research (Kozak & Kozak, 2013b).

This book examines the subject of tourism economics in detail, through specific case studies of tourism operations in various countries. The authors of the papers selected for inclusion in the book are from diverse locations across the world, with 10 countries across 4 continents represented: Canada, China, Greece, India, Iran, Poland, Portugal, South Africa, Spain, and USA. The first seven contributions determine the economic impacts of tourism on destinations: these include the redistribution effects of tourism (Chapter 1, by Polo & Valle), the role of SMEs (Chapter 2, by Costa, Costa, Breda), the contribution of tourism to the local economy (Chapter 3, by Karuaihe, Tsoanamatsie, Mashile, Molokomme, & Nmemachena), the economic and political utility of national parks (Chapter 4, by Rettie), the impact of tourism income inequality (Chapter 5, by Assadzadeh & Yalghouzaghaj), the correlation between tourism development and professional mobility (Chapter 6, by Despotaki, Tsartas, Stavnoudis, & Doumi), and the role of Chinese outbound demand (Chapter 7, by Rodrigues & Breda). The remaining three chapters address diverse topics: the possibility of the re-articulation of economic power (Chapter 8, by Imara & Basu), the location-based determinants of accommodation prices (Chapter 9, by Napierala & Lesniewska), and demand forecasting based on stock market performance (Chapter 10, by Zhang & Yan).

We believe that as a reference book, this volume will be a helpful resource, full of rich materials that refer to the applications of tourism

development practices in the context of worldwide case studies. As an excellent supplementary textbook, the audience of this book may include advanced students of tourism, hospitality, leisure, recreation and economics, and users of libraries in schools that run that tourism, hospitality, leisure, recreation and economics programs. A careful synthesis of the results of the studies presented is also worthy of consideration for practitioners (such as destination managers, ministry of tourism staff, and individual tourism businesses) in order to operate better and to yield more economic and social benefits in such a challenging industry.

Last but not least, we acknowledge and thank all the authors for their remarkable contributions and for showing the commitment and continuous cooperation that has been of such help in bringing this proposal to fruition. We would also like to thank Gözde Türktarhan Yılmazdoğan for her support to produce the subject index and *Cambridge Scholars Publishing* for giving us a unique opportunity to publish this volume in such a smooth and professional manner. Without your endless support, positivity and understanding, we would never have been able to make this happen.

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CHAPTER ONE

THE BALEARIC ISLANDS: ECONOMY AND REDISTRIBUTION EFFECTS OF TOURISM

CLEMENTE POLO AND ELISABETH VALLE

Abstract

The aim of this chapter is to present the first true Social Accounting Matrix (SAM) of the Balearic Islands for 2004, the latest year an input-output table is available. In contrast to the matrix constructed by Polo and Valle (2007), the new SAM includes five distinct representative consumers rather than a single household, and distinguishes six capital goods. The new SAM enables the role of tourism in the Balearic economy to be re-examined, production sectors to be classified from the point of view of tourism, the weight of tourism and the impact of tourism growth to be estimated, and the redistribution effects of tourism to be quantified.
Keywords: social accounting matrix, weight of tourism, and redistribution effects, Balearic Islands.

1.1. Introduction

Input-output (IO) and Social Accounting Matrix (SAM) models are tools that economists have used for many decades to measure sectoral interdependencies, compare the economic structure of economies, quantify production impacts, measure structural and productivity changes, study the effects of redistribution policies, calculate the energy content of commodities, and estimate CO_2 emissions, etc.

The main advantage of the IO model is that it can be readily applied, since the database required to specify the model's parameters, an input-output table (IOT), is available for many national economies and smaller regions. The numerical specification of the SAM model, a straightforward

extension of Leontief's open IO model, requires "closing" the input-output table by linking expenditure decisions (consumption, investment, and exports) to value-added and imports. The reward to the extra effort required to "balance" household, government and external accounts is that SAM models provide information on "induced" impacts and distributive issues. Both models assume fixed "technical" and "expenditure" coefficients and often ignore resource constraints.

Economists' interest in tourism came to age when the rapid increase in per capita income in the western economies and the reduction of transportation costs after WWII gave rise to mass international and domestic tourism. By the 1970's, servicing international tourism had become a key export "industry" that accounted for large shares of output, income, labour, and tax revenues in the recipient countries (Archer, 1982). At the same time, domestic tourism had also become an important source of revenue for regions, counties, cities and recreational areas (Archer, 1978). Not surprisingly, IO models (or approaches inspired by it) have been used since the 60's to quantify the impact of international tourism in large, medium and small national economies as well as in regions, counties, cities and recreational areas all over the world. In the last two decades, SAM and CGE models have also been applied to this end.

This chapter presents the first true social accounting matrix of the Balearic Islands (BI) and explores several important issues for the future of the Balearic Island economy using a SAM model. Section 2 presents a panoramic of SAM based tourism studies. In Section 3, the main features of the 2004 SAM of the Balearic economy (SAM-04) are outlined and the basic algebra employed by SAM models is presented. The generalised multiplier matrix, Rasmussen indices, the weight of non-resident consumption, the impact of an increase in non-resident demand, and the redistribution effects of tourism are discussed in Section 4. The main conclusions of this research are presented in the final section.

1.2. Literature Review

As is well known, a SAM is a double-entry table that records all transactions that characterise the circular flow of income: production, distribution, and expenditure. The matrix concept was first introduced in the revised framework of the 1968 System of National Accounts (SNA-68) developed by the UN as a device to present the information provided by the interconnected main accounts in a more transparent way and avoiding unnecessary duplications. The SNA-68 manual, however, only provided

detailed guidelines to disaggregate the SNA-53 production account and recommended including an IOT in the National Accounts framework.

Although a SAM can be viewed as just a compact and efficient way of presenting National Account's information, or even considered a mere extension of an IOT, a SAM is much more than that. As Pyatt and Round (1985, p.3) put it, a SAM tells us "who gets what, and how much, as a result of the economic process of income generation". This implies that distribution and redistribution operations are treated on the same footing as production activities. Therefore, a true SAM should provide a sensible breakdown of households by applying relevant socio-economic criteria in order to capture the process of income distribution and the effects of redistribution policies.

SAM matrices have been employed to numerically specify SAM models used to analyse tourism impacts in national, regional and local economies. The fact that many national statistical offices in developed economies publish IO tables along with national accounts, but only a few of them elaborate SAMs has hampered its use in tourism studies. For many developing countries, SAMs have been assembled to explore "the links between growth, inequality and employment, and… how the extent of poverty and changes in it are related to familiar issues of savings and investment, balance of payments, production and distribution" (Pyatt & Thorbecke, 1976). SAMs constructed for these purposes can nevertheless be employed to quantify the role of tourism in the economy and its impact on all endogenous accounts, including households.

An early application is West's (1993) analysis of tourism in Queensland (Australia) which combines a regional SAM with econometric time series analysis. The basic information for production activities was drawn from the 1985-86 Queensland IO table, while visitor expenditure, subdivided into intrastate, interstate (the largest), and overseas, was estimated with the information provided by the Queensland Tourist and Travel Corporation. Tourism impacts for the three tourist types were calculated by comparing the values of "various economic indicators derived by the model" with and without tourism expenditure, assuming that activities, factors and institutions are all endogenous.

Wagner (1997) developed a SAM for Guaraqueçaba, a small rural community in Brazil, to study the impact of tourism and its effects on households. A peculiarity of the Guaraqueçaba SAM is that the base year is 1989-94 rather than a single year, a decision Wagner justified by the singularity of the economy and the scarcity of data.[1]

Polo and Valle (2007) constructed a square regional accounting matrix (RAM) for the Balearic Islands in 1997. They compared the effects of

exogenous injections in three scenarios: first, production accounts were the only endogenous accounts; second, capital and labour and the resident household were also taken as endogenous; and finally, the savings-investment account was also considered endogenous. They also compared the effects of a 10% fall in non-resident consumption in the three models. In the first case, weighted average production fell 3.21%, gross value-added 3.61%, and employment 3.02%. The falls were substantially larger when the primary factors, domestic household, and savings-investment account were also endogenous (5.52, 6.0 and 5.5%, respectively). Polo and Valle (2008, 2009) compared these results with those obtained with IO models specified with domestic coefficients.

Polo *et al.* (2006, 2008) also analysed the impact on employment and added value of a hypothetical change in the expenditure distribution of the non-resident consumer, using both IO and SAM models. In particular, they calculated the increase in demand for 4-5 star hotel services needed to offset a decline in demand in the 1-2-3 star hotel category so that neither employment nor added value would be affected. Their results indicate that in order to keep value-added constant, 505 (499) extra beds in the 4-5 star category using the IO (SAM) model, are required to compensate a reduction of 1,000 beds in the 1-2-3 star hotel segment. This information may be of interest for those who view upgrading hotel services as an option to alleviate congestion and environmental degradation in mass tourism destinations.

Jones (2010) estimated the impact of tourism in Mozambique using a 'tourism-focused' SAM.[2] In the reported results, all accounts except investment and the rest of the world were considered endogenous. The normalised column sums in the generalised multiplier matrix (column sums divided by the average value of all column sums) show that the injections directed to all types of foreign visitors have above average impact whether one looks at all accounts, production accounts, household income or value-added. Domestic tourism impacts are slightly above average, but for two accounts – firms and government and investment tourism – they are below average. Only government revenue multipliers are larger than average and larger than foreign tourists' multipliers.

Although these results indicate that "tourism is a sector with comparatively strong backward linkages across production, household income and value-added", Jones calls the attention to two weak points: the fragility of backward linkages of domestic tourism and the shortage of scarce production factors.[3]

1.3. Methodology

A consistent SAM is simply an ordered square matrix with as many rows and columns as operations. A row (the ith) and its corresponding column (ith) indicate the sources of income of the account and its outlays, respectively. The SAM-04 of the Balearic economy is a 62x62 square matrix that provides a complete x-ray picture of transactions in 2004. It includes 24 accounts corresponding to the production sectors in the IOT, 12 consumption goods and services, and 6 investment goods. There are 2 accounts for inventory changes and fixed capital investment, 2 for primary factors (labour and capital), 10 for all economic agents (corporations, 5 representative domestic households, non-resident households, government and non-profit institutions serving households, and the external sector). There also several auxiliary accounts, one for transfers and five for the distinct tax operations (net taxes on production, net taxes on products, social contributions, personal income tax, and corporate tax) included in the SAM.[4]

The inter-sectoral flows of production commodities are directly taken from the 2004 IOT of the Balearic Islands. Row sector entries show the different sources of income for the sectors: intermediate sales and final sales to domestic households, non-domestic households, government and non-profit organizations, the savings-investment account (gross investment), and the foreign sector (exports). Consumption commodities are differentiated from production commodities and related through the so-called conversion matrix. For the consumption commodity accounts, row entries show household purchases of each commodity, and column entries reveal the payments made to production activities[5] and net taxes on products paid to the government. There are also six distinct capital goods made up of production goods. Labour, capital, and the government receive income from production activities (labour and capital income and net product taxes) and distribute it among households, corporations and the government.

Resident households receive, in addition to labour and capital income, property income, and several current transfers and foreign sector transfers. They spend their income on consumption commodities and pay income taxes and transfers to the foreign sector. Household savings, the difference between current revenue and expenditure, go into the savings-investment account.

The government collects taxes from the auxiliary tax accounts (SS contributions and net taxes on production, net taxes on products, and personal income, and corporation taxes). Government revenue is employed

to finance public consumption and investment and transfers. Likewise, corporations draw their income from the capital account and pay property income to resident households and corporation tax to the government. The difference between income and expenditure for both government and corporations are savings that go into the savings-investment account.

Lastly, income for the external sector accrues from sectoral imports and other resident transfers and is used to finance exports and transfers to residents. The capital account shows how saving, both private and public, finance investment made in the islands. The difference between these two figures indicates the existence of an important financing capacity in the Balearic economy.

Noteworthy contributions of this article are the breakdown of domestic households, the distinction between production and consumption commodities, and the disaggregation of capital goods. As earlier indicated, the SAM distinguishes 5 representative households defined with information drawn from the national continuous budget survey (INE, 2004), a quarterly national survey that only includes around 300 households from the BI. Given the data limitation, the five representative households were defined by taking into account the characteristics of the main breadwinner: working, working but temporarily absent, unemployed, retired, and disabled. Of course, had we had a large sample, it would have been finer and more interesting.

1.3.1. The algebra of SAM models

Let X be a SAM, i.e., a square N×N matrix that records transactions arising in the circular flow of income (production, income generation, income distribution, and income expenditure) of an economy. The elements in the *i* th row indicate the sources of income accruing to the *i* th account, and those in the *i* th column its expenditures. Thus, row (column) sums indicate the total income accruing (spent or saved) by account. In a SAM, row totals (revenues) equal column totals (outlays):

$$\sum_{j=1}^{N} \tilde{X}_{ij} \equiv \tilde{Y}_i \equiv \sum_{j=1}^{N} \tilde{X}_{ji} \tag{1}$$

A SAM may include accounts for industries, commodities, institutional sectors (households, non-profit institutions, corporate sector, public administrations, and foreign sectors), capital (savings-investment), and as many auxiliary accounts as needed. Equation (1) implies that the value of

sales equals total costs in any industry; the value of demand equals the value of supply for commodities; and total revenue equals total expenditure and savings for institutions. Expenditure coefficients can be defined as

$$\tilde{a}_{ij} \equiv \frac{\tilde{X}_{ij}}{\tilde{Y}_j} \tag{2}$$

and equation (1) can be expressed in terms of them

$$\tilde{Y}_i \equiv \sum_{j=1}^{N} \tilde{a}_{ij} \tilde{Y}_j \tag{3}$$

The right hand term in (3) can be split into two terms: one for income accruing from the first M accounts, considered endogenous, and the other for the remaining accounts taken as exogenous:

$$Y_i \equiv \sum_{j=1}^{M} \tilde{a}_{ij} Y_j + \sum_{j=M+1}^{N} \tilde{a}_{ij} Y_j \qquad i = 1,2,...,M \tag{4}$$

Identities (4) become a system of equations when exogenous income and expenditure coefficients are assumed to be fixed. Assuming that units of products, commodities and factors are chosen so that their prices are equal to 1, some fixed expenditure coefficients (inter-industry, industry-commodity, primary factors) can be interpreted as technical coefficients and the results obtained with SAM models can be compared to those of IO models.[6] For unitary prices, balance conditions (4) can be interpreted as zero profit conditions for industries, demand and supply equilibrium conditions for commodities, and budget constraints for institutions. Having made these assumptions we drop the tilde from the expenditure coefficient.

Once the partition of accounts is done, matrix A can be partitioned accordingly

$$A = \begin{pmatrix} A_{mm} & A_{mn} \\ A_{nm} & A_{nn} \end{pmatrix}$$

and (4) be written as

$$y^m = A_{mm} y^m + A_{mn} \bar{y}^n \tag{5}$$

where y^m and $\bar{y}^n$ are the vectors of endogenous and exogenous income, respectively. From equation (5) one can derive the vector of endogenous income

$$y^m = \left(I - A_{mm}\right)^{-1} A_{mn} \bar{y}^n = M_m A_{mn} \bar{y}_n = M_m d_m \tag{6}$$

with d_m as the vector of exogenous income $A_{mn}y^n$. M_m is the multiplier matrix and m_{ji} can be interpreted as the increase in income of account *j* brought about by a unit injection into account *i*.

1.3.2. Redistribution effects in SAM models

The effects of exogenous injections on relative incomes can be easily calculated. First, the vector of relative incomes is written in matrix form

$$y = \frac{y^m}{\sum_{j=1}^{M} Y_j} = \frac{M_m d}{e^T y^m} \tag{7}$$

with e^T as a row vector of ones. Then variation of the vector of relative incomes resulting from exogenous injections is given by the redistribution matrix

$$R = \frac{\partial y}{\partial d} = \begin{pmatrix} \frac{\partial y_1}{\partial d_1} & \frac{\partial y_1}{\partial d_2} & \cdots & \frac{\partial y_1}{\partial d_m} \\ \frac{\partial y_2}{\partial d_1} & \frac{\partial y_2}{\partial d_2} & \cdots & \frac{\partial y_2}{\partial d_m} \\ \cdots & & & \\ \frac{\partial y_m}{\partial d_1} & \frac{\partial y_m}{\partial d_2} & \cdots & \frac{\partial y_m}{\partial d_{2m}} \end{pmatrix} = \frac{M_m e^T y^m - y^m e^T M_m}{\left(e^T y^m\right)^2} = \frac{1}{e^T y^m}\left(M_m - \frac{y^m e^T M_m}{e^T y^m}\right) \tag{8}$$

whose r_{ji} is

$$\frac{\partial y_j}{\partial d_i} = \frac{1}{e^T y^m}\left(m_{ji} - \frac{Y_j \sum_{k=1}^{M} m_{ki}}{\sum_{k=1}^{M} Y_k} \right) \tag{9}$$

The sign is determined by the parentheses and is positive if and only if

$$\frac{m_{ji}}{\sum_{k=1}^{M} m_{ki}} \geq \frac{Y_j}{\sum_{k=1}^{M} Y_k}$$

i.e., if the marginal relative effect on *j* (the term on the left-hand side of the equality) is greater than the relative income of *j* (the right-hand term of the inequality). It can easily be checked that the sum of the elements of each column of the redistribution matrix is zero.

$$e^T \frac{\partial y}{\partial d} = \frac{1}{e^T y^m}\left(e^T M_m - \frac{e^T y^m e^T M_m}{e^T y^m} \right) = 0 .$$

1.3.3. Numerical specification

Leaving aside for the moment concerns about the underlying assumptions made in a SAM model, the fact is that they have been routinely employed to measure the weight of tourism in the economy and to quantify tourism impacts on output, income and employment. These models can be applied if the appropriate information is available: a SAM for the economy at hand and a vector of tourist expenditure by sector valued at the base year prices. Of course, one may subdivide the tourist vector into as many vectors $\left(d = d_1 + d_2 + ... + d_K\right)$ as types of tourists the data enable to be differentiated and calculate their individual contributions and impacts.[7]

If a SAM is available, the only difficulty in applying the model is to cast tourist expenditure into a vector *d* congruent with the classification employed and the way transactions are valued in the SAM. To begin with, when the SAM is dated at year *t* and the impact occurs at *t+s*, vector e_{t+s} has to be valued at time *t* prices.[8] Moreover, tourist expenditure includes

distribution and transportation margins and product taxes that need to be eliminated to make them congruent with SAM. As Cooper and Pigram (1984) point out, they have to be valued as transactions are in the table, i.e., excluding margins and taxes. In the case of domestic tourism, adjustments also have to be made to deduct expenditure that would have been made anyway and add pre-trip expenditure not included in reported tourist expenditure. The development of Tourism Satellite Accounts (TSA) can provide adequate estimates of tourist demand to be used jointly with SAMs to analyse its impact on the economy.

1.4. Results

SAM models enable the role of tourism to be examined from several points of view. Firstly, only production sectors are taken as endogenous, as occurs in input-output models (IOM), and the SAM-IOM label is used where results are reported. Secondly, productive production factors and the five representative households are also taken as endogenous, and the label SAM-HOU is used in this case. Finally, the savings-investment account is also included in the endogenous subset and the results appear labelled as SAM-INV.

1.4.1. A tourism-oriented sectoral classification and links

In the case where only production activities are endogenous, SAM-IOM, there are two sectors, 'Related transport activities'[9] and 'Accommodation services', where non-resident demand explains over four fifths of total production. There are five sectors ('Restaurant services'; 'Transport services'; 'Computer, R&D and Other business services'; 'Market services: Education, health and cultural'; and 'Energy products') where the production share accounted for by non-resident demand lies in the 25-50% interval. There are 10 sectors, including 'Agriculture'; several industrial sectors ('Food and Drinks', 'Textile and shoes', 'Chemical products', etc.); and some service activities ('Telecommunications', 'Financial services' and 'Trade' and 'Real estate'), where tourist demand explains between 10% and 24% of production. Finally, we find 8 sectors where the share accounted for by non-resident demand is below 10%, with 'Non-market services' at the bottom of the list. The aggregate share is 27.9% in this scenario.

This aggregate share is considerably larger in the SAM-HOU and SAM-INV scenarios: 36.56% and 40.08%, respectively. The main increase occurs when labour, capital, and households are considered endogenous

and the induced effect of non-resident demand on domestic consumption is taken into account. Highly tourism-oriented sectors such as 'Related transport activities' and 'Accommodation services' record small changes, but most sectors' shares – including conventional tourist sectors such as 'Restaurant services' as well as many industrial and service sectors – undergo substantial increases (10-15 percentage points). In the light of these results, it seems safe to conclude that tourism accounts for approximately 40% of production in the BI economy.

As is well known, sectoral output multipliers are obtained by adding the column entries of the generalised multipliers matrix (GMM) and can be interpreted as the effect of adding one extra-unit of final demand to any given sector. In the SAM-IOM scenario, the sectors with the largest pulling index are 'Related transport activities' (2.3213) and 'Construction' (2.0764) followed by some industrial and agricultural sectors. 'Accommodation services' have a relatively low value (1.4619). The ranking, however, undergoes significant changes when labour and capital, households, and savings-investment accounts are endogenous. In the two alternative scenarios, SAM-HOU and SAM-INV, 'Restaurants', 'Related Transport' and 'Accommodation services' are among the sectors with the largest pulling index.

Demand multipliers, obtained by adding the rows entries of the GMM, indicate the impact on each sector of a uniform expansion of demand. In the SAM-IOM, the largest pushing index corresponds to 'Trade' (3.4799), 'Computer, R&D and other business services' (2.5365) and 'Transport services' (2.0995), indicating the importance of these sectors for the rest of the economy. In the two other cases, SAM-HOU and SAM-INV, the production accounts most affected by a uniform expansion of demand appear to be 'Trade', 'Foods and drinks', 'Financial services', 'Real Estate' and 'Computer, R&D and other business services'. 'Construction' has the largest index in the SAM-INV scenario. Among the non-production accounts, working households, labour, and capital show the largest figures.

The multiplier analysis is summed up by the Rasmussen indices[10] that define key sectors, i.e., whose demand and output multipliers exceed the all-sectors average. In the SAM-IOM model, the key sectors are 'Transport services', 'Construction', 'Wood, paper, cement, glass, ceramic articles' and 'Real Estate'. In the SAM-HOU model, it turns out that the subset of key accounts include 'Trade', 'Real Estate' and 'Restaurant services' among the production sectors and 'Housing, water, electricity, gas and other fuels', 'Labour', and 'Working households' among the other accounts. Finally, the key sectors in the SAM-INV scenario include, in

addition to those already mentioned, the 'Capital' and 'Savings-investment' accounts.

1.4.2. The weight of tourism and the impact of tourism growth

We have already shown the sectoral and aggregate production shares accounted for by non-resident demand. This information is completed in Table 1.1 which provides aggregate value-added, employment and import shares accounted for by tourist demand.[11]

Table 1.1 – Gross value-added, employment and imports accounted for by non-resident demand (2004)

	Gross value-added (000€)	%	Gross wages (000€)	%	Imports (000€)	%
SAM-IOM	4,884,203	27.90	105,568	23.16	2,194,594	20.85
SAM-HOU	6,399,013	36.56	146,679	32.18	3,364,216	31.96
SAM-INV	7,015,367	40.08	165,390	36.28	3,816,753	36.26
Economy total	17,504,442		455,862		10,527,248	

The results of these simulations show the enormous weight of tourism in the main macroeconomic variables: value-added, gross wages, and imports of goods and services. In the SAM-HOU scenario, i.e., when household consumption is endogenous 36.56% of gross value-added generated in the economy is due to non-resident consumption. Since the share of gross wages in value-added is smaller than the gross operating surplus share, the share of gross wages accounted for by tourist expenditure is a bit lower – 32.18%. It can also be seen that almost one third of imports (31.96%) go to satisfying non-resident demand.

Given the paramount importance of tourism in the BI economy, it is worth estimating the contribution tourism has made to economic growth over the last four years. International tourist arrivals resumed growth in 2009 after a decade of stagnation and recession. International visitors increased from 9,037,000 in 2009 to 11,111,300 in 2013 and non-resident expenditure also jumped from 8,790 million euro in 2009 to an all-time peak of 10,671 million euro in 2013.[12] Taking into account that the accumulated growth of the CPI was 8.9% in those years, we assume that tourist expenditure in real terms grew approximately 12.5% over the four-year period.

Now we analyse the effects of simulating a 12.5% increase in tourist expenditure in the three scenarios. In the SAM-IOM scenario, service sectors such as 'Accommodation' and 'Travel services', aimed at satisfying non-resident demand, achieve increases of over 10%. The increase in other tourist oriented sectors such as 'Transportation services' and 'Restaurant services' is over 5%, and in 'Market services' is 4.36%. It is interesting to note that while the former are almost unaffected when domestic households are endogenous (model SAM-HOU) the impact is substantial in the other three sectors. In this scenario, the increase in working households' income is 3,7% and the effects on many other sectors of the economy ('Products of agriculture', 'Electricity, water and gas', 'Energy products', 'Foods and Drinks', 'Motor vehicles', 'Telecommunication services', 'Financial Services', 'Real Estate', etc.) is quite substantial. In the SAM-INV scenario, savings-investment increases 2.31%.

1.4.3. Redistribution effects of tourism

As indicated in Section 3, exogenous injections do alter the relative position of endogenous accounts. Positive entries, $r_{ij}>0$, in column *j* of the (normalised) redistribution matrix *R* indicate the accounts whose relative income increases (the winners) while negative entries, $r_{ij}<0$ are those that undergo a relative income loss (losers) after an exogenous unitary injection to account *j*. Total redistributed income (TRI) is defined as the sum of all positive entries (equal to minus the sum of all negative entries). The weighted sum of row entries, on the other hand, shows the effects of an exogenous injection allocated between all endogenous accounts using sectoral weights calculated as the ratio of each entry in the exogenous accounts to the total. In the results presented below, all accounts are endogenous (model SAM-INV) except non-resident consumption, government consumption, and exports, which are exogenous.[13]

An exogenous unitary injection into, let us say, sector 1 ('Products of agriculture, hunting, forestry and fishing') has a total impact of 2.387, with 1.07 corresponding to sector 1 and 1.317 to the indirect and induced effects on the other 23 sectors. Sector 13 ('Trade'), in this case, with an absolute increase of 0.229 units is the most benefited by the exogenous injection. The normalised redistribution matrix shows that the only two sectors whose relative income increases are those with positive entries, sector 1, 1.0252 (86.94%) and sector 13, 0.1540 (13.06%). Total redistributed income, 1.1792, is the sum of all positive entries.

Tourism oriented sectors, such as 'Related transport activities' (17), 'Accommodation services' (14), 'Restaurant services' (15) and 'Transport

services' (16), record larger than average impacts (2.2674). The income redistribution matrix also indicates that the amount of income redistributed is larger than average in 'Related transport activities' (1.2678) and 'Transport services' (1.1213). Sectors that improve their relative position as a result of exogenous injections into tourist oriented sectors are 'Products of agriculture, hunting, forestry and fishing' (1), 'Electricity, water and gas' (2), 'Energy products and petroleum' (3), 'Food and drinks' (5), 'Motor vehicles and trailers' (10) and 'Other personal services' (24). Injections directed to 'Related transport activities' (17) do also improve the relative position of other highly touristic sectors such as 'Accommodation services' (14) and 'Transport services' (16).

If we consider the GMM submatrix for labour and capital, the two production factors in the model, absolute impacts of exogenous injections directed to highly touristic sectors such as 'Accommodation services' (14), 'Restaurant services' (15) and 'Related transport services' (17) have powerful effects on total labour and capital income. Only the effects of injections directed to 'Other personal services' (24), 'Trade' (13), 'Non-market services' (23) and 'Real Estate' (20) are comparable to them. However, the relative position of labour worsens when injections are directed to most service sectors, including the five highly touristic sectors.[14] On the contrary, injections directed to most non-service sectors, including manufacturing sectors and 'Construction' improve the relative position of labour, with the exception of 'Agriculture, forestry, hunting and fishing'.

Finally, we study the absolute impact of injections on the five households included in the model. Of course, all households record positive impacts although there are significant differences depending on the sector the injection goes into. In the case of highly touristic sectors, the largest impacts occur when the injection goes into 'Accommodation services' and 'Restaurant services'.

As expected, around 80% of the total injection into households goes into 'Working' households, no matter whether the injection is allocated using average weights or non-resident consumption weights. More surprisingly, perhaps, 'Retired' households account for 14.5% of the total impact in both cases too. The apparent paradox is resolved when one takes into account that capital income is important for retired people. Thus, although government financed retirement pensions are kept constant in this scenario, injections boost capital income and the disposable income of retired households. Nevertheless, the results included in the redistribution matrices indicate that only 'Working' households and 'Households

temporarily out of work' improve their relative income. This result is independent of the sector the injection goes into.

1.5. Conclusion

This chapter presents the first social accounting matrix of the Balearic Islands for 2004 with several households and capital goods. The matrix was constructed by the authors using the input-output framework and the (incomplete) regional accounts published by the BI Autonomous government for 2004. Further information on household characteristics, consumption patterns, and asset holdings was provided by the subsample of households in the National Continuous Budget Survey (INE, 2004) living in the BI. Unfortunately, the small number of households living in the BI made it impossible to draw a finer disaggregation of domestic consumers. Finally, a consistent square SAM was calculated using the Robinson et al. (2001) Cross Entropy Method.

The SAM-04 was used to specify three SAM models numerically. In the SAM-IOM, only the 24 production activities are endogenous. In the SAM-HOU, factor accounts and domestic consumers are also endogenous. Finally, in the SAM-INV model the savings-investment account is added to the endogenous accounts.

The estimates derived using the SAM-INV model indicate that non-resident consumer demand accounts for 40.08% of gross value-added, 36.28% of employment and 36.26% of imports. There are, of course, large differences as to the importance of non-resident consumption in production activities. For those we call highly touristic sectors – 'Accommodation services', 'Restaurant services', 'Transport services', 'Related transport services' and 'Market services: Education, health and cultural' – the role of tourist demand is overwhelming. An interesting finding is that the figures obtained with the SAM-HOU model are quite close to those derived by Polo and Valle (2011) with an extended IO model. It is reassuring for researchers that do not have the data required to construct a SAM on hand.

The results obtained with the generalised multiplier matrix indicate that only 'Related transport services' and 'Transport services' have above average backward linkages in the SAM-IOM. However, other tourist oriented sectors such as 'Accommodation services' and 'Restaurant services' are pulling sectors when consumption and investment are endogenous (SAM-HOU and SAM-INV models), reflecting the importance of the income generated in sectors oriented to satisfying non-resident demand. On the other hand, only 'Related transport services'

among the highly touristic sectors has above average forward linkages. In other words, tourist oriented sectors are key to other sectors in the more encompassing models but their activity (except for Restaurants) is not triggered by uniform injections.

International arrivals and total expenditure resumed growth in 2009. We estimate that non-resident expenditure might have increased by 12.5% in real terms over the four year period. It turns out that an impact of this size should have increased production, gross value-added, and employment in most sectors, particularly in highly touristic sectors. In the more encompassing model, SAM-INV, the increase in total production in highly tourism-oriented sectors such as 'Related Transport services' and 'Accommodation', exceeds 10%, whereas in 'Restaurant services', 'Transport services', and 'Market services' it is over 6%. For most sectors, the impact is between 2 and 6%. At any rate, there is a large, positive impact that has somewhat softened the negative impact of the Great Recession.

Injections accruing to tourism-oriented sectors also have impacts on incomes and relative incomes. In general, the redistribution matrices presented in this chapter indicate that injections into one sector have positive impacts on the others, but rarely improve the relative income of sectors other than the one receiving the injection. In the case of injections into the five highly touristic sectors, the accounts that improve their relative position are 'Products of agriculture, hunting, forestry and fishing', 'Electricity, water and gas', 'Energy products and petroleum', 'Food and beverages', 'Chemical products', and 'Motor vehicles and trailers'. Injections into 'Related transport services' also increase the relative position of 'Accommodation services' and 'Transport services'.

It also appears that injections into highly touristic sectors improve the relative position of capital versus labour. It should be said that this feature also occurs with other service sectors. Clearly, an injection allocated using non-resident consumer weights is far more favourable to capital than an injection allocated using average final demand weights. Finally, injections directed into the 24 productive activities do improve the relative income of 'Working' and 'Employed temporarily absent' households. In this case, there are no significant differences between highly touristic sectors and other sectors. Of course, these results should be interpreted cautiously: they do not mean that injections do not raise labour and other household ('Unemployed', 'Retired' and 'Non-economic activity, 'Unable to work') income, but simply that the impact is not large enough to improve their relative incomes.

Tourism has played and continues to play a key role in the Balearic economy and more attention should be paid by regional authorities to collecting more accurate, disaggregated data on both international and domestic non-resident consumers. In order to improve the disaggregation of households presented in this chapter, we also encourage the Autonomous government to compile its own information on domestic households to improve the reliability of data on household consumption patterns, the state of the labour market, and sources of income. Moreover, it would be very helpful for researchers to have a complete set of regional accounts and periodic input-output tables.

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