An Assessment of the Tourism Impact in the Uruguayan Economy

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RESUMEN

This Project will present an assessment of the Tourism Impact in the Uruguayan Economy using an Input-Output analysis. Despite the recent criticisms this methodology continues being used and in the case of Uruguay there aren't antecedents of this type of researches. This could be considered the first step for trying to measure the effects of the tourism Industry on Intermediate Consumption and Value Added. The result show us that the Tourism represent more than the 16% of Uruguayan economy, when consider not only the direct effects but also the secondary effects. Moreover the majority of sectors related with tourism are key or strategic sector on the economy with higher multiplier effects.

Palabras clave: *Input-Output, Sectores Estratégicos, Sectores Clave, Multiplicadores, Turismo.*

Introduction

This research provides an assessment of the importance of tourism in Uruguay and estimates the impact on its economy of a variation in tourist demand. Uruguay is a small country with more than 3.2 million of inhabitants that receives near than 2.9 million of visitants per year. The Tourism and Sport Ministry (MTS) show how the number of international visitors increases of 22% with regarding 2010. On the other hand incomes from tourism were nearly U$S 2172 million in 2011 increasing a 46.9% respect to the previous year.

It is known that tourism has a great impact on the destinations and in different dimensions like economic, social, cultural and environmental. From the economic perspective tourism impacts the sales, profits, jobs, tax revenues, and income. The total economic impact of tourism is the sum of direct and secondary effects that could be divided into indirect and induced effects and these are recognized as fundamental in the case of developing countries like Uruguay.[2]

Several techniques of analysis have been applied to evaluate the economic effects of tourism; Wanhill (1983) classified them into feasibility studies, social cost-benefit analysis, impact studies and econometric models.

The impact´s studies try to make a quantitative assessment of the effects of tourism expenditure on national or regional economic aggregates, such as Gross Domestic Product (GDP) and employment. In the last year the World Tourism Organization (UNWTO) has developed the Tourism Satellite Account (TSA) that is no more than a set of definitions, classifications integrated into tables, organized in a logical, consistent way, which allows one to view the whole economic magnitude of tourism in both its aspects of demand and supply (UNWTO, 2000)

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1 Magister en Economía del Turismo y Medio Ambiente de la Universidad de las Islas Baleares (España).
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2 *Direct effects* are production changes associated with the immediate effects of changes in tourism expenditures. *Indirect effects* are the production changes resulting from various rounds of re-spending of the tourism industry's receipts in backward-linked industries and *Induced effects* are the changes in economic activity resulting from household spending of income earned directly or indirectly as a result of tourism expenditure. (Stynes, 1997)

However, the UNWTO mentions that the TSA does not include these secondary effects and considers three types of macroeconomic models that are currently used to explore this impact: the Input-Output Model (IO), the Social Accounting Matrix (SAM) and the Computable General Equilibrium Model (CGM). (Frechtling, 2011)

The first IO applications for tourism impact analysis were done in the early 1960s and focused in the broader phenomenon of recreation. Archer's paper in 1982 was pioneering in the use of IO models for the tourism industry, in a decade where an important number of researches were developed using the standard model.

From a theoretical point of view Fletcher (1989) demonstrated the importance of IO analysis, like a general equilibrium approach, to study the economic impact of tourism, because of its flexibility and level of detail. Nevertheless, it is mentioned by the author the requirements of a series of assumptions that do not truly reflect reality.

In this sense, Briassoulis (1991) mentioned that the analysis only represent a part of the economic value of tourism and criticized the problem that technical coefficients were constant so the substitution between factors was impossible. In addition IO model assumes economic sectors with an homogenous output but one of the specific characteristic of touristic industry is the heterogeneity defined by Vanhove(2005) as amalgam of products and services.

In spite of the criticism, in the 1990s the IO analysis continued being used, and they are mentioned by Polo and Valle (2008) highlighting research like: Fletcher, 1994; Archer, 1995; Archer and Fletcher, 1996; Henry and Deane, 1997; Frechtlingand Horvath, 1999; Crompton et al, 2001; and Tyrrell and Johnston, 2001.

Dwyer, et al. (2004) noted that the IO technique had a serious limitation because it ignores the negative influences of an expansion in touristic production associated to a fluctuation of limited resources between sector that could result in a reduction in the output of other industries. The authors proposed as an alternative the use of CGE, however, Polo and Valle (2008) demonstrated that under sensible closure rules the result of both model in the case of the Balearic Island are similar.

In Uruguay, there have been attempts to improve the measurement of the tourism impact. In this sense the MTS together with the UNWTO and the University of Uruguay have developed a preliminary exercise of the TSA whose result showed that the Tourism Industry represent 6% of GDP for 2010.

Additionally Brida et al. (2008) studied the contribution of tourism principally in growing number of Argentinean visitors through an econometrical analysis. The results showed the existence of one cointegrated vector among real GDP per capita, Argentinean tourist's expenditure and real exchange rate between Uruguay and Argentina.

In the last two years a series of research about tourism was elaborated in the framework of the University of the Republic of Uruguay, like the creation of a tourism price index, Alonsoperez et al. (2010) and the quantification and qualification of tourism employment, Altmark and Larruina (2011).

The aim of this research is to use a standard IO model to measure the different effects of tourism on the Uruguayan Economy and to estimate the impact of an 88% rise in the inbound demand flow, considering with especial attention the incoming tourism from Argentina. Then, an extended IO, where the demand is partially endogenized is estimated to obtain another part

of the tourism impact (induced effects) on the economy and to compare it with the previous results.

The rest of the paper is divided in three sections. In the next, the main traits of the Uruguayan economy are presented using the National Accounts and particularly the Use and Supply Table (UST) for 2005 and a brief characterization of the Uruguayan tourism are showed. The following section shows the IO approach to the tourism in Uruguay, to explain the used methodology, the main assumptions and the results of the standard, extended model and the effects of a variation in nonresident tourism demand using IO models is presented. Concluding remarks are included in the final section.

The economy of Uruguay and the growth of tourism

Uruguayan GDP was growing at rate close to 4-7 per cent a year at constant price through the years 2004 to 2008, after the crisis in 2002.[3] In year 2009 Uruguayan economy grew at a slower rate than previous years, due to a decrease in private investment in a context of economic crisis, however in 2010 the highest rate of growth of the decade 8.9 was driven by growth of both private consumption and investment. Annex 1.

In the last year, according to the Economy Institute IECON report (2011), the Uruguayan economy grows 5.5% determined mainly by domestic demand and to a lesser extent by external; it is projecting a GDP of 48,500 billion. The expansion of the Uruguayan economy is supported by most of the productive sectors and has a positive impact on the labor market, where the number of employees grows on average 3.4% compared to 2010, and the unemployment rate would be at year average of about 6.2%. In the case of the government, it got a similar deficit a year earlier (1.0% of GDP) and inflation is located above the roof of the government's target range (8%).

This annual growth of the Uruguayan economy has been caused by the increased level of production of all activities. Nearly 26% of GDP is equivalent to the Manufacturing Industry (standing out in this to the Food Industry with 10.8%). But in recent years there was a drop in the weight of this sector in favor of an increase in the sectors of Trade, Transport and Communications. The trade sector grew 12.6% to 14.7% while transport and communications sector over 9.3% to 13.4% mainly due to the dynamism that was the communications sector in the country it duplicated its participation in GDP from 3% to 7.2 %.

Other important areas are the primary activities where, although its share remained constant over the years, it is interesting to note the change that happened within the sector. One can observe an increase in the agricultural sector in compensation of a decline in the animals hunting, ceased it to be the main country's primary activity. Table A11 in the Annex 1.

Finally, considering the dynamics of the sectors, it can be conclude that the Construction and Trade have maintained their growth rates above 10%. But the most remarkable is that the growth of transport and communications sector has been throughout the period of over 11%

3 The banking crisis was mainly triggered by the massive withdrawal of the assets of Argentine in the Uruguayan banking, and as a direct economic consequence of this, real wages was a sharp drop, reaching a floor between 2003 and 2004 with a loss of 22% compared to 2000; the unemployment rate climbed to a peak in 2002 of 17%. Moreover the inflation rate increased, while in 2001 inflation in Uruguay was 3.6% in 2002 it reached 25.9%, considered December to December. In addition, the acceleration of inflation was linked to the significant devaluation of the peso that occurred in 2002 (93.2%), impacting primarily on traded items. Alonsoperez et al. 2010

and is partly explained by the expansion of mobile phones and new technologies, the largest port activity and growth load transport. Meanwhile the sector of electricity, gas and water had large fluctuations over the years due to inclement weather such as floods or droughts. Figure A12 in the Annex1.

Supply and Use tables in Uruguay for year 2005

National Account is a complete statistic system that reports transactions and other flows performed by different operators in the country. In Uruguay it existed since 1982 when started the measure of the Gross Domestic Product (GDP) in a quarterly way (BCU, 2009). Several revisions were performed by the Uruguayan Central Bank (BCU) of until 2001 where the implementation of the System of National Accounts 1993 has been developing by Area of Economic Statistics. According to the Central Bank, this new version of the accounts of the Uruguayan economy is a comprehensive review of the national accounts of the country, that collects better the structural changes in recent years and introduces new sources of information (expanding the coverage of the phenomena).

In this context the supply-use table of Uruguayan economy for the year 1997 and in a partial way for the year 2005 has been elaborated[4]. It includes 43 productive sectors and 45 products (based in the international Classification CIIU Rev 3) and from this table we can obtain the domestic supply at basic prices by product, the intermediate use, most domestic imports, at purchasers' prices, as products and activities, the final use, plus domestic imports, at purchasers' prices, as products, the coefficients of estimated rates of distribution margins, by product and by components of intermediate and final uses; the coefficients of estimated rates of net taxes on products, as products and components of the intermediate and final uses; the import (CIF prices), as products and as components intermediate and final uses. Complete classification in Annex 2

Table 1 presents the Use Table aggregated to the different sectors to provide the reader with an idea of its structure and the main features of the Uruguayan economy[5]. In this, the highest intermediate demand was for Manufacturing products with a 42.8% of total (147.6 billion of Pesos): products of Agriculture, Hunting and Related Services with 12.5% (43.1) Real Estate, Renting & Business with 7.86% (27.1). Total Intermediate Demand in 2005 was 344.6 billion Pesos.

As for total demand, the highest was observed for products of Manufacture Sector with a 41.2% of total (222.4 billion of Pesos), Real Estate, Renting & Business with 10.2% (55.1) and Transport, Storage and Communications with 7.34% (39.6). Total Final Demand in 2005 was 539.3 billion Pesos.

Final Consumption Expenditure by Households and Non-Profit Institutions Serving Households and Exports were the two key components of Final Demand, which contributed 56.5% and 20.9% to total demand respectively. Gross fixed capital formation contributed 13% to total demand considering that the weight of the Private Investment is the 10.4%. Another

4 In previous researches it realized the input-output matrix for the year 1961 and 1983

5 All figures are in thousands of Pesos

remarkable share belongs to Final Consumption Expenditure by Government as it accounts for 8.6% of total demand.

Table 1 Use Table by Industry Sector (2005)

	Intermediate Uses (Purchasing Price)	Final Demand						Final Demand (Purchasing Price)	Total Uses (Purchasing Price)
		Exports (FOB)	Total final consumption expenditure		Gross capital formation		Changes in inventories		
			Households & NPISH	Government	Public Sector	Private Sector			
Agriculture, Hunting & Forestry	**43.101.480**	7.929.644	14.502.722	0	0	2.852.721	4.481.672	**29.766.759**	**72.868.239**
Fishing	**1.479.554**	145.504	212.813	0	0	0	0	**358.318**	**1.837.872**
Mining	**21.330.873**	128.690	0	0	0	293.134	1.272.090	**1.693.914**	**23.024.787**
Manufacturing Industries	**147.654.895**	84.102.659	115.526.035	0	2.247.168	21.412.845	-860.096	**222.428.610**	**370.083.505**
Electricity, Gas And Water	**10.370.586**	368.995	13.399.926	0	0	0	0	**13.768.921**	**24.139.507**
Construction	**25.799.426**	0	0	0	11.821.369	25.887.814	0	**37.709.184**	**63.508.609**
Trade & Repair	**4.783.621**	429	6.171.403	0	19.210	483.037	0	**6.674.079**	**11.457.700**
Restaurants & Hotels	**2.429.396**	147.491	21.879.087	0	0	0	0	**22.026.578**	**24.455.974**
Transport, Storage & Communications	**26.579.028**	11.900.558	27.692.486	0	0	0	0	**39.593.044**	**66.172.072**
Financial Transactions	**21.010.767**	5.224.046	6.426.192	895.146	0	0	0	**12.545.384**	**33.556.151**
Real Estate, Renting & Business	**27.082.039**	2.874.344	47.063.224	0	263.485	4.930.791	0	**55.131.844**	**82.213.883**
Administration Public & Defense, Security Plans Compulsory Social	**2.033.396**	107.130	5.528.256	22.447.148	2.343	94.166	0	**28.179.043**	**30.212.439**
Education	**325.981**	0	6.028.946	11.262.405	0	0	0	**17.291.351**	**17.617.332**
Health	**5.368.652**	0	20.333.996	11.056.511	0	0	0	**31.390.506**	**36.759.159**
Personal Services	**5.281.169**	37.448	15.171.869	816.504	0	21.664	0	**16.047.484**	**21.328.653**
Domestic Service Homes	**0**	0	4.690.947	0	0	0	0	**4.690.947**	**4.690.947**
Total	**344.630.864**	112.966.939	304.627.901	46.477.714	14.353.575	55.976.171	4.893.665	**539.295.966**	**883.926.830**

Source: Made by the Author using data from BCU

Considering the Supply table, which is presented in the Table 2 the most significant branches in Uruguay are: Manufacture with a 28.7% of total production (205.2 billion of Pesos), Real Estate, Renting & Business with 10.5% (74.9) and Trade and Repair with 9.54% (68.0). Total Production at basic prices in 2005 was 713.2 billion Pesos.

In the case of the Intermediate Consumptions the Manufacturing Industries consume near the 42.5% of total (142.1) following by the Construction with the 11% (36.8) and Transport, Storage And Communications 8,4% (28.1). Total Intermediate Consumption is 333.9 billion of Pesos and represents the 46.8% of the Total Production.

Focusing in the Value Added the main sectors are Manufacture with the 16.6% of total (63.1), Real Estate, Renting & Business with 15.4% (58.3) and Trade and Repair with 11.7% (44.4). Total Valued Added at basic prices in 2005 was 379.3billion Pesos. Table A21 in Annex2

Table 2

	Intermediate Consumption	%	Value Added	%	Production (Basic Prices)
Agriculture, Hunting and Forestry	21.201.182	36,9%	36.236.634	63,1%	57.437.817
Fishing	667.639	41,7%	934.785	58,3%	1.602.424
Mining	1.007.390	48,8%	1.058.505	51,2%	2.065.895
Manufacturing Industries	142.056.311	69,2%	63.125.725	30,8%	205.182.036
Electricity, Gas And Water	7.554.359	36,2%	13.323.287	63,8%	20.877.646
Construction	36.810.262	61,0%	23.542.050	39,0%	60.352.312
Trade and Repair	23.661.993	34,8%	44.388.145	65,2%	68.050.138
Restaurants and Hotels	11.590.287	54,5%	9.683.999	45,5%	21.274.287
Transport, Storage And Communications	28.104.086	44,4%	35.172.988	55,6%	63.277.074
Financial Transactions	7.553.544	24,9%	22.830.609	75,1%	30.384.152
Real Estate, Renting and Business	16.706.614	22,3%	58.271.637	77,7%	74.978.251
Administration Public and Defense, Security Plans Compulsory Social	9.729.035	31,8%	20.818.125	68,2%	30.547.160
Education	3.156.063	17,9%	14.477.553	82,1%	17.633.616
Health	16.156.043	45,2%	19.566.988	54,8%	35.723.031
Personal Services	7.984.209	41,8%	11.138.432	58,2%	19.122.641
Domestic Service Homes	0	0,0%	4.690.947	100,0%	4.690.947
Total	333.939.018	46,8%	379.260.410	53,2%	713.199.427

Supply Table by Industry Sector (2005)

Source: Made by the Author using data from BCU

The Importance of Tourism

In the last twenty years Uruguay has experienced significant changes in the number of visitors. From 1992 to 1997 saw an upward trend. Then, following the regional economic crisis begins a decreasing in the number of visitors, marking its lowest point in 2002. From

that time there has been an increase in visitors, which was negatively influenced by the cutting of bridges with Argentina. But in recent years the increase in Brazilian and Non-Regional visitors and the free movement of vehicles from Argentina have accelerated this growing trend reaching a total of 2.9 million visitors in 2011.[6] See Figure A31 in the Annex 3

Gross income from tourism receptive to 2000 showed a rising trend, a situation that was reversed with the economic crisis mentioned above. Since the year 2003, is recovered the upward trend in the exchange receipts. Compared these revenues to GDP may be mentioned that these represent 4.6% of that for 2011, 23.3% of total exports and 63.8% of total services exports

Trying to better quantify the impact of tourism on the economy a preliminary study Tourism Satellite Accounts, according to the methodology of the UNWTO, was held in Uruguay between 2008 and 2009. The study was a preliminary estimation of the share of tourism GDP of the Uruguayan economy of around 6% in recent years, as Table 3 shows us.

Table 3 Total Direct Tourism Value Added

Source: Made by the Author using data from MTS

6 Argentina and Uruguay remained a conflict due to the installation of a production factory of pulp belonging to the Finnish company UPM-Kymmene, located in Uruguayan territory and on the bi-national waters of the Uruguay River, near populations of Fray Bentos in Uruguay and Gualeguaychú in Argentina. This conflict led to Argentine protesters cut the path to the bridge that links the countries from November 2006 until June 2010 without interruption.

	2005	2006	2007	2008	2009	2010	2011
Specific Activities (91%)	22.059.440	23.250.861	26.222.496	31.956.900	36.045.522	44.160.729	54.339.777
Characteristics Activities (86%)	20.870.775	21.997.997	24.809.506	30.234.915	34.103.223	41.781.145	51.411.698
Related Activities (5%)	1.188.665	1.252.864	1.412.989	1.721.986	1.942.300	2.379.585	2.928.079
Non-Related Activities (9%)	2.259.301	2.381.325	2.685.676	3.272.986	3.691.738	4.522.888	5.565.413
Total	24.318.741	25.632.186	28.908.172	35.229.887	39.737.260	48.683.617	59.905.190
Total Value Added of Economy	379.260.410	427.573.432	508.651.773	608.778.835	711.136.491	807.685.066	854.934.654
Importance of Tourism	6,4%	6,0%	5,7%	5,8%	5,6%	6,0%	7,0%

If the employment generated by the sector is considered, a research of Altmark and Larruina 2011 shows that considering the characteristic activities of tourism, the Tourism Job Participation[7] is around 8% between 2006 and 2009. In addition it is establish that the number of jobs tourism has increased over the period, for example in 2009 these positions increased by 3.7%. However, the share of tourism employment decreased since the increase in jobs in the economy was greater, (from 8.15% to 7.66%). Considering the composition of jobs tourism shows that Restaurants and Transportation sectors passenger are the most important with more than 20% of jobs generated by the industry. Table A31 Annex 3

Input – Output Model in Uruguay

Methodology

The IO model assumes a classification of economic activity in a region into industrial sectors whose transactions (inter industry transactions) are described by means of a matrix A of technical coefficients. Each element a_{ij} of the matrix represents the value of output from sector *i* needed to produce a dollar's (or any other national currency) worth of output of sector *j*. Each industrial sector produces the amount of output necessary to meet inter industry demands, as well as final demand caused by household consumption, government spending, investment, and exports. In addition, because of the general equilibrium model's assumption, the value of output produced by each sector equals the value of output it purchases from other sectors, plus the value of primary inputs such as imports, wages, dividends, profits, taxes, etc. Briassoulis (1991)

If we consider X as the vector of output of all industrial sectors and Y as the final demand vector, then the basic input-output model should be:

$$X = AX + Y \qquad \textbf{(1)}$$

7 Tourism Job Participation (TJP) is defined as the percentage of tourism jobs over the total.
TJP = TOURISM JOBS * 100/ TOTAL JOBS where the Tourism Jobs generated by the economy are the total jobs in all the characteristic activities of tourism in the first and second occupation of the persons referred to in the Household Survey

Where A = [aij = Xij/Xj]

The solution would be:

$$X = (I - A)^{-1} Y \qquad \textbf{(2)}$$

Where (1-A) is the technological matrix

Assuming that the technical coefficients are constant this model allows for evaluating the effect of a change in the final demand over production, income and employment. The way to calculate this impact is through the multipliers. Hara (2008)

- **Output Multipliers**: if it is defined B as the inverse of technological matrix, each elements b_{ij} indicate the increase in production of sector i needed to satisfy an increase of one unit in the final demand of sector j. Although the addition of a matrix column represent the necessary production in all sector to satisfy an increase of one unit in the final demand of sector j:

$$MO_j = \sum_{i=1} b_{ij} \qquad \textbf{(3)}$$

- **Demand Multipliers:** quantifies the strangle capacity of the sector because a uniform demand expansion, represent the needs of the rest of economy from each sector with the purpose of increase the production responding to a rise of demand of all sectors in one unit

$$MD_j = \sum_{j=1} b_{ij} \qquad \textbf{(4)}$$

- **Income Multipliers:** quantifies the capacity of generating income due to a change in the final demand, considering Vi = value added on i/production i

$$MI_j = \sum_{i=1} v_i b_{ij} \qquad \textbf{(5)}$$

Considering the work of Rasmussen (1956) and Hirschman (1958) they developed two indices of linkage for identifying key sectors in the economy. These indices determine the forward and backward effects in an economy using the Leontief Matrix.

If is defined B as the inverse of technological matrix, each elements bij and N as the quantity of economic sectors considered, the backward linkage index is

$$U_{.j} = \frac{\left(\sum_i b_{ij}\right) / N}{\left(\sum_i \sum_j b_{ij}\right) / N^2} \qquad \textbf{(6)}$$

And the Forward linkage is

$$U_{i.} = \frac{\left(\sum_j b_{ij}\right)/N}{\left(\sum_i \sum_j b_{ij}\right)/N^2} \quad \textbf{(7)}$$

If the value of $U_{.j}$ is bigger than one, the backward linkages are strong and the sector j demands from other sectors more than an average level of intermediate inputs to sustain a unit of sector j´s demand expansion. If $U_{i.}$ is greater than 1 the sector j should supply more than the average level of intermediate inputs to other sector to sustain a unit expansion of sector i´s demand. If both indexes are over than 1 the sector is defined as a **key sector.** When forward linkages bigger than one, but with backward linkage lower than one, the sector is considered as **a strategic or push sectors** of the economy; by other hand when backward linkages greater than one, but forward linkages lower that one, the sector is considered a **pull sectors** of the economy.

According Sonis et al. (1995) one of the criticisms for the above mentioned indices is that they do not take into consideration the different levels of production in each sector of the economy, however they have become a part of the generally accepted procedures for identifying key sectors in the economy.

Following Polo and Valle (2008) and considering the production associated with tourism the equation (1) can be rewritten taking into account the tourism demand

$$X_T = A X_T + Y_T \quad \textbf{(8)}$$

So the intermediate consumption, value added, due to tourism can be calculated. Moreover as it is mentioned by Fletcher (1989) the vector of Tourism Demand can be transformed into a matrix if expenditure patterns exhibit different classifications of tourism arrivals.

The standard model can be modified to take into account that consumption not associated to tourism (CWT) may be endogenous. In this case, the model is modified by including an additional activity that produces a consumption bundle in fixed proportions

$$\begin{pmatrix} X_T \\ VA \end{pmatrix} = \begin{pmatrix} A & c \\ va_i & 0 \end{pmatrix} * \begin{pmatrix} X_T \\ VA \end{pmatrix} + \begin{pmatrix} Y_T \\ 0 \end{pmatrix} \quad \textbf{(9)}$$

Where $va_i = \frac{VA_i}{X_j}$ and $c_i = \frac{CWT_i}{VA}$

Main Assumptions

IO Table

IO table is not made by the BCU since 1983, however the supply-use tables are made and the last one was done in 2005[8]. These tables are the main resource of this research, in which several assumptions (that are detailed below) were made in order to work in IO model framework.

The first step was to transform the matrix of 45 products and 43 industries in a symmetrical matrix, in that sense there were added agricultural products and livestock that were subdivided, thus obtaining a symmetric matrix of 43 * 43. A special treatment was given to the fictitious industry designed to amount the financial intermediation services indirectly measured. This industry does not produce and its value added is negative in the amount of the allocation bank. So for this paper the total of this industry was imputed to the Financial Intermediation Industry.

The model is closed by difference comparing the Total Domestic Production (at basic prices) and the Total Use (at purchasing price) and obtaining a vector which include Imports, Taxes, Subsidies and Trade Margins.

The Touristic Demand

For the elaboration of tourist demand vector was considered the methodology used in the experimental exercise CST where inbound, outbound and domestic tourism demand is estimated. In the case of outbound demand, the estimation was based on data from the inbound tourism survey prepared by the MTS, which provides information on accommodation, food and beverage, second homes and others. For the rest of the items were considered qualify opinions (from BCU, INE -National Statics Bureau- and MTS) to achieve greater openness of items.

The domestic tourism spending and its distribution through the different categories (characteristic products, related and other non-specific), was obtained by difference between the Gross Value of Touristic Production and the tourist expenditure for the other forms of tourism (inbound and outbound).

Table 4 Tourism Demand

	Products	Inbound Tourism Expenditure		Domestic Tourism Expenditure		Total Tourism Expenditure	
A	**Specific Products**	**14.792.737**	**91%**	**16.040.592**	**92%**	**30.833.329**	**91%**
A.1	Characteristic products	14.305.064	88%	14.921.607	85%	29.226.672	87%
1.1	Hosting Services	3.576.266	22%	1.863.736	11%	5.440.002	16%
1.2	Services Second Home	1.788.133	11%	2.759.262	16%	4.547.395	13%
1.3	Food and Drink	3.088.593	19%	1.987.007	11%	5.075.600	15%
1.4	Land transport services	1.463.018	9%	5.185.166	30%	6.648.184	20%
1.5	Water transport services	1.788.133	11%	77.934	0%	1.866.068	6%
1.5	Air transport services	1.788.133	11%	688.346	4%	2.476.479	7%
1.6	Travel Agency Services	325.115	2%	35.857	0%	360.972	1%
1.7	Cultural Services	325.115	2%	1.583.569	9%	1.908.685	6%
1.8	Financial Services	162.558	1%	740.729	4%	903.287	3%
A.2	Related products	487.673	3%	1.118.984	6%	1.606.657	5%
2.1	Other tourism products	487.673	3%	1.118.984	6%	1.606.657	5%
B.	**No specific products**	**1.463.018**	**9%**	**1.431.711**	**8%**	**2.894.729**	**9%**
Total		**16.255.755**	**100%**	**17.472.303**	**100%**	**33.728.058**	**100%**

8 Although academic scope of Uruguay has worked on the creation of an IO matrix it was not available for the preparation of this work.

Source: Made by the Author using data from MTS

In the case of Related[9] and Non-specific[10] products, the basket of goods included in the estimation of Tourist Production was considered assuming the same structure that non tourist consumption.

Taking into account the classification used in the supply table and the tourism demand the main sectors linked with tourism are: Accommodation and provision of food and beverages; Transport services by road and pipeline, Transport services by water, air, and auxiliary services to transportation, services of travel agencies and Trade services, wholesale and retail, repair of motor vehicles, motorcycles and personal and household goods.

Main Results

Considering the model and the assumptions mentioned in the previous section, the principal results for the Uruguayan Economy would be presented in this part. Firstly the different multipliers are summarized focusing in the sectors linked with tourism industry and the Rasmussen Index determined the key, the pull and strategic sectors.

Table 5 summarizes the principal results of production multipliers of the economy of Uruguay, there, it is possible to note that of the sectors linked with tourism industry, "trade and repair services" has the highest production multiplier which means that it is the sector that needs more of the rest of the economy for increasing its production in order to satisfy a demand rise (the economy produces for a value of 4.73 units for each unit of expenditure in products of trade or in repairing services,). The second higher multiplier is the "transport by road", other sector related with tourism which value is 2.42

Table 5 Main output multipliers for the economy of Uruguay 2005

Sector	Output Multiplier
Trade services, wholesale and retail, repair of motor vehicles, motorcycles and personal and household goods.	4,739
Transport services by road and pipeline	2,428
Mill products, starches and starch products and prepared animal feeds	2,201
Financial intermediation services	2,039
Meat and products of processing and preserving of meat	1,973
Buildings and other structures	1,958

9 These include: Equipment rental services, computer services, research and development and other services provided to businesses, Central government services except education and health and government departmental services compulsory social security and Trade services, wholesale and retail, repair of motor vehicles, motorcycles and personal and household goods.

10 These include: Cereals and other crops, vegetables and legumes products of fruit trees, grapes, and agricultural services applied. Products of animal husbandry livestock services, Fishery products, crude oil and natural gas, sand, clay, limestone and other minerals, meat and products of processing and preserving of meat products processing and preserving of fish, fruits and vegetables, other products, oils and fats of vegetable and animal, dairy products, mill products, bakery and Pasta Factory, Sugar, cocoa, chocolate, confectionery and other food products, beverages, snuff, textiles, clothing and dyeing of fur, leather made, saddlery, shoes, newspapers, magazines and periodicals, general printing and reproduction of recorded media, refined petroleum and nuclear fuel, pharmaceutical products, chemicals medicinal and botanical products for human and animal, rubber and plastic products, motor vehicles, trailers and other transport equipment, furniture, product manufacturing, recycling, Electricity, piped gas and drinking water.

The energy sector has the highest strangle capacity of the sectors, in other words the economy needs more of this sector and it has to increase more its production in order to satisfy a rise in the demand of all economic sectors. If the demand of all products increases in one unit, the fuel sector will be produce 3.39 units, as show us Table 6.

Table 6 Main demand multipliers for the economy of Uruguay 2005

Sector	Demand Multiplier
Refined petroleum and nuclear fuel	3,392
Substances and chemicals except fertilizers and pesticides and pharmaceuticals	3,183
Crude oil and natural gas, sand, clay, limestone and other mineral extraction services related to such products	2,876
Financial intermediation services	2,67
Equipment rental services, computer services, research and development and other services provided to businesses	2,603
Basic metals, fabricated metal products, machinery, special and general office machinery, accounting and computing machinery, electrical appliances, radio, television and communication equipment, parts and pieces	2,458

Table 7 summarizes the principal results of value added multipliers, there again “trade and repair services” has the highest multiplier and it means that its capacity of generating income due to a change in its final demand, is of 18.35. Other sector linked with tourism like the transport road has important in the creation of value added.

Table 7 Main value added multipliers for the economy of Uruguay 2005

Sector	Value Added Multiplier
Trade services, wholesale and retail, repair of motor vehicles, motorcycles and personal and household goods.	18,359
Transport services by road and pipeline	1,977
Financial intermediation services	1,387
Education services	1,068
Real estate	1,065
Central government services except education and health and government departmental services compulsory social security	1,054

For the economy of Uruguay, the sector of air and water transport and the travel agency would be defined as a key sector, as show us the Table 8. Moreover the rest of the sectors related with tourism as hotel services and restaurants, trade and repair services and road transport sector are strategic ones. According to results obtained with the Rasmussen-Hirschman indices it is remarkable the importance of the tourism sector on the Uruguayan Sectorial Structure. Detailed information for all sectors of the economy is presented in Annex 4

Table 8 Rasmussen-Hirschman indices for the Touristic Sectors

Sector	Backward Index	Forward Index	
Transport services by water, air, and auxiliary services to transportation, services of travel agencies	1,011	1,352	Key Sectors
Trade services, wholesale and retail, repair of motor vehicles, motorcycles and personal and household goods.	2,899	0,907	Pull Sectors
Accommodation and provision of food and beverages	1,094	0,731	
Transport services by road and pipeline	1,485	0,926	

For the economy of Uruguay, the sector of air and water transport and the travel agency would be defined as a key sector. Moreover the rest of the sectors related with tourism as hotel services and restaurants, trade and repair services and road transport sector are strategic ones. According to results obtained with the Rasmussen-Hirschman indices it is remarkable the importance of the tourism sector on the Uruguayan Sectorial Structure. Detailed information for all sectors of the economy is presented in Annex 4

On the other hand, Table 9 shows the production of the 43 sectors of the Uruguayan economy required to satisfy the vector of touristic demand. The direct effects figures are vector of touristic demand in the 2005 input–output table, and the difference between it and the total are the indirect effects figures. The percentage columns indicate the shares of direct and indirect effects over the total effect.

Considering the total economy, it is possible to say that the weight of tourist sector is 7.1%, where the direct effect is 53.6% and the indirect production is 46.4%; in the case of the individual sectors, there are great variations in the results in comparison with this average. For the four tourism sectors, the percentage of direct effects is very high in the case of Accommodation and provision of food and beverages (97.9%), Transport services by road (86.9%) and Transport services by water, air, and auxiliary services to transportation, services of travel agencies (72.1%). Also it is remarkable the high level of direct effect of the Snuff products with (98.1%).

In contrast, in the most of sectors where touristic demand is zero or close to zero, the indirect effects have a great importance like in the “chemicals”, “construction”, postal and telecommunications, education, health and social services.

Table 9 Total, direct and indirect effects of Tourism Demand by Sector

	Total Effect	Direct Effect	%	Indirect Effect	%
Agricultural products, agricultural services applied to these crops	818.074	224.527	27,4 %	593.547	72,6%
Products of animal husbandry, livestock services	931.177	70.286	7,5%	860.891	92,5%
Lumber and other forest products. Related services	62.667	0	0,0%	62.667	100,0 %
Fishery products	67.158	4.835	7,2%	62.323	92,8%
Crude oil and natural gas, sand, clay, limestone and other mineral extraction services related to such products	2.041.885	0	0,0%	2.041.885	100,0 %
Meat and products of processing and preserving of meat	1.281.867	353.982	27,6 %	927.885	72,4%
Products processing and preserving of fish, fruits, vegetables, other products, oils and fats of vegetable and animal	406.865	90.384	22,2 %	316.481	77,8%
Milk products	345.551	150.503	43,6 %	195.048	56,4%
Mill products, starches and starch products and prepared animal feeds	298.856	39.425	13,2 %	259.431	86,8%
Bakery and Pasta Factory	404.182	217.057	53,7 %	187.125	46,3%
Refined sugar, raw, powdered, cocoa, chocolate, confectionery and other food	505.823	130.146	25,7	375.677	74,3%

products			%		
Beverages	1.709.999	175.128	10,2 %	1.534.871	89,8%
Snuff products	99.932	98.004	98,1 %	1.928	1,9%
Textiles	217.863	69.901	32,1 %	147.962	67,9%
Clothing, dressing and dyeing of fur	344.859	269.574	78,2 %	75.285	21,8%
Leather made, saddlery, footwear	150.030	119.164	79,4 %	30.866	20,6%
Products sawmill and other wood, except furniture	134.934	0	0,0%	134.934	100,0 %
Paper and cardboard and paper products and cardboard	237.554	0	0,0%	237.554	100,0 %
Newspapers, magazines and periodicals, general printing and reproduction of recorded	429.876	37.107	8,6%	392.769	91,4%
Refined petroleum and nuclear fuel	4.195.371	196.108	4,7%	3.999.263	95,3%
Fertilizers and nitrogen compounds, pesticides and other agrochemical products	268.329	2.068	0,8%	266.261	99,2%
Pharmaceuticals, medicinal chemicals and botanical products for human and animal	150.846	98.681	65,4 %	52.165	34,6%
Substances and chemicals except fertilizers and pesticides and pharmaceuticals	909.604	0	0,0%	909.604	100,0 %
Rubber and plastic	990.313	23.290	2,4%	967.023	97,6%
Other non-metallic mineral products	169.413	0	0,0%	169.413	100,0 %
Basic metals, fabricated metal products, machinery, special and general office machinery, accounting and computing machinery, electrical appliances, radio, television and communication equipment, parts and pieces	1.018.669	0	0,0%	1.018.669	100,0 %
Motor vehicles, trailers and other transport equipment	1.205.137	121.723	10,1 %	1.083.414	89,9%
Furniture, manufacturing products, recycling	201.775	98.382	48,8 %	103.393	51,2%
Electricity, gas and water pipe	1.002.110	304.454	30,4 %	697.656	69,6%
Buildings and other structures	1.234.122	0	0,0%	1.234.122	100,0 %
Trade services, wholesale and retail, repair of motor vehicles, motorcycles and personal and household goods.	1.487.894	713.329	47,9 %	774.565	52,1%
Accommodation and provision of food and beverages	10.737.010	10.515.602	97,9 %	221.408	2,1%
Transport services by road and pipeline	7.647.823	6.648.184	86,9 %	999.639	13,1%
Transport services by water, air, and auxiliary services to transportation, services of travel agencies	6.527.350	4.703.518	72,1 %	1.823.832	27,9%
Postal and telecommunications	839.210		0,0%	839.210	100,0 %
Financial intermediation services	2.791.316	903.287	32,4 %	1.888.029	67,6%
Real estate	5.455.707	4.547.395	83,4 %	908.312	16,6%
Equipment rental services, computer services, research and development and other services provided to businesses	2.202.018	254.338	11,6 %	1.947.680	88,4%
Central government services except education and health and government departmental services compulsory social security	934.212	638.990	68,4 %	295.222	31,6%
Education services	22.344	0	0,0%	22.344	100,0 %
Health and social services	30.261	0	0,0%	30.261	100,0 %
Other community, social and personal	2.400.977	1.908.684	79,5 %	492.293	20,5%
Domestic Services	0	0	0,0%	0	0,0%
TOTAL	62.910.964	33.728.056	53,6 %	29.182.908	46,4%

Taking into account that the Value Added represents the 39% of Total Uses for all economy, the Value Added of Touristic Industry could be estimated in 24.5 billions of pesos.

In the endogenous model the induced effect could be calculated. The new total effect includes not only the direct and indirect effects but also the induced effect that are calculated by difference. In this case the weight of tourism in economy is near than 16.5% (145.4 billions of Pesos) and the induced effect represent the 56.7% of total effects. Also the value added of Touristic Industry is 56.6 billions of pesos. Table A43 Annex 4.

Finally, considering the evolution of the incomes obtained by Inbound Tourism it is observed an increase of 88% between 2005 and 2011. In this sense if assume this rise on demand the new total effect of tourism is calculated and it is near than 88.3 billions of Pesos, where the direct effect represent the 54.37% and the rest are indirect effects. Table A44 Annex 4.

Conclusions

Due to the growing interest in determining the importance of tourism in the Uruguayan economy this research led us to establishing a suitable methodology to calculate the impact of tourism, considering the IO model constructed by the author for year 2005.

Previous studies show the importance of this sector in Uruguay that represent more than 6% of Value Added and employs near than the 8% of total workers of the country.

It is remarkable the importance of touristic sector if consider the estimation of different indicators like multipliers or Rasmussen index. A basic analysis of multiplier shows us that the sectors higher linkage with the tourist sector like accommodation, restoration or transport have a big impact on the economy, being key or strategic sector.

Using a standard input–output model was estimated that tourism generates 7.1% of total uses where the direct effect is 53.6% and the indirect production is 46.4%. When the model is extended to include the induced effects the impact of tourism rises to 16%.

The aim of this research was to use the Input-Output model to measure the different effects of tourism on the Uruguayan Economy, considering this like the first step in the analysis of tourism through macroeconomics. In this sense the results show us the importance of the sector.

As was mentioned before the IO technique has serious limitations since a theoretical point of view. If consider a practical application these problems increase due to the important assumption that should be consider.

In this sense, this kind of study can improve in two ways, first improve the source of data to avoid make biggest assumptions and consider alternative models like the use of CGE model to estimate better the impact of tourism sector in the Uruguayan Economy

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Annexes

Annex 1 Uruguayan Economy

Figure A11 GDP Growth of Uruguay compared to previous period (constant price, 2005)

Source: Made by the Author using data from BCU[11]

Figure A12 GDP Components Growth of Uruguay –Expenditure Approach- compared to previous period (constant price, 2005)

Source: Made by the Author using data from BCU

Figure A13 GDP Growth of Uruguay by Industry compared to previous period (constant price, 2005)

Source: Made by the Author using data from BCU

11 * Preliminary data

Table A11 GDP by Industry Sector (Constant Price 2005)

CODE	SECTORS	2006	2007	2008*	2009*	2010*	2011*
A+B+C	PRIMARY ACTIVITIES	8,8%	8,2%	8,0%	8,3%	7,8%	8,0%
A	AGRICULTURE, HUNTING AND FORESTRY	8,3%	7,6%	7,5%	7,9%	7,4%	7,5%
A.011	Crops in general agricultural services applied to these crops	3,3%	3,1%	3,3%	3,7%	3,3%	3,6%
A.012	Animal husbandry, livestock services	4,5%	4,0%	3,7%	3,7%	3,6%	3,4%
A.020	Forestry, logging and related service activities	0,5%	0,5%	0,5%	0,5%	0,6%	0,5%
B	FISHING	0,2%	0,2%	0,2%	0,1%	0,1%	0,1%
C	MINING	0,3%	0,3%	0,3%	0,3%	0,3%	0,3%
D	MANUFACTURING INDUSTRIES	29,1%	28,3%	28,7%	27,4%	26,8%	25,7%
D.15+D.16	Manufacture of food products, beverages and snuff	12,6%	12,1%	11,5%	11,8%	11,1%	10,8%
D.17 to D.19	Manufacture of textiles and clothing, tanning and dressing of hides and skins, leather products and footwear	3,3%	3,2%	2,7%	2,0%	1,9%	1,9%
D.20 to D.22	Manufacture of wood and wood products, paper and paper products and printing	1,8%	2,0%	3,5%	3,5%	3,8%	3,6%
D.210T.0	Manufacture of paper and paper products	0,5%	0,7%	2,1%	2,3%	2,4%	2,1%
D.23	Manufacture of coke, oil refining and nuclear fuel	3,5%	2,8%	3,3%	3,1%	2,9%	2,0%
D.24+D.25	Manufacture of chemicals and chemical products and rubber and plastic products	3,4%	3,6%	3,4%	3,3%	3,5%	3,7%
D.26	Manufacture of other non-metallic mineral products	0,8%	0,7%	0,7%	0,6%	0,6%	0,6%
D.RR to D.33	Manufacture of basic metals, machinery and equipment, metal, electrical and precision instruments	2,2%	2,4%	2,2%	2,0%	1,9%	1,9%
D.34 - D.35	Manufacture of transport equipment	0,8%	0,9%	0,7%	0,5%	0,6%	0,8%
D.UU	Other manufacturing	0,6%	0,7%	0,6%	0,6%	0,5%	0,5%
E	ELECTRICITY, GAS AND WATER	2,8%	2,9%	2,6%	2,6%	2,6%	2,6%
F	CONSTRUCTION	8,5%	8,9%	8,7%	8,9%	8,7%	8,5%
G+H	TRADE, REPAIR, RESTAURANTS AND HOTELS	12,6%	13,0%	13,2%	13,2%	14,2%	14,7%
G	TRADE AND REPAIR	9,6%	10,0%	10,3%	10,0%	10,7%	11,1%
H	RESTAURANTS AND HOTELS	2,9%	3,0%	3,0%	3,2%	3,5%	3,6%
I	TRANSPORT, STORAGE AND COMMUNICATIONS	9,3%	10,1%	11,3%	11,7%	12,5%	13,4%
I.60 to I.63	Transport and storage	6,4%	6,5%	6,4%	5,7%	5,9%	6,2%
I.60	Land transport and pipelines	3,2%	3,2%	3,2%	3,2%	3,2%	3,1%
I.61 + I.62	Transportation by air and sea	1,7%	1,8%	1,7%	1,1%	1,2%	1,5%
I.63	Additional services and transport auxiliaries	1,4%	1,5%	1,5%	1,4%	1,5%	1,6%
I.64	Communications	3,0%	3,6%	4,9%	6,0%	6,7%	7,2%
J to P	OTHER SERVICES	28,9%	28,7%	27,5%	27,8%	27,3%	27,1%
J	FINANCIAL TRANSACTIONS	3,9%	3,8%	3,8%	3,9%	4,0%	4,4%
K	REAL ESTATE, RENTING AND BUSINESS	10,2%	10,2%	9,5%	9,4%	9,2%	9,0%
L	PUBLIC ADMINISTRATION AND DEFENSE, SECURITY PLANS COMPULSORY SOCIAL	4,1%	4,0%	3,7%	3,8%	3,6%	3,4%
M	EDUCATION	2,4%	2,4%	2,2%	2,3%	2,2%	2,1%
N	HEALTH	4,9%	5,0%	4,9%	5,0%	4,9%	4,8%
O+P	PERSONAL SERVICES AND DOMESTIC SERVICE HOMES	3,3%	3,4%	3,3%	3,4%	3,3%	3,3%
GROSS DOMESTIC PRODUCT		**100%**	**100%**	**100%**	**100%**	**100%**	**100%**

Source: Made by the Author using data from BCU

Annex 2 Uses and Supply Tables 2005

Table A21 Complete Classifications of Products UST 2005

A.011T.	Agricultural products, agricultural services applied to these crops
A.012T.	Products of animal husbandry, livestock services
A.0200.0.0	Lumber and other forest products. Related services
B.0500.0.0	Fishery products
C.TTTT.0.0	Crude oil and natural gas, sand, clay, limestone and other mineral extraction services related to such products
D.1511.0.0	Meat and products of processing and preserving of meat
D.151R.0.0	Products processing and preserving of fish, fruits, vegetables, other products, oils and fats of vegetable and animal
D.1520.0.0	Milk products
D.153T.0.0	Mill products, starches and starch products and prepared animal feeds
D.154R.0.0	Bakery and Pasta Factory
D.154S.0.0	Refined sugar, raw, powdered, cocoa, chocolate, confectionery and other food products nec
D.155T.0.0	Beverages
D.1600.0.0	Snuff products
D.17TT.0.0	Textiles
D.18TT.0.0	Clothing, dressing and dyeing of fur
D.19TT.0.0	Leather made, saddlery, footwear
D.20TT.0.0	Products sawmill and other wood, except furniture
D.210T.0.0	Paper and cardboard and paper products and cardboard
D.22TT.0.0	Newspapers, magazines and periodicals, general printing and reproduction of recorded
D.23TT.0.0	Refined petroleum and nuclear fuel
D.24RT.0.0	Fertilizers and nitrogen compounds, pesticides and other agrochemical products
D.24ST.0.0	Pharmaceuticals, medicinal chemicals and botanical products for human and animal
D.24UT.0.0	Substances and chemicals except fertilizers and pesticides and pharmaceuticals
D.25TT.0.0	Rubber and plastic
D.26TT.0.0	Other non-metallic mineral products
D.RRTT.0.0	Basic metals, fabricated metal products, machinery, special and general office machinery, accounting and computing machinery, electrical appliances, radio, television and communication equipment, parts and pieces
D.SSTT.0.0	Motor vehicles, trailers and other transport equipment
D.UUTT.0.0	Furniture, manufacturing products, recycling
E.TTTT.0.0	Electricity, gas and water pipe
F.45TT.0.0	Buildings and other structures
G.TTTT.0.0	Trade services, wholesale and retail, repair of motor vehicles, motorcycles and personal and household goods.
H.55TT.0.0	Accommodation and provision of food and beverages
I.60TT.0.0	Transport services by road and pipeline
I.RRTT.0.0	Transport services by water, air, and auxiliary services to transportation, services of travel agencies
I.64TT.0.0	Postal and telecommunications
J.TTTT.0.0	Financial intermediation services
K.70TT.0.0	Real estate
K.RRTT.0.0	Equipment rental services, computer services, research and development and other services provided to businesses
L.75TT.0.0	Central government services except education and health and government departmental services compulsory social security
M.80TT.0.0	Education services
N.85TT.0.0	Health and social services
O.TTTT.0.0	Other community, social and personal
P.9500.0.0	Domestic Services

Table A22 Supply Table by Industry Sector and Percentage of Total (2005)

	Intermediate Consumption	%	Value Added	%	Production (Basic Prices)	%
AGRICULTURE, HUNTING AND FORESTRY	21.201.182	6,35%	36.236.634	9,55%	57.437.817	8,05%
FISHING	667.639	0,20%	934.785	0,25%	1.602.424	0,22%
MINING	1.007.390	0,30%	1.058.505	0,28%	2.065.895	0,29%
MANUFACTURING INDUSTRIES	142.056.311	42,54%	63.125.725	16,64%	205.182.036	28,77%
ELECTRICITY, GAS AND WATER	7.554.359	2,26%	13.323.287	3,51%	20.877.646	2,93%
CONSTRUCTION	36.810.262	11,02%	23.542.050	6,21%	60.352.312	8,46%
TRADE AND REPAIR	23.661.993	7,09%	44.388.145	11,70%	68.050.138	9,54%
RESTAURANTS AND HOTELS	11.590.287	3,47%	9.683.999	2,55%	21.274.287	2,98%
TRANSPORT, STORAGE AND COMMUNICATIONS	28.104.086	8,42%	35.172.988	9,27%	63.277.074	8,87%
FINANCIAL TRANSACTIONS	7.553.544	2,26%	22.830.609	6,02%	30.384.152	4,26%
REAL ESTATE, RENTING AND BUSINESS	16.706.614	5,00%	58.271.637	15,36%	74.978.251	10,51%
ADMINISTRACION PUBLIC AND DEFENSE, SECURITY PLANS COMPULSORY SOCIAL	9.729.035	2,91%	20.818.125	5,49%	30.547.160	4,28%
EDUCATION	3.156.063	0,95%	14.477.553	3,82%	17.633.616	2,47%
HEALTH	16.156.043	4,84%	19.566.988	5,16%	35.723.031	5,01%
PERSONAL SERVICES	7.984.209	2,39%	11.138.432	2,94%	19.122.641	2,68%
DOMESTIC SERVICE HOMES	0	0,00%	4.690.947	1,24%	4.690.947	0,66%
Total	333.939.018	100%	379.260.410	100%	713.199.427	100, %

Source: Made by the Author using data from BCU

Annex 3 Tourism in Uruguay

Figure A31 Number of visitors arrived to Uruguay compared to previous period

Source: Made by the Author using data from MTS

Figure A32 Tourism Income - Exports

Source: Made by the Author using data from MTS

Figure A33 Incomes in Pesos for visitors arrived to Uruguay compared to previous period

Source: Made by the Author using data from MTS and INE

Table A31: Jobs in Tourist Activities Year 2006-2009

TOURIST ACTIVITIES	2006	2007	2008	2009	2009-%
Hotels	7.452	7.078	7.856	8688	6,67%
Guest House	516	579	859	840	0,64%
Camping and other accommodations	458	527	450	335	0,26%
Real Estate	5.657	5.579	6.433	6380	4,90%
Restaurants, bars and canteens	27.910	29.998	32.754	36459	27,98%
Passenger Service land	22.141	23.594	24.659	26250	20,15%
Waterway passenger service	1.194	1.316	1.716	1715	1,32%
Air passenger service	1.080	899	1.326	838	0,64%
Auxiliary transport services	5.562	4.609	6.148	5048	3,87%
Vacation goods transport equipment	247	529	482	516	0,40%
Travel Agents and complementary activities	1.764	2.320	2.089	1984	1,52%
Exhibition of films and videos	310	307	284	412	0,32%
Radio and television activities	4.551	5.361	4.485	5517	4,23%
Theater, music	6.389	7.248	7.805	6634	5,09%
Other entertainment and recreation	5.944	5.430	5.438	5168	3,97%
Libraries, museums.	1.741	2.527	3.327	2103	1,61%
Sports	11.461	13.456	12.236	13969	10,72%
Other recreational activities (parks, beaches, gambling, etc.).	6.946	6.922	6.314	6239	4,79%
Various tourist services	678	1.448	979	1202	0,92%
TOTAL JOBS IN TOURISM	112.001	107.219	125.640	130.297	100%

Source: Made by the Author based in Altmark & Larruina (2011)

Annex 4 Main Results of IO Model in Uruguay

Table A41: Total Multipliers Effects

Sector	Output Multipliers	Demand Multipliers	Value Added Multipliers
Agricultural products, agricultural services applied to these crops	1,622	2,13	0,479
Products of animal husbandry, livestock services	1,427	2,374	0,968
Lumber and other forest products. Related services	1,36	1,282	0,611
Fishery products	1,576	1,179	0,801
Crude oil and natural gas, sand, clay, limestone and other mineral extraction services related to such products	1,066	2,876	0,049
Meat and products of processing and preserving of meat	1,973	1,394	0,276
Products processing and preserving of fish, fruits, vegetables, other products, oils and fats of vegetable and animal	1,568	1,169	0,38
Milk products	1,851	1,102	0,515
Mill products, starches and starch products and prepared animal feeds	2,201	1,33	0,345
Bakery and Pasta Factory	1,765	1,048	0,42
Refined sugar, raw, powdered, cocoa, chocolate, confectionery and other food products	1,38	1,283	0,437
Beverages	1,57	1,207	0,361
Snuff products	1,301	1,02	0,139
Textiles	1,541	1,476	0,347
Clothing, dressing and dyeing of fur	1,459	1,095	0,26
Leather made, saddlery, footwear	1,822	1,205	0,174
Products sawmill and other wood, except furniture	1,557	1,334	0,688
Paper and cardboard and paper products and cardboard	1,505	1,647	0,213
Newspapers, magazines and periodicals, general printing and reproduction of recorded	1,616	1,406	0,536
Refined petroleum and nuclear fuel	1,63	3,392	0,241
Fertilizers and nitrogen compounds, pesticides and other agrochemical products	1,488	1,787	0,118
Pharmaceuticals, medicinal chemicals and botanical products for human and animal	1,359	1,315	0,199
Substances and chemicals except fertilizers and pesticides and pharmaceuticals	1,314	3,183	0,123
Rubber and plastic	1,521	1,781	0,279
Other non-metallic mineral products	1,57	1,344	0,363
Basic metals, fabricated metal products, machinery, special and general office machinery, accounting and computing machinery, electrical appliances, radio, television and communication equipment, parts and pieces	1,226	2,458	0,159
Motor vehicles, trailers and other transport equipment	1,259	1,6	0,126
Furniture, manufacturing products, recycling	1,511	1,127	0,377
Electricity, gas and water pipe	1,507	1,778	0,832
Buildings and other structures	1,958	2,12	0,726
Trade services, wholesale and retail, repair of motor vehicles, motorcycles and personal and household goods.	4,739	1,483	18,359
Accommodation and provision of food and beverages	1,789	1,195	0,708
Transport services by road and pipeline	2,428	1,514	1,977
Transport services by water, air, and auxiliary services to transportation, services of travel agencies	1,652	2,209	0,554
Postal and telecommunications	1,362	1,708	0,816
Financial intermediation services	2,039	2,67	1,387
Real estate	1,307	1,589	1,065
Equipment rental services, computer services, research and development and other services provided to businesses	1,403	2,603	0,722
Central government services except education and health and government departmental services compulsory social security	1,53	1,208	1,054
Education services	1,3	1,027	1,068
Health and social services	1,656	1,187	0,882
Other community, social and personal	1,58	1,455	0,825
Domestic Services	1	1	1

Table A42: Rasmussen Index

Sector	Backward Index	Forward Index	
Buildings and other structures	1,198	1,297	
Transport services by water, air, and auxiliary services to transportation, services of travel agencies	1,011	1,352	Key Sectors
Financial intermediation services	1,247	1,633	
Meat and products of processing and preserving of meat	1,207	0,853	
Milk products	1,133	0,674	
Mill products, starches and starch products and prepared animal feeds	1,347	0,814	
Bakery and Pasta Factory	1,08	0,641	
Leather made, saddlery, footwear	1,115	0,737	Pull Sectors
Trade services, wholesale and retail, repair of motor vehicles, motorcycles and personal and household goods.	2,899	0,907	
Accommodation and provision of food and beverages	1,094	0,731	
Transport services by road and pipeline	1,485	0,926	
Health and social services	1,013	0,726	
Agricultural products, agricultural services applied to these crops	0,992	1,303	
Products of animal husbandry, livestock services	0,873	1,452	
Crude oil and natural gas, sand, clay, limestone and other mineral extraction services related to such products	0,652	1,76	
Paper and cardboard and paper products and cardboard	0,921	1,007	
Refined petroleum and nuclear fuel	0,997	2,075	
Fertilizers and nitrogen compounds, pesticides and other agrochemical products	0,91	1,093	
Substances and chemicals except fertilizers and pesticides and pharmaceuticals	0,804	1,947	Strategic or
Rubber and plastic	0,931	1,089	Push Sectors
Basic metals, fabricated metal products, machinery, special and general office machinery, accounting and computing machinery, electrical appliances, radio, television and communication equipment, parts and pieces	0,75	1,504	
Electricity, gas and water pipe	0,922	1,088	
Postal and telecommunications	0,833	1,045	
Equipment rental services, computer services, research and development and other services provided to businesses	0,859	1,592	
Lumber and other forest products. Related services	0,832	0,785	
Fishery products	0,964	0,721	
Products processing and preserving of fish, fruits, vegetables, other products, oils and fats of vegetable and animal	0,959	0,715	
Refined sugar, raw, powdered, cocoa, chocolate, confectionery and other food products	0,844	0,785	
Beverages	0,96	0,739	
Snuff products	0,796	0,624	
Textiles	0,943	0,903	
Clothing, dressing and dyeing of fur	0,893	0,67	
Products sawmill and other wood, except furniture	0,952	0,816	
Newspapers, magazines and periodicals, general printing and reproduction of recorded	0,989	0,86	Other Sectors
Pharmaceuticals, medicinal chemicals and botanical products for human and animal	0,832	0,804	
Other non-metallic mineral products	0,961	0,822	
Motor vehicles, trailers and other transport equipment	0,77	0,979	
Furniture, manufacturing nec products, recycling	0,924	0,689	
Real estate	0,8	0,972	
Central government services except education and health and government departmental services compulsory social security	0,936	0,739	
Education services	0,795	0,628	
Other community, social and personal	0,966	0,89	
Domestic Services	0,62	0,62	

Table A43: Total Effects of Tourism

	Total Production	Total Touristic Production	% of Tourism in Total Prod.	% of Sector In Total Touristic Prod.	Touristic Production for Inbound Tourism	Touristic Production for Inbound Argentinean Tourism	Touristic Production for Domestic Tourism
Agricultural products, agricultural services applied to these crops	31.350.540	818.074	2,6%	1,3%	471.782	225.652	346.292
Products of animal husbandry, livestock services	36.399.350	931.177	2,6%	1,5%	536.084	256.409	395.093
Lumber and other forest products. Related services	5.118.348	62.667	1,2%	0,1%	30.104	14.398	32.564
Fishery products	1.837.871	67.158	3,7%	0,1%	39.425	18.857	27.733
Crude oil and natural gas, sand, clay, limestone and other mineral extraction services related to such products	23.024.790	2.041.885	8,9%	3,2%	710.194	339.686	1.331.691
Meat and products of processing and preserving of meat	44.007.230	1.281.867	2,9%	2,0%	756.829	361.991	525.038
Products processing and preserving of fish, fruits, vegetables, other products, oils and fats of vegetable and animal	9.658.890	406.865	4,2%	0,6%	241.429	115.475	165.436
Milk products	14.047.930	345.551	2,5%	0,5%	196.501	93.986	149.050
Mill products, starches and starch products and prepared animal feeds	10.799.330	298.856	2,8%	0,5%	175.429	83.907	123.426
Bakery and Pasta Factory	10.588.280	404.182	3,8%	0,6%	225.373	107.796	178.809
Refined sugar, raw, powdered, cocoa, chocolate, confectionery and other food products	14.509.980	505.823	3,5%	0,8%	296.383	141.760	209.439
Beverages	13.472.480	1.709.999	12,7%	2,7%	1.050.463	502.437	659.536
Snuff products	4.942.133	99.932	2,0%	0,2%	50.506	24.157	49.426
Textiles	13.422.230	217.863	1,6%	0,3%	94.811	45.348	123.052
Clothing, dressing and dyeing of fur	14.775.590	344.859	2,3%	0,5%	166.113	79.452	178.746
Leather made, saddlery, footwear	13.888.120	150.030	1,1%	0,2%	75.382	36.055	74.648
Products sawmill and other wood, except furniture	5.521.225	134.934	2,4%	0,2%	52.502	25.111	82.433
Paper and cardboard and paper products and cardboard	7.392.483	237.554	3,2%	0,4%	99.527	47.604	138.026
Newspapers, magazines and periodicals, general printing and reproduction of recorded	6.378.412	429.876	6,7%	0,7%	161.820	77.398	268.056
Refined petroleum and nuclear fuel	39.567.870	4.195.371	10,6%	6,7%	1.447.117	692.156	2.748.254
Fertilizers and nitrogen compounds, pesticides and other agrochemical products	8.366.244	268.329	3,2%	0,4%	147.925	70.753	120.404
Pharmaceuticals, medicinal chemicals and botanical products for human and animal	11.828.630	150.846	1,3%	0,2%	77.588	37.111	73.258
Substances and chemicals except fertilizers and pesticides and pharmaceuticals	30.003.140	909.604	3,0%	1,4%	359.595	171.994	550.009
Rubber and plastic	12.946.260	990.313	7,6%	1,6%	333.102	159.323	657.211
Other non-metallic mineral products	8.300.026	169.413	2,0%	0,3%	74.219	35.499	95.194
Basic metals, fabricated metal products, machinery, special and general office machinery, accounting and computing machinery, electrical appliances, radio, television and communication equipment, parts and pieces	50.712.620	1.018.669	2,0%	1,6%	379.222	181.382	639.447
Motor vehicles, trailers and other transport equipment	16.337.460	1.205.137	7,4%	1,9%	412.575	197.335	792.562
Furniture, manufacturing nec products, recycling	8.616.941	201.775	2,3%	0,3%	90.091	43.090	111.684
Electricity, gas and water pipe	24.139.510	1.002.110	4,2%	1,6%	467.168	223.447	534.942
Buildings and other structures	63.508.610	1.234.122	1,9%	2,0%	511.410	244.607	722.713
Trade services, wholesale and retail, repair of motor vehicles, motorcycles and personal and household goods.	11.457.700	1.487.894	13,0%	2,4%	443.836	212.287	1.044.058
Accommodation and provision of food and beverages	24.455.970	10.737.010	43,9%	17,1%	6.760.965	3.233.770	3.976.044
Transport services by road and pipeline	14.621.690	7.647.823	52,3%	12,2%	1.764.963	844.182	5.882.860
Transport services by water, air, and auxiliary services to transportation, services of travel agencies	28.848.260	6.527.350	22,6%	10,4%	5.082.791	2.431.099	1.444.560
Postal and telecommunications	22.702.120	839.210	3,7%	1,3%	344.958	164.994	494.252
Financial intermediation services	33.556.150	2.791.316	8,3%	4,4%	765.971	366.363	2.025.345
Real estate	53.206.720	5.455.707	10,3%	8,7%	2.197.168	1.050.906	3.258.539
Equipment rental services, computer services, research and development and other services provided to businesses	29.007.160	2.202.018	7,6%	3,5%	949.840	454.309	1.252.178
Central government services except education and health and government	30.212.440	934.212	3,1%	1,5%	326.843	156.329	607.369

departmental services compulsory social security							
Education services	17.617.330	22.344	0,1%	0,0%	9.171	4.387	13.173
Health and social services	36.759.160	30.261	0,1%	0,0%	11.803	5.645	18.458
Other community, social and personal	21.328.650	2.400.977	11,3%	3,8%	506.465	242.243	1.894.512
Domestic Services	4.690.947	0	0,0%	0,0%	0	0	0
TOTAL	883.926.820	62.910.964	7,1%	100%	28.895.445	13.820.690	34.015.519

Table A44: Total Effects of an Increase in the Tourism Inbound Demand

	New Total Effect	New Direct Effect	%	New Indirect Effect	%
Agricultural products, agricultural services applied to these crops	1.233.242	324.388	26,30 %	908.855	73,70%
Products of animal husbandry, livestock services	1.402.931	101.546	7,24%	1.301.385	92,76%
Lumber and other forest products. Related services	89.158	0	0,00%	89.158	100,00 %
Fishery products	101.852	6.986	6,86%	94.866	93,14%
Crude oil and natural gas, sand, clay, limestone and other mineral extraction services related to such products	2.666.857	0	0,00%	2.666.857	100,00 %
Meat and products of processing and preserving of meat	1.947.877	511.418	26,26 %	1.436.458	73,74%
Products processing and preserving of fish, fruits, vegetables, other products nec, oils and fats of vegetable and animal	619.322	130.583	21,08 %	488.739	78,92%
Milk products	518.472	217.440	41,94 %	301.031	58,06%
Mill products, starches and starch products and prepared animal feeds	453.233	56.960	12,57 %	396.273	87,43%
Bakery and Pasta Factory	602.511	313.595	52,05 %	288.916	47,95%
Refined sugar, raw, powdered, cocoa, chocolate, confectionery and other food products nec	766.640	188.030	24,53 %	578.610	75,47%
Beverages	2.634.406	253.018	9,60%	2.381.388	90,40%
Snuff products	144.378	141.592	98,07 %	2.786	1,93%
Textiles	301.297	100.992	33,52 %	200.305	66,48%
Clothing, dressing and dyeing of fur	491.038	389.470	79,32 %	101.569	20,68%
Leather made, saddlery, footwear	216.366	172.165	79,57 %	44.202	20,43%
Products sawmill and other wood, except furniture	181.136	0	0,00%	181.136	100,00 %
Paper and cardboard and paper products and cardboard	325.138	0	0,00%	325.138	100,00 %
Newspapers, magazines and periodicals, general printing and reproduction of recorded	572.277	53.611	9,37%	518.666	90,63%
Refined petroleum and nuclear fuel	5.468.833	283.330	5,18%	5.185.503	94,82%
Fertilizers and nitrogen compounds, pesticides and other agrochemical products	398.503	2.988	0,75%	395.515	99,25%
Pharmaceuticals, medicinal chemicals and botanical products for human and animal	219.123	142.570	65,06 %	76.553	34,94%
Substances and chemicals except fertilizers and pesticides and pharmaceuticals	1.226.047		0,00%	1.226.047	100,00 %
Rubber and plastic	1.283.443	33.648	2,62%	1.249.795	97,38%
Other non-metallic mineral products	234.726	0	0,00%	234.726	100,00 %
Basic metals, fabricated metal products, machinery, special and general office machinery, accounting and computing machinery, electrical appliances, radio, television and communication equipment, parts and pieces	1.352.385	0	0,00%	1.352.385	100,00 %
Motor vehicles, trailers and other transport equipment	1.568.204	175.861	11,21 %	1.392.343	88,79%
Furniture, manufacturing nec products, recycling	281.055	142.138	50,57 %	138.917	49,43%
Electricity, gas and water pipe	1.413.218	439.861	31,12 %	973.357	68,88%
Buildings and other structures	1.684.163	0	0,00%	1.684.163	100,00 %
Trade services, wholesale and retail, repair of motor vehicles, motorcycles and personal and household goods.	1.878.470	903.866	48,12 %	974.604	51,88%
Accommodation and provision of food and beverages	16.686.660	16.380.680	98,17 %	305.980	1,83%
Transport services by road and pipeline	9.200.990	7.935.640	86,25 %	1.265.350	13,75%
Transport services by water, air, and auxiliary services to transportation, services of travel agencies	11.000.210	8.136.733	73,97 %	2.863.477	26,03%
Postal and telecommunications	1.142.774		0,00%	1.142.774	100,00 %
Financial intermediation services	3.465.370	1.046.338	30,19 %	2.419.032	69,81%
Real estate	7.389.215	6.120.952	82,84 %	1.268.263	17,16%
Equipment rental services, computer services, research and development and other services provided to businesses	3.037.877	322.274	10,61 %	2.715.603	89,39%
Central government services except education and health and government departmental services compulsory social security	1.221.835	809.670	66,27 %	412.165	33,73%
Education services	30.415	0	0,00%	30.415	100,00 %
Health and social services	40.648	0	0,00%	40.648	100,00 %
Other community, social and personal	2.846.665	2.194.785	77,10 %	651.880	22,90%