ECONOMIC IMPACT OF WESTERN MEDITERRANEAN LEISURE PORTS

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Abstract

This research conducts a homogeneous analysis of the economic impact of a selection of leisure ports in the Western Mediterranean. Impact has been quantified by means of Input-Output Analysis and Leontief's quantities model. This study makes it possible to carry out a comparative analysis of the various port infrastructures.

Using the results as a basis, we can ascertain the direct, indirect and induced effects of such installation on the area when they are located.

Key words: Economic impact analysis, Input-Output Tables, Leisure ports

JEL Classification: C67, D57, L92

* The researchers gratefully acknowledge the funding provided by the European project Interreg IIIC Sud and the possibility of participating in the GESINPORTS project afforded by the FEPORTS foundation.

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1. Introduction

This article aims to analyse the economic impact of a selection of leisure ports in the Western Mediterranean on the area where they are located. In order to achieve this, we use a method that allows results to be homogenized. It is important to highlight the fact that, despite the numerous studies carried out in Spain on the economic impact of commercial ports, this is the first to analyse how important the activity generated by leisure ports is in relation to the towns where they are located.

The research was conducted as part of the project entitled GESINPORTS financed by the European Union under the Interreg IIIC South initiative. The purpose of this programme is to establish the aspects that are essential for improving leisure port infrastructures in order to make them more modern, safe and environmentally friendly. The Institute of International Economics at the University of Valencia has carried out a two-part study, the first involving the economic impact analysis conducted in this article and the second focusing on the importance of tourism in the towns where the ports under consideration are located.

The Valencia Regional Government (*Generalitat Valenciana* in Spanish) and more specifically the Directorate-General of Transport and Coastlines participated in the work undertaken throughout the course of the project. Together with the foregoing organism, the following also participated as partners: the Polytechnic University of Valencia, the regions of Liguria and Sicilia, the Associazione Nazionale per la Nautica da Diporto, the West Attica region and the Capodistria Regional Development Centre.

Decision making in both the public and private sector is becoming increasingly dependent on studying how effective sports facilities are in practical terms in the economic development of a region. For this reason it is important to quantify the economic impact of each facility on the town where it is established, based on job creation, wages, corporate profits, tax income and the effect on the rest of town's productive sectors. Similarly, it is also of great interest to indicate how such a facility can continue influencing economic development in the future.

This article is structured as follows: Section 2 presents the methodology used in the economic impact study. Sections 3 and 4 exhibit the empirical results obtained from Valencia and Italian leisure ports respectively. Finally, Section 5 summarises the main conclusions drawn from the study.

2. Input-Output analysis

Input-Output Analysis (IOA) may be considered an extended version of National Accounts, concentrating on transactions between the various activities that make up the productive sectors of an economy. It focuses on the inter-sector relations of the various branches of activity – the latter being defined as aggregates of homogeneous production units. Therefore, IOA constitutes a systematic method for capturing an economy's statistical data which registers not only transactions between the various branches of activity, but also their primary factor needs and the final demands to be met in economic activity development.

IOA comprises three blocks[1]. The central block, also called inter-sector relations or Intermediate Consumption block, the Primary Input block and the Final Demand block.

Block I registers information on a square matrix containing the same number of rows and columns (branches of activity). Each branch is assigned one row and one column so that columns indicate Inputs or purchases needed in the productive process, and rows indicate Outputs or sales from production units to each branch. Thus, columns represent the commodities that each branch takes from others to produce its own goods, whereas rows represent the destination of the goods produced by each branch which are used as intermediate consumption by other branches.

Block II comprising Primary Inputs, represents the various intermediate goods and services expenses incurred by branches of activity, that is, the sector added value for workforce and capital remuneration expenses: salaries, social security contributions, operating surplus, amortizations, taxes and imports.

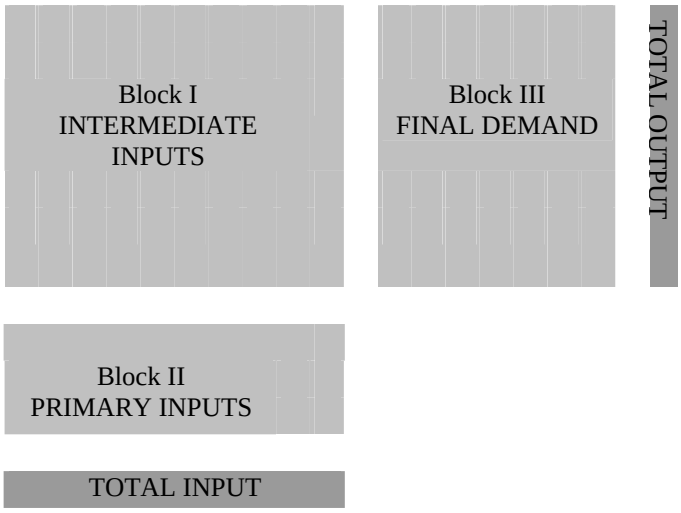
It can generally be said that both the salaries and operating surplus concepts —the latter understood as income generated through economic activity— comprise the Value Added to each branch. By adding intermediate Inputs (Block I), gross value added and imports (Block II) we obtain effective production which, together with VAT, provides the total resources value for each branch.

Block III, Final Demand, represents the part of production allocated to final uses in each branch, such as private consumption, government consumption, gross wealth formation and exports. Total Output comprises intermediate consumption and final demand allocations.

[1] See Fernández et al (2003)

To summarise the above concepts, it may be said that an IOA column represents branch productive or cost structure, that is, intermediate and primary Inputs used for production, whereas a row represents branch production allocation or use — both intermediate and final.

Exhibit 1: Input-Output Table Structure



Source: Own elaboration

Having established the Input-Output Table (IOT) structure, the latter is turned into a matrix to obtain an economic model and draw up a simplified production theory that may be used in simulation exercises. Thus, this paper has used Leontief´s model to estimate the production levels required by each branch to meet a given Final Demand objective. This is the *Quantities* or *Demand Model*, which relates autonomous final demands to production levels required to meet them.

The idea behind the quantities model is that an increase in final demand is transmitted so that an increase in production is not only enough to meet the new final demand, but will also supply subsequent intermediate demands from the other branches till the

required production increase is reached. It is a chain of successive Input demands made by each branch, which must increase its own production in order to supply the demands of the rest.

In order to calculate the production required by each branch of activity to meet a given final demand, we use the following Leontief´s model (1970):

$$[X_i] = [I - A_{ij}]^{-1} \cdot [Y_i] \qquad (1)$$

where,

X: Total Outputs (X_i), Total Inputs (X_j) vector.
Y_i: Final demands vector.
$[I - A_{ij}]^{-1}$: Leontief´s inverse matrix.
I: Identity matrix.
A_{ij}: Technical coefficients matrix a_{ij}.

This model is extremely useful as the constancy and proportionality of technical coefficients (a_{ij}) afford an evaluation of the effects of a final demand exogenous vector on production, income and employment.

Technical coefficients express the extent to which each branch uses other branches' commodities per production unit.

$$a_{ij} = \frac{x_{ij}}{X_j} \qquad (2)$$

Thus, coefficient a_{ij} is defined as the use made by branch j of branch i products per production unit. Once this information is obtained for each and every activity branch, technical coefficients matrix $[A_{ij}]$ becomes available.

2.1. Identification of the most relevant economic effects

Using the Leontief´s model the various types of effect of an activity branch on all others and, conversely, the effect of the economy on a given type of activity may be identified. The most widely used effects are: Direct Effect, Indirect Effect and Induced Effect.

Direct Effect represents the direct productive effort that port sector must make in order to cope with changes in the final demand for their services.

$$[E_D] = \left[Y_i^p\right] + [A_{ij}] \cdot \left[Y_i^p\right] \quad (3)$$

where,

$\left[Y_i^p\right]$: Vector of final demands of the port sector
$[A_{ij}]$: Technical coefficient matrix

Indirect Effect represents the impact of all successive transactions conducted between the sectors originally affected by port activity and other sectors of the economy.

$$[E_I] = [A_{ij}] \cdot [A_{ij}] \cdot [Y_i] + [A_{ij}] \cdot [A_{ij}] \cdot [A_{ij}] \cdot [Y_i] + \ldots + R\,[Y_i] \quad (4)$$

Finally, the **Induced Effect** is defined as that generated by the consumption and investment capacity of businesses and other economic agents directly related to the activity of a given branch. For its calculation a number of additional assumptions on family saving capacity must be made in order to allocate the rest to final consumption; the same process is necessary for investing capacity, both in terms of work-related income savings and gross operating surplus. Induced effects are calculated using the same Leontief model but this time with a final demand vector which has been expanded to include the demand for consumer and capital goods generated by the income obtained by all economic agents involved in the activities of a given branch. The resulting model is as follows:

$$[E_{INDUC.}] = [I - A_{ij}]^{-1} \cdot [Y_i^{R*}] \quad (5)$$

where,

$[Y_i^{R*}]$: Vector of branch income generated consumption.

2.2. Preparation of the Model for Leisure Ports in Valencia

The economic impact study by means of Input-Output methodology uses IOT for the town where the leisure port is located as a basic tool. The Valencia Institute of Statistics (*Instituto Valenciano de Estadística* in Spanish) publishes IOT for the Valencia region on a five-yearly basis, the latest referring to 1995, which divides the economy into 84 sectors[2]. This means that the IOT must not only be simplified by aggregating sectors, but also updated, as using the IOT for 1995 implies a significant time lag that would make it impossible to obtain adequate results regarding the impact ports have had.

We initially have a table with 84 branches of activity (B84) and must now decide to what extent they should be aggregated in order to reduce the number of sectors. An overly detailed IOT does not improve the results of impact analysis and, furthermore, both building up and also updating and interpreting results become an arduous task. As a result, the level of aggregation deemed suitable in order to achieve the objectives of the study and comply with accuracy demands is a Valencia Region IOT with 19 productive sectors (IOTVRB19). This level of detail captures information about the most relevant sectors and makes it possible to identify the so-called traditional sectors of the Valencia Region economy.

After structuring the IOT into 19 sectors (IOTVR1995B19), information from Spanish Regional Accounts published by the National Institute of Statistics (*Instituto Nacional*

[2] At the time this article was written, the Valencia Region IOT for the year 2000 had not been published.

de Estadística in Spanish) is used in order to obtain the maximum amount of accounting data for each and every branch of activity and thus update Blocks II and III of the IOT.

Once these blocks have been updated, the only thing left to be done is to determine the matrix of inter-sector transactions for 2004. In order to capture the technological changes over the period dating from 1995 to 2004, the matrix has been updated by applying the iterative method of matrix convergence RAS, first proposed by Stone (1969). This method is based on a computation process that makes it easier to adjust the matrix with a time lag (IOTVR1995B19) so that it fits the new data from the Regional Accounts used in the year under study (2004). After this process has finished, a new Valencia Region IOT is obtained, updated to 2004 and with 19 branches of economic activity (IOTVR2004B19). This will be the basic instrument used in the empirical analysis.

This study has analysed the economic impact of a selection of leisure ports in the Valencia Region on the towns where they are located. The installations that provided sufficient information for the study to be conducted are listed below:

- Oropesa Yacht Club (Oropesa)
- Royal Yacht Club of Valencia (Valencia)
- Denia Marina (Denia)
- Denia Yacht Club (Denia)
- "Les Bassetes" Yacht Club (Benisa)
- "Marina de las Dunas" Marina (Guardamar)
- Royal Yacht Club of Torrevieja (Torrevieja)
- Santa Pola Yacht Club (Santa Pola)
- Altea Yacht Club (Altea)
- "Campoamor" Yacht Club (Orihuela)

In order to tackle the study at the required level, we use information from a publication by *"La Caixa"*[3] (2005) on the towns where leisure ports are located, which makes it possible to elaborate IOT for each of them. A regionalisation procedure was applied to IOTVR2004B19 and the following tables were obtained: IOT(OROPESA)2004B19, IOT(VALENCIA)2004B19, IOT(DENIA)2004B19, IOT(BENISA)2004B19, IOT(GUARDAMAR)2004B19, IOT(TORREVIEJA)2004B19, IOT(SANTAPOLA)2004B19, IOT(ALTEA)2004B19, IOT(ORIHUELA)2004B19. These IOT are the key tool for calculating the local economic impact of the respective sports clubs and marinas.

2.3. Preparation of the Model for Italian Leisure Ports

The basic instrument used to carry out the economic impact analysis in Italian regions was the Italian IOT[4] for 2000, which is divided into 59 branches of activity. The branches of activity in the Italian IOT have also been aggregated to 19 (IOTIT2000B19) in order to homogenize the analysis with the leisure ports in Valencia. We then proceeded to regionalize and update the IOT to 2004 in order to obtain the IOT for Liguria (IOTLG2004B19), as the ports analysed are situated in this region.

In this study, the economic impact of three leisure ports in Italy has been analysed:

- Lega Navale (Province of Genova)
- Diano Marina (Province of Imperia)
- Porto Antico (Province of Genova)

It was also necessary to obtain IOT that reflected the size of the geographical areas under study (Genova and Imperia) where the leisure ports are located, which resulted in the following IOT: IOT(GENOVA)2004B19 and IOT(IMPERIA)2004B19. Unlike the

[3] "La Caixa" is a Spanish financial institution.
[4] Latest available table at ISTAT at the time this article was written.

analysis of leisure ports in the Valencia Region, there was not enough information to refer the IOT to the town in question in this analysis. Consequently, the impact results on the area of influence will not be entirely comparable, as the geographical regions referred to are different both in terms of administrative structure and size.

The accounting data obtained via surveys and provided by the various nautical infrastructures has allowed us to obtain, as in the case of the Valencia Region, a column which identifies the economic activity of leisure ports. This column has been treated as a demand disturbance in order to determine what effects are produced when leisure port activity increases.

3. Results Obtained for Leisure Ports in Valencia

Analysing the economic impact of leisure ports, as mentioned previously, provides a point of reference for public and private sector decision making related to the port sector. In addition to this, results will make it possible to compare sports structures as the same methodology has been used in all cases and an attempt has been made to focus on the town where ports are located or the nearest area of influence as in the case of Italian installations.

In the first place, purchase structures and the value added to infrastructures are analysed to determine the presence of possible significant differences between the two. Later, in order to simplify observations, the economic impact results obtained from quantifying the initial, direct, indirect and induced effects are presented in aggregate form.

3.1 Purchase Structure

The purchase structure of nautical-sports ports was obtained from surveys and the annual accounts of the individual leisure ports under study. After analysing these data, it can be appreciated that while there are important differences across ports, at least two sectors stand out in all of them: in goods, “Energy” and in services, the branch of activity called “Other Market Services” (Table 1). “Energy” represents up to 40% of purchases in some ports, such as Oropesa Yacht Club. This branch of activity encompasses the following types of products: fuel, electricity, gas, water and residual collection. All these products are necessary for the users of these installations to be able to carry out their nautical and leisure activities.

“Other Market Services” are important in proportion to the rest of supplies due to the nature of the business activity these ports conduct. It is important to bear in mind that this sector includes the following types of services: educational, health, social, associative, recreational, cultural, sports and other personal services. More specifically, the Yacht Clubs in Denia, Orihuela (“Campoamor”) and Torrevieja more than 35% of their expenses to these activities. However, in “Marina de las Dunas” and Denia Marina these services are not as relevant, as their activity is less recreational than that of yacht clubs.

It is also worth mentioning the “Trade and Repairs” sector, which differs in order of importance depending on the facility, but accounts for more than 10% of expenses in most due to the constant maintenance and repairs that infrastructures and above all vessels require. Other relevant sectors depending on the individual situation and configuration of each port are “Construction” and “Financial Intermediation”, together

with “Real Estate Agencies and Business Services” in the case of the Royal Yacht Club of Valencia and “Machinery” in Denia, Santa Pola and Altea Yacht Clubs.

Table 1: Nautical Facility Purchase Structure (2004)

Sector	OROPESA YACHT CLUB	R.Y.C. of VALENCIA	DENIA MARINA	DENIA YACHT CLUB	LES BASSETES Y.C.	MARINA DE DUNAS	R.Y.C of TORREVIEJA	SANTA POLA Y.C.	ALTEA YACHT CLUB	CAMPOAMOR YACHT CLUB
Agriculture	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Energy	40.29%	9.48%	31.86%	13.99%	34.12%	28.46%	12.91%	26.45%	20.81%	13.69%
Food	0.00%	0.95%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Clothing and Footwear	1.48%	1.33%	7.66%	2.81%	1.30%	1.84%	0.00%	7.81%	4.20%	0.00%
Chemical Industry	7.91%	3.79%	0.00%	0.51%	0.32%	9.80%	0.00%	0.17%	0.32%	0.48%
Other Non-metallic Products	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Metallurgy	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Machinery	0.00%	0.57%	21.49%	5.10%	3.65%	0.00%	4.27%	14.20%	11.78%	0.00%
Electrical Equipment	0.00%	0.57%	0.00%	0.54%	0.54%	0.00%	0.00%	0.18%	0.54%	0.82%
Transport Material	1.90%	1.33%	0.00%	0.00%	0.00%	2.36%	0.00%	0.00%	0.00%	0.00%
Misc. Manufactures	0.00%	0.95%	5.13%	0.89%	0.87%	16.99%	4.64%	6.23%	5.41%	3.91%
Construction	0.00%	8.10%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Trade and Repairs	29.01%	12.16%	4.44%	9.50%	8.74%	20.49%	17.71%	13.01%	9.38%	14.07%
Hotels and Restaurants	0.00%	1.62%	4.01%	2.24%	3.55%	0.00%	0.00%	2.06%	5.11%	4.37%
Transport & Communications	0.07%	2.43%	1.34%	1.91%	4.30%	0.05%	0.41%	1.31%	4.56%	5.86%
Financial Intermediation	2.25%	8.10%	6.01%	3.75%	10.68%	7.91%	2.83%	4.28%	3.72%	5.56%
Real Estate Agencies and Business Services	6.96%	20.26%	9.00%	2.97%	6.69%	4.91%	3.17%	4.25%	2.94%	4.41%
Other Market Services	10.13%	28.37%	9.06%	55.80%	25.25%	7.19%	37.78%	20.03%	31.23%	46.84%
Non-market Services	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	16.28%	0.00%	0.00%	0.00%
	100%	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**

3.2 Value Added Structure and Employment

Value added structure (Table 2) reveals how more than 80% is accounted for by income distributed between employee compensation and the gross operating surplus. Notwithstanding, differences between these two items can be appreciated within each leisure port.

The gross operating surplus is not as important an item, as can be observed in Table 2, as it would be in any other type of company, due to the non-profit-making nature of yacht clubs. In fact, it is even negative in the case of Denia Yacht Club, “Marina de las Dunas” and Santa Pola Yacht Club. Another feature of this type of organisation is that they are subsidised by the government, which means quite low or even negative net indirect taxes (Royal Yacht Club of Valencia, Les Bassetes Yacht Club, “Marina de las Dunas”, Royal Yacht Club of Torrevieja).

In the majority of leisure ports, the most important item is wages. As these organisms do not share profits, employee wages are more important than the rest of the items that make up value added. However, in the case of Oropesa Yacht Club, the Royal Yacht Club of Valencia, Denia Marina and the Royal Yacht Club of Torrevieja, both employee wages and the gross operating surplus are relevant.

Employment information is somewhat disguised by the fact that yacht clubs subcontract services, as can be appreciated in the information referring to the purchase of services. On many occasions, such services are hired on a personal basis and as a result are not clearly portrayed in the situation of marinas or the companies that provide the services. Identifying such services remains difficult because they are not recorded as employment by the port or the services company.

Table 2: Nautical Facility Value Added Structure (2004)

	OROPESA YACHT CLUB	R.Y.C. of VALENCIA	DENIA MARINA	DENIA YACHT CLUB	LES BASSETES Y.C.	MARINA DE DUNAS	R.Y.C. of TORREVIEJA	SANTA POLA Y.C.	ALTEA YACHT CLUB	CAMPOAMOR Y.C.
Gross Wages	30.39%	47.38%	25.03%	112.18%	66.78%	106.01%	54.15%	113.92%	76.16%	78.97%
Operating Surplus	63.72%	31.05%	59.74%	-35.92%	20.49%	-4.39%	46.27%	-22.89%	17.91%	1.05%
Other Taxes	0.92%	16.22%	6.97%	17.14%	13.01%	1.46%	1.41%	2.91%	11.41%	8.72%
Net Indirect Taxes	4.97%	-5.35%	8.27%	6.59%	-0.28%	-3.08%	-1.82%	6.06%	5.48%	11.26%
Gross Value Added mp	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Nº of Employees	23	73	14	41	11	22	40	39	24	11

3.3 Aggregate Effects of Leisure Ports

In the tables that present the aggregate effects of each port, summarised in six variables: gross wages, gross operating surplus, tax income, gross value added at basic prices (GVA_{bp}), output and number of employees, the results are detailed according to initial, direct, indirect and induced effects. Despite the differences between leisure ports, marinas and yacht clubs, Table 3 includes the averages for all of them.

Some of the general features of the economic impact of marinas and leisure ports in the Valencia Region can be appreciated in Table 3 and are detailed below:

1. The initial information obtained regarding the structure of these ports denotes an average-sized company that purchases intermediate goods worth 967,000 euros, which exceeds their value added contribution.
2. Leisure ports have an important direct effect on the town due to both the quantity of purchases made and the value added generated, particularly where wages are concerned.
3. Indirect effects are minimal as this type of activity is not closely linked to local industry.
4. The induced effect, owing to the income generated, approaches the value of the indirect effect.
5. Total impact almost replicates the initial effect, which implies significant repercussions for the local economy.

Table 3: Average Economic Aggregates of the 10 Leisure Ports Analysed in the Valencia Region, 2004 (1,000s of euros)

	Initial	Direct	Indirect	Induced	Total
Gross Wages	529	292	20	185	**496**
Operating Surplus	276	316	18	156	**490**
Tax Income	106	19	1	13	**33**
GVA bp	898	616	39	347	**1,002**
Output	1,865	1,151	76	532	**1,859**
Nº of Employees	30	15	1	10	**26**

Going into more comparative detail, a summary of each of the effects of the ports on each town is provided below, the results of which are presented in Tables 1A-10A in the Appendix.

The **initial effect** portrays the current situation of leisure ports based on the data obtained from their accounts, which provides information regarding the size and structure of their activity. If we analyse Tables 1A-10A, the Royal Yacht Club of Valencia is seen to have the largest initial impact with respect to the rest of them (total output of 5,586,000 euros), followed by the Denia Marina and Denia Yacht Club (with an output of 2,844,000 euros and 2,303,000 euros respectively).

In addition to this, the importance of the facility with respect to the town where it is located (2nd column in the tables) is another relevant aspect of the information included in the initial effect. The larger the town is, the smaller the relative influence of the sports facility. This is the case of the Royal Yacht Club of Valencia, which despite being the largest has a minimal impact on the city (0.02% of Valencia's output). The opposite occurs with Oropesa Yacht Club, whose effect on the town represents 1.3% of output, despite being smaller in size (1,772,000 euros).

Nautical and sports activity demands a significant amount of services from the rest of productive sectors in the economy, giving rise to the so-called **direct effect**. This impact mainly captures how relevant facility is with respect to its environment, which could be perceived by local companies as an indispensable producer of services that are

necessary to maintain and increase their business activity. In all ports, the direct activity they generate (3rd column) is more important to the rest of sectors than subsequent trade relations (indirect and induced effects represented in columns 4 and 5). In this sense, for example, the Royal Yacht Club of Torrevieja generates a total output amounting to 1,229,000 euros in order to meet the demand of the rest of the branches of activity, of which 737,000 euros are increases in income (GVA) and 21 new jobs are created. However, Campoamor Yacht Club, due to being smaller in size, also has a smaller direct effect on the rest of economic sectors. This impact implies a total output of 236,000 euros and three new jobs together with corporate profits amounting to 139,000 euros.

The **indirect effect** that stems from all the interaction that occurs in the productive structure is relatively small, but not inconsiderable. The reason the impact is cushioned so quickly is nautical-sports activities mainly use services, which create only minimal inter-sector links.

However, investors become more interested and consumption increases if we consider the spending of the income that leisure ports generate through their activity, employee compensation (wages) and companies (corporate profits) (**induced effect**). Results show that the induced effect is larger than the indirect effect, but smaller than the direct effect. A common feature in all the ports under analysis is that the profits made through the induced effect are very similar to the gross wages obtained through the same effect. For example, in Altea Yacht Club, the induced effect generates a profit of 121,000 euros and gross wages of 143,000 euros. Likewise, Santa Pola Yacht Club faced with gross wages that amount to 132,000 euros, makes a profit of 111,000 euros.

4. Results Obtained in Italian Ports

Average direct, indirect and induced effects are presented below in aggregate form with respect to the main macroeconomic variables that determine the influence of the nautical activity carried out by the three nautical infrastructures under analysis (Table 4). The results portray a similar pattern to that described for the marinas in the Valencia region.

Table 4: Average Economic Aggregates in the Three Italian Leisure Ports Analysed, 2004 (1,000s of euros)

	Direct	Indirect	Dir and Ind	Induced	Total
Gross Wages	435	38	474	148	**622**
Operating Surplus	487	85	572	393	**965**
Tax Income	1,084	180	1,264	822	**2,086**
GVA bp	796	114	910	512	**456**
Output	1,303	210	1,513	978	**2,491**
Nº of Employees	23	2	25	9	**34**

Tables 11A – 13A in the Appendix detail the individual effect that Porto Antico, Lega Navale and Diano Marina have on the provinces where they are located. These tables reveal that, Porto Antico has the greatest impact on the rest of productive sectors in terms of the size of the effects as a whole. Furthermore, direct activity generated for the rest of sectors is more important than subsequent trade relations (indirect and induced effect) in all tables. The results of each effect are presented below:

The **direct effect**, as explained previously, mainly echoes how important local companies perceive the nautical activity to be when it comes to meeting the demands of these types of ports. In short, the structure of them represented by purchases and identified in their column, generate significant direct economic activity among the rest of productive sectors. In the case of Porto Antico, this increase in demand boosts output by 2,941,000 euros, of which 1,805,000 are increases in income (GVA) and creates 53 new jobs. Lower results were obtained in Lega Nevale and Diano Marina as they are

both smaller (output increased by 200,000 euros and 769,000 euros of which 123,000 and 459,000 were GVA respectively).

The **indirect effect** denotes the impact that stems from the subsequent buying and selling activity that takes place between the sectors originally affected by the activity of the facility under analysis and the rest of economic sectors. According to the results in Tables 11A, 12A and 13A, this impact is smaller than in the case of the direct effect described above. Once again, the reason this impact is absorbed so quickly is due to the sports activity demanding mainly services, which have a minimal inter-sector linking effect.

Finally, the **induced effect** is generated by the consumption and investment power of companies and economic agents directly related to the activity of the marina. In this sense, considering the income obtained through local nautical activity, employee compensation (wages) and companies (corporate profits) stimulates the economy. In the case of Italian ports, the induced effect of Porto Antico boosts output by more than 2,200,000 euros and produces GVA amounting to slightly over 1,150,000 euros, as well as creating 20 additional jobs. In Lega Navale and Diano Marina, the induced effect raises output by 151,000 and 568,000 euros, GVA to the value of 79,000 and 297,000 euros and created one and five new jobs respectively.

The total impact of each facility on the economy of the province (last column in Tables 11A, 12A and 13A) indicates that such infrastructures are not very important as they are extremely small when compared to the size of economy in the province where they are located. This is the case of Genova, a province that is responsible for nearly 80% of the overall volume of economic activity in the region of Liguria. These results are the only ones that are not comparable to the leisure ports in the Valencia Region where we were able to obtain IOT for the various towns in which they are located. Towns are logically

much more affected by such ports. We can also see how their structures are quite similar, which gives an idea of how stable the analysis of the nautical facilities is.

5. Conclusions

The recent upturn in demand for nautical sports and the need for attractive ports in tourist destinations has sparked an interest in evaluating possible investment decisions by analysing alternatives that will have an impact on the Valencia and Italian economy.

This study has made it possible to determine how important some Western Mediterranean nautical-sports infrastructures are in the towns where they are located using data for 2004. It is worth bearing in mind that such leisure ports are growing continuously to meet user demand and offer an increasing number of services (restaurants, shops, central office, nautical and fishing schools, swimming pools etc.) as the current level of competition makes perfecting all activities undertaken a must.

According to the results of the study, the facility that contributes the most to GVA (GDP) in its respective area is the Royal Yacht Club of Valencia (3,087,000 euros), followed by Denia Marina (1,489,000 euros). However, the size of the city where the port is located is decisive when it comes to evaluating the overall impact (initial plus total effects) on the area under study. Such is the case of the Royal Yacht Club of Valencia, which despite being the largest facility has a minimal impact on the city of Valencia (0.04% of Valencia GDP). The opposite occurs in the case of the Oropesa Yacht Club, which despite being a relatively small facility, accounts for 2.58% of Oropesa GDP.

As regards the nautical-sports infrastructures in Italy, the economic impact of Porto Antico boosted direct output by 2,941,000 euros, of which 1,805,000 were increases in

income (GVA), and created 53 new jobs. Lower results were obtained in the cases of Lega Navale and Diano Marina due to their being smaller in size (increases in output of 200,000 and 769,000 euros, of which 123,000 and 459,000 euros were GVA respectively).

The results obtained from the impact analysis highlight the fact that Input-Output Analysis is a good tool for evaluating how important the internal activity of a port area is and its repercussions on the region. Furthermore, in order to avoid the strictly linear nature of the model applied, specific matrices were used for the year and the region or town under study, thus improving data manipulation and consequently results.

Direct effects are highly relevant in nearby areas from which leisure ports obtain supplies. In contrast, apart from other effects such as attracting recreational and sports tourism, the indirect effects that are strictly economic are not very significant, while the effect induced through ports creating household wealth is again considerable in the town or region where the facility is located. Despite having a lesser impact, the indirect and induced effects are felt by all branches of productive activity and above all are evenly spread across productive factors, labour and corporate profits.

In line with the research conducted under the Interreg IIIC initiative, Ruiz (2005) concludes, from a strictly tourist viewpoint, that while it is true that nautical activity has many appealing aspects in terms of diversifying and specialising the tourist activities on offer, the high level of expenditure that it brings and how appealing the activity and the facility are, it also increases the residential tourism share of accommodation supply along the Valencia coastline. This must be taken into account when evaluating how profitable it is to fill vacancies with this type of tourism, as it may turn out to be less profitable.

References

Fernández, J.I., Goerlich, F. y Puertas, R. (2001): "Impacto de la A-7 en la estructura productiva valenciana". En García, L. y Torregrosa, A.: Valoración económica de los efectos de la Autopista A-7 en la Comunidad Valenciana. Instituto de Economía Internacional.

Instituto Nacional de Estadística (2005): Contabilidad Regional de España. Base 1995.

Instituto Valenciano de Estadística (2002): Marc Input-Output i Comptabilitat Regional. Comunitat Valenciana 1995. Generalitat Valenciana.

Instituto de Estadística Italiano (2005): Contabilidad Regional de Italia

La Caixa (2005): Anuario Económico de España.

Leontief, W. (1970): Análisis económico Input-Output, Ariel.

Ruiz, P (2005): "Estudio del impacto socioeconómico" Proyecto Gesinports: gestión integrada y sostenible de los puertos de recreo del Mediterráneo

Stone, R. (1969): "L'analisi dei Sistema Economici" en D'Adda, C., y Filippini, C.: Interdependenze Industriali e Politica Economica, I1 Mulino, Bologna.

APPENDIX

Table 1A: Economic Effects of the Oropesa Yacht Club, 2004 (€1,000s)

	Initial	% s/OROP*	Direct	Indirect	Induced	Total	% o/OROP*
Gross Wages	**289**	**0.82%**	204	16	152	372	**1.05%**
Operating Surplus	**606**	**1.96%**	295	15	128	438	**1.42%**
Tax Income	**56**	**2.77%**	15	1	10	27	**1.31%**
GVA bp	**904**	**1.35%**	508	31	285	824	**1.23%**
Output	**1,772**	**1.30%**	1,006	61	520	1,587	**1.16%**
Nº of Employees	**23**	**1.23%**	12	1	8	21	**1.10%**

*Town of Oropesa

Table 2A: Economic Effects of the Royal Yacht Club of Valencia, 2004 (€1,000s)

	Initial	% s/VLC*	Direct	Indirect	Induced	Total	% o/VLC*
Gross Wages	**1,545**	**0.02%**	756	55	494	1,305	**0.01%**
Operating Surplus	**1,013**	**0.01%**	862	49	418	1,328	**0.022%**
Tax Income	**355**	**0.08%**	57	3	33	93	**0.02%**
GVA bp	**3,087**	**0.02%**	1,646	106	927	2,679	**0.02%**
Output	**5,586**	**0.02%**	2,901	209	1,691	4,801	**0.01%**
Nº of Employees	**73**	**0.01%**	39	3	25	67	**0.01%**

* City of Valencia

Table 3A: Economic Effects of Denia Marina, 2004 (€1,000s)

	Initial	%s/DENIA	Direct	Indirect	Induced	Total	%o/DENIA
Gross Wages	**406**	**0.14%**	325	28	215	568	**0.19%**
Operating Surplus	**970**	**0.38%**	372	26	182	579	**0.22%**
Tax Income	**247**	**1.48%**	22	2	14	38	**0.22%**
GVA bp	**1,489**	**0.26%**	707	55	403	1,166	**0.21%**
Output	**2,844**	**0.25%**	1,538	111	736	2,385	**0.21%**
Nº of Employees	**14**	**0.09%**	17	2	11	29	**0.19%**

Table 4A: Economic Effects of Denia Yacht Club, 2004 (€1,000s)

	Initial	%s/DENIA	Direct	Indirect	Induced	Total	%o/DENIA
Gross Wages	**848**	**0.29%**	535	32	327	895	**0.30%**
Operating Surplus	**-272**	**-**	550	29	277	856	**0.33%**
Tax Income	**179**	**1.07%**	32	2	22	55	**0.33%**
GVA bp	**706**	**0.12%**	1,098	62	614	1,774	**0.32%**
Output	**2,303**	**0.20%**	1,913	119	1,120	3,152	**0.28%**
Nº of Employees	**41**	**0.26%**	27	2	17	46	**0.29%**

Table 5A: Economic Effects of Les Bassetes Yacht Club, 2004 (€1,000s)

	Initial	%s/BEN**	Direct	Indirect	Induced	Total	%o/BEN**
Gross Wages	**84**	**0.13%**	19	1	13	33	**0.05%**
Operating Surplus	**26**	**0.04%**	23	1	11	35	**0.06%**
Tax Income	**16**	**0.43%**	1	0	1	2	**0.06%**
GVA bp	**127**	**0.10%**	43	3	24	69	**0.05%**
Output	**191**	**0.07%**	80	5	44	129	**0.05%**
Nº of Employees	**11**	**0.32%**	1	1*	1	2	**0.04%**

* a part-time worker
**Town of Benisa

Table 6A: Economic Effects of "Marina de las Dunas", 2004 (€1,000s)

	Initial	%s/GMAR*	Direct	Indirect	Induced	Total	%o/GMAR*
Gross Wages	**350**	**0.37%**	169	13	113	294	**0.31%**
Operating Surplus	**-14**	**-**	199	12	95	307	**0.37%**
Tax Income	**-5**	**-**	11	1	8	19	**0.36%**
GVA bp	**340**	**0.19%**	374	25	211	610	**0.34%**
Output	**966**	**0.27%**	787	50	385	1,223	**0.34%**
Nº of Employees	**22**	**0.44%**	10	1	6	16	**0.32%**

* Town of Guardamar

Table 7A: Economic Effects of the Royal Yacht Club of Torrevieja, 2004 (€1,000s)

	Initial	% s/TORR*	Direct	Indirect	Induced	Total	% o/TORR*
Gross Wages	**495**	**0.11%**	411	20	218	649	**0.14%**
Operating Surplus	**423**	**0.10%**	317	17	184	519	**0.13%**
Tax Income	**-4**	**-**	22	1	15	38	**0.14%**
GVA bp	**931**	**0.10%**	737	37	410	1,183	**0.13%**
Output	**1,918**	**0.11%**	1,229	70	747	2,046	**0.11%**
Nº of Employees	**40**	**0.16%**	21	1	11	33	**0.13%**

* Town of Torrevieja

Table 8A: Economic Effects of Santa Pola Yacht Club, 2004 (€1,000s)

	Initial	%s/S.POLA	Direct	Indirect	Induced	Total	%o/S.POLA
Gross Wages	**552**	**0.52%**	205	16	132	353	**0.33%**
Operating Surplus	**-111**	**-**	225	15	111	351	**0.38%**
Tax Income	**43**	**0.72%**	13	1	9	22	**0.37%**
GVA bp	**455**	**0.23%**	436	31	248	715	**0.36%**
Output	**1,198**	**0.29%**	896	62	451	1,409	**0.35%**
Nº of Employees	**39**	**0.70%**	11	1	7	19	**0.34%**

Table 9A: Economic Effects of Altea Yacht Club, 2004 (€1,000s)

	Initial	%s/ALTEA	Direct	Indirect	Induced	Total	%o/ALTEA
Gross Wages	**503**	**0.34%**	227	16	143	385	**0.26%**
Operating Surplus	**118**	**0.09%**	244	15	121	379	**0.30%**
Tax Income	**112**	**1.35%**	13	1	10	24	**0.29%**
GVA bp	**697**	**0.25%**	476	31	268	775	**0.28%**
Output	**1,398**	**0.25%**	919	61	489	1,469	**0.26%**
Nº of Employees	**24**	**0.31%**	12	1	7	20	**0.26%**

Table 10A: Economic Effects of Campoamor Yacht Club, 2004 (€1,000s)

	Initial	%s/ORI**	Direct	Indirect	Induced	Total	%o/ORI**
Gross Wages	**220**	**0.04%**	65	4	41	110	**0.02%**
Operating Surplus	**3**	**0.001%**	72	3	35	110	**0.02%**
Tax Income	**56**	**0.21%**	4	0	3	7	**0.02%**
GVA bp	**247**	**0.02%**	139	7	77	223	**0.02%**
Output	**471**	**0.02%**	236	14	141	392	**0.02%**
Nº of Employees	**11**	**0.04%**	3	1*	2	6	**0.02%**

* Part-time worker
**Town of Orihuela

Table 11A: Economic Effects of Porto Antico, 2004 (€1,000s)

	Direct	Indirect	Dir. & Ind.	Induced	Total	%o/GEN*
Gross Wages	1,003	86	1,089	335	1,424	**0.022%**
Operating Surplus	1,096	190	1,286	889	2,175	**0.013%**
Tax Income	2,445	401	2,846	1,862	4,708	**0.013%**
GVA bp	1,805	256	2,061	1,159	3,220	**0.014%**
Output	2,941	469	3,409	2,214	5,624	**0.013%**
Nº of Employees	53	5	58	20	78	**0.00017%**

* Province of Genova

Table 12A: Economic Effects of Lega Navale, 2004 (€1,000s)

	Direct	Indirect	Dir. & Ind.	Induced	Total	%o/GEN*
Gross Wages	68	6	74	23	97	**0.002%**
Operating Surplus	75	13	88	61	148	**0.001%**
Tax Income	167	27	194	127	321	**0.001%**
GVA bp	123	17	140	79	219	**0.001%**
Output	200	32	232	151	383	**0.001%**
Nº of Employees	4	0	4	1	5	**0.000012%**

* Province of Genova

Table 13A: Economic Effects of Diano Marina, 2004 (€1,000s)

	Direct	Indirect	Dir. & Ind.	Induced	Total	%o/IMP*
Gross Wages	235	23	258	86	344	**0.022%**
Operating Surplus	291	52	343	228	571	**0.014%**
Tax Income	640	111	751	477	1,228	**0.014%**
GVA bp	459	70	529	297	826	**0.015%**
Output	769	129	898	568	1,465	**0.014%**
Nº of Employees	13	1	14	5	19	**0.000%**

* Province of Imperia