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FEDERATION OF THE SEA

CENSIS

**THE SECOND MARITIME
ECONOMY REPORT
2002**

THE ECONOMIC AND
EMPLOYMENT IMPACT
OF THE ITALIAN MARITIME CLUSTER

FRANCOANGELI

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AIDIM: Associazione Italiana di Diritto Marittimo (maritime law)

ANIA: Associazione Nazionale tra le Imprese di Assicurazione (insuring)

Assiterminal: Associazione Italiana Terminalisti Portuali (port logistics)

Assologistica: Associazione Nazionale Imprese di Logistica, Magazzini Generali, Magazzini Frigoriferi, Terminal Operator Portuali, Interportuali e Aeroportuali (logistics)

Assonave: Associazione Nazionale dell'Industria Navalmecanica (shipbuilding)

Assoportri: Associazione Porti Italiani (port administration)

Assorimorchiatori: Associazione Italiana Armatori di Rimorchiatori (towage)

Confitarma: Confederazione Italiana Armatori (merchant shipping)

Fedarlinea: Associazione Italiana Armamento di Linea (merchant shipping)

Federpesca: Federazione Nazionale delle Imprese di Pesca (fishing navigation)

IPSEMA: Istituto di previdenza per il Settore Marittimo (maritime welfare)

RINA: Registro Italiano Navale (certification and classification)

TMCR: Associazione Nazionale per la Promozione del Trasporto Marittimo a Corto Raggio (shortsea promotion)

UCINA: Unione Nazionale Cantieri Industrie Nautiche e Affini (leisure boating)

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SUMMARY

Foreword	pag. 7
<i>Corrado Antonini</i>	
Introduction	» 9
<i>Giuseppe Perasso</i>	
1. General considerations	» 13
1.1. 2.3% of GDP, 1.5% of national employment: the maritime sector is growing and reorganizing	» 13
1.2. Towards an Italian maritime cluster	» 20
2. Economic analysis	» 25
2.1. The role of the maritime industry	» 25
2.2. The individual industrial sectors	» 36
2.3. Comparison between 1992 and 2000	» 55
2.4. The other sectors of the maritime sector	» 63
3. Principle sectorial dynamics	» 71
3.1. Maritime transport	» 71
3.2. Merchant shipbuilding	» 83
3.3. Recreational boating	» 88
3.4. Fishing	» 96
3.5. The Navy	» 105
4. A look at the european situation: the proliferation of maritime cluster experiments	» 109
4.1. Clustered Maritime Europe	» 109
4.2. An example of excellence: the Dutch maritime cluster	» 114
4.3. A traditional reference point: the United Kingdom	» 116

FOREWORD

This is the Second Report on the maritime economy prepared by the Federation of the Italian Maritime System. This follows the First Report drafted in 1996 and demonstrates the Federation's intention to ensure continuity in the analysis of the socio-economic situation of maritime activities, as well as its aim of giving the sea economy a unified identity more clearly perceivable by public opinion and the political and economic worlds.

The Report examines not only industrial activities associated with shipping, shipbuilding, port activities, fishing and leisure boating. It also looks at those institutions, including the Navy, Coast Guard and Port Authorities, which constitute an important part of the maritime world and influence its development and economy. The most successful foreign experiences in this sphere have included these important organizations in their maritime "clusters".

The data included in the new Report confirm the great impact maritime activities have on the Italian economy, estimated at over 26 billion euro of goods and services produced annually, with 356,000 work units directly or indirectly employed and with strong multiplying effects both upstream and downstream. The role of the maritime economy is growing, confirming its status as an invaluable resource for the country's development.

The maritime system of course plays a key role in Italy, considering the strong interdependence of our economy with foreign markets, Italy's coastal and inland layout and the civic and economic importance of sea towns.

The goal of the Maritime Federation is to photograph the general situation of the national Maritime System, to better understand its needs so that appropriate policies can then be adopted, both for activities taken as a whole and for individual elements. We believe that this report constitutes a significant new step in that direction.

Corrado Antonini

INTRODUCTION

In May 1994 the Federation of the Italian Maritime System - or more simply the Federation of the Sea - was created, uniting the leading business organizations in the sector (Assologistica, Assonave, Confitarma, Fedarlinea, Federagenti, Federpesca, UCINA) with the aim of strengthening them through the unified representation of multiple maritime business activities, with common values, cultures and expressed interests, especially in an international scenario.

It has also been several years since the Federation of the Sea and Censis prepared the First Report on the maritime economy, in 1996, with the goal of highlighting, through forecasts and statistics, the socio-economic impact of maritime business in the broader context of the country's development.

Since then, though little time has passed, much has changed. The international scene is affected by the globalization processes of companies and economies, as well as by wars and acts of terrorism. Within the national context, the continuous cross-pollination between the global and local dimensions has helped to progressively change the culture and actions of local actors, particularly in business. The geo-economic structure of development has been modified through new systemic, cross-border and international systems. Within the scope of local growth, the country has brought back into play all of its potential value added, in a new wave of economic flows.

In such a context of flux and progressive change - at times even traumatic change - the scope of transformation has increased beyond all expectations the role played by the sea and all of its components in the national system. Within the span of less than ten years, the maritime economy, its members, carriers, territories and symbols, have come to play a significant new role in national development.

This role consists of global interconnections, trade centers, environmental research and innovation, the rethinking of production processes, the reorganization of consumer and tourism sectors, and the development of available human resources. Ports and maritime cities have become strategic “nodes” in a renewed network of influences going beyond trade and mobility to include the development of the areas in which they are located, in many cases crossing national boundaries. The development of the “Sea Highways” and of “short sea shipping” has become a priority for increasing Italian competitiveness in the Mediterranean and global markets.

These are of course only some of the issues in the country’s recent maritime history that have helped to reformulate the objectives being pursued by maritime business and non-business operators in their daily work.

This is why it now seems important to take a new look at the maritime economy and redirect one’s attention - sadly lacking too often on the part of institutions - and review and identify possible new objectives.

The instigator of this project is first and foremost a renewed Sea Federation, with more members, more substance and a stronger desire for action.

As for its members, the associations that were already members (Assolagistica, Assonave, Confitarma, Fedarlinea, Federpesca and UCINA) have been joined by ANIA, AIDIM, Assoport, Assorimorchiatori, IPSEMA, RINA and TMCR. The Sea Federation also relies on the interest, expertise and active participation of the Navy and the Coast Guard.

The move to include non-business members bears witness to the intention of making the Sea Federation a “cluster” of the maritime world that can provide institutions, intermediaries and public opinion in Italy and Europe with a unified vision of all of the elements that revolve around shipping, economic interests, employment opportunities and the maritime culture, taken to mean the expression of the maritime universe and its impact on that world. One might wonder whether this need is actually perceived, or if the Sea Federation is instead one of the many superfluous entities that is all words and no action.

I think the answer is clear for all to see. In recent years, the maritime world has too often presented itself - and unfortunately still presents itself - to the outside world in a manner that is fragmented, divided, and at times in conflict.

Too often similar interests have become a part of different associations and federations, becoming secondary sectors of important, influential entities but basically unconcerned about the future of the maritime sector.

The results have not been very inspiring. From an institutional viewpoint, there is not an element of the maritime world that has not been challenged.

The Ministry of the Merchant Navy was abolished. The Ministry of Transport was added on to the Infrastructure Ministry, at this risk of its being subordinate to it. The maritime welfare institute (IPSEMA) is always in danger of being abolished. The Italian Classification Society is poised between attempts at incorporation and possible alliances and mergers. Shipbuilding is on the threshold of important privatization processes. Shipping companies are forced to follow slowly a liberalization process that has never been completely finished. Fishing enterprises are engaged in a laborious process of structural transformation. The leisure boating sector is seeking recognition for its contribution to the country's economy. Ports and their operators are constantly working to avoid isolation from the maritime hubs of Italian and European transport networks.

I regret to say that this situation can largely be attributed to the maritime world itself working towards important, even vital, objectives, but short-term goals. Objectives should instead be framed in a broader vision capable of involving all of those that can be brought together under a major maritime cluster.

The new organization of the Sea Federation gives new importance to estimates and statistical evaluations of the economic and occupational impact of all Italian maritime activities. For this reason, we have to take a step forward beyond the work accomplished in the First Report on the maritime economy in 1996. The work performed for the Second Report on the maritime economy has been based on statistical elements that are more up-to-date than in the previous edition, and, significantly, we have been able to rely on an analytical support framework that is more complete than was possible in the past. In this Report we have chosen not to compare the data from 1996 with the more recent data. Instead we have used as a basis for comparison the last certain data - which was not estimated but was calculated in the national accounts - from 1992, to be able to provide a dynamic review of tendencies. We have of course been careful to remain coherent with all of the quantitative evaluations expressed in past years. The basic methodological choice was however that of comparing the estimates of 2000 only with the most recent certain reference data, which are those from 1992.

In terms of results, the evidence provided in this Second Report on the maritime economy appears to be especially significant. In the year 2000 all maritime activities generated almost 26,300 million euro of production value - approximately 2.3% of the national GDP - providing employment for over 356,000 workers, both directly and indirectly, corresponding to approximately 1.5% of total national employment.

Just as interesting, or maybe more so, is the data about individual sectors which are examined in separate chapters, to which this is an introduction. I hope that the data that we supply, as was the case in the past with the First Report, are widely used by member associations and can contribute to restoring to the maritime world the place and importance it deserves.

Before ending this introduction I must thank all of those, in the association and outside that have worked with the Federation of the Sea and with Censis to produce this Second Report on maritime economy, making an invaluable contribution with their knowledge and experience in the sector.

First of all, I would like to thank the Italian Shipowners' Association, and in particular its President Giovanni Montanari, for the logistical and organizational contribution given to the Federation. A mainstay of this contribution was Carlo Lombardi, Vice Secretary of the Federation. Our gratitude is equally great to the Directors of member associations, and especially to Renato Sicurezza of Assonave, Luigi Perissich of Confitarma, Luigi Giannini of Federpesca, Luigi Robba of Assoport, Lorenzo Pollicardo of UCINA and the President of Fedarlinea, Giuseppe Ravera.

Finally, we should point out that this research was financed by Confitarma, Fedarlinea, Assonave, Federpesca, UCINA, Assologistica and Federagenti.

Giuseppe Perasso

1. GENERAL CONSIDERATIONS

1.1. 2.3% of GDP, 1.5% of national employment: the maritime sector is growing and reorganizing

An annual production value of almost 26,300 million euro (net of internal trading between sectors that amount to an additional 3,000 million euro circa), about 2.3% of the total gross domestic product in Italy.

Over 356,000 workers employed (about 1.5% of total national employment), including 185,830 directly in maritime activities and the remainder in related upstream (88,985) and downstream (81,260) economic sectors.

An overall impact on the national economy equal to 2.154 (i.e. for every euro of added demand 2.154 euro is generated in the Italian economy as a whole) and a total impact on national employment of 1.916 (i.e. every additional work unit leads to the creation of an additional 0.916 work units in the country as a whole).

The Italian maritime sector is on the threshold of the new millennium with these figures to back it up¹. And that is without considering, with similar econometric estimates, the strategic importance that many of its sectoral parts take on in providing:

- a high level of internationalization that increases the presence of Italian trade worldwide;
- a considerable impact on local areas (especially maritime cities);
- a means of transport and global communication that is increasingly more aware of and compatible with environmental issues;

1. The following sectors are included in the Italian maritime sector: maritime transport, maritime transport support services (terminal operators, tug-boat services, etc.), merchant shipbuilding, leisure boating (including the tourism branch), fishing, the Navy, Coast Guard, Port Authorities, Italian Naval Registry, the maritime social security institute (IPSEMA)

- the ability to provide safety to national and international traffic, through the defense of coasts, navigation and the inland territory;
- a spur to innovation in technology and procedures;
- constant attention to the development and training of human resources.

The overall value of the national maritime sector derives from the combination - described in detail in the paragraphs below - of the individual production and occupational values recorded by the different sectors under review. They specifically concern, on the one hand, the five major maritime industries (which can be broken down into maritime transport, maritime transport support services, merchant shipbuilding, leisure boating and fishing), and, on the other hand, non-industrial sectors, including the Navy, Coast Guard and Port Authorities (table 1.1).

As might be expected, industrial maritime activities alone, performing a mainly commercial function, have the most powerful impact on the economy and on national employment (multipliers of 2.333 and 2.153 for production and employment respectively). With regard to the individual contribution of

Tab. 1.1 – Maritime economy figures, 2000 (millions of euro)

	Industrial maritime activities (1)	Other maritime activities (2)	Total maritime sector (3)
<i>Input/output</i>			
GDP (net of duplications)	24,230	2,635	26,290
Impact			
direct	0.924	1.000	0.930
upstream	1.199	0.510	1.034
downstream	0.209	0.000	0.190
Multiplier	2.333	1.510	2.154
<i>Work units (AWUs)</i>			
AWUs			
direct	144,240	41,590	185,830
upstream (net of duplications)	85,040	8,680	88,985
downstream	81,260	0	81,260
total	310,540	50,270	356,075
Impact			
direct	1.000	1.000	1.000
upstream	0.590	0.209	0.479
downstream	0.563	0.000	0.437
Multiplier	2.153	1.209	1.916

(1) Maritime transport, maritime transport support services, merchant shipbuilding, recreational boating (including tourism branch) and fishing

(2) Navy, harbor companies, port authorities

(3) The total may not correspond to the total of the line values due to possible duplications

Source: Censis, 2002

sectors to the overall total, one should note the significant share in GDP of all the industrial branches under review: maritime transport (12,600 million euro and a production multiplier of 2.709), leisure boating - including maritime tourism-related industries (5,155 million euro and an impact of 5.019), maritime transport support services - maritime agents, terminal operators, etc. - with 3,455 million euro, fishing (2,925 million) and merchant shipbuilding (2,515 million).

Different, but still significant, is the sectoral participation in determining overall employment levels, where the sizeable direct contribution of fishing is visible (63,300 direct workers²), although it proves to be the least dynamic in terms of employment impact (with an employment multiplier of 1.404) and a very significant contribution of indirect workers in the maritime transport sector (60,930 upstream workers). Overall, the general value of the 310,540 work units relating to economic maritime activities appears to be generated by the following breakdown (gross of duplications): 88,850 in the fishing sector, 82,220 in leisure boating (including the 61,000 AWUs (annual working units) estimated for the related maritime tourism branch), 81,510 in maritime transport, 44,460 in maritime transport support services and finally 32,650 in merchant shipbuilding.

Other maritime activities under review impact the national economic balance sheet to a lesser degree, for obvious reasons (though they nonetheless make a substantial contribution to the absolute values of production and employment), due to the absence of downstream impact (the Navy, Coast Guard and Port Authorities are not by nature service-based bodies that sell to customers) and limited upstream impact (they are management sectors, mainly financed by the public sector). Despite this, the contribution of such non-industrial maritime activities is not at all insignificant, with a production value of over 2,600 million euro and 50,270 work units. Approximately 85% of both values are generated by the Italian Navy alone.

Furthermore, it does not seem too much to point out that, in actual fact, a comparison of economic in particular but also dynamic employment aspects regarding industrial and non-industrial maritime activities provokes a certain distortion of meaning, and therefore of interpretation. This is because it does

2. The official estimate, taken from national accounting data on direct AWUs in the fishing sector (63,300 direct work units) includes an assessment of the contribution of non-regular AWUs, amounting to approximately 19,600 AWUs. In greater detail, non-regular AWUs include the following types of working activity: 1) continuous, performed in breach of existing regulations; 2) occasional, performed by persons who declare themselves as non-active, being students, homemakers or retired; 3) non-resident, non-regular foreigners; 4) others not known to tax authorities.

not appear possible to count the “work productivity”, “value added per employee” and even gross domestic product for operational areas like the Navy, which clearly follow very different strategic criteria to evaluate efficiency.

Notwithstanding this necessary warning in interpreting economic values, we have in any case attempted to fix parameters comparable with those of industrial activities, to try to recreate, within the set physical and conceptual limits, a unified portrait of the Italian maritime sector.

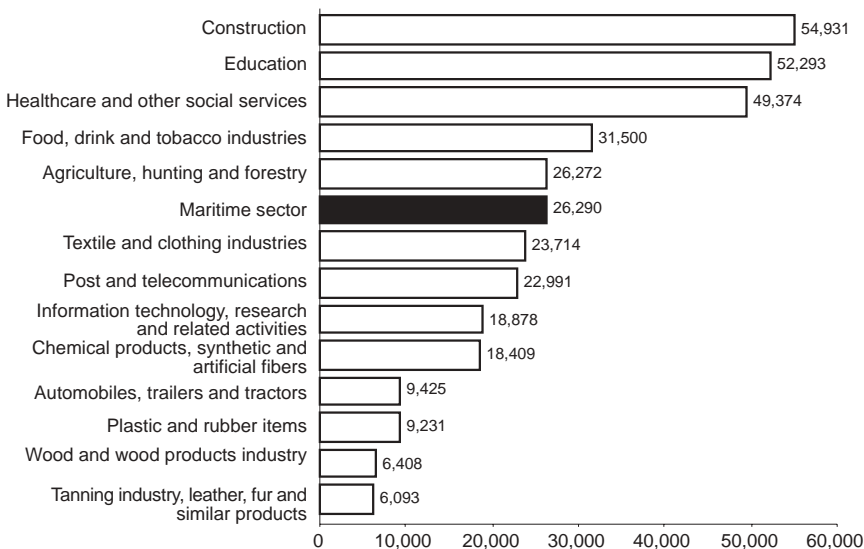
Accordingly, Italian maritime sectors generate a global output well in excess of that of many traditional national production sectors, including the textile-clothing sector (23,714 million euro), post and telecommunications (22,991 euro), automotive industry (9,425 euro), and the wood industry (6,408) (fig. 1.1).

In employment terms as well, the size of the maritime sector taken as a whole proves quite substantial, surpassing sectors like post and telecommunications (260,200 AWUs), the wood industry (196,300 AWUs), and showing value added per employee decidedly above sectors such as textile-clothing (748,400 AWUs) (fig. 1.2).

The high economic values of the Italian maritime sector can also be seen by comparing it with like values for European maritime sectors. While considering that this is a purely indicative comparison of the size of the phenomenon, being based on different methodologies of statistic and econometric estimates, even a cursory reading of table 1.2 shows that 2.3% of the Italian national GDP is greater than the European average (1.6%) and not much less than the values of countries such as the Netherlands (3.7%) or the United Kingdom (3.5%), which put a very different emphasis on productive investments in their maritime industries. From an occupational point of view as well, Italy shows almost double the impact of the Netherlands and almost the same as the United Kingdom, with a share of about 12.4% of direct maritime employment in Europe and almost 15% of the total (direct plus upstream or downstream related industries).

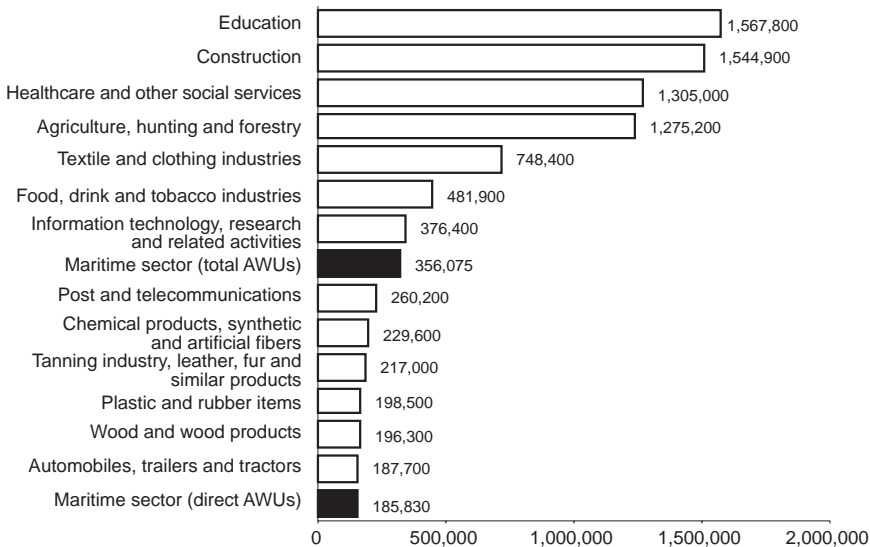
Looking at the growth of maritime activities over time, the availability of estimates starting from the input/output table of the national economy in 1992 provides a convenient and scientifically valid comparison - limited to the five branches under consideration for industrial maritime activities - between the production and employment values in 1992 and those estimated in 2000 (again with the warning that, from a methodological perspective, it is necessary to consider assessments that do not quite coincide, due to the partially different formulation of available data).

Fig. 1.1 - Gross domestic product at market price: comparison between the maritime sector and select branches of the economy, 2000 (millions of euro)



Source: Censis, 2002

Fig. 1.2 - Work units: comparison between the maritime sector and select branches of the economy, 2000



Source: Censis, 2002

Tab. 1.2. - A comparison between select European maritime sectors (*)

	Economic impact (% of total GDP)	Employment impact (v.a. employees)	
		Direct	Total
Italy	2.3	185,830	356,075
Europe 15 + Norway	1.6	1,500,000	2,400,000
Netherlands	3.7	137,000	193,000
United Kingdom	3.5	250,000	423,000

(*) The comparison of data is made solely for indicative purposes, as the aggregates compared in gathering and calculating the data are not homogenous

Source: Censis calculations based on various sources, 2002

In interpreting the statistical data from the point of view of development over time (table 1.3), one can see structural processes that, in tandem with the many inevitable fluctuations in economic trends, have been occurring within the Italian maritime sector over the course of the last eight or ten years:

- a consistent growth in output, i.e. expansion of the ability of industrial maritime activities to create wealth, which emerges, for instance, from the observation of a 43.2% rise (in current money) in GDP during the period under review;
- a sizeable increase in the international importance of the sector, as shown by the 108.7% growth in the value of exports (largely attributable to the maritime transport sector);
- an increase in the efficiency of production processes within industrial maritime branches, which appear to be increasingly integrated. In this sense, the 63.5% growth in economic and production “duplications” among maritime branches confirms this assessment. Duplications represent the extent of production and work exchanges occurring among individual maritime branches. Their increase therefore implies an increase in interrelations. Even the modest reduction in multipliers reinforces this conviction, with production expansion meaning greater productive “self-referencing” of maritime branches, which clearly continue to unite to satisfy mutual productive needs;
- a dynamic reorganization of productive processes, including human resources, for which it is necessary to interpret reductions in absolute terms during the period in question in the light of two different processes: on the one hand, the structural reorganization, with the growth of value added per employee, common to many of the examined sectors. On the other, the ongoing structural crisis of the fishing sector, which, as is seen, has a significant impact on global employment levels in the sector;

Tab. 1.3 - Comparison of principal characteristics of maritime industrial activities (*) 1992 and 2000 (values in millions of euro **)

	1992	2000	Var. % 1992-2000
<i>Input/output</i>			
GDP (net of duplications)	16,925	24,230	43.2
	1,480	2,420	63.5
Exports	6,700	13,985	108.7
Impact			
direct	0.926	0.924	
upstream	1.248	1.199	
downstream	0.291	0.209	
Multiplier	2.465	2.333	
<i>Work units (AWU)</i>			
AWUs			
direct	167,420	144,240	-13.8
upstream (net of duplications)	80,580	85,040	5.5
downstream	88,790	81,260	-8.5
totals	336,790	310,540	-7.8
Impact			
direct	1.000	1.000	
upstream	0.481	0.590	
downstream	0.530	0.563	
Multiplier	2.012	2.153	

(*) Maritime transport, maritime transport support services, merchant shipbuilding, recreational boating (including tourism branch) and fishing

(**) To allow a comparison between 1992 and 2000, euros were used, though they were not yet in effect

Source: Censis, 2002

– the ongoing reshaping of employment trends sees a growth in the employment multiplier, following a less than proportional reduction in the employment factor compared with production trends. In other words, in the maritime sector, production appears to be growing more than employment levels are falling. Therefore, the global employment impact appears to be structurally increasing over time for both upstream and downstream components.

In conclusion, the overall image that emerges from all of the data and estimates prepared is that of a maritime sector that is increasingly important for the country, both in terms of production and employment. It is a sector that is consistently growing and expanding, and also demonstrates an especially strong inclination towards innovation and the reorganization of its production processes. This flexibility is unfortunately accompanied by a continued and protracted downturn in the fishing sector, whose negative data leave no room for doubts as to the urgency of structural support action.

1.2. Towards an Italian maritime cluster

An interpretation of statistical estimates processed in the present research, made in the light of a careful comparison of what is happening in other countries in the European area, in structural and organizational terms, raises many questions that should lead the Italian maritime sector to a more in-depth reflection on opportunities to be grasped in the international arena.

The move towards “regrouping” maritime operators and capacities is widely underway in Europe - and is especially advanced in the Netherlands - prompted by the observation that a strategic importance for national systems such as that of the maritime world requires a single representation of the different individual sectors, to better calibrate appropriate responses to relative demand. It does not seem that the problems and processes involved can be resolved in a at a sub-sectoral level alone, as they require a unification of thought and expression that only some form of group work can provide.

Important questions such as those of national and European trade strategies, environmental compatibility, defense of the territory - again both national and European - the professional labor shortage, maritime equipment, appropriate technical figures, military personnel in the Navy, and innovation (technological input, the output of the Internet, production of advanced value added, etc.), just to mention a few, present a new and more pressing need to bring the diverse members of the industry together.

It is clear that in Italy too it is necessary to imagine a sort of container that might provide a unified response to the multiple stimuli of the Italian and worldwide maritime markets. In this context, the Sea Federation, a group established almost ten years ago by the main representatives of the Italian maritime industry, can become an essential cornerstone of this process.

Specifically, in light of what we were able to see in the exploratory study and in the analysis conducted, four basic observations seem to emerge that pertain to four basic elements of an Italian maritime cluster: institutions, members/bodies, functions and territory.

The first point is concerned with institutions, or more specifically the involvement of institutions in a viable Italian maritime cluster project. In this sense, the Dutch experience speaks out clearly, and the first steps taken by other European countries also leave no room for doubt that the creation of a compact and efficient national maritime cluster clearly happens through the involvement and stimulus of the institutions.

We should stress that this is not a purely financial issue, despite Italy having chronic problems in this sense.

The crux is coming up not with funding, which of course is useful and at least a part of which should be provided by institutions, but with a political thrust, a strong and clear drive towards the relaunching of the maritime sector as a whole, a concrete will to promote maritime culture in the country, meaning going beyond canonical arguments and widely-accepted operational theories.

The project affects all Italians, the entire maritime sector and the entire country. The challenge is everyone's and for everyone. Therefore, the institutions must be there - though maybe behind, rather than within - and must clearly mark their presence with strong action. This is the first major point for the creation of an Italian maritime cluster.

The second point is related to the entities, those who participate and are involved in the maritime cluster. On this point, two main new elements seen in the Dutch case are of relevance for the creation of a maritime cluster in Italy: the presence of ports (as they constitute an integral and essential part of the sector³) and of the Navy - and in Italy's case Coast Guard as well - which make numerous contributions to the sector, beyond being customers, in the areas of research, innovation, human resources, etc.

It should be stressed that the participation of the Navy in the Dutch cluster is entirely non-onerous, as it participates in group operations exclusively with a contribution of technologies and resources. An Italian maritime cluster would not make much sense without the full and direct participation of these two important components of the maritime world, alongside the more traditional sectors of maritime industrial activity (maritime transport, maritime transport support services, merchant shipbuilding, leisure boating and fishing).

A third salient point is that of functions. Thinking does not appear to be especially well-developed in this area. Looking at Europe, it is very clear that to construct a cluster - it matters little whether industrial or maritime - a major effort and intense will towards renewal of the sector is necessary, with the full involvement and unconditional support of all its parts and the implementation of the actual functions of the maritime cluster that, starting from neutral terrain such as the promotion of the sea "universe", can then spill over into

3. Port activities have a significant economic and employment impact on the direct and related economies in the area in which they are located, and frequently on the regional and interregional level as well. A recent Censis study for instance gauged the extent of this impact for the port of Genoa.

less traditional fields of mediation, along the lines of the Dutch example. On this point, it is always important to keep in mind the “variable structure” of the Dutch maritime group, because to be truly effective, the different offices must be able to express themselves in keeping with their own structures and processes, without seeking futile routes to unanimity that would doubtless stand in the way of effective operations. Simple institutional stimulus and the right composition of entities would thus not be enough. The third necessary ingredient is the will to act and give a common and shared mission to the cluster.

Yet, this framework for a hypothetical Italian maritime cluster is not complete without a fourth and final ingredient, which for a country like Italy, is a necessary condition for the development of processes: the territory.

In a country of small and medium businesses, local development, industrial districts, cities, and ports, the need to be rooted in the territory appears strong even within large planned programs of national and international scope, to sort out the continuous push-pull current between global and local that has prompted some to coin the term “glocal”, to try to make a conceptual synthesis of the relational processes transforming the country every day.

In order to receive widespread support and form local roots, the maritime cluster must also seek opportunities for territorial synthesis, either directly through the association of individual local representatives or more indirectly through the simple creation of local groups or clusters, in order to plant in the territory the sensors necessary for operational implementation in the mid-to-long term.

Institutions, entities, functions and the territory thus appear to be the four pillars on which to base the maritime cluster at a national level, a body that can legitimately aspire to achieve results as successful as those already achieved by the Dutch.

There is the hope that with such a sectoral grouping we too could have a “Sea Day”, television programs on the maritime sectors in schools, a convergence of international and financial interests, and much more. Any integration process would be difficult to achieve outside of such a structure, the absence of which would certainly be felt by the entire country.

The Italian maritime sector, it should be remembered, is not just Sea Highways or Short Sea Shipping. It is above all a part of the national system, of the community, a collective use, coming together to plan strategies. It is promotion, joint action and a shared vision of processes. Relaunching the sea and its industries is not a simple undertaking. Only if many are involved will it be possible to speed up the various stages of collective development and

achieve objectives that are as possible as they are desired. Such a sharing of aims could also prevent the creation of a dangerous antagonism between society and economy, between the maritime culture and socio-economic activities associated with the sea.

2. ECONOMIC ANALYSIS

The Second Report on the maritime economy reconstructs the financial statements of maritime activities. More specifically, as with the First Report, the activities of the *maritime industry* were analyzed, represented by the following five sectors: *maritime transport*, *maritime transport support services*, *merchant shipbuilding*, *recreational boating* (including estimates from the maritime tourism branch) and *fishing*.

Tables 2,1-5 describe these activities by sector.

The *innovation* in this second edition is in having introduced *another three sectors* of essential importance for the complex of maritime activities: *Italian Navy*, *Coast Guard* and *Port Authorities*. As these are in sectors that are *sui generis* and different from those of the maritime industry, the reported data are interpreted as a first attempt to move from an assessment exclusively of the maritime industry to a wider one that considers the entirety of maritime activities.

First, the analysis will describe the economic aggregates of the maritime industry with estimates for the year 2000. Then, the values will be compared with those from 1992, the year from which exact data from ISTAT is available. This section will therefore be concluded with the estimates for the year 2000 of the principle economic aggregates of the three new sectors introduced in this Second Report.

2.1. The role of the maritime industry

All of the estimates presented refer to the year 2000. The currency values reported are in euro. This section will describe the impact of the *maritime industry* complex, in the following five sectors: *maritime transport*, *maritime transport support services*, *merchant shipbuilding*, *recreational boating* (including estimates of the maritime tourism branch) and *fishing*.

Tab. 2.1 - Maritime transport sector

Branches ISTAT	Classification ATECO	ATECO classification description	
72	61.0	61.0	Maritime and waterway transport
		61.1	Maritime and coastal transport
		61.11	Maritime and coastal transport This class includes: - transoceanic transport of passengers and goods
		61.12	Coastal transport This class includes: - transport of passengers and goods between national and European ports

Source: Censis, 2002

Tab. 2.2 - Maritime transport support services sector

Branches ISTAT	Classification ATECO	ATECO classification description	
75	63.0	63.0	Support and support services to transport; travel agency services
		63.1	Goods handling and warehousing
		63.1	Goods handling
		63.11.2	Goods handling for maritime transport This class includes: - loading and unloading of goods and passenger baggage, and stowing goods for maritime transport
		63.11.3	Goods handling for land transport
		63.12	Warehousing and safekeeping
		63.12.1	Safekeeping and deposit warehouses This class includes: - the management of all types of warehouses and merchandise deposits, goods warehousing in customs areas; silos manage- ment
		63.12.2	Refrigerated warehousing for third parties This class includes: - the management of refrigerated warehouses and other related operations for the preservation of food and non-food products
		63.2	Other services connected to transport
		63.21	Other services connected to land transport
		63.22	Other services connected to waterway transport This class includes: - services connected to transport on waterways of passengers, animals or goods, port and wharf management, lock management, etc., piloting and anchoring services, transport on barges, recovery operations, maritime signing services
		63.3	Travel agency and tour operator services; tourism assistance services n.e.c.
		63.4	Other transport agency services
		63.40	Other transport agency services
		63.40.1	Shippers and customs operations agencies This class includes: - goods shipping - broker services and customs shipping

follows

follows **Tab. 2.2 - Maritime transport support services sector**

Branches ISTAT	Classification ATECO	ATECO classification description
	63.40.2	<p>Transport brokers</p> <p>This class includes:</p> <ul style="list-style-type: none"> - the organization of transport and related agreements in the name of loaders/shippers or consignees - receipt and acceptance of goods - preparation of shipping documents - packaged cargo and separation of bulk loads - bookkeeping and information on chartering rates - brokering of transport via land, sea and air - packing, repacking, weighing and sampling goods, etc. <p>This class does not include:</p> <ul style="list-style-type: none"> - services connected to insurance coverage of the transported goods, see. 66.03 - packing services for third parties, see. 74.82

Source: Censis, 2002

Tab. 2.3 - Merchant shipbuilding sector

Branch ISTAT	Classification ATECO	ATECO classification description
49	35.11	<p>35.11 Naval construction and ship repair</p> <p>35.11.1 Naval shipyards for metal constructions</p> <p>This class includes:</p> <ul style="list-style-type: none"> - the construction of floating or submersible drilling platforms - construction of floating structures: construction and manufacture of wet docks, pontoons, cofferdams, floating docks, buoys, floating tanks, barges, lighterers, etc. <p>35.11.2 Naval shipyards for non-metal constructions</p> <p>35.11.3 Shipyards for naval repairs</p> <p>This class includes:</p> <ul style="list-style-type: none"> - maintenance, repair or conversion of ships <p>35.11.4 Shipyards for naval demolitions</p> <p>This class includes:</p> <ul style="list-style-type: none"> - demolition of ships <p>This class does not include:</p> <ul style="list-style-type: none"> - manufacture of propellers for vessels, see. 28.75 - manufacture of marine motors, see. 29.11 - manufacture of navigation instruments, see. 33.2 - construction and repair of recreational and sport boats, see. 35.12 - manufacture of amphibious vehicles, see. 34.1 - manufacture of boats or inflatable boats or dinghies, see. 25.13

Source: Censis, 2002

Tab. 2.4 - Recreational boating sector

Branches ISTAT	Classification ATECO	ATECO classification description	
49	35.12	35.12	<p>Construction and repair of recreational and sport boats</p> <p>This class includes:</p> <ul style="list-style-type: none"> - construction, maintenance, and repair of: recreational and sport sailboats; recreational and sport motor boats; other sport boats (canoes, kayaks, skiffs). <p>This class does not include:</p> <ul style="list-style-type: none"> - manufacture of marine motors, see. 29.11 - manufacture of inflatable boats or dinghies, see. 25.13 - manufacture of sailboards, see. 36.4

Source: Censis, 2002

Tab. 2.5 - Fishing sector

Branches ISTAT	Classification ATECO	ATECO classification description	
4	05.0	05.0	Fishing, fish farming and related services
		05.01	Fishing
		05.01.1	<p>Fishing operations in marine and lake waters</p> <p>This class includes:</p> <ul style="list-style-type: none"> - deep-sea fishing, coastal fishing - harvesting of crustaceans and sea mollusks - hunting aquatic animals: turtles, sea squirts, tunicate - harvesting of marine products: pearl oysters, sponges, sea urchins, coral and algae - whale catching
		05.02	Fish farming
		05.02.1	<p>Raising marine and lake fish, mollusks and crustaceans</p> <p>This class includes:</p> <ul style="list-style-type: none"> - production of eggs of oysters, mussels, young lobsters, shrimp and other larva of crustaceans, small fish and alevin - cultivation of ulva and other edible algae - fish farming in sea water - oyster farming
		05.03	Services related to fishing and fish farming

Source: Censis, 2002

The production value

The estimate in 2000 of the gross domestic product at market price for the maritime industry equals 24,230 million euro at current prices (tab. 2.6). This value is equal to 2.1% of the GDP at market price (1,165,677 million euro in 2000).

To form a more detailed picture of the scope of the production value of the maritime sector, figure 2.1 is provided, comparing the gross domestic product

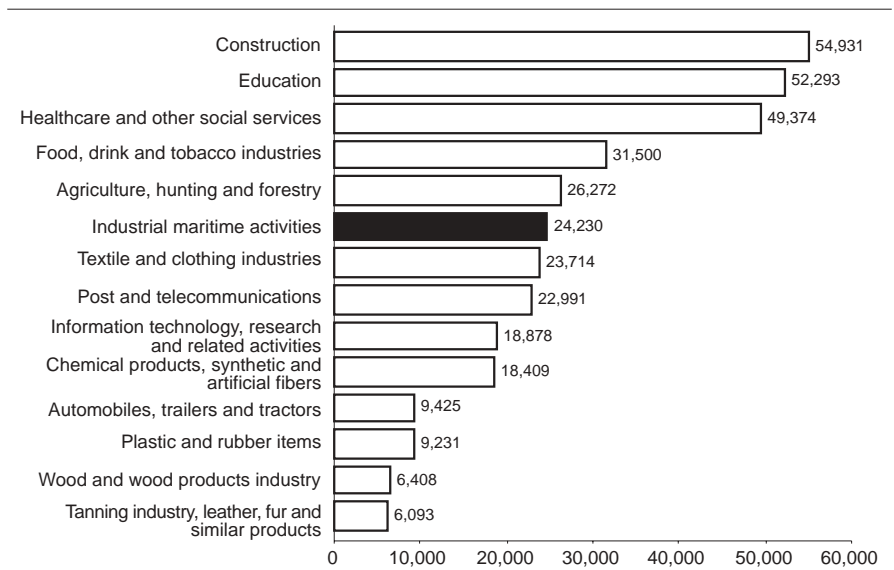
at market price of the maritime industry with that of other sectors of the national economic system. As can be seen, industrial maritime activities lie between the textile and clothing industries (23,714 million euro) and the agriculture, hunting and forestry industries (26,272 million euro), which are two prominent sectors for the Italian economy. In addition, the contribution of the maritime sector to the formation of the GDP is greater than that of

Tab. 2.6 - Main aggregates of input/output economic statements of the maritime industry, 2000 (millions of euro at current prices)

Total maritime economic activities		
Input	Gross domestic product at market price:	24,230
	Imports	1,980
Output	End domestic consumption	13,050
	Gross fixed capital formation	100
	Changes in stock	-925
	Export	13,985
Total input		26,210

Source: Censis, 2002

Fig. 2.1 - Gross domestic product at market price: comparison between maritime industrial activities and select branches of the economy, 2000 (millions of euro)



Source: Censis calculations on ISTAT data, national economic statements, 1970-2000

information technology, research and related activities (18,878 million euro), manufacture of automobiles, trailers and tractors (9,425) and the wood and wood products industry (6,408), important *made in Italy* sectors.

There are three sectors that provide a clearly larger contribution to the formation of the national GDP: construction (54,931 million euro), education (52,293) and healthcare (49,374).

Returning to the analysis of the main aggregates of the income and output financial statement (tab. 2.6), the expenditure side evidences the maritime industry's export orientation, with exports coming to approx. 14,000 million euro, 53.4% of the total income (26,210 million euro). This orientation is also confirmed by the percentage of maritime industry exports (4.2%) out of the total of goods and services exported from our country (330,562 million euro, in 2000).

Conversely, foreign dependence is very low. Imports of goods and services *by the sectors under consideration* are 1,980 million euro, or 7.6% of the total income at market price. The balance between exports and imports (approx. 12,000 million euro) is indicative of the trade balance *exclusively* of the five sectors under consideration and not of the entire Italian economy. Therefore, it cannot be considered as the traditional trade balance of these goods and services.

Produced revenue multiplier

In order to evaluate the level of upstream integration of the activities under consideration, intermediate and import costs must be kept in consideration. For downstream integration, trade and transport margins must be considered.

Table 2.7 reports the aggregates of the income statement and some key ratios and impact measurements, typical of input-output analysis (for a detailed description, see paragraph 2.2).

The key ratios reveal that the economic activities of the maritime industry are characterized by a *high level of upstream integration with the rest of the economic system*. Purchases of goods and services from other branches that are necessary to the productive process represent almost 60% of the production at factor cost (technical coefficient is 0.565) and therefore, the value added to the factor cost accounts for the remaining approx. 40%. Breaking production down into value added and intermediate costs means that for every euro of value added, or for every unit of compensation for employees used within the productive processes of the sectors of maritime economic

activity (salaries, stipends, social contributions, etc), 1.30 is needed to acquire goods and services needed for production (e.g., raw materials).

A second point pertains to the *low level of dependence on foreign countries in the production* of goods and services by the maritime industry. In fact, as we have already mentioned, imports represent less than 8% of the total income at market price (import coefficient of 0.076).

The indicator of direct impact on production (i.e. complement to one of the import coefficient) at 0.924 confirms the low level of dependence on foreign countries mentioned above. This indicator shows that 100 euro of added demand that is directed at industrial maritime activities create an increase of domestic demand of 92.40 euro and imports for the remaining 7.60 euro.

Considering the upstream effects as well of an increase of 100 euro of additional demand for goods and services produced by the maritime sector, the indicator of the total impact on production shows that the maritime economic system is able to generate production for 212.30 euro. That the upstream multiplier is so high evidences how a *high capacity to generate income* can derive from an increase of investments or an increase in internal or external demand for goods and services produced by industrial maritime activities.

Tab. 2.7 - Economic input statements, 2000 (millions of euro at current prices)

	Total maritime economic activities
Real production at factor cost	20,190
of which: value added at factor cost	8,790
Intermediate costs	11,400
Imports	1,980
Distribution costs	4,225
Other (net taxes)	-185
Total input	26,210
<i>Key ratios</i>	
Intermediate costs/value added at f.c.	1.297
Value added at f.c./production at f.c.	0.435
Technical coefficient (intermediate costs/prod. at f.c.)	0.565
Import coefficient	0.076
<i>Impact measurements</i>	
Direct impact on production	0.924
Total impact on production	2.123
Downstream impact	0.209
Multiplier (upstream and downstream impact)	2.333

Source: Censis, 2002

The maritime industry is also capable of *creating wealth in phases following production*: for every 100 euro produced by the maritime sector, another approximately 20.90 euro is added to the formation of overall income, as indicated by the downstream impact indicator (ratio of the increase of trade and transport margins and the increase of production at factor cost). The downstream impact, though substantial, is less than the upstream because it only counts sectors involved in the stages of processing, distributing and selling goods and services.

Maritime transport support services and merchant shipbuilding are therefore excluded from this process. The maritime transport contribution is negative as it is a sale sector and does not purchase downstream services. Furthermore, the downstream impact is due in large part to the size of the recreational boating branch, including tourism consumption, estimated at 3,520 million euro for the year 2000. The total downstream impact of industrial maritime activities, without this component, is reduced to 0.035.

The multiplier is an indicator that measures the overall effect of a demand increase. For the maritime industry in its entirety, it is equal to 2.333, which means that for every 100 euro of additional demand that is directed at the maritime sector, the Italian economy activates, overall, upstream and downstream - a production of 233.30 euro.

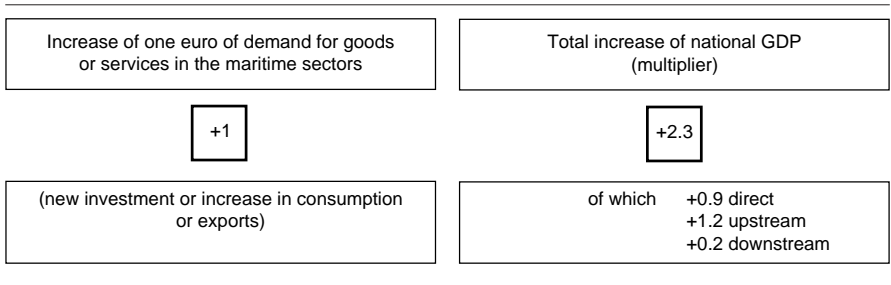
The total maritime industry is therefore an invaluable source of wealth creation for the national system. For example, investing 1,000 million euro in maritime activities (maritime transport and related support services, merchant shipbuilding, recreational boating or fishing) means putting into motion and attaining a national production of 2,333 million euro. Of these, approximately 1,200 are added in upstream production and 200 in downstream production (tab. 2.7). The same economic impact can be estimated from an increase of consumption or foreign demand, i.e. by exports.

Finally, figure 2.2 summarizes what has been described in detail above, which is the effect on the national GDP - separated in direct upstream and downstream - of an increase of one euro of demand of goods and services in the maritime sector.

The employment dimension

The second objective of this part of the research consists in estimating and evaluating the employment dimension of the maritime industry. The work force of the sector is measured in work units (AWUs), a statistical unit of

Fig. 2.2 - Production multiplier for the maritime industry, 2000



Source: Censis, 2002

measure that transforms all work positions in homogenous work units in terms of annual hours. As in the financial statements, the estimate is for 2000 and productivities are measured in euros.

The work units are separated in AWUs directly used in the production of goods and services in the maritime sectors, AWUs generated upstream and AWUs generated downstream of the production processes of those sectors. This division enables the evaluation in employment terms of the maritime economy's level of employment integration in relationship to the entire national economy.

By linking work productivity to the intermediate costs, the upstream AWUs were estimated, while the downstream AWUs were estimated by linking them to trade and transport margins. For a detailed description of the way in which these estimates were calculated, see section 2.2.

Overall, employment related to industrial maritime activities comes to a total of 310,540 work units (tab. 2.8). In order to appreciate its magnitude, it should be noted that this value represents 1.3% of the national total of work units in 2000 (23.5 million). More specifically, the AWUs directly used in the sectors under consideration are 144,240; those of the upstream productions are 85,040 and those downstream are 81,260. The former, it should be noted, include 61,000 AWUs associated with the production of goods and services consumed by the tourism branch of recreational boating.

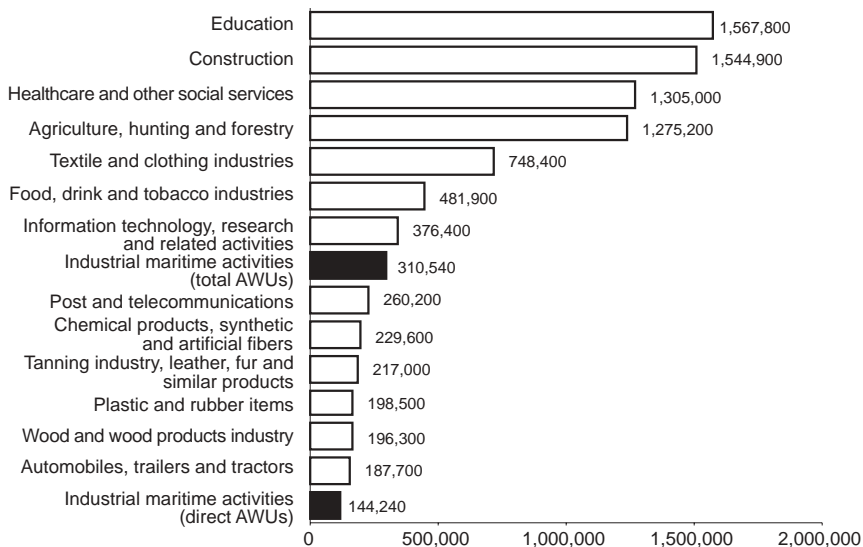
Figure 2.3 is provided to compare the significance of the maritime industry in employment terms with other sectors of the national economy. Total work units of the maritime sector (310,540) are between those directly used in the sector of information technology, research and related activities (376,400) and those of the post and telecommunications sector (260,200). Though the work units *directly* used in the industrial maritime sector are in

Tab. 2.8 - Work units (AWUs), 2000

Type of AWUs	Total maritime economic activities
Direct AWUs	144,240
Upstream AWUs	85,040
Downstream AWUs	81,260
Total work units	310,540

Source: Censis, 2002

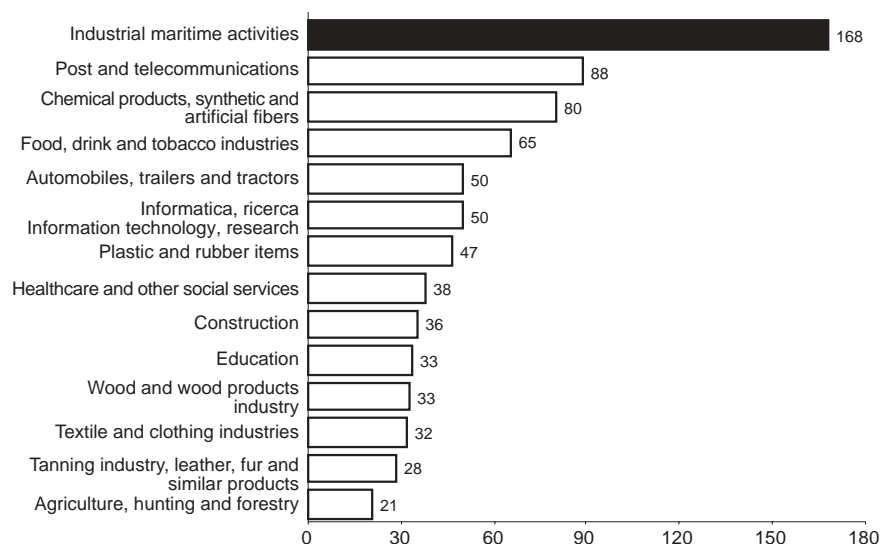
Fig. 2.3 - Work units: comparison between maritime industrial activities and select branches of the economy, 2000



Source: Censis calculations on ISTAT data, national economic statements, 1970-2000

the last place of the economic branches under consideration, the production per work unit directly used in the industrial maritime sectors (168,000 euro) prove markedly above the national average (50,000 euro). Figure 2.4 shows precisely how the production per direct unit of work of the entirety of industrial maritime activities is the highest of the sectors used as examples. In the section in which the sectors of the maritime sector will be described individually, it will be illustrated how in fact this indicator characterizes them at different levels.

Fig. 2.4 - Production per direct work unit: comparison between maritime industrial activities and select branches of the economy, 2000



Source: Censis calculations on ISTAT data, national economic statements, 1970-2000

The employment multiplier

The same system used for measuring the revenue impact was used for measuring that of employment (tab. 2.9).

An upstream impact (relationship between upstream AWUs and direct AWUs) of 0.590 indicates an increase of 100 work units in the sectors under consideration (infused in turn by a demand increase of corresponding goods and services) activates another 59 AWUs in the upstream supply sectors.

A downstream impact (relationship between downstream and direct AWUs) of 0.563 indicates that an increase of 100 work units in the sectors under consideration activates production process downstream of an additional 56 AWUs. The similar size of this impact and the upstream impact comes in large part from the recreational boating tourism branch. In fact, as has already been indicated, 61,000 of the 81,260 downstream AWUs represent those activated in this tourism segment. The downstream impact, without counting this component, is 0.140.

Finally, the AWU multiplier is an indicator that measures the overall effect of an employment increase. For the maritime industry in its entirety,

this is equal to 2,153, which means that for every 100 euro of additional work units in the maritime sectors, 215 AWUs overall - upstream and downstream - are activated. The total maritime industry is therefore an invaluable source of wealth creation for the national system, and also has the ability to actively stimulate the work market.

Like for the production multiplier, the overall impact on national employment is described in figure 2.5 - separated into direct, upstream and downstream - deriving from an increase of one work unit.

2.2. The individual industrial sectors

This section of the economic analysis is dedicated to describing the estimates - for 2000 - of the economic proportions and the impact capacity of the five sectors that constitute the maritime industry.

Before proceeding to a separate analytical presentation of the financial statements and principle indicators considered, we think it would be useful to make a summary comparison between the different sectors to note some special characteristics, both in terms of the production and employment dimensions, and in terms of each productive process's capacity to generate income and upstream and downstream work.

The comparison of the 2000 GDP of each sector (fig. 2.6) shows that the maritime industry is internally characterized by *diverse productive dimensions*. Maritime transport, with a GDP of 12,600 million euro, creates about 50% of the entire wealth of the maritime sector.

Furthermore, closely connected to that sector are the maritime transport support services, whose GDP is 3,455 million euro. The GDP of merchant shipbuilding and fishing are 2,515 and 2,925 million euro, respectively. Finally, the contribution of recreational boating, net of the maritime tourism branch, is 1,635 million euro, to which the 3,520 million share generated by tourism should be added.

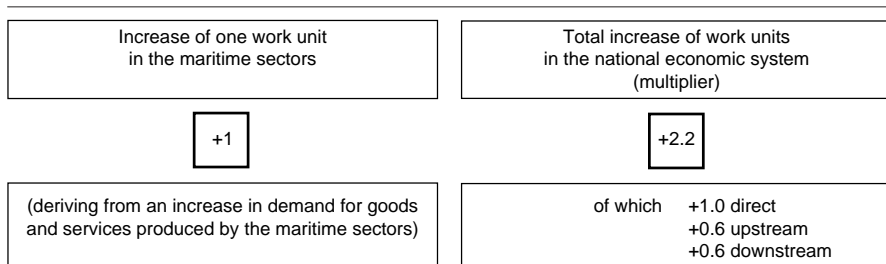
Moving on to a preliminary comparison of employment in individual sectors (fig. 2.7), fishing uses the work force the most (88,850 total AWUs), while maritime transport (81,510 total AWUs) and recreational boating (82,220 total AWUs, considering the 61,000 AWUs generated downstream from the tourism industry) near these amounts. While still significant, employment created by maritime transport support services (44,460 total AWUs) and merchant shipbuilding (32,650 total AWUs) is of smaller proportions. A detailed description of the type of AWUs (direct, upstream and

Tab. 2.9 - Measurement of impact on work units, 2000

Type of impact	Total maritime economic activities
Upstream impact	0.590
Downstream impact	0.563
Multiplier (upstream and downstream impact)	2.153

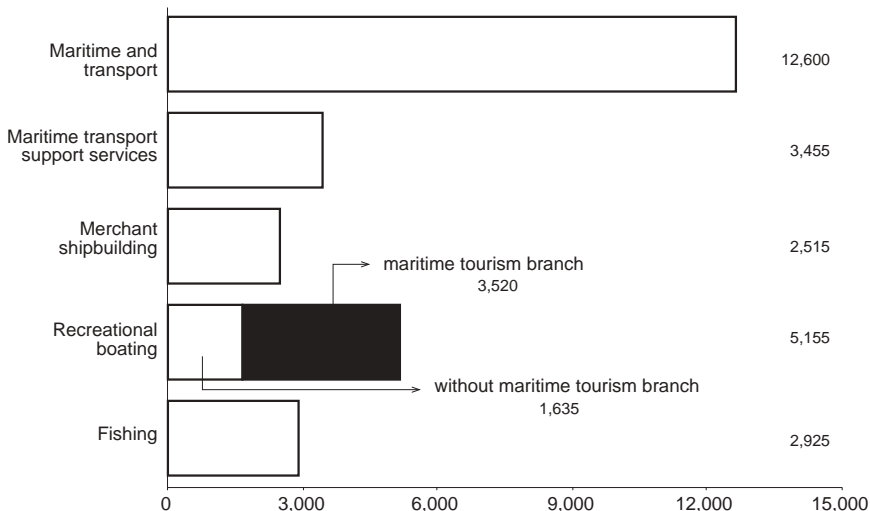
Source: Censis, 2002

Fig. 2.5 – Employment multiplier for the maritime industry, 2000



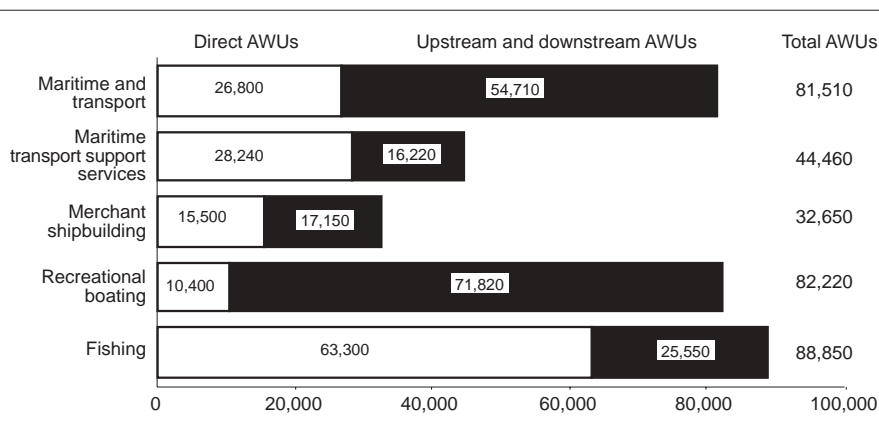
Source: Censis, 2002

Fig. 2.6 - GDP of the five sectors of the maritime industry, 2000 (millions of euro)



Source: Censis, 2002

Fig. 2.7 - Comparison between sectors by work units (AWUs): direct, activated upstream and downstream, 2000



Source: Censis, 2002

downstream) per sector will be provided in the section dedicated to each sector.

From the data reported in table 2.10, the other features of the different sectors of the maritime industry can be compared.

It should be specified that the total GDP of the maritime industry (24,230 million euro) does not coincide with the sum of the GDP of the five sectors. The intermediate costs of the maritime activities net of the duplications coming from internal exchanges between the sectors had to be considered. For example, of the intermediate costs of maritime transport (8,980 million euro), a part (2,210 million euro) were intermediate consumption from other maritime branches (mainly from the branch of ship construction and repairs) and therefore must be counted only once in the total of the industrial maritime activities. A similar calculation was also necessary for the total AWUs. In this case as well, the reported total does not coincide with the sum of the five sectors. For example, of the 60,930 upstream AWUs of maritime transport, 16,850 are direct AWUs of other maritime branches. This duplication was therefore taken off of the total.

The income and output statement shows, as mentioned above, that the maritime industry's *high export orientation*, is due almost exclusively to the maritime transport industry. The exports of this industry - 10,720 million euro - equal 76.7% of the exports of the entire maritime industry and 85.1% of the GDP of the sector. A significant share of merchant shipbuilding production

Tab. 2.10 - Selected characteristics of the five sectors of the maritime industry, 2000

	Input/output				Multiplier
	GDP (mm of euro)	Technical coefficient	Downstream impact	Export (mm of euro)	
Maritime transport	12,600	0.647	-0.074 (*)	10,720	2.709
Maritime transport support services	3,455	0.501	0.000	180	1.826
Merchant shipbuilding	2,515	0.761	0.000	1,595	3.526
Recreational boating (with tourism branch) (1)	5,155	0.601	2.650	1,320	5.019
Fishing	2,925	0.243	1.118	170	2.198
Total (net of duplications) (2)	24,230	0.565	0.209	13,985	2.333

	Work units (AWU)			Total	Multiplier
	Direct	Upstream	Downstream		
Maritime transport	26,800	60,930	-6,220 (*)	81,510	3.041
Maritime transport support services	28,240	16,220	0	44,460	1.574
Merchant shipbuilding	15,500	17,150	0	32,650	2.106
Recreational boating (with tourism branch) (1)	10,400	7,390	64,430	82,220	7.906
Fishing	63,300	2,500	23,050	88,850	1.404
Total (net of duplications) (2)	144,240	85,040	81,260	310,540	2.153

(*) This posts as negative because maritime transport is a sales sector and does not purchase downstream services

(1) Includes the estimate of the maritime tourism branch downstream of boating, 3,520 million euro and 61,000 AWUs are considered

(2) The total does not correspond to the sum of the five sectors because the sum of the intermediate costs – in the first table – and of the upstream AWUs – in the second table – was considered net of the duplications from internal exchanges between the sectors

Source: Censis, 2002

also goes to foreign markets (63.4% of the GDP). The foreign orientation is especially significant in recreational boating (net of the maritime tourism branch) at over 80% of production. Conversely, the amount of foreign demand for the fishing sector is relatively limited (5.8% of the GDP). However, the dependence of foreign countries for this sector is significant, at 32.8% of the imports of the entire maritime industry.

Comparing the technical coefficients, a high *degree of upstream integration* is seen in merchant shipbuilding (0.761) and little is seen in fishing (0.243). This implies that the shipbuilding industry's production depends in large part on the other branches of the national economy. For every 100 euro of production, it must acquire 75.10 euro of goods and services, while the

fishing sector is more self-sufficient in that it must only acquire 24.30. It will be detailed below how a high or low degree of upstream integration corresponds to a substantial or insubstantial upstream impact.

Finally, the *downstream impact*, measured by the ratio between distribution costs and production at factor cost, varies greatly between the different sectors. For maritime transport support services and merchant shipbuilding, in particular, it is zero, as both of the sectors do not generate income downstream of their productive processes.

In the former case, as it is a downstream sector, it does not perform sales or distribution activities. In the latter case, conversely, the production, distribution and sales of ships is done within the sector. For maritime transport the downstream impact is negative. This accounting result is due to the obvious negative balance between purchases and sales of services and distribution by the maritime transport companies. Because maritime transport is a distribution sector, its own production includes trade margins of other branches, which are therefore subtracted from the income generated by transport. The fishing sector, though it has a low capacity for upstream activation, is able to generate downstream revenues from its production process. An increase in demand of 100 euro (caused for example by an increase in consumption by families) initiates another 111.80 euro of downstream activity, seen mainly in the food industry of processing and preserving fish and fish products and wholesale and retail trade. Finally, in recreational boating, net of the maritime tourism branch, for every euro of demand (for example by the purchase of sport boats) another 163 is activated downstream. If the maritime tourism branch is counted as well, it activates 265, thereby showing the greatest absolute capacity for downstream activation of all of the maritime industry sectors.

The produced revenue multiplier is obtained by counting the upstream and downstream impacts of the individual sectors together. This makes it both a concise and comprehensive indicator of the capacity of each sector to create wealth. Table 2.11 shows that recreational boating - including the maritime tourism branch - has an extraordinarily high multiplier (5.019). Of course, if the tourism component is subtracted from this indicator a reduced value (2.284) would be obtained. The values of the shipbuilding industry (3.526) and maritime transport (2.709) are also significant, while those of fishing (2.198) and support services, though still noteworthy, are smaller.

Moving on to the comparison of employment in the different industrial maritime activities, the second part of table 2.10 lists the work units, separated according to type.

Tab. 2.11 - Produced revenue multiplier: a comparison between sectors

	Increase of one euro of demand for goods or services in the maritime sectors (new investment or increase in consumption or exports)		Total increase of national GDP (upstream and downstream multiplier)
Maritime transport	+1	→	2.709
Maritime transport support services	+1	→	1.826
Merchant shipbuilding	+1	→	3.526
Recreational boating (with tourism branch)	+1	→	5.019
Fishing	+1	→	2.198

Source: Censis, 2002

Direct AWUs: fishing is the sector that uses the greatest number (63,300)⁴.

Maritime transport (26,800) and its related support services (28,240) taken together come near the fishing sector. Merchant shipbuilding (15,500) and recreational boating (10,400) use a smaller number of AWUs in their respective productive processes.

Upstream AWUs: It should be emphasized that the duplication which had to be taken into account in evaluating the total AWUs derives exclusively from the upstream component of employment. Therefore, it is the total of upstream AWUs (85,040) that does not coincide with the sum of the upstream AWUs in the five sectors. The contribution in absolute terms of the capacity for upstream employment activation is very high in the maritime transport sector (60,930 AWUs). Maritime transport support services (16,220) and merchant shipbuilding (17,150), especially with consideration of their smaller proportions in terms of production and employment compared to maritime transport, are two sectors with considerable capacities to generate upstream employment in their production processes. Recreational boating (10,400) and fishing (2,500), though they actively contribute to stimulating the market of upstream work, are two sectors that generate employment mainly downstream in their respective productive processes.

Downstream AWUs: As noted, maritime transport support services and merchant shipbuilding do not generate downstream income, as they do not need work units for their distribution. Maritime transport, as it is a sale sector that does not purchase downstream services, must be considered as a negative

4. Compare to note 2.

value to be subtracted from the AWUs used by the other sectors. Fishing (23,050 AWUs), and particularly recreational boating (64,430 AWUs, of which 61,000 derive from the maritime tourism branch), prove to be the most dynamic sectors in terms of employment activated downstream by the individual productive processes.

The AWU multipliers of the individual sectors (tab. 2.12) allow for a comparison of the total capacity of each sector to create work force. As with the revenues, in employment, recreational boating - including the tourism branch- proves the sector able to most stimulate the labor market. A multiplier value of 7.906 means that every extra work unit used in production - resulting from an increase in demand - generates almost 8 AWUs. This value is reduced to 2 AWUs if boating is considered without the tourism industry. In maritime transport and merchant shipbuilding, the capacity to stimulate employment is also high. The increase of one AWUs generates, respectively, an increase of 3 and a little more than 2 AWUs in the national economic system. In the case of the revenue multiplier, the merchant shipbuilding conversely had an overall impact greater than that of maritime transport. Finally, every additional AWU in the support services or fishing sectors infuses about 1.5 AWUs into the national economic system.

The cross analysis of the five sectors of the maritime industry made thus far have enabled us to compare the principle economic and employment aggregates of each sector. At this point, it will be useful to describe the main features that characterize each sector. Tables 2.13-17, found at the end of this section, report the estimates for 2000 for each sector of economic and employment aggregates.

Tab. 2.12 - Multiplier of work units: a comparison between sectors

	Increase of one work unit in maritime sectors (deriving from an increase in demand for goods and services produced by the maritime sectors)		Total increase of work units in the national economic system (upstream and downstream multiplier)
Maritime transport	+1	→	3.041
Maritime transport support services	+1	→	1.574
Merchant shipbuilding	+1	→	2.106
Recreational boating (with tourism branch)	+1	→	7.906
Fishing	+1	→	1.404

Source: Censis, 2002

Maritime transport

There are two quantitative economic elements that characterize maritime transport: *The largest production value* (12,600 million euro GDP, equal to approx. 50% of the entire maritime industry) and the *highest export level* (10,720 million euro - equaling 76.7% of total exports.) In addition, the fact that it is a sector with a *high level of upstream integration* (technical coefficient of 0.647, greater than the average of 0.565) and which has little dependence on foreign markets (import coefficient of 0.019) means that the *direct impact* (0.981) and *total impact* (2.782) on production are considerably *greater* than the average of the maritime industry (respectively, 0.924 and 2.123). Finally, the *downstream impact is negative* (-0.074), as it is a distributing sector, trade margins of other branches are included in its own production, which are therefore subtracted from the income generated by transport. Overall, it is a sector with a *high capacity for generating revenue*: for every 100 euro of added final demand that is directed to this industrial maritime sector, the national economic system creates production of 270.80 euro.

From the employment perspective, it is characterized by a *high upstream impact* (2,274), the direct consequence of the high level of upstream integration noted above. Upstream of its production process, maritime transport activates 60,930 AWUs, a number that is very high if compared with the total of AWUs generated upstream - net of duplications - by the maritime industry (85,040 AWUs). Using a total of 81,510 AWUs and with a multiplier of 3.041, it is a sector that *strongly impacts the national labor market*: 100 additional work units in maritime transport activate a total of 304 AWUs.

Finally, it is a sector with a *particularly high work unit productivity*: on average, in 2000, the production of one direct work unit was 518,000 euro (comparable to production per employee) and a value added by one work unit of 182,000 euro (value added per employee). The corresponding values for the maritime industry in its entirety are 140,000 euro (production per employee) and 61,000 euro (value added per employee).

Maritime transport support services

This sector's dynamics are closely connected to those of maritime transport. With a GDP of 3,455 million euro, it is the *second* sector by *production size* (if the tourism branch is not counted for boating.) With a technical coefficient (0.501) below average, it can be defined as a *relatively self-*

sufficient sector - only half of production depends on other branches of the national economy. Furthermore, as it is a downstream sector, another two unusual features should be noted: 90% of the income are used in intermediate consumption, i.e. sold to other branches and the *downstream impact* is zero. The revenue multiplier (1.826) is the lowest of the maritime industry, because it derives only from the direct impact (0.912) and the upstream impact (0.914).

This sector uses a relatively *high amount of direct AWUs* (28,240) in its production process (more than maritime transport). The upstream employment impact, still keeping in consideration the limited production value compared to maritime transport, is considerable (16,220 AWUs).

As was the case for the formation of income, because as a downstream sector it does not use AWUs for distribution. The multiplier therefore (1.574) shows the moderate (compared to the average of the maritime industry), but still significant capacity of the sector to create work force.

It is a sector with a *lower than the average work factor productivity*: on average, in 2000, the production of one direct work unit was at 120,000 euro and the value added of one work unit was 60,000 euro, a direct result of the high number of direct AWUs mentioned above.

Merchant shipbuilding

While in absolute terms, this sector has a production size that - compared to the other maritime sectors - is medium low (GDP 2,515 million euro), it is nonetheless especially noteworthy for its large capacity to create value as it has the *highest multiplier*, 3.526 (excluding the tourism branch for boating). This can be attributed to a strong *upstream impact* (2,682) which counterbalances the *downstream impact* of zero and a below average direct impact.

The production process's upstream stimulus is due to the *high degree of upstream integration* (technical coefficient of 0.761). The production of the shipbuilding industry depends strongly on other branches of the national economy. For every 100 euro of production it must purchase 76.10 euro of goods and services from the rest of the economic system. Therefore, its greater than average foreign dependence (import coefficient of 0.156) reduces the direct impact on production and though the distribution and sales of ships is effected within the sector (zero downstream impact), the total impact on the wealth generated by the sector is nonetheless significant.

On the output side, 2,170 million euro were sold to other branches to be used in the respective production processes (intermediate consumption) and

1,595 million euro are exported (export orientation second only to that of maritime transport).

The AWUs directly used in the production process (15,500 direct AWUs) reflect the size of the sector, while those used upstream (17,150) reflect the high degree of upstream integration. Labor is not used downstream for the reasons noted above. Production per employee is 167,000 euro per year - greater than the average (140,000 euro) - while the value added per employee is 40,000 euro - less than the average (61,000 euro) because it is a sector with *low value added* (23.9% of production).

Recreational boating

For recreational boating, the estimates were made preliminarily considering *recreational boating in the narrowest sense* and then including the maritime tourism branch, which is estimated at 3,520 million euro. It is important to emphasize the difference. In the first case, with a GDP of 1,635 million euro, recreational boating shows the smallest proportions of all of the maritime industry, while in the latter case, with a GDP of 5,155 million euro, it is second only to maritime transport.

While the key ratios, excepting the import coefficient, are the same in both cases, the difference is significant for the impact measurements.

The different capacity to generate income is seen particularly in the downstream impact (which goes from 0.163 to 2.650) and the multiplier (which goes from 2.284 to 5.019).

So, *all together* recreational boating has the *highest capacity of downstream activation* among the all of the sectors of the maritime industry and consequently the *greatest capacity to generate wealth*. For every 1,000 euro invested in this sector, production of 5.019 is activated. On the output side, the difference described above pertains entirely to end consumption by families, as these are the users of the services directly or indirectly generated in this sector. Finally, a noteworthy amount goes to foreign markets (exports of 1,320 million euro).

Similarly to that said above for production, the tourism-related industries also affect downstream employment with 61,000 work units and the downstream impact goes from 0.330 to 6.195 if the tourism-related industries are counted. With the highest employment multiplier (7.906) among the five analyzed sectors, recreational boating in its entirety shows its potential to be the *most dynamic sector* in terms of the creation of *new work force*. For every

100 additional work units a total - upstream and downstream - of 791 AWUs are activated. Furthermore, with 82,220 total AWUs overall, it is the second sector in the maritime industry in terms of employment used.

Finally, per employee production of 136,000 euro and per employee value added of 54,000 euro, both less than the average of the maritime industry, show the relative importance in quantitative terms of the AWUs used directly in the sector (10,400).

Fishing

Fishing, with a GDP in 2000 of 2,925 million euro, is the most “self-sufficient” sector, with a production that only in small part depends on goods and services supplied by other branches of the national economy (technical coefficient of 0.243).

Therefore, the *level of upstream integration* deriving from it is the *lowest* (0.262). Conversely, among all of the sectors of the maritime industry, it is the one with the *greatest foreign dependence* (import coefficient of 0.182). Together these two factors mean that the *total impact on production* (1.080) is also the *least*. As this is a sector that stimulates downstream the food industry activities of processing and preservation of fishing products and those of wholesale and retail trade, it has an excellent capacity for *creating wealth* in subsequent stages of production (*downstream* impact of 1.118). Of the total output (3,575 million euro), 3,100 million euro are for end consumption by families, 275 million are sold to other branches (particularly restaurants) to be used in their production processes.

This is the sector that employs the *greatest total number of employees* (88,850 total AWUs of which 63,300 are directly employed in fishing activities). It should be noted that the value reported for the direct AWUs in fishing is not an estimate. It is a statistic that ISTAT published in the year 2000. The low upstream integration mentioned above is reflected in the upstream employment that is therefore small (2,500 AWUs). Symmetrically, given its quality of actively stimulating the market in the stages following production, downstream employment (23,050 AWUs) deriving from it is especially large.

Fishing is the sector with the *lowest productivity* of those under consideration: 21,000 euro production per employee and 16,000 euro value added per employee. Similar to the maritime transport support services, this is the direct result of the very high employment used directly by the sector.

Tab. 2.13.a - Economic input statements of the maritime transport sector, 2000 (millions of current euro)

Economic input statement aggregates		Maritime transport
A=B+C	<i>Real production at factor cost</i>	13,870
B	Value added at factor cost (Value of compensation of productive and retired employees; including salaries, stipends, social contributions and other income)	4,890
C	<i>Intermediate costs</i> (intermediate consumption of goods and services needed for production and supplied by productive units of other branches) of which: from maritime branches	2,210 8,980
D	CIF imports (Value of goods and services imported by the sector)	235
E	<i>Distribution costs</i> (Increase in value of input due to market placement) of which: Trade margins Transport margins	-1,045 0 -1,045
F	<i>Other</i> Including: net taxes on production (indirect taxes less contributions, taxes on imports and VAT levied on input)	-225
G=A+D+E+F	Input at market price (Total value of goods and services generated by the sector)	12,835
KEY RATIOS		
H=C/B	Intermediate costs/value added at f.c.	1.836
I=B/A	Value added at f.c./production at f.c.	0.353
J=C/A	Technical coefficient (intermediate costs/prod. at f.c.)	0.647
K=D/G	Import coefficient	0.019
IMPACT MEASUREMENTS		
L=1-K	Direct impact on production	0.981
M=L/(1-J)	Total impact on production	2.782
N=E/A	Downstream impact	-0.074
O=M+N	Multiplier (upstream and downstream impact)	2.708

Source: Censis, 2002

Tab. 2.13.b - Economic statements of output in the maritime transport sector, 2000 (millions of current euro)

Economic statements of output aggregates		Maritime transport
a	<i>Intermediate consumption</i> (Value of goods and services sold to other branches to be used in their own processes)	1,475
b	<i>Final consumption</i> (Value of goods and services used to directly meet human needs) of which: Family consumption Public administration consumption Other civic institutional consumption	640 640 0 0
c	<i>Gross fixed capital formation</i> (Value of durable goods purchased - including the services incorporated in them - to be used in the production cycle over a period greater than a year)	0
d	<i>Changes in stock</i> (Changes in the value of stocks of finished products, products in the course of processing and raw materials between the beginning and end of the period)	0

follows

follows **Tab. 2.13.b - Economic statements of output in the maritime transport sector, 2000 (millions of current euro)**

Economic statements of output aggregates		Maritime transport
e	<i>Exports</i> (Value of goods and services sold to non-resident entities)	10,720
f=b+c+d+e	Final output	11,360
G=a+f	Total output	12,835
h=e/G	Export coefficient	0.835

Source: Censis, 2002

Tab. 2.13.c - Work units (AWUs) in the sector of maritime transport, 2000

Work units by type		Maritime transport
a	<i>Direct AWUs</i> (work units used directly by the sector)	26,800
b	<i>Upstream AWUs</i> (work units used in the production of goods and services purchased by the sector for its production) of which, in maritime branches	60,930 17,150
c	<i>Downstream AWUs</i> (work units used in the distribution of goods and services produced by the sector) of which: Trade Transport	-6,220 0 -6,220
d=a+b+c	Total work units	81,510

IMPACT MEASUREMENTS

e=b/a	Upstream impact	2.274
f=c/a	Downstream impact	-0.232
g=1+e+f	Multiplier (upstream and downstream impact)	3.041

KEY RATIOS

Prod./Dir. AWUs	Production at f.c. per employee (thousands of current euro)	518
V.A./Dir. AWUs	Value added at f.c. per employee (thousands of current euro)	182

Source: Censis, 2002

Tab. 2.14.a - Economic input statements of the maritime transport support services sector (*), 2000 (millions of current euro)

Economic input statement aggregates		Maritime transport support services
A=B+C	<i>Real production at factor cost</i>	3,375
B	<i>Value added at factor cost</i> (Value of compensation of productive and retired employees; includes salaries, stipends, social contributions and other income)	1,685
C	<i>Intermediate costs</i> (intermediate consumption of goods and services needed for production and supplied by productive units of other branches) of which, in maritime branches	1,690 30

follows

follows **Tab. 2.14.a - Economic input statements of the maritime transport support services sector (*), 2000 (millions of current euro)**

Economic input statement aggregates		Maritime transport support services
D	<i>CIF Imports</i> (Value of goods and services imported by the sector)	335
E	<i>Distribution costs</i> (Increase in value of input due to market placement) of which: Trade margins	0 0
	Transport margins	0
F	<i>Other</i> Including: net taxes on production (indirect taxes less contributions, taxes on imports and VAT levied on input)	80
G=A+D+E+F	<i>Input at market price</i> (Total value of goods and services generated by the sector)	3,790
KEY RATIOS		
H=C/B	Intermediate costs/value added at f.c.	1.003
I=B/A	Value added at f.c./production at f.c.	0.499
J=C/A	Technical coefficient (intermediate costs/prod. at f.c.)	0.501
K=D/G	Import coefficient	0.088
IMPACT MEASUREMENTS		
L=1-K	Direct impact on production	0.912
M=L/(1-J)	Total impact on production	1.826
N=E/A	Downstream impact	0.000
O=M+N	Multiplier (upstream and downstream impact)	1.826

(* Terminal operators, maritime agents, shippers and other support services to maritime transport
Source: Censis, 2002

Tab. 2.14.b - Economic statements of output in the maritime transport support services sector (*), 2000 (millions of current euro)

Economic statements of output aggregates		Maritime transport support services
a	<i>Intermediate consumption</i> (Value of goods and services sold to other branches to be used in their own processes)	3,470
b	<i>Final consumption</i> (Value of goods and services used to directly meet human needs) of which: Family consumption	140 140
	Public administration consumption	0
	Other civic institutional consumption	0
c	<i>Gross fixed capital formation</i> (Value of durable goods purchased - including the services incorporated in them - to be used in the production cycle over a period greater than a year)	0
d	<i>Changes in stock</i> (Changes in the value of stocks of finished products, products in the course of processing and the raw materials between the beginning and end of the period)	0
e	<i>Exports</i> (Value of goods and services sold to non-resident entities)	180
f=b+c+d+e	Final output	320
G=a+f	Total output	3,790
h=e/G	Export coefficient	0.047

(* Terminal operators, maritime agents, shippers and other support services to maritime transport
Source: Censis, 2002

Tab. 2.14.c - Work units (AWUs) in the maritime transport support services sector (*), 2000

Work units by type		Maritime transport support services
a	<i>Direct AWUs</i> (work units used directly by the sector)	28,240
b	<i>Upstream AWUs</i> (work units used in the production of goods and services purchased by the sector for its production) of which, in maritime branches	16,220 190
c	<i>Downstream AWUs</i> (work units used in the distribution of goods and services produced by the sector) of which: Trade Transport	0 0 0
d=a+b+c	Total work units	44,460
IMPACT MEASUREMENTS		
e=b/a	Upstream impact	0.574
f=c/a	Downstream impact	0.000
g=1+e+f	Multiplier (upstream and downstream impact)	1.574
KEY RATIOS		
Prod./Dir. AWUs	Production at f.c. per employee (thousands of current euro)	120
V.A./Dir. AWUs	Value added at f.c. per employee (thousands of current euro)	60

(*) Terminal operators, maritime agents, shippers and other support services to maritime transport

Source: Censis, 2002

Tab. 2.15.a - Economic input statements of the merchant shipbuilding sector, 2000 (millions of current euro)

Economic input statement aggregates		Merchant shipbuilding
A=B+C	<i>Real production at factor cost</i>	2,590
B	<i>Value added at factor cost</i> (Value of compensation of productive and retired employees; including salaries, stipends, social contributions and other income)	620
C	<i>Intermediate costs</i> (intermediate consumption of goods and services needed for production and supplied by productive units of other branches) of which, from maritime branches	1,970 80
D	<i>CIF imports</i> (Value of goods and services imported by the sector)	465
E	<i>Distribution costs</i> (Increase in value of input due to market placement) of which: Trade margins Transport margins	0 0 0
F	<i>Other</i> Including: net taxes on production (indirect taxes less contributions, taxes on imports and VAT levied on input)	-75
G=A+D+E+F	Input at market price (Total value of goods and services generated by the sector)	2,980
KEY RATIOS		
H=C/B	Intermediate costs/value added at f.c.	3.177
I=B/A	Value added at f.c./production at f.c.	0.239
J=C/A	Technical coefficient (intermediate costs/prod. at f.c.)	0.761
K=D/G	Import coefficient	0.156

follows

follows **Tab. 2.15.a - Economic input statements of the merchant shipbuilding sector, 2000 (millions of current euro)**

Economic input statement aggregates		Merchant shipbuilding
IMPACT MEASUREMENTS		
L=1-K	Direct impact on production	0.844
M=L/(1-J)	Total impact on production	3.526
N=E/A	Downstream impact	0.000
O=M+N	Multiplier (upstream and downstream impact)	3.526

Source: Censis, 2002

Tab. 2.15.b - Economic statements of output in the merchant shipbuilding sector, 2000 (millions of current euro)

Economic statements of output aggregates		Merchant shipbuilding
a	<i>Intermediate consumption</i> (Value of goods and services sold to other branches to be used in their own processes)	2,170
b	<i>Final consumption</i> (Value of goods and services used to directly meet human needs) of which: Family consumption	0
	Public administration consumption	0
	Other civic institutional consumption	0
c	<i>Gross fixed capital formation</i> (Value of durable goods purchased - including the services incorporated in them - to be used in the production cycle over a period greater than a year)	50
d	<i>Changes in stock</i> (Changes in the value of stocks of finished products, products in the course of processing and raw materials between the beginning and end of the period)	-835
e	<i>Exports</i> (Value of goods and services sold to non-resident entities)	1,595
f=b+c+d+e	Final output	810
G=a+f	Total output	2,980
h=e/G	Export coefficient	0.535

Source: Censis, 2002

Tab. 2.15.c - Work units (AWUs) in the merchant shipbuilding sector, 2000

Work units by type		Merchant shipbuilding
a	<i>Direct AWUs</i> (work units used directly by the sector)	15,500
b	<i>Upstream AWUs</i> (work units used in the production of goods and services purchased by the sector for its production) of which, from maritime branches	17,150
		670
c	<i>Downstream AWUs</i> (work units used in the distribution of goods and services produced by the sector) of which: Trade	0
	Transport	0
d=a+b+c	Total work units	32,650

follows

follows **Tab. 2.15.c - Work units (AWUs) in the merchant shipbuilding sector, 2000**

Work units by type		Merchant shipbuilding
IMPACT MEASUREMENTS		
e=b/a	Upstream impact	1.106
f=c/a	Downstream impact	0.000
g=1+e+f	Multiplier (upstream and downstream impact)	2.106
KEY RATIOS		
Prod./Dir. AWUs	Production at f.c. per employee (thousands of current euro)	167
V.A./Dir. AWUs	Value added at f.c. per employee (thousands of current euro)	40

Source: Censis, 2002

Tab. 2.16.a - Economic input statements of the recreational boating sector, 2000 (millions of current euro)

Economic input statement aggregates		Recreational boating	
		without tourism branch	with tourism branch
A=B+C	<i>Real production at factor cost</i>	1,415	1,415
B	<i>Value added at factor cost</i> (Value of compensation of productive and retired employees; includes salaries, stipends, social contributions and other income)	565	565
C	<i>Intermediate costs</i> (intermediate consumption of goods and services needed for production and supplied by productive units of other branches) of which, from maritime branches	850	850
D	<i>CIF imports</i> (Value of goods and services imported by the sector)	35	35
E	<i>Distribution costs and tourism branch</i> (Increase in value of input due to market placement and the tourism branch)	295	295
	of which: Trade margins	230	3,750
	Transport margins	210	210
	Tourism branch	20	20
		0	3,520
F	<i>Other</i> Including: net taxes on production (indirect taxes less contributions, taxes on imports and VAT levied on input)	-10	-10
G=A+D+E+F	<i>Input at market price</i> (Total value of goods and services generated by the sector)	1,930	5,450
KEY RATIOS			
H=C/B	Intermediate costs/value added at f.c.	1.504	1.504
I=B/A	Intermediate costs at f.c./production at f.c.	0.399	0.399
J=C/A	Technical coefficient (intermediate costs/prod. at f.c.)	0.601	0.601
K=D/G	Import coefficient	0.153	0.054
IMPACT MEASUREMENTS			
L=1-K	Direct impact on production	0.847	0.946
M=L/(1-J)	Total impact on production	2.122	2.369
N=E/A	Downstream impact	0.163	2.650
O=M+N	Multiplier (upstream and downstream impact)	2.284	5.019

Source: Censis, 2002

Tab. 2.16.b - Economic statements of output in the recreational boating sector, 2000 (millions of current euro)

Economic statements of output aggregates		Recreational boating	
		without tourism branch	with tourism branch
a	<i>Intermediate consumption</i> (Value of goods and services sold to other branches to be used in their own processes)	0	0
b	<i>Final consumption</i> (Value of goods and services used to directly meet human needs)	680	4,200
	of which: Family consumption	680	4,200
	Public administration consumption	0	0
	Other civic institutional consumption	0	0
c	<i>Gross fixed capital formation</i> (Value of durable goods purchased – including those of services incorporated in them – to be used in the production cycle over a period greater than a year)	20	20
d	<i>Changes in stock</i> (Changes in the value of stocks of finished products, products in the course of processing and raw materials between the beginning and end of the period)	-90	-90
e	<i>Exports</i> (Value of goods and services sold to non-resident entities)	1,320	1,320
f=b+c+d+e	Final output	1,930	5,450
G=a+f	Total output	1,930	5,450
h=e/G	Export coefficient	0.684	0.242

Source: Censis, 2002

Tab. 2.16.c - Work units (AWUs) in the recreational boating sector, 2000

Work units by type		Recreational boating	
		without tourism branch	with tourism branch
a	<i>Direct AWUs</i> (work units used directly by the sector)	10,400	10,400
b	<i>Upstream AWUs</i> (work units used in the production of goods and services purchased by the sector for its production)	7,390	7,390
	of which, from maritime branches	290	290
c	<i>Downstream AWUs</i> (work units used in the production of goods and services produced by the sector)	3,430	64,430
	of which: Trade	3,230	3,230
	Transport	200	200
	Tourism branch	0	61,000
d=a+b+c	Total work units	21,220	82,220
IMPACT MEASUREMENTS			
e=b/a	Upstream impact	0.711	0.711
f=c/a	Downstream impact	0.330	6.195
g=1+e+f	Multiplier (upstream and downstream impact)	2.040	7.906
KEY RATIOS			
Prod./Dir. AWUs	Production at f.c. per employee (thousands of current euro)	136	–
V.A./Dir. AWUs	Value added at f.c. per employee (thousands of current euro)	54	–

Source: Censis, 2002

Tab. 2.17.a - Economic input statements of the fishing sector, 2000 (millions of current euro)

Economic input statement aggregates		Fishing
A=B+C	<i>Real production at factor cost</i>	1,360
B	<i>Value added at factor cost</i> (Value of compensation of productive and retired employees; includes salaries, stipends, social contributions and other income)	1,030
C	<i>Intermediate costs</i> (intermediate consumption of goods and services needed for production and supplied by productive units of other branches) of which, from maritime branches	330 65
D	<i>CIF imports</i> (Value of goods and services imported by the sector)	650
E	<i>Distribution costs</i> (Increase in value of input due to market placement) of which: Trade margins Transport margins	1,520 1,350 170
F	<i>Other</i> Including: net taxes on production (indirect taxes less contributions, taxes on imports and VAT levied on input)	45
G=A+D+E+F	<i>Input at market price</i> (Total value of goods and services generated by the sector)	3,575
KEY RATIOS		
H=C/B	Intermediate costs/value added at f.c.	0.320
I=B/A	Value added at f.c./production at f.c.	0.757
J=C/A	Technical coefficient (intermediate costs/prod. at f.c.)	0.243
K=D/G	Import coefficient	0.182
IMPACT MEASUREMENTS		
L=1-K	Direct impact on production	0.818
M=L/(1-J)	Total impact on production	1.080
N=E/A	Downstream impact	1.118
O=M+N	Multiplier (upstream and downstream impact)	2.198

Source: Censis, 2002

Tab. 2.17.b - Economic statements of output in the fishing sector, 2000 (millions of current euro)

Economic statements of output aggregates		Fishing
a	<i>Intermediate consumption</i> (Value of goods and services sold to other branches to be used in their own processes)	275
b	<i>Final consumption</i> (Value of goods and services used to directly meet human needs) of which: Family consumption Public administration consumption Other civic institutional consumption	3,100 3,100 0 0
c	<i>Gross fixed capital formation</i> (Value of durable goods purchased - including the services incorporated in them - to be used in the production cycle over a period greater than a year)	30
d	<i>Changes in stock</i> (Changes in the value of stocks of finished products, products in the course of processing and raw materials between the beginning and end of the period)	0
e	<i>Exports</i> (Value of goods and services sold to non-resident entities)	170
f=b+c+d+e	Final output	3,300
G=a+f	Total output	3,575
h=e/G	Export coefficient	0.048

Source: Censis, 2002

Tab. 2.17.c - Work units (AWUs) in the fishing sector, 2000

Work units by type		Fishing
a	<i>Direct AWUs</i> (work units used directly by the sector)	63,300
b	<i>Upstream AWUs</i> (work units used in the production of goods and services purchased by the sector for its production) of which, from maritime branches	2,500 850
c	<i>Downstream AWUs</i> (work units used in the distribution of goods and services produced by the sector) of which: Trade Transport	23,050 20,650 2,400
d=a+b+c	<i>Total work units</i>	88,850
IMPACT MEASUREMENTS		
e=b/a	Upstream impact	0.039
f=c/a	Downstream impact	0.364
g=1+e+f	Multiplier (upstream and downstream impact)	1.404
KEY RATIOS		
Prod./Dir. AWUs	Production at f.c. per employee (thousands of current euro)	21
V.A./Dir. AWUs	Value added at f.c. per employee (thousands of current euro)	16

Source: Censis, 2002

2.3. Comparison between 1992 and 2000

The reconstruction of the maritime industry financial statement was done using the input-output table of the Italian economy from the year 1992 (for a more information on of the methodology used please see section 2.2.4). By reading the table columns the structure in 1992 of the income statement is seen for each of the 92 branches of the national economy, while by reading the rows the structure of the output statements is seen. For this reason, the estimates made for the year 2000 are compared here with the *definite* data from 1992. As for the employment dimension of the sectors in 1992, the data of the direct AWUs are those reported in the “national economic accounts”, while those for the upstream and downstream AWUs are those estimated following the same methodology used for the 2000 estimates.

Table 2.18 shows the main characteristics of the sectors of the maritime industry in 1992. To facilitate the comparison between the two years, the table is presented with the same structure as 2.10 (in which the estimates for the maritime industry in 2000 are reported). Also to facilitate the comparison, the data of table 2.18 and table 2.19-22, originally in lire, have been converted to euro.

Tab. 2.18 - Selected features of the sectors of the maritime industry, 1992

	Input/output				Multiplier
	GDP (**) (mm of euro)	Technical coefficient	Downstream impact	Export (**) (mm of euro)	
Maritime transport	7,445	0.688	-0.076 (*)	6,235	3.075
Maritime transport support services	2,185	0.550	0.000	110	2.025
Naval constructions (with tourism branch) (1)	5,785	0.638	0.934	300	3.453
Fishing	2,990	0.247	1.111	55	2.269
Total (net of duplications) (2)	16,925	0.574	0.291	6,700	2.465

	Work units (AWUs)			Total	Multiplier
	Direct	Upstream	Downstream		
Maritime transport	27,740	52,170	-4,600 (*)	75,310	2.715
Maritime transport support services	22,880	16,200	0	39,080	1.708
Naval constructions (with tourism branch) (1)	34,100	24,910	59,820	118,830	3.485
Fishing	82,700	3,640	33,570	119,910	1.450
Total (net of duplications) (2)	167,420	80,580	88,790	336,790	2.012

(*) This posts as negative because maritime transport is a sales sector and does not purchase downstream services

(**) To allow a comparison between 1992 and 2000, euros were used, though they were not yet in effect

(1) Includes estimate of the maritime tourism branch downstream of recreational boating, 2,790 million euro and 56,000 AWUs are considered

(2) The total does not correspond to the sum of the five sectors because the sum of the intermediate costs – in the first table – and of the upstream AWUs – in the second table – was considered net of the duplications coming from internal exchanges between the sectors

Source: Censis, 2002

A further clarification is needed before continuing with the discussion of the development of the maritime industry's economic accounts. The category "naval constructions" in table 2.18 and tables 2.21 a-b should be understood as, and compared with, merchant shipbuilding and recreational boating counted together. More specifically, the estimates reported in table 2.18 also count the maritime tourism branch. Downstream of boating, 2,790 million euro and 56,000 work units are counted. The estimate of table 2.21, conversely, is net of this component.

In the eight years under consideration, the total GDP of the maritime industry net of the duplications has grown (at current prices) by 43%. The sectors' structural features that emerge are the same as those described for the year 2000. For example, in 1992, the production size of maritime transport (more than 40% of the total GDP) and its export orientation (more than 90%

of the total exports) was already predominant. Employment went from 336,790 total AWUs in 1992 to 310,540 in 2000. This drop, beyond the reorganization of the work force within the individual sectors, was caused in large part by the decrease of direct AWUs in the fishing sector, which went from 82,700 units to 63,300.

Maritime transport

In addition to being the sector with the largest production size, it is also the one that has shown the greatest economic vitality in the last eight years, with a total value of goods and services generated growing 69% in nominal terms. The direct and downstream impact measurements have remained almost unchanged, while a slight decrease in the upstream impact is recorded and is reflected in the total multiplier of the sector, which has gone down from 3.075 to 2.708. This change is due to an internal reorganization of the sector, which in recent years has decreased its dependence on goods and services needed for production that were provided by productive units in other branches. In other words, the value added of the sector increased and the productive process of maritime transport became more self-sufficient.

All together, work units increased, going from 75,310 to 81,510. The largest percentage variations are found for upstream AWUs (+17%) and markedly for downstream AWUs (+35%). The AWU multiplier also increased, going from 2.715 to 3.041. The productivity of the sector was especially high, in absolute terms as well, compared to other sectors of the maritime industry. In eight years, both production per employee and the annual average value added per employee doubled (at current prices), going from 295,000 to 518,000, and from 92,000 to 182,000 euro, respectively.

Maritime transport support services

As this sector is closely connected to maritime transport, it is also characterized by considerable growth (+58% revenues at market price) and by a reorganization similar to the one described above. The impact measurements and multiplier of this sector have the same dynamics as that of maritime transport with a slight decline in upstream impact that is reflected in the revenue multiplier, which goes from 2.025 to 1.826.

From the employment perspective as well, an increase is seen in total

AWUs (+14%), which can be fully attributed to the greater number of those employed directly by the sector (+5,630 units). Though less intense than in transport, the increases seen in productivity are also noteworthy: +29% production per employee and +43% in value added per employee.

Shipbuilding

It was not possible to separately compare the estimates of 2000 with those of 1992 for merchant shipbuilding and for leisure boating. The data of these two sectors compared to 2000 have both been deduced from branch 49 “Shipbuilding” of the “input-output table of the Italian economy”. As separate values were not available for the two sectors for 1992, the estimates of 2000 were added together for the comparison. The data from 1992 does not therefore include accessories or motors for leisure boating. Furthermore, the values reported for both years are net of the maritime tourism branch.

With these clarifications, a notable increase is recorded for this expanded sector, as well: +38% increase in the value of goods and services generated by the sector. The increase found is also considerable for the multiplier which increased from 2.385 to 2.914. This variation is once again caused by changes that have occurred within the productive process (primarily by the increase of the upstream impact).

The restructuring that has been underway for some time in the shipbuilding sector, and particularly in that of merchant shipbuilding, is found especially in changes in the employment dimension. Total AWUs have decreased from 62,830 to 53,870. This change can be almost entirely attributed to the drop of direct AWUs (-8,200 units). Similar to the transport and the transport support services, an increase in productivity of the work factor is shown for this expanded sector. The production per employee increased in nominal terms by 67%, and the value added per employee increased by 35%.

Fishing

For this sector, the reported value, both in 1992 and 2000, have been almost entirely gathered from official statistical sources. In addition, it is the only case in which there is perfect correspondence between the branch in the “Input-output table of the Italian economy” and the fishing sector.

It is the sector of the maritime industry that, despite having a great deal of potential, has not succeeded in developing as it could. In nominal terms, the goods and services generated by the sector have grown by only a little more than 4% in eight years. Because national production has not managed to excel and satisfy the growing demand for fishing products, the demand has been met by foreign products (the import coefficient has grown from 0.128 to 0.182). The upstream impact has also decreased, from 0.286 to 0.262. The direct and upstream impact has fallen (together with a virtually stationary downstream impact), causing the revenue multiplier to go down from 2.269 to 2.198.

As has already been noted, the sharp drop of total AWUs in the fishing sector (-31,060 units) was caused almost completely by the decrease of direct AWUs (-19,400 units) and downstream AWUs (-10,520 units). This was caused by a major reorganization of the sector, which is trying to get out of the static situation that has characterized it in recent years. Work productivity, though in absolute terms it is the lowest of the maritime industry, has shown a significant increase: +24% production per employee and +23% in value added per employee.

Tab. 2.19.a - Economic input statements of the maritime transport sector, 2000 (millions of current euro*)

Main aggregates of the economic input statements	Maritime transport	
	1992	2000
<i>Real production at factor cost</i>	8,190	13,870
of which: Value added at factor cost (Value of compensation of productive and retired employees; includes salaries, stipends, social contributions and other income)	2,555	4,890
Intermediate costs (Intermediate consumption of goods and services needed for production and supplied by the production units of other branches)	5,635	8,980
Input at market price (Total value of goods and services generated by the sector)	7,585	12,835
IMPACT MEASUREMENTS		
Direct impact on production	0.983	0.981
Total impact on production	3.151	2.782
Downstream impact	-0.076	-0.074
Multiplier (upstream and downstream impact)	3.075	2.708

(*) To allow a comparison between 1992 and 2000, euros were used, though they were not yet in effect
Source: Censis, 2002

Tab. 2.19.b - Work units (AWUs) in the maritime transport sector

Work units by type	Maritime transport	
	1992	2000
<i>Direct AWUs</i> (work units used directly by the sector)	27,740	26,800
<i>Upstream AWUs</i> (work units used in the production of goods and services purchased by the sector for its production)	52,170	60,930
<i>Downstream AWUs</i> (work units used in the distribution of goods and services produced by the sector)	-4,600	-6,220
Total work units	75,310	81,510
IMPACT MEASUREMENTS		
Upstream impact	1.881	2.274
Downstream impact	-0.166	-0.232
Multiplier (upstream and downstream impact)	2.715	3.041
KEY RATIOS		
Production at f.c. per employee (thousands of current euro*)	295	518
Value added at f.c. per employee (thousands of current euro)	92	182

(*) To allow a comparison between 1992 and 2000, euros were used, though they were not yet in effect
Source: Censis, 2002

Tab. 2.20.a - Economic input statements of the maritime transport support services sector (*) (millions of current euro)**

Main aggregates of the economic input statements	Maritime transport	
	1992	2000
<i>Real production at factor cost</i>	2,135	3,375
of which: <i>Value added at factor cost</i> (Value of compensation of productive and retired employees; includes salaries, stipends, social contributions and other income)	960	1,685
<i>Intermediate costs</i> (Intermediate consumption of goods and services needed for production and supplied by the production units of other branches)	1,175	1,690
<i>Input at market price</i> (Total value of goods and services generated by the sector)	2,400	3,790
IMPACT MEASUREMENTS		
Direct impact on production	0.910	0.912
Total impact on production	2.025	1.826
Downstream impact	0.000	0.000
Multiplier (upstream and downstream impact)	2.025	1.826

(*) Terminal operators, maritime agents, shippers and other support services to maritime transport

(**) To allow a comparison between 1992 and 2000, euros were used, though they were not yet in effect
Source: Censis, 2002

Tab. 2.20.b - Work units (AWUs) in the sector of the maritime transport support services sector (*)

Work units by type	Maritime transport support services	
	1992	2000
Direct AWUs (work units used directly by the sector)	22,880	28,240
Upstream AWUs (work units used in the production of goods and services purchased by the sector for their production)	16,200	16,220
Downstream AWUs (work units used in the distribution of goods and services produced by the sector)	0	0
Total work units	39,080	44,460
IMPACT MEASUREMENTS		
Upstream impact	0.708	0.574
Downstream impact	0.000	0.000
Multiplier (upstream and downstream impact)	1.708	1.574
KEY RATIOS		
Production at f.c. per employee (thousands of current euro)**	93	120
Value added at f.c. per employee (thousands of current euro)	42	60

(*) Terminal operators, maritime agents, shippers and other support services to maritime transport

(**) To allow a comparison between 1992 and 2000, euros were used, though they were not yet in effect

Source: Censis, 2002

Tab. 2.21.a - Economic input statements of the naval construction sector (*) (millions of current euro)**

Main aggregates of the economic input statements	Naval constructions	
	1992	2000
<i>Real production at factor cost</i>	3,175	4,005
of which: <i>Value added at factor cost</i> (Value of compensation of productive and retired employees; includes salaries, stipends, social contributions and other income)	1,150	1,185
<i>Intermediate costs</i> (Intermediate consumption of goods and services needed for production and supplied by the production units of other branches)	2,025	2,820
<i>Input at market price</i> (Total value of goods and services generated by the sector)	3,550	4,910
IMPACT MEASUREMENTS		
Direct impact on production	0.844	0.845
Total impact on production	2.329	2.857
Downstream impact	0.055	0.057
Multiplier (upstream and downstream impact)	2.385	2.914

(*) 2000 includes the accessories and motors for recreational boating, which were not included in the 1992 data

(**) To allow a comparison between 1992 and 2000, euros were used, though they were not yet in effect

Source: Censis, 2002

Tab. 2.21.b - Work units (AWUs) in naval construction sector (*)

Work units by type	Naval constructions	
	1992	2000
<i>Direct AWUs</i> (work units used directly by the sector)	34,100	25,900
<i>Upstream AWUs</i> (work units used in the production of goods and services purchased by the sector for their production)	24,910	24,540
<i>Downstream AWUs</i> (work units used in the distribution of goods and services produced by the sector)	3,820	3,430
Total work units	62,830	53,870
IMPACT MEASUREMENTS		
Upstream impact	0.730	0.947
Downstream impact	0.112	0.132
Multiplier (upstream and downstream impact)	1.843	2.080
KEY RATIOS		
Production at f.c. per employee (thousands of current euro**)	93	155
Value added at f.c. per employee (thousands of current euro)	34	46

(*) 2000 includes the accessories and motors for recreational boating, which were not included in the 1992 data

(**) To allow a comparison between 1992 and 2000, euros were used, though they were not yet in effect

Source: Censis, 2002

Tab. 2.22.a - Economic input statements of the fishing sector (millions of current euro*)

Main aggregates of the economic input statements	Fishing	
	1992	2000
<i>Real production at factor cost</i>	1,395	1,360
of which: <i>Value added at factor cost</i> (Value of compensation of productive and retired employees; includes salaries, stipends, social contributions and other income)	1,050	1,030
<i>Intermediate costs</i> (Intermediate consumption of goods and services needed for production and supplied by the production units of other branches)	345	330
<i>Input at market price</i> (Total value of goods and services generated by the sector)	3,430	3,575
IMPACT MEASUREMENTS		
Direct impact on production	0.872	0.818
Total impact on production	1.158	1.080
Downstream impact	1.111	1.118
Multiplier (upstream and downstream impact)	2.269	2.198

(*) To allow a comparison between 1992 and 2000, euros were used, though they were not yet in effect

Source: Censis, 2002

Tab. 2.22.b - Work units (AWUs) in the fishing sector

Work units by type	1992	2000
<i>Direct AWUs</i> (work units used directly by the sector)	82,700	63,300
<i>Upstream AWUs</i> (work units used in the production of goods and services purchased by the sector for their production)	3,640	2,500
<i>Downstream AWUs</i> (work units used in the distribution of goods and services produced by the sector)	33,570	23,050
Total work units	119,910	88,850
IMPACT MEASUREMENTS		
Upstream impact	0.044	0.039
Downstream impact	0.406	0.364
Multiplier (upstream and downstream impact)	1.450	1.404
KEY RATIOS		
Production at f.c. per employee (thousands of current euro*)	17	21
Value added at f.c. per employee (thousands of current euro)	13	16

(*) To allow a comparison between 1992 and 2000, euros were used, though they were not yet in effect
Source: Censis, 2002

2.4. The other sectors of the maritime sector

In order to evaluate the total scope of Italian maritime activities, in this “Second Report on the Sea Economy,” in addition to the five sectors of the maritime industry, economic and employment aggregates were also estimated for the *Navy*, *Coast Guard* and *Port Authorities*. It should be specified that to expand the analysis to include these maritime sectors as well, a conceptual and technical effort had to be made to make these estimates homogenous and comparable to those of the maritime industry. Furthermore, not being sectors in the strictest sense, i.e. activities that produce goods and services intended for sale on the market, the estimates reported below should be interpreted only as a first attempt to quantify the contributions of these sectors in monetary terms to the total of Italian maritime activities.

Navy

Before moving on to the descriptions of the *Navy* aggregates, it should be emphasized that the estimates reported in table 2.33 have been taken from the year 2000 final balance. They do not therefore take into consideration the

contribution that cannot be quantified in monetary terms, but that are nonetheless invaluable, that the Navy provides the country in terms of defense, policing and services such as hydrography and lighthouse management.

The accounting system used starts from the assumption that the final balance is equal to input at market price (which in turn coincide with the real production at factor cost, because import and distribution costs are zero). The 2,225 euro of “production” are therefore divided between the value added (1,455 million euro), which can be included in the operating and personnel costs and intermediate costs (770 million euro), which can be interpreted as modernization and renovation costs, or investments. From this subdivision, it emerges that in 2000 the Navy put 34% of its total expenditures to investments (technical coefficient of 0.346) and the remaining part - 65,% - to regular management expenses. In the output statement, 2,225 million euro of “production” were attributed entirely to “final consumption by public administration”.

The multiplier (1.529), to be considered with all of the appropriate caution, comes from a direct unit impact and upstream impact of 0.529. Therefore, though the Navy does not generate downstream wealth from its “productive processes”, it contributes intensively to the formation of national revenue. For every 100 additional euro going to the Navy, a total of 152.90 euro of “production” is activated.

The total work units (42,540 units, tab. 2.23.b) are in large measure composed of AWUs directly used by the Navy (34,950 units). The latter were calculated counting only the military personnel (excluding those in training). Conversely, the 7,590 upstream AWUs correspond to the labor force indirectly generated in those sectors (primarily merchant shipbuilding) which produce goods and services needed by the Navy. Finally, the employment multiplier of 1.217 assesses the Navy’s capacity to create new work force. An increase of 100 units of military personnel activates more than 20 other positions in upstream sectors.

Coast Guard

The prudence and care with which the Navy data should be interpreted also apply to the Coast Guard. The methodology used to calculate the economic aggregates is also similar to that described for the Navy.

In this case also, input at market price (325 million euro, tab. 2.24 a)

coincide with the real production at factor cost, as there are no import or distribution costs. More specifically, “production” consists of 230 million euro of value added (regular expenses such as salaries, stipends, etc.) and by 95 million of intermediate costs (investments). The entire value of “production” is found in the output statement in the “final consumption by the public administration” category. The revenue multiplier for Coast Guard is found by taking together the direct impact on production (unit), the upstream impact (0.413) and the downstream impact (zero). For every 100 euro of added demand that is made of this “sector” 141,30 euro of production is created in the total national economic system.

The direct work units, estimated at 5,440 units, were calculated on the basis of the military personnel permanently in service in the Coast Guard on 31 December 2000 (tab. 2.24.b). To these, 960 upstream AWUs were added, in sectors which produce goods and services needed by the Coast Guard companies. The employment multiplier (1,176) shows the impact the harbor companies can have on the work market. An increase of 100 units of personnel generates more than 18 additional jobs in upstream sectors.

Port Authorities

Though it may seem needlessly repetitive, we want to emphasize once more the caution with which these estimates should be read and interpreted. The reported data (tab. 2.25.a and 2.25.b) refer to the 21 Port Authorities⁵ existing in the year 2000 (currently 23) and members of Assporti. Production at factor cost, for the same reasons noted above for the Navy and Coast Guard, coincides with the income at market price (85 million euro).

The amount that can be attributed to the value added comes to 60 million euro, while those related to intermediate costs are 25 million euro. The technical coefficient (0.294) and complement to one, demonstrates a relatively self-sufficient sector. In the output statement, as in the two cases described above, the total value of goods and services generated in the sector

5. These are non-commercial public entities that do not perform business activities in the true sense. Therefore, aggregates indicated in the income and output statement, conceived on the basis of the businesses of the maritime industry, aside from some cases not shown by this study, are not readily adaptable to these entities. As an example, note that the study did not count investments made by the port authorities with their own income, with national income or from other public entities for regular and unscheduled maintenance and, specifically, starting in 2000, for implementing new works. Though it cannot be quantified, this is also held to significantly affect the AWUs indirectly generated.

is found entirely in the category “End consumption by the public administration”.

Finally, the port authorities directly use 1,200 AWUs and indirectly activate upstream another 130, for a total of 1,330 units (tab. 2.25.b). The employment multiplier obtained in this way is 1.108.

Tab. 2.23.a - Economic input statements and output of the Italian Navy (millions of euro at current prices), 2000

Aggregates of the economic input statements		Navy
A=B+C	Real production at factor cost	2,225
B	<i>Value added at factor cost</i> (Value of compensation of productive and retired employees; includes salaries, stipends, social contributions and other income)	1,455
C	<i>Intermediate costs</i> (Intermediate consumption of goods and services needed for production and supplied by the production units of other branches)	770
D	<i>CIF imports</i>	0
E	<i>Distribution costs</i>	0
G=A+D+E	<i>Input at market price</i> (Total value of goods and services generated by the sector)	2,225
KEY RATIOS		
H=C/B	Intermediate costs/value added at f.c.	0.529
I=B/A	Value added at f.c./production at f.c.	0.654
J=C/A	Technical coefficient (intermediate costs/prod. at f.c.)	0.346
K=D/G	Import coefficient	0.000
IMPACT MEASUREMENTS		
L=1-K	Direct impact on production	1.000
M=L/(1-J)	Total impact on production	1.529
N=E/A	Downstream impact	0.000
O=M+N	Multiplier (upstream and downstream impact)	1.529
<i>Economic statements of output aggregates</i>		
a	Intermediate consumption	0
b	Final consumption	2,225
c	Gross fixed capital formation	0
d	Changes in stock	0
e	Exports	0
G=a+b+c+d+e	Total output	2,225
h=e/G	Export coefficient	0.000

Source: Censis, 2002

Tab. 2.23.b - Work units (AWUs) in the Italian Navy, 2000

Work units by type		Navy
a	<i>Direct AWUs</i> (*) (work units used directly by the sector)	34,950
b	<i>Upstream AWUs</i> (work units used in the production of goods and services purchased by the sector for its production)	7,590
c	<i>Downstream AWUs</i> (work units used in the distribution of goods and services produced by the sector)	0
d=a+b+c	<i>Total work units</i>	42,540
IMPACT MEASUREMENTS		
e=b/a	Upstream impact	0.217
f=c/a	Downstream impact	0.000
g=1+e+f	Multiplier (upstream and downstream impact)	1.217

(*) Does not include personnel in training
Source: Censis, 2002

Tab. 2.24.a - Economic input statements and output of harbor companies, 2000 (millions of euro at current prices)

Aggregates of the economic input statements		Harbor companies
A=B+C	<i>Real production at factor cost</i>	325
B	<i>Value added at factor cost</i> (Value of compensation of productive and retired employees; includes salaries, stipends, social contributions and other income)	230
C	<i>Intermediate costs</i> (Intermediate consumption of goods and services needed for production and supplied by the production units of other branches)	95
D	<i>CIF imports</i>	0
E	<i>Distribution costs</i>	0
G=A+D+E	<i>Input at market price</i> (Total value of goods and services generated by the sector)	325
KEY RATIOS		
H=C/B	Intermediate costs/value added at f.c.	0.413
I=B/A	Value added at f.c./production at f.c.	0.708
J=C/A	Technical coefficient (intermediate costs/prod. at f.c.)	0.292
K=D/G	Import coefficient	0.000
IMPACT MEASUREMENTS		
L=1-K	Direct impact on production	1.000
M=L/(1-J)	Total impact on production	1.413
N=E/A	Downstream impact	0.000
O=M+N	Multiplier (upstream and downstream impact)	1.413

follows

follows **Tab. 2.24.a - Economic input statements and output of harbor companies, 2000 (millions of euro at current prices)**

Aggregates of the economic input statements		Harbor companies
<i>Economic statements of output aggregates</i>		
a	Intermediate consumption	0
b	Final consumption	325
c	Gross fixed capital formation	0
d	Changes in stock	0
e	Exports	0
G=a+b+c+d+e Total output		325
h=e/G	Export coefficient	0.000

Source: Censis, 2002

Tab. 2.24.b - Work units (AWUs) of the harbor companies, 2000

Work units by type		Harbor companies
a	<i>Direct AWUs</i> (work units used directly by the sector)	5,440
b	<i>Upstream AWUs</i> (work units used in the production of goods and services purchased by the sector for their production)	960
c	<i>Downstream AWUs</i> (work units used in the distribution of goods and services produced by the sector)	0
d=a+b+c	<i>Total work units</i>	6,400
IMPACT MEASUREMENTS		
e=b/a	Upstream impact	0.176
f=c/a	Downstream impact	0.000
g=1+e+f	Multiplier (upstream and downstream impact)	1.176

Source: Censis, 2002

Tab. 2.25.a - Economic input statements and output of the port authorities, 2000 (millions of euro at current prices)

Main aggregates of the economic input statements		Port authorities
A=B+C	<i>Real production at factor cost</i>	85
B	<i>Value added at factor cost</i> (Value of compensation of productive and retired employees; includes salaries, stipends, social contributions and other income)	60
C	<i>Intermediate costs</i> (intermediate consumption of goods and services needed for production and supplied by the production units of other branches)	25

follows

follows **Tab. 2.25.a - Economic input statements and output of the port authorities, 2000 (millions of euro at current prices)**

Main aggregates of the economic input statements		Port authorities
D	<i>CIF imports</i>	0
E	<i>Distribution costs</i>	0
G=A+D+E	<i>Input at market price</i> (Total value of goods and services generated by the sector)	85
KEY RATIOS		
H=C/B	Intermediate costs/value added at f.c.	0.417
I=B/A	Value added at f.c./production at f.c.	0.706
J=C/A	Technical coefficient (intermediate costs/prod. at f.c.)	0.294
K=D/G	Import coefficient	0.000
IMPACT MEASUREMENTS		
L=1-K	Direct impact on production	1.000
M=L/(1-J)	Total impact on production	1.417
N=E/A	Downstream impact	0.000
O=M+N	Multiplier (upstream and downstream impact)	1.417
<i>Economic statements of output aggregates</i>		
a	Intermediate consumption	0
b	Final consumption	85
c	Gross fixed capital formation	0
d	Changes in stock	0
e	Exports	0
G=a+b+c+d+e	Total output	85
h=e/G	Export coefficient	0.000

Source: Censis, 2002

Tab. 2.25.b - Work units (AWUs) of port authorities, 2000

Work units by type		Port authorities
a	Direct AWUs (work units used directly by the sector)	1,200
b	Upstream AWUs (work units used in the production of goods and services purchased by the sector for their production)	130
c	Downstream AWUs (work units used in the distribution of goods and services produced by the sector)	0
d=a+b+c	Total work units	1,330
IMPACT MEASUREMENTS		
e=b/a	Upstream impact	0.108
f=c/a	Downstream impact	0.000
g=1+e+f	Multiplier (upstream and downstream impact)	1.108

Source: Censis, 2002

3. PRINCIPLE SECTORAL DYNAMICS

3.1. Maritime transport

Maritime transport proves to be the litmus test of a large series of issues related to the sea in general and the country as a whole. The *performance* directly inherent to the flows of transport on the sea and internal waterways result from the combined effect of multiple elements. It crosses factors relating to the infrastructure, regulations, organization, the market, and, more generally, political-social issues, in forming the boundaries that the transport system must respect.

Therefore, on one hand, the assessment of the conditions of Italian maritime transport end up involving an aggregate that goes far beyond the scope of the base analysis. On the other hand, the solution to the problems that beset it call directly upon skills and strategies that are in essence part of the Italian system.

The statistical evidence creates an image of a sector that seems to be suffocated by systemic bottlenecks and conditioned to a significant degree by political/economic choices that often appear both excessively timid and short-sighted.

The problems of congestion of roadways and, more generally, of logistical hubs of transport affect all of Europe and Italy especially. In the economic landscape characterized by globalization, businesses are closely connected to *just in time* logistics and increasingly vulnerable to the functionality of delivery systems, and having the use of an integrated and efficient transport system becomes an essential pre-condition for making the country and businesses competitive. With the added transport issues of pollution and environmental impact, the importance of including the transit of goods and passengers on water becomes clear.

Today, on the international level, the sea is the favored conveyer of

commerce, particularly known for its capacity to move large masses of raw materials and its small unit cost on long trips. In the context under consideration, Italy encounters an entire series of structural problems of varied types related to questions of competitiveness, inadequacy of infrastructures to connect with other transport methods and the scarce political/policy-making attention paid to the sea as a transport means on which to focus.

The consequences are quite clear for the flows of goods transported on water. The absolute increase in the traffic of goods by short sea and internal navigation that took place in the period between 1995-2000 is foiled by the decrease in terms of share of the total goods traffic in the same period.

In 2000, water was the means on which 18.7% of goods traveled, the same percentage as four years earlier. The growth path undertaken shows signs of regression, though the situation seems to offer the opportunity to push in the direction of a progressive substitution of water ways for the asphalt roads that are now oversaturated. This point pertains as much to goods traffic as passenger traffic and is corroborated by solid arguments that go far beyond observations on the current state of the road system.

With regard for the entirety of the problems in the transport sector, the choice of greater focus on water seems to be the most sensible. Maritime and river transport do not require line infrastructures, only connection points, and require investments of relatively small amounts. Its cost per ton/kilometer is much less than transport on wheels or rails, and has comparatively limited environmental repercussions.

The evidence is the increasingly pressing need for an overall modal rebalancing. To overcome the bottlenecks that are part of some of the basic principles of our transport system, the direction that the situation seems to be pointing is towards combined road-water transport.

Between 1995 and 2000, internal goods traffic has shown a growth both in absolute value and in percentage of the total of handled products. In 2000, both of the categories for water transport (short sea navigation and internal river and lake navigation) show values higher than five years earlier. The absolute increases made by short sea maritime transport and internal transport are both quite significant, +30.4% and +25.2%, respectively, (the similar increase calculated in the full 1990-2000 decade comes to 43.2%), and also the largest of the increases made by the different types of transport.

For such large positive changes to not be misleading for the purpose of the analysis, attention need only be paid to the data of the percentage distribution of goods traffic by transport system. From this angle, the situation looks different. In the time period under consideration the total of goods transported

on water increased by 1.5%, not reaching even 19% of the total in 2000, versus 66.6% for vehicle transport.

Looking at this development in detail, it is seen that over the course of the 15 years there was even an inversion of the trend. While from 1995 to 1997, maritime short sea transport gained almost three percentage points, from 1998 to 2000, a regression occurred, with a loss of 1.3%.

The internal movement of passengers on water had, in absolute terms, an explosion between 1995 and 2000, +89.0%, but in relative terms accounted for a meager 0.5% of the total, compared to 75.5% of passengers who traveled with automobiles.

In the second half of the 1990s, all of the indicators grew (incoming ships, tons of goods and numbers of passengers) for navigation in its entirety, i.e., including both short sea and international shipping. The variation rates regarding the number of incoming ships and their tonnage show an increase of 70%, transported goods show a +16.5% increase and passenger volume grew over 60%.

Breaking navigation into its two components, international and short sea, the small impact that the latter has on the whole is seen, in terms of incoming ships and numbers of transported passengers. A comparison of the values of the two types of navigation makes clear the sharp, though expected, difference in the average tonnage of ships that perform it. The ships used for international routes that stop in Italy, though they are an eighth of those in short sea navigation, with a total net tonnage well beyond 270,000,000 tons, transport three times the goods transported by units navigating within national boundaries.

Between 1995 and 2000, international trade grew greatly (+25.8% exports, +15.1% imports). Among the modes of transport that accompanied the growth of trade beyond national boundaries, particularly noteworthy on the basis of quantity are transport by sea (+27.8% for exports and +9.3% for imports), followed by air (+1.6% for exports and +79.7% for imports) and those on wheels (+24.4% for exports and +28.6% for imports). The value of goods exported by sea decreased on average. The quantity change between 1995 and 1999 shows an increase of 15.7% for a value that decreased overall by 1.5%. A similar phenomenon seemed to affect exports on the roads.

In 1999, in exports, goods transported on rail and by sea seem to be characterized by a low unit value in contrast to products that were traded by air, which though only 0.4% by volume of the total traded, represent almost 10% of the total value.

The above-mentioned phenomena for imports proves greater in the

parallel occurrences between sea transport (very low average value) and air transport (very high average value). Aside from the large distance between the volume amounts of goods transported on sea and by air, the consumer categories that are the major object of the two modes of transport, in terms of percentage of totals, explain the considerable difference in unit value seen in the import data: crude oil, petroleum products, minerals and waste from metalworking travel by ship. Chemical products, machines, vehicles and manufactured objects travel by air. The smallest difference in the average sea/air value is found in exports due to the fact that, regardless of the means of transport used, products leaving our country are less diverse in value.

The Italian mercantile and fishing fleet has been consistently growing since 1995, but at paces that only in two years, 1999 and 2000, picked up. The trend seen in the high number of the maritime fleet seems to be confirmed by the trend pertaining to tonnage. The rate of variation in the 15 years under consideration comes to +11.2%.

The developing of the individual ship types of which the fleet consists shows a considerable absolute increase in the ships for passenger or passenger/goods transport, +28.5%, those for fishing, +13.5%, and special ships, +12.3%. The only decreasing category is of dry cargo ships, -3.5%. As for the percentage shares of each category represented in the total, the parallels between 1995 and 2000 indicate a substantial consistency in distribution of which only the ferries (-8%) and bulk carriers (+8%) are noteworthy exceptions. In the world-wide average division for ship type, the Italian fleet in 2000 was characterized in particular by low specific percentage of the container carriers and a percentage of ferries far beyond the international average (19%, compared to 7% on a world-wide level), for reasons that will be explained further below. On 31 December 2000, the national mercantile complex was composed of 1,396 units, for a total of approximately ten million tons of gross registered tonnage and included 76 ships under constructions (for 842,979 GRT).

Between 1995 and 2000, mercantile tonnage recorded an increase of 13%. Specifically, with the International Register, established in 1998, thanks to a reduction of labor and tax costs connected to these, the component of nationally-owned ships flying the Italian flag increased (+37%) and those temporarily under foreign flags were drastically reduced, because chartered bare-hull to subjects of other countries (-75%).

The renovation process that affected the Italian mercantile ships in the 1990s resulted in 483 completed ships, for a total of 5,396,322 GRT. Production affected 34.6% of ships with liquid cargo, 27.9% of ships for

support services, 24.4% mixed and passenger ships, and dry cargo ships for the remaining 13.0%.

Among the world-wide fleets, in data from 2001, Italy ranked 16th place, managed 2.37% of ships world-wide, accounting for 1.62% of the total tonnage. Three European nations, Greece (5th place), Norway (7th) and the United Kingdom (12th place), ranked higher and managed much larger portions of the world-wide tonnage.

Taking into consideration the controlled fleet in the national arms complex, the situation seen is similar. Italy places three times and figures in 14th place, but in this analysis area it is surpassed by five European countries (in order, Greece, Norway, Germany, Denmark and the United Kingdom).

As for this type of ship, on 1 January 2001, Italy was distinguished for its high number of ships equipped to transport passengers, 130 (406,000 GRT), putting it in fourth place in this sectoral classification. For the remaining types, Italy is positioned in the background, with an alarming negative dip in the category of container carriers, in which it is only 20th, with only eleven active units (16,000 TEU).

Goods traffic managed in Italian ports in the years 1996-2000 shows a significant increase in tonnage handled. With regard only for the main ports, the 23 currently registered at port authorities and others, including Chioggia, Monfalcone and Trapani (for which we have updated data for the year 2000), consistent growth was recorded for the loaded and unloaded tonnage, going from 354,022 million tons in the year 1996 to 417,122 million in 2000, for a percentage increase in the period under consideration of approximately 17.8%.

Within the total of traffic in the ports under consideration, a division is seen by type of goods in 2000 with approximately 32% of various goods, approximately 46% of liquid bulk and 21.9% of solid bulk. The growth in traffic in the 1996-2000 period affected all of the three components, and the various goods segment to a greater extent.

Indicative of the growth of Italian ports and in particular of the major ports, is the data for the same time period in terms of TEU (*Twenty-foot Equivalent Unit container standard*) which saw an increase of over 85%. Such a sustained positive change in the use of containers is fully congruent with international developments and the trend towards standardizing maritime transport. In recent years a great deal of container traffic has developed that most affects the transport of higher-value goods.

Though the use of containers has grown in Italy, and despite the already excellent performances recorded, in light of the recent start-up of additional specialized terminals (e.g. Taranto), there are larger growth margins, in

keeping with the progress of the international and European economy. We also note that in the ranking of principal European ports for the transport of *containers* only Gioia Tauro, with the 4th place, figures among the top places. Another Italian port, Genoa, is in ninth place. The ports of Italy, in addition to having only the two units noted in the first ten places, compared to European ports (and especially north European) handle relatively small overall volumes. Only Genoa and Gioia Taura show figures above a million TEU. The explanation for this is found in the larger size of geographic

Tab. 3.1 - Container handling in principle Italian ports from 1995 to 2000 (TEU)

Port	1995	1996	1997	1998	1999	2000	Var. % 1995-2000
Gioia Tauro	16,048	486,946	1,444,441	2,082,761	2,371,627	2,652,701	16,429.8
Genoa	615,152	825,752	1,179,954	1,265,593	1,233,817	1,500,632	143.9
La Spezia	965,483	871,100	615,542	731,882	802,191	909,962	-5.8
Livorno	423,729	416,622	501,146	522,466	457,842	501,339	18.3
Naples	234,767	245,806	299,117	319,686	308,679	396,562	68.9
Salerno	173,880	190,032	201,680	207,927	238,025	275,963	58.7
Venice	127,878	168,821	211,969	206,389	199,803	218,023	70.5
Trieste	150,013	172,847	201,918	171,297	185,263	206,134	37.4
Ravenna	193,374	159,818	188,223	172,524	173,405	181,387	-6.2
Ancona	26,873	46,727	65,555	66,138	45,524	83,934	212.3
Total	2,927,197	3,584,471	4,909,545	5,746,663	6,016,176	6,926,637	136.6

Source: Censis calculations on Confitarm data, 2001

Tab. 3.2 - Distribution of goods traffic by transport system (millions of tons-km)

Year	National railway	Private railway companies	Maritime coastal navigation (1)	Internal navigation	Internal air traffic	Vehicle transport (>50 Km)	Pipelines (>50 Km)	Total
1990	21,855	56	35,665	118	612	124,209	8,776	191,291
1995	24,352	56	35,307	135	671	137,254	9,221	206,996
1996	23,619	56	39,878	125	741	139,863	9,665	213,947
1997	25,917	58	44,462	202	743	142,270	9,311	222,963
1998	25,366	75	44,986	126	766	152,592	9,991	233,902
1999	24,434	58	45,510	172	790	161,482	9,775	242,221
2000 (2)	25,600	68	46,034	169	814	165,048	9,964	247,697
Var.% 1995-2000	5.1	21.4	30.4	25.2	21.3	20.3	8.1	19.7

(1) Since 1997 ISTAT has improved traffic surveying on the straight of Messina

(2) Internal estimates of the Office of Statistics of the Transport and Navigation Ministry

Source: National Accounts of Transport, various years

Tab. 3.3 - Distribution of passenger traffic by transport system (millions of passengers-km)

Year	National railway	Private railway companies	Rental buses	Vehicles	Internal coastal navigation (1)	Internal navigation	Internal air traffic	Other	Total
1990	44,709	2,780	54,834	522,593	2,404	483	6,416	93,715	727,934
1991	46,427	2,769	58,839	538,265	2,528	461	6,223	89,448	744,960
1992	48,361	2,788	61,227	590,449	2,445	428	6,901	82,194	794,793
1993	47,101	2,674	61,698	588,279	2,220	430	6,903	82,040	791,345
1994	48,900	2,816	63,467	594,178	2,125	439	6,948	86,832	805,705
1995	43,859	2,792	59,968	614,713	2,247	420	7,108	92,582	823,689
1996	44,782	2,792	61,029	627,383	2,560	425	7,871	94,392	841,234
1997	43,591	3,001	62,046	638,837	3,297	448	8,841	96,544	856,605
1998	41,392	2,852	63,077	662,545	3,307	446	8,974	98,120	880,713
1999	40,971	2,878	64,116	663,319	3,832	435	9,841	100,133	885,525
2000 (2)	43,700	2,933	65,150	664,395	4,224	424	10,497	102,159	893,482
Var. % 1995-2000	-0.4	5.1	8.6	8.1	88.0	1.0	47.7	10.3	8.5

(1) Since 1997, ISTAT has improved traffic surveying that it effects on the straight of Messina

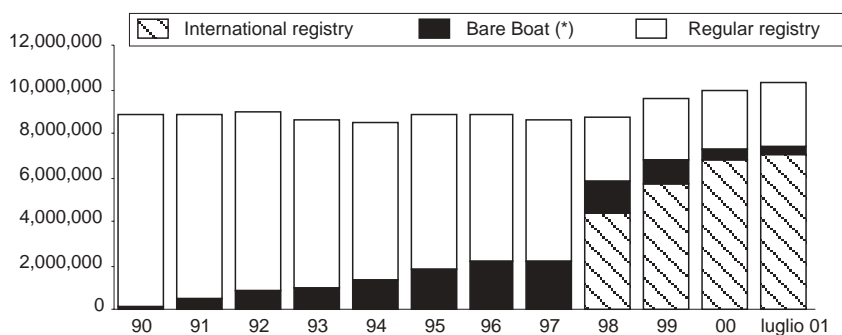
(2) Internal estimates of the Office of Statistics of the Transport and Navigation Ministry

Source: National Accounts of Transport, various years

Tab. 3.4 - Total navigation movement

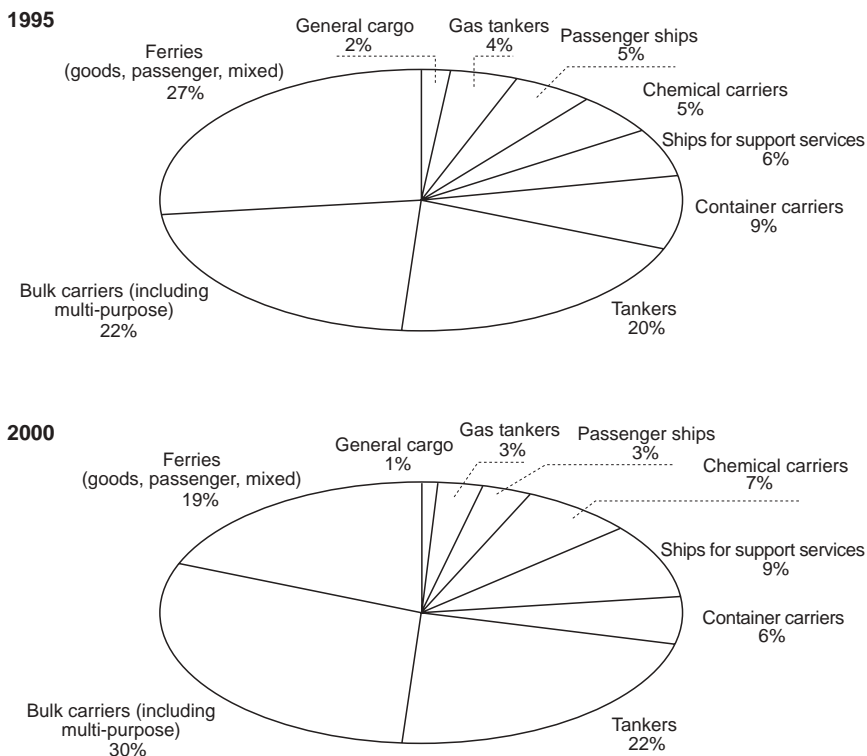
Year	Incoming ships		Goods (thousands of tons)			Passengers (thousands)		
	Number	NRT (thousands of tons)	Unloading	Loading	Total	Unloading	Loading	Total
1987	279,746	332,024	269,225	97,207	366,432	21,697	21,631	43,329
1988	323,851	354,390	271,266	104,211	375,477	23,230	23,159	46,389
1989	345,774	366,203	277,836	100,071	377,907	23,116	22,988	46,104
1990	350,970	380,204	295,766	109,233	404,999	25,486	25,432	50,918
1991	389,012	421,022	313,745	116,631	430,376	25,730	25,624	51,353
1992	368,882	396,385	291,933	110,573	402,506	24,943	24,789	49,733
1993	343,063	385,524	281,859	111,218	393,078	24,641	24,534	49,175
1994	323,036	403,531	287,440	111,684	399,124	23,908	23,769	47,678
1995	302,021	417,309	294,436	108,550	402,986	24,592	24,315	48,908
1996	368,265	441,781	316,181	127,336	443,518	28,356	28,354	56,710
1997	536,560	672,413	321,746	137,501	459,246	40,128	40,056	80,184
1998	564,989	724,849	335,222	140,448	475,670	40,398	40,223	80,621
1999 (*)	549,194	748,819	327,783	135,286	463,069	42,745	42,696	85,441
2000 (*)	519,773	696,979	328,548	141,074	469,622	39,649	39,503	79,152
Var. % 1995-2000	72.1	67.0	11.6	30.0	16.5	61.2	62.5	61.8

(*) Internal estimates of the Office of Statistics of the Transport and Navigation Ministry
Source: National Accounts of Transport, various years

Fig. 3.1 - Italian mercantile fleet from December 1990 to July 2001 (GRT)

(*) Italian-owned ships chartered bare-hull to foreign entities
Source: Censis calculations based on Confirtarma data, various years

Fig. 3.2 - Composition of the Italian fleet by ship type (comparison between 1995 and 2000)



Source: Censis calculations based on Confindarma data, 2001

Tab. 3.5 - 1995-2000 development of the Italian mercantile fleet

Years	Italian flag		Foreign flag (*)		Total	
	N. of ships	GRT	N. of ships	GRT	N. of ships	GRT
1995	1,356	6,905,447	83	1,875,923	1,439	8,781,370
1996	1,308	6,604,887	92	2,187,822	1,400	8,792,709
1997	1,241	6,458,586	90	2,140,081	1,331	8,598,667
1998	1,264	7,184,316	67	1,527,279	1,331	8,711,595
1999	1,339	8,437,254	48	1,153,565	1,387	9,590,819
2000	1,376	9,475,503	20	472,668	1,396	9,948,171

(*) Ships of Italian ownership chartered bare hull to foreign entities (bare-boat charter)

Source: Confindarma

Tab. 3.6 - Principle worldwide fleets by type of ship on 1 January 2001 (ships greater than 1,000 GRT)

Country	Passengers			Container carriers			Tankers			Bulk carriers				
	N. ships	000 TDW	Country	N. ships	000 TEU	Country	N. ships	000 TDW	Country	N. ships	000 TDW	Country	N. ships	000 TDW
Japan	180	526	Germany	661	1,234	Greece	787	62,884	Greece	1,336	66,240			
Greece	201	520	Taiwan	197	468	Japan	731	37,870	Japan	799	45,499			
United States	129	460	Denmark	139	399	Norway	479	36,750	China	553	22,546			
ITALY	130	406	Japan	193	354	United States	377	30,922	Hong Kong	239	17,851			
United Kingdom	102	348	Greece	136	252	Hong Kong	120	14,354	South Korea	192	14,064			
Norway	125	306	China	180	222	Singapore	321	12,272	Norway	177	11,056			
China	89	208	United Kingdom	90	225	Saudi Arabia	71	9,765	Taiwan	148	8,379			
Finland	37	164	Singapore	127	185	Denmark	168	8,337	United States	123	6,124			
Philippines	70	151	South Korea	104	183	Sweden	134	7,920	Turkey	151	5,676			
Sweden	29	141	Switzerland	74	150	United Kingdom	153	7,919	ITALY	69	5,317			
Germany	56	137	United States	62	133	South Korea	196	6,895	India	124	5,286			
France	45	16	Hong Kong	50	106	Russia	343	6,263	Germany	108	4,820			
Canada	66	93	Israel	31	77	China	289	6,095	United Kingdom	63	4,704			
Indonesia	51	86	France	25	67	India	113	5,567	Brazil	48	3,400			
Turkey	51	70	Russia	35	52	ITALY	240	5,176	Singapore	91	3,331			
Spain	34	61	Malaysia	39	53	Belgium	64	4,204	Philippines	71	3,005			
Denmark	26	48	Norway	23	47	Iran	33	4,130	Malaysia	68	2,898			
South Korea	23	46	Canada	22	40	Germany	163	3,892	Russia:	127	2,737			
Russia	26	46	Thailand	26	25	Kuwait	28	3,497	Denmark	32	2,127			
Egypt	36	40	ITALY	11	16	Brazil	72	3,170	Switzerland	44	2,061			

Source: Confitarma, 2001

Tab. 3.7 - Ranking of main Italian ports by type of traffic, 1997

Port	Passenger traffic		Goods traffic		Goods traffic									
	Int'l	Coastal	Int'l	Coastal	Agricult. products and live animals	Foodstuffs and feed	Fuels and solid minerals	Petroleum products materials	Minerals and various metal waste	Metal-working products	Rough or manufactured minerals and construction	Fertilizer	Chemical products	Machines & vehicles, manufactured objects and various goods
Ancona	2	95	14	44	7	9	12	20	23	14	32	42	30	13
Augusta	48	97	4	3	81	21	30	2	29	34	15	15	5	52
Bari	3	64	26	75	9	45	18	58	38	35	51	5	48	18
Brindisi	1	94	15	29	26	37	8	19	36	43	43	27	16	9
Capri	30	4	85	48	65	96	45	51	40	79	77	45	68	28
Civitavecchia	24	8	18	6	16	15	24	11	13	15	9	30	17	8
Genoa	6	10	3	1	3	3	5	5	4	2	6	14	3	2
Ischia P.	*	5	*	46	78	63	45	80	40	63	65	47	68	27
La Spezia	33	48	12	14	19	19	2	16	12	6	8	24	15	5
Livorno	4	21	9	4	4	4	22	8	9	10	3	3	4	3
M. di Carrara	48	101	22	74	37	69	13	33	15	21	2	47	22	30
Naples	9	3	17	5	1	1	23	18	16	18	13	31	10	6
Piombino	48	6	21	16	17	16	7	31	3	5	19	13	28	11
Porto Foxi	48	100	5	8	72	80	44	3	40	76	89	47	13	86
Ravenna	46	81	8	12	6	2	15	10	22	4	1	1	2	16
Santa Panagia	47	101	7	15	52	96	45	4	40	52	59	47	51	104
Savona/Vado	14	70	11	21	5	54	3	12	10	7	30	32	11	32
Taranto	48	79	2	2	45	60	1	14	1	1	5	10	18	40
Trieste	8	85	1	31	13	13	4	1	5	20	21	28	12	4
Venice	5	52	6	7	2	5	6	7	6	3	4	2	1	12

Source: Censis calculations on ISTAT data, Statistics of maritime transport in Italian ports, 1999

Tab. 3.8 - Measurement of the concentration of traffic in Italian ports (number of ports with 90% of traffic)

		1997	1994
<i>Passenger traffic</i>			
Coastal and international	unloading	38	
	loading	38	
Coastal	unloading	25	26
	loading	25	26
International	unloading	10	9
	loading	12	10
<i>Goods traffic</i>			
Coastal and international	unloading	35	
	loading	38	
Coastal	unloading	28	30
	loading	27	25
International	unloading	21	19
	loading	21	21
Agricultural products and live animals	unloading	22	21
	loading	17	15
Foodstuff and feed	unloading	22	23
	loading	19	23
Fuels and solid minerals	unloading	10	9
	loading	4	5
Petroleum products	unloading	16	16
	loading	10	9
Minerals and various metal waste	unloading	5	3
	loading	6	8
Metalworking products	unloading	16	13
	loading	9	9
Rough or manufactured minerals and construction materials	unloading	26	28
	loading	22	20
Fertilizer	unloading	16	18
	loading	7	3
Chemical products	unloading	19	21
	loading	16	18
Machines and vehicles, manufactured objects and various goods	unloading	21	24
	loading	21	23

Source: Censis calculations on ISTAT data, Statistics of maritime transport in Italian ports, various years

economic inland of north European ports compared to the maritime ports of the Mediterranean, as well as in the smaller number of ports of the North Range compared to the southern part of Europe. On the Mediterranean coasts in general, and Italian coasts in particular, beyond few large transshipment centers or ocean traffic terminals, there is also a dense network of ports which, through feeder connections, ensure a wide-spread distribution of container traffic in the area.

Passenger traffic experienced an increase very close to 25% for a total of 42,461,656 passengers passing through Italian ports in 2000.

3.2. Merchant shipbuilding

For shipbuilding, 2000 was a record year on a world-wide level, marked by a volume of new orders at approximately 26 million compensated gross registered tons (CGT), mainly concentrated in the category of standard ships.

In this context, European shipbuilding stands out as the leader in specialized high-technology market niches (cruise ships, new generation ferries, special constructions); while the segment of standard ships (oil tankers, bulk carriers, container ships and combo) and those of intermediate technology (general cargo, product, gas carriers, chemical and refrigerated) are dominated mainly by the countries of the Far East.

The international scene has been marked by major controversies triggered by Korea's practice of extensive dumping. These controversies and reactions in the Europe were aggravated by the phasing out, starting 1 January 2001, of production aid for shipyards from the Community (support that had reached a maximum of 9% of the ship price).

Prospects for world-wide demand, despite the unavoidable effect of saturation resulting from the volume of orders that were recorded in recent years, and especially in 2000, appear good. With a fleet that still has a high average age, expectations are positive especially due to the effects that are expected following the introduction of standards that generally required the higher safety standards for ships in operation and the resulting substitution of obsolete or sub-standard vessels.

As for Italy, the three main indicators of activity in the sector (new orders, order book and completion of ships) have decreased since 1998 in terms of percentages of the world-wide total. Nonetheless, in absolute terms, the national shipbuilding industry achieved results of considerable note, particularly considering the high value and quality level of a large part of the purchased units.

An interpretation of the Italian performance could be made only with due consideration of the changes that the international competitive situation has undergone in the last decade and the repercussions that these have had on the individual national economies.

The progress of the shipbuilding industry in our Country should therefore be evaluated with reference to the phenomena occurring in a large part of the industrialized West, among which a prominent position is taken by the collapse of the historical link between the European shipping industry and national shipbuilding.

The high degree of competition typical of the sector, accentuated by the policies of the Asian competition, in particular Korea, are the origin of the separation occurring between the area from which the demand originates and that in which production is implemented.

This phenomenon ended up involving many countries, bringing about strategies of adaptation by the shipbuilding industry, varying from country to country.

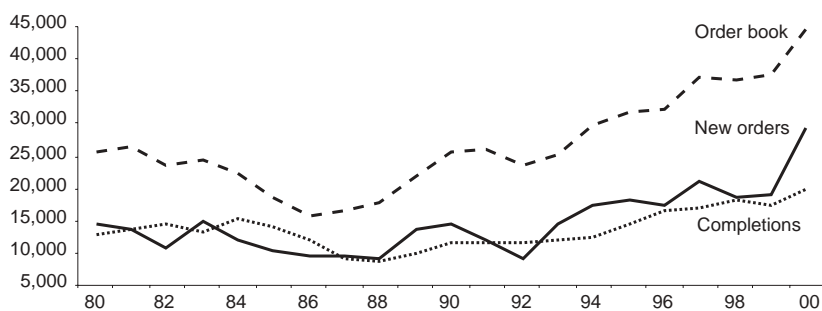
In Italy, this response took the form of a repositioning of a large part of the shipyards in special market niches. This response, within the situation described and in light of results reached by alternative policies put into effect in other countries, has been decidedly positive.

In the preceding report, it was emphasized how national shipbuilding adapted to European averages in workforce numbers with a certain delay, concentrating the reorganization in a shorter time period.

Interpreting the data from 1995, it was possible to find indications of some return of Italian dynamics to being in line with the European community dynamics. The last five years showed instead a branching off of the trends. All this confirms what was previously noted, i.e. the result of the strategy that merchant shipbuilding adopted in Italy, bringing itself to the international peak in the production of cruise ships and new generation ferries, establishing its repositioning on the market, began in fact around the first years of the 1990s.

It should be emphasized that the industry chose to specialize in high-tech market niches. In the case of ferries, it is also linked to a strong functional tie with the physical, social and economic features of the Country.

Fig. 3.3 - Indicators of shipbuilding activity in the world (thousands of CGRT)



Source: Censis calculations on AWES-Assonave data, 2001

There are two main effects caused by the Italian shipbuilding's competitive repositioning process: on one hand, the noted modification of the production mix, and on the other, the resulting modification of production models adopted in the industry. The change in the types of ship produced in the direction of units with greater technological and quality levels, requires the involvement of specialized, relevant skills of business and sectors traditionally removed from the narrow definition of the shipbuilding world.

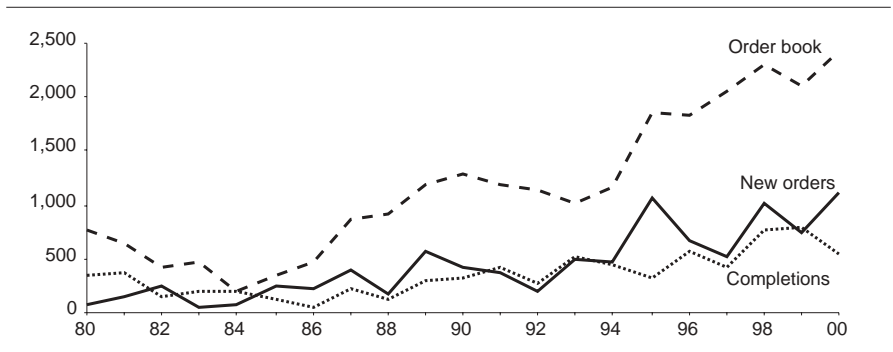
Production processes came to feature a marked outsourcing of production and enlargement of the related industries involved in the sector activities.

The interaction of this series of elements caused the dynamic employment variations that affected the EU countries and Italy, and at the same time, shows that the data on direct employment does not fully portray the current national shipbuilding situation.

New orders in Italy, while not having unequivocal growth in terms of percentages of world-wide totals, comparing an essentially niche market with a mass one, show record numbers in three of the five years: 1995, 1998 and 2000, the year in which the new orders reached their historic high, surpassing a million CGT. Relative to international progress, the highest amounts were reached in Italy in 1995, with 5.8% of the total, and in 1998 with 5.4%. In 2000, as the volume records for demand were concentrated in the standard ship category, the country took 3.8% of the world-wide total.

The progress of the order book follows the new orders quite closely. Only in the 1995–period 1997 did the dynamics of the two indicators diverge, while for order book, the absolute record was seen in 2000 and the relative record was reached in 1998.

Fig. 3.4 - Indicators of shipbuilding activity in Italy (thousands of CGRT)



Source: Censis calculations on AWES-Assonave data, 2001

Ship completions, i.e., the delivery of the units expressed in CGT, do not show much correlation to the other two values considered. The highest absolute value and relative values were reached in 1999 with 797,000 CGT, equaling 4.5% of the world-wide total.

Imports have been growing consistently since 1998. Exports grew rapidly between 1997 and 1998, and after the drop in 1999, they started growing again, though modestly. The trade balance for shipbuilding has been positive for eight years. The last year in which the sector showed a foreign deficit was 1992. Since then, the balance in the value of payments has only shown surpluses. These surpluses became substantial in 1995, and in 1998, with 3,430 billion lire, reached their historic high. Overall, the active balance accumulated by the shipbuilding sector in the 1995–2000 period surpassed the sizeable value of 12,500 billion lire (6,456 million euro).

The EU countries and Norway went from 26% of the worldwide production covered in 1998, down to 18% in 2000. The loss of market share was in favor of Korea and China. In the three years, Korea gained ten percentage points, bringing its share from 27% to 37%, while China went from supplying 6% to 8% of global production. The areas of demand origin remained essentially stable between 1998 and 2000. It came, in order of value, from the EU, the rest of the world, Japan and China. Paralleling construction and demand areas clearly establishes the scope of the phenomenon. In 2000, with a production that covered 18% of the total, the EU countries and Norway generated 49% of worldwide demand.

Tab. 3.9 - Imports, exports and trade balance of ships and boats (values in billions of lira/millions of current euro)

Year	Ship constructions		
	Imports	Exports	Trade balance
1991	468	249	-219
1992	430	179	-251
1993	438	1,093	655
1994	63	651	588
1995	81	1,494	1,413
1996	200	2,049	1,849
1997	252	2,118	1,866
1998	286	3,716	3,430
1999	billions of lira	533	2,586
	millions of euro	275	1,336
2000 (*)	billions of lire	1,098	3,046
	millions of euro	567	1,573

(*) Provisional data

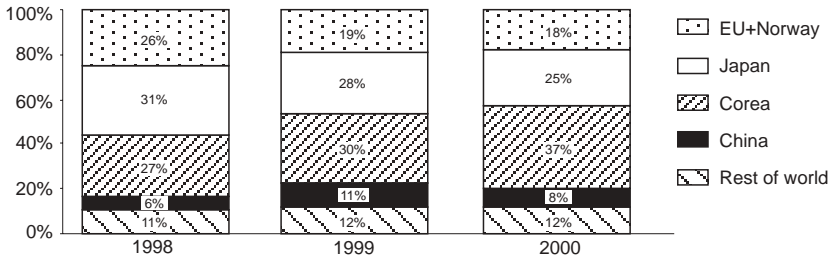
Source: Censis calculations on Istat-ICE data, 2000

Tab. 3.10 - Principle indicators of shipbuilding activity in the world (thousands of CGRT)

Years	New orders			Order book			Completions		
	Italy	World	% Italy	Italy	World	% Italy	Italy	World	% Italy
1980	83	14,358	0.58	772	25,592	3.02	346	12,636	2.74
1981	145	13,504	1.07	640	26,364	2.43	359	13,827	2.60
1982	258	10,811	2.39	427	23,732	1.80	156	14,340	1.09
1983	49	14,804	0.33	480	24,308	1.97	209	13,441	1.55
1984	70	11,985	0.58	195	22,442	0.87	193	15,347	1.26
1985	258	10,321	2.50	345	18,564	1.86	124	14,169	0.88
1986	228	9,483	2.40	466	15,646	2.98	61	12,139	0.50
1987	403	9,740	4.14	877	16,633	5.27	225	9,238	2.44
1988	172	9,126	1.88	904	17,674	5.11	120	8,586	1.40
1989	564	13,562	4.16	1,189	21,968	5.41	285	9,881	2.88
1990	413	14,324	2.88	1,298	25,810	5.03	328	11,546	2.84
1991	379	11,941	3.17	1,196	26,083	4.59	422	11,423	3.69
1992	197	9,108	2.16	1,134	23,492	4.83	274	11,771	2.33
1993	495	14,688	3.37	1,007	25,329	3.98	513	11,858	4.33
1994	470	17,294	2.72	1,163	29,699	3.92	440	12,488	3.52
1995	1,062	18,372	5.78	1,860	31,907	5.83	310	14,454	2.15
1996	662	17,505	3.78	1,843	32,222	5.72	564	16,550	3.41
1997	508	20,935	2.43	2,049	37,050	5.53	416	16,937	2.45
1998	1,003	18,491	5.42	2,290	36,809	6.22	778	18,003	4.32
1999	731	18,986	3.85	2,106	37,512	5.61	797	17,508	4.55
2000	1,111	26,322	4.22	2,437	44,388	5.49	544	19,902	2.73
Var. % 1990-2000	169.1	83.8		87.8	72.0		65.8	72.4	
Var. % 1995-2000	4.7	43.3		31.0	39.1		75.2	37.7	

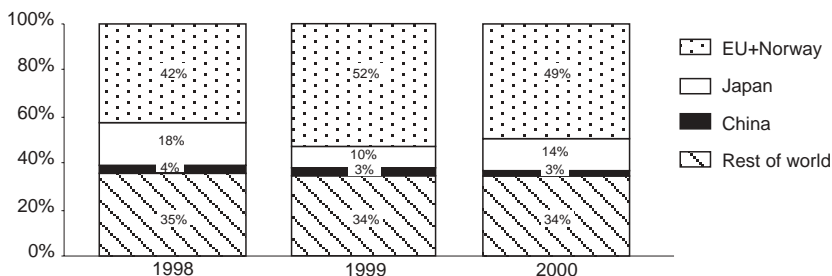
Source: Censis calculations on AWES-Assonave data, 2001

Fig. 3.5 - Market shares by construction area



Source: Fairplay

Fig. 3.6 - Areas of demand origination



Source: Fairplay

3.3. Recreational boating

The recreational boating situation in Italy is complex and susceptible to assessments that may be contrasting, but, as we can see, are not irreconcilable. A snapshot of the sector clearly portrays its strengths of vitality and dynamism. Yet, it also evidences a relatively small significance within the national economic system in relationship to its potential.

The fact that in Italy there is only one vessel for every 67 residents is not symptomatic of an innate apathy to the sea. It can also not be interpreted as the result of a progressive and natural indifference towards a passion that has historically been an integral part of our culture. Interest for the sea, like all interests, is cultivated or at least not thwarted. Therefore, the concrete manifestation of passion for the sea is not a direct measure of the passion's intensity, but the result of a series of heterogeneous factors taken together. The development of recreational boating requires the presence of infrastructures (tourism ports, marinas, docks and berths in general) that are appropriate in quantity and quality. It also needs an attentive political/institutional support that can prepare a collection of laws and aid in keeping with the reality of a sector that cannot be simplistically considered as the exclusive prerogative of a small privileged elite.

The formation of the land, the geographic location, the climate, beauty and length of the coastlines make Italy a country of renown for recreational boating. These special features and the already noteworthy performances of the recreational boating industry, both in terms of quality, design, and reputation of *made in Italy* boating, as well as in terms of the trade balance, clearly indicate the potential contribution to the national situation.

Tab. 3.11 - The three sectors of recreational boating, year 2000 (values in thousands of euro)

	Recreational	Accessories	Motors
Number of employees	4,750	6,592	3,648
Total boating revenues	957,018	559,438	155,970
National revenues (internal + export)	811,870	456,548	47,514
Total imports	145,148	102,890	108,456
Total export	640,923	155,015	29,955
EU Export	371,626	106,960	25,761
Extra EU export	269,297	48,054	4,194

Source: Censis calculations on Ucina data, "Recreational boating figures", 2000 and 2001

The recreational boating industry in its entirety consists of the following three components: recreational boating units, accessories and marine motors. However, an analysis of boating based on the sum of the three main economic indicators of the three branches of which it consists would not result in an accurate assessment. The products of the accessory and motor segments fall mainly in the recreational boating production. Therefore, as a significant portion of the nautical components is intended to be assembled on the vessels, the production of marine motors is also in good part absorbed by the recreational boating industry.

To understand the conditions, trends and prospects of boating, attention will be focused on recreational boating, as it is a sector immune to the interpretive inconveniences that would be found in including the results of the other two sectors, or even basing it on the sum of the economic results recorded in each of the three.

For a logical interpretation of the sector, after an overview of the situation in 2000 pertaining to the accessory and motor sectors, we will then look in detail at recreational boating, studying its main elements.

The sector of components produces over five hundred million euro, most of which (81.6%) derives from the national market, with almost 6,600 employees. Among the three sectors under consideration, it is the sector with the largest number of employees. The fact is explained by the high value added produced, greater than that generated by the recreational boating unit sector, in which the components that come out of the branch under consideration are individually assembled.

Motor production features a strong foreign orientation (over half of the products are exported). At the same time, being the only boating sector to

show a trade balance in deficit, as the others are not only favorable, but have had a very high *surplus* for years. To understand the reasons for a trade balance that in 2000 was 78,501 million euro in the red, it should be noted that the motors were at that time, in large part, assembled on boats sold outside of our borders and that foreign builders who bought them tend to prefer motors manufactured *in loco*.

In the span of the last fifteen surveyed years, internal revenues per recreational boating unit virtually doubled. Exports grew at a quite consistent pace, reaching its historical high, contributing to further consolidating the now traditional favorable foreign trade balance.

The acute critical phase of the years between 1990 and 1994, in which the revenues of the domestic market of recreational boat units diminished by almost 135 billion lire, bringing it to 1986 levels and effectively erasing the results of the lively growth experienced during the second half of the 1980s, seems to be definitively behind us.

The first signs of revival began in 1995, and since 1997 the growth dynamic of domestic revenues has been noteworthy. The comparison between the variation rates in the 1990-2000 period (18.7%) and 1995-2000 (85.3%) is indicative of how dissimilar the revenue phases in the first and second half of the 1990s were. After four years of recession, the recovery took form. In the years 1999 and 2000, this recovery took on an exponential pace.

The years from 1990 to 1995 were marked by a drop in the number of vessels produced. The major regression seen in those years accounts for the value of the variation rate for the decade 1990-2000 (-23.7%) when the same rate calculated for the last fifteen years gives an extremely positive result (+68.1%).

The progress of the units manufactured and sold on the domestic market does not follow in line with the revenue cycle that this generated. The number of units sold began to drop in 1992 and turned around only in the middle of 1997. As can be seen in examining the data, the progress of revenues follows a different trajectory, beginning to grow already in 1994.

Looking at the parallel progress of production pertaining to the domestic market, in volume and values, from 1984 to 2000, the occurring phenomenon is very clear. In the two indicated years, the number of units manufactured is practically the same, 12,361 in 1984 and 12,300 in 2000. However, the revenues deriving from them in 2000 is more than double that shown sixteen years earlier.

The recovery affecting the production of recreational boat units for the national market has been intense, especially in the last two years under

Tab. 3.12 - National production of recreational units in 2000

	Production percentage (%)	Number of units produced (v.a.)	Average cost of units (thousands of euro)
Inboard and inboard/outboard units	79.9	3,700	175.4
Outboard units	8.2	8,000	8.3
Sail units	6.0	1,500	32.4
Inflatable boats	5.9	11,200	4.2
Total	100.0	24,400	33.3

Source: Censis calculations on Ucina data, "Recreational boating figures", 2001

consideration. However, the number of units manufactured (12,300 in 2000) is still quite far from the peak of 16,121 units seen in 1990. Considerably higher was the average value of vessels manufactured and sold. The distribution changed in the four types in which the recreational vessels are divided (inboard and inboard/outboard units, outboard units, sail units, and inflatable boats.) Overall, the inboard and inboard/outboard units continue to dominate. The sale of outboard units is growing to the detriment of inflatable boats. These factors explain the coexistence, in the same time period, of the -23.7% in the variation rate of units manufactured and the +85.3% similar rate calculated for revenues.

The analysis of the revenues of recreational boating overall, including the domestic and export markets, shows clearly the part that exports plays in the sector's economy. Recreational boating looked at this way follows a more regular path and shows signs of recovery a year ahead of what happened for only the domestic market. In 1993 the trend was reversed. The acceleration of the growth stage here came in 1996 (again twelve months before the just the revenues of the national market) and continued at a sustained pace until 2000.

The increase in average unit value that affected the values for the domestic market was likewise seen in the larger context of the national market. The shift of production and sales of inflatable boats to the outboard vessels is also held in common by both of the analysis areas. The rate of variation in the 1990-2000 decade for revenues and numbers of units have opposing indicators (-22.8% in terms of units and +110.4% in revenues). Only examining the dynamics occurring in the second half of the 1990s is a common trend found, though with proportions that are very far apart (+41.2% in numbers and +118.8% in value). Clear evidence of the phenomenon described can be taken

from the parallel between the absolute values of units produced and the resulting revenues in 1990 and in 2000. In 2000, with a considerable decrease in the units produced, -7,204 since 1990, the revenues more than doubled over ten years earlier (+824,833 billion of lire more than in 1990). In detail, production in the sector is broken down as seen in table 3.70.

As in the domestic market, in overall production the lion's part was also played by the inboard and inboard/offboard units. The category on its own originated 80% of total revenues, followed by, in order, offboard units, sailing units and inflatable boats.

The import values, after the lowest levels hit in the years 1993 and 1994, increased in a fairly continuous fashion during the four year period 1996-

Tab. 3.13 - National production of recreational units (domestic revenues in millions of lire/current euros)

Years	Units Inboard Inboard/outboard	Units Outboard	Sail units	Inflatable boats	Total	
1983	109,469	9,267	26,670	18,048	163,454	
1984	111,483	10,351	24,730	14,777	161,341	
1985	113,097	10,564	23,741	14,964	162,366	
1986	106,110	9,216	23,945	13,478	152,749	
1987	122,634	15,584	20,463	13,750	172,431	
1988	138,775	19,379	22,610	17,139	197,903	
1989	145,606	20,746	24,987	14,899	206,238	
1990	209,804	26,636	26,435	15,958	278,833	
1991	129,744	57,208	14,558	32,478	233,988	
1992	107,179	43,051	14,937	42,921	208,088	
1993	90,324	20,848	18,975	33,659	163,806	
1994	78,321	21,227	15,134	30,540	145,222	
1995	97,648	22,177	18,457	40,310	178,592	
1996	108,831	22,297	15,407	42,801	189,336	
1997	89,500	39,200	19,605	53,340	201,645	
1998	105,920	49,735	25,719	53,525	234,899	
1999	lire	123,345	64,376	25,935	58,190	271,846
	euro	63.7	33.2	13.4	30.1	140.4
2000	lire	158,000	79,140	29,365	64,495	331,000
	euro	81.6	40.9	15.2	33.3	170.9
Var. % 1990-2000	-24.7	197.1	11.1	304.2	18.7	
Var. % 1995-2000	61.8	256.9	59.1	60.0	85.3	

Source: Censis calculations on Ucina data, "Recreational boating figures", 2001

2000. In terms of imported units, the trend is less uniform. The variation rates for the years 1990-2000 dropped markedly (-21.8%), while that calculated for the last five considered years is slightly positive (+3.7%). For exports, both in values and in units, a strong growth phase is recorded for the second half of the 1990s (+21.4% in numbers and +130.0% in revenues). In 2000, the export market represents almost 80% of the national revenues for recreational boating.

As has long been the tradition, the trade balance of the recreational boating sector is favorable, with a surplus that in absolute values grew with regularity from 1996 to 2000, the year in which it reached a record level of 496 million euro. The growth rate in the 1990-2000 period is +249.1% for the

Tab. 3.14 - Total revenues of internal market and exports (millions of lire/current euros)

Years	Units Inboard Inboard/outboard	Units Outboard	Sail units	Inflatable boats	Total	
1983	206,087	16,802	39,058	23,539	285,486	
1984	247,066	17,033	40,973	20,008	325,080	
1985	326,873	17,778	44,541	20,176	409,368	
1986	267,055	23,721	51,825	18,524	361,125	
1987	351,526	30,795	33,799	18,775	434,895	
1988	354,812	42,884	39,817	24,663	462,176	
1989	451,422	45,512	42,248	30,410	569,592	
1990	613,395	44,304	54,300	34,988	746,987	
1991	495,927	86,170	64,422	45,159	691,678	
1992	446,405	65,131	51,252	56,696	619,484	
1993	345,517	54,662	38,441	48,736	487,356	
1994	508,781	59,697	33,744	41,920	644,142	
1995	542,722	67,044	52,164	56,289	718,219	
1996	576,081	70,086	49,665	61,810	757,642	
1997	707,400	80,000	57,950	74,310	919,660	
1998	894,550	88,860	55,595	77,635	1,116,640	
1999	lire	1,029,675	115,632	72,135	83,290	1,300,732
	euro	531.8	59.7	37.3	43.0	671.8
2000	lire	1,256,574	129,140	94,000	92,106	1,571,820
	euro	649.0	66.7	48.5	47.6	811.8
Var. % 1990-2000	104.9	191.5	73.1	163.3	110.4	
Var. % 1995-2000	131.5	92.6	80.2	63.6	118.8	

Source: Censis calculations on Ucina data, "Recreational boating figures", 2001

balance in values, compared to -6.0% for the balance of the units object of international trades. A comparison between less distant years, provides numbers that are easier to interpret. From 1995 to 2000, for the same data, a +138.7% increase is recorded in value and +79.1% in volume. Exports also seem to essentially confirm the remarkable increase of the average value of vessels.

The regional distribution of registrations shows a small number of regions dominate. In the ranking, the first five regions cover over three-fourths of the

Tab. 3.15 - Imports and exports of recreational units (millions of lire/current euros)

Years	Inboard unit and inboard/outboard		Outboard units		Sail units		Inflatable boats		Total	
	Imp.	Esp.	Imp.	Esp.	Imp.	Esp.	Imp.	Esp.	Imp.	Esp.
1983	14,219	96,618	4,773	7,535	10,396	12,388	1,814	5,491	31,202	122,032
1984	10,782	135,583	4,862	6,682	9,226	16,243	753	5,231	25,623	163,739
1985	11,726	213,776	3,945	7,214	7,154	20,800	1,696	5,212	24,521	247,002
1986	21,829	160,945	5,399	14,505	8,155	27,880	2,411	5,046	37,794	208,376
1987	32,325	228,892	7,595	15,211	16,952	13,336	2,612	5,025	59,484	262,464
1988	54,444	216,037	14,640	23,505	19,152	17,207	1,744	7,524	89,980	264,273
1989	64,030	305,816	19,238	24,766	34,681	17,261	5,413	15,511	123,362	363,354
1990	108,432	403,591	25,252	17,668	53,170	27,865	6,335	19,030	193,189	468,154
1991	162,196	366,183	22,060	28,962	53,003	49,864	4,799	12,681	242,058	457,690
1992	102,706	339,226	20,732	22,080	37,928	36,315	3,483	13,775	164,849	411,396
1993	47,082	255,193	10,927	33,814	19,832	19,466	4,045	15,077	81,886	323,550
1994	31,984	430,460	15,794	38,470	29,376	18,610	4,030	11,380	81,184	498,920
1995	99,564	445,074	15,291	44,867	18,112	33,707	4,496	15,979	137,463	539,627
1996	98,369	467,250	13,914	47,789	15,765	34,258	3,975	19,009	132,023	568,306
1997	143,500	617,900	12,700	40,800	15,450	38,345	5,490	20,970	177,140	718,015
1998	128,900	788,630	15,670	39,125	16,750	29,876	8,150	24,110	169,470	881,741
1999										
lire	183,320	906,330	20,550	51,256	24,990	46,200	7,434	25,100	236,294	1,028,886
euro	94.7	468.1	10.6	26.5	12.9	23.9	3.8	13.0	122.0	531.4
2000										
lire	219,984	1,098,754	24,561	50,000	30,000	64,635	6,500	27,611	281,045	1,241,000
euro	113.6	567.5	12.7	25.8	15.5	33.4	3.4	14.3	145.1	640.9
Var. %										
'90-2000	102.9	172.2	-2.7	183.0	-43.6	132.0	2.6	45.1	45.5	165.1
Var. %										
'95-2000	120.9	146.9	60.6	11.4	65.6	91.8	44.6	72.8	104.5	130.0

Source: Censis calculations on Ucina data, "Recreational boating figures", 2001

total. The lead is taken by Liguria which accounted for 31.2% of all Italian registrations by itself in 2000, followed by Emilia Romagna with 12.1%, Tuscany with 11.8% and Campania with 9.0%. Of the other regions, only Lazio and Veneto achieve percentages of the total above 6%.

Tab. 3.16 - Recreational boating on the international level, 2000

		Maritime fleet			Recreational boating index (population/maritime fleet)
1	United States	16,965,200	1	Japan	370
2	Sweden	1,335,000	2	Germany	190
3	Italy	847,000	3	United Kingdom	74
4	France	845,250	4	Switzerland	69
5	United Kingdom	800,000	5	France	69
6	Finland	750,000	6	Italy	67
7	Norway	633,750	7	Netherlands	54
8	Australia	587,722	8	Australia	32
9	Germany	431,756	9	United States	16
10	Japan	341,000	10	Denmark	15
11	Denmark	331,000	11	Sweden	7
12	Netherlands	296,350	12	Finland	7
13	Switzerland	101,038	13	Norway	6

Source: Censis calculations on Ucina data, "Recreational boating figures", 2001

Tab. 3.17 - Ship berths available in Italy on 31/12/1999

	Up to 7.50 m or not specified	From 7.51 m to 12 m	Over 12 m	Total
Liguria	14,326	5,776	2,735	22,837
Tuscany	13,481	1,070	427	14,978
Lazio	4,104	2,293	650	7,047
Campania	7,070	3,069	1,120	11,259
Calabria	623	468	782	1,873
Puglia	4,841	2,221	830	7,892
Molise	70	47	3	120
Abruzzo	700	637	154	1,491
Marche	3,036	956	335	4,327
Emilia Romagna	1,865	2,387	1,209	5,461
Veneto	1,874	1,219	469	3,562
Friuli Venezia Giulia	5,843	3,652	901	10,396
Sardinia	3,933	4,108	3,279	11,320
Sicily	5,229	1,381	1,712	8,322
Total	66,995	29,284	14,606	110,885

Source: Censis calculations on Ucina data, "Recreational boating figures", 2001

As for the availability of berths, in 1999, the situation largely reflects that of the concentration of registrations. Exceptions are found with Sardinia, Friuli Venezia Giulia and Sicily, which though not distinguished for number of registrations, are among the regions with the greatest supply of berths. Classifying the Italian regions by number of berths, Liguria is again in first place, with availability (22,837 berths) that surpasses Tuscany (14,978 berths), the region that follows most closely, by over 50%.

In 2000, on an international level, Italy was located in third place for its maritime fleet, behind the United States and Sweden, with 847,000 units, essentially the same amount as France. Though the country shows a high absolute value for numbers of total vessels, it has a poor recreational boating index - an index of the ratio of the population to the maritime fleet. In Norway, there is one vessel for every six residents, in Sweden and Finland, one for every seven, in Denmark, one every four, while in Italy, the index shows only one boat per 67 residents.

3.4. Fishing

The changes undergone by the variables part of fishing activities reflect the image of a sector that still appears to be in ongoing structural crisis, as well as lacking in a basic strategy equipped to provide for an adequate and rapid recovery.

The combined effects of conditions such as operating on a substantially open market, being subject to European community policies mainly focused on countries with high capacities for primary production, the serious crisis in Mediterranean fish stocks (a crisis felt especially by the coastal species, on which fishing in Italy primarily concentrates), the growing burden of mass distribution, the specific features of “fish products” (a renewable, but exhaustible resource), present a framework in which Italian fishing, in its present organization, will have difficulty finding its deserved place.

The very structure of the sector internally undermines the possibility of presenting itself competitively on today’s markets. Italian fishing is marked by the disintegration of the productive fabric, composed of a large number of separate units, which are more often than not completely independent, operating on approximately 800 landing beaches, one every ten kilometers of coastline.

A situation such as this lends itself poorly to effective and efficient management and appears irreconcilable with the need to compete on

globalized markets. It is not by chance that mass distribution only draws minimally from within country, turning instead to foreign producers able to offer the necessary guarantees pertaining to stability of quantities and prices.

It seems that in Italy fishing suffers a series of limitations that require the preliminary definition, on a national level, of a focused economic policy in order to overcome them.

An urgent need emerges for a total reorganization of the sector, from a *filière* perspective and with a polarization of productive processes, setting the conditions for achieving meaningful critical masses. The ability to make a system, and then to govern this system cannot be born endogenously. It requires a policy of direction and orientation, focused on systemizing the relationships between the productive system and the fish resources it relies on so fishing can redesign itself in line with production, distribution and trade systems that typify the global competitive context.

In the First Report on the economy of the sea, the low vitality characteristic of the sector was brought to light. It responded to the marked increase in demand for fish from families with basically stationary production levels and stasis in the process of modernizing the fleet. Since then, the gap between the development of demand and that of national production continued to widen. Looking at the pace of renovation of the maritime fleet, the signs also do not point in favor of a reversal of the trend. There is no movement in the direction of bridging the gap between supply and demand.

The main economic indicators clearly demonstrate the situation in which the fishing sector finds itself. Productivity, value added and the total multiplier all remain at very low levels. Value added per employee in the branch of naval constructions is more than double that of fishing and in maritime transport it comes to 11 times more than the figures for each employee in the fishing sector. The production per employee in fishing ranges from 1/5 of that of the support services to 1/24 the value recorded in maritime transport. The comparison of the values of the overall multiplier (indicative of both downstream and upstream impact) in the different sectors places fishing once again in last place in the ranking.

To appropriately interpret the fishing sector, it is useful to briefly outline the position of the Italian case within the larger international context. The period analyzed, the second half of the 1980s in particular, was characterized by events that affected the fishing market very closely, if not directly and exclusively. Keeping them in consideration better contextualizes the specific results attained by the national fishing sector.

Worldwide fish production has diminished overall, showing a contraction

almost everywhere. The major increase in fish farming production has not succeeded in counterbalancing the effect of drastic impoverishing of the fish stocks that too many uncontrolled years of harvesting from the sea bottoms has produced. On the European community level, the provision enacted during 1994 should be remembered. It applied customs duties on all fish products coming from the countries of the Andean Pact, a pact that includes among its signers nations that are large producers of fish on a worldwide level (Peru, Colombia, Venezuela, Ecuador and Bolivia are part of the pact). It should also be remembered that average fish consumption is growing in all of the EU (research by FAO shows that in 2001, this came to 28 kg per capita in the EU area and 23 kg in Italy) and that the whole Union has an unfavorable fish trade balance. Finally, regarding the solely Italian situation, the extraordinary interruption of activity in the Adriatic should be considered, caused by the wartime standstill resulting from the conflict in the Balkans.

Demand for fish products has been continuously growing since the 1980s. Among food products, fish items have had the most substantial increases, substituting in part consumption of their closest alternative, meat. The growing preference accorded fish products by both Italian and European consumers certainly opens up important opportunities. It seems that these opportunities have not been taken advantage of by the national sector. Fish production has been declining for years. The trend is indeed in keeping with the development of worldwide fishing. Yet, the progress of volumes produced in Italy since 1995 rather than a drop could better be described as in a free fall.

A quick look at the data shown in the attachment shows that fish consumption has continued in its growth trend (a trend that for several years has been crossing most of the EU countries), both in relative and absolute terms - from 1995 to 1999, spending on fish products showed a +28.5% increase in absolute terms and a +1.1 increase in the percentage distribution of average family spending. Production in the fishing sector overall (meaning all of fish production, prepared, preserved and fresh fish) sustained a major decline, recording in the same period a 25.7% decrease in quantity and value.

In terms of revenues, three regions stood out over the rest: Puglia, Sicily and Veneto hold, in order, the first three places of the regional ranking, accounting by themselves for 45.6% of the value of the national fish product.

The Italian fishing fleet suffers from having too small boats on average and the trends in the most recent years under consideration in the report indicate that it continues to move in the direction of vessels with small tonnages. A look at all of the registers completes the picture. Half of Italian

ships have a quarter century of service behind them. The high average age and insufficient size of the fishing boats result in the low level of renovation of the sector's capital and the resulting insufficient introduction of technological innovations. These are conditions that the fishing branch cannot avoid feeling, as was shown in the observations made on productivity and value added in the sector.

The negative production trend corresponds to a fishing fleet of very low average dimensions (barely 11.6 TSL), with over 60% of the boats that belong to class 0 and 6 TSL and another 21.0% that are part of the next class (6-10 TSL). Motor fishing ships hit the lowest point in terms of units in 1993. From 1998, there is the most considerable recovery. In terms of TSL, the trend decreased until 1996, with a slow recovery after that, a sign that renovation was made in the direction of smaller sized boats. In 1999, there are 19,798 for a total of 230,018 TSL. Eleven years earlier in 1988, almost the same number of units reached a total tonnage of 273,694 TSL; 15.9% more than in 1999. The historical series of distribution of ships by tonnage class provides further evidence of the trend towards reduction in the average size of boats. Between 1996 and 1999, the size class up to 6 TSL showed a marked increase (+43.6%), coming to represent 61.6% of the total boats, compared to 52.9% in 1996.

The Italian fishing fleet is strongly characterized by the service vessels' high average age; 45.4% of them are more than 25 years old and account for 48.8% of the total tonnage, compared to only 13.5% of boats that are less than 10 years old with only 14.1% of the total tonnage. For the age of the vessels as well, the analysis of changes made in the last four years does not seem to signal a change in direction. The data reports that the situation continued to deteriorate in the 1996-1999 four year period with a 43% increase in boats over 25 years old (+16.4% in TSL) and a decrease of 10.2% (-22.6% in TSL) of units under ten years old.

The fish products trade balance is nothing other than the inevitable consequence of the current structure of this sector. The increase of the deficit is fully congruent with the described situation. However, far from being evidence of a sector without a future, it is a sign of the opportunities that, though they have been passed up so far, could be taken advantage of in the near future if action is taken on structural features of the sector. For a country in which fishing already activates a considerable volume of work force and in which fish consumption is consistently growing, opportunities can be seen that merit a strategic effort to overcome the broken structures described.

The consequences of the dynamics seen in the sector's trade balance are quite clear. The trade of fish products overall caused a progressive worsening

of the deficit of the trade balance. Between 1994 and 1999, the decrease was 49.6% in value (with an increase rate of the deficit at 8.3 points per year) and 20.2% in volume. Exports, after the peak recorded in 1997, began to decrease in value and in quantity, accelerating the rate of descent in 1998. Conversely, imports, both in value and in quantity, had an essentially consistent and parallel growth until 1998. From then until 1999, while export volumes dropped, their value continued to grow, though very slightly.

The most recent official data, available up to 2000, pertains solely to the fish sector (fishing, fish farming and related services, without prepared and preserved fish) and are those on which the estimates produced in the report were based. An analysis of the values for this understanding of fishing, i.e. pertaining to fresh fish (caught or raised) and related services, brings to light how the progress of the value added at the factor cost faithfully follows that of production at factor cost. For both of the values, a major, rapid descent is seen, beginning in 1995 and ending in 1997. After that, a modest recovery occurred and then a new contraction until 1999. In 2000, an intense growth in

Tab. 3.18 - Food consumption in Italy. Absolute value and percentage distribution of the average expenditures by the average family on principle food products (values in current lire/current euro)

Year	Bread and cereals		Meat		Fish		Milk, cheese and eggs		Total foods and drinks	
	v.a.	%	v.a.	%	v.a.	%	v.a.	%	v.a.	%
1980	34,512	12.8	89,510.0	33.2	10,416	3.9	36,375	13.5	270,012	
1985	67,020	14.5	137,056.0	29.6	28,519	6.2	60,907	13.1	463,621	
1990	87,574	14.7	168,255.0	28.2	46,039	7.7	75,348	12.6	596,564	
1991	95,945	15.3	163,774.0	26.0	44,622	7.1	86,571	13.8	628,773	
1992	101,349	15.9	166,260.0	26.0	45,248	7.1	89,739	14.0	639,095	
1993	103,798	16.3	166,607.0	26.1	45,868	7.2	91,861	14.4	637,314	
1994	109,171	16.3	175,468.0	26.3	46,827	7.0	96,856	14.5	668,285	
1995	111,927	16.2	178,732.0	25.8	48,614	7.0	103,229	14.9	692,176	
1996	116,436	16.5	176,563.0	25.0	50,389	7.1	105,910	15.0	705,482	
1997	128,685	16.6	183,242.0	23.6	59,466	7.7	109,245	14.1	776,997	
1998	128,442	16.4	182,496.0	23.4	60,671	7.8	110,373	14.1	781,536	
1999	127,130	16.4	181,000.0	23.4	62,470	8.1	107,509	13.9	773,455	
euro	65.66		93.48		32.26		55.52		399.5	
Var. % 1990-99	45.2		7.6		35.7		42.7			
Var. % 1995-99	13.6		1.3		28.5		4.1			

Source: Censis calculations on ISTAT data, Consumption by families

production and added value was experienced, returning in value to 1996 levels. The intermediate costs tend to follow the direction taken by production and value added, with the exception of the periods 1992-1993 and 1997-1998, in which the progress followed inverse courses.

The trade balance for fresh fish seems to show the most positive signs. Imports values, after the interrupted growth of the years between 1996 and 1999, showed a slight drop in 2000. Export values, after the virtual stasis experienced between 1997 and 1999, finally started growing again, reaching a level higher than the historic peak of 1997.

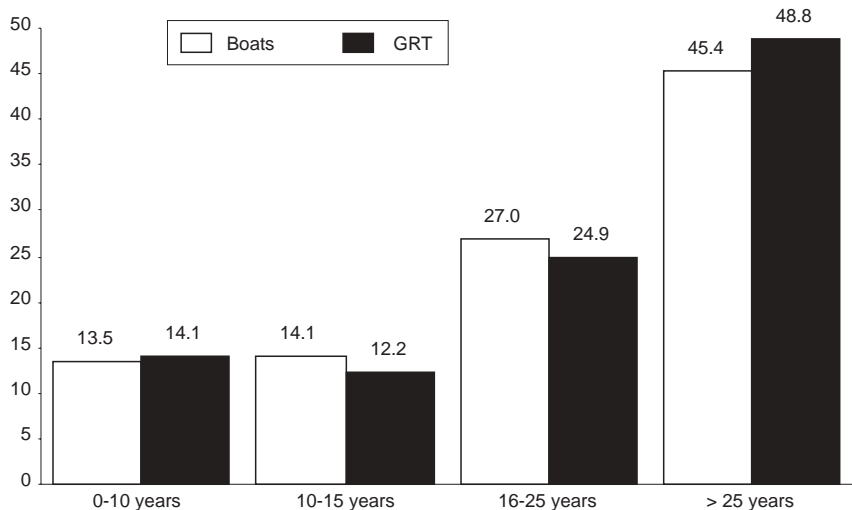
Productivity and value added per work unit went hand-in-hand over the years, growing at essentially consistent rates up to the high point of 1996. From there a downward trend began that stopped only in 1999. Both values increased markedly in 2000, reaching values achieved two years earlier.

Tab. 3.19 - Production at base prices, intermediate consumption and value added by fishing per region, 1999 (values in thousands of current euro)

Region	Production at base prices (a)	Intermediate consumption (b)	Value added at base prices (c)	Distribution % on total production	Technical coefficient (b)/(a)
Puglia	210,186	52,935	157,251	16.89	0.252
Sicily	187,235	64,369	122,866	15.04	0.344
Veneto	167,139	34,079	133,059	13.43	0.204
Marche	89,499	25,671	63,828	7.19	0.287
Emilia Romagna	89,171	20,352	68,819	7.16	0.228
Friuli Venezia Giulia	76,219	14,810	61,408	6.12	0.194
Liguria	74,849	15,957	58,892	6.01	0.213
Sardinia	74,491	17,581	56,910	5.98	0.236
Campania	70,703	17,931	52,772	5.68	0.254
Tuscany	48,993	13,377	35,615	3.94	0.273
Lazio	44,802	11,561	33,240	3.60	0.258
Abruzzo	38,984	13,122	25,862	3.13	0.337
Lombardy	29,126	5,223	23,902	2.34	0.179
Calabria	11,712	4,746	6,966	0.94	0.405
Piedmont	8,962	1,593	7,369	0.72	0.178
Molise	7,380	2,453	4,928	0.59	0.332
Umbria	6,847	1,242	5,605	0.55	0.181
Trentino Alto Adige	6,381	1,147	5,234	0.51	0.180
Basilicata	1,573	287	1,286	0.13	0.182
Valle d'Aosta	394	64	331	0.03	0.161
Italy	1,244,644	318,501	926,143	100.00	0.256

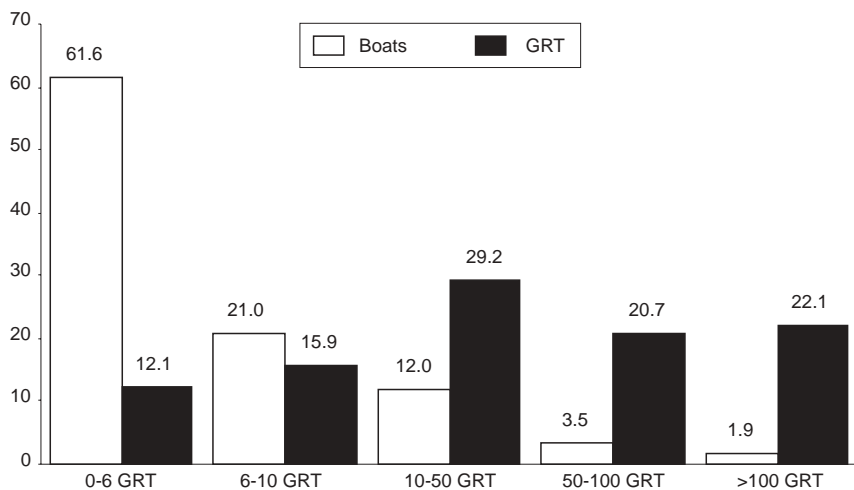
Source: Censis calculations on ISTAT data, Statistics on fishing and animal husbandry, 2001

Fig. 3.7 - Boats by age classes and corresponding GRT, 1999



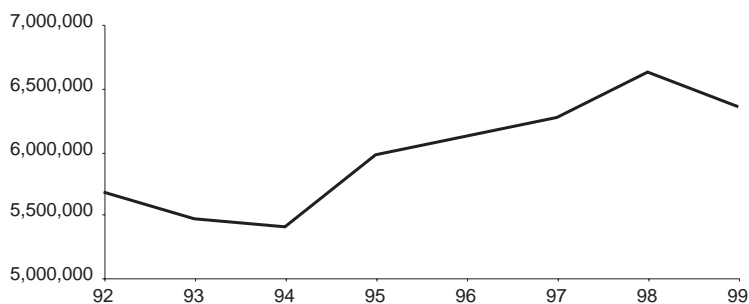
Source: Censis calculations on fishing license archive data

Fig. 3.8 - Boats by GRT class and corresponding GRT, 1999



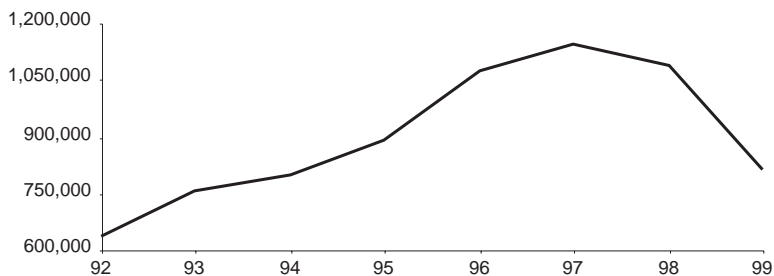
Source: Censis calculations on fishing license archive data

Fig. 3.9 - Fish products imports (quintals)



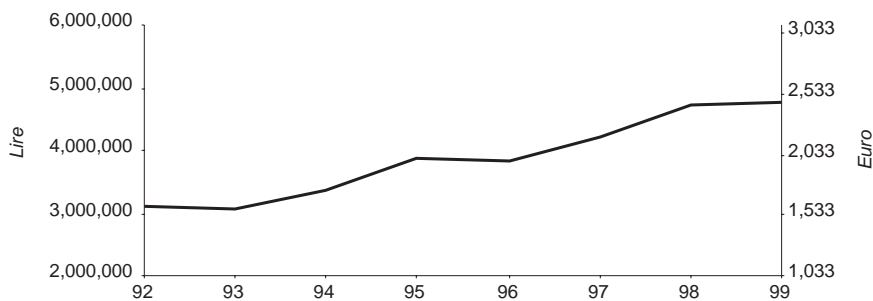
Source: ISTAT, Fishing and hunting statistics, 1997 - ISTAT, Fishing and animal husbandry statistics, 2001

Fig. 3.10 - Fish product exports (quintals)



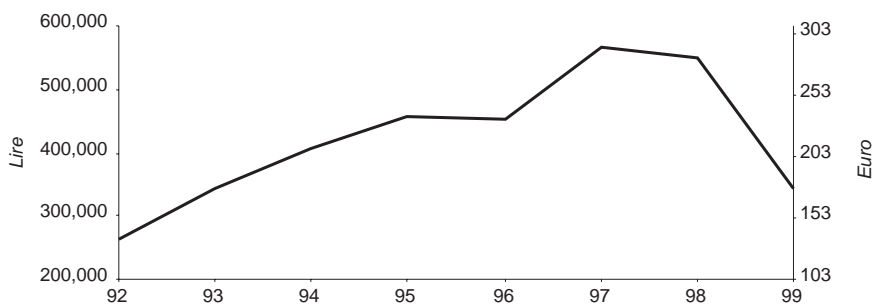
Source: ISTAT, Fishing and hunting statistics, 1997 - ISTAT, Fishing and animal husbandry statistics, 2001

Fig. 3.11 - Imports fishing products (millions of lire/current euros)



Source: ISTAT, Fishing and hunting statistics, 1997 - ISTAT, Fishing and animal husbandry statistics, 2001

Fig. 3.12 - Fishing product exports (millions of lire/current euros)



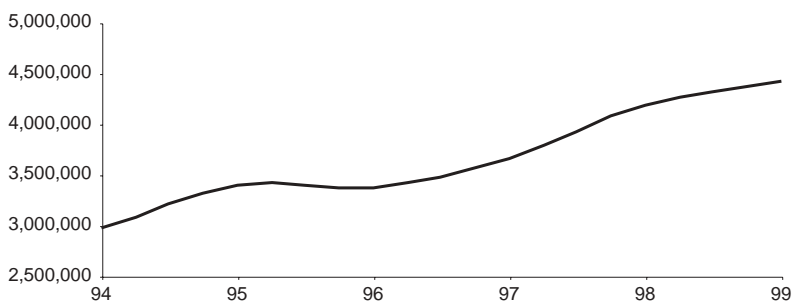
Source: ISTAT, Fishing and hunting statistics, 1997 - ISTAT, Fishing and animal husbandry statistics, 2001

Tab. 3.20 - Trade balance deficit in values and quantities 1994-1999 (values in millions of current lira/ quantities in quintal)

	1994	1995	1996	1997	1998	1999	Var. % 1994-99
<i>VALUES</i>							
Imports	3,366,371	3,854,470	3,814,239	4,216,313	4,737,202	4,774,314	
Exports	405,395	457,925	451,085	568,033	548,603	344,024	
Deficit	2,960,976	3,396,545	3,363,154	3,648,280	4,188,599	4,430,290	49.6
<i>QUANTITY</i>							
Imports	5,405,774	5,976,902	6,120,680	6,267,631	6,629,790	6,350,531	
Exports	799,113	891,580	1,072,535	1,144,406	1,084,984	813,199	
Deficit	4,606,661	5,085,322	5,048,145	5,123,225	5,544,806	5,537,332	20.2

Source: Censis calculations on ISTAT data, Fishing and animal husbandry statistics, 1997 and 2001

Fig. 3.13 - Trade balance deficit of fishing sector, 1994-1999 (millions of current lire)



Source: ISTAT, Fishing and hunting statistics, 1997 - ISTAT, Fishing and animal husbandry statistics, 2001

3.5. The Navy

In the new millenium scenario, the Armed Forces, called to respond to needs that go far beyond the more traditional military functions, are taking on new traits. It is in this framework that today the defining coordinates of the Navy for the Country and for the sea system in particular will be indicated.

For a country like Italy that is so deeply rooted, geographically and culturally, in the heart of the Mediterranean and dependent on it in many ways, the Navy plays a role of primary significance. Its work is central to defense and national security policies, though it is not limited to these. It also provides a vast and multi-faceted spectrum of services for the civilian community in different capacities.

For descriptive purposes, the main functions performed by the Navy can be put into three categories: defense, policing and general services. We will not examine the classic issues of defense, more strictly connected to the military domain, but we will shed light on the other categories that have assumed an important strategic, social and political significance in recent years in particular.

The policing function includes all of the operations that the Navy carries on in order to ensure the security of the coasts and of the national and international sea. These operations are especially focused on the monitoring of fishing in the long-disputed area of the Strait of Sicily (known as the “*Mammellone*”) and the Adriatic Sea and the control of illegal immigration and trafficking.

Situations connected to contraband in general as well as the incoming migration flows have a deeply-rooted, structural basis. However, since the second half of the 1990s, both have grown following the numerous politic, ethnic and religious conflicts (the republics of the former Yugoslavia, Kosovo and Chechnya) and severe crises (Albania) that the Mediterranean area has experienced, in addition to such factors as the constant pressure coming from the Maghreb area.

Evidence of the greater energy expended by the Navy is seen in the growth of the total hours of navigation/flight effected in order to control illegal immigration. In the years 1997, 1998 and 1999, the hours employed in this activity were six times greater than in 1996. The same trend was followed, as a result, by the values for detected and seized vessels, and stopped illegal immigrants. In 2000, with the end of the war in Kosovo and the acute phase of the Albanian crisis now subsided, the amounts of all of the values under consideration started to decline again.

The group of service activities includes, primarily, the use of specialized vehicles for anti-pollution services and protecting the maritime environmental resources, aiding underwater archeological research (in collaboration with the Ministry of Cultural Heritage and Activities), the numerous operations of seabed maintenance (especially in the high Adriatic) and diverse operations benefiting the community (water supply services to the smaller islands, medical transport and fire services).

The points covered clearly show the effects that the many activities performed by the Navy have, in terms of security, on the whole of maritime activities. The considerable increase of the operational duties entrusted to the Navy and its growing strategic importance invites reconsideration of the role of an entity that appears distinct in a now profoundly altered situation defined with reference to a situation now deeply changing.

For a comprehensive overview of the contribution made by the Navy, in addition to the noted benefits for the community, we should consider the direct investments that it makes, and, in general, the effects of all of its activities on the entire sector.

To understand how the Navy is reacting to the progressive decrease of defense spending in the national budget, we can look at the information for total navigation in the Navy accounts (in absolute and in percentage of defense) and to the distribution by categories of budget expenses. Naval activity has been divided between operational activities and training activities.

With the need to contain expenses, a trend towards resizing operations is underway.

In the 1995–2000 period, allocations for the Navy grew in actual value by 6.8% and in relative terms by 0.8%. These values, if properly compared with the growing operational tasks assigned to this entity, appear insubstantial.

The share of the budget the Navy designates for investments has been consistently growing since 1997. In 2000, it reached a record amount of 36.5% of total Services resources, in the amount of almost 770 million euro. The amount for investments has grown to the loss of personnel expenditures.

The importance of safeguarding the effectiveness and efficiency of the national naval-aviation forces seems quite clear. The reorganization of the Italian Navy is proceeding with the attempt to compensate for the imbalance between the scarcity of resources and growing commitments. It appears that it can be said that the effort made towards optimizing resources, though indispensable, cannot on the long run overcome the increasing gap that is continuing to form between available resources and requirements.

Tab. 3.21 - Illegal immigration control operations (hours of navigation/flight)

	1995	1996	1997	1998	1999	2000
Total hours of navigation-flight	8,698	10,187	71,149	63,780	68,107	26,411
Detected vessels	845	322	1,062	2,913	1,934	984
Seized vessels	152	64	472	114	319	135
Illegal immigrants stopped	7,000	4,311	25,919	22,725	50,089	21,400

Source: Censis calculations on Italian Navy data, Reports, various years

Tab. 3.22 - Naval activity (hours of navigation)

	1985	1995	1996	1997	1998	1999	2000
Operations	16,000	91,000	74,000	82,000	80,000	78,000	53,000
Training	62,500	45,000	55,000	65,000	75,000	52,000	47,000
Total	78,500	136,000	129,000	147,000	155,000	130,000	100,000

Source: Censis calculations on Italian Navy data, Reports, various years

Tab. 3.23 - Defense budget in 2000, actual and percentage variation 1995-2000 (millions of euro)

	2000	%	Actual var. 1995-2000	% var. 1995-2000
Italian army	404.1	34	7.8	1.1
Navy	213.4	18	6.8	0.8
Air Force	354.1	30	11.8	-0.1
Joint services	215.7	18	24.0	-1.8
Total defense department	1187.2		11.4	

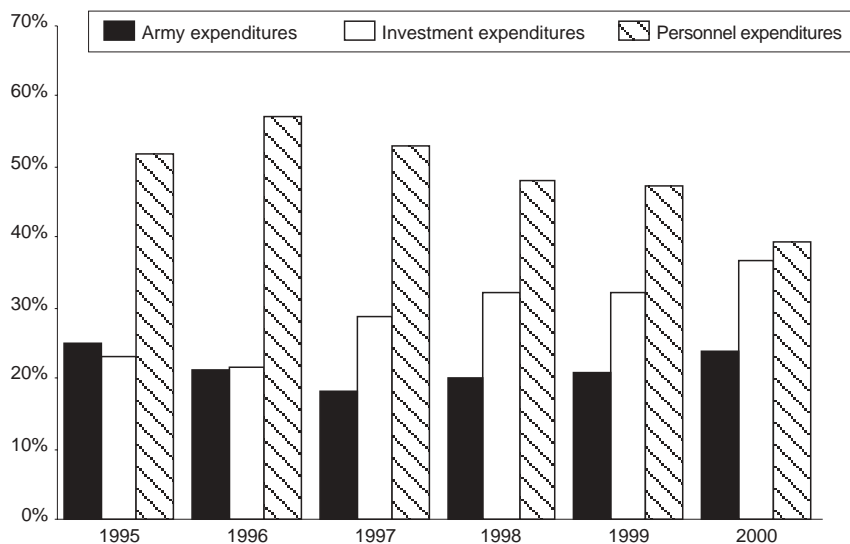
Source: Censis calculations on Italian Navy data, Reports, various years

Tab. 3.24 - Percentage distribution of Navy budget

	1995	1996	1997	1998	1999	2000
Army expenditures	25.0	21.0	18.2	20.0	20.7	23.8
Investment expenditures	23.0	21.7	28.7	32.0	32.0	36.8
Personnel expenditures	52.0	57.3	53.1	48.0	47.3	39.5
Total	100.0	100.0	100.0	100.0	100.0	100.0

Source: Censis calculations on Italian Navy data, Reports, various years

Fig. 3.14 - Percentage distribution of Navy budget, 1995–2000



Source: Censis calculations on Italian Navy data, Reports, various years

4. A LOOK AT THE EUROPEAN SITUATION: THE PROLIFERATION OF MARITIME CLUSTER EXPERIMENTS

4.1. Clustered Maritime Europe

It is not easy to reconstruct a complete statistical summary of the European maritime sector, as there is no comprehensive, up-to-date and comparable data available on the national aggregates and the individual sectors that compose it. The availability of research work concentrated on this issue is also quite scarce.

The most recent and most wide-ranging surveys of a European nature on the issue are mainly those made by the European Union, with its directorates DG TREN (*Directorate General for Energy and Transport*) and DG Industry (*Enterprise Directorate General*).

Of particular significance in this context is the study by the DG Industry UE, conducted at the end of the 1990s (the data refers to a time period between 1993 and 1997, with projections made up to 2003), on the “*The Economic Impact of Maritime Industries in Europè*”, which analyzes the impact on employment and participation in wealth creation of the maritime industries in the 15 Members States of the EU and Norway.

The study is based on a collection of national statistics that are in some ways “standardized” - or at least made generally compatible - selected on the basis of research done on the Dutch maritime sector by the *Policy Research Corporation N. V.* It is structured in the same macrosectors that compose the Dutch maritime sector in the cited study, with the exclusion in this case, of the Navy, as it is not considered a sector of the “industrial” type. This study was officially presented at MIF in Valencia in October 2001 and is currently available, in detailed summary, at the web site <http://europa.eu.int/comm/enterprise/maritime>.

The data contained in study “*The Economic Impact of Maritime Industries in Europè*”, shows an overall impact of the maritime sector in Europe that is

quite significant both from the economic and employment perspectives. Specifically, from the data - summarized in table 4.1 - a major direct economic impact is seen, substantiated by revenues of about 159 billion euro, with a value added that is around 70 billion euro (almost 1% of the GDP of the EU plus Norway) and with an employment level that is no less significant, considering that 1.5 million individuals find employment in the sector.

The indirect economic impact is also definitely not insignificant: 41 billion euro of wealth produced in terms of value added and almost a million people (0.9 million to be exact) are employed in related industries. The value added, which all together (between direct and indirect) comes to 111 billion euro, was generated almost entirely in Europe (90%), while only a small fraction (10%) from outside of this area. Furthermore, well over half of its value (63%) can be attributed to direct production of the maritime sector, and the remainder, a little less than a third (27%), to related industries.

Beyond its productive and employment significance, approximately evaluated through these estimates, the European maritime sector appears to be involved in a process of member and sectoral condensation that is evidenced within each nation state. In other words, following the lead of a few

Tab. 4.1 - Economic impact of the European maritime industry

Indicators	Values
<i>Direct impact</i>	
• Revenues	→ 159 billion euro
• Value added	→ 70 billion euro
• Employment	→ 1.5 million people
• Public input	→ 23 billion euro (33% of value added)
• Expenses of EU countries + Norway	→ 58 billion euro (83% of value added)
• Expenses outside of EU countries + Norway	→ 12 billion euro (17% of value added)
<i>Indirect impact</i>	
• Value added	→ 41 billion euro
• Employment	→ 0.9 million people
<i>Total impact</i>	
• Value added	→ 111 billion euro
– domestically generated	→ 90%
- direct	→ 63%
- indirect	→ 27%
– generated in other EU countries	→ 10%
• Employment	→ 2.4 million people

Source: U.E.-DG Industry, 2001

example cases, it can be seen how in many European countries, the sectors connected to the maritime economy (shipping, shipbuilding, fishing, recreational boating, etc) tend to aggregate following variable functional structures in order to promote the interests and needs of the maritime sectors in a unified manner on national and international levels with greater relevance compared to the importance of the individual components of the group.

In reality, a careful observation of European maritime dynamics confirms that maritime Europe has not yet chosen when and how to aggregate. There are no pre-established forms or models according to which the maritime sectors tend to group themselves. There are only experiences in the field, some of which are more advanced than others. However, there is a common denominator between the European maritime sector. There is a common feeling, an aspiration or need that is moving forward with increasing force. There is the pressure to make a system, to become a group, a rank, and unite. This is the natural attraction towards constructing a maritime cluster.

Wherever one looks, whether in France, England, Denmark, Norway, Germany or the Netherlands, it is proven how individual maritime sectors anticipate within a greater national, if not European scope, the possibility/opportunity to collect the needs of a sector - the maritime one - that is suspended between new discoveries and new responsibilities, legitimate expectations and excessive expectations with reference to their potential contribution to the national systems to which they belong.

In Germany as well as England, they are beginning to think in the footsteps of the Dutch model, the *Dutch Maritime Cluster*, which seems to be currently playing teacher to Europe, according to EU representatives, though no one yet dares consider it “officially” a successful model to be imitated. It is only an experiment that is particularly advanced, particularly successful, and particularly revealing of how over ten maritime sectors can unite to promote the sea in the larger sense. This is so to the point that it has dealt with whole areas of operation that are traditionally the territory of individual associations (capital markets, internationalization, and technological innovation).

Every country, even with its natural features, even with the intuition of this process of converging the maritime sector, without overestimating its capacity to direct “from on high”, prefers to nonetheless remain an accompaniment “from on low” on the paths of the individual sectors. This is from the belief that it is not possible to require anyone to create a larger entity for promotion or other functions, but that one can only act on what each one desires, on this common feeling, and possibly help it to fulfill itself and develop in the ways and time frames that work best for everyone.

Among the countries that compose the European Union, the structure of the maritime cluster is still in an initial design stage, except in the Dutch case. Every country is taking its own approach to the problem, meeting the special features and needs of the existing industrial framework and, more generally, of the national system (in England, they are beginning to discuss it with greater energy, as they are in Germany. Denmark and Norway are discussing groups of individual industrial sectors).

Nonetheless, a considerable and widespread interest is found for consideration of a possible cluster of European clusters, i.e. a common structure of integration between the European maritime systems. Initially, this could be done by trying to expand the Forum of the Maritime Industry's experiment, considered by many to present the chance to enlarge it and endow it with new and wider-ranging features.

At any rate, within this situation of fragmentation and improvisation by each European country, as we have mentioned, the Dutch case is in fact widely recognized as an example per excellence of the success of a maritime cluster project. This is so much so that for several months there has been a full-fledged pilgrimage to the exponents of the *Dutch Maritime Cluster* to understand the details of the project and to be able to possibly apply them in other countries.

At the level of the European Union, the Dutch case has however not yet been officially recognized as the example or model for EU policies, limiting its attention for now to carefully following with attention the Dutch happenings with interest. There also appear to be no signs coming from the European community of such an intention in the future.

Nonetheless, for the importance that it has within the landscape of member condensing processes of the European maritime sectors, the Dutch maritime sector plays a primary role, as it has been united for several years in a cluster that has been successful both from the cultural and practical perspectives. The Dutch experiment has some aspects of major significance, including:

- the maritime cluster is managed directly through an agile, streamlined, dedicated organizational structure called the *Dutch Maritime Center*, which is composed of a director and two full-time employees. It is located in its own office in Rotterdam;
- the Dutch cluster includes 11 different maritime sectors, with an estimated total of approximately 12,000 businesses, including: shipping, shipbuilding, marine equipment, offshore navigation, inland shipping, dredging, ports, maritime services, fishing, yachting and the *Royal Netherlands*

- Navy*. The expansion of the group to other maritime sectors that have requested it seems imminent;
- in evaluating the impact of the maritime activities on the country, in addition to monitoring elements of value added and employment, the Dutch also pay careful attention to the innovation factor, i.e. the ability that the sector has to stimulate technological and organizational innovation in the country. On this point, it should be recalled that the last two studies done in the course of 2000 on the activities of the maritime cluster concerned the contribution to innovation through investments by the diverse maritime sectors and the formation of the information technologies and web sites of the Dutch maritime companies;
 - the cluster was started in 1996 with three sectors and then gradually expanded. It worked mainly on a series of initiatives intended to promote the Dutch maritime in the world and within the country (studies, publications, popular television shows, educational television shows for schools, discussion on sectors such as fishing or yachting, etc). Progressively with the passing of the years, the Dutch maritime cluster began to develop useful consensus on more problematic areas as well, such as those of exports (the *Export Forum* was initiated, focused on promoting the collective participation of homogenous groups of the maritime sector in different promotional occasions for exports and fairs) and the financial and capital market (*Capital Forum* was started, focused on creating synergies of interests in the financial area between the different sectors);
 - an important feature of the work of the Dutch maritime cluster is the flexibility generated by the “variable geometry” work methods. In other words, depending on the issues being dealt with and conditions, all of the sectors in the cluster might not participate. Instead only those that in each case are or could be more directly involved;
 - the entire Dutch organization was strongly supported and joined by the Dutch government, including through specific financing lines, upon the total restructuring of the national system’s maritime policy. For example, the initial study on the impact of the different sectors on the economy was entirely financed by the government. The central office was cofinanced by the government, and further studies and other initiatives are cofinanced by the government. The commitment of the government is planned to go from its initial 100% of expenses to the current 70% to 40% in the future, through a concurrent greater financial involvement of the individual member associations.

4.2. An example of excellence: the Dutch maritime cluster

The importance of the Dutch maritime system can be understood through the completion of a large research project on the Dutch maritime sector commissioned by the *Dutch Maritime Network* and effected by the *Policy Research Corporation N.V.*⁶. The following subjects were addressed in the research:

- Methodology of the policy analysis;
- Economic importance of the Dutch maritime sector;
- Autonomous development of the maritime sector;
- Political actions;
- Impact of proposed actions;
- Recommendations.

The section on the “economic importance of the maritime sector” summarizes the data on the economic structure of the Dutch maritime sector. It includes a general description in terms of production, value added, employment and public income and expenditures. Particular attention is given to the relationships between the diverse sectors of the maritime sector and the strong export orientation of some of these sectors.

To summarize the results of the statistical analysis, effected with a methodology called EIS, the Dutch maritime sector seems to be composed of approximately 12,000 active companies in 11 sectors:

- maritime transport;
- shipbuilding;
- maritime equipment;
- offshore supply;
- internal navigation;
- draining;
- ports;
- maritime services;
- fishing;
- yachting;
- the Navy.

The value of direct production in the Dutch maritime sector comes to 14.6 billion euro. The different sectors have a strongly international orientation, and with the exception of the Navy, make on average 60% of their sales abroad, corresponding to approximately 5.4% of the total volume of Dutch exports. The direct value added generated by the sector comes to 6.9

6. The information reported in this section is largely taken from the cited original study.

billion euro, a figure that represents approximately 2.5% of the total value added generated by the country. Furthermore, the Dutch maritime sector gives work to approximately 137,000 individuals.

In production terms, the most important branches of the sector are the ports (20%), maritime transport (15%) and offshore activities (14%). These three sectors together account for about half of the total production of the sector. In terms of value added the port sector stands out, generating almost 30% of the total value added. In terms of employment, the most important sectors are again the ports (19%) and offshore supply (14%), followed by the Navy (13%) and the internal navigation sector (10%).

The input/output analysis used in the research provided an estimate of the indirect effects generated by the sector on the rest of the Dutch economy. The total economic importance of the Dutch maritime sector seems to exceed its direct importance by 35% in terms of production and value added, and by approximately 40% in terms of employment. Total production would then come to approximately 20.2 billion euro. The total value added would exceed 10.3 billion euro and total employment would come to 193,000 units.

The shipbuilding, drainage, port and offshore supply industries are those that generate the greatest indirect effects. The case of shipbuilding, both the indirect value added generated is 1.3 times its direct value added and indirect employment is much greater than direct employment. The drainage sector has a considerable indirect effect on the Dutch economy in terms of employment. Nonetheless, in absolute terms, the port sector retains the highest amount for level of total economic importance of the maritime sector in this case as well, representing 27% of total value added. The offshore supply sector takes second place, with 14% of the total value added.

In the section focused on the “Autonomous development of the maritime sector”, the development forecast for the sector in the next decade is outlined in terms of production, value added, employment and public income and expenditures. The forecasts were prepared under the hypothesis that the current political structure will continue and that the business will essentially maintain their current strategies.

The actions and policy measures recommended by *Policy Research* based on the summarized statistical estimates are grouped into ten subjects that affect the entire sector. These subjects are:

- innovation;
- exporting;
- internal market;
- infrastructure and environmental planning;

- reformulation of transportation modes;
- international receptivity of operators;
- capital markets;
- communications and image promotion;
- work market, training and personnel search;
- concordance between government and industry.

According to the observations made by the Dutch researchers, the current policy for maritime industries of the Dutch government covers many different areas and can therefore be seen as an inherent sector policy. The proposed measures include some improvements to the current policy, aiming to increase their effectiveness and sustainability.

The initiatives that should be developed by the maritime industry (through sector organizations, such as the Dutch Maritime Network), mainly pertain to support operations of enterprise, in addition to providing support to new initiatives focused on the following issues: *innovation, exporting, international receptivity of operators, capital markets, communication and image promotion, work market, training and personnel search*. The measures necessary pertaining to the *internal market, the infrastructures, the reconfiguration of transport modes and the concordance between industry and government* require (primarily) the support of the government.

Specifically, the recommendations to the maritime industry address:

- continuation of efforts connected to building contacts and image through the Dutch Maritime Network;
- establishment of a Forum for maritime exports;
- institution of a market monitoring tool;
- establishment of a Forum dedicated to maritime capitals;
- study of the possibility of establishing a Forum dedicated to innovation issues.

4.3. A traditional reference point: the United Kingdom

International focus

The research report from which the data and information on the maritime industrial sector situation in the United Kingdom was commissioned to *Douglas Westwood Association* by *Foresight Marine Panel (FMP)* and was completed in August of 2000⁷.

7. The information reported in this section is largely taken from the cited original study.

The study was created to fill in the lack of quantitative data on the maritime industries of the United Kingdom pertaining to their contribution to the economy, exports and the value of foreign markets, and prepared with the main objectives of:

- identifying, for each sector, the potential worldwide market for exports from the United Kingdom;
- determining, for each sector, export opportunities from the United Kingdom, currently and over the next fifteen years;
- analyzing the current comprehensive maritime market and its potential over a five year period;
- identifying specific opportunities that the United Kingdom could take to increase its export percentages;
- encouraging the maritime sector in its entirety to consider its opportunities in the longer term.

For a proper approach to handling the information contained in the document, it seems worthwhile to emphasize that the completeness and detail level of the data depend partly on the use of official statistics, partly a reconstruction of missing data through recourse to estimates prepared on the basis of other income.

A specific example of this is seen in the shipbuilding sector, for which a special econometric model was developed. The same model was also applied to determine the value of the marine equipment sector. Separate market models were applied to the sectors of remote-controlled submersibles, submarine production and oceanographic surveying, with the goal of attaining the industry's value, presenting a division by ship type and region. Most of the markets addressed include three key elements: equipment purchase, operation costs and production value.

In the petroleum and offshore gas sector, for instance, it was possible to separate capital expenses for the system of offshore operations from the operation expense and value of the petroleum product. Similarly, shipbuilding constitutes a system expense element in the maritime transport industry, which also has management expenses and whose production value is seen in the profits generated by the transport of goods and passengers.

There are also no usable statistics for exports because business sectors of the maritime industry often have a customer base that operates in a diversified range of industries (submarine vehicles are used in the offshore extraction sectors, submarine cables, defense, oceanographic surveying, etc). In these cases, specially estimated values are presented.

The analysis is therefore complex and flexible. The landscape of British

maritime production is reconstructed in relationship to the international context and broken down by sector. The aspect of the market segment is examined crossing the maritime sectors with the main geographic partitions of the maritime markets.

For the purposes of comparison, the three most important sectors in terms of economics are doubtlessly: the *production of offshore petroleum and natural gas, maritime transport* and the *Navy*. At any rate, in the cited studied a description is provided of the most important sectors for a complete overview of the sector in question.

Strengths and weaknesses

The research file commissioned by FMP contains a SWOT⁸ analysis conducted on the United Kingdom's maritime sector, from which many exogenous factors emerged. These factors influenced the maritime industries of the country in the past and are in fact *macrofactors* that a country on its own is not able to manipulate or control.

Of these, one in particular bore on the progress of the British maritime sector: the application of various policies effected pertaining to the maritime industries by the governments of the United Kingdom and other foreign countries. Nonetheless, despite some causes for concern, the maritime industries overall provide good opportunities to the United Kingdom and interesting prospective for the development of new areas of activity.

The industries of the maritime sector are of considerable importance for the United Kingdom's economy. Their annual contribution to the GDP varies between 3% and 4% (the variation is connected mainly to variations in the price of crude oil). Just the natural gas and offshore petroleum industry has a value of sales equal to the aerospace industry (28.3 billion euro).

In the next 10 years, the economic importance of the maritime industries of the world is set to grow and provide increasingly large opportunities in export markets. They are also one of the most important sources of employment. It is estimated that it gives work to about 423,000 individuals. Even excluding the 68,800 people who work in diverse capacities for the Navy, the remaining 354,200 ensure that the maritime sector surpasses other sectors,

8. The SWOT analysis - in which SWOT stands for Strengths, Weaknesses, Opportunities and Threats - is an effective analysis technique of the strengths and weaknesses of the area and identifying important elements for the area in opportunities and threats to its development.

including those traditionally considered to be large employment suppliers, such as agriculture (297,000 employees), gas, electricity and water supply industries together (136,000) and the aerospace industry (155,000).

Of the major industries, some were surprisingly successful. The income generated by remote-controlled submersibles activities and the supply of maritime services are examples. The leisure time maritime industries taken together represent an especially lucrative market for the United Kingdom. The recreational boating sector alone contributes more to the country's economy than the construction of military ships.

From the practical aspect, some maritime sectors are much more important than the monetary values indicate. For example, while the university instruction of foreign maritime officers renders only 16.6 million, its capacity to influence the future decision makers has a value many times greater

According to the observations made in the English study, one of the sectors in which the United Kingdom holds a large market share and has good prospects for development is the technical and sales sector. Nonetheless, for maintaining/increasing the market share, the United Kingdom's maritime sector must make greater investments in some basic elements:

- high-tech, high-value, streamlined products;
- income connected to the development and ownership of product designs and basic technologies (which may be made elsewhere);
- growth of the service industry.

The enormous importance of government support should be emphasized. International competition for the maritime markets is set to increase and to be successful. It is suggested that companies in the United Kingdom should have the ability to obtain the same level of state support from which their European neighbors benefit.

To increase its market share in vital sectors such as shipbuilding, the United Kingdom's maritime businesses must work with the government to facilitate the introduction and use of innovations in commercial maritime activities. Other special opportunities can be found in:

- acquisition of shares in ships by builders;
- provision of a complete logistics service instead of a single ship, i.e. a "unified shipbuilding package" rather than finished ships;
- cooperation between shipyards to fulfill multiple orders.

The impact of the United Kingdom's tax system is also found decisive. In 1996, a new tax plan was initiated in the Netherlands (similar to ones already in effect in Germany, Greece and Norway), thanks to which the number and tonnage of ships increased in three years by almost 40% and employment

went from 5,000 to 28,000 units. Commercial operators in the shipbuilding sector also quadrupled.

The lack of comparable continuous data impacts the sector. The amount of information pertaining to the maritime sectors is enormous, but it tends to be vague and incoherent, and not prepared for statistical study. This makes it unusable for the purpose of comparative trade analysis. This is a serious obstacle to promoting awareness of the importance of the maritime industries and is a disincentive for investments.

The lack of specialized skills will also likely be a limitation to the development of maritime activities in the United Kingdom. The availability of expert and skilled personnel is a key factor for the future prosperity of the maritime industries throughout the world. In recent years, a change has been seen in the average age of the personnel in the maritime industry in the Western world. This phenomena is combined with the difficulty of hiring qualified young people because of competition from high-tech industries and the difficulty of maintaining new employees in the sector. This problem is caused by the frequent lack of solid career opportunities and discomfort with working in industries that are at times highly cyclical, characterized by low job security and work schedules that cut heavily into social time. The public's negative view of some large maritime industries does little to help these problems, particularly of offshore drilling and possibly shipbuilding. Some industries are working on changing these attitudes. However, a generalized approach is needed for the maritime industries in their entirety. Access to the most-qualified graduates will be conditioned by the ability of the maritime industries to make the public more aware of their activities and the career possibilities that they can directly and indirectly offer.

Finally, the study concludes with the reminder that many foreign maritime organizations choose the United Kingdom as a base from which to run their international business, drawing on the country's long maritime experience. For this trend to grow, the United Kingdom must continue to present itself as a country in which "good business is done." However, the United Kingdom's maritime industries, though they have great economic importance, are highly fragmented and do not express themselves through a common voice. There is the lack of a "product leader" and, more generally, of something that would not only manage to raise the profile of the sector in the business world and with the government and public, but also present itself to young people as an exciting international, high-tech industry, with great future prospects.

These needs are the basis for Britain's future prospects for fostering the formation of a maritime cluster.

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