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The Greek passenger ferry transport system

Service Level Agreements in the route Piraeus – Samos Island

By

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Dedicated to:

My grandfather Lefteris

Island of Samos, 24th August 2009

Acknowledgements

Writing the Thesis was a great experience for me. As I come from the island of Samos it was a very good opportunity for me to publish the needs of the residents of the islandic areas and try to contribute the least to the solution of their problems. The accomplishment of the Thesis would not have been possible without the support and help of the people I would like to mention here.

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Abstract

Five years after the liberalization of maritime transport in the majority of the Greek domestic routes (removal of cabotage) and the abolition of the age limit applying to vessels, the Greek ferry transport system is characterized by several major problems. These problems do not concern only important issues that deal with the functioning of the state and its interventions, such as port infrastructure problems, institutional issues, structure of the network design, but also issues concerning the offering services by the shipping companies such as malfunctions of the fleet, unjustified high tariffs and fares and non service of certain isolated routes and islands.

The Thesis examines these problems by presenting the Aegean ferry system and the Adriatic ferry system. The difference between these two systems will emphasize the necessity for individual approach of these two cases. Also we will examine the implementation of an Essential Terms Agreement through a case study in a very popular Greek route of the Aegean Sea. The main target of this case study will be to identify the needs of the islandic areas and to defend the main research issue that an individual technical consideration is required for developing transportation Service Level Agreement.

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Chapter 1: Research Question and Methodology

According to modern prevailing perception and as it is suggested by the European Union, the short sea shipping can be defined as follows: [1]"*short sea shipping is the carriage of cargo and passengers through the sea, between ports that are placed in the geographical location of Europe or between European ports and ports that are located in third countries, which have coast line that is connected to Europe".* According to this definition, short sea shipping contains the domestic or international sea carriage of cargo or passengers, and feeder services across the coast line. Sea passenger transportation is a very important transport sector, which connects countries and large geographical regions. With more than 400 million sea passengers per year, travelling through European ports, sea passenger transportation and ferry transport system have a direct impact on the quality of life of citizens in islands and peripheral regions.

On the other hand, as far as the current situation of the Greek ferry transport system is concerned, five years after the liberalization of maritime transport in the majority of the Greek domestic routes (removal of cabotage) and the abolition of the age limit applying to vessels; it is characterized by several major problems. These problems do not concern only important issues that deal with the functioning of the state and its interventions, such as port infrastructure problems, institutional issues, structure of the network design, but also issues concerning the offering services by the shipping companies such as malfunctions of the fleet, unjustified high tariffs and fares and non service of certain isolated routes and islands.

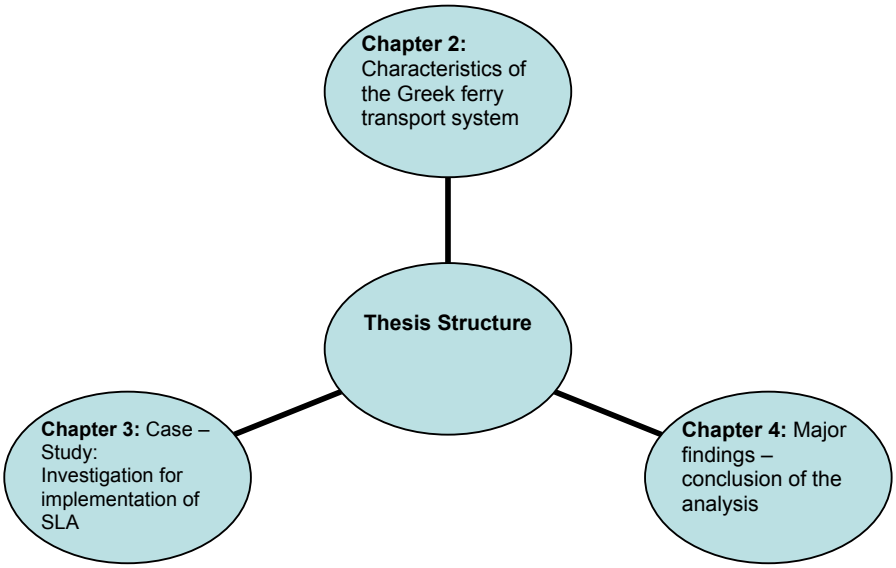
The main scope of this thesis is to study the aspects and the characteristics of the Aegean passenger ferry system and the Adriatic passenger ferry system carried out by Greek ferry shipping companies. More particularly, the author using these characteristics will try to compare these two ferry transport systems and try to identify the major differences or similarities of these two. The outcome of this comparison will emphasize the necessity for individual approach of these two cases. Moreover, the findings of this comparison will allow us to develop a case study according to which there will be an attempt to investigate what Service Level Agreement is most appropriate to be implemented in a vital route of the Aegean Sea such as the line/route Piraeus – Icaria Island – Fournoi Island and Samos Island. In essence, the current thesis is trying to investigate the following research question/issue: "*An individual technical consideration is required for developing transportation Service Level Agreement".*

Overall the analysis focuses on the research question/issue that *an individual technical consideration is required for developing a transportation Service Level Agreement.* This research question is answered in the two different parts of the Thesis. In the first part (chapter 2) by stating the differences between the two ferry transport systems (Aegean – Adriatic) and in the second part of the Thesis (chapter 3) by the case study showing that each island is unique (different characteristics – different needs) and needs to be treated independently.

[1] Goulielmos A., Sambrakos E., (2002), *Ferry system and short sea shipping,* Stamoulis Publications, Athens

The structure of the thesis is visualized in figure 1 below:

Figure 1 : structure of the Thesis



The methodology of the first and second chapter of the Thesis will be based on secondary data analysis. More specifically, extensive literature (academic, trade, and professional) review will be used. As far as the third chapter is concerned, the author uses some interviews with persons of different professional fields.

Despite the fact that the passenger ferry system in Greece has went through different phases the last 30 years, phases that concern tremendous changes in the traffic volume, the fleet composition and the legal regime, there is a characteristic that all this time remains stable and untouched: the lack of a certain plan and efficient actions taken by the Greek state. The problem of the Aegean passenger ferry system has been always postponed for the future in order the Greek governments to avoid the possible risks and the short term "political cost". This constant adjournment has created more problems, aggravating by this way the "tired" system. In contrast to the Aegean, the situation is different in the Adriatic passenger ferry system which is carried out with Greek vessels too: the quality of service has risen, the number of passengers has grown and prices are lower, per kilometer, than in the Aegean. In general passengers on Adriatic routes have benefited from liberalized entry.

Chapter 2 begins with an overview of the transport system in Europe mentioning, also, the concept of international multimodal transport. Afterwards, it is given an analytical description of the characteristics and the problems of the Aegean ferry passenger system. More specifically there will be described the geography and the network design of the system, the factors that determine the level of fares, the fleet composition, the volume of passenger and vehicle traffic during the year of 2008,

the ports and the associated problems of the port infrastructure and will be provided a detailed explanation of the legal regime. After describing the Aegean ferry transport system, it will be presented an analysis of the characteristics of the Adriatic ferry passenger system similar to the structure followed for the Aegean (network design, level of fares, fleet composition, volume of passenger and vehicle traffic, port infrastructure, and legal regime). The chapter concludes with the comparison of the two systems which will help the reader to shape a clear view of the current situation and will support the concept of the need for individual attention for each ferry system in Europe.

Chapter 3 relates the findings of the previous two chapters with the definitions of the Service Level Agreement and Essential Terms Agreement. There will be provided a description of these two definitions including the processes which are followed for their implementation. The chapter ends with a case study in which the author will examine if a Service Level Agreement is necessary to be implemented in the route/line Piraeus – Icaria – Fournoi and Samos Island. The empirical research will be carried out according to specific indexes and using the Delphi method.

Finally, *Chapter 4* provides the overall conclusion of the Thesis and its major findings. In addition, some suggestions for future research in the area of the Greek ferry transport system will be provided and the author makes some suggestions on how the system can be improved.

Chapter 2: Analysis of the characteristics of the Greek passenger ferry system

2.1 Introduction

In this chapter the description will start by mentioning the importance of transport in Europe by presenting certain statistical data about various sectors such as the household expenditures, the employment that is occupied in the transport sector and the governmental finance to the sector. After it, the description focuses on the overview of the transport policy in Europe according to changes that have taken place to the sector during the last decade, such as the introduction of the international multimodal transport. It will be explained the meaning of the ferry passenger system in Europe and its importance for the European citizens and the economic welfare. Afterwards, it is provided a detailed description of the all the aspects and the problems that characterize the Greek ferry passenger system starting from the Aegean. More specifically, the description will be based on the geography and the network design of the system, all the factors that determine the level of fares, the fleet composition, the volume of passenger and vehicle traffic according to data of the year 2008, the vital role of the ports and the associated problems of the port infrastructure and, finally, there will be provided a description and explanation of the legal regime and all the significant transformations that have taken place during the last 10 – 15 years.

After having described the Aegean ferry transport system, the analysis will focus on the characteristics of the Adriatic ferry system. The structure of the description is similar to the one followed for the Aegean (network design, level of fares, fleet composition, volume of passenger and vehicle traffic during 2008, port infrastructure and problems and legal regime). After having described the two systems and markets, there will be presented a comparison of these two that will help the reader to shape a clear view of the current status quo in the Greek ferry system and will support the concept that each system is unique and the need for individual attention for each ferry system in Europe.

2.2 An overview of the transport system in Europe

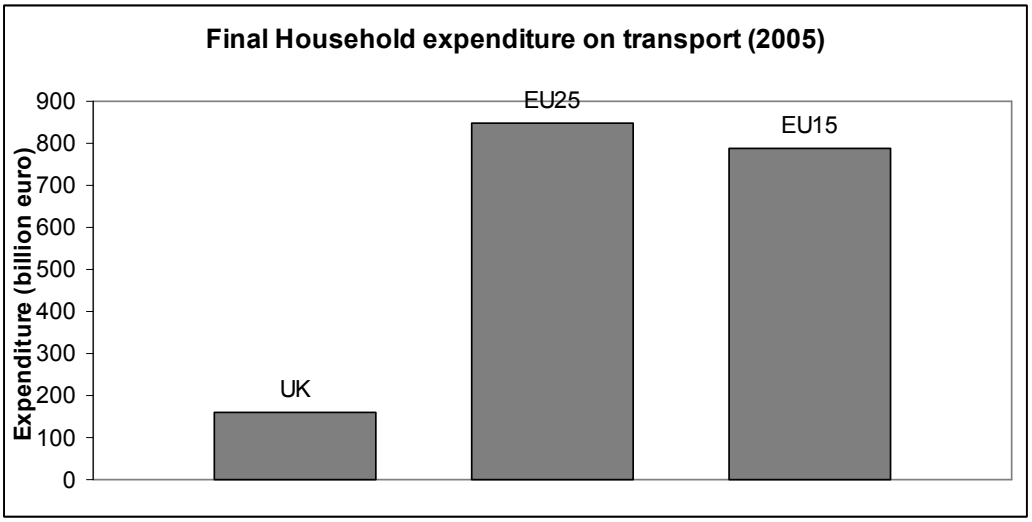
2.2.1 The importance of transport in Europe

Statistically, the transport sector is a very significant part of all the European economies, accounting for a substantial proportion of private spending, employment and government expenditure. Changes within the transport sector potentially have serious and widespread effects on the quality of life, and so it is important that the economic understanding of the sector is comprehensive. It is, also, of great importance that policy-makers can most effectively develop the sector and try to minimize the effects of any undesirable changes that inevitably will occur.

According to figure 2, in 2005, UK households spent 159.08 billion euros on the transport sector. The majority of this, 75 per cent, was directed towards the purchase and operation of personal transport equipment (cars, motorbikes etc), and the remaining 24.9 per cent towards transport services offered by third parties. A

similar description can be made of the EU27. In 2007, private households in the EU 27 spent 949 billion euros or roughly 13.7 per cent of their total consumption on transport – related items. About one third of this sum (around 310 billion euros) was used to purchase vehicles, almost half (470 billion euros) was spent on the operation of personal transport equipment (e.g. to buy fuel for the car) and the remainder (169 billion euros) was spent for transport services (e.g. bus, train, plain tickets)[2].

Figure 2: Household Expenditure



Source: Graham Mallard and Stephen Glaister (2008), *Transport Economics – Theory, Application and Policy,* Palgrave Macmillan

In 2007, total goods transport activities in the EU27 are estimated to have amounted to 4,228 billion tones/kilometre. This figure includes intra-EU air and sea transport but not transport activities between the EU and the rest of the world. Road transport accounted for 45.6 per cent of this total, rail for 10.7 per cent, inland waterways for 3.3 per cent and oil pipelines for 3.0 per cent. Intra EU maritime transport was the second most important mode with a share of 37.3 per cent while intra EU air transport only accounted for 0.1 per cent of the total[3].

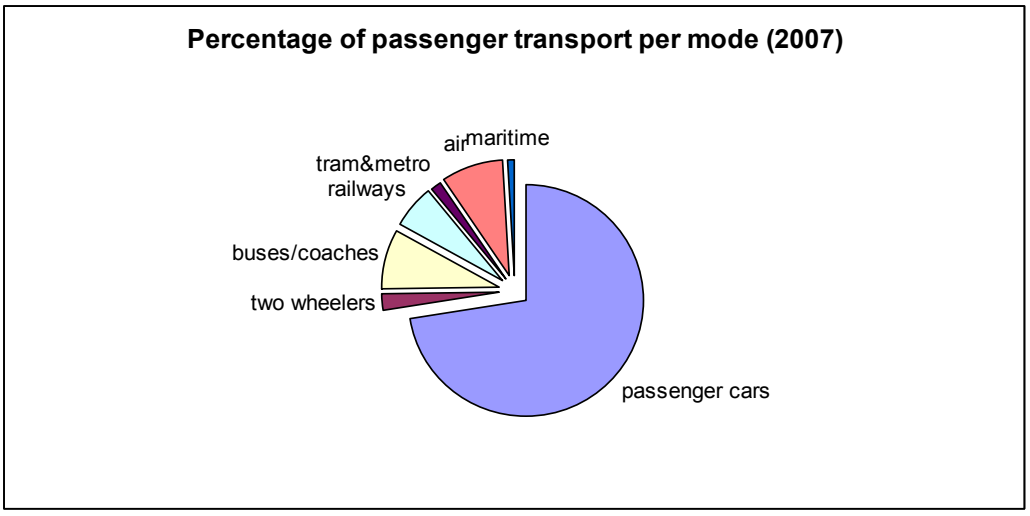
As far as the passenger transport in 2007 is concerned, total passenger transport activities in the EU27 by any motorised means of transport, are estimated to have amounted to 6,473 billion passengers/kilometre or on average 13,092 kilometres per person. This figure includes intra – EU air and sea transport but not transport activities between the EU and the rest of the world. According to figure 3, passenger cars accounted for 72.4 per cent of this total, powered two wheelers for 2.4 per cent, buses and coaches for 8.3 per cent, railways for 6.1 per cent and tram & metro for

[2] Statistical data taken by European Commission (2009). *EU Energy and Transport in Figures – Statistical Pocketbook 2009,* European Commission
[3] Statistical data taken by European Commission (2009). *EU Energy and Transport in Figures – Statistical Pocketbook 2009,* European Commission

1.3 per cent. Intra EU air and intra EU maritime transport contributed 8.8 per cent and 0.6 respectively[4].

Apart from the great necessity and importance the transport sector entails for the movement and transportation of people and goods, the transport sector also accounts for a substantial proportion of employment. More specifically, in 2004, there were 1.1 and 8.2 million workers employed in the transport sectors of the UK and EU25 respectively. The majority of these workers were occupied in the road transport. Needless to say that road freight accounting for a greater proportion than the road passenger transport. After road transport, the second largest employing industry in the transport sectors of both the UK and the EU25, in 2004, was that of supporting and auxiliary transport. This category includes activities such as cargo handling, storage and warehousing. Moreover, the third largest employing industry is travel agencies and tour operators. The remainder was employed in the sea and air industries.[5]

Figure 3 : Percentage of Passenger transport per mode (2007)



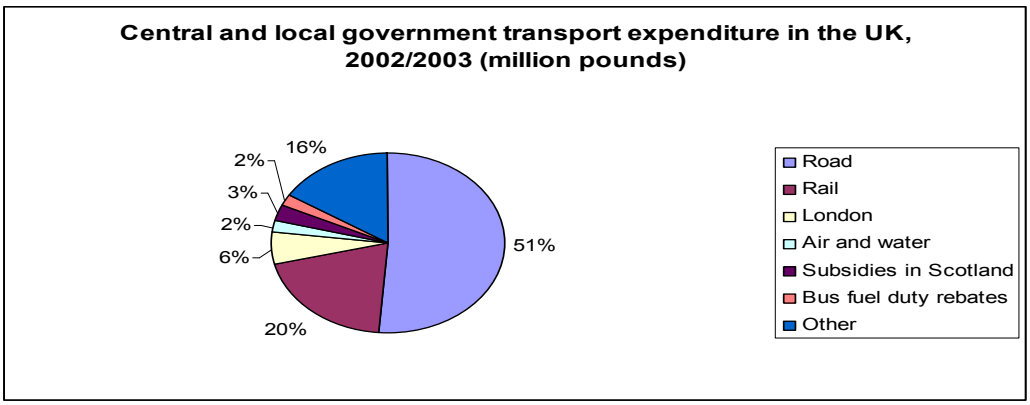
Source: European Commission (2009). *EU Energy and Transport in Figures – Statistical Pocketbook 2009,* European Commission

A final indication of the great significance of the transport sector is the amount of the government finance devoted to it. Figure 4 shows the central and local government expenditure on transport in the UK, which is a representative sample of the European economy, in the financial year 2002/2003. The total expenditure on transport in this year amounted to 13,241 million pounds, which was an increase of 2217 million pounds from the previous year, which in turn had been an increase of 2437 million pounds from the year before. As figure 4 illustrates, the largest proportion of this expenditure in 2002/2003, some 51 per cent, was directed towards road transport.

[4] Statistical data taken by European Commission (2009). *EU Energy and Transport in Figures – Statistical Pocketbook 2009,* European Commission

[5] Graham Mallard and Stephen Glaister (2008), *Transport Economics – Theory, Application and Policy,* Palgrave Macmillan

Figure 4: Central and local government expenditure in the UK



Source: Graham Mallard and Stephen Glaister (2008), *Transport Economics – Theory, Application and Policy,* Palgrave Macmillan

2.2.2 European transport policy

One of the great challenges facing policy – makers at the start of 21st century is to reconcile the different priorities between economic development and environment, whilst at the same time recognizing the different social priorities and the distributional consequences of decisions. Transport offers us the best example of the complexity of these choices. In the past, a high – quality transport system has been seen as an essential prerequisite for economic development and many major investments in transport have been justified on non – transport criteria. This established wisdom has now been questioned; particularly where high quality well connected networks already exist. The real value added is reflected in making the existing transport systems and the complementary communications networks compatible, through common organizational and operating systems and through high quality monitoring and information systems. It is the integration of networks in this wider sense that true value added is obtained.

In addition to the debate over the economic impacts of new transport investments, policy is equally concerned with the environmental and social costs of transport. It is now widely recognized and accepted that transport in Europe is unsustainable and that the trend based path of continuous and continuing growth is unacceptable. This understanding is crucial to the development of transport policy at both the national and European levels. Although there is common agreement on the nature and scale of the problem, little is being done to change the direction of policy in a fundamental way. It is argued that the economic growth objectives of policy are crucial to the competitiveness of Europe and that an explicit realignment of policy objectives towards environmental and social measures will weaken this position.[6]

As regards the proper scope of a European policy, transport is local, regional, national, European and global. The majority of journeys are in fact very local – for satisfaction of the daily needs – and only a few cross national boundaries. Yet policy at the European level is critically important. It is needed in order to secure the

[6] Banister D., Stead D., Steen P., Akerman J., Dreborg K., Nijkamp J., Tappeser R. (2000), *European Transport Policy and sustainable mobility,* European Commission

efficient operation of an economy which now operates on a European scale. If goods and people are to flow freely across frontiers, the transport industries by which they are moved need to operate in fair competition with one another under conditions which do not impose unnecessary barriers. Transport policies are need at every level, but they also need to find their place within an overall framework at the European level. The making of transport policies at the European level has become important not just for the direct consequences it has on the transport of people and freight across European frontier, but also for the policy framework it establishes for national, regional and local transport policies.

A wide range of policy measures has recently been proposed to cope with the high social costs of geographical mobility, such as information campaigns, user charges, emission standards, mobility constraints, new forms of land use and physical planning, and new transport technologies. The main objective in most urban areas is also to stimulate public transport and to reduce car use. Experiences from different countries and cities, however, have shown that there is no single unambiguous and effective remedy. One observation is clear: at both a global and local scale, modern societies appear to be characterized by an unprecedented increase in spatial mobility. The dynamic behavior of all actor involved (the demand side), and the rapid change in modern transport modes (the supply side) have led to a dramatic rise in the mobility of individuals and businesses.[7]

At this point of the description, it is very useful to take a look at the developments of the sector of European Transport Policies that have taken place in the recent past. While it is too early to fully assess the impact of a number of policy measures taken since 2000, a few indications can nevertheless be distilled from market trends and data.[8] These can be assessed against the policy objectives set in the mid-term review of the White Paper and those set for transport by the Sustainable Development Strategy (SDS) of 2006. It is generally admitted that European Transport Policy has largely achieved the objectives set out in the above mentioned strategic documents, by substantially contributing to the development of the European economy and its competitiveness, by facilitating market opening and integration, by establishing high quality standards for safety, security and passenger rights and by improving working conditions.

The European Transport policy has contributed to a mobility system that compares well in terms of efficiency and effectiveness with that of the economically most advanced regions of the world. The European Transport policy, has assisted social and economic cohesion and promoted the effectiveness of the European industry therefore contributing significantly to the Lisbon Agenda for Growth and Jobs (March 2000).

The market opening that has taken place between the countries of the European Union has led to more efficiency and lower costs. We can take as a representative example the air transport where the process is more advanced. The European Union is on its way to create a level playing field in the increasingly integrated transport market, but issues such as differences in taxation and subsidies still need

[7] Handley Stevens. (2003), *Transport Policy in the European Union,* Palgrave Macmillan Publishers, England

[8] Handley Stevens. (2003), *Transport Policy in the European Union,* Palgrave Macmillan Publishers, England

to be addressed. It is worth to be mentioned that not only large companies but also many small and medium enterprises (SMEs) have benefited from market opening and integration in the different modes of transport.

Trans – European Transport Networks (TEN-T) policy has much increased the coordination in the planning of infrastructure projects by the Member States. Progress in implementation has been substantial and about one third of the necessary investments (400 billion euros) in the TEN-T have been made. The extension of the TENs to cover the new Member States, building on the investment already made prior to enlargement, has provided the blueprint for Structural and Cohesion funds to gradually fill their infrastructure deficits. Needless to say tha much remains to be done but the TENs have already gone a long way in linking European Union's markets and people. [9]

Moreover, progress has been achieved in reducing air pollution and road accidents, Air quality in European cities has significantly improved through the application of ever stricter Euro emission standards, but more needs to be done, above all to reduce emissions in urban areas as well ensuring that real world emissions are adequately controlled. The expansion of transport infrastructure has also resulted in habitat loss and landscape fragmentation. The objective to halve casualties in road transport by 2010, included in the 2001 White Paper, will likely not be achieved although action has been triggered in many Member States leading to significant progress. With still over 39,000 in the European Union in 2008, transport by road remains far too costly in terms of human lives.
As far as the maritime sector is concerned, marine pollution and maritime accidents were considerably reduced and the European Union has established one of the most advanced regulatory frameworks for safety and for pollution prevention (lastly with the third Maritime Safety Package). On the other hand, in aviation it has adopted a comprehensive set of common, uniform and mandatory legislation covering all the key elements affecting safety (aircrafts, maintenance, airports, air traffic management systems etc). Safety agencies have been set up for aviation (EASA), maritime (EMSA) and rail transport (ERA).

The 2001 White Paper did not refer to security. After the terrorist attacks of 11th September 2001, however, was inevitable and necessary a security policy to be developed. Nowadays there are European Union legislative measures on transport security for most transport modes and for critical infrastructures. The European Union also cooperates with the international community to improve policy towards the security in many different sectors. For example, recently, European Union naval operations have been adopted and launched in order to fight piracy.

As far as policy for passenger transport is concerned, many steps have been made ahead. Quality services for transport users have been promoted by strengthening passenger rights. Legislation on aviation passengers' rights has been adopted and is now in force. In the field of rail, a regulation was adopted in December 2007 which provides for extensive passenger rights. In December of 2008 two proposals have been adopted on passenger rights. The first was in the field of bus and coaches and the second was in the maritime sector. On the other hand, public transport (bus and

[9] Commission of the European Communities (2009), *A sustainable future for transport: Towards an integrated, technology-led and user friendly system,* COM 279/4, Brussels

rail) has been identified as one of the sectors where consumer satisfaction is the lowest.

Ending this part of the Thesis it is necessary to mention the social dimension of the modern European Transport Policy which was strengthened also with respect to transport workers. Legislation on working time, on minimum level of training, on mutual recognition of diplomas and qualifications, was introduced, in collaboration with the social partners, to improve working conditions in road, rail and maritime transport.[10]

2.2.3 Recent changes - Global trends in the transport sector affecting European Transport Policy

Some recent developments in the transport sector will briefly be described in this part of the Thesis in order to shape a clearer idea of the sector paying more attention to multimodal transport which will be described separately in the next paragraph (2.2.4). More specifically, in the area of transportation we can observe the following changes and developments taking place in many European countries:

- The production of more and more high value, low weight commodities. A decreasing amount of material is needed per unit of national product (dematerialization). On the other hand, more sophisticated products are made, while at the same time savings in the use of raw materials have been achieved
- Nowadays, smaller products play an important role, with direct consequences for the geographical distribution of resources and products. Given this shift in product types, road and air transport carry an increasing share of total transport at the expense of modes that used to be more efficient for bulk products (such as water transport and pipeline transport).
- At the same time, combined transport of previously competitive modes, especially road-rail transport (container traffic) and road – air transport, is becoming more important in order to increase efficiency and to avoid congestion.
- The development of transport informatics and logistics as key factors for more transport efficiency and integration is also important. The JIT (just-in-time) principle one such an example. These trends will affect the spatial configuration of European economies substantially (in terms of mobility patterns and location patterns for example). Concepts like door-to-door transport and, increasingly, person-to-person transport (for reasons of security) demand greater flexibility.
- As far as technological changes are concerned, high tech telecommunications and telematics will have a large impact on the development of new rapid modes such as high speed trains and larger airplanes. Modern electronics and informatics have the potential to provide environmentally friendly solutions. New transport technology, pre – programmed routing and efficient organizational structures and management will make such developments possible.
- Advanced communications technology may structurally change the demand for passenger and freight transport (telecommuting or teleshopping for example). On the other hand, the information society may lead more flexible working

[10] Commission of the European Communities (2009), *A sustainable future for transport: Towards an integrated, technology-led and user friendly system,* COM 279/4, Brussels

arrangements with an increasing number of commuters without a fixed place of work, relying more heavily on the car.

- An important element in a European economic context is the globalization of the economy in general. This global shift goes hand in hand with an economic reorientation. Products are increasingly being made by transnational companies for worldwide markets. Energy, raw materials and intermediate goods are obtained at great distances. Within Europe this flow will result in large flows of products between countries. These dynamics constantly call for adaptation and more importantly for anticipation of changing economic conditions.[11] Although it may be temporarily halted by economic crises and geopolitical instability, the strong economic growth of many developing countries implies further globalization. Transport outside Europe will increase much more than the European interior and European Union external trade and transport are likely to keep growing rapidly in the coming years.
- On the other hand, the world population is expected to exceed 9 billion by the year 2050[12]. This tremendous increase, by roughly a third from 6.8 billion people in 2009, will have a tremendous impact on global resources, inevitably making the goal of setting up a more sustainable and efficient transport system – one which uses fewer resources – all the more important.
- More people and greater economic affluence have as a result more mobility and more transport. Some studies have showed and suggest that the number of cars in the world will increase from around 700 million today to more than 3 billion in 2050, creating by this way serious sustainability problems unless there is transition towards lower and zero - emission vehicles and a different concept of mobility is introduced.[13]

In general, the goal of the European Transport Policy is to establish a sustainable transport system that meets society's economic, social and environmental needs and is conducive to an inclusive society and fully integrated and competitive Europe. The future holds significant opportunities for the European population, and the transport sector is to play an important role in their realization. The sector needs to be guided carefully to ensure that it helps social welfare to be maximized, and so the role of transport economists is just as important now as it has ever been. The ongoing trends and recent changes, which have been highlighted above, point to the need for satisfying a rising demand for accessibility in a context of growing sustainability concerns. The most immediate priorities appear to be the better integration of the different modes of transport (*multimodal transport)* as a way to improve the overall efficiency of the system and the acceleration of the development and deployment of innovative technologies. This is an approach that always keeps the transport users and workers, with their needs and rights, at the centre of policy making. In the following chapter, is underlined in detail this recent trend towards a more integrated transport system.

[11] Banister D., Stead D., Steen P., Akerman J., Dreborg K., Nijkamp J., Tappeser R. (2000), *European Transport Policy and sustainable mobility,* European Commission

[12] United Nations Population Division (2009): *World Population Prospects: the 2008 Revision*

[13] Commission of the European Communities (2009), *A sustainable future for transport: Towards an integrated, technology-led and user friendly system,* COM 279/4, Brussels

2.2.4 The concept of multimodal transportation

As it has been already mentioned in the previous paragraph, the most important recent change in the transport sector is the integration of different modes of transport or else the introduction of multimodal transportation in order to increase the overall efficiency of the system by eliminating all the related costs occurred. More specifically according to the U.N. Multimodal Convention (which has not entered into force and most likely never will) defines in article 1.1 multimodal transport as follows: "International multimodal transport means the carriage of goods by at least two different modes of transport on the basis of a multimodal transport contract from a place in one country at which the goods are taken in charge by the multimodal transport operator to a place designated for delivery situated in a different country."

The concept of international multimodal transport covers the door to door movement of goods under the responsibility of a single transport operator. The concept might not be new as it has been developed with the container revolution initiated in the late 1950's by Malcolm McLean and his trucking operations. The emergence of the container technology and of the multimodal transport concept came from and facilitated growing international trade. Trade and transport are inextricably linked: efficient transport services are prerequisite to successful trading. International Transport generally implies the use of various transport links (interfaces and modes), each link corresponding to a transfer, storage or transport operation either in the country of origin, in a transit country, or in the country of final destination. The situation has created a number of problems over the years as more and more shippers are realizing that this new concept is involving the effective participation of various transport mode operators but does not always make clear who is responsible for delivering cargo at destination in safe conditions according to agreed schedules.

Considering the variety of cultures, languages and commercial practices at both ends of a trade, and the resulting complexity of assembling such an international transport operation, it would appear reasonable to a trader to let one qualified operator organize and be responsible and accountable for the entire transport chain. Beginning from the present unimodal transport conditions and legal environment, transport operators have developed transport systems to fulfill customers' requirements, offering competitive services and thereby making trade more efficient by offering multimodal transport services to their clients. Since the introduction of containerization and the later development of EDI (Electronic Data Interchange), international trade has increasingly demanded efficient commercial transactions. To take advantage of the potential offered by the new technologies, the international trading community updated its uniform commercial practices regarding trading terms, letters of credit and multimodal transport documents.

The concept of multimodal transport covers the safe and efficient movement of goods, where the Multimodal Transport Operator (MTO) accepts the corresponding responsibility from door – to – door. With technological development of transport means and operations, as well as in communications, coupled with liberalization in the provision of services, more and more transport operators are able to provide

such safe and efficient transport. These services are increasingly market – segment oriented rather than transport mode oriented.

As far as policy regarding the multimodal transport is concerned, in 1973 commercial forces created a set of rules under the ICC banner, while the governments have initiated consultations on an international convention in UNCTAD. In 1980, the Multimodal Transport convention was signed but it has so far received little support. In 1990, this situation forced commercial parties jointly with UNCTAD to replace the 1973 Rules by the UNCTAD/ICC Rules for multimodal transport Documents. These new rules have become commercial practices (new FIATA FBL, new BIMCO COMBIDOC). In Latin America, some governments have recently agreed on a regional legislation for multimodal transport, taking basic elements from the Multimodal Transport convention and from the UNCTAD/ICC Rules. Other governments have deigned their own law on multimodal transport.

Finally, it is very important to mention what are the challenges in the sector of multimodal transport. Firstly, with the globalization of production and liberalization of services, developing countries and countries in transition, more than ever, need to increase their capabilities in offering reliable and cost – effective transport and logistics services. Secondly, there is a world – wide need for harmonization of the legal environment for multimodal transport, in particular considering the development of new forms of international transport (combined road/rail transport and short-sea shipping in Europe, for example).[14]

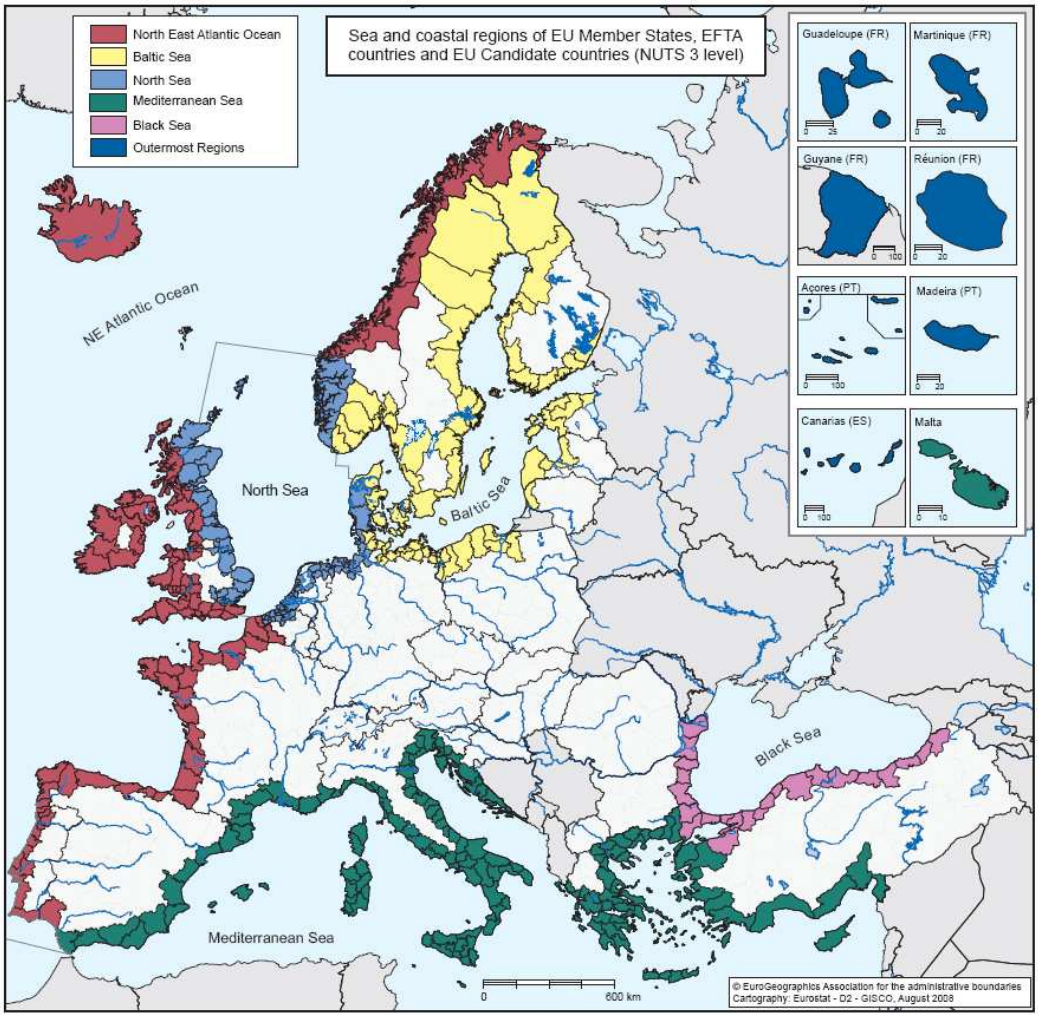
2.2.5 European passenger ferry transport

After having presented a detailed overview of the transport system in Europe, mentioning its importance for the European economy and welfare, the current status quo in the European Transport Policy, the recent changes that are taking place, nowadays, and the global trends in the transport sector affecting European Transport Policy, giving special attention to the concept of multimodality, it is time to give an overview of the European passenger ferry transport. In this part of the Thesis it will be described the current situation of the European passenger ferry transport system by giving some statistical data. More specifically, this part will be used as an introduction for the following parts of the current chapter which concerns the Greek ferry transport system.

As it is known a great number of European citizens is living in the coastal regions of Europe. More specifically, the length of the coastline for the EU27 Member States with a sea border is estimated to be 136,106 kilometers. The European coastal regions account for 43 per cent of the total European Union's 27 area and population. In the coastal regions, the population density (inhabitants per km^2) is highest on the islands of Malta, followed by the Belgium and the Netherlands on the European Union mainland. The lowest population densities are to be found in Estonia, Sweden and Finland.

[14] UNCTAD (2008), *Improving International Transport Services: a fundamental element of trade efficiency*

Figure 5: Sea and coastal regions of EU Member States



Source: Eurostat (2009), *Statistics in Focus,* Eurostat Publications

As it is shown in Figure 5, the European coastline and ferry system as well has been divided into six area categories which can be summarised as follows:

- North East Atlantic Ocean
- Baltic Sea
- North Sea
- Mediterranean Sea
- Black Sea
- Outermost Regions (French overseas territories, Azores, Canary Islands and Madeira

More specifically the North East Atlantic Ocean includes the ferry transport between England and France, which can be described as the busiest seaway in the world. The transport is carried out through the English Channel which connects Great Britain and mainland Europe sailing mainly to French ports, such as Calais, Boulogne, Cherbourg – Octeville, Caen, St Malo and Le Havre.

On the other hand, large cruise ferries are sailing in the Baltic Sea between Finland, Sweden, Germany and Estonia while the ferry transport between Great Britain, Netherlands and the Scandinavian countries comprises the North Sea ferry transport.

The largest ferry transport system in terms of number of passengers carried each year is the Mediterranean ferry system which includes countries like Spain, France, Italy, Croatia, Albania and Greece (divided into the Aegean and the Adriatic). The Greek ferry passenger transport system will be described in the next part of the Thesis. Finally, there is the Black Sea ferry system which is carried out between countries such as Bulgaria, Georgia, Romania, Russia, Turkey and Ukraine.[15]

Table 1: Number of seaborne passengers embarked and disembarked in all ports (in 1000)

	1997	2001	2002	2003	2004	2005	2006	2007					Growth rate 2006-2007 (%)
	Total	Total	Total	Total	Total	Total	Total	Inwards	Outwards	Cruise	Non cruise	Total	
BE (1)	1 946	1 377	1 125	739	787	922	891	452	457	151	759	909	+2.1%
BG	:	3	6	4	6	13	15	5	5	0	10	10	-32.7%
DK	75 928	47 862	48 178	48 653	48 555	47 924	48 145	24 200	24 208	289	48 120	48 409	+0.5%
DE	:	31 817	33 222	32 146	29 815	29 490	29 256	15 030	15 171	483	29 717	30 200	+3.2%
EE	:	5 740	5 136	5 172	6 452	6 885	6 691	3 250	3 273	0	6 523	6 523	-2.5%
IE	4 380	3 895	3 893	3 747	3 550	3 275	3 207	1 682	1 542	104	3 121	3 225	+0.6%
EL (2) (3)	32 259	50 149	101 210	102 760	96 744	86 068	90 402	46 250	46 173	528	91 894	92 423	+2.2%
ES	13 939	18 623	18 947	20 041	21 694	22 410	22 167	11 576	11 557	1 810	21 324	23 134	+4.4%
FR	33 124	27 724	29 110	27 405	27 068	25 804	26 402	13 537	13 511	462	26 586	27 048	+2.4%
IT	80 181	86 882	82 700	82 576	83 316	78 753	85 984	:	:	:	:	:	:
CY	:		339	287	247	194	228	87	87	173	1	174	-23.9%
LV	:	26	23	118	130	144	217	179	183	0	362	362	+66.6%
LT	:	101	107	135	146	166	190	104	108	0	212	212	+11.2%
MT	:	:	:	6 942	7 250	7 103	7 328	3 902	3 900	18	7 784	7 802	+6.5%
NL (4)	1 964	2 041	2 202	2 015	2 012	2 116	2 127	945	925	:	1 871	1 871	-12.1%
PL		4 416	3 304	3 188	2 031	1 647	1 737	1 218	1 238	0	2 456	2 456	+41.4%
PT (4)	34	542	502	616	650	662	686	368	367	:	735	735	+7.2%
RO	:	:	:	:	:	:	:	0	0	0	0	0	:
SI	:	34	42	47	42	35	30	35	17	:	:	51	+74.0%
FI	15 191	16 729	16 577	16 341	16 806	17 112	16 739	8 251	8 199	15	16 436	16 450	-1.7%
SE	40 949	32 350	32 112	32 748	33 318	32 617	32 334	16 582	16 080	15	32 647	32 662	+1.0%
UK	36 287	34 516	35 623	33 708	32 837	30 207	29 930	15 156	15 309	1 132	29 333	30 465	+1.8%
EU-27	:	:	:	**419 387**	**413 458**	**393 547**	**404 706**	:	:	:	:	:	:
EU-27-IT	:	:	:	**336 812**	**330 141**	**314 794**	**318 723**	**162 810**	**162 311**	**5 179**	**319 890**	**325 121**	**+2.0%**
EU-15 (2)	:	**354 506**	**405 400**	**403 494**	**397 153**	**377 359**	**388 271**	:	:	:	:	:	:

(1) The increase registered between 2004 and 2005 is partly due to an improvement of the data reporting system.
(2) EL from 1997 to 2001: partial data.
(3) EL: up to 2003 data exclude cruise passenger; the number of passengers excluding cruise passengers is 96 416 in 2004, 85 392
in 2005 and 89 973 in 2006.
(4) *NL and PT: data exclude cruise passengers.*
Source: Eurostat (2009), *Statistics in Focus,* Eurostat Publications

As we can see by the figure 6 the number of passengers who passed through European Union's 27 ports in 2007 is estimated at 410 million (2 per cent increase compared with 2006 for European Union 27 excluding Italy). Unlike goods handling (2/3 unloaded, 1/3 loaded), there was no significant difference between the numbers

[15] Eurostat (2009) – Giuliano Amerini, *Statistics in Focus,* Eurostat Publications

of passengers embarking and disembarking, due to the fact that most of this transport activity corresponds to the main national and intra – European Union – 27 ferry connections.

As it has already been mentioned, Figure 6 shows the number of passengers embarked and disembarked in all European Union's ports by country. The number of passengers who passed through European Union's ports in 2007 is estimated at about 410 million (using 2006 data for Italy). In the European Union of 27 exluding Italy, the number of passengers grew by 2 per cent compared to 2006. At European Union level (with the uncertainty due to the missing data for Italy) this is the second yearly increase after a period of negative trend.

More specifically, Greece (with 92 million passengers embarked and disembarked) and Italy (86 million passengers in 2006) are the leading countries in transport of passengers by sea. As far as Greece is concerned, it has registered an increase in the number of passengers embarked and disembarked (+2 per cent). With this increase, Greece continued recovering from the decrease registered between 2003 and 2005. This downturn was mainly explained by the opening in 2004 of a bridge between the Peloponnese and mainland Greece ("Charilaos Trikoupis" bridge) competing with the Greek ferry connection Rio – Antirio.[16]

Denmark is third with regard to passengers embarked and disembarked in 2007 (48 million) and remained stable compared to 2006 (+0.5 per cent), although the number has fallen by 36 per cent since 1997. Denmark counts numerous ferry connections between its various islands, and with Germany, Sweden and Norway. The tremendous fall occurred because of the opening of the Great Belt bridge in 1997 (rail) – 1998 (road) connecting its two main islands (Sjaelland and Fyn) and the corresponding closure of the ferry link between Korsor and Nyborg (both ports recorded more than 8 million passenger in 1997). The major drop that occurred in some countries between 1997 and 2007 is mainly explained by the opening and progressive use of new alternatives to sea routes. Also, the introduction of more low cost flights shifted a great number of passengers to this alternative.

As far as European passenger ports are concerned, in 2007, there were 5 Italian, 3 Greek and 3 Spanish ports amongst the top 20 passenger ports. Denmark and Sweden had two ports each in the top 20, and Germany Estonia, France, Finland and the United Kingdom are represented by 1 port each. There used to be two additional ports in the list, Rio and Antirio, which registered a dramatic fall (from 13 - 14 million passengers in 2002 – 2003 to only about 2 million sice 2005) due to the mentioned opening of the "Charilaos Trikoupis" bridge between the Corinth Gulf and Patraikos Gulf in 2004.

This fact largely explains the fall in the total number of passengers for the top 20 ports between 2003 and 2005. Five of the ports amongst the top 10 passenger ports are Mediterranean (see figure 7), three ports are located on the Baltic coast and the remaining two are situated on the Atlantic coast (including the Channel).[17]

Two of the ports in figure 7 registered a decline in the total number of passengers between 2006 and 2007 which are Piraeus and Tallinn. After losing 3 places in

[16] Eurostat (2009) – Giuliano Amerini, *Statistics in Focus,* Eurostat Publications
[17] Eurostat (2009) – Giuliano Amerini, *Statistics in Focus,* Eurostat Publications

2006, Calais, regained one place in the ranking mainly because of the decrease of the number of passengers embarked and disembarked at Piraeus (the decrease was 4 per cent).

The significant fall in the number of passengers in Dover and Calais between 1997 and 2007, by 32 per cent and 43 per cent respectively, reflects the emergence of successful rail and air transport alternatives as it has been already mentioned above. [18]

According to the statistical data, concerning the European ferry transport system, presented at this part of the Thesis we can easily realise that ferry system and a significant mode of transport within the European Community. For many European citizens, such as those living in isolated coastal areas, this mode of transport is of vital importance in order to cover their daily needs that needs to be prioritised in terms of European Transport Policy. During the next parts of the Thesis, we will focus on the Greek passenger ferry system which is the most important and difficult to be investigated transport system due to its complexity and diversity.

Table 2: Top – 10 European passenger ports in 2007 – by total passengers embarked and disembarked (in 1000)

Rank 2007	Port	Sea	1997	2003	2004	2005	2006	2007			Growth rate 2006-2007 (%)	Average annual growth rate 1997-2007 (%)
			Total	Total	Total	Total	Total	Inwards	Outwards	Total		
1	Dover (UK)	Atlantic	21 236	14 770	14 429	13 501	13 987	7 172	7 261	14 433	+3.2%	-3.8%
2	Paloukia Salaminas (EL)	Mediter.	:	12 541	11 568	11 663	11 981	6 541	6 525	13 066	+9.1%	:
3	Perama (EL)	Mediter.	:	12 541	11 568	11 663	11 981	6 525	6 541	13 066	+9.1%	:
4	Calais (FR)	Atlantic	20 060	13 729	13 259	11 695	11 460	5 785	5 734	11 519	+0.5%	-5.4%
5	Pireus (EL) (1)	Mediter.	8 707	9 315	10 713	11 076	11 539	5 313	5 751	11 063	-4.1%	+2.4%
6	Helsingør (Elsinore) (DK)	Baltic	13 302	11 646	11 612	11 023	10 721	5 479	5 487	10 966	+2.3%	-1.9%
7	Helsingborg (SE)	Baltic	13 397	11 693	11 808	11 102	10 776	5 487	5 479	10 966	+1.8%	-2.0%
8	Messina (IT)	Mediter.	11 157	9 833	10 128	9 802	10 834	:	:	:	:	:
9	Reggio Di Calabria (IT)	Mediter.	11 000	9 698	9 992	9 645	10 669	:	:	:	:	:
10	Helsinki (FI)	Baltic	8 146	8 549	8 747	8 854	8 548	4 308	4 252	8 561	+0.1%	+0.5%

(1) Up to 2003 data exclude cruise passengers; the number of passengers excluding cruise passengers is 10,584 in 2004, 10,458 in 2005, 11,204 in 2006 and 10 697 in 2007.

Source: Eurostat (2009), *Statistics in Focus,* Eurostat Publications

[18] Eurostat (2009) – Giuliano Amerini, *Statistics in Focus,* Eurostat Publications

2.3 Basic characteristics of the Aegean passenger ferry system

2.3.1 Introduction

The current system of planning and execution of internal maritime services within Greece, is characterized by several important aspects concerning both the supply of services by shipping companies (such as the composition of fleet), and the operation and intervention of the State (such as, institutional structure and port infrastructure and the structure of the network). The domestic maritime ferry transport system is divided in two major systems: the Aegean and the Adriatic. These two systems are totally different to each other and need a different approach. In the current part of the Thesis, it will be given an overview of the most important characteristics as far as the Aegean ferry transport system is concerned.

More specifically there will be described the geography and the network design of the system, the factors that determine the level of fares, the fleet composition, the volume of passenger and vehicle traffic during the year of 2008, the ports and the associated problems of the port infrastructure and will be provided a detailed explanation of the current legal regime (it is mentioned what are the consequences of the transition of the regulated Aegean internal maritime services to a free market – lifting of cabotage restrictions - and in particular how has the new system been implemented and what has followed its adoption). By describing these characteristics the reader will shape a clear view of the current status quo of the Greek national ferry passenger system.

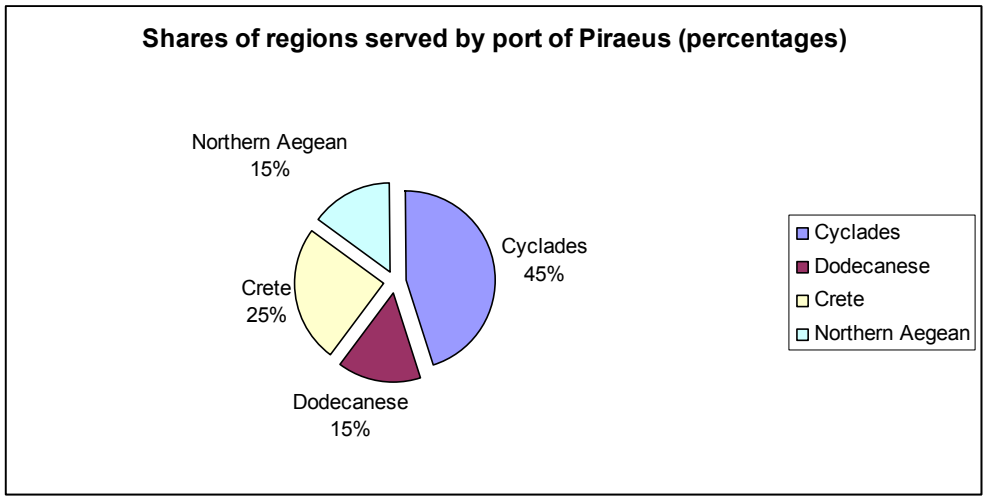
2.3.2 Geography – Network design

The network design of the Aegean archipelago is of primordial importance since it represents, more than 70 per cent of the total passenger domestic traffic. It involves the movement of passengers within a complex system of mainland – to – island, and mainland – to- mainland connections. Despite the fact that the real number of islands is about several thousands, the majority of these islands are very small and uninhabited and only 69 islands are officially considered important from an economic perspective.

More specifically, it represents a pure “hub and spokes” (one main – hub port and several smaller ports) configuration with the port of Piraeus being the central node of the system. The 10 heavier connections of the country in terms of traffic are structured on the basis of the Piraeus hub. More specifically the port of Piraeus serves the insular regions of the Cyclades, the Dodecanese, Crete and Northern Aegean with respective shares of 45 per cent, 15 per cent, 25 per cent and 15 per cent of its total traffic (Figure 8). As we can see, each main line is defined not as a prescribed sequence of port visits, but rather as a set of geographical clusters that are internally linked by a network of ship routes (for example Piraeus – Crete, Piraeus – Cyclades – Dodecanese – Crete, etc.).[19]

[19] Giamouridis D. (1997), *Greek ferry transport system for the domestic transportation of goods: current situation and future prospects*, Doctoral Thesis, National Technical University of Athens, Faculty of Naval Architects, Athens, Greece

Figure 6: Shares of regions served by port of Piraeus



Source: Athanasios A. Pallis (2006), *Maritime Transport: the Greek Paradigm,* Elsevier, Athens

The network configuration of the Aegean ferry transport system reveals the complete absence of connections between mainland ports and in the current situation. Such connections between continental ports (for example Gytheion - Piraeus, Corinth – Piraeus, etc.) were historically an integral part of the system serving both the passenger and freight demand. They progressively disappeared after the Second World War, taking into account the characteristics of reconstruction of the country, such as the extended development of road infrastructure. There are also two recent attempts for ferry services. The first is a regular line connecting Piraeus to Thessaloniki via the islands of Chios and Lesvos with a frequency of three roundtrips per week and the second is a line connecting Thessaloniki to Piraeus and Heraklion (Crete) with two round trips per week. Needless to be mentioned that these two lines do not operate anymore. They stayed in the market for a few years, from the 1990's till the middle of 2000's.[20]

2.3.3 Fares

Before we start to describe the current status quo in the Aegean ferry transport as far as the fares are concerned, the reader should get familiarized with some important definitions. As it is known, passenger fares are normally dictated by the nature of the voyage, the class of the ship and the accommodation offered. They are also influenced by demand and supply factors and are subject to Conference Agreements. The discharging and loading expenses of the passenger vessel are negligible compared with those of the cargo vessel, but its operating costs are high, since food and service must be provided and speed and regularity of sailings are of great importance. Product differentiation is an outstanding factor since the service and comfort of different lines and vessels vary greatly.[21]

[20] Athanasios A. Pallis (2006), *Maritime Transport: the Greek Paradigm,* Elsevier, Athens

[21] Psaraftis.H., Papanikolaou A. (1993) Impact of new technologies on short sea shipping in Greece, Lloyd's of London Press

Generally speaking, the shipowner will charge a fixed rate per day, depending on the accommodation offered, and to some extent the relative speed of the vessel. For instance, a relative fast ship will command a higher rate. The charge per day is often lower (with a different elasticity of demand) when the vessel is cruising with a good load factor, than on normal commercial runs subject to seasonal and one-way peaks. The technique of market pricing has been introduced on some routes, a differing fare being charged according to demand, for example during off-peak periods when a lower tariff would be raised. The demand for passenger accommodation on a liner route with business passengers tends to be inelastic, whilst the demand for pleasure cruising tends to be elastic.[22]

The fares strategy varies and depends on the competition within each individual route. It must be remembered that particularly with the modern tonnage – which is usually one or two classes – the vessel is capable of carrying road haulage vehicles (T.I.R.), foot passengers and accompanied cars with caravans sometimes. The short sea trade foot passenger market for example those going by rail/sea are vulnerable to air competition, but this is not the case with the accompanied car market as air ferries services are virtually non existent. In order for the reader to shape a clear view on the fares the following factors are presented which are relevant in fare evaluation[23]:

- Voyage distance/speed and time
- Competition by sea and air
- Passenger, car etc port dues
- Fuel, crew and other expenses involved in voyage cost embracing direct and indirect charges
- Agreements with other operators
- Season of travel and actual time of travel – for example day or overnight. On some routes during off peak season concessionary fares are available. Other routes offer fare discounts for mid – week travel.
- Class of travel, adult or child and type of cabin, if any. Concessionary fares sometimes available to students, old age pensioners, or for special events.
- Party travel – concessionary fares usually available to parties in excess of ten. This is very much in evidence with rail/sea Travel Agency market offering iclusive holidays/tours.
- Length of car and number of accompanying passengers.
- Any Government statutory control over rates
- Revenue accruing from catering, entertainment facilities on board ship, advertising, shop sales (for example tobacco, cigarettes, spirits, gifts etc) and the bars.

The operator will prepare his tariffs to maximize his revenue production. In so doing he will have regard to ensuring his regular clientele have preference in shipment over the optional traveler. For example the regular road haulier will have preference on deck space allocation to the optional accompanied motorist. Moreover, the shipowner will formulate his tariff to ensure capacity is utilized to the full (for example deck space, cabin accommodation, seats etc) during the off peak season thereby maximizing profitability.

[22] Branch E. Alan (1975), *The elements of shipping,* Chapman and Hall, London
[23] Athanasios A. Pallis (2006), *Maritime Transport: the Greek Paradigm,* Elsevier, Athens

The fare is the most important revenue for a ferry company and especially for a Greek one as the majority of the Greek coastal shipping companies are not admitted to the stock market and do not have significant revenues from advertising. Thus the evolution and structure of fares is one of the most important issues concerning all actors involved in shipping since it is the most important element for the sustainability of a ferry firm and for the welfare of the inhabitants of the island areas.

The most important feature of fares in the Aegean ferry transport system during the 1990's was, except for annual increases, the strong intervention of the state, through legislation, in order to regulate the final price. The major policy of the Ministry of Mercantile Marine was the balance between the interests of ferry transport companies (carried out by tax breaks, subsidization etc) and the facilitation in transport of the inhabitants of the islands (such as discounts in fares etc.).

For greater understanding, we can divide the study of fares intro three periods[24]:

- The period before 2002 when the government regulated the prices of fares by implementing various economic policies
- The period from 1st November 2002 to 29th May 2005, during which the market was operated as a free market, but the state was still regulating the maximum value of fare of the economy class in all the lines and routes
- The period from 29th May 2005 to today, when the fares in the majority of routes are liberalized, while the State intervenes only in non – commercial and "monopolistic" routes in order to avoid monopolistic situations and always in the interest of passengers.

More specifically, during the first period the regulatory role of the state is crucial in price fixing. The state intervenes in the formulation of the tariffs/fares and their structure. On the other hand, it may allow discounts, in certain cases, and even penalties for infringement. Moreover, it becomes mandatory for the ferry companies to implement some discounts or free movement of some special categories of passengers and vehicles. Thus, in 2000 were entitled to free movement fourteen passenger categories while other twenty were allowed discount between 25 per cent and 50 per cent (which is the normal rate deduction). As far as vehicles are concerned there were five categories of free transportation and two categories for which discounts were granted. The main aim of the State during this period was to prevent the unrestrained competition and to plan the network according to the satisfaction of the public interest.

The main characteristic of the second period 9 November 2002 to 29th May 2005) was the liberalization of maritime transport in the majority of the Greek domestic routes (removal of cabotage – law 2932/2001). On the other hand the problems of the ferry system continue to exist primarily because of the ongoing intervention of State in pricing. The other characteristics of the period were the existence of the concept of the "appropriate" fare (according to the spirit on European regulation on liberalization of transport and coastal shipping) which is a kind of upper limit of

[24] Psarros Apostolos (2007), *The Greek Sea Transport System: qualitative and technological evolutions in ships, regulations, services, ports,* Doctoral Thesis, Athens, Greece

economy class fare and the continuous supply of discount tickets for specific groups.
The third period is typically defined by the decision to liberalize fares (29th of May 2005), according to which there is no maximum allowable tariff on every class of passenger seats and all categories of vehicles. On the other hand, the problems of the system were still obvious as there was no entry of foreign ferry companies and lack of investment in new ships. This situation led to certain decisions taken by the State in order to remove some major obstacles. The full liberalization of fares occurred in the first half of 2006 creating the conditions for increasing competition in the majority of the shipping routes and offering a wide range of services combing both quality and price.[25]

2.3.2 Fleet Composition – Age

The fleet of the ferry ships has evolved over the last 20 years. Particularly, until 2002 a great number of new big ships was constructed and operated in the Aegean ferry system, increasing by this way the overall capacity of the fleet. This trend has been developed due to various causes which can be summarized as follows[26]:

- The need to cover the demand of large geographic areas in a single trip.
- Improvement in the quality of service, almost as the price of the fare which led to an increase in the overall size of the ships.
- There was the possibility for big capacity vessels to be operated also in some foreign routes, which are more profitable than the domestic routes.
- The fact that bigger ships are more competitive, particularly in the transport of vehicles, and have also lower operating costs (economies of scale).

In early 2008 the composition the Aegean ferry fleet was 290 vessels of which 123 were open - ended passenger ferries, 77 were of the same type but closed and 89 were of classic type. The largest number of vessels is owned by the company Hellenic Seaways which had this leadership also during 2000 but under the name Minoan Flying Dolphins. Hellenic Seaways has under its ownership 39 ships. The second largest ferry company, as far as the Aegean ferry transport system is concerned, is ANEK lines with 9 ships. ANEK is followed by Blue Star Ferries and NEL with 7 ships accordingly and Minoan Lines with 5 ships.

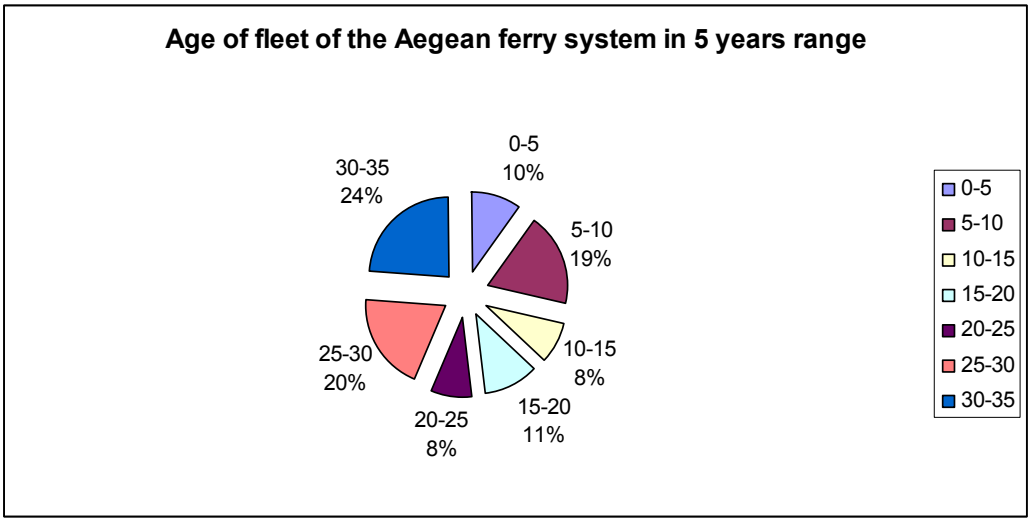
It should be mentioned that the number of vessels has been decreased significantly in all companies during the last 5 years. This has happened due to the provision of Law 2932/2001. More specifically, according to this Regulation it is provided the abolition of the age limit applying to vessels from 35 years to 30 years. This Regulation led many companies to sell their ships and prevented them from undertaking new investments in renovation and modernization of the fleet.

[25] Psarros Apostolos (2007), The Greek Sea Transport System: qualitative and technological evolutions in ships, regulations, services, ports, Doctoral Thesis, Athens

[26] XRTC (2008), *Annual Report on the Greek Ferry Industry: New players in a mature market,* XRTC Business Consultants

As we can see from the figure 7, the Aegean ferry transport system is served by aging fleet as the majority of the vessels are exceeding 20 years in operation. This number is significantly higher that in other European countries.

Figure 7: Age of fleet of the Aegean ferry system in 5 years range



Source: Psarros Apostolos (2007), *The Greek Sea Transport System: qualitative and technological evolutions in ships, regulations, services, ports,* Doctoral Thesis, Athens

2.3.3 Volume of traffic

In addition to the above information on the transport supply, we can obtain some insight on the demand side. The following statistics are important in that respect:

- In the case of the Aegean ferry transport system the passenger demand appears to fluctuate between 12 and 13 million (according to data for the year 2007) after it peaked at 14 million between 2001 and 2003.
- As far as car traffic demand is concerned, this appears to follow the same trend with the passenger. More specifically, there was noted an increase during 2007 (1 million cars compared to 900,000 in 2006)
- The truck market requires special attention in our analysis for the Aegean ferry system. More specifically, truck traffic appears to have an average upward trend of +5 per cent since 2000 for the ferry operators (Hellenic Seaways, Blue Star Ferries, ANEK Lines, Minoan Lines, NEL Lines and SAOS Ferries). It is worth mentioning that after a long period of fluctuations around the 400 thousand units in truck traffic volumes, in 2007 demand exceeded 450 thousand units). The slower growth can be explained because truck traffic depends more on the overall economic/industrial growth of a region and less on tourism, which is more linked to passenger car traffic.[27]

[27] XRTC (2008), *Annual Report on the Greek Ferry Industry: Positive developments and encouraging prospects on a fertile ground,* XRTC Business Consultants

2.3.4 Port infrastructure and problems

The main purpose of this part of the Thesis is to describe the existing infrastructure and all the relevant problems in all mainland and island ports of the Aegean ferry system.

The Aegean port system is consisted of about 1000 regional ports, fishing shelters and very small ports of which the nine major (Piraeus, Thessaloniki, Lavrion, Rafina, Volos, Heraklion, Eleusis, Alexandroupolis, and Kavala) are operating under the form of port SA. Furthermore, port of Piraeus and port of Thessaloniki are listed in Athens stock exchange. In addition, 22 Aegean ports are considered as ports of international importance (Class A) in the system of Trans – European network. This means that these ports have annual traffic of 200,000 passengers and 1,5 milion tones of freight. Most of these ports are connected with the inland transportation network.

The Aegean port system is very complex and requires constant monitoring and maintenance by the local authorities. This complexity is growing as the majority of the islands have more than one port (which is usually in the capital and has the best infrastructure and the highest traffic). This situation has been developed when there was no organised road network in early years of the last century for internal communication between regions of the same island. Obviously, the Aegean ferry system cannot cover all the Aegean ports (most of them have also limited demand). On the other hand, it can satisfy the needs of each area by serving the main ports (approximately 80).

The problems in the Aegean ports, particularly in the island areas, are significant with many shortages and malfunctions in terms of infrastructure, facilities and services to the users. According to the findings from the workshop of Greek Union of Shipmasters, held on 22nd June of 2006 in Athens, the most important aspects concerning the status of the Aegean ports are the following[28]:

- Security. Most of the ports are not adequately protected from weather conditions having as a result the mooring to be dangerous during bad weather conditions.
- Draft - Berth. Generally, disproportionally small for the size of the ships causing major difficulties in mooring and anchoring procedures. Also, there are many problems of simultaneous service of ships (small space of manoeuvring).
- Lighting is satisfactory but should be improved in some secondary ports in order to avoid accidents.
- Insufficient passenger reception areas. The problem is obvious for all island regions and the central mainland ports of Piraeus and Rafina, especially during the peak periods (summer months).
- Lack of new infrastructure technologies. The lag of the Aegean ports in this field is great. A major characteristic of this problem is that the internationally – used conventional technologies surveillance of maritime traffic have limited application in the Aegean Sea.
- The great difficulties port authorities face in covering the operating costs of the necessary ports and infrastructure investments. This is happening mainly due to the very large number of ports and the seasonality of demand. Moreover, there

[28] Psarros Apostolos (2007), The Greek Sea Transport System: qualitative and technological evolutions in ships, regulations, services, ports, Doctoral Thesis, Athens

are involved increased operating costs of the ports, and major investments for construction, maintenance and improvement of port infrastructure.

Unfortunately, despite all the studies that have been carried out showing serious problems relating to the operational efficiency of the port infrastructure to satisfy the public and freight demand, the situation has not particularly improved in recent years.

On the other hand, it has to be mentioned the Agreement of financing 3 billion euros for the development of the Greek ports signed by the Minister of Merchant Marine (Mr. Manolis Kefalogiannis) with Mr. Gerlado Genouardi, on 12th July of 2005 at the headquarters of the European Bank of Investment in Luxembourg. This significant movement is very important for the development of the Aegean and the Greek ports in general.[29]

2.3.5 Legal Regime

The Greek and more specifically the Aegean ferry system from the beginning of its existence was operating under the situation of the state protectionism and interventionism in order to control the problems the free competition would create in both the ferry network and the islands that have not commercial interest. Moreover, during the previous decade, the Aegean ferry system was carried out under large variations in the provision of services. On one hand it used to provide high quality of service to passengers because of the fierce competition and the overcapacity of the fleet and on the other hand low quality of service due to the continuous intervention of the state. Because of this variation, the ferry system did not manage to offer sufficient frequency to all the islands, especially during the winter. Even after the significant developments in new technologies and investment in new ships, the ferry system could not adjust in time to the new situation and the majority of the routes were operating with significant problems.

At this point we should give the meaning of some definitions. When referring to the term “legal regime” we mean all the laws, regulations and ministerial decisions that set the framework of the entire ferry system. The legal framework that governs the ferry system at the Aegean Sea was established by the Law 2932/2001. This Law of the Greek government specifies the following:

- Specific ferry network determined by the Ministry of Merchant Marine
- Specific route annual periods
- Possibility to change from the Ministry of Merchant Marine the routes and the fare of the economy class
- Possibility of imposing public service obligations even in the regular lines (the only role of the state is to select the ship that will be operated in the route always by performing an open, free public competition that any ferry company can join)
- Manning of ships
- The removal of cabotage (the privilege to transport passengers between Greek ports only by ships under the Greek flag)

[29] Psarros Apostolos (2007), *The Greek Sea Transport System: qualitative and technological evolutions in ships, regulations, services, ports,* Doctoral Thesis, Athens

Also, in 2004 according to the regulation 3577/92 of the European Union, the Greek State was obligated to release and liberalise the ferry services in order to avoid monopolistic situation. Although this regulation was mandatory for the Greek state, at the beginning the competition still did not work in favour of the quality and the high level of service mainly because of the fact that the Greek state did not fully compromise with the European Union's directives. This situation caused uncertainty in the market and problems in the relationship of the Greek state with the European Principles. Eventually, with progressive steps, the regulation began to be implemented increasing the level of competition in many Aegean routes, although it is difficult mainly because of the peculiarity of the Aegean ferry system. This peculiarity is illustrated on the fact that 57 out of 84 lines are subsidised by the Ministry of Merchant Marine (monopoly). On the rest of the lines (not subsidised) the competition is protected by the Law 2932/2001 which has been described in the above paragraph.[30]

2.3.6 SWOT ANALYSIS

In order to shape a more clear idea about the Aegean ferry system it is very useful to present a SWOT analysis of the system. More specifically, in this part of the Thesis it will be mentioned the strengths and weaknesses of the system and also the future opportunities and threats.

Strengths:
- Quality of management
- Fleet replacement
- Good relationships with banks
- Improved financial results of each ferry company operated in the Aegean Sea
- Restructuring of operations
- High level of service in certain itineraries due to the fierce competition

Weaknesses:
- Over – aged and reduced fleet in the Aegean market (see paragraph *2.3.2 Fleet composition – Age)*
- Low service level in certain itineraries
- Immediate taxes imposed on ticket fares
- Inefficient subsidies system

Opportunities:
- New entrants in the market
- Scope for more mergers and acquisitions
- Gradual investments in port infrastructure
- Possibilities for the creation on new itineraries at a European level by Greek ferry operators (new routes connecting Aegean ports with Turkey)
- Need for new investments in different sectors of the Aegean ferry system

[30] Charilaos P. (2002), *Liberalization of the Aegean ferry system* – article taken from the magazine Naytika Chronika November 2002
Clomoudis K., Lekakou M., Panou K., Papadimitriou E., Syriopoulos Th., Tzannatos E. (2007), *Metafores artiries zois gia ta nisia,* Papazisi Publications, Athens

- Subsidies by the European Union and the Greek state for the development of sea transportation
- Trust by the banking sector to ferry operators

Threats:
- Delay in the completion of the national ferry transportation network
- Lack of port infrastructure (see paragraph *2.3.4 Port infrastructure and problems)*
- Lack of vessels in the global market
- Increased fuel cost
- Seasonality effect (reduced demand during winter – peak periods during the summer months)
- The increase of the air competition (low cost airlines)
- Bureaucracy problems
- Crisis in international banking system[31]

From the above description of the Aegean ferry transport system and the SWOT analysis some very important strategies and requirements can be produced. First of all, it should be faced the intense intra – regional disparities between the mainland and the islandic areas. Moreover, the island isolation should be removed by upgrading the existing infrastructure and create new physical and technological accessibility. The ferry operators should take advantage of the good relationship they have with the banking sector and improve the services they offer.

2.4 Basic characteristics of the Adriatic passenger ferry system

2.4.1 Introduction

As it has been already mentioned, the Greek ferry transport system is divided in two markets: the Aegean and the Adriatic. In the previous part of the Thesis we examined the characteristics of the Aegean ferry transport system. In the current part it will be presented an overview of the most important aspects as far as the Adriatic ferry transport system is concerned.

More specifically, there will be described the structure of the market giving major importance to its monopolistic character. We will examine the demand of the transport services in the market (routes – volume of traffic) as well as the supply (companies that operate in the market, level of fares).

2.4.2 Structure of the market

The market of the Adriatic passenger ferry system is completely different from the Aegean. It is a completely competitive market with free entry and exit of the ferry companies. This freedom of movement has as a result for the ferry operators to reduce the available capacity during the off peak season (season with low demand)

[31] XRTC (2008), *Annual Report on the Greek Ferry Industry: New players in a mature market,* XRTC Business Consultants
Ministry of Mercantile Marine: **www.ypai.gr**

and on the other hand to increase the number of ships during the peak periods in order to satisfy the increased demand for transport.

In the Adriatic market all the restrictions as far as the transport activities are concerned, can be implemented only by the European Union in order to support the vision of the Common Market and free competition. Very often is the intervention of the European Union in this market in order to prevent the formation of cartels that may appear due to the increased competition. As far as the manning of the ships is concerned, the European Union implies specific terms according to the regulations and the Laws of the flag – state that carries the vessel. Moreover, there are implied the national regulations for manning as they are formed by the international organizations and agreements. It has to be mentioned, that under any circumstances the European Union or any other international organization intervene in the settlement of the level of price of the offering service (fare) or the competitive character of the market.[32]

2.4.3 Demand of services in the Adriatic ferry system

First of all, it should be mentioned that the basic routes of the Adriatic Sea which connect the Greek ports with the most important Italian ports are the following:

- Patras – Igoumenitsa – Corfu – Brindisi
- Patras – Igoumenitsa – Corfu – Ancona – Venice
- Igoumenitsa – Corfu – Otrado
- Patras – Igoumenitsa – Corfu – Bari
- Igoumenitsa – Corfu – Dubrovnik (the route was abolished after 1991 due to the political changes in Yugoslavia)
- Patras – Igoumenitsa – Corfu – Trieste

The biggest market share, according to statistical data of 2005, is concentrated mostly in three routes and in particular it represents the 95 per cent of the market. These three routes are the following:

- Patras – Igoumenitsa – Corfu – Brindisi
- Patras – Igoumenitsa – Corfu – Ancona – Venice
- Patras – Igoumenitsa – Corfu – Bari

As far as the demand for transport services is concerned, in the Adriatic Sea the market shows stronger signs of stability with the Greek operators transporting around two million passengers per year after 2006. More specifically, in 2005 and 2006 ferry operators transported around 1.9 million passengers while in 2007 the number dropped at 1.8 million.

As far as car traffic is concerned, this seems to follow the same trend with passenger. The Adriatic Sea market seems to be rather unchanged since 2000 with the average volume ranging between 400 and 500 thousand units.

The truck market of the Adriatic Sea, as in the case of the Aegean ferry transport system, requires special attention. More specifically, strong signs of maturity are

[32] Goulielmos A., Sambrakos E., (2002), *Ferry system and short sea shipping,* Stamoulis Publications, Athens

present since, especially after 2003, truck traffic numbers have dropped below the 350 thousand units per year for the total of the listed ferry operators (NEL Lines and SAOS Ferries do not operate in the area). Speaking with statistical data, during the year of 2007, 338 thousand trucks were transported by the ferry operators in the Adriatic Sea.[33]

2.4.4 Supply of services in the Adriatic ferry system

The Adriatic market has been developed since the decade of 1960. In all these 50 years, many changes have been taken place as it has happened in the global shipping market. During 1990's the basic characteristic of the Adriatic fleet was the effort for qualitative development of the offering services mainly through the increase of the vessel speed. Obviously, the main target of the ferry operators was to reduce the voyage time. According to this, it has to be mentioned that at the end of the 1980's the voyage time, including the time spent in median ports, was estimated about 30 to 34 hours. Nowadays, the investments in high speed vessels have led to the reduction of the voyage time even in 8 hours. There are ships in the market with average speed of 30 knots. Apart from the speed, another aspect that is increased in the new vessels is the carrying capacity as well as all the other characteristics that contribute in the qualitative character of the offering services.

In the Adriatic market, four are the major ferry companies which are the following: Minoan Lines, ANEK Lines, ATTICA Group, BLUE STAR Ferries. Minoan Lines and ANEK Lines possess 30 per cent of the passenger traffic each, with ATTICA Group along with BLUE STAR Ferries transporting around 40 per cent of the total traffic. During the last three years market share levels remain steady with the exception of BLUE STAR Ferries, which shows a decline due to the redeployment of its fleet in North Europe in order to cover the needs of ATTICA Group.[34]

In the case of car traffic things seem to be more evenly distributed among the ferry operators. More specifically, each operator holds around 1/3 of the car traffic, which remains unchanged during the last three years. It has to be mentioned that ATTICA Group and BLUE STAR Ferries are considered to be as one company due to their ongoing merger.

Both ATTICA Group and BLUE STAR Ferries dominate the Adriatic Sea market, serving more than 40 per cent of the trucks. ANEK Lines and MINOAN Lines follow with 26 per cent and 25 per cent respectively. Hellenic Seaways has also managed to obtain a 7.5 per cent of the market share, sailing from the port of Korinthos unlike the rest of the ferry operators who prefer the port of Patra.

According to the above, we realize that there are only very few ferry operators in the Adriatic ferry transport system. It is an oligopolistic market with characteristics of differentiated oligopoly as it is defined by the Economic Theory (the basic characteristics of an oligopolistic market is the small number of the firms, the common participation of all the firms in the decisions, differentiated or same

[33] XRTC (2008), *Annual Report on the Greek Ferry Industry: New players in a mature market,* XRTC Business Consultants
[34] XRTC (2008), *Annual Report on the Greek Ferry Industry: New players in a mature market,* XRTC Business Consultants

product[35]). According to the above paragraph, the market shares that each company has are differentiated, with the result to 70 per cent of the passenger, car and truck traffic to be controlled by only 4 ferry operators. Another characteristic of the market that justifies its oligopolistic character is the common participation of the firms in the decision making concerning issues of pricing policy and customer attraction (discounts, reduced prices etc.). These practices have as a result to the formation of an informal cartel, which led to the intervention of the European Union in order to ensure the competition. Finally, as far as the product that the firms offer is concerned can be characterized as differentiated. This happens not because of the price – in perfect competition the price is the main determinant factor of the demand – but because of the quality of the offering service in terms of speed, voyage time, safety, comfort, time of departure/arrival. All these aspects are forming a market which functions under the supervision of the State and can be characterized, as we have already mentioned, as a differentiated monopoly.

More specifically, as far as the level of fares is concerned, there is stability in the price of the offering services. This happens because all the firms know that a perfect competition in terms of the price would have destructive results for everyone. Thus, all the firms are accepting stability in the level of fare. On the other hand, the competition is concentrated in other fields such as the quality of the offering service, the discounts etc.[36]

2.5. Comparison – The need for individual attention for each ferry system

After having described the two ferry transport systems of the Aegean Sea and the Adriatic Sea, we can easily allocate the major differences between them.

First of all, ferries in the Aegean domestic routes and the Adriatic international routes, are governed by different regulatory frameworks. The international routes of the Adriatic are under European Commission competence and have been subject to liberalization of entry, pricing and frequency since 1993. International traffic between Greece and Italy does not come under the Greek domestic regulations, institutional and legal umbrella, apart from that part that links Greek ports, e.g., among Patras, Igoumenitsa and Corfu. Also, international routes are subject to enforcement of European Union competition laws by the Commission.

In contrast to the Aegean, entry was always free in the Adriatic routes: the quality of service has risen, the number of passengers has grown, and prices are lower per kilometer than in the Aegean. Passengers of the Adriatic ferry transport system have benefited from liberalized entry.

Faster ferries were firstly introduced in the liberalized Adriatic market, while in the Aegean the introduction of faster ferries has been delayed by the ministry's licensing decisions. As a result, companies use their newer and faster ships on the longer, liberalized Adriatic routes and slower older ships in the Aegean (until the abolition of the age limit). The introduction of faster ferries significantly affects markets and

[35] Mallard G., Glaister St. (2008), *Transport Economics – Theory, application and policy,* Palgrave McMillan, London

[36] Goulielmos A., Sambrakos E., (2002), *Ferry system and short sea shipping,* Stamoulis Publications, Athens

market structure. For example the two 27 knot ships that have entered the Patras – Bari via Igoumenitsa route in the Adriatic, won about two thirds of the market in less than a year, increased the size of the market by 5 per cent to 36 per cent (depending on whether trucks, private vehicles, or passengers are measured) and shifted traffic toward Bari from other southern Italian ports.

The Adriatic has had free pricing for several years. Fares in the Adriatic are much lower per unit distance than fares in the Aegean. Three very popular routes are Piraeus – Heraklion (Crete) a distance of 175 nautical miles, Patras – Ancona (Italy) a distance of 510 nautical miles, and Patras – Venice (Italy) a distance of 620 miles.[37]

In order to understand in a better and clearer way the level of difference of the two ferry transport systems we have carried out the following comparison. A comparison of the level of fares of a well - known ferry operator that has ships in all the three routes (Heraklion, Ancona, Venice) leads us to the following picture (all rates in the two tables below are low season):

Table 3: Average Fare for a double cabin 1st class (return) – Low season

Route	Distance (nautical miles)	Fare (euro)	Euro/mile
Piraeus - Heraklion	175	319	1.82
Patra - Ancona	512	333	0.65
Patra - Venice	621	338	0.54

Source: Psaraftis.H H. (2008), *Liberalization of Greek ferry transport system: Fiction or Reality,* Publications of Eugenidou Foundation, Athens

Table 4 Average Fare for a passenger car (return) – Low season

Route	Distance (nautical miles)	Fare (euro)	Euro/mile
Piraeus - Heraklion	175	167	0.95
Patra - Ancona	512	124	0.24
Patra - Venice	621	126	0.20

Source: Psaraftis.H H. (2008), *Liberalization of Greek ferry transport system: Fiction or Reality,* Publications of Eugenidou Foundation, Athens

The above picture does not change a lot if we take under consideration other companies. Similar table as the above may also be formed for trucks, two – wheeled vehicles, other services etc. (the picture there is similar).

The comparison we carried out above is logical because of the fact that the vessels that are used on these routes have comparable specifications (size, speed, comfort) and belong to the same company. The division of the level of fares (in euro) by the

[37] Organisation for Economic Co-operation and Development (2001), *Regulatory Reform in Greece,* OECD Editions, Paris

distance (in miles) is also useful because as the cost is variable and a function of increasing distance, we would reasonably expect higher fares for longer distances.

If we take a closer look to the above figures we easily can understand some strange aspects. In the beginning, as we can see, Venice is slightly more expensive than Ancona, although the distance is 20 per cent longer, but this is not the most important point. What is most interesting is that the cabin fares to Crete is absolutely about the same level as those of Italy, but considerably higher for the car, although the distances to Italy (and also the time spent on board) is 3.5 times more. More specifically, the questions that arise at this point are why the company charges the customer to go to Heraklion about 3 times more per mile the cabin and about 5 times more per mile the car?

As we have mentioned in the above paragraphs the legal framework of the Adriatic ferry system is completely different than the legal framework of the Aegean ferry system. In the Adriatic Sea perfect competition is prevailed. The level of fares, the network and the services are subject to the choices of the owner while the age limits have never been adopted. On the other hand in the route of Piraeus – Heraklion (Aegean Ferry system) the legal regime is subject to the domestic Regulation 2392/2001 (see *2.3.5*) which is completely different than the European one.

But the different legal regime cannot by itself explain the difference in the level of fares. Of course it is of major importance but there is another factor that should be considered. This factor is the absence of other alternatives modes of transport if the passenger/ the owner of the car or the truck driver want to go to Crete. Perhaps the owner of the car can go to Crete by air and rent a car there but the cost will be enormous. On the other hand, the truck driver has no other options so basically the demand for him is captive.

For the drivers wishing to travel to Europe (this applies specially for the truck drivers), the road passage through the Former Yugoslavia is a very serious alternative. After the end of the war in this area and the entry of Bulgaria and Romania in the European Union the transition in the Central Europe by road has become even more attractive. Even for someone who would like to cross the Adriatic Sea there are many alternatives as far as the number of ferry companies and routes are concerned (apart from Ancona and Venice, there are the routes to Brindisi and Bari).

The result of all these is the compression of the level of fares in the Adriatic Sea, while in the Aegean ferry transport system there are no conditions for this. An important phrase that characterises the route Piraeus – Heraklion is “charge what the traffic can bear” because every user of the transport service is willing to pay the fare no matter the level of the price. If this situation applies to Crete, which is certainly the piece of the market where someone would expect that the competition exists what is happening in the other parts of the market? Unfortunately, the situation is similar and possibly worse as we will see in the next chapter of the Thesis as far as the route Piraeus – Samos is concerned.

The long term effects of such a situation in the Aegean ferry transport system may be very dangerous as this may lead to reduced tourism and reduced economic development for the islands. Moreover, there is a great risk the population of the

island areas to be reduced substantially leading this areas to isolation and devastation.[38]

[38] Psaraftis.H H. (2008), *Liberalization of Greek ferry transport system: Fiction or Reality,* Publications of Eugenidou Foundation, Athens
Interview with Mr. John Tsekouras, Travel Agent, Travel Agency Office: Travel Specialists, Athens

Chapter 3: Case Study – Investigation for implementation of Service Level Agreement in the route Piraeus - Samos

3.1 Introduction – Setting the scene

It is widely known that the 3 per cent of the European Union population lives in insular areas. Needless to say, that many of these people are facing significant problems concerning their welfare and quality of life. Greece is one of the most relevant examples within the European Union of a country that consists of a great number of islands. In the Green Paper issued by the European Committee (SEC 2008 – 2550/2008) concerning the social and economic cohesion within the European Union, is mentioned a very important definition. More specifically this definition concerns the meaning of "islandic". More specifically, according to the Green Paper the definition islandic does not only describe the numerous small islands in terms of geographical size and population but also describes many other characteristics (either positive or negative) that arise from this geographical specificity. These characteristics concern not only the economic and social isolation that these areas face, the increased cost of living of the permanent residents and the increased cost of operation of all the commercial activities taking place in these regions, but also concern the special and unique natural and cultural environment that has been developed in these areas.

The major and strategic importance that insular areas have in the economic development and welfare of the country is highly recognized by the Greek State and the European Union as well. According to this, the Greek Constitution mentions that "the legislator and the Greek state are obligated to take under consideration the special needs of the insular areas"[39]. The European Commission as a second regulator of the processes that concern these areas promotes for the period 2006 to 2013 a proposal for immediate taking immediate action for the development European insular areas and the ferry transport shipping in Europe.

As far as the European Union's policy towards the insular areas is concerned, this has been developed for the first time in the Amsterdam Treaty (signed on 2 October 1997 and entered into force on 1 May 1999). More specifically the Treaty of Amsterdam "*recognizes that the insular areas face structural problems due to their insular characteristics, and because of the fact that these problems are permanent it is prevented the economic and social development of these areas. As a result, the Treaty recognizes that the European Regulation should take into account these significant problems and, if is necessary, to implement immediate and special measures for the integration of these areas in the internal market under fair terms".*

Moreover, in the Treaty of Amsterdam is mentioned that the important issue of transportation is of vital importance for the cooperation and economic development of all the regional areas of the European Union under a framework of a common transportation policy (article 70). More specifically, the article 70 of the Treaty of Amsterdam states that transportation between the insular areas is associated with the development of all the regions of the European Union and therefore should be part of a wider transport policy.

[39] Article 101 – Greek Constitution

For the purpose of implementation of all the issues defined in article 70 of the Amsterdam Treaty, the European Council after having been consulted the Social Committee and the Committee of the Regions, has regulated:

- Common rules applicable to transportation that is passing through the territory of a Member State,
- Rules for permission of transport activities in a Member State of carriers that are not residents of that State,
- Measures for the safety of the transportation,
- Special provisions relating to transport that aim to ensure the standards of living and working in certain areas with particular characteristics (isolated areas, islands, inaccessible and sparsely populated areas of the European Union).

The European Union's policy with regard to transportation and the insular areas is based on quality, which is expressed mainly through the transport safety and the environmental protection in accordance to the guidelines of the Kyoto Conference. The key point is the development of transport and insular areas of the European Union to overcharge as little as possible the environment.

The definition of islandic is of vital importance in both the European Union and Greece because it is a prerequisite for the justification of measures and formulation of policies related to it. The problem of course concerns political decisions and the interest of the private sector to cover the special needs of the transport. As far as the definition of islandic is concerned, there is no a special index or expression which can describe this whole concept. In general, islandic concerns any area inhabited on a permanent basis by more than 50 residents, is not connected to the mainland by permanent infrastructures, is not connected to the European mainland as it is surrounded by water at least 1 km distance by the mainland and does not include capital of a Member State of the European Union. According to one theoretical approach, islandic can be described with data such as geographical area, population or economic aspects such as GDP, level of employment and natural resources.

The concept of the Essential Terms Agreement (or Service Level Agreement) was introduced and developed in the paper "Essential Terms Agreement Guide for Island Transport Services" by the scientific team of Dr. Chlomoudis Konstantinos in the March of 2009.[40] In order to make this concept understandable and try to implement an Agreement in the route Piraeus – Samos Island, the writer of the Thesis in the following 13 pages (until the page 48) is presenting a summary of this paper.

[40] Chlomoudis K., Papadimitriou E., Giannatos E., Kostagiolas P., Kollιousis I., Pallis P., Asonititis P., (2009), *Essential Terms Agreement Guide for Island Transport Services*

3.2 Methodology

3.2.1 The need to develop Essential Terms Agreement in order to regulate European transport

The spatial dimension of social and economic cohesion is a very important aspect of the development and the welfare within the European Union. As it has been mentioned already, in the Green Paper (is issued by the European Commission, the European Parliament, the Committee of Regions and the Economic and Social Committee) is underlined the need for adaptation of a common legal framework as far as transport is concerned, that are involved all the relevant parts such as public organizations, local authorities and the private sector. More specifically, this framework will concern three different cases that have special needs:

- Isolated areas in high altitude, often in internal and external borders of the European Union
- Islands
- 18 specific areas with very low population density

The development of an integrated and unique approach especially for the islandic areas is inextricably linked with the spatial dimension of economic and social cohesion. The transport policy is a very crucial issue and is related with the needs and individuality of each island and each route. According to this an acceptable service level is needed that will concern the quantity, the quality and the cost in accordance with development opportunities, the travel needs of the passengers and goods, the preferences of the users, taking into consideration of course the market conditions particularly in the transport system (efficiency, effectiveness and productivity). The above observation is of significant importance for this effort and is related to the progress of the Green Paper as far as social and economic cohesion in the European Union is concerned.

More specifically, in the part of the Green Paper “Questions for Consultation, Questions for Debate” (SEC 2008 – 2550) the following issues arise:

- Questions of Unite 3: *Better cooperation*. For Example the question: Is there a need to develop new legislative and management tools to facilitate cooperation, including along the external borders?
- Questions of Unite 4: *Better coordination*. For Example the questions: “How can coordination between territorial and sectoral policies be improved?” “Which sectoral policies should give more consideration to their territorial impact when being designed?” “What tools could be developed in this regard?” ““How can the coherence of territorial policies be strengthened?” “How can Community and national policies be better combined to contribute to territorial cohesion?”
- Questions of Unite 5: *New territorial Partnerships.* For example the questions: “Does the pursuit of territorial cohesion require the participation of new actors in policymaking, such as representatives of the social economy, local stakeholders, voluntary organizations and NGOs?” “How can the desired level of participation be achieved?”

- Question s of Unite 6: *Improving understanding of territorial cohesion.* For example the questions: “What quantitative/qualitative indicators should be developed at European Union level to monitor characteristics and trends in territorial cohesion?”

The questions and issues posed in the Green Paper concerning the spatial dimension of economic and social cohesion are based on the effort to create a commonly accepted framework conditions and modes of implementation partnerships. For the islandic areas, in particular, the methodological approach can be developed by the European Committee and the European Council. The significant importance and positive impact of free competition in many cases may be multiplied if essential conditions and essential terms be developed by the State for the island transport services. Of course, these conditions and terms should serve an acceptable level of island transport services offered by the operators.

Determining the acceptable level of service (quantity, quality, cost) is a problem that includes a large number of factors, such as population and demographic criteria, transport costs, voyage time, financial data, seasonality, the need for transport etc. Additionally, apart from the passenger transport within the European Union, we should consider also the need for freight transport the inefficiency of which increases the cost of the products for the residents of the islands. The most important aspect in the freight transport is to regulate and satisfy all the conflicting interests of the different parts (business interests, social interests and the public interests). This satisfaction is hampered by the low level of knowledge of the peculiarities of the market and the irrational confrontation of the issue of transport in the islands within the European Union as a problem of management of the fleet and the carriers and not as a function of an integrated island transport system, in the heart of which are the users and the inhabitants of the islands. As far as Greece is concerned, the main malfunction of the system is identified not only on issues of determining the appropriate level of transport services to the islands (quality, cost etc) but also on the unwillingness of the market players and especially the State to solve the problem. Especially, the State is characterized by the adherence to old practices and the adaptation of “old – style” solutions in order to take the lowest possible liability.

Nowadays, one of the most important problems is the inadequate knowledge of the ferry market in the European Union which is happening due to the lack of a systematical recording and management of the data. The data are sometimes collected but not processed with the correct way, which has as a result the parties to be misinformed. Some institutional reforms have diversified the situation, with the “strong” players of the market having made significant reorganization of their activities and improved their level of knowledge. This has happened because of the modernization of the administration methods and the commercial practices (pricing, discounts etc) as they are distinguished and improved by the Competition Committee.

On the other hand, the State collects a large amount of information but does not use it properly and in a way that can support or justify the decisions taken. In the most adverse position are the users that are informed by other parts of the market such as the State and the ferry operators. They focus on issues of routes and prices and they are not able to possess independent knowledge, under the current

circumstances, in order to evaluate the service. This situation has as a result to weaken the intervention of the public in the State institutions (in Greece for example the Council of Coastal Transport) and strengthen the few ferry operators (oligopolists) as they cannot be checked or judged.

This current reality in Greece, demands the development of multi – part agreements as it is required in a market with services of great social and economic importance. This need for consultation has become of significant importance for the Greek State and for that reason the Ministry of Merchant Marine promotes measures in order to improve the current system. These include the increase of expenditures, which is approaching nearly double, in the subsidized lines, the effort to replace old ships with new and other measures.

3.2.2 The concept of the Essential Terms Agreement

Within the European Union, the finalizing or the renewal of an agreement between different parts (Member State, users and producers) is so important, that is one of the most important factors of the success of this agreement. The agreement has the optimal result when all the parties that take part in this have established agreements of dynamic character and not static. In order to succeed this, high level of coordination and cooperation is required between all the relevant parts. The cooperation must have a public character and will help each party to understand the degree of dependence on other parties. This public character mainly concerns the publication and the disclosure of the whole process of coordination and cooperation amongst the different parts and of course all the decisions taken. The public character can be enhanced by the use of information technology systems and the internet.

The initiation of the Essential Terms Agreement often depends on input from the providers of the services. These providers quite often have a better understanding of the different aspects of services than the users or even the State. The Essential terms of these Agreements must be specified each time depending on the circumstances and the needs of the islands (research question of the Thesis: *An individual technical consideration is required for developing transportation Service Level Agreement)* and the people who wish to be transferred to and from the islands. All the people should express their opinion as far as their needs are concerned based on specific social, business, economic or other constraints. As the demand increases it is inevitable the passengers – users to seek and demand services of higher quality. Beyond one point the passengers tend to become more demanding as they “lead” the procedures for these Agreements.

3.2.3 Approach for development of the Essential Terms Agreement (four stages)

The development of an Essential Terms Agreement can be ensured in all the systematic and planned actions that constitute the Agreement. The configuration guide of the essential terms includes some specific procedures relating to the regulatory framework of transport and the islandic policy of the European Union and their application on the European territory.

The guide includes four stages of development and formation of Essential Terms Agreement which are the following:

1st Stage: Investigation for the necessity of implementation of an Essential Terms Agreement
2nd Stage: Development and formation of the content of the Essential Terms Agreement
3rd Stage: Implementation of the content of the Essential Terms Agreement
4th Stage: Monitoring of the Essential Terms

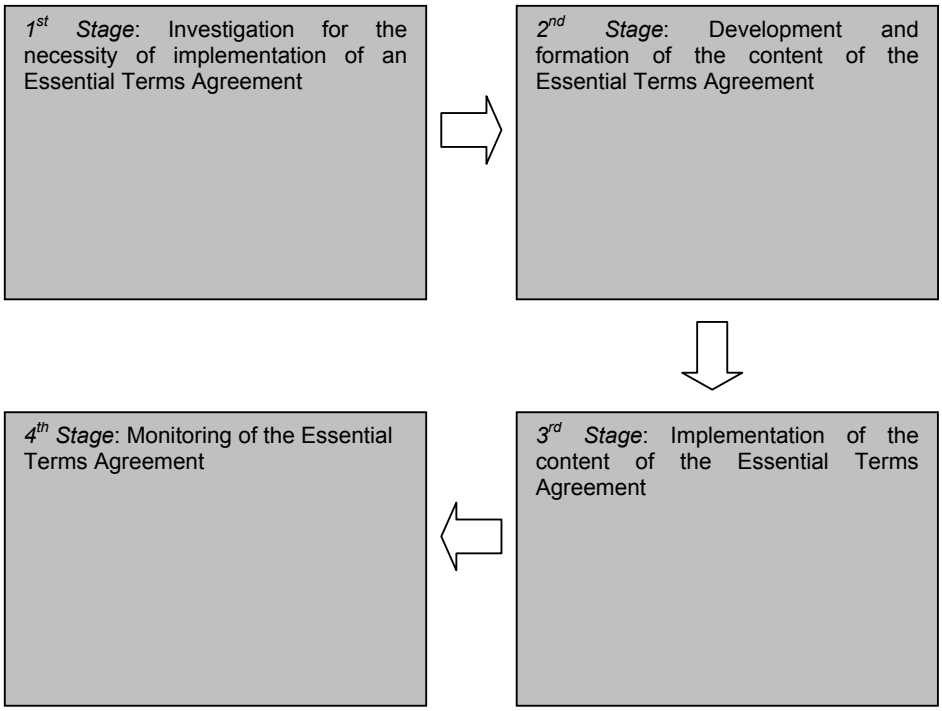
For all the above are proposed some specific indexes/indicators in order to determine qualitatively and quantitatively the content of the agreements (level, description, communication and control, payments, volatility, management of the disputes, schedule and timeline). Additionally, it is shaped a method of confirmation of acceptance of the Essential Terms. Finally, it is determined a monitoring method of the Essential Terms. The monitoring may include also some disputes according to the need.

It is important to clarify that the completion of the Essential Terms Agreement concerns the establishment of a framework of terms for their integration into:

- Relevant declarations of the lowest bidder (tenderer) competitions for the service of certain routes and finally the establishment of Public Service Contract of a certain duration for the specific route,
- The development of certain legal entities which are going to reflect collaborations of public and private entities,
- The development of legal entities from the local authorities.

Therefore as we can see in detail in the following figure, for the determination of the final shape is formed an innovative bottom – up approach:

Figure 8: The stages for the completion of an Essential Terms Agreement



3.2.4 The use of the Essential Terms Agreement

The guide of the Essential terms is not only a specific process but also a manual configuration of agreements or/and conventions that can be used in the islandic areas of the European Union. The process that is described in the guide describes the way according to which the users or their representative body (for example the local authorities), the private providers of the services or their Association (ferry operators) and the State reach an Agreement setting specific economic and social targets and also the level and the characteristics of the transport services. Also another aspect that is described are the performance indicators, which are called Critical Performance Indicators.

The process initially explores the necessity of development of an Essential Terms Agreement and the conditions required by current law provisions that relate to the specific route. After the completion of this stage the indicators/indexes are set which reflect the interests of all parties involved (users, service provides, State). After all the above are set, is carried out a Delphic Method for the improvement of the level of Agreement and finally the determination of the Essential Terms. According to the conditions that are finally determined, there are selected one or more approaches of implementation of agreement/agreements and the necessary competitions (between the service providers) are carried out.

The essential terms constitute also conditions that are integrated in the relevant notices and therefore are used as part of the convention/conventions under which the objectives are recorded and are resolved any disputes or disagreements

between the parties. Finally, at the last stage the process develops a method of monitoring the conventions and provides solutions for any disputes. More specifically, the process consists of four separate procedures which include actions, forms and decisions. The actions taken step by step are the following:

1st Stage: Investigation for the necessity of implementation of an Essential Terms Agreement

- 1.1: Investigation of the level of interest of the private sector
- 1.2: Investigation of objective factors
- 1.3: Policies for the specific service
- 1.4: Investigation of the characteristics of the public service
- 1.5: Indicators/Indexes of the characteristics of the islands
- 1.6: Investigation for Public Service Obligation
- 1.7: Investigation for Public Service Contracts

2nd Stage: Development and formation of the content of the Essential Terms Agreement

- 2.1: Formation of Group of Deliberation
- 2.2: Determination of the level of information
- 2.3: Selection of specification indexes
- 2.4: Selection of efficiency indexes
- 2.5: Selection of performance indexes
- 2.6:Selection of indexes of reliability of the service provider
- 2.7: Selection of indicators of ship performance
- 2.8: Determination of the Essential Terms using the Delphic Method

3rd Stage: Implementation of the content of the Essential Terms Agreement

- 3.1: Analysis Report of the Essential Terms
- 3.2: Implementation through Public Service Contracts or Public Service Obligation (PSC or PSO)
- 3.3: Implementation through Public – Private Partnerships (PPP)
- 3.4: Implementation through Private Finance Initiatives (PFI)
- 3.5: Implementation through Local Authorities
- 3.6: Formation of the conditions of the notices and accomplishment of Competition

4th Stage: Monitoring of the Essential Terms Agreement

- 4.1: Contracting the Convention/Conventions
- 4.2: Start of implementation of the convention
- 4.3: Monitoring of the Essential terms
- 4.4: Settlement of the disputes/disagreements and sanctions

The theoretical framework of the content of these four stages/steps is described in the next parts of the Thesis. Then in the Paragraph 3.3 (Implementation – Field Study), there will be an attempt to put into practice these four stages in the route (line) Piraeus – island of Samos. In general, this guide aims to provide a framework according to which an Essential Terms Agreement will be developed for the provision of one or more services. This guide aims to apply in the islandic regions of the European Union and includes data related to the spatial dimension of economic

and social cohesion in Europe. There are multiple positive implications for all parties involved by the implementation of the Essential Terms Agreement:

- There are developed some clear criteria and indicators for the transport services in the islands and especially for the maritime transport
- The roles and responsibilities of all the involved parties are finally determined
- There is developed a transport system according to the crucial and most important needs of the ferry users/residents of the islands
- The culture of quality is strengthened

3.2.5 1st Stage: Investigation for the necessity of implementation of an Essential Terms Agreement

The aim of the first stage is to explore and investigate if there is a need for implementation of an Essential Terms Agreement. The parties who are responsible to carry out this investigation are the entrusting authority and the Committee of investigation for implementation of an Essential Terms Agreement.

More specifically the main purpose of this stage is to investigate and verify if it is necessary to implement an Essential Terms Agreement on a specific route. This investigation is carried out according to:

- The level of interest of the private sector
- The factors related to islandic
- Specific data concerning the content of the service (public interest, public service obligation etc)

According to our approach for the development of an Essential Terms Agreement the definition islandic contains all the indicators/indexes of islandic characteristics (provided in the next paragraph).

The recognition of the islandic is of significant importance because it is a prerequisite for the justification of action and the formulation of policies related to it. The main target for the recognition of the islandic is to support all those involved in the project, in order to produce objective decisions for the promotion of the next step of the Essential Terms Agreement. The problem of course entails political decisions and the interest of the private sector to meet and cover specific transport needs.

As we can see in the next page, in figure 13 there are presented the main indicators/indexes of islandic and in the next paragraph is described the sequence of all the actions and decisions for the investigation for the necessity of implementation of an Essential Terms Agreement:

Table 5: Indexes of island characteristics

Indexes of island characteristics
per capita income
island size
population density
age composition of the population
rate of unemployment - employment
number of employees by industry
seasonality (peak - off peak periods)
educational level
number of inhabitants per number of doctors and nurses
other transportation modes (airplane - seaplane)
number of passengers/residents per year
index of fullness of the transport mode
average access time of the ship to the island
ways of accessibility to the ship (number of public transports that exist in the island)
Number of computers per 100 inhabitants

Source: Chlomoudis Kon. (March 2009), *Essential Terms Agreement Guide for Island Transport Services,* Athens

The Investigation for the necessity of implementation of an Essential Terms Agreement focuses on three different areas:

- Interest of the private sector,
- Indexes/Indicators of islandic,
- Service of public interest

In many cases, some of the routes that express high level of islandic (the indexes of the island characteristics are high) are identified by the existing regulatory/legal framework, but without existing a common way of identification for all the Member States of the European Union. Therefore, the current procedure can be used for the support of a political decision or/and the investigation for the necessity of implementation of an Essential Terms Agreement in particular routes of specific islands.

The final steps in this stage are the investigation for Public Service Obligation and for Public Service Contracts. These two definitions will be described in the paragraph *3.2.7: 3rd Stage - Implementation of the content of the Essential Terms Agreement.* More specifically this stage is consisted of the following steps:

- Investigation of the level of interest of the private sector
- Investigation of objective factors
- Policies for the specific service
- Investigation of the characteristics of the public service
- Indicators/Indexes of the characteristics of the islands
- Investigation for Public Service Obligation
- Investigation for Public Service Contracts

3.2.6 2nd Stage: Development and formation of the content of the Essential Terms Agreement

The aim of the second stage is the development and formation of the content of the Essential Terms Agreement. The parties which are responsible for the accomplishment of this stage are the entrusting authority, the Committee of Consultation of the Essential Terms, a representative of the residents of the island, a representative of the State, a representative of the ferry operators, an expert on transport issues and an information scientist.

The main purpose of this stage is to develop a common framework for the development of the indicators/indexes that concern the transport service. In this specific point we will describe the sequence of decisions and information for the formation of the Essential Terms Agreement. More specifically, every Agreement is surrounded by a network of relations and connections. The identification and the definition of these relations among all the relevant parties is of significant importance for the development and implementation of the Agreement. The basic parties are the service provider, the user (passenger, resident of the island) and the State (regulatory authority). In these parties are included, also, the suppliers, internal and external customers and other social partners, who have an interest and/or are affected by the implementation of the Essential Terms Agreement. In the majority of the European countries the regulation of the routes and services is made by government bodies, central or regional.

A general approach for the current stage in order to define specific requirements includes the following indexes/indicators:

- Index of Requirements – Specifications (for example regularity – number of routes per week, maximum time difference between consecutive routes, days of service etc)
- Performance indexes (for example connection with other islands, voyage time)
- Efficiency indexes (amount of allowance per passenger or vehicle, ticket value per passenger, vehicle fare)
- Indexes of reliability of the provider
- Indexes of vessel's capacity (vessel's capacity, vessel's age)

The indexes included in the category of "requirements – directions", "performance", "efficiency", "reliability of the provider" and "vessel's capacity" are the basis of the correct formation of the Essential Terms Agreement. Some of these indicators are included in the Delphic Method which we will use in the next paragraph for the route Piraeus – Samos Island. The Essential Terms, as will be formed after the procedure, should be included in the conditions for a public competition for the entrusting of

public service. The choice of these indicators was made in a way that all the Essential Terms that will result from them to be harmonized with the Greek and European legal regime.

The basic values for the negotiation are the current/existing values before the development and the implementation of the Essential Terms Agreement. However, in some cases the basic values can be formed according to specific regulations or legal regime. The setting of the basic values is of significant importance because the negotiations start from them. The provider of the services must provide real opportunities to upgrade the services according to the basic values and the actual functions and constraints in order to improve the values. Through this action, the provider of the service will constrain the users, the state and the other social partners not to have unrealistic expectations as far as the level of service is concerned. On the other hand, the customer/user and the State should define the essential services and the minimum values of the basic indicators by category of service standards.

The process of the second stage starts by setting up the Committee of Consultation of the Essential Terms. Initially, the Committee selects particular characteristics of the transport service and then sets out the framework for negotiation according to the basic values of the indexes. After this, it is carried out a Delphic Method of three rounds for the support of the agreements. Finally, the specifications of the transport services are recorded. More specifically this stage is consisted of the following steps:

- Formation of Group of Deliberation
- Determination of the level of information
- Selection of specification indexes
- Selection of efficiency indexes
- Selection of performance indexes
- Selection of indexes of reliability of the service provider
- Selection of indicators of ship performance
- Determination of the Essential Terms using the Delphic Method

3.2.7: 3rd Stage - Implementation of the content of the Essential Terms Agreement

The parties which are responsible for the accomplishment of this stage are the entrusting authority, the Committee of Consultation of the Essential Terms, a representative of the residents of the island, a representative of the State, a representative of the ferry operators, an expert on transport issues and an information scientist.

The purpose of this stage is the implementation of the content of the Essential Terms Agreement. Firstly, it is formed a report of the analysis of the Essential Terms and then there is the choice of one of the following cases:

- Public Service
- Public – Private Partnership
- Private Finance Initiatives
- Implementation through local authorities

The consultation and then the selection of one of the above cases is the main purpose of this procedure. More specifically:

Public Service: According to the regulation No. 2408/92 of the European Council (EEC Council Regulation), every member country has the jurisdiction to impose a regime of "Public Service" on the routes and to provide financial subsidy to the carrier in order to carry out the public service. For some routes for which there is no business interest by the ferry operators, the demand is satisfied through the "Public Service Obligations" in accordance with the regulation No. 2932/01 of the European Council.

Public – Private Partnership (PPP): The public – private partnerships (PPP) are a modern approach to the cooperation of the public and private sector for the provision of public services. All the member countries of the European Union, especially Britain, since the decade of 1990 were open to this cooperation. In Greece were legalized as practices of provision of public goods according to the law 3389/2005 of the Greek Constitution. This law and other provisions that comply with the European Union's law are designed in order to provide a safe environment for both public and private entities for their participation in PPPs.

There are three different types of Public – Private Partnerships. The first type is called Concession PPPs according to which the private sector fully undertakes the construction or the provision of the project or the service and all the related public parties are responsible for their obligations, the possible dangers and the financing of the project or the service.

The second type of Public – Private Partnership is called Joint Venture PPPs. The public and the private sector are both responsible for the project/service. All the relevant parties that are involved in the project are equally shared the financing amount, the dangers/risks and the liabilities.

The Hybridic PPPs is the third type of the Public – Private Partnership. In this type belong all the cases that are not included in the previous two types (Concession PPPs and Joint Venture PPPs). More specifically, the most important characteristic of the Hybridic PPPs is the fact that the project is divided into different parts under the supervision of the public sector, which has the responsibility or operates as link between the different parties which are responsible for the completion of each part of the project. Despite the fact that this type of Public – Private Partnership is the most complicated, it is the most commonly used.

Private Finance Initiatives (PFI): The Private Finance Initiative is a form of PPP where the pubic project or service is funded major by private equity funds. According to this, if a PPP is chosen for the satisfaction of transport needs in an unprofitable route, the PFI can be used as main source of financing of the transport service.

The process starts with the development of a report of implementation of an Essential Terms Agreement in accordance with the specific characteristics of the transport service. This report will present the basic economic framework for the different cases of implementation of the Agreement. More specifically this stage is consisted of the following steps:

- Analysis Report of the Essential Terms
- Implementation through Public Service Contracts or Public Service Obligation (PSC or PSO)
- Implementation through Public – Private Partnerships (PPP)
- Implementation through Private Finance Initiatives (PFI)
- Implementation through Local Authorities
- Formation of the conditions of the notices and accomplishment of Competition

3.2.8: 4th Stage - Monitoring of the Essential Terms Agreement

The parties which are responsible for the accomplishment of this stage are the entrusting authority, the Committee of Consultation of the Essential Terms, a representative of the residents of the island, a representative of the State, a representative of the ferry operators, an expert on transport issues and an information scientist.

In general, the main purpose of this stage is the constant monitoring of the Essential Terms Agreement and the compliance of all the parties with the conditions of the Agreement according to the Indexes of reliability of the provider. More specifically this stage is consisted of the following steps:

- Contracting the Convention/Conventions
- Start of implementation of the convention
- Monitoring of the Essential terms
- Settlement of the disputes/disagreements and sanctions

3.3 Implementation – Field Study

3.3.1 Introduction

After having described the concept of the Essential Terms Agreement and its necessity and importance for the welfare of the residents of the islands, in this part of the Thesis we will try to implement all these by developing a case study in order to examine if an Essential Terms Agreement is necessary and can be implemented in the route/line Piraeus – Icaria Island – Fournoi Island – Samos Island, using certain indexes and according to the specific island characteristics. The investigation will be carried out using the Delphic Method.

More specifically, we will start the case study by setting the scene – by describing the definition "transport equivalent" and of course underlying the significance of the Essential Terms Agreement for the residents of the islands. Moreover, it will be presented the aim of the case study, a short description of the current situation in these islands and the necessity for the development of an Essential Terms Agreement. The method (Delphic Method) which will be used for the investigation will be described in accordance with the specific indexes which will be quantified. Finally, the results of the case study will be presented followed by a discussion using these results.

3.3.2 Setting the scene

As we have seen in previous paragraphs (2nd chapter) the passenger ferry system in Greece does not operate under a fully competitive environment. This means that a very important sector for the Greek economy and the welfare of the islands is underestimated. Unfortunately, during the last decade there was not any response from the ferry operators because they were relying on a system of balance and dullness which they thought it was suitable for their interests.

The one that serves the Greek passenger ferry system and its development is the welfare of the islands. Unfortunately, this was not understandable neither from the state nor from the ferry operators. The result of this situation was the ferry transport sector, a very important sector for the Greek economy, to be underestimated in a period that the ferry companies operating in Greece were managing over the 10 per cent of the global ferry transport fleet, carrying 15 million passengers and 40 tones of cargo, serving the 20 per cent of the residents of the country and having a great contribution in the GDP of the country creating more than 120,000 jobs. This situation has as a result the distortion of the ferry transport market. It is not a coincidence that despite the liberalization of the market, there is no, until now, expansion of business in the non – profitable routes and in the ferry market in general.

Nowadays, therefore, the particularity of the Greek insular area is recognized as an element which is valuable and which should be protected by the Greek State and the European Union. According to the above it is very important the role and the importance of the Greek ferry transport to be reassessed.

The funds provided by the Greek State to the ferry companies operated in non profitable – public service routes are indicative of the increased interest that the State has shown during the last years for the ferry transport sector: the year 2009 the amount is estimated about 107 million euros, the year 2008 about 41 million euros, the year 2007 about 35 million euros, the year 2006 about 40 million euros and the year 2005 about 37 million euros.

The concern is always intense and underlines the need to find the optimal framework of conditions for the regulatory presence of the public sector in order to ensure the transparency and effectiveness in the production and provision of the ferry transport services to all the residents of the islands and the travelers under the modern expectations of the new era (fare that is economically convenient, security, quality of services, protection of the environment etc).

Over the last decade, the insular areas of Greece and the Greek stare are more intensively trying to seek an operational solution, according to which they will try to cover the needs in transport connections during the year regardless the fluctuations that displays the movement of passengers and vehicles throughout the year (peak and off peak periods).

In recent years, through the debate for ending up in an operational solution is raised a new definition, which scientists, maritime economists have included in a study of the Institute of Local Authority and is called “transport equivalent”.

At this point, there will be an attempt to simplify the definition of “transport equivalent” for a broader and clearer understanding of this term. More specifically, ferry transport costs in Greece up to 500 per cent more than land transportation. This has resulted in the distortion of the social cohesion with adverse effects for the islandic areas. According to this, it is reasonable for the residents of the islands to demand an economic help of the State (subsidies) in the price of the ticket paid for the ferry services, as it happens in the tickets that have the citizens of the inland areas and of the big urban areas.

Moreover, it is widely known that according to the social policy that is implemented for many years in Greece, the cost of the ticket for the rail, the subway and the bus services in the urban areas (major cities) is subsidized. More specifically, for the ticket of the subway is paid by the passenger only 1 euro instead of 3.6 (the rest 2.6 is subsidized by the State). It has to be mentioned that these subsidies are not limited only in the cost of the ticket but are extended also in the transport infrastructure. Moreover, the rail projects and the material supplies are covered by the public budget. The same happens for the supply of material concerning the road infrastructure and the construction of subway.

A way to measure the level and the amount of subsidy of the tickets for the residents of the islands is called “transport equivalent”. In practice, the transport equivalent provides that the cost of the ticket is covered only by a part by the residents of the islands. The remaining cost is paid by the Greek State.

The discussion for the “transport equivalent” is not new. The term has, initially, been appeared in some papers published by the University of Piraeus and the University of the Aegean. It has to be mentioned that this measure already exists in France

and Spain. Particularly in France, it is implemented that the cost of the ferry ticket to Corsica does not exceed the cost of the train for the same distance. Needless to say, that in the year 2001 appeals have been lodged against the French State on the grounds that the State economic aid distorts the competition, but the European Commission vindicated France based on the view that the line was of Public interest.

If a similar provision was implemented in Greece, then the most expensive ticket in the Greek ferry transport system would cost to the residents of the islands around 20 euros. The remaining cost would be covered by the Greek State (of course it is provided that the State would have managed to solve the important issue of the non – profitable lines/routes). It has to be mentioned that the transport equivalent may be implemented by subsidizing the construction of a ship or the supply of ships on the routes of Public Interest, as it happens now (the construction or the supply of trains, metro, buses etc is subsidized).

Nowadays, is recorded a significant momentum for the issue of transport equivalent. The relevant legal regime proposed by the Ministry of Mercantile Marine is in the process of implementation. On the other hand one of the major barriers as far as implementation is concerned is the corruption in the ferry market in which the Greek government is also related.

There should be transparency, reliability and meritocracy in the public competitions carried out for the unprofitable routes since the 175 million euros the government earns by the ferry tickets that the residents of the islands buy should be returned to those who pay as investment on the infrastructure of the Greek islands (ports etc). Apart from all these, the islanders are obliged to pay an additional fare of 3 per cent of the price of the ticket in order to finance the non – profitable lines. The ferry transport system is the only transport sector in which the passengers are forced to pay and finance other routes - lines.

Therefore it is required a system with objective criteria for the correct selection of the transport services providers between the islands. This will happen by selecting and quantifying certain indexes (see paragraph 3.2.6). These indexes are extremely useful for the determination (qualitatively and quantitatively) of the content of the Agreements (see paragraph concerning the Essential Terms Agreement) that will be applied between the providers of the transport services (ferry operators), the Greek State and the representative of the users (local authorities). It is important to clarify that these Agreements will lead either the relevant tender notices of public competitions for the service of certain routes or to a Public Service Contracts or Public Service Obligation (see paragraph 3.2.7). Finally, it should be determined a method for the monitoring and the correct implementation of these agreements (see paragraph 3.2.8 – 4th Stage: Monitoring the Essential Terms Agreement). In this perspective should shift the Greek State and the ferry operators for the welfare of the islandic areas.

In order to make the above more clear, in the next paragraphs there will be an attempt to develop an Essential Terms Agreement in the route/line Piraeus – Icaria Island – Fournoi Island – Samos Island. The main target of this case study will be to identify the needs of the islandic areas and to defend the main research issue that an individual technical consideration is required for developing transportation

Service Level Agreement. This basically means that each island has different needs from another and a special attention is required. At the end of the case study we will be in a position to recommend some solutions, based on the findings of our research. Before starting describing the process, we should set the scene by providing some information concerning the current situation in the islands that we are going to investigate.

3.3.3 Current situation in the islands

First of all, it has to be mentioned that the route – line we have chosen to investigate is the route Piraeus – Icaria Island – Fournoi Island and Samos Island. The choice of this certain route has been made as these three islands despite of the fact that belong to the same prefecture (Samos Prefecture) have different characteristics and different needs. This difference will allow us to defend the research question – issue we have developed in the beginning of the Thesis that "*An individual technical consideration is required for developing transportation Service Level Agreement".* Moreover, the writer of the Thesis is familiar with the needs of these areas and the long term problems the residents face as far as their transportation is concerned as his origin is from Samos Island. In this paragraph we will give some island characteristics and the current status quo concerning their connection with the mainland (Piraeus) in order the reader to shape a clear picture of these islands before proceeding to the research and its results.

Samos: Samos is a Greek island in the North Aegean Sea, south of Chios, north of Patmos and the Dodecanese, and off the coast of Asia Minor. The distance between Samos and Piraeus is about 580 miles.

The area of the island is 478 km^2 (184.6 sq miles), 43 kilometers (27 miles) long and 13 kilometers (8 miles) wide. It is separated from Anatolia (the coast of Asia Minor – Turkey) by the approximately 1 nautical mile (1.6 km) wide Mycale Strait.

The island's population is 33,814 residents (as of the census of 2001), which is the 9^{th} most populous of the Greek islands.

With the neighboring islands of Icaria and Fournoi, the island of Samos is administered as part of the Samos Prefecture. Samos includes four of the eight municipalities of the prefecture, which constitute more than 77 percent of the prefecture's population (2001 census). The island's capital and main port is the city of Vathy, most commonly called Samos; other municipalities are Karlovasi, which is the second port of the island, and Pythagoreio.

Table 6: Characteristics of Samos Island

Island Chain	North Aegean
Area	477.395 sq km
Periphery	North Aegean
Prefecture	Samos
Capital	Vathy
Population	33,814
Density	71/sq km

Source: Province of Samos, Ikaria, Fournoi Islands: **www.samos.gr**

In order to shape a clear view of the passenger traffic of Samos Island the author of the Thesis has collected from the port authorities of the Port of Samos some statistical data of the traffic during the previous three years (2006, 2007 and 2008). These data concern the months of February and August which are the most representative months of low season (winter months) and high season (summer months) correspondingly. Moreover, the data concern only the passenger traffic in the Port of Vathy (Samos) and not in the port of Karlovasi which is lower in terms of passengers and vehicles during the year.

Table 7: Passenger Traffic during low season in the port of Samos (2006 – 2008)

February 2006		February 2007		February 2008	
Arrived	Departed	Arrived	Departed	Arrived	Departed
1770	2553	1435	2696	3503	3180

Source: Samos Island Port Authorities

Table 8: Passenger Traffic during high season in the port of Samos (2006 – 2008)

August 2006		August 2007		August 2008	
Arrived	Departed	Arrived	Departed	Arrived	Departed
6503	5220	7061	6390	8528	7701

Source: Samos Island Port Authorities

As we can see from the figures above (Figure 15, Figure 16), during the winter months (low season) the traffic is significantly reduced in contrast to the summer months (high season). This happens because of the fact that Samos Island becomes a very important touristic destination during the summer. In order to satisfy the high demand, the ferry operators plan more routes during the summer months. Another characteristic that comes out of these statistical data is that the traffic constantly increases during the last years as far as the both periods are concerned. The increasing traffic reflects the increasing demands and needs of the residents of

the island for more often connection of the island with the Greek capital through the port of Piraeus during the year.

Icaria: Icaria is a Greek island, also situated in the North Aegean Sea 10 nautical miles (19 kilometres) southwest of Samos. The distance between Icaria and Piraeus is about 560 nautical miles. The area of the island is 255 km^2 (99 sq. miles) and the population is 8,500 inhabitants as of the census of 2001. The island of Icaria is administered as part of Samos Prefecture. The island's capital and main port is the city of Agios Kirykos. Another main port is the city of Eudylos.

Table 9: Characteristics of Icaria Island

Island Chain	North Aegean
Area	255.303 sq km
Periphery	North Aegean
Prefecture	Samos
Capital	Agios Kirykos
Population	8,312
Density	33/sq km

Source: Province of Samos, Ikaria, Fournoi Islands: **www.samos.gr**

Fournoi: Fournoi Korseon more commonly Fournoi, are a complex of small Greek islands that lie between Icaria and Samos in Samos Prefecture. The two largest islands of the complex, the main isle and the isle of Thymaina are inhabited, as is Agios Minas Island to the east. On the main isle Fournoi (town) is the largest settlement and then Chryssomilia in the north the second largest (and third largest overall, after Thymaina). The settlement of Chryssomilia is the main port of the island and the ferries landing site.

The main island Fournoi has a population of 1,326 inhabitants (as of the census of 2001), or over the 90 per cent of the municipality's population. The majority of the inhabitants are fishermen, although during the summer season they are also occupied in tourist activities, mostly room rentals and catering.

The island of Fournoi is connected through the sea by ferries with Samos Island and Icaria Island three times per week. For a very long time there was no ferry connection with the port of Piraeus. Only until recently the two ports have been connected.

Table 10: Characteristics of Fournoi Island

Island Chain	North Aegean
Total Isles	10
Periphery	North Aegean
Prefecture	Samos
Capital	Fournoi
Population	1,469
Density	32/sq. km

Source: Province of Samos, Ikaria, Fournoi Islands: **www.samos.gr**

As we can see from the above figures and information, the Island of Samos is the largest of all the three in terms of area and population. The second largest is the island of Icaria and the smallest one is the island of Fournoi. All the three islands have different needs but for all of them the connection with the port of Piraeus is of vital importance for their welfare and development.

Unfortunately, due to the complicated bureaucracy the author of the Thesis was able to find statistical data concerning the passenger traffic during the low or high season only for the Samos Island and not for the islands of Icaria and Fournoi. However, the traffic in these two islands is considered to have the same characteristics as the traffic in Samos Island. More specifically, the passenger traffic during the summer months is significantly higher than the winter months. Also, the traffic during the last years is constantly increasing as these islands become more and more a very famous touristic destination.

In the next paragraph will be described the method (Delphic Method) that is used in order to investigate these islands for the development of an Essential Terms Agreement according to their needs.

3.3.4 Delphic Method

The Delphic Method is a qualitative method of data analysis that is used for the statement of opinions, through the group consensus. The method is mostly used when the issue under investigation is not well - structured and the investigator should turn to the opinions of some experts in order to be able to organize a methodological approach to this issue. The most usual form of implementation of this method is the concentration of a group of experts (experts' panel), who do not know each other, in order to participate in rounds of questions – answers through questionnaires. The main characteristics of the Delphic Method are the anonymity, the statement of the answers through an arithmetical scale (numeric response) and the feedback:

Anonymity: The anonymity of the members of the group ensures that a view that is introduced in the group, through a questionnaire, is not affected by the position/affiliation of the person that expresses this view.

The statement of the answers through an arithmetical scale (numeric response): The answers, that the members of the team give, are measured in an arithmetical scale in order at the end of the research, the common view of the members of the group to be able to be measured. As a measurement for the common view between the members - experts of the group is measured using some statistical tools such as the median[41] or the mode[42]. The level of agreement is measured through the variability of the answers that were given. The variability is measured through the standard deviation[43] (standard deviation: s) and the interquartile range[44] (interquartile: $Q=Q_3-Q_1$).

Feedback: The process of feedback is described as follows (Malindretou, 1998): the answers from the first questionnaire that has been sent to the group of the experts are processed and are used for the formulation of the second questionnaire which is sent again to the group. Obviously, the second questionnaire does not express the view of the investigator – user of the method, but expresses views of the team as they have been collected from the first round of the questionnaire. The process is repeated until there is noted a small range of differentiations in which agrees the majority of the experts.

The group of the experts: It is not officially defined an optimal number of experts who form the group in the Delphi Method (Ndour, Force & McLaughlin, 1992). In the bibliography it is noted a great variability in the number of experts that have been proposed in various implementations of the Delphic Method (Mullen, 2003). The range is estimated from 4 experts to hundreds or even thousands of experts. The number of experts in a typical Delphi Method is estimated to be from 7 or 8 to 12 persons (Mullen, 2003). On the one hand, for the very small samples under the 7 persons, the accuracy of the method is reduced at a very high level. On the other hand the extension of the number of the experts in already large samples slightly increases the accuracy of the method (Linstone, 1978, in Mullen, 2003).

As it has been already mentioned, in our specific case study concerning the route – line Piraeus – Icaria Island – Fournoi Island and Samos Island we will investigate the implementation of an Essential Terms Agreement. In the Delphic Method which will be used for the strengthening of this Agreement, are going to be participated, according to all the above, a group of experts who will specify the following indexes:

- Indexes of Requirements – Specifications

[41] The median is calculated by placing all the observations in order (ascending or descending). The observation that falls in the middle is the median

[42] The mode is defined as the observation (or observations) that occur with the highest frequency.

[43] The standard deviation is the positive square root of the variance. To compute the variance we begin by calculating the sample mean. Next we compute the difference (also called the deviation) between each observation and the mean. We square the deviations and sum. Finally, we divide the sum of squared deviations by n-1. More specifically, the formula is the following: $\sigma^2 = \frac{1}{v}\sum_{i=1}^{v}(x_i - \bar{x})^2$. The lowest the standard deviation is, the lowest the variability of the values of the observations. This means that we have succeeded a great level of agreement using the Delphic Method.

[44] The interquartile range is the difference between the first and the third quartile ($Q=Q_3-Q_1$). The smallest the interquartile range the highest the level of agreement between the answers the experts gave.

- Performance indexes
- Efficiency indexes

More specifically, from the indexes of Requirements – Specifications there will be used the index of Frequency: Number of routes per week for the year and the index of the duration of the Agreement. From the performance indexes there will be used the index of the number of intermediate islands – stops and the voyage time Piraeus – Samos Island via Ikaria Island and Fournoi Island. Finally, from the efficiency indexes there will be used the price of the passenger ticket (one way), the fare of the passenger car (one way) and the subsidy amount per passenger (according to the price of the passenger ticket).

The selection of the indexes has been made in accordance with the supervisor of the Thesis. These indexes represent the most important issues and problems that the residents of these specific islands face and need to be solved in common with the ferry operators and the Greek State.

3.4 Results

In the previous paragraph, it has been described and discussed the optimal number of the experts that constitute the group in the Delphic Method. The number of the experts in the current Delphic Method is nine (9). The selection has been made according to the results of the literature as they have been presented in the previous paragraph. More specifically, in the first cycle (the only one as we will see in the next paragraphs), have been sent questionnaires in a group of nine experts (two experts representing the ferry operator, two experts from Samos Island local authorities, one expert from Icaria local Authorities, one expert from Fournoi Island local authorities, one expert representing the Greek State and two tourist agents). The full personal details of each expert can be found in the bibliography of the Thesis.

In the 1st Circle of the Delphic Method the questionnaire that was sent to the group of the experts was divided in two parts. In the first part the expert was asked to mark the minimum and the maximum value for each index (7 indexes in total) that we chose, for both the summer and the winter months as the needs are different during these periods. In the second part, the expert should mark the desirable value for the index in an arithmetical scale from one to ten according to the limits (minimum – maximum value) that he had posed in the previous part. The value one of the arithmetical scale is the minimum value and the value ten is the maximum. The full questionnaire of the first cycle of the Delphic Method as well as the introductory note that was accompanying the questionnaire can be found at the Appendix of the Thesis. The delivery of the questionnaires has been made via telecommunication and by personal delivery of the questionnaires to the experts (hand in hand). The concentration of the answers of the experts has been carried out during the period from 01/08/2009 to 15/08/2009. In the questionnaires have been answered all the nine experts; response rate 100%. The answers after their collection were processed. For each index it was calculated:

- The median of the answers of the arithmetical scale (0 → 10)
- The interquartile range
- The mode
- The average

- The standard deviation and the
- Coefficient of variation[45]

The results of the first cycle of the Delphic Method for the summer months and the winter months are presented in the following figures:

[45] The coefficient of variation is given by the type: CV= standard deviation/average. The coefficient of variation is a natural number that is indicated as a percentage. It expresses the homogeneity of the values of the observations. In general a group of observations is considered homogeneous when CVis less or close 10 - 15%.

Indexes	1	2	3	4	5	6	7	8	9	median	Q1	Q3	Q=Q3-Q1	mode	average	Actual value	Standard deviation	CV
Frequency: Number of routes per week for the summer (min. 3 routes– max. every day)	**9**	**9**	**10**	**10**	**10**	**7**	**9**	**9**	**9**	**9**	**9**	**10**	**1**	**9**	**9.1**	**every day**	**0.92**	**10.1%**
Number of intermediate islands – stops (min. no stop – max. 4 ports)	**2**	**2**	**0**	**0**	**0**	**2**	**1**	**1**	**1**	**1**	**0**	**2**	**2**	**2**	**1**	**No stop**	**0.86**	
Duration of the Agreement (years) (min. 30 years – max. forever)	**9**	**9**	**10**	**10**	**10**	**10**	**10**	**9**	**10**	**10**	**9**	**10**	**1**	**10**	**9.6**	**For ever**	**0.5**	**5.2%**
Voyage Time (min. 6 hours – max. 9 hours)	**9**	**9**	**8**	**8**	**8**	**10**	**9**	**9**	**8**	**9**	**8**	**9**	**1**	**9**	**8.6**	**8.5 hours**	**0.70**	**8.1%**
Price of the passenger ticket (one way) (min. 30 eur – max. 70)	**6**	**6**	**4**	**4**	**4**	**3**	**5**	**4**	**5**	**4**	**4**	**6**	**2**	**4**	**4.5**	**48 euros**	**1.01**	**22.4%**
Fare of the passenger car (one way) (min. 50 eur – max 110)	**6**	**6**	**4**	**4**	**4**	**3**	**5**	**4**	**5**	**4**	**4**	**6**	**2**	**4**	**4.5**	**78 euros**	**1.01**	**22.4%**
Subsidy amount per passenger (according to the price of the passenger ticket) (min. 10% - max. 40%)	**7**	**7**	**7**	**7**	**6**	**7**	**5**	**7**	**7**	**7**	**6**	**7**	**1**	**7**	**6.6**	**30%**	**0.70**	**10.6%**

Table 11: Results of the 1st Round of Delphic Method (high season – summer months)

1: expert representing the ferry operator, 2: expert representing the ferry operator, 3: expert from Samos Local Authorities, 4: expert from Samos Local Authorities, 5: expert from Ikaria Local Authorities, 6: Expert from Fournoi Local Authorities, 7: expert representing the State, 8: Tourist Agent, 9: Tourist Agent

Indexes	1	2	3	4	5	6	7	8	9	median	Q1	Q3	Q=Q3-Q1	mode	average	Actual value	Standard deviation	CV
Frequency: Number of routes per week for the winter (min. 2 routes– max. 7 routes)	**9**	**9**	**10**	**10**	**8**	**4**	**9**	**9**	**10**	**9**	**8**	**10**	**2**	**9**	**8.6**	**6 routes**	**1.87**	**21.74%**
Number of intermediate islands – stops (min. no stop – max. 5 ports)	**3**	**3**	**0**	**1**	**3**	**4**	**1**	**1**	**1**	**1**	**1**	**3**	**2**	**1**	**1.8**	**1 stop**	**1.36**	
Duration of the Agreement (years) (min. 30 years – max. forever)	**9**	**9**	**10**	**10**	**10**	**10**	**10**	**9**	**10**	**10**	**9**	**10**	**1**	**10**	**9.6**	**For ever**	**0.5**	**5.2%**
Voyage Time (min. 6 hours – max. 10 hours)	**6**	**6**	**5**	**5**	**4**	**5**	**6**	**5**	**5**	**5**	**5**	**6**	**1**	**5**	**5.2**	**8.5 hours**	**0.66**	**12.6%**
Price of the passenger ticket (one way) (min. 20 eur – max. 60)	**5**	**6**	**5**	**5**	**5**	**3**	**5**	**5**	**5**	**5**	**5**	**6**	**1**	**5**	**4.8**	**40 euros**	**0.78**	**15.9%**
Fare of the passenger car (one way) (min. 40 eur – max 100)	**6**	**6**	**5**	**5**	**5**	**4**	**5**	**5**	**5**	**5**	**5**	**6**	**1**	**5**	**5.1**	**70 euros**	**0.60**	**11.7%**
Subsidy amount per passenger (according to the price of the passenger ticket) (min. 10% - max. 40%)	**7**	**7**	**7**	**7**	**6**	**7**	**5**	**7**	**7**	**7**	**6**	**7**	**1**	**7**	**6.6**	**30%**	**0.70**	**10.6%**

Table 12: Results of the 1st Round of Delphic Method (low season – winter months)

1: expert representing the ferry operator, 2: expert representing the ferry operator, 3: expert from Samos Local Authorities, 4: expert from Samos Local Authorities, 5: expert from Ikaria Local Authorities, 6: Expert from Fournoi Local Authorities, 7: expert representing the State, 8: Tourist Agent, 9: Tourist Agent

3.5 Discussion

In paragraph 3.3.4, where it is described the Delphic Method, it is mentioned that a very useful tool to measure the level of the agreement between the experts that are taking part in the research is the variability. Accordingly, the variability is measured through the standard deviation, the interquartile range and the coefficient of variation. The lowest the standard deviation is (usually less or close to 1) the lowest the variability of the values of the observations and the higher the level of agreement between the experts. Moreover, as it has already been mentioned the other tools are the interquartile range and the coefficient of variation. The lowest they are the higher the level of agreement. Particularly for the coefficient of variation the variability reduces when it is less or close to 10 – 15%.

Looking at the results of the high season (Figure 19) we see that the standard deviation is slightly more than the normal value, which is 1, in only two out of seven indexes (price of the passenger ticket – fare of the passenger car). The same happens with the coefficient of variation (around 22%) and the interquartile range (2). For the rest five indexes these values are very close to the normal values (coefficient of variation close to 10% - low interquartile range). The same happens with the results of the low season (Figure 20). Only two indexes out of 7 (the frequency and the number of intermediate islands – stops) are slightly above the normal values as far as the standard deviation, the coefficient of variation and the interquartile range are concerned.

According to the above interpretation of the results we realise that the variability of the observations for both the low and high season results is low. This means that it is succeeded a high level of agreement between the experts from even the first round of the Delphic Method. The author and the supervisor of the Thesis have agreed that as the level of agreement is satisfactory there is no need to proceed to a second round of questionnaires and the Delphic Method ends from the first round. The discussion that follows is based on the above results.

In order to give a clear view of the results of the research we will describe each index separately. We will start from the results concerning the high season (summer months).

Frequency: Number of routes per week for the summer (min. 3 routes– max. every day): In the first part of the questionnaire, each expert was asked to set the minimum and the maximum value for the number of routes the vessel should make according to the needs of each island per week for the summer. The minimum of the minimum values that the experts had set was the value that the expert representing the local authorities of the Fournoi Island (the island with the lowest population) had given (3 routes per week). The maximum of the maximum values was given by the representatives of the Samos Island and Icaria Island local authorities (every day).

As we see by the results (Figure 19) the local authorities of Samos Island and Icaria Island demand daily service - connection with the Greek mainland (port of Piraeus). This happens because of the fact that these two islands attract a great number of tourists during the high season. On the other hand the residents of Fournoi Island are satisfied with 5 routes per week as the island attracts a small number of tourists

in comparison with the other two islands. Also, we should take under consideration that Samos and more recently Icaria Island have invested a lot of money in tourism. The sector of tourism is of vital importance for the residents of these two islands as many of them are involved in this business (restaurants, hotels, spas etc). It should be noted that a tourist who visits these two islands stays around 5 to 7 nights. In contrary, Fournoi Island attracts only daily or short stay (around 2-3 nights) travellers during the summer as the island is small and the accommodation offered very poor. According to the above it is reasonable that the residents of Samos and Icaria Island demand daily connection with the port of Piraeus during the summer.

This view is also accepted by the ferry operator but for different reasons. During the summer, when the demand for transport services is high, the vessels are always full leading to more profits for the ferry company. Thus, it is reasonable for the operator to desire a high number of routes during the summer. Also, as we see in the results the ferry operator desires a high number of intermediate islands – stops in order to increase the number of passengers transported and, of course, his profit. Finally, the expert representing the Greek State and the tourist agents have the same opinion. The needs of the islands (Samos – Icaria) during the summer are covered only by daily routes.

Number of intermediate islands – stops (min. no stop – max. 4 ports): As it has already been mentioned the ferry operator in order to increase the number of passengers transported and his profit wishes at least one stop to another island. In contrast to the ferry operator the residents of the islands apart from the residents of Fournoi Island demand no intermediate island – stop in order to decrease the voyage time. By decreasing the voyage time the vessel trip is easier and more pleasant for the tourist and the final destination becomes more accessible. Moreover, as these islands are very far from the port of Piraeus in contrary to other touristic destinations (such as Cyclades) the residents are very demanded in reducing the voyage time by the non-stop voyage.

The residents of the Fournoi Island are compromised with at least one stop as they are aware of the reality: the ferry operator would not route a vessel to a low demand destination without including in the route at least one high demanded island in order to increase the fullness of his vessel. Also, another reason that the residents of Fournoi Island are satisfied with intermediate stops is the fact that the price of the ticket will be lower if more passengers fill the vessel. The more intermediate islands the vessel stops the less the price of the passenger ticket. This is of vital importance for the residents of Fournoi as we will see in the index price of the passenger ticket. Finally, the expert representing the Greek State and the tourist agents have the same opinion.

Duration of the Agreement (years) (min. 30 years – max. forever): The experts were asked to answer according to their opinion what would be the optimal duration of the Agreement in order to cover the needs of the islands. As we can see in the results, this index is the index with the higher level of agreement between the experts (standard deviation is 0.5). More specifically all the experts agree that in order to satisfy the demands and the needs of the islands the Agreement should last forever or at least for a time period of around 50 years , according to the ferry operator.

Voyage Time (min. 6 hours – max. 9 hours): The voyage time depends on the number of intermediate islands – stops the vessel will make. The greater the number of the stops will be the higher the voyage time. As it has already been mentioned the residents of the islands of Samos and Icaria demand low voyage time during the summer months in order the destination to become more easily accessible by the tourists. The residents of Fournoi Island know that will not be profitable for a ferry operator to route a vessel to their island without stopping to at least one other island and increasing by this way the voyage time. The same more or less opinion with the residents of the islands seems to have the ferry operator. By reducing the voyage time (no matter the number of intermediate stops) the ferry operator will attract more customers – passengers by making the trip more enjoyable. Finally, the expert representing the Greek State and the tourist agents have the same opinion.

Price of the passenger ticket (one way) (min. 30 eur – max. 70): Before discussing the results of this index it has to be mentioned that the current price of one way passenger ticket during the summer period is 41 euros with two intermediate islands – stops in Cyclades (Paros Island and Naxos Island). According to the results the residents of Samos Island and Icaria Island are satisfied with the current price (around 45 euros) with the condition that the route will be non stop as it was presented in the previous index. This means that they desire to pay the same or higher price for the ticket as now but with better services (non stop voyage, low voyage time).

On the other hand, the residents of the Island of Fournoi demand to pay for the ticket as less as possible. This happens because of two reasons. The first is that the majority of the population of this island is consisted of aged persons that are pensioners with low income who cannot afford to pay a lot of money for the ferry ticket. The second reason is that as the island hardly attracts a small number of tourists during the summer, a high ticket price would drive the island out from the "travel map". The ferry operator in order to increase his profit desires to increase the price of the passenger ticket but not very high from the desired price of the residents. Finally, the expert representing the Greek State and the tourist agents have the same opinion.

Fare of the passenger car (one way) (min. 50 eur – max 110): For this index, as we see by the results, the experts have given the same answers as has happened with the index of the price of the passenger ticket. The explanation is similar to the previous index.

Subsidy amount per passenger (according to the price of the passenger ticket) (min. 10% - max. 40%): The final index the experts were asked to quantify was the amount of the subsidy according to the price of the passenger ticket. The level of agreement between the experts was very high for this index (standard deviation is 0.7). More specifically, the amount of subsidy by the Greek State to this route that was agreed is around 30% of the value of the ticket. The more the subsidy amount the less the amount of money the passenger will pay for the purchase of the ticket. On the other hand, the expert representing the State has underlined to the author that the Greek State cannot afford for the specific route more than 25 – 28% of the passenger ticket price. This happens because the State does not consider the route Piraeus – Icaria Island – Fournoi Island – Samos Island as non profitable route that

needs a great amount of subsidises. A subsidise at the level of 25% is enough to cover the needs of the ferry operator.

After having described the results of the high season (summer months), we proceed to the results of the low season (winter months).

Frequency: Number of routes per week for the winter (min. 2 routes– max. 7 routes): Before starting describing the results according to the figure 20, it should be mentioned that during the winter months (low season) the passenger traffic is significantly reduced in contrast to the summer months. This becomes clearer by comparing the minimum and the maximum values of the indexes during the summer and the winter months (Figure 19 – Figure 20). We easily realise that the limits during the winter months are lower than the summer months.

During the summer the needs are higher as a great number of tourists needs to be served. On the other hand, during the winter months the tourist period is over and the passengers that are transported are only the residents of the islands. As we can see in the results the local authorities of Samos Island and Icaria Island demand at least 6 routes per week. The population of these two islands is high and needs to be served during the winter months. More specifically, during the interview with the Samos and Icaria local authorities, the experts have underlined that it is of vital importance to exist a route every Friday afternoon from Samos – Icaria – Fournoi to Piraeus and every Sunday a route from Piraeus to Icaria – Fournoi and Samos. The residents demand these certain days as there are many people who desire to travel to Athens the weekends for their own business (medical care, shopping etc).

As far as Fournoi Island is concerned, the residents believe that their needs would be covered by 3 routes per week. Taking into consideration the population of the island (1,469 inhabitants), this demand is totally understandable. The ferry operator believes that he will maximise his profit with at least 6 routes per week. Finally, the expert representing the Greek State and the tourist agents have the same opinion.

Number of intermediate islands – stops (min. no stop – max. 5 ports): As it has been mentioned, the passenger traffic during the winter is significantly lower than the traffic during the summer. The only solution for the ferry operator to increase or maintain his profits is to include to his route more intermediate islands – stops. By this way the number of passengers transported is higher (high load factor level results to improved financial results for the operator). The answers the two experts representing the ferry operator gave reflect this situation. In contrary, the residents of Samos Island believe that the route, as it happens during the summer, should be non – stop. More specifically they believe that the ferry network in the islands of Cyclades is better than in the North Aegean (high frequency, faster ships) so there is no need for the route Piraeus – Icaria – Fournoi – Samos to serve also these islands. The local authorities of Icaria and Fournoi Island are satisfied with 2 intermediate islands – stops. Finally, the expert representing the Greek State and the tourist agents have the same opinion.

Duration of the Agreement (years) (min. 30 years – max. forever): The results for this index are common for both the summer months and the winter months. The description is the same as the description given for the index during the high season.

Voyage Time (min. 6 hours – max. 10 hours): As the demand for transport services during the winter is lower the residents of the islands are satisfied with a voyage time slightly higher than the voyage time during the summer. On the one hand, this is reflected on the fact that the maximum value of the index the residents gave is one hour more than during the summer (10 hours). On the other hand the actual value is 8.5 hours which is the same as the summer one. This underlines that the needs of the residents during the two time periods may differ but are equally important.

Price of the passenger ticket (one way) (min. 20 eur – max. 60): According to the results all the experts, apart from the expert representing the Fournoi Island local authorities, agree to a price for the ticket around 40 euros for the winter season which is 10 euros less than the price for the summer period. This makes sense as the demand for transport services is reduced during the winter and there is no reason to set high prices for the ticket. The residents of the Fournoi Island demand even lower price than the other islanders for the same reason as the price index for the summer (aged population with low income).

Fare of the passenger car (one way) (min. 40 eur – max 100): For this index, as we see by the results, the experts have given the same answers as has happened with the index of the price of the passenger ticket. The explanation is similar to the previous index.

Subsidy amount per passenger (according to the price of the passenger ticket) (min. 10% - max. 40%): For this index the experts have agreed that a desirable amount of subsidy during the winter would be around 30% of the value of the passenger ticket (40 euros). This amount is higher than the amount during the summer period (30% subsidy at the price of 48 euros). This is easily understandable as the earnings for the ferry operator during the low season are less than the high season and needs the State aid in order to cover his expenses and maintain profitable.

3.6 Conclusions

In conclusion, the Essential Terms Agreement in which the experts have ended and believe that will cover the needs and satisfy the demands of the residents of the islands is the following. As far as the summer period is concerned, the route/line Piraeus – Icaria Island – Fournoi Island and Samos Island should be daily. Also, there should not be any intermediate island – stop and the voyage time should not exceed the 8.5 hours. The price of a one way passenger ticket is around 48 euros and the fare of a passenger car of around 78 euros. Finally, the subsidy amount should be around 30 % and the Agreement should last forever.

As far as the winter months are concerned, there should be a connection of the islands with the port of Piraeus 6 times the week (6 routes). The vessel should not stop to more than one intermediate island and the voyage time should not exceed the 8.5 hours. The price of the one way passenger ticket is around 40 euros and the fare of a passenger car is around 70 euros. Finally, the subsidy amount should be around the 30 % of the passenger ticket and the Agreement should last forever.

As it has been discussed in the previous paragraphs the results of the research have raised and underlined the most important aspect of the specific route which is

the following: the fact that each island is different from the other, has different characteristics which lead to different needs and demands by the residents. In other words, each island is unique and needs to be treated independently.

In other words, this major finding of the case study emphasizes the research question/issue that *an individual technical consideration is required for developing transportation Service Level Agreement*.

Finally, the overall conclusion is that the Aegean ferry transport market, as it is now, after the liberalisation of fares (in 2006) is in a critical path (with serious prospects for improvement) and it seems that by working together all the different parts (State, ferry operator, residents of the islands) will definitely improve the system with final recipient of this improvement the user of the ferry services who is the citizen and the resident of the island region.

If the contrary happens (limited cooperation between the different parts) there is high risk of deteriorating the quality of the services offered, while the costs will be increased which may have serious consequences in the social cohesion of the islandic areas.

Chapter 4: Conclusion

4.1 Major findings and conclusion of the analysis

Overall the analysis focuses on the research question/issue that *an individual technical consideration is required for developing a transportation Service Level Agreement.* This research question is answered in the two different parts of the Thesis. In the first part (chapter 2) by stating the differences between the two ferry transport systems (Aegean – Adriatic) and in the second part of the Thesis (chapter 3) by the case study showing that each island is unique (different characteristics – different needs) and needs to be treated independently.

In general the analysis indicated that the gradual harmonization of the Greek legislative framework with the European legislation via the Greek state law 2932/2001 resulted in the creation of a new competitive environment in the Greek ferry sector presenting to all operators a new perspective. All operators across the board encountered negative macroeconomic pressures including the stabilization of the to date increasing trend in traffic demand in the itineraries of the Adriatic Sea, the increase in the interest rates affecting debt repayments and the increase of the bunkers' cost.

Another important fact is the decrease in the bank portfolios of ferry financing due to the lack of big investments, the sale of many vessels and the repayment of debts by the ferry operators. Of increasing concern are the exit of many foreign banks from the market and the global exposure of the financial institutions. For the time being though, there is no need for capital since no business plans are present.

The global financial crisis does not leave the ferry sector untouched. Companies will be asked to pay higher premiums to pay off their debts since this crisis has resulted in the increase of lending cost. A significant factor which could assist in the development and growth of the ferry sector in the future can be the investment in modern fast ships friendly to the environment. We are not far from seeing the need of new building projects becoming practice since the lack of second hand vessels and the limited shipyard availability in Asia could shift the order book to European soil.

The case study showed that the Greek state is obliged to continue supporting not only the ferry sector but the populations leaving in the island complexes as well. The subsidies in specific itineraries should increase in order to achieve a satisfactory level of cohesion with the mainland. Focus should also be given on the viability of the competitive conditions since these can keep transport costs at low levels and thus social cohesion can be sustained. Another issue that certainly needs special attention is the immediate charges imposed via the ferry tickets by the State. These result in the increase of the ticket prices, which impede healthy competition conditions.

In parallel the state should expand its successful port policy investing more in infrastructure aiming for the less favored areas. Private investors should be more than welcomed in investing in new port infrastructures since they can trigger development in these areas via the creation of new jobs and via the attraction of

tourists. These investments are also necessary for the operation of new vessels as today's infrastructure impedes their safe operation and makes the operators reluctant in operating them in these areas.

The future prospects for the Greek ferry sector look promising with new business efforts taking place. Sea transportation is the only way for the decongestion of the land transport in the European Union leading to further development in the sector. Significant capital investments are expected in sea transportation in the coming years despite the significant bureaucratic barriers imposed by the European Union. Greek ferry operators should be optimistic and take advantage of the new opportunities stemming from the new business environment. Their experience is strong capability which enables them to act appropriately to the benefit of themselves and their shareholders.

The signs of maturity present in the markets of Adriatic Sea and Greece make the need for the application of geographic diversification strategies more evident than ever before.

4.2 Suggestions for further research

During the writing period of this Thesis many ideas crossed the author. These ideas could be included in the current Thesis but the time period was very limited. The most burning question is how to improve the Greek ferry system, apart from the cooperation of all the parts, and how to create a solution which the system can work out by itself without extensive regulation and State intervention. Moreover, it would be interesting to find out in what level the current financial crisis has affected the system and what can be done in order to recover from this situation.

Finally, the most burning and most difficult question is to find out incentives for new coming operators into the market can be created in order to enhance the competition into the system. All these questions and areas that have been presented above, show that the ferry transportation is a very interesting field for conducting further research.

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Appendices

Appendix 1

Questionnaire of the 1st circle of the Delphic Method

Explanations for the first circle:
The questionnaire is consisted of two parts. For each part please mark the data that are asked.

Personal data of the asked person *(the data will be used in order to send you the results of the research)*
Name: _____Tel. /fax: _____
Position/Affiliation: _____Email: _____

1st Part: In the following questionnaire, please mark according to your opinion the minimum and the maximum value for each index and any possible remarks.

Summer Months (high season)

Indexes	Minimum Value	Maximum Value	Remarks
Frequency: Number of routes (the route is Piraeus – Ikaria Island – Fournoi Island – Samos Island) per week for the summer months			
Number of intermediate islands - stops			
Duration of the Agreement (years)			
Voyage Time Piraeus – Samos Island via Ikaria Island and Fournoi Island (Hours)			
Price of the passenger ticket (one way)			
Fare of the passenger car (one way)			
Subsidy amount per passenger (according to the price of the passenger ticket)			

Winter Months (low season)

Indexes	Minimum Value	Maximum Value	Remarks
Frequency: Number of routes (the route is Piraeus – Ikaria Island – Fournoi Island – Samos Island) per week for the winter months			
Number of intermediate islands - stops			
Duration of the Agreement (years)			
Voyage Time Piraeus – Samos Island via Ikaria Island and Fournoi Island (Hours)			
Price of the passenger ticket (one way)			
Fare of the passenger car (one way)			
Subsidy amount per passenger (according to the price of the passenger ticket)			

2nd Part: In the following questionnaire please mark according to your opinion the desirable value taking into consideration the limits that you posed in the 1st part (minimum value – maximum value).

Example:

1st Part:

Indexes	Minimum Value	Maximum Value	Remarks
Frequency: Number of routes (the route is Piraeus – Ikaria Island – Fournoi Island – Samos Island) per week for the summer months	2	5	

The minimum value 0 in the arithmetical scale of the 2nd part corresponds to the value 2 that was given in the 1st part. In the same way the maximum value 10 corresponds to the value 5. If you wish to be carried out 3 routes per week for the whole year then you choose one value that is close to the middle of the scale.

2nd Part: Chart of the Delphic Method for the accomplishment of an Essential Terms Agreement

Summer Months (high season)

Indexes	Arithmetical Scale										
	Close to the minimum → Close to the maximum										
Frequency: Number of routes (the route is Piraeus – Ikaria Island – Fournoi Island – Samos Island) per week for summer months	0	1	2	3	4	5	6	7	8	9	10
Number of intermediate islands – stops	0	1	2	3	4	5	6	7	8	9	10
Duration of the Agreement (years)	0	1	2	3	4	5	6	7	8	9	10
Voyage Time Piraeus – Samos Island via Ikaria Island and Fournoi Island (Hours)	0	1	2	3	4	5	6	7	8	9	10
Price of the passenger ticket (one way)	0	1	2	3	4	5	6	7	8	9	10
Fare of the passenger car (one way)	0	1	2	3	4	5	6	7	8	9	10
Subsidy amount per passenger (according to the price of the passenger ticket)	0	1	2	3	4	5	6	7	8	9	10

Please express any additional information as far as the chart is concerned and any further suggestions regarding the indexes: …….

……

……

……

Winter Months (low season)

Indexes	**Arithmetical Scale**										
	Close to the minimum → Close to the maximum										
Frequency: Number of routes (the route is Piraeus – Ikaria Island – Fournoi Island – Samos Island) per week for winter months	0	1	2	3	4	5	6	7	8	9	10
Number of intermediate islands – stops	0	1	2	3	4	5	6	7	8	9	10
Duration of the Agreement (years)	0	1	2	3	4	5	6	7	8	9	10
Voyage Time Piraeus – Samos Island via Ikaria Island and Fournoi Island (Hours)	0	1	2	3	4	5	6	7	8	9	10
Price of the passenger ticket (one way)	0	1	2	3	4	5	6	7	8	9	10
Fare of the passenger car (one way)	0	1	2	3	4	5	6	7	8	9	10
Subsidy amount per passenger (according to the price of the passenger ticket)	0	1	2	3	4	5	6	7	8	9	10

Please express any additional information as far as the chart is concerned and any further suggestions regarding the indexes: …….

……

……

……

Many thanks for your time,

Kefalas Anastasios

Appendix 2

Introductory note that was accompanying the questionnaire (in the case the questionnaire was sent via e-mail)

Dear Sir/Madam,

Following the communication we had and your positive response, you have joined a group of experts consisting of experts representing the ferry operator, Samos Island local authorities, Icaria Island local authorities, Fournoi Island local authorities, the Greek State and tourist agents concerning the development of an Essential Terms Agreement in the route Piraeus – Icaria Island – Fournoi Island – Samos Island that will satisfy the needs and the interests of all the parts involved (State, ferry operator, residents).

The research is carried out in the Master Program of the Erasmus University of Rotterdam: "Maritime Economics and Logistics" for my MSc Thesis with subject: "*Analysis of the characteristics of the Greek passenger ferry transport system – Case Study: Investigation for implementation of Service Level Agreement in the route Piraeus – Samos Island"*.

The investigation will be carried out through the completion of structured questionnaires, the first of which (1st cycle of the Delphic Method) is attached in the e-mail. Please be so kind to complete the attached questionnaire and send to us by Saturday, August 15, 2009. Then, according to your answers and if it is necessary depending on the level of agreement, you will be sent a second and final questionnaire (2nd cycle of the Delphic Method), through which there will be reached the consensus between the views of all the experts of the group.

Your answers will be confidential and the survey results will be sent to you by e-mail.

At your disposal for any clarifications.

Thanking you in advance for your time, your scientific opinion and experience.

Anastasios Kefalas,

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