



The contribution of coastal shipping to the Greek economy: Performance and outlook



Foundation for Economic and Industrial Research - IOBE

2 The contribution of coastal shipping to the Greek economy: Performance and outlook

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Summary

The scope of the study is to document the contribution of the coastal maritime sector to the Greek economy, considering also the catalytic effects associated with the development of tourism, agriculture and manufacturing in the Greek islands. Additionally, the study examines the main issues related to the utilisation of the sector's potential. The study refers to all passenger coastal maritime activity, except of ferries operating on small distance routes.

The Greek coastal maritime is among the largest in Europe due to the vast number of interconnections among the mainland and the island regions. The large shipping companies operate a modern fleet with large capacity, as a result of investments in new ships and scrapping older ships during the past decade.

Since 2009 the coastal maritime sector has been negatively affected by higher oil prices and a vertical drop in passenger traffic, due primarily to the recession of the Greek economy and, to a lesser extent, of the European economy. In particular, the demand for coastal services has declined by 24% for passengers and 31% for vehicles respectively over the period 2009-2012 (with an indication of stability in 2013 coming from the data for the first nine months of the year), whereas the fuel cost comprises more than half of the total turnover in the sector. The effort to adjust to these exogenous shocks was hampered by limitations of the regulatory framework.

These developments are reflected in the **adverse financial outcome of the sector**, in which the contraction of the turnover along with the substantial increase in operating expenses has resulted in large **losses**. Meanwhile, the reduced liquidity in the sector is accompanied by increased debt burden. Therefore, the sustainability of some shipping firms as well as the capacity of the current operating scheme to provide the required coastal shipping services over the coming years is currently under threat, despite the improvement of the financial indices in 2013. The likelihood of shipping company closures due to the adverse economic environment in the coastal maritime sector will have negative repercussions for the Greek economy. This is due to the substantial contribution of the sector to the domestic economic activity through passengers and freight transportation services as well as from its supportive role in other economic activities, mainly in the island regions.

The economic impact from the demand for domestic coastal shipping services in 2013 in terms of GDP is estimated at \pounds 1.5 billion, whereas the contribution in employment is estimated at about 21,400 jobs, of which about 5,000 jobs correspond to the employment in the sector (direct effect). However, the contribution is substantially higher when we also consider the catalytic effects associated with tourism and the growth of primary and manufacturing sector in islands. The economy of the islands is based on tourism, trade and agriculture, i.e. sectors that depend strongly on the smooth interconnection of the islands to the mainland. By combining the direct, indirect and induced benefits from the demand for coastal services in the domestic routes along with the catalytic effects, the total contribution in GDP terms is approximately \pounds 11.8 billion or 6.5% of Greek GDP, while in terms of employment it accounts for about 260,000 jobs (7.2% of the total workforce in Greece and about half of the total employment in the Greek island regions).

Given the current market conditions, **the rationalisation of the sector's capacity and the coastal transport network are necessary**. The negotiations of some coastal shipping firms with the domestic banking institutions for debt restructuring is considered as a first step towards the sector's recovery.



	Impact from Coastal shipping fares in the domestic routes	Catalytic Effects in the Greek islands	Total
Gross Value Added (million €)	1,200	8,886	10,086
GDP (million €)	1,512	10,334	11,846
Employment (thousand)	21	239	260
Tax Revenues (million €)	449	1,693	2,142

The economic impact of the domestic coastal maritime sector in the Greek economy, 2013

Source: IOBE estimations

In order for the sector to adjust in the current market conditions, the continuous reduction of the operating costs, along with the maintenance of best possible quality transportation services, should be the primary objective. In the short-term, some measures on the demand side, such as the reduction of surcharges imposed on fares, can be beneficial, yet quite a few elements of the regulatory framework in the coastal maritime sector should also be re-examined. The following indicative policy proposals would be helpful to consider towards this direction:

- Reduced operating costs. Given that the fuel cost is to a large extent exogenously determined¹ the operating costs can be reduced, by lowering the crewing costs (for instance, through subsidies of the social security contributions), changing the on-board staff composition requirements to be adequately matched to the real operation needs of the vessels and abolishing the requirement for adequate knowledge of Greek for the crew that is not in charge according to the international standards of duties related to safety. Additionally, reducing the period of compulsory operation in regular routes (with a compensation for providing public services, reduction of the period of compulsory seamen employment and provision for unemployment benefits) would also help in this direction.
- Consider the possibility of abolishing the surcharges that support public service lines, the reduction of fees for port use where the reciprocating services are lacking as well as the revision of the obligatory discount scheme for certain user categories.
- Examine the possibility to reduce the VAT rates on coastal fares for passengers and vehicles. Using three different scenarios, we estimated that the reduction of the VAT on passenger and vehicle (cars and motorcycles) fares could – under certain conditions (e.g. full pass-through of the VAT reductions onto fares) – increase the demand for coastal services. This is expected to have a positive impact both on the sector and the economy of the Greek coastal regions due to a boost in the number of visitors. Additionally, any losses in revenues from the VAT reduction could be counterbalanced from potentially higher tax revenues resulting from the increased economic activity in the Greek island regions, provided that the new demand in the island regions does not reduce tourism demand elsewhere in the country and tax-evasion does not erase more than 60% of the potential tax revenue gains in the Greek islands. Therefore, under certain circumstances the reduction of the tax rates on passenger and vehicle fares should not have negative fiscal implications.
- **Modernisation of the ticketing system:** The gradual adoption of new technologies by the consumers, along with an upgrade of the IT systems of the shipping firms and adjustment of the regulatory framework could facilitate the use of e-tickets in the maritime sector, as in the case of airlines. With the necessary adjustments and under the condition that any issues arising are resolved (for instance in relation to the capacity of port infrastructures to handle large number of

¹ Excluding the charges imposed for withholding strategic oil reserves, for which the possibility of reductions can be examined.

passengers and vehicles with e-tickets), the services provided to passengers could improve further, while the shipping firms would be able to make savings and at the same time extend the implementation of dynamic pricing systems, allowing them to manage their revenue streams more efficiently.²

Scenario	Additional Visitors (million.)	Additional Revenues for Coastal shipping firms (€ million.)	Additional tourism expenditure (€ billion)	Additional GDP in the economies of the Greek islands (€ billion)	Additional job- years in the economies of the Greek islands (thousand)	Discrepancy in VAT from ticket sales (€ million)	Additional VAT from tourism expenditure (€ million)
Α	0,6	31	0,4	0,6	10,4	-12,6	37,0
В	2,1	100	1,5	2,1	35,3	-51,5	125,9
С	2,5	117	1,8	2,5	42,0	-62,3	149,6

Projection of VAT revenues, 2014-2016

Source: IOBE

- Re-organisation of the coastal maritime system. The maritime transport network should be reorganised in order to serve best the existing needs and at the same time to utilise better the funds provided for the compensation of public-service lines. This means that an assessment of the existing subsidised coastal routes is necessary taking into consideration the following issues: Are the coastal transportation needs covered by the existing commercial routes? Are there alternative connection means (e.g, roads between the ports of the same island)? Do the routes fall under the minimum connection requirements? What is the cost per passenger? Additionally, the reorganisation of the coastal maritime system implies that the calls for expression of interest on coastal routes could take place more than once in a year.
- Re-examination of the compensation system for "public service obligations" across all means of transportation (sea, air, etc.). The proposed abolishment of the surcharge in favour of the public-service lines, which distorts the coastal maritime market (through cross-subsidies), implies that the compensation awarded for the execution of public services should be re-assessed in total, so as to ensure that the resources from the State Budget are distributed, treating all users equally. Studies have underlined the lack of appropriate planning with regard to this issue. For instance, in some routes the level of compensation is disproportionally low, while overlaps have been observed among coastal and air routes, as well as among air-transport public service obligations and profitable coastal shipping routes.
- Along with the re-design of the coastal network the potential of establishing regional transit hubs that enable the fast correspondence with smaller islands – in combination also with other means of transportation (e.g. buses, airlines, seaplanes) – should also be examined in detail. However, it should be underlined that such initiatives face numerous obstacles (e.g. complexities in handling passengers and luggage).
- **Improvement of processes:** a) Commercial route applications b) Choice of vessels used on public service routes, c) Compensation for executing public services, d) Tender terms for public service routes based on criteria with regard to seasonality, capacity of vessels and introduction of quality criteria (such as speed, comfort, fares, etc).

In conclusion, the contribution of the coastal maritime sector to the Greek economy is substantial, yet the preservation and the expansion of this impact depends to a large extent on the implementation of

² The plans to modernise the ticketing system are already at an advanced stage, with the issuance of the relevant presidential decree expected shortly.



structural and sector policy measures. These policies should aim at the minimisation of the costs for the supplied maritime services, so as to ensure the sustainability of the sector, without sacrificing the quality of these services.



1. Introduction

The exit from the on-going crisis of the Greek economy requires coordinated action for transition to a new growth model. It is commonly accepted that the new model should give emphasis on the utilisation of the country's comparative advantages and on boosting exports and investment, so that the Greek economy can soon return to a growth path that would raise its economic activity and employment levels.

In this regard, the publication of studies on the growth potential and impact of sectors, such as Tourism and Shipping has taken off in the recent years. These two sectors combine the utilisation of the country's comparative advantages with the goal of boosting the exports of services, thus constituting significant pillars in support of the economic recovery effort in Greece.

The coastal maritime sector, located at the intersection of Tourism and Shipping and linking the island regions with the mainland, is tightly connected with Greece's economic development. Today, despite the sharp seasonality that characterises the demand for coastal maritime transportation in the country, the Greek coastal shipping is among the largest in Europe and the world. It is transferring more than 30 million Greek and foreign passengers per year (including the short-distance ferries), while the ships operating in the Greek market represent more than 7% of the world passenger shipping fleet. Its activity belongs to the "ecosystem" that supports tourism and in this regard its contribution to highquality transport services is boosting the country's tourist product. Given these significant dimensions, the market conditions, the institutional and regulatory framework and the business performance of the companies in the coastal maritime sector require constant monitoring and adjustment to the economic, social and technological changes.

The coastal maritime sector in Greece links about 120 inhabited islands with the mainland mostly on a daily basis. Meanwhile, it transports goods from and to the mainland, facilitating agriculture, manufacturing and trade in the islands. Therefore, its normal operation has significant social and economic implications for the islands, which often are underestimated. In this regard, the scope of the study is to outline the total contribution of the coastal maritime sector in the Greek economy and to highlight the wider significance of the smooth operation of the coastal maritime sector, which is tightly linked with the viability of the shipping companies.



The next chapter of the study describes the sector, presenting its key figures and analysing the financial performance of the largest companies in the sector. The economy of the island regions of Greece, which largely depend on coastal maritime transportation, is also outlined in this chapter. The multiplier effects from the sector's activity in the Greek economy is examined in the third chapter, where an attempt is made to quantify the direct and indirect effects on the Greek economy, together with the catalytic effects from tourism and the transportation of goods in the economy of the Greek island regions. The fourth chapter analyses the factors that hinder the fulfilment of the sector's potential and estimates the impact on the demand for coastal maritime services from reducing the VAT on passenger and car fares. The study ends with the formulation of policy recommendations, aimed at lifting the major obstacles faced by the sector in order to maintain and boost its significant contribution to the Greek economy.



2. The Sector of Coastal Shipping in Greece: Current Situation

- The Greek coastal shipping sector is one of the largest in Europe.
- The coastal shipping industry performs the indispensable function of linking the mainland with the islands of Greece.
- The number of ships operated by the large coastal shipping companies in Greece in 2013 is estimated at about 57, having declined significantly compared with the early nineties, due to the replacement of older vessels with new of larger capacity.
- The average age of the fleet operating from the Port of Piraeus, which serves most of the passenger traffic in Greece, stood at 11 years in 2013.
- Since 2010 the level of demand for coastal shipping services has declined steadily. Between 2009 and 2012, the total number of passengers was reduced from 16.8 to 12.8 million (-24%), the number of cars reduced from about 2.4 to 1.7 million (-29%) and the number of trucks from about 868,000 to 618,000 (-29%).
- The coastal shipping activity is characterised by high seasonality, especially with respect to the traffic of passengers and cars, as about half of the transportation is performed during the summer months.
- The fluctuation of the fuel prices strongly influences the performance of the sector. The fuel costs constitute more than half of the total turnover of the companies in the sector, as the global prices of petroleum products have risen significantly in the past few years.
- The financial performance of the sector is extremely weak, reflecting the effects of two parallel exogenous supply (increased fuel costs) and demand (sharp drop of traffic) shocks.
- The islands of Greece offer income and employment to a significant part of the population (about 12%). Sectors such as tourism, trade and agriculture, which depend strongly on the reliable interconnection between the islands and the mainland, have an increased importance for the economy of the islands.

2.1 Sector description

The multitude of islands in the country justifies the need for sufficient, good-quality maritime transport, given that in Greece there are more than 120 inhabited islands, with a population of over 1.3 million people. The coastal shipping sector, therefore, performs an important function, linking the mainland with the islands.

The Greek coastal shipping is one of the largest in Europe. Greece and Italy are the EU member states with the highest passenger traffic, as each one covers approximately 17-18% of the total coastal passenger traffic in Europe (Figure 2.1), even though in Greece, due to the multitude of islands, the coastal shipping lines are clearly more than in Italy.





Source: Eurostat

The sector companies operate ships both within the country and in the lines connecting Greece with Italy. The main domestic lines connect the Attica region with the Cyclades, Crete, the Dodecanese, the North Aegean, the Saronic and the Sporades islands. The companies also operate on lines under public service contracts that would not have been served without some financial support.



The main services in the coastal shipping sector include the transport of passengers, cars and trucks, the on-board sales in restaurants, bars & shops and (to a lesser extent) the chartering of ships.

Regarding its statistical classification in NACE Rev.2 (STAKOD - 08), passenger coastal shipping is part of Water Transport (sector 50) and specifically of the subcategory "Sea and Coastal Passenger Water Transport" (sector 50.1). This economic activity includes transport services that the sector companies of the industry offer in the main lines that start from the country's major ports (Piraeus, Rafina, Volos, Patra) and in the secondary lines between regional ports and islands in the Aegean and the Ionian seas.

It should be noted that in this study we do not examine the ferry lines which make short distance journeys e.g. Rio - Antirrio. Also, we are not dealing with the carriage of goods by companies operating in the short-sea shipping sector.

2.2 Economic activity in the sector

The companies in the sector operate with owned and chartered vessels on domestic routes and the Adriatic. The routes in the main lines are run either individually by each company, or (in recent years) with two companies operating jointly on a particular route (i.e. ANEK and SUPERFAST operating jointly on the route "Piraeus - Heraklion").

The number of vessels operating in the Greek market by the large coastal shipping companies is estimated at about 57 in 2013, having, however, declined significantly compared with the early nineties. This reflects the replacement of older with new ships of larger capacity, together with the fall of passenger traffic in the past few years. The ships are mostly owned by the shipping companies that operate them. Under programmes of efficient fleet management, ships are being chartered to foreign companies.

The average age of the ships differs along the coastal maritime routes. In the Aegean lines, which absorb most of the demand, about 80% of the traffic is served by ships built in the early 2000s, and as a result their average age is about 11 years. Meanwhile, a modern fleet of ships that in certain cases are not more than six years old (e.g. Superfast I and Superfast II on the Patras-Bari route) carry out the transport activity on the Greece-Italy lines.

Regarding the demand for shipping services, the impact from the adverse economic conditions is reflected in the course of traffic of passengers and vehicles. In greater detail,



the passenger transport between 2006 and 2009 followed a steady trend with the average annual passenger traffic reaching 17 million passengers. However, since 2010 the level of demand have been declining steadily recording a drop at an average annual rate of 9.6%, while the total number of passengers fell to about 12.8 million in 2012 (Figure 2.2).



Figure 2.2: Passenger traffic in coastal shipping, 2006-2012

Note: Excluding short-distance ferry lines and the routes under the category "Other Lines" according to the classification by the Hellenic Statistical Authority (mainly secondary routes between islands) **Source:** ELSTAT





(*) The number of passengers in "secondary lines" that run between islands are not taken into account.

Source: ELSTAT

Based on data available for the first nine months of 2013, the passenger traffic seems to have stabilised in the previous year, fluctuating at about the same level with the corresponding period of 2012 (10.9 million passengers). In geographical terms, the highest passenger traffic occurs in the lines of the Cyclades and Crete (Figure 2.3), where more than half of the total passenger traffic takes place.

A similar trend with that of passenger transport was observed in the case of cars.³ Between 2006 and 2009 on average 2.4 million vehicles annually were transported by the coastal shipping in Greece, without much year-on-year fluctuation. However, since 2010 the demand for the transport of cars has contracted faster compared to passenger traffic (-11%). As a result, in 2012 the number of shipped vehicles was lower by about 764,000, compared with 2007 (the peak year) reflecting mostly the reduction of the disposable income of the households (Figure 2.4).



Figure 2.4: Number of cars transported by coastal shipping, 2006-2012

Note: Excluding short-distance ferry lines and the routes under the category "Other Lines" according to the classification by the Hellenic Statistical Authority (mainly secondary routes between islands) **Source:** ELSTAT, IOBE estimations

In freight transport, the number of trucks amounted to about 874,000 on average per year between 2006 and 2009. Here too economic activity has declined since then, as in 2012 the number of trucks reached about 618,000, having fallen by about 162,000 since 2010 (Figure 2.5). In the first nine months of 2013, the transport of vehicles (cars and trucks in total) declined further by 1.6%.

³ The car traffic includes data on motorcycles, buses and campervans.





Figure 2.5: Number of trucks transported by coastal shipping, 2006-2012

Note: Excluding short-distance ferry lines and the routes under the category "Other Lines" according to the classification by the Hellenic Statistical Authority (mainly secondary routes between islands) **Source:** ELSTAT, IOBE estimations

The activity in the industry is highly seasonal, which has a direct impact on the financial results of the sector companies. This trend is reflected to a greater extent in the shipping of passengers and cars, where about half of the trips take place during the summer months, reflecting the tourist demand for island destinations. In contrast, the shipping of trucks shows little variation, as it is distributed more smoothly throughout the year (Figure 2.6).



Figure 2.6: Seasonality in coastal passenger and vehicle traffic, 2012



Source: SEEN

Finally, the fluctuation of the fuel prices strongly influences the performance of the sector. The fuel costs constituted more than half of the total turnover of the companies in the sector in 2012, as the global prices of petroleum products have risen significantly in the past few years. In turn, this affects the fares for passengers and vehicles and the profitability of the coastal shipping companies.

2.3 Financial Analysis

This section analyses the financial structure and results of the companies operating in the coastal shipping sector. The data of the analysis is based on published balance sheets and income statements for the period 2007-2013. The companies with the legal form "Shipping Company" are not obligated to publish balance sheets, so the following analysis is based on data from the consolidated financial statements of limited liability companies (société anonyme and shipping société anonyme). In particular, the analysis covers data from companies listed on the Athens Stock Exchange (Attica, ANEK, Minoan and NEL) and Hellenic Seaways.

The financial analysis of the above companies is performed both in total and for two geographical subcategories - domestic and international routes (mainly Adriatic). The scope of this separation is to highlight any differences in the results between two areas of operation with different regulatory framework and market conditions.

2.3.1 Financial indicators of the coastal shipping sector

The total assets of the large coastal shipping companies declined at an average annual rate of 5.3% between 2007 and 2013 (Table 2.1). The net value of fixed assets, which forms the largest part of total assets, had an average annual decline rate of 3.7%; a decline by 10.2% recorded in 2013 contributed significantly to this trend. Current assets also decreased, with an average annual rate of 12.6%, while the largest annual decrease was recorded in 2011 (-23%).

Between 2008 and 2012 lending underwent restructuring in favour of short-term loans, which was largely due to delays in the servicing of long-term debt and its conversion to overdue payables. The restructuring came also from both increased working capital needs and systematic refusal of banks to grant long-term loans, due to the tight liquidity in the banking system and the reduced solvency of the companies.



(mil. €)	2007	2008	2009	2010	2011	2012	2013	CAGR 2007-13	Y-o-y '12-'13		
Income Statement											
Turnover	994	1,073	966	914	912	788	754	-4.5%	-4.3%		
Cost of Sales	719	860	801	878	896	767	683	-0.9%	-10.9%		
Profit before Income Tax	129	1	-4	-244	-240	-276	-173	-	37.6%		
Balance Sheet											
Total Assets	2,762	2,773	2,745	2,581	2,387	2,201	1,988	-5.3%	-9.7%		
Net Value of Fixed Assets	2,179	2,316	2,255	2,180	2,079	1,940	1,743	-3.7%	-10.2%		
Depreciation	77	75	82	81	79	79	75	-0.5%	-5.9%		
Inventories	24	22	25	34	30	21	15	-7.1%	-28.4%		
Current Assets	547	457	408	401	309	261	245	-12.6%	-6.2%		
Total Equity	1,279	1,249	1,243	1,129	926	649	664	-10.3%	2.3%		
Short-term Liabilities	286	333	655	427	747	1,370	959	22.3%	-30.0%		
Long-term Liabilities	1,191	1,187	848	1,026	714	183	365	-17.9%	100.0%		
Total Liabilities	1,477	1,520	1,502	1,453	1,461	1,553	1,324	-1.8%	-14.7%		

Table 2.1: Key financial results

Source: Annual Financial Statements Data processing: IOBE

In 2013, this trend came to an end, as the long-term liabilities doubled, while short-term debt decreased by 30%. This change was largely due to the recording of debt securities of Minoan Lines (with an outstanding balance of \leq 211 million as of 31/12/2013) as short-term liability in 2012 and long-term debt in 2013.⁴

Meanwhile, the examined companies became more reliant on foreign capital between 2007 and 2013, as equity decreased stronger (at an average annual rate of -10.3%) compared to total assets (-5.3%). The dependence on debt is confirmed by the course of the debt-to-assets ratio which exceeded 70% in 2012 from 53% in 2007 (Table 2.2). The share of funds allocated to current assets decreased over time from 20% in 2007 to 12% of total assets in 2012, reflecting the reduced market liquidity.

As was the case in the time structure of liabilities, in 2013 the trend in capital allocation changed sign, with equity increasing modestly by 2.3% and the debt pressure to fall to 67%. This positive development came both from the new equity issue of Minoan Lines (\leq 51 million) in November 2013, and from the increase of the reserve capital of NEL by \leq 129 million, as a result of the restructuring of the debt of the company.

General liquidity in 2007 and 2008 was quite high, indicating that the current assets of the companies could cover sufficiently their short-term obligations. However, in 2009 liquidity

⁴ One of the ratios included in the terms of the bond (Total consolidated liabilities, except state subsidies, over total consolidated assets) was temporarily exceeded as of 31.12.2012. The ratio was brought within the set limits in 2013 and as a result the bond was recorded once more as a long-term liability.



deteriorated sharply, reaching its lowest level in 2012 (0.19). In 2013 liquidity improved somewhat, without returning to the levels observed before 2012.

		2000		2010	0011	0010	0040			
(MII. €)	2007	2008	2009	2010	2011	2012	2013			
Profitability										
Net Profit Margin	12,9%	0,1%	-0,4%	-26,7%	-26,3%	-35,1%	-22,9%			
Gross Profit Margin	27,7%	19,9%	17,0%	3,9%	1,7%	2,7%	9,5%			
Return on Equity	10,1%	0,1%	-0,3%	-21,7%	-25,9%	-42,6%	-26,0%			
Return on Assets	4,7%	0,0%	-0,1%	-9,5%	-10,1%	-12,6%	-8,7%			
	Capital	Structure								
Current Assets / Total Assets	19,8%	16,5%	14,9%	15,5%	12,9%	11,9%	12,3%			
Debt Pressure (Total Liabilities / Total Assets)	53,5%	54,8%	54,7%	56,3%	61,2%	70,5%	66,6%			
	Lic	uidity								
General Liquidity	1,91	1,37	0,62	0,94	0,41	0,19	0,26			
Direct Liquidity	1,83	1,31	0,59	0,86	0,37	0,17	0,24			
Short-term Liabilities to Sales	0,29	0,31	0,68	0,47	0,82	1,74	1,27			
Short-term Bank Liabilities to Sales	0,27	0,13	0,19	0,20	0,51	1,05	0,90			
Solvency										
Interest to Sales	0,07	0,07	0,05	0,05	0,06	0,07	0,07			
Financial Expenses Coverage	2,18	1,17	0,83	-2,15	-1,18	-1,23	-0,05			
Z-score	1,88	1,37	0,38	0,74	-0,30	-2,79	-1,49			

Table 2.2: Key financial ratios

Note: Data included for listed companies Attica Group, ANEK, MINOAN, NEL, along with Hellenic Seaways, which includes their operation both in the domestic market and on the Adriatic routes.

Source: Annual Financial Statements

Data processing: IOBE

Regarding the income statement, the turnover of the companies in the sector declined in 2013 for a fifth consecutive year, with an average annual decline rate of 4.5%. The contraction of turnover by 14% in 2012 was a key factor in this development. At the same time, the cost of sales increased significantly in 2008 and 2010, mainly due to the course of international oil prices, and fell by 10.9% in 2013. The decline in the past year mainly came from measures to contain the fuel cost (such as slow steaming, route optimisation and propeller upgrades) and the slight decline of fuel prices in the global markets.

The companies' profitability declined between 2007 and 2012, recording a slight recovery in 2013. The gross profit margin stood relatively high in 2007 (27.7%) but in the following years it declined significantly to 1.7% in 2011. As a result of the measures to limit the cost of sales, the gross profit margin has improved since then to reach 9.5%, its highest level since 2009. The net profit margin also improved in 2013, yet it has remained significantly negative (-23%).

The return on equity deteriorated significantly in 2010 and 2012, declining by 21 and 17 percentage points respectively, both due to the net losses and the decline of the value of equity as a result of the accumulation of losses over the crisis years. As net losses fell from €276 million in 2012 to €173 million in 2013 and the value of equity consolidated, the ratio



improved by 17 percentage points in 2013, yet it remained negative. The return on assets followed a similar trend to that of ROE, albeit with less fluctuation, reaching -8.7% in 2013. As regards solvency, the ability of the companies to cover their financial expenses has been very limited, especially between 2010 and 2012, while the z-score⁵ indicates that since 2009 the sector has remained in the zone of distress, despite the slight improvement recorded in 2013.

2.3.2 Financial indicators per geographical region

The analysis of the financial results per geographical sector is hindered by the fact that the financial statements of most companies in the sector contain figures for their total activity, which includes shipping services both in the country and abroad. The notes to the financial statements contain a breakdown per sector of operation, yet the breakdown covers relatively few indicators (mainly from the income statement), with differences across the companies. In addition, some of the financial results cannot be allocated to any specific geographic region (e.g. revenues from chartering ships to other operators abroad).

(€ million)	2007	2008	2009	2010	2011	2012	2013	CAGR			
Domestic routes											
Turnover	521	594	576	522	519	462	433	-3.1%			
Cost of Sales	381	473	468	516	514	456	404	1.0%			
Net Profits (before tax)	49	3	7	-142	-132	-164	-120	-			
Total Assets	1085	1209	1430	1401	1367	1367	1170	1.3%			
International routes											
Turnover	438	457	258	358	374	308	297	-6.3%			
Cost of Sales	313	370	227	336	368	295	261	-3.0%			
Net Profits (before tax)	39	-9	-6	-86	-101	-104	-48	-			
Total Assets	1079	1341	912	826	711	426	431	-14.2%			
	Į	Unallocat	ted sums								
Turnover	35	21	132	34	18	18	25	-5.6%			
Cost of Sales	24	16	106	26	14	16	17	-5.5%			
Net Profits (before tax)	40	7	-5	-16	-7	-9	-5	-			
Total Assets	598	223	403	355	310	408	388	-7.0%			

Table 2.3: Financial results per geographic sector

Source: Annual Financial Statements Data processing: IOBE

Bearing in mind the above limitations, there seems to be a shift of activity towards the domestic market, judging at least from the asset composition. The domestic routes had 73% of the allocated assets in 2013, from 50% in 2007. This change came from the clearly stronger contraction rate of assets in the international routes, due to fleet restructuring (Table 2.3), with rescheduling of vessels from the Adriatic to the domestic market by the



⁵ The z-score indicator is presented in more detail in the Appendix of this chapter.

Attica Group in 2009 and the chartering of ships previously active in the Adriatic by Minoan Lines in 2012 (the value of the ships is now recorded as "unallocated assets" in the Minoan Lines balance sheet breakdown by operation sector).

The shift to the domestic market is notably weaker in turnover terms, where the share of the domestic routes has increased by 5 percentage points since 2007, reaching 57% in 2013 (Table 2.4). The average annual contraction rate was stronger in the international routes (-6.3%) than in the domestic market (-3.1%). A similar shift was observed in cost-of-sales terms, where as a result of the upward trend until 2010-11 and its decline since then, the domestic lines had slightly higher cost of sales in 2013 than in 2007, in contrast with the international routes, where the cost of sales was lower at the end of the period under examination. Combining the trends in turnover and cost of sales, there was no notable differentiation between the gross profit margins in the two geographic regions, with the difference fluctuating between -5.1% and 6.9% during that period (Table 2.5).

(% του συνόλου)	2007	2008	2009	2010	2011	2012	2013		
Domestic routes									
Turnover	52%	55%	60%	57%	57%	59%	57%		
Cost of Sales	53%	55%	58%	59%	57%	59%	59%		
Net Profits (before tax)	38%	347%	-197%	58%	55%	59%	70%		
Total Assets	39%	44%	52%	54%	57%	62%	59%		
	In	iternationa	l routes						
Turnover	44%	43%	27%	39%	41%	39%	39%		
Cost of Sales	44%	43%	28%	38%	41%	39%	38%		
Net Profits (before tax)	31%	-1109%	162%	35%	42%	38%	28%		
Total Assets	39%	48%	33%	32%	30%	19%	22%		
	Į	Unallocated	d sums						
Turnover	4%	2%	14%	4%	2%	2%	3%		
Cost of Sales	3%	2%	13%	3%	2%	2%	3%		
Net Profits (before tax)	31%	862%	136%	7%	3%	3%	3%		
Total Assets	22%	8%	15%	14%	13%	19%	19%		

Tab	le 2.4	: Composition	of the	financia	l resul	lts pei	r geograp	hic s	ector
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Source: Annual Financial Statements Data processing: IOBE

Regarding profitability, the trends in the two geographic sectors are similar, with both regions recording profits in 2007, marginally positive or negative results in 2008-2009 and losses ever since. However, the contribution of the domestic routes in the losses between 2010 and 2012 (55%-59%) and especially in 2013 (70%) is notably stronger that their contribution to the profits in 2007 (38%).

As a result of the changes in turnover, the net profit margin of the domestic routes is slightly lower for most of the years in the period between 2010 and 2013. In ROA terms, the



domestic routes continue to perform better, largely due to the stronger asset contraction in the international routes, which record higher ratio of losses over total assets, compared with the domestic routes.

	2007	2008	2009	2010	2011	2012	2013			
Domestic routes										
Gross Profit Margin	26,8%	20,4%	18,8%	1,2%	1,0%	1,4%	6,6%			
Net Profit Margin	9,5%	0,5%	1,3%	-27,3%	-25,4%	-35,4%	-27,7%			
Return on Assets	4,5%	0,2%	0,5%	-10,2%	-9,7%	-12,0%	-10,3%			
International routes										
Gross Profit Margin	28,5%	19,0%	11,9%	6,2%	1,5%	4,1%	1,5%			
Net Profit Margin	9,0%	-2,1%	-2,3%	-24,0%	-27,1%	-33,8%	-27,1%			
Return on Assets	3,6%	-0,7%	-0,7%	-10,4%	-14,2%	-24,4%	-14,2%			
		Differer	nce							
Gross Profit Margin	-1,7%	1,4%	6,9%	-5,1%	-0,5%	-2,7%	5,1%			
Net Profit Margin	0,5%	2,6%	3,6%	-3,3%	1,6%	-1,7%	-0,7%			
Return on Assets	0,9%	1,0%	1,2%	0,2%	4,6%	12,4%	4,0%			

Table 2.5: Profitability per geographic sector

Source: Annual Financial Statements **Data processing**: IOBE

2.4 Sector companies

Attica Group holds the highest market share in terms of turnover in the sector, with the indicator standing at 34.5% of turnover in the sample in 2013 (€260 million), followed by ANEK with 23.6% (€178 million) and Minoan with 21.4% (€162 million). Hellenic Seaways and NEL come next with 13.6% (€103 million) and 6.8% (€52 million) respectively.





Figure 2.9 shows the indicator Altman z-score for non-manufacturing companies, which measures the risk of financial distress of a company. According to Altman, one company is in good financial health when the z-score is greater than 2.9, in an alarming state (grey zone) when the z-score is between 2.9 and 1.23 and at high risk when the z-score is below 1.23 (distress zone).



Figure 2.8: EBITDA per company between 2007 and 2013

Source: Annual Financial Statements Data processing: IOBE





Source: Hellastat, Annual Financial Statement of companies **Data processing**: IOBE



All the examined companies have been in the distress zone in the past three years, as the indicator has been lower than 1.23. Attica Group has been in the distress zone since 2011, Hellenic Seaways and Minoan since 2009, ANEK since 2008 and NEL since the beginning of the period under examination. The difficulty of achieving financial robustness over the long-term in the coastal shipping sector is revealed by the fact that even in 2007, no company achieved a value above 2.9 of the z-score (safe zone). The performance in terms of the z-score of Attica Group, Minoan and NEL improved substantially in 2013, yet these companies remained within the distress zone.

2.4.1 Attica Group

The company manages a fleet of 13 ships, 4 of which belong to Superfast and 9 to Blue Star Ferries. The company strengthened its coastal shipping fleet by launching the newly built Ro-Pax ship Blue Star Patmos, along the route Piraeus - Chios – Lesvos in July 2012. One more new ship - Blue Star Delos - was launched in the Cyclades in the 4th quarter of 2011.

The company operates in the Adriatic Sea on the routes Patras - Igoumenitsa - Ancona and Patras - Igoumenitsa - Bari, with an intermediate stop at the port of Corfu during the summer months. In Greece, the company is operating in the Cyclades, the Dodecanese, the line Piraeus - Heraklion and since July 2012 the line Piraeus - Chios - Lesvos. The itineraries of the ships of the company have increased annually by 3% in the domestic market and have decreased by 8% in the Adriatic.

Turnover in 2013 amounted to ≤ 260 million instead of ≤ 256 million in 2012, with the growth rate reaching 1.6%. Earnings before interest and taxes in 2013 reached ≤ 2.0 million, compared to losses of ≤ 17.7 million in the previous year. Similarly, the after tax net loss amounted to ≤ 10.1 million in 2013 from ≤ 54.0 million in 2012. It should be stressed, that the results for 2012 incorporate a loss of ≤ 20.4 million from revaluation of tangible assets (ships), as well as an accounting loss of ≤ 6.4 million resulting from the sale of Superfast VI. The significant improvement in the results of the Group with respect to 2012 came from a reduction of the administrative costs, while the fall of the fuel prices also contributed to this positive development.

2.4.2 ANEK Lines

The company was founded on 10 April, 1967, under the company name "Crete Shipping Company SA" and the trade name "ANEK Lines". It manages 15 vessels, 10 of which are



privately owned, with an average age of around 23 years, which is among the highest in the market.

The ANEK Lines group followed a strategy aiming to reduce the operating costs in order to compensate for the negative consequences of lower demand and higher fuel prices in 2011 and 2012. This strategy included measures, such as fewer itineraries, lower speed, withdrawal of ships from unprofitable lines, ship replacement and procurement system reorganisation. Since June 2011, ANEK is operating itineraries jointly with "Attica S.A. Holdings" in the routes to Heraklion and Ancona, through the joint venture "ANEK – Superfast" established for this purpose.

The Group's turnover amounted to ≤ 178 million in 2013, compared to ≤ 200 million in 2012. The consolidated gross profit in 2013 amounted to ≤ 23.3 million, compared to ≤ 22.4 million in 2012. The cost of sales amounted to ≤ 155 million in 2013, compared with ≤ 177 million in the previous year. The decrease in the operating costs in 2013 was mainly due to more efficient management of ships and itineraries and a small decline in fuel prices compared to 2012. The earnings before interest, tax, depreciation and amortisation (EBITDA) increased as a result, amounting to ≤ 6.5 million, compared to ≤ 4.2 million in 2012.

The group's net results after tax and minority interest amounted to losses of ≤ 35.7 million in 2013, compared to losses of ≤ 60.8 million in 2012. It should be noted that the results in both 2012 and 2013 were significantly affected by the revaluation of the vessels' value, by ≤ 35.5 million and ≤ 15.3 million respectively.

2.4.3 Minoan lines

Minoan Lines operates both in the domestic market with 2 vessels connecting Piraeus with Crete and in the Adriatic with 4 vessels. The company followed in the recent years a policy of operating cost reduction, in order to overcome the difficulties arising from the economic downturn. Following the decision to withdraw from the line Patras-Venice from 01/04/2012, the company chartered the ships HSF Olympia Palace and HSF Europe Palace to the Italian Compagnia Italiana di Navigazione, the main shareholder of Minoan Lines. Meanwhile, Minoan Lines launched the new route Patras-Igoumenitsa-Ancona-Trieste in the first week of December 2012.

The financial results of the company improved in 2013. In particular, turnover increased to €162 million from €153 million in 2012. The cost of sales amounted to €140 million against



€154 million in the previous year. The decrease came mainly from the company's strategy of fuel cost reduction (slow steaming and an upgrade of the propeller systems) and rationalisation of the payroll cost.

The earnings before interest, taxes, depreciation and amortisation (EBITDA) stood at ≤ 16.1 million in 2013, compared to losses of ≤ 7.2 million in 2012. Net income (after taxes) amounted to losses of ≤ 14.8 million, compared to losses of ≤ 51.3 million in the previous year.

2.4.4 Hellenic Seaways

Hellenic Seaways has been operating in the Greek market since February 1999. In 2013 its fleet comprised 19 ships in operation in Greece, serving the Cyclades, the North-East Aegean, the Saronic islands and the Sporades. It also operates in the Adriatic with RO-RO freight ships.

In 2013 the Company signed agreements to charter abroad the ships HELLENIC WIND and EXPRESS SANTORINI, a measure which bolstered its liquidity. At the same time, it signed a 3-year agreement with Cosmote, which envisages the mobile phone operator using the company's high-speed boats for advertisement. In February 2014 the company deposited a proposal for the restructuring of its bank debt, while in the following month it signed an agreement to charter its ship Nisos Chios in the Western Mediterranean.

Turnover amounted to ≤ 103 million in 2013, falling by 7.6% compared to the previous year. The cost of sales also declined, by ≤ 11 million (9.1%), due to fewer itineraries and lower fuel cost, nevertheless gross earning remained negative (- ≤ 4.8 million). The selling and administrative expenses fell as well (≤ 1.0 million, 6.0%), which however was not enough to prevent negative operating results. Hellenic Seaways reported negative EBITDA of ≤ 6.3 million, from ≤ 7.9 million in 2012.

The Group's after tax net results deteriorated further, as the company reported losses of \notin 53 million, compared to losses of \notin 35 million in 2012. The deterioration came mainly from revaluation of the companies' vessels by \notin 21 million and extraordinary losses of \notin 2.4 million from the sale of the ships Hellenic Master and Hellenic Trader.



2.4.5 NEL Lines

NEL Lines was established in 1972, with shareholders the residents of the Lesvos Island and the primary aim to purchase a vessel to operate on the route Lesvos-Chios-Piraeus. The fleet of NEL Lines constitutes of 16 vessels and executes itineraries connecting Piraeus with Chios and Lesvos, Syros and Lavrion with the Eastern, Central and Western Cyclades, Lavrion with Psara and Mesta of Chios, Northern and Central Greece with the Sporades, and the islands of the Northern Aegean (Chios, Lesvos, Ag. Efstratios, Limnos, Samos, Ikaria) with Thessaloniki, Kavala and Lavrion. In addition, NEL Lines connects Lesvos with Dikili and Ayvali in Turkey. In the freight sector, the company operates with Ro-Ro ships from Piraeus to Kalymnos, Kos, Rhodes, the Cyclades and Ikaria, and with Ro-Pax ships in the Adriatic Sea.

The turnover of NEL Lines in 2013 decreased by 24.2% compared with 2012, to reach \notin 51.5 million. EBITDA amounted to - \notin 45.8 million in 2013, compared to losses of \notin 62.3 million in the previous year. The results before and after taxes in 2013 amounted to a loss of \notin 59 million compared to a loss of \notin 75.7 in 2012. The above results were negatively impacted by \notin 32.3 million in 2013 and \notin 34.7 million in 2012 by revaluation of the ships at their fair value.

It should be noted finally that the consolidation plan, submitted by the company in accordance with the provision of Article 106 of Law 3588/2007, was approved by a threejudge panel of the North Aegean Court of Appeals (No. 124/12.12.2013). The judgment validated the consolidation agreement, constituting consequently a positive development for the further progress of the company, provided that the plan proves to be effective in practice.

2.5 The economy of the Greek islands

The coastal shipping sector is one of the key growth drivers for the Greek islands, connecting them to the mainland. The four island regions of Greece – the Ionian Islands, the North Aegean, the South Aegean and Crete - are inhabited by 12.3% of the country's population (about 1.3 million people), generating 11.5% of the total GDP in Greece (about \pounds 24 billion in 2011). Moreover, they create jobs that cover 12.2% of the country workforce (Table 2.6).

Over time, compared with the rest of the country, the crisis seems to have affected slightly more the Greece islands in terms of GDP, as the share of the region in Greek GDP declined from 11.8% in 2005 to 11.5% in 2011. In contrast, the share of employment, after the drop recorded in 2008, increased marginally amid the crisis (from 11.9% in 2008 to 12.1% in



2011). Regarding investment, the decline was significant, but weaker than in the rest of the country, as the share of the Greek islands rose from 13.3% in 2007 and 12.0% in 2008 to 16.5% in 2011.

Key economic indicators	2005	2006	2007	2008	2009	2010	2011
GDP (mil.)	22,852	24,482	26,006	27,269	27,005	25,557	23,999
% of total in Greece	11.8	12.0	11.7	11.7	11.7	11.5	11.5
Employment (thou.)	577	570	581	582	579	564	542
% of total in Greece	12.4	12.0	12.1	11.9	11.9	12.0	12.1
Investment (mil.)	5,051	5,576	7,843	7,007	4,204	3,753	3,338
% of total in Greece	12.6	11.8	13.2	13.3	12.0	12.7	16.5
Source: ELSTAT							

Table 2.6: Key economic indicators of the Greek island regions

Source: ELSTAT

Figure 2.10: Sector composition of employment in the Greek island regions



A. Sector composition of employment

% of employment



B. Difference in the composition of employment

Difference, compared with the country average

Source: ELSTAT

As regards the sector composition (Figure 2.10), 37% of the manpower in the Greek islands is employed in Trade-Transportation-Tourism (accommodation and catering), followed by the Public Sector (19%) and Agriculture (15%). Compared with the average of Greece, the sectors with stronger presence in the islands in employment terms are Trade-



Transportation-Tourism (+5%), Agriculture (+4%) and Construction (+2%), while Industry (-4%) and the Public Sector (-2%) have significantly weaker presence.

2.5.1 Crete

The region of Crete is the largest among the island regions of the country with about 623,000 inhabitants (5.8% of the population of Greece). In 2011 the regional GDP reached 10.2 billion. Over time, the share of Crete in the Greek GDP declined slightly from 5.0% in 2005 to 4.9% in 2011.

Key economic indicators	2005	2006	2007	2008	2009	2010	2011
GDP (mil.)	9,749	10,471	10,964	11,473	11,399	10,875	10,197
% of total in Greece	5.0	5.0	4.9	4.9	4.9	4.9	4.9
Employment (thou.)	276	276	278	274	271	264	255
% of total in Greece	5.9	5.8	5.8	5.6	5.6	5.6	5.7
Investment (mil.)	2,559	2,754	3,991	3,409	2,748	2,365	1,948
% of total in Greece	6.4	5.8	6.7	6.5	6.0	5.1	6.2
Course: ELCTAT							

Table 2.7: Key economic indicators for Crete

Source: ELSTAT

In addition, about 255,000 people work in the region of Crete. In contrast to GDP, the share of employment in the region increased marginally from 5.6% in 2008 to 5.7% in 2011. This result suggests a slightly smaller impact of the crisis in the region in terms of employment, compared with the country average.

Finally, investment in Crete declined faster than in the rest of the country in the early years of the crisis, with the share of investment in the region dropping from 6.7% in 2007 to 6.0% in 2009 and 5.1% in 2010. In 2011, however, the share recovered to 6.2%, indicating a milder contraction compared with the rest of Greece.

In terms of sector composition of employment in Crete, agriculture, tourism, transportation and the public sector are the main economic sectors in the region. Compared with the rest of the country, Agriculture (+7.7%), Trade, Transportation and Tourism (+3.3%) and Construction (+1.0%) have a stronger presence. On the other hand, Industry (-4.1%), the Public Sector (-3.1%) and Other Consumer Services (-1.7%) have comparatively lower participation in employment in the region.



Figure 2.11: Sector composition of employment in Crete







Source: ELSTAT

2.5.2 South Aegean

With approximately 309,000 inhabitants, the South Aegean is the second largest island region of the country (2.9% of the population). The GDP of the region amounted to \notin 7.1 billion in 2011 (Table 2.8). The share of the region in terms of GDP has remained relatively unchained over time (3.4%).

Table 2.8: Key economic indicators of the South Aegean region

South Aegean	2005	2006	2007	2008	2009	2010	2011
GDP (mil.)	6,465	6,897	7,391	7,872	7,900	7,487	7,076
% of total in Greece	3.3	3.3	3.3	3.4	3.4	3.4	3.4
Employment (thou.)	130	125	130	132	132	126	122
% of total in Greece	2.8	2.6	2.7	2.7	2.7	2.7	2.7
Investment (mil.)	1,152	1,383	1,853	1,881	1,455	1,386	1,388
% of total in Greece	2.9	2.9	3.1	3.6	3.2	3.5	4.9

Source: ELSTAT

The participation of the region in domestic employment has also been stable (2.7%), suggesting similar rates of contraction during the crisis with the rest of the country. In 2011 the number of employees in the region amounted to 122,000 people.

In contrast, in investment, despite the contraction in absolute terms, the share of the region follows an upward trend. From 2.9% of domestic investment in 2005, the participation of the South Aegean increased to 4.9% in 2011. This result raises expectations for increased participation of the region in the economic indicators of the country in the future.

As regards the sector composition of employment, in the South Aegean Trade, Transport and Tourism (+10.1%) and Construction (+5.2%) have a stronger presence. In contrast, Agriculture (-4%), the Public Sector (-3.0%) and Industry (-2.9%) have a weaker presence, compared with the rest of the country.

Figure 2.12: Sector composition of employment of South Aegean



A. Sector composition of employment





B. Differnce in the composition of employment

Difference with the country average

Source: ELSTAT

2.5.3 North Aegean

The North Aegean is the smallest of the four island regions in population terms (199,000 inhabitants, or 1.8% of the Greek population). In 2011 the regional GDP amounted to \leq 3.0 billion. Approximately 73,000 people on average in 2011 were employed in the North Aegean.



North Aegean	2005	2006	2007	2008	2009	2010	2011
GDP (mil.)	2,810	3,044	3,279	3,448	3,398	3,153	3,009
% of total in Greece	1.4	1.5	1.5	1.5	1.5	1.4	1.4
Employment (thou.)	74	76	78	75	75	75	73
% of total in Greece	1.6	1.6	1.6	1.5	1.5	1.6	1.6
Investment (mil.)	668	587	832	753	578	783	785
% of total in Greece	1.7	1.2	1.4	1.4	1.3	2.0	2.5
Source: ELSTAT							

Table 2.9: Key economic indicators for the North Aegean

Over time, the participation of the region in Greece's GDP and domestic employment is around 1.4% -1.6%, with no significant upward or downward trends. In contrast, investment in the region during the crisis increased, after a temporary drop in 2009, and as a result the participation of the region in the country's investment doubled from 1.3% in 2009 to 2.5% in 2011.

Figure 2.13: Sector composition of employment in the North Aegean



% of employment

B. Difference in the composition of employment



Difference with the country average

Source: ELSTAT

Compared with the country average, the Public Sector (+9.1%) has a stronger presence in the region, primarily due to increased needs for defence and border surveillance. In contrast, Industry (-3.6%) and Services have weaker presence.



2.5.4 Ionian Islands

The Ionian Islands region is the third largest in population terms among the island regions of the country (208,000 inhabitants, or 1.9% of the population of Greece in 2011). Compared with the share of the population living in this region, the contribution to GDP is lower (1.8% or ≤ 3.7 billion), while its contribution to employment is higher (2.1% or 92,000 jobs). This result indicates relatively low labour productivity in the region.

Key economic indicators	2005	2006	2007	2008	2009	2010	2011
GDP (mil.)	3,828	4,07	4,372	4,476	4,308	4,042	3,717
% of total in Greece	2.0	1.9	2.0	1.9	1.9	1.8	1.8
Employment (thou.)	98	93	95	100	101	97	92
% of total in Greece	2.1	2.0	2.0	2.1	2.1	2.1	2.1
Investment (mil.)	673	852	1.166	964	725	794	926
% of total in Greece	1.7	1.8	2.0	1.8	1.6	2.0	2.9
Source: ELSTAT							

Table 2.10: Key economic indicators of the Ionian Islands

Source: ELSTAT

Over time, the share of the region in domestic employment has remained fairly stable, but in terms of GDP, the contribution has receded. In contrast, investment increased remarkably amid the crisis, after the drop observed in 2009 (Table 2.10).

Figure 2.14: Sector composition of employment in the Ionian Islands





B. Difference in the composition of employment



Difference with the country average

Source: ELSTAT



Compared with the rest of the country, Trade, Transport and Tourism (8.7%), Agriculture (5.5%) and Construction (+1.9%) have enhanced contribution to employment. On the other hand, Industry (-6.2%) and the public sector (-5.6%) have significantly reduced participation (Figure 2.14).

2.5.5 Conclusions

The Greek islands provide income and jobs to a significant part of the population (about 12%). Sectors that depend to a large extent on the smooth interconnection between the islands and the mainland, such as tourism, trade and agriculture, have an increased importance for the economy of the islands. Therefore, the contribution of the Greek coastal shipping to the economy exceeds by far the economic activity of the sector itself, which must be taken into account in formulating policies for the sector.

2.6 Appendix

2.6.1 Altman z-score

The z-score is calculated using financial data and provides indications for the risk of a company finding itself in financial distress in the coming two years. The score was developed by Professor Edward I. Altman, New York University, in the 1960s.

Initially, using data on listed manufacturing companies and statistical methods, Altman examined the financial factors that differentiated the companies which had declared bankruptcy from corresponding surviving companies. Later on, with the same methodology, similar formulas were developed for private companies (z'-score) and for non-manufacturers (z''-score).

In this study we use the z"-score for non-manufacturing companies:

$$z''=6,56\frac{CA-SL}{TA}+3,26\frac{RE}{TA}+6,72\frac{EBIT}{TA}+1,05\frac{EQ}{TL}$$

Where: CA – Current Assets, SL – Short-term Liabilities, TA – Total Assets, RE – Retained Earnings, EBIT – Earnings before Interest and Tax, EQ - Equity and TL – Total liabilities.

According to Altman (2000), a company is in the distress zone if the value of the z"-score is lower than 1.23. On the other hand, if the score exceeds 2.9, the company could be considered as not facing significant risk of economic distress in the coming two years (safe



zone). If the score takes intermediate values (between 1.23 and 2.9), the risk is real, but not very high (grey zone).

We should note here that the calculation of the Altman z-score is based on a number of assumptions; hence the evaluation of the prospects of a company should also take into account other factors and variables, such as cash flows and qualitative information.


3. The economic impact of coastal maritime in Greece

- The contribution of the domestic coastal maritime sector to the Greek economy is substantial, through the passenger and freight transportation services that it provides, along with the supportive role that it plays for other economic activities, particularly in the Greek islands.
- Accommodation–Food services, Real estate services, Food–Beverages, Financial institutions and Trade are the sectors with the strongest interconnections with the domestic coastal maritime sector.
- ➤ The social contributions paid by the shipping firms in 2013 are estimated at about €37 million, which is equivalent to 15% of the total labour cost in the sector.
- Surcharges (mooring fees and public service dues) are estimated at €35.6 million in 2013.
- ➤ The revenues from VAT on tickets is estimated at around €85 million.
- In terms of GDP the economic impact from the domestic coastal transportation services in 2013 is estimated at 1.5 billion euro, while in terms of employment this corresponds to 21,400 jobs.
- Substantially higher is the economic impact associated with the catalytic effects in the tourism sector and the development of the primary and manufacturing sector in the island regions of Greece.
- ➤ The economic impact of the domestic maritime sector, combining the impact from the domestic transportation services and the catalytic effects, is estimated at €11.8 billion or 6.5% of total GDP in 2013, whereas in terms of employment this corresponds to about 260,000 jobs (7.2% of total employment).



3.1 Methodology

The purpose of this chapter is to assess the impact of the domestic coastal maritime sector on the Greek economy, in terms of Value Added, GDP, employment and tax revenues. The assessment uses the input-output tables for the Greek economy and the Leontief inputoutput model.⁶

This method allows the estimation of indirect and induced effects from an economic activity, alongside its direct impact. Together, these three channels provide the sector's total impact. The term "indirect effects" describes the impact generated along the supply chain of a sector. In addition, the economic activity in the sector and along the supply chain generates value added, part of which ends up in the form of additional wage income in the household budgets. Part of it is transformed into wealth through savings, still most of it is spent on goods and services, triggering a further round of effects, termed "induced" in the literature.



Figure 3.1: The economic impact of coastal maritime transport

However, in many cases the benefit from an activity exceeds the direct contribution (and its multiplying effects) and spreads across the economy. These benefits are known as "catalytic effects", which describe the contribution of an economic activity to other sectors by facilitating their growth and supporting their operations, which goes beyond the customer-supplier relationship captured through the indirect effect. In the case of coastal maritime, the catalytic effects are mainly associated with the economic activities of tourism, manufacturing and agriculture in the Greek islands, which are connected with the mainland primarily through the services provided by coastal maritime transport.

⁶ The Appendix to this chapter presents the key assumptions of this method.



Tourism would be underdeveloped in the absence of shipping routes, especially in the islands where shipping is the only means of connection with the mainland and other islands. This holds for quite a few destinations given that 26 airports operate in the island regions of Greece, whereas over 70 ports provide regular passenger transport services by sea (Figure 3.2).





Respectively, the catalytic effects related to the growth of the primary sector and manufacturing in the Greek islands are reflected in the fact that passenger vessels carry out almost 80% of the freight volumes transported by sea in Greece (Figure 3.3).



Figure 3.3: Share of freight volumes (gross tonnage) carried by type of vessel in Greece, 2012

Source: Eurostat



The main assumptions for the assessment of the economic impact of coastal maritime services are shown in Table 3.1. The estimation with regard to the impact from the sector's economic activity (core impact) is based on the turnover from passenger and vehicle (cars and trucks) transportation in the domestic routes. The revenues from food services provided on board, whose share in total turnover is small (almost 5%), is also taken into account.

Table 3	.1: Main	assumptions	concerning	the	estimation	of	the	coastal	maritime's	impact
on the O	Greek ecc	onomy								

	Households	Enterprises
Core impact	Expenditure for passenger and vehicle transportation by sea on the domestic routes.	Expenditure for transporting trucks by sea on the domestic routes.
Catalytic effects	Tourism expenditure in the Greek island regions (an estimate, based on the number of passengers who use coastal transportation for tourism and the average tourism expenditure per trip)	Value of the output of Agriculture and Manufacturing in the Greek islands served by the coastal maritime sector (i.e, North Aegean, South Aegean, Crete, Zakynthos and Kefalonia).

The estimation of the catalytic effects on tourism is based on the tourism expenditure, made by visitors who have used coastal transport services in the regions of the North Aegean, Crete and the South Aegean. In the case of the Ionian islands, the analysis covers the islands of Zakynthos and Kefalonnia, which have regular ferry services with Kyllini.





B. GVA of Primary sector & Manufacturing



Source: SEEN, Eurostat



To estimate the number of visitors, the analysis uses the additional passenger transport demand recorded between March and October – the tourism period in Greece – on the main lines, connecting the islands with Piraeus and Rafina (Figure 3.4).

3.2 The economic impact of the coastal maritime sector

In terms of Value added, the total contribution of the domestic coastal maritime sector (excluding the catalytic effects and the operation in the Adriatic line) to the Greek economy is estimated at ≤ 1.2 billion, of which ≤ 851 million correspond to the induced effects. Respectively, ≤ 149 million come directly from the operation of the sector, as a result of the demand for passenger and vehicles transportation services, whereas approximately ≤ 200 million correspond to the indirect effect. Similarly, in GDP terms, the total contribution is approximately ≤ 1.5 billion, which is equivalent to 1% of the Greek GDP in 2013 (Figure 3.5).





Source: IOBE estimations

With regard to employment, the direct effect is estimated at approximately 5,000 jobs, which increases in 21,400 jobs (or 0.6% of total employment in Greece in 2013) when we also consider the indirect and induced effects. The induced effects account for almost 2/3 of the sector's impact on employment (14,700 jobs), while 1,700 jobs correspond to the sector's indirect impact, which refers to jobs along the sector's supply chain, such as in travel agencies (Figure 3.6).







Source: IOBE estimations

Finally, the tax revenues from the sector's activity in the domestic market are estimated at approximately \leq 449 million, of which \leq 85 million is the direct impact (i.e., VAT on passenger and vehicle fares), while \leq 72 million correspond to indirect effects and \leq 292 million to induced effects (Figure 3.7).





Source: SEEN, IOBE estimations

The total multiplier, which incorporates the indirect and induced effects, implies that an increase by one euro of the sector's value added (in market prices) leads to an increase of



GDP by €8. Respectively, in employment each job in the coastal maritime sector supports 4 jobs in the economy. The relatively high multipliers can be explained with the fact that coastal maritime is a capital intensive sector, with a small share of value added in total output. Additionally, labour costs are higher compared with other economic sectors. In this way, the direct effects, in terms of value added and employment, are relatively low, compared with the total impact, which incorporates the relatively high consumption expenditure of employees in the coastal maritime sector and its supply chain.

Meanwhile, the contribution of coastal maritime in the domestic economic activity is also reflected in other significant indicators, such as the level of employers' social security contributions and the surcharges on vessels for the use of the ports. In particular, the contributions paid by the coastal maritime enterprises in 2013 are estimated at \notin 37 million, which is equivalent to 15% of total labour cost in the sector.





Source: ELSTAT, SEEN, IOBE estimations

Respectively, surcharges are estimated at ≤ 35.6 million in 2013, of which ≤ 10.6 million correspond to passenger and vehicle fees paid to the Piraeus port, whereas ≤ 11.4 million is the corresponding amount paid to the ports of Rafina and the islands. Additionally, the surcharge to support unprofitable routes (equal to 3% of each fare) is estimated at ≤ 13.7 million (Figure 3.8).



3.3 Catalytic effects in the economy of the islands

The significant contribution of the coastal maritime sector to the Greek economy is also revealed through the assessment of its catalytic effects. In terms of GDP, the total impact is approximately ≤ 10.3 billion, of which ≤ 3.2 billion (almost 1/3) correspond to the direct effect. In addition, the indirect effect is estimated at ≤ 1.8 billion, whereas ≤ 5.3 billion correspond to the induced effect (Figure 3.9).





Source: IOBE estimations

In terms of employment, the direct effect is estimated at 118,000 jobs, which increases to 239,000 jobs (or 51.4% of total employment in the Greek island regions and 6.6% in the country respectively in 2013) when the indirect and induced effects are also taken into account.

Finally, total tax revenues are close to ≤ 1.7 billion, of which 85% (or ≤ 1.4 euro) correspond to the induced effects (Figure 3.10). The high multipliers in terms of value added and tax revenues are related to the low value added and tax burden in the agriculture sector. Similarly, the low employment multipliers are mainly due to the labour intensive characteristics of the agriculture sector in Greece.





Figure 3.10: Catalytic effects on employment and tax revenues from coastal maritime activity

Source: IOBE estimations

3.4 The Adriatic market

The Greece-Italy routes in the Adriatic Sea are important market segment for the Greek listed shipping companies. Based on traffic data from the Port Authorities of Patras and Igoumenitsa, the demand for ferry services varied significantly over the past decade.

In particular, 322,000 trucks travelled to and from the ports of Patras and Igoumenitsa in 2013, having increased by 5% compared with the previous year. However, compared with 2006, when the largest volume of truck traffic was recorded, demand has contracted by 31% (Figure 3.11).

Meanwhile, passenger transportation increased by 5% in 2013 to 1.4 million passengers, following the sharp decline by 27% in 2012. The total number of other vehicles (including cars, buses and motorcycles) reached 316,000 in 2013, recording approximately 5% decline rate per annum on average between 2006 and 2013 (almost similar to the other traffic categories).





Figure 3.11: Outboards traffic from the ports of Patras and Igoumenitsa, 2013





(*) Cars, buses and motorcycles

Source: Port Authorities of Patra and Igoumenitsa

With regard to revenues, the share from the operation in the Adriatic Sea is substantial for the three largest coastal shipping companies listed on the Athens Stock Exchange. According to financial data for 2013, the Adriatic represented between 39% to 69% of the total turnover of Attica Group, ANEK and Minoan Lines (Figure 3.12). Furthermore, the development of the specific route offers significant benefits by enabling the export of Greek goods to foreign markets from the ports of Patras and Igoumenitsa.⁷

⁷ The estimation of the catalytic effects from this activity is not feasible due to the lack of data with regard to the value of exports that reach the foreign markets through the Adriatic routes.







Source: Attica Group, Minoan, ANEK

3.5 Conclusions

The contribution of the coastal maritime sector to the Greek economy is substantial, as it provides an extensive network of connections between the mainland and the Greek islands. The sector has a significant impact on the Greek economy, both in terms of the passenger and freight transportation services that it provides and by enabling an extensive "ecosystem" of activities, particularly in the Greek island regions.

The significance of the sector is stronger felt on occasions when its absence increases significantly the transportation cost for passengers and manufacturers of goods. The lack of service due to adverse weather conditions or the reduced number of itineraries on certain coastal maritime routes constitute indicative examples of such occasions.

	Impact from Coastal shipping fares	Catalytic effects	Total
GVA (million €)	1,200	8,886	10,086
GDP (million €)	1,512	10,334	11,846
Employment (in thousands)	21	239	260
Tax Revenues (million €)	449	1,693	2,142

Table 3.2: The economic impact of domestic coastal maritime sector on the Greek economy, 2013

Source: IOBE estimations



The economic impact from the demand for domestic coastal services is estimated at ≤ 1.5 billion in GDP terms in 2013, while in terms of employment the total effect is estimated at approximately 21,400 jobs. Combining the direct, indirect and induced benefits along with the catalytic effects (associated with the development of tourism, manufacturing and agriculture in the Greek islands), the total contribution in GDP terms is approximately ≤ 11.8 billion or 6.5% of GDP, while in terms of employment it accounts for 260,000 jobs (7.2% of total employment, Table 3.2).

Meanwhile, the contribution of the sector to the wider economy is also evident from the indirect effects (including also the catalytic effects) on the other sectors of economic activity. In terms of value added, industries such as Accommodation – Food services, Agriculture and Real estate services (mainly induced and real rent of residences, forming a significant part of household expenditure) exhibit the strongest links with the coastal maritime sector, with the indirect impact on these sectors exceeding \notin 4 billion. Significant also is the impact on the value added of Food-Beverages Manufacturing, Financial Institutions and Trade (Figure 3.13).





Source: IOBE estimations



3.6 Appendix

3.6.1 Methodology

The input-output table is an accounting representation of the overall structure of the economic system, reflecting the interconnections between the different branches of economic activity.

Along each line, the table shows the proceeds of a sector from other sectors of the economy (sales of intermediate goods to other sectors of the economy) and from end uses (final consumption, investment and exports). Respectively, each column of the table shows the inputs of a sector from other industries (i.e., total purchases of intermediate goods) and from the factors of production (capital and labour), with and without taxes, from the domestic economy and from imports.

In this way, the total output of the economy can be calculated either on the demand side or the supply side. On the demand side, total output is the sum of intermediate demand and final demand, which includes consumer demand by the households and the state, the demand for investment and the demand for exports of domestically produced goods. On the supply side, the value of total production equals the sum of the total cost of intermediate goods and value added.

In algebraic terms, the sum of intermediate and final demand is defined according to the equation

AX + Y = X

, where X is the nx1 vector of total production, Y is the nx1 vector of final demand for the product of each sector, and A is the nxn table of technological coefficients.

Solving the equation with respect to total output, the resulting equation

$$X = (I - A)^{-1} Y$$

presents the level of total output as a function of final demand and technological coefficients. The inverse matrix $(I - A)^{-1}$, also known as the Leontief matrix, shows the degree to which final demand (Y) has a multiplier effect on total output (X).



For each sector of economic activity, the sum of a column of the Leontief inverse is the partial output multiplier of the sector, indicating the extent to which an increase in final demand by one unit for the product of this sector diffuses in the economic system through interconnections with other sectors.

The input-output model is a useful tool for assessing a sector's overall economic impact. However, it should be noted that the model also suffers from certain limitations. In particular, the model assumes that each sector of the economy produces a single product, i.e., there is a complete and unambiguous mapping between economic activities and products. Furthermore, the model presumes the absence of positive or negative externalities, constant returns to scale, and stable input-output coefficients that reflect technological necessities rather than choices among production techniques.

As a final remark, the estimation of the labour cost is based on figures from the Annual Financial Reports of Minoan Lines and ANEK Lines for 2013, according to which the average annual remuneration is €49,500 and €48,900 per employee respectively.

3.6.2 Main assumptions in the estimation of the economic impact of coastal shipping

	% Distribution*	Fares distribution (million €)	Distribution of Fares with VAT (million €)
Passenger fares	58%	295	333
Car fares	14%	69	85
Truck fares	28%	143	175
Total revenues from fares	100%	507	593
On-board revenues		22	25
Total		529	619

Table 3.3: Distribution of fares, 2013

(*) The distribution is based on data from the Blue Star Ferries

Πηγή: SEEN, Annual Financial Reports (2013)

Table 3.4: Tourism expenditure estimates in the Greek island regions, 2013

	2013
Passengers who use coastal transport services for tourism purposes	3.6 million
Average tourism expenditure per passenger	720 euro
Total tourism expenditure	2.6 billion euro

Πηγή: EL.STAT, IOBE estimations





Figure 3.14: Tourism expenditure distribution

Source: VisitEngland.com

Table 5.5. Production value in agriculture and manufacturing in the Greek Island (e)	Table 3.5:	Production value i	n agriculture and	I manufacturing in	the Greek island	regions [*]
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	2010	2011	2012**	2013**
Manufacturing	2519	2349	2319	2247
Agriculture	1791	1673	1558	1604

(*) Only Zakynthos and Kefalonia are included from the Ionian islands.

(**) Estimate

Πηγή: Eurostat, IOBE estimations



4. Main issues for the better utilisation of the sector's potential

- The significant decrease of the demand for coastal transportation and the deterioration of other exogenous factors such as high fuel costs, lack of liquidity and high debt pressure have driven the sector to a disadvantageous position, risking its ability to supply the essential maritime services.
- Certain legislative elements indirectly increase the operation cost of the coastal maritime companies and turn the adaptation of the sector's firms to the new economic environment into a difficult task:
 - Mandatory ten-month routing
 - Surcharges for funding the non-profitable lines which increases the ticket prices
 - Higher levels of minimum obligatory manning compared to other EU member states
 - Obligatory knowledge of Greek for all members of the crew
 - Inability to adopt an e-ticket scheme in the coastal maritime sector, along the lines of those used in the airlines, due to infrastructure and regulatory deficiencies.
- The reduction of the VAT rate in the coastal maritime tickets is expected to stimulate demand and economic activity in the islands, under the condition that the companies will pass the tax reduction to the customers. The decrease of the State's VAT revenues is expected to be counterbalanced by the revenues from the increased economic activity in the islands, as long as the additional demand in the islands does not come from substituting demand from the mainland.
- Given the current market conditions, the rationalisation of the sector's capacity and the routing schedule is inevitable.



4.1 Introduction

Despite the fundamental importance of the Greek coastal maritime shipping for the connection of the Greek islands with the mainland for the development of tourism and of other activities in the island economies, the sector is facing significant obstacles, which can be attributed to the prolonged economic recession the country is in.

The significant contraction of the demand for coastal transportation services, the negative developments in many exogenous factors, such as high fuel costs, combined with the demand's seasonality in the transportation of passengers and vehicles, difficulties in increasing ticket prices further, lack of liquidity, sharp debt pressure and the resulting financial cost for the coastal maritime shipping companies, are only some of the barriers that hinder the sector's ability to seamlessly supply the needed coastal transportation services.

The existing legislation increases the operating cost of the coastal maritime companies, while it reduces the sector's ability to adapt to the new economic environment as it would have under a truly liberalised and competitive market. This adaptation seems to be slow, problems are piling up and the necessary timeframe for their effective resolution is drastically limited.

In this chapter, we examine the factors that hinder the fulfilment of the Greek coastal shipping potential and highlight the constraints that must be resolved immediately in order to ensure the sector's sustainable future and its long-term capability to contributing further to the economic development of the Greek islands. In this direction and given that ticket prices affect the demand for maritime services, we estimate the effect of a possible price reduction through a decrease in the VAT rates.

4.2 Limitations in the market operation framework

The strong difficulties faced by the coastal maritime sector in Greece, stemming from adverse developments in the basic demand and supply factors, are exacerbated by the existing operational framework. This framework determines the sector's ability to absorb shock and adjust speedily to the new market conditions.

The existing legislative framework aims at achieving multiple targets through the attempt to combine the effectiveness of a free-market competitive system with state intervention. The

scope of the state intervention is to ensure adequate transportation services, in case that the competitive system and the free entrepreneurship cannot offer the required service level.

The coastal maritime sector is considered as "liberalised", meaning that any EU shipping company may schedule itineraries on the coastal maritime routes of their preference in Greece, provided that all legal requirements are met. Therefore, the relevant market can be considered as open to competition. However, as mentioned below, there are curtain regulations that may be considered as barriers for entering the market.

The main goals of the state intervention are to ensure the interconnection of the Greek islands with the main economic and administrative centres, the economic activity in the islands, and the supply of transportation services in satisfactory prices, quantity and quality. This in practice translates to ensuring regular and reliable coastal interconnections of the islands with the mainland throughout the year. In addition, the State has the mandate to safeguard competition, safety navigation and the protection of the marine environment.

Achieving the abovementioned targets requires specific processes which are currently based on:⁸

- Free entrance of coastal maritime companies in the market, wherever feasible.
- Exclusive contracting (short/long term) when the first stage of the selection process does not result in covering all lines that are considered necessary.
- Subsidizing lines, so that the companies are compensated for supplying services of public interest, when the first two stages of the selection process do not provide the desired outcome.

The stages of the selection process, which is repeated annually, are presented in Figure 4.1. Initially, the Ministry of Mercantile Marine which is the competent public authority announces the "Indicative General Coastal Transport Network (IGCTN)", which comprises of the minimum number of coastal lines that must be covered. The coastal maritime companies are submitting individual routing declarations for the desired lines that as mentioned above, may be different from the indicative network. Then, the regular routing network is determined, after an assessment of the declarations. Each line may be covered by one or more coastal shipping companies. If the network does not cover the minimum routing

⁸ The current system is based on Law 2932/2001 which incorporated the EC guideline 3577/92 in the Greek legal framework.



requirements, then the State may issue public service contracts (duration 1-12 years) that provide the exclusive right of commercial operation on routing lines that are not included in the regular network. Usually, the interest by the shipping companies is low at this point and the tenders are cancelled. For these lines the State provides the option of exclusive public service contracts, with compensation for the companies that provide their services. The level of the compensation (annual subsidy) is determined through tendering processes with the interested parties.

Figure 4.1: Routing selection process

- Announcement of the Indicative General Coastal Transport Network (IGCTN)
- •The Ministry of Mercantile Marine defines the minimum service level, thus the minimum number of the lines that must be covered by the sector.
- •This network is "indicative", meaning that the shipping companies may suggest also other routes when applying.

Regular routing lines

- The companies submit routing declarations for the desired lines.
- The regular routing lines are identified based on the companies' declared interest.
- The remaining routing lines pass to the next stage of the selection process.

Non-regular routing lines

- The State provides the opportunity of contract based "exclusive service" (duration: 1-12 years).
- Interest is usually low at this stage.

Public service lines of lower commercial interest

- The State provides the opportunity of exclusive service via a public service contract.
- Compensation is provided by the State
- The compensation's level is determined through tendering.

While in principle the process of covering the islands' transportation needs follows a reasonable set of steps, the state's intervention extends further to ensure the most effective achievement of the pursued targets. In particular, the regulatory framework envisages:

Obligatory regular routing for a year with a fixed itinerary frequency. The routing of a vessel on a specific line must last for a year, starting on November 1st. Discontinuance is allowed only under specific conditions for 60 days at most (annual inspection, damage repair or other serious causes). In practice, this implies that there is a mandatory ten-month routing for simple ferries and a four-month mandatory routing for the fast ferries (during the summer period).

- Imposition of a 3% surcharge on the ticket net fare for funding the non-commercial lines, which increases the ticket prices of all lines.
- Predefined manning size and composition, and obligatory Greek language certificate for all crew members.
- Price cap imposition on the non-commercial lines and price cap monitoring in the regular routes.
- Mandatory discounts on specific social groups of public interest.
- Tight standards and control on the ships' layout and the passenger areas.
- Interventions to cover extra destinations through regular routing, in light of public service obligations.

It must be noted that the state intervention has become less restrictive compared to the recent past, as legislative initiatives were carried out in an effort to remove excessive barriers (mainly with Law 4150/2013). In particular, the mandatory minimum number of general service crew was revised and the minimum hospitality crew was reduced by 50% during the winter months, third-party fees levied on the fares were abolished, the emergency routing of additional ships during high-peak periods was simplified and the mandatory routing period of high-speed ferries was reduced from 7.5 to 4 months. Moreover, service interruption for 45 continuous days was allowed in specific cases (when needs are covered by existing ships or in short-distance lines with seasonal traffic), while the shipping companies were given the permission to replace an already routed ship with another of similar, lower or higher capacity, provided that the transportation needs are met.

However, the existing legislative framework still contains clauses that hinder business operation and burden the financials of the sector's companies, such as:

- The imposition of the ten-month routing is equivalent to the imposition of public service obligations for certain months of the year without any sort of compensation.
- The selection process still focuses on routing specific vessels and not on servicing the transportation needs with a company fleet, depending on the prevailing demand conditions.
- The existing price surcharge that funds the non commercial lines implies cross subsidisation.
- There are still elements of rigidity regarding crucial business decisions (i.e. regulated and time-consuming processes of short-term market entry to cover extraordinary



needs – also resulting from the ten-month mandatory routing to ensure a levelplaying field).

- The existing requirements for the minimum size of the crew, higher compared to other EU states, and the inclusion of the hospitality crew in the minimum manning required for safety purposes increase the operating costs.
- The obligation of manning vessels only by seafarers that speak the Greek language practically does not allow recruitment of foreign seafarers into the Greek fleet.

Already, some routings have been cancelled; vessels remain immobilised, or are chartered or sold abroad, while many companies are facing difficulties in covering their financial liabilities (wages, repairers, bank loans etc). The main goal of the coastal maritime companies remains the minimisation of their operation costs through lower travel speed (lower fuel consumption), reduction of the port calls per trip, replacement or sale of vessels and cooperation with other companies on specific lines.

Another significant issue is the poor port infrastructure. Almost all Greek ports have inadequate reception facilities while nine out of ten have shore ramps which are problematic. More than 86% of the ports are facing wave problems while some of them are not suitable for mooring cruise ships. Finally, depth issues are encountered at almost half of the existing ports, hindering calls by new, modern coastal vessels (Figure 4.2).

The existing port infrastructure is also hindering the adoption of innovative solutions based on modern technologies such as the use of e-tickets, a common practice in the airline transportation industry. Apart from the lack of the necessary infrastructure, the reform of the legislative framework is essential to enable the use of intangible (electronic) tickets and/or printouts. Implementing an e-ticket scheme would gradually bring about cost reduction and would stimulate the further development of yield/revenue management and dynamic pricing practices, which put the companies in a better position to maximise their revenues.⁹ Dynamic pricing allows the companies to adjust their ticket prices in order to achieve higher occupancy rates and thus revenue, without a corresponding cost increase. For instance, offering seats at lower prices well in advance, the companies attract passengers to take up seats that would have most probably remained empty, covering thus not only the very low marginal cost of a seat, but also part of the total costs of an itinerary. It is estimated that the extra revenues of the airline companies that have already adopted

⁹ An integrated information system that would permit electronic reservations and sea transport receipts is expected to be established soon with a presidential decree.

revenue management systems are comparable to the overall profitability of an airline company during a good year (4-5% of the turnover). This practically means that without the use of such systems, an airline company could not generate profits nowadays (Talluri and Van Ryzin, 2005).

Besides the above, there are other issues that are deterring the operation and the development of the coastal maritime sector, such as the State's inability to adequately fund the non-commercial lines, the inadequate quality of the services offered by vessels in some non-commercial routes and the deficiencies in the tender design and the overall planning in the coastal maritime system (e.g. the criteria for determining the needed itineraries).



Figure 4.2: The state of Greek harbours

Source: Laboratory of Harbour Works NTUA, Professor Mr Mountzouris

So, why the losses are extensive and the sector's sustainability is endangered? Why the sector's firms cannot adapt to the changes in the supply and demand conditions? Is a price adjustment enough to improve the current situation? In order to provide the relevant answers we must briefly refer to the market's operation and the decision making process.

From the entrepreneurial point of view, the market of the coastal maritime shipping contains three routing categories, based on the size of the demand (passengers and vehicles). The first category contains high-demand routes, where more than one coastal company can participate, with satisfactory profitability prospects on a competitive basis (i.e. Crete, the Saronic islands, the Cyclades, the Adriatic). The second category includes lines,



where the demand size is such that only one coastal maritime company or ship can have prospects for profitable operation. The average cost falls as quantity increases due to the significant fixed cost of shipping. Hence the quantity of services per ship should be sufficiently high to ensure that the average cost is below the equilibrium price and thus operation is profitable, which in this category can only be achieved with a single operator. The last category includes the low demand routes. Operating these lines is not financially viable without the State's subsidy for the supply of the public service.

The seasonality of the demand is another well known characteristic of the coastal maritime sector. Demand follows a predictable pattern across the year in almost all routing lines, reflecting the corresponding seasonality of the touristic activity.

Categories of coastal maritime routes in Greece							
A. Markets that can be served profitably on a competitive basis by more than one companies	B. Small markets that can be served profitably by only one company, without the need of further support	C. Small markets that can not be served profitably without subsidies					

During the past, the effects of seasonality of demand were less intense, since the annual demand covered the annual operational costs, while fuel costs were significantly lower. Thus, the issue of achieving positive financial results was resolved by cross-subsidising the low-demand periods from the revenues gained during the high-peak periods (in the high-demand lines), together with the provision of subsidies on the non-commercial routing lines. In other words, the prices were formed at such level that the profitability during the high demand periods could compensate for the losses during the low demand periods, given that the biggest part of the operation costs was fixed.

Despite its problems, the system was working in the sense that the sector viability was not threatened. However, today the sector is operating in a different environment, characterised by a sharp decrease in the demand for coastal maritime services (passengers and vehicles), higher fuel costs and inability to find funding to cover current liabilities.

Almost 50-54% of the receipts from net fares is used to cover fuel and lubricants expenses, while another 24% covers manning costs (Fig 4.1). In the past, these expenses did not exceed 65% (2005) and 67% (2009) of the total receipts in total, while given the above



discussion on the legislative framework, these cost categories should mostly be considered part of the fixed operation cost.





Source: Piraeus Chamber of Commerce and Industry (2014)

As mentioned above, lines with high demand and profitability cross-subsidise low-demand lines, and thus attract a multitude of coastal maritime companies. The contraction of the demand, however, combined with the increased fixed costs, has turned even some of the most lucrative routes into routes with marginal profitability or even losses. The opportunity to increase prices at a level that would allow for higher profitability is limited by competition and the existence of alternative means of transportation and alternative tourist destinations. Thus, the price elasticity of the demand for coastal services is quite high.

Based on the current conditions, the rationalisation of the sector capacity and routings is inevitable. This however may cause a reduction of the service level in some islands. As long as the State wants to maintain the current level of service, the coastal maritime companies must be compensated for the performing public service obligation, which would lead to higher government spending.

Some recommendations towards ensuring the sector's sustainability are formulated in the next chapter. Meanwhile, in the next section of the present chapter, we assess the effect of a reduction of the VAT rates (passengers and vehicles) on the demand for coastal maritime services. Since taxes and other charges range between 21.8% and 33.3% (Figure 4.4) of the



fare for the domestic routes, they constitute a significant part of the final price. Thus, the extent to which the reduction of the tickets' final price can become a policy tool in the attempt to reverse the existing situation in the sector, by stimulating an increase in the demand for coastal services, is worth investigating.





Source: Piraeus Chamber of Commerce and Industry (2014)

4.3 The effect of lower VAT rate in the demand for coastal services

Among the 8 EU member-states with the highest ferry traffic (93% of the total traffic), Greece has the second highest VAT rate for the coastal transportation of passengers (13%). Among these countries, only Croatia, the newest member of the EU, with almost 6% of the total EU coastal traffic, does not apply the reduced VAT rate. Italy, Spain and France apply a 10% VAT rate for passenger tickets, while on the other hand, Sweden applies a 6% reduced VAT rate, while in the UK the transport of passengers with boats of more than 10 seat capacity is exempted from VAT. A similar exemption applies for Malta as well.

Even in countries with relatively low share in the EU coastal maritime transportation, such as Slovenia, Cyprus, Portugal, Netherlands and Belgium, the applied VAT rates are significantly lower compared to those used in Greece. Meanwhile, Greece imposes a higher VAT rate for the transportation of cars (23%) – we could not find evidence of such a differentiation in other EU member states.

The reduction of VAT rates for both passengers and cars, as a measure to stimulate demand and reinstate the sector's financials to sustainable levels, is a topic of public discussion. The evaluation of this policy requires deeper analysis, assessing the factors that determine the demand for passenger tickets and quantifying the impact of a possible reduction of the VAT rates.





Source: VAT Rates Applied in the Member States of the European Union, European Commission 2014

The reduction of the VAT rates (passengers and cars) is expected, under specific conditions, to affect the demand for coastal maritime services, the fiscal revenues and the financials of the coastal maritime companies. Correlating the VAT rates with the above mentioned factors requires a quantification of those effects with econometric models, which is described in more detail in the following sections.

4.3.1 Assumptions

The scope of the present section is to quantify the expected change in the demand for coastal services from the reduction of the VAT rates and the ticket prices. Based on detailed data regarding the number of passenger and vehicle tickets, we estimated that there are 0.12 private car tickets for every passenger ticket. Then, assuming that the average price for every passenger ticket is \notin 22, while the price for the car ticket is \notin 50, we calculated the



average expense of a passenger per itinerary (incl. car fares). The weighted VAT rate per passenger and vehicle, based on the number of passenger tickets, private car tickets and the existing VAT rates (13% for passengers and 23% for vehicles) was then estimated at 15.0%.

For the purposes of the analysis, we constructed a baseline scenario and three policy change scenarios. In the baseline scenario, the course of demand over the next few years is estimated, assuming that the VAT rates do not change. In the policy change scenarios, the ticket prices are adjusted to reflect VAT rate reductions for the passenger and car tickets.

In the first policy change scenario we applied a VAT rate of 13% for both passengers and cars (average ticket price reduction of 1.7%). In the second scenario, the VAT rate was reduced to 6.5% for passenger and to 13% for car tickets (6.2% total ticket price reduction). Finally, the third scenario examines the effects of imposing the lowest possible VAT rate in both passenger and car tickets (6.5%). In that case the ticket price is reduced by 7.4%. Across all scenarios we assume that the reduction in the VAT rates will be fully passed on to the final ticket prices.

In each scenario we estimate the demand for coastal maritime tickets, the VAT revenues from ticket sales and also the extra VAT revenues that would be generated from increased economic activity in the island economies from the increased number of visitors. In addition, by applying the multipliers that were presented in a previous chapter, we assess the effect of the additional fares in the wider Greek economy. For this analysis we used data from the Hellenic Chamber of Hotels (HCH) and the Hellenic Statistical Authority (ELSTAT). The average expense by tourist was estimated at around €720 (a relevant cost breakdown can be seen in Figure 4.6). Taking under consideration the existing VAT rates per cost category we estimated that each visitor can potentially contribute almost €59.2 of VAT to the island economies.

However, since in practice receipts are not issued for all transactions due to tax evasion, the actual VAT revenues are expected to be lower the estimated potential. Yet, a precise calculation of the VAT revenue loss due to tax evasion cannot take place due to lack of data.

In all scenarios (baseline, A, B and C) we consider that the household disposable income follows AMECO's forecasts, according to which it will contract by 6.0% in 2014 and then grow by 3.9% in 2015 and 2016.







Source: IOBE

4.3.2 Results

Scenario A "Uniform VAT rate 13% for passengers and cars"

Reducing the cost of the tickets by 1.7%, through the application of a single VAT rate of 13% for passenger and car tickets, is expected to increase demand by 3.2% in 2014 and by 3.9% during the next years, provided that the reduction is passed on to the consumers. In total, additional 625,000 tickets would be sold in the end of the three years period. This moderate increase of the demand is expected to bring additional €30.7 million (€10.2 million annually) in revenues into the economy, compared with the baseline scenario. Tourist total expenditure is also expected to increase by €450 million (€150 million annually). Taking under consideration the multiplying effects, the GDP of the island economies is expected to increase by €619 million, while employment would grow by 3,400 jobs (10,300 man-years during the three year period). To the extent that the above changes are not accompanied with a reduction in the economic activity that takes place in the mainland, the Greek economy would benefit from this change.

Scenario B "VAT rate of 6.5% for passengers and 13% for cars"

Imposing a VAT rate of 6.5% in the passenger tickets and 13% in the car tickets leads to a sharper reduction of the tickets price (by 6.2%), under the assumption of a full pass-on of the reduction to the final prices. In this case, the demand grows by 10.6% in 2014, by 13.3%



in 2015 and by 12.3% in 2016 against the baseline scenario. In total, 2.1 million more visitors are expected in the islands, increasing the revenues of the coastal maritime companies by \notin 100 million against the baseline scenario. Consequently, tourist expenditure would be higher by \notin 1.8 billion (\notin 0.6 billion per year), contributing around \notin 2.1 billion to the GDP of the island economies. The additional demand would be served by 11.7 thousand new job positions on average each year (35.3 man-years in the assessed period).

Scenario C "Reduced VAT rate in passengers and cars – 6.5%"

The biggest increase in ticket sales is expected in the scenario of applying the lowest VAT rate (6.5%) to both passengers and cars, with full pass-on of the reduction to the final prices. The ticket prices are reduced by 7.4% against the baseline scenario. In this case, and under the condition that the disposable income would evolve as per the EU projections, the demand for tickets would increase by 14.8% on average. As a result, the number of visitors is expected to increase by 12.7% in 2014 (first year of reduced VAT) and by 15.9% during the next two years. In total, almost 2.5 million more tourists are expected to visit the islands during the three years, compared with the baseline scenario. The revenues for the coastal shipping companies increase by €117 million, while tourist expenditure grows by €1.8 billion as a result of the additional visitors. When counting in the economic interdependencies between the sectors, GDP is higher by €2.5 billion for the three-year period (€0.8 billion annual average). Such a change tones up the labour market as well, creating 14,000 jobs (42,000 man-years).

	Additional Visitors (million)	Additional revenues for maritime companies (€ million)	Additional tourist expenditure (€ billion)	Additional GDP in Iocal economies (€ billion)	Additional man-years in island economies (thousand)	Change in VAT revenues from ticket sales (€ million)	VAT from additional visitors (€ million)
Scenario A	0,6	31	0,4	0,6	10	-13	37
Scenario B	2,1	100	1,5	2,1	35	-52	126
Scenario C	2,5	117	1,8	2,5	42	-62	150

Table 4.1: Estimations of VAT revenues, 2014-2016

Source: IOBE

The VAT revenues from ticket sales are reduced across all policy scenarios. However, tourist expenditure in the island economies grows as a result of the increased number of visitors. According to our estimations, the gain in terms of VAT revenue from the additional visitor expenditure outweighs the VAT revenue losses on the tickets provided that a) the additional



expenditure is not replacing expenditure in other domestic destinations and that b) tax evasion does not exceed 60% of the potential VAT revenues in the islands.

4.4 Appendix: Coastal maritime ticket demand model

The scope of this section is to present the estimation of the demand elasticities of coastal maritime services with respect to the final price of the tickets and the disposable income of the households. The estimation was performed using the least squares method in a linear multivariate regression model.

Further below, we describe the variables that were used and the models that were estimated before selecting the appropriate model for drawing conclusions on the course of demand in the future.

Model's variables

The variable *Pass_Tickets* measures the actual number of sold passenger tickets, between 2002 and 2013, on a monthly basis. This variable refers to tickets sold in a sample of specific routes. In particular, data was available on routes connecting Piraeus with:

- Siros Tinos Mykonos
- Chios Lesvos
- The Dodecanese Islands
- Crete
- Rafina the Cyclades
- The Western Cyclades
- Ikaria Samos
- Paros Naxos Thira

The sample contains 144 monthly observations (between 2002 and 2013), enough to limit the standard error of the estimates to levels that can generate statistically significant results and coefficients. The data were provided by the Association of Coastal Maritime Companies (SEEN). The *Pass_Tickets* variable is the dependent variable across all linear models examined here.

The variable *Income* contains a monthly index describing the development of the households' disposable income. To construct this index we used officially published data on net national income (quarterly data), the consumer price index (from the Hellenic Statistical Authority - ELSTAT), employment (ELSTAT), travel receipts (Bank of Greece - BoG), consumer credit (BoG) and average monthly income from salaries (Social Security Organisation – IKA).

As data from the last quarter of the 2013 were not available, the variable contains 141 observations between 2002 and 2013.

As data series on ticket prices on the above routes were not available, we used the consumer price index for sea transportation (Code 0734) that is published officially on a monthly basis by the statistical authority (ELSTAT). This category includes scheduled and not scheduled passenger transport through rivers, canals, lakes and other inland waterways, and yacht rental (with crew). This category does not include a) other on-board economic activities, such as restaurants and bars and b) renting of yachts without crew. The presence of yacht renting with personnel is not expected to affect the index significantly, since the size of this market is small compared with the coastal maritime sector.

The demand for coastal maritime services suffers from strong seasonality. To take this into account, we used a dummy variable (D_Winter) that controls for the significant difference of the demand during the summer and winter periods and alternatively twelve different dummy variables, one for each month of the year ($D_Jan - D_Dec$).

We estimated four different linear regression models, applying least squares techniques in the STATA statistical software. The results of each model are exhibited in Table 4.2.

Model A

In Model A, we regressed passenger tickets (Pass_Tickets) with disposable income (Income) and tickets price (CPI_Boats). Demand's seasonality was controlled using the dummy variable D_Winter. The coefficients confirm the expected negative correlation between the ticket prices and demand, but also a relatively strong positive relation with disposable income. However, by taking into consideration the statistical significance of the regression coefficients, the coefficient on the CPI_Boats variable cannot be considered as statistical significant, as its p-value exceeds 10%. In contrast, the rest of the variables are statistically significant. The specific model does not suffer from multicollinearity issues, as the average variance inflation factor (VIF) is 1.12, below the threshold of 5.However, the dummy variable D_Winter does not capture satisfactorily the considerable demand variation that is present even on a monthly basis during the year.



Table 4.2: Results of econometric models

Dependant Variable	Model	Model	Model	Model
	-0.73	B	-0.63**	U
Ticket price	(0,50)	(0,19)	(0,23)	(0,20)
Demand for tickets with a single			0,60***	0,66***
period lag			(0,07)	(0,02)
Disposable income	1,42***	1,29***	0,53***	0,44* **
	(0,32)	(0,12)	(0,15)	(0,11)
Constant	11,04***	13,83***	5,65***	4,73*
	(2,38)	(0,88)	(1,37)	(0,95)
D Wint	-0,78***			
	(2,38)			
D_Feb		-0,35***	-0,06	
		(0,09)	(0,07)	0 50*
D_Mar		-0,05	0,52***	0,52* (0.05)
		0.49***	0.66***	(0,05)
D_Apr		(0.10)	(0.08)	(0.05)
		0.46***	0 40***	0 35*
D_May		(0,09)	(0,08)	(0,04)
		0,69***	0,66***	0,61*
D_Jun		(0,10)	(0,08)	(0,04)
		1,13***	1,07***	1,01*
		(0,10)	(0,08)	(0,02)
D Aug		1,56***	0,89***	0,80*
		(0,09)	(0,11)	(0,02)
D Sep		0,76***	0,16	
		(0,09)	(0,136)	
D Oct		0,24***	-0,002	
		(0,09)	(0,09)	0 4 3 * * *
D_Nov		-0,03	-0,08**	-0,12***
		0.15*	(0,07)	0.00
D_Dec		-0,15	(0.07)	(0.03)
B ²	0 5488	0 9505	0 9693	0.9669
Mean VIF	1,12	4,71	7,47	1,37

Note: Standard deviation appears in the parenthesis. *** The hypothesis that the coefficient equals zero, is rejected at 1% significance level. ** The hypothesis that the coefficient equals zero, is rejected at 5% significance level. * The hypothesis that the coefficient equals zero is rejected at higher than 10% significance level.

Model B

In the second model, we assess the correlation between the dependent and independent variables, using eleven dummy variables that are used to control for the seasonality issue, not per season but on a monthly basis. Disposable income and ticket demand are strongly positively correlated, with the elasticity exceeding unity, while ticket prices and demand are negatively correlated. The P-values are smaller than 5% in this model, leading to the



conclusion that the results are statistically significant. In contrast, the coefficient of determination (R^2) and the variance inflation factor (VIF) equal 0.95 and 4.7 respectively, both significantly higher than in Model A. The risk of multicollinearity is relatively high, since the VIF index approaches the threshold of rejection (5).

Model C

In the previous sections we examined how a potential change in the disposable income or/and in ticket prices would affect demand for coastal maritime services, in the case where there is no time lag between that change and the reaction of the passengers. In practice though, passengers' reactions to ticket price changes is not expected to take place immediately. A visit to a Greek island could have been scheduled long before and most likely it would be realised regardless of a very recent price change. However, a change in the prices today is likely to affect demand in the future (i.e. by choosing a mainland destination for vacations in the following summer).

In the third model, we included a time lag of one month between the change in prices and demand. Then, we applied an autoregressive distributed lag model (ADL) to estimate the demand's elasticity both in the short and the long term. The seasonality was corrected with the use of monthly dummy variables.

The positive correlation between income and demand and the negative relation between prices and demand are evident. Meanwhile, the dummy variables coefficients point to a reasonable pattern of seasonality - most of them are statistically significant with the exception of February, September and October, when passenger traffic does not differ much from January. Demand is significantly higher during the summer months (in July, in August and to a lesser extent in June) and during the holidays' seasons (Christmas in December and Easter in March or April).

The risk of multicollinearity in Model C is considerable , since the average variance inflation factor (VIF) exceeds 7.4. The coefficient of determination is quite high as well, at 0.96.

<u>Model D</u>

The fourth and last model contains fewer dummy variables, as the statistically nonsignificant dummies (namely those referring to February, September and October) were



removed. This model confronts both the seasonality and the multicollinearity issue most efficiently.

Reducing the tickets' prices by 10% will increase demand in the short run by 5.3% and in the long run by 15.6%. A similar increase in the disposable income will boost the sales of coastal maritime tickets by 4.4% in the short run and 12.9% in the long run.

Finally, to assess the credibility of this model, we estimated the demand for tickets between 2002 and 2013 according to the model's coefficients and compared it with the actual demand levels. As can be seen in Figure 4.7, the model's estimations are close to the actual demand observations. Since this model does not display the disadvantages of the rest, it was selected for the scenario estimations.





Source: SEEN, IOBE model

The fitted demand function for the coastal maritime tickets thus is:

$$Y_t = 4,73 + 0,66 Y_{t-1} - 0,53 X_{1(t-1)} + 0,44 X_{2(t-1)} + 0,52 D_Mar + 0,65 D_Apr + 0,35$$

D May +0,61 D Jun +1,01 D Jul + 0,80 D Aug -0,12 D Nov + 0,20 D Dec + u

Where,

- Yt demand for costal maritime tickets (number of tickets) in time t,
- \mathbf{Y}_{t-1} demand in time t-1
- X_{1(t-1)} price of tickets in time t-1



$\mathbf{X}_{\mathbf{2(t-1)}}$ - household disposable income in time t-1

D_Mar - D_Dec, monthly dummy variables

 Table 4.3: Brief description of the independent variables in the multivariate linear regression model

Variable	Obs	Mean	Std. Dev.	Min	Max
Pass_Tickets	144	1318588	898668.8	356962	3973922
Income	141	98.1805	11.6751	74.21	131.1
Ln_Income	141	4.579686	.1203693	4.306852	4.87594
CPI_Boats	144	95.79618	6.422877	70.66	104.74
Ln_CPI_Boats	144	4.559767	.072119	4.257936	4.651488
Ln_Pass_Ti~s	144	13.89594	.6122091	12.78538	15.19526

Source: IOBE





Source: ELSTAT



5. Summary and policy recommendations

5.1 Key findings

The Greek coastal maritime is among the largest in Europe due to the vast number of interconnections among the mainland and the island regions. The large shipping companies operate a modern fleet with large capacity, as a result of investments in new ships and scrapping older ships during the past decade.

Since 2009 the coastal maritime sector has been negatively affected by higher oil prices and a vertical drop in passenger traffic, due primarily to the recession of the Greek economy and, to a lesser extent, of the European economy. In particular, the demand for coastal services has declined by 24% for passengers and 31% for vehicles respectively over the period 2009-2012 (with an indication of stability in 2013 coming from the data for the first nine months of the year), whereas the fuel cost comprises more than half of the total turnover in the sector. The effort to adjust to these exogenous shocks was hampered by limitations of the regulatory framework. Quite a few distortions were mitigated but not eliminated in 2013, yet their impact on the adjustment effort is still unclear.

These developments are reflected in the adverse financial outcome of the sector, in which the contraction of the turnover along with the substantial increase in operating expenses has resulted in large losses. Meanwhile, the reduced liquidity in the sector is accompanied by increased debt burden. Therefore, the sustainability of some shipping firms as well as the capacity of the current operating scheme to provide the required coastal shipping services over the coming years is currently under threat, despite the improvement of the financial indices in 2013. The likelihood of shipping company closures due to the adverse economic environment in the coastal maritime sector will have negative repercussions for the Greek economy. This is due to the substantial contribution of the sector to the domestic economic activity through passengers and freight transportation services as well as from its supportive role in other economic activities, mainly in the island regions.

The economic impact from the demand for domestic coastal shipping services in 2013 in terms of GDP is estimated at \leq 1.5 billion, whereas the contribution in employment is estimated at about 21,400 jobs, of which about 5,000 jobs correspond to the employment in the sector (direct effect). However, the contribution is substantially higher when we also consider the catalytic effects associated with tourism and the growth of primary and


manufacturing sector in islands. The economy of the islands is based on tourism, trade and agriculture, i.e. sectors that depend strongly on the smooth interconnection of the islands to the mainland. By combining the direct, indirect and induced benefits from the demand for coastal services in the domestic routes along with the catalytic effects, the total contribution in GDP terms is approximately ≤ 11.8 billion or 6.5% of Greek GDP, while in terms of employment it accounts for about 260,000 jobs (7.2% of the total workforce in Greece and about half of the total employment in the Greek island regions).

Given the current market conditions, the rationalisation of the sector's capacity and the coastal transport network are necessary. The negotiations of some coastal shipping firms with the domestic banking institutions for debt restructuring is considered as a first step towards the sector's recovery.

In conclusion, the contribution of the coastal maritime sector to the Greek economy is substantial, yet the preservation and the expansion of this impact depends to a large extent on the implementation of structural and sector policy measures. These policies should aim at the minimisation of the costs for the supplied maritime services, so as to ensure the sustainability of the sector, without sacrificing the quality of these services. The directions that the policy measures should take are listed below.

5.2 Suggestions for the viability and further development of Greek coastal shipping

In order for the sector to adjust in the current market conditions, the continuous reduction of operating costs, along with the maintenance of best possible quality transportation services, should be the primary objective. In the short-term, some measures on the demand side, such as the reduction of surcharges imposed on fares, can be beneficial, yet quite a few elements of the regulatory framework in the coastal maritime sector should also be reexamined. The following indicative policy proposals would be helpful to consider towards this direction:

Reduced operating costs. Given that the fuel cost is to a large extent exogenously determined¹⁰ the operating costs can be reduced, by lowering the crewing costs (for instance, through subsidies of the social security contributions), changing the on-board

¹⁰ Excluding the charges imposed for withholding strategic oil reserves, for which the possibility of reductions can be examined.

staff composition requirements to be adequately matched to the real operation needs of the vessels and abolishing the requirement for adequate knowledge of Greek for the crew that is not in charge – according to the international standards – of duties related to safety. Additionally, reducing the period of compulsory operation in regular routes (with a compensation for providing public services, reduction of the period of compulsory seamen employment and provision for unemployment benefits) would also help in this direction.

- Consider the possibility of abolishing the surcharges that support public service lines, the reduction of fees for port use where the reciprocating services are lacking as well as the revision of the obligatory discount scheme for certain user categories.
- Examine the possibility to reduce the VAT rates on coastal fares for passengers and vehicles. Using three different scenarios, we estimated that the reduction of the VAT on passenger and vehicle (cars and motorcycles) fares could under certain conditions (e.g. full pass-through of the VAT reductions onto fares) increase the demand for coastal services. This is expected to have a positive impact both on the sector and the economy of the Greek coastal regions due to a boost in the number of visitors. Additionally, any losses in revenues from the VAT reduction could be counterbalanced from potentially higher tax revenues resulting from the increased economic activity in the Greek island regions, provided that the new demand in the island regions does not reduce tourism demand elsewhere in the country and tax-evasion does not erase more than 60% of the potential tax revenue gains in the Greek islands. Therefore, under certain circumstances the reduction of the tax rates on passenger and vehicle fares should not have negative fiscal implications.
- Modernisation of the ticketing system: The gradual adoption of new technologies by the consumers, along with an upgrade of the IT systems of the shipping firms and adjustment of the regulatory framework could facilitate the use of e-tickets in the maritime sector, as in the case of airlines. With the necessary adjustments and under the condition that any issues arising are resolved (for instance in relation to the capacity of port infrastructures to handle large number of passengers and vehicles with etickets), the services provided to passengers could improve further, while the shipping firms would be able to make savings and at the same time extend the implementation of



dynamic pricing systems, allowing them to manage their revenue streams more efficiently.¹¹

- Re-organisation of the coastal maritime system. The maritime transport network should be reorganised in order to serve best the existing needs and at the same time to utilise better the funds provided for the compensation of public-service lines. This means that an assessment of the existing subsidised coastal routes is necessary taking into consideration the following issues: Are the coastal transportation needs covered by the existing commercial routes? Are there alternative connection means (e.g, roads between the ports of the same island)? Do the routes fall under the minimum connection requirements? What is the cost per passenger? Additionally, the reorganisation of the coastal maritime system implies that the calls for expression of interest on coastal routes could take place more than once in a year.
- Re-examination of the compensation system for "public service obligations" across all means of transportation (sea, air, etc.). The proposed abolishment of the surcharge in favour of the public-service lines, which distorts the coastal maritime market (through cross-subsidies), implies that the compensation awarded for the execution of public services should be re-assessed in total, so as to ensure that the resources from the State Budget are distributed, treating all users equally. Studies have underlined the lack of appropriate planning with regard to this issue. For instance, in some routes the level of compensation is disproportionally low, while overlaps have been observed among coastal and air routes, as well as among air-transport public service obligations and profitable coastal shipping routes.
- Along with the re-design of the coastal network the potential of establishing regional transit hubs that enable the fast correspondence with smaller islands in combination also with other means of transportation (e.g. buses, airlines, seaplanes) should also be examined in detail. However, it should be underlined that such initiatives face numerous obstacles (e.g. complexities in handling passengers and luggage).
- Improvement of processes: a) Commercial route applications b) Choice of vessels used on public service routes, c) Compensation for executing public services, d) Tender terms for public service routes based on criteria with regard to seasonality, capacity of vessels and introduction of quality criteria (such as speed, comfort, fares, etc).

¹¹ The plans to modernise the ticketing system are already at an advanced stage, with the issuance of the relevant presidential decree expected shortly.



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