

# International Journal *of* Euro-Mediterranean Studies

VOLUME 4 | 2011 | NUMBER 1

A Look at Euro-Mediterranean Countries  
from a Trade Logistics Point of View

*Sinan Fikret Erk*

A Future Regulatory Framework for CO<sub>2</sub> Emissions  
of Shipping in the Mediterranean Area

*Alexander M. Goulielmos, Konstantinos V. Giziakis,  
and Anastasia Christodoulou*

The New Port Framework in Spain As a Means to Support  
the Increase of Traffic Potential in the Mediterranean Sea

*Fernando González Laxe*

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from Port Devolution in Malaysia?

*Hesbam M. Ghasbat, Kevin Cullinane, and Gordon Wilmsmeier*

Governance of Italian Cruise Terminals for the Management  
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*Monica Grosso and Feliciano Monteiro*

# International Journal of Euro-Mediterranean Studies

ISSN 1855-3362

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*Continued on the back inside cover*



# International Journal of Euro-Mediterranean Studies *Table of Contents*

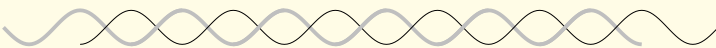
GUEST EDITORS *Vittorio Torbianelli and Metin Çancı*

- 3 Political Stability and Transportation within Euro-Mediterranean Countries: A Foreword to the Thematic Issue  
*Metin Çancı*
- 7 Introduction to the Thematic Issue: What Is the Future Scenario for Transport in the Mediterranean Region?  
*Vittorio Torbianelli*
- 19 A Look at Euro-Mediterranean Countries from a Trade Logistics Point of View  
*Sinan Fikret Erk*
- 39 A Future Regulatory Framework for CO<sub>2</sub> Emissions of Shipping in the Mediterranean Area  
*Alexander M. Goulielmos, Konstantinos V. Giziakis, and Anastasia Christodoulou*
- 61 The New Port Framework in Spain As a Means to Support the Increase of Traffic Potential in the Mediterranean Sea  
*Fernando González Laxe*
- 83 Identifying the Right 'Fit:' What Can Libya Learn from Port Devolution in Malaysia?  
*Hesbam M. Ghashat, Kevin Cullinane, and Gordon Wilmsmeier*
- 119 Governance of Italian Cruise Terminals for the Management of Mediterranean Passenger Flows  
*Assunta Di Vaio and Gabriella D'Amore*

139 Criteria for Container Port Choice:  
Focus on the Mediterranean  
*Monica Grosso and Feliciano Monteiro*

161 Résumés

165 Povzetki



# Political Stability and Transportation within Euro-Mediterranean Countries: A Foreword to the Thematic Issue

METIN ÇANCI

*Okan University, Turkey*

Political stability is the main issue in transportation geography to enable a liberal goods flow in cross border trade. Nowadays a new transition is being witnessed in the Mediterranean basin, starting from Tunisia and expanding through Egypt, Libya and surrounding countries. In the case of political equivocacy situations three main subjects come into prominence: energy, communication and transportation. These three subjects are vital not only for regional economies, but also for wider geographies.

Because of these conditions some risks occur both for countries' internal policies and for international stabilities in a 600 billion dollar market. Until gaining political stability and regenerating regional economies, it is inevitable for Mediterranean countries not to be affected by existing conditions.

From the transportation aspect, fluctuations in political conditions result in economical crisis. These crises cause dwindling of business volumes in the transportation sector as well as the economy sector in the short term. Decrease in freight volume negatively affects shipping industry, ports, all transportation operators, relevant business areas and their employees. Some activity subjects in the sector are observed to be irrevocably affected by the crisis.

On the other hand, as in all other crisis types, the existing crisis conditions create some new challenges for surrounding countries. Especially for the new governance in these countries, there is an important need for a new roadmap of the transportation sector to obtain integration with the global economy.

[4] At this stage, the main obstacle to cross-border trade is the harmonization and the standardization subject of the customs system to simplify the goods flow. The reciprocal harmonization of the customs work processes of the Mediterranean basin with the European region is a part of accelerating the goods flow. In the harmonization process, developing standard work procedures for all processes related with transportation system infrastructure, vehicles, freight and drivers is required. Although some countries do cover some ground in simplifying, harmonizing and standardizing work procedures, unfortunately this is still not enough in full.

A huge amount of transportation is carried out by sea transportation in the Mediterranean basin. Because of this, to regularize goods flow with minimum waiting times, improvement is needed in all processes from ports' physical land usage to information technologies. Container shipping and Ro-Ro transportation issues also stand out in front of regular sea transportation. The entire process of freight from origin to destination needs to be handled together in sea transportation. One of the main transition factors in accelerating goods movement is the transformation of container and Ro-Ro transportation to a transport chain by integrating with other transport systems. Generating of combined transportation depends on developing main relations in logistics and transportation related with technology, qualified man power, port infrastructure, etc.

This situation obliges one to have an environment that functions properly, regularly and continuously for the transportation sector, with internal and external dynamics in a wide geographic area, starting from the Mediterranean basin and spreading to Europe, Asia, Africa and the Middle East.

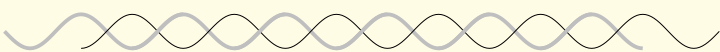
The main aim of shippers and receivers is to have freight on time and non-damaged, while logistics service providers' aim is to have a high standard service quality. Realizing these aims will have an important role in the economic development of countries. For the logistics service providers, it is not enough to have an appropriate freight transportation system; perpetuity must also be ensured in order to solve local and international problems quickly and permanently.

The competitive structure of the sector necessitates high perfor-



mance work plans to perform long term collaborations in customer relations, instead of one-time transportation agreements. In order to achieve this, the development of business structures with a qualified labour force, quality based solution approaches, information technology based processes and innovative business analysis are all significant. [5]

Lastly, one of the main obstacles to the improvement of cross border trade and harmonisation and standardisation of subjects is that of illegal migration. Especially the migration to the Euro region is a considerable issue facing the liberalising of transportation and trade in the region. To prevent the illegal migration from the Mediterranean basin to the developed countries, instead of one side studies, mutual and multi dimensional efforts should be undertaken.





# Introduction to the Thematic Issue: What Is the Future Scenario for Transport in the Mediterranean Region?

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KEY ISSUES CONCERNING THE FUTURE OF TRANSPORT  
IN THE MEDITERRANEAN REGION: FROM  
AN OVERVIEW TO DETAILED ANALYSIS

In a year like 2011, characterized by important events that concern the southern and eastern part of the Mediterranean region, it is not easy to imagine what the future has in store for this area even in terms of commercial relations and consequently transport.

Yet, this is precisely what has urged us to investigate this topic in this thematic issue of the *International Journal of Euro-Mediterranean Studies*, which endeavours to answer the question ‘What does the future have in store for freight transport and logistics in the Mediterranean region?’

The current global geoeconomic situation is bringing about new perspectives for the Mediterranean region in terms of trade flows and transport and logistics networks, especially with reference to maritime transport – but not exclusively.

From an evolutionary perspective, it is worth investigating the trends that are most likely to influence transport and logistics in the Mediterranean area in many different ways over the next few years.

We asked ourselves a few questions, which were to be tackled not only from a strictly technical perspective focused on transport, but rather keeping the wider picture in mind, which meant considering the future of transport in the Mediterranean region as an opportunity to analyse and anticipate a wider scenario. To be specific, these are the questions behind this edition: Which role will logistics and trans-Mediterranean transport play in supporting trade and sustain-

[8] able development in emerging countries (and in particular in Northern Africa and the Middle East)? How will economic geography and the related traffic routes change? Which will be the new drivers in the logistics competition between Mediterranean regions and what will the regional specialisations be? What will ports, cargoes, transport technologies, costs, human resources, logistics networks and supply chains be like? What prospects will there be for investors? What finance and governance frameworks will there be for infrastructures and services? What regulation and governance frameworks will there be for transport security, safety and sustainability in this area? What chances will there be for the development of trans-Mediterranean land-bridges (e. g. the Adriatic–Baltic corridor)?

THE REFERENCE FRAMEWORK: FROM BARCELONA  
(1995) TO THE PARLIAMENTARY CONFERENCE  
OF THE UNION FOR THE MEDITERRANEAN (UfM)  
ON TRANSPORT (ROME 2011)

Before presenting the contents of this thematic issue, it is important to define a reference framework to which the papers' research contents have to be ascribed.

Mediterranean transport is obviously an extremely wide topic and it is directly linked to the issue – that we do not wish to discuss here – of the Euro-Mediterranean policy concerning the Barcelona process, of the cooperation policies among the Mediterranean countries of the Maghreb and the eastern Mediterranean area, and of the idea of creating a free trade area, not to mention the future geopolitical scenarios, which are uncertain at present.

It is clear that much of what will happen in transport depends on the evolution of the originating process, which seems to have slowed down in the last few years.

Yet, it must be pointed out that the 1995 Barcelona Declaration stresses 'the importance of developing and improving infrastructures by establishing an efficient transport system' and that 'efficient interoperable transport links between the EU and its Mediterranean Partners and among the Partners themselves, as well as free access to the market for services in international maritime transport, are essential



to the development of trade patterns and the smooth operation of the Euro-Mediterranean Partnership.’

In order to understand the scenario created by the challenges posed by a ‘Mediterranean transport policy’ it is worth looking at the recommendations made by the latest Parliamentary Assembly of the Union for the Mediterranean (UfM), which took place in Rome on 4 March 2011, that is at a time of geopolitical turmoil for that area (Parliamentary Assembly of the Union for the Mediterranean 2011).

[9]

The starting point of the recommendations is ‘the risk of a deterioration in the economic and financial situation in the entire Mediterranean region, given the impact of the social and political events in various countries of the region on prices of raw materials and food’ and the disapproval of the ‘lack of progress in establishing the Euro-Mediterranean Transport Networks, despite the commitment expressed by the Euro-Mediterranean Partners in this respect.’

In general, the recommendations made by the parliamentary assembly concern the need to ‘put at the centre of the future transport policy of the region the correlation between the Trans-European network policy and the envisaged Trans-Mediterranean Transport Network.’ In particular, ‘a Euro-Mediterranean integrated and multimodal transport helping to strengthen trade between the EU and Mediterranean partners and between partners themselves’ is envisaged, as well as the ‘enhancement of the integration and cohesion of infrastructure networks by providing a transportation network well connected and interoperable between Southern Mediterranean countries and between those countries and the EU.’

From a political point of view, it is recommended that a transport policy in the Euro-Mediterranean region should be supported through ‘not only financial criteria, but also economic, social and territorial cohesion and in particular the needs of territorial planning and sustainable development criteria,’ while paying ‘special attention to cross-border connections, and the need for better connections between inland regions and coastal areas.’

A closer connection between the European Union policies and those of other Mediterranean countries is encouraged and this goal can be achieved also through ‘the connection of the Trans-European

[10] Transport Networks (TEN-T) with the Trans-Mediterranean (MRT-T) and for the development of innovative and flexible financing instruments.’ Making reference to the EU policy based on financing corridors, the conclusions of the assembly state ‘the need for a higher allocation of funds, including through public-private partnerships, for priority infrastructure projects and the development of maritime, land and rail corridors in the Euro-Mediterranean region.’

The role of human resources is considered fundamental and thus ‘particular attention to ensure equitable training of human resources for transportation and for harmonizing technical and operations rules between countries’ is required.

The articles published in this thematic issue are to be ascribed to this general framework. If placed within a wider picture, the answers that emerge from the submitted research papers provide a scenario that, although somewhat fragmented, is evenly distributed in geographical terms and capable of bringing to the fore some key issues.

IMPORTANCE OF ISSUES CONCERNING MARITIME  
TRANSPORT

*Special Attention to Maritime Transport*

Maritime transport clearly is the most important topic, also because of the number of papers covering this sector. We cannot forget that the Mediterranean basin is a strategic world transport area, and in particular the Suez Canal, which represents the shortest route between East and West; it accounted for 8% of the world seaborne trade in 2009. The maritime theme, besides being linked to the economic aspects concerning the development of commercial opportunities, is also closely linked to environmental issues. By way of example, consider what the conclusions of the assembly held in Rome state: ‘the objective is to avoid the transport by sea of hydrocarbons in the Mediterranean resulting in a new “Erika” or “Prestige” in a closed and ecologically fragile sea and, in this context, a new regional project should bring together the main prevention measures.’ The issue of greenhouse gas emissions is also considered relevant.

A research topic discussed by various authors is the role played by the legal and institutional systems in the development of maritime



transport. Consider how many articles focus on the need to reform the port systems of the Mediterranean countries of Northern Africa and on the opportunities provided by importing port policies models (for example from the Far East countries) – see the article on port-devolution in Libya. The topic of port reform appears to be a core issue also for countries located in the northern part of the Mediterranean Sea: for example, according to the paper on the Spanish port reform, Spain has only recently adopted a port reform framework that is in line with a full exploitation of the logistics potential of the country. A specific focus on port management models is put forward also for the cruising sector, which is very dynamic in the Mediterranean Sea. This article points out the fact that legal frameworks that allow private management of cruise terminals favour efficiency increase. However, legal frameworks cannot work at national levels only. Some issues, like the regulation of greenhouse gas emissions made by ships must be considered from a wider, trans-Mediterranean perspective, as is clearly explained in the paper on this topic.

[11]

Other articles deal with the transport evolution scenario in the Mediterranean region in more general terms and bring to the fore some geographical and organizational aspects of the international logistics business, while pointing out – through a model applied to a case study – the fundamental issue of choosing between Mediterranean ports and northern European ports.

*An Overview of Maritime Transport in the Mediterranean Region:  
Recent Trends*

It goes without saying that the maritime transport framework of the Mediterranean region is certainly undergoing a deep transition phase (Laroche 2010). It is worth taking a look at some events that took place in 2010 to understand which phenomena are taking place, regardless of what will happen in the southern Mediterranean countries in the next few years.

There seem to be three main aspects:

- ‘Motorways of the Sea’ (MOS) development;
- the ‘battle’ for transshipment in the container sector and in par-

ticular the role that the southern side of the Mediterranean Sea is acquiring;

- the issue of gates to Europe and the reduction of environmental costs after the crisis, with new prospects for some areas (i. e. upper Adriatic Sea).

[12]

### Motorways of the Sea

The growth of maritime integration between eastern and southern Mediterranean countries and the northern side depends basically on the development of the 'Motorways of the Sea' (MOS), as is well known.

An IPEMED report issued last year stated that between 2005 and 2020 there is likely to be a growth that could amount from twice to four times the present flow levels, depending on future scenarios, but in order to support such a potential the integrated policy of Euro-Mediterranean maritime transport should be strengthened, whereas at present it is left up to regional projects (Abeille and Weiger 2010).

In 2010 some results were achieved in this sector through the pilot projects launched within the framework of the Euro-Mediterranean transport program MedaMos of the EU, which aims at creating a basic network of north-south relations (connected by a combined rail transport network) through an international partnership of various stakeholders (operators, ports, customs, ministries) involved in the logistics chain.

### The Development of Hub Ports

As for international container traffic and the role of the Mediterranean region as world hub, the situation is evolving and the role played by the African side in transshipment is becoming greater. According to a study carried out by Eurispes (Eurispes 2010), container transshipment traffic in the Mediterranean region is estimated to increase by about 5 million TEU (+25.2%).

Speaking of transshipment, this was the situation in 2009 in terms of relations between the Mediterranean Sea and northern Africa: Port Said ranked first with 3 million and 258,000 TEU (+1.7% compared to 2008), Algeciras (Spain) ranked second with 3 million and 42,000 TEU



(−8.4% compared to 2008), Gioia Tauro ranked third with 2 million and 857,000 TEU (−17.6% compared to 2008), Malta ranked fourth with 2 million and 330,000 TEU (−0.1% compared to 2008), and then there was Tangier with 1 million and 240,000 TEU, but with an outstanding increase of 35.6% in comparison with 2008, which is likely to grow further in view of the huge volume of investments planned for this port of call.

[13]

The competition of African ports, for example for Spanish ports specialized in transshipment, became a fact in 2010, when the Tangier-Med terminal (Sastre Sebastián 2010, 7) began to take some ship services away from the port of Valencia that had previously carried out transshipment (with an estimated yearly loss of 50,000 TEU). This situation is a major challenge for ports located on the northern side of the Mediterranean Sea that carry out transshipment – and for unions too – in terms of productivity and terminal operation costs, which in Spain are estimated to be 65% of the overall costs of the navigation line for a port of call, whereas in Tangier-Med such costs are estimated to be 40% lower than in Valencia.

In order to understand the full competitive potential of the southern side of the Mediterranean Sea, it is worth mentioning some comparative data on costs that concern Italy and other southern Mediterranean ports with reference to 2010. Data have been supplied by terminal operators that work in both markets. The new southern ports offer much more competitive performances in many respects: in terms of productivity per hour (Gioia Tauro moves 21–23 containers per hour, Port Said 30), of average labour cost per hour (workers: € 22.1 in Gioia Tauro, € 1.9 in Port Said and € 3.1 in Tangier; employees: € 22.9 in Italy, € 10.1 in Egypt and € 7.1 in Morocco) and of the total cost for moving a ship of 7,000/7,900 TEU (piloting, towing, mooring and taxes), which in Gioia Tauro would be 25% higher than in Port Said and 500% higher than in Malta (Eurispes 2010).

Finally, the ‘development areas’ policy and the ‘added value’ creation policy in ports have continued to be pursued in Africa, for example in Morocco and Tunisia; by way of example, in 2010 in the port of Rades a procedure was started for the concession of a plot where a logistics area of about 35 hectares could be created and managed.

## Interest in New Port Gates on the Mediterranean Northern Coast

[14] The Mediterranean Sea is obviously not only a transshipment sea. Among the phenomena that emerged in 2010 in the port container sector there was a growing interest in the opportunity to use southern European gates to serve central and eastern Europe – to replace part of the northern European gates – and in particular gates closer to the eastern part of the Mediterranean Sea and therefore to Suez.

The reason for this is the growing sensitivity that carriers operating in the container sector are showing towards reducing route lengths, navigation time and fuel use.

This explains the interest in the southern gates, which are more convenient than northern European gates: navigation time is 5–6 days shorter (in all directions) and this would make up for speed reduction. Lastly, in terms of environmental sustainability, a container that starts off in Suez and reaches Munich through the upper Adriatic Sea rather than through Rotterdam reduces CO<sub>2</sub> emissions between Suez and Munich by 135 kg/TEU if transported through ship/rail (Venice Port Authority 2010).

Because of this, the region where the northernmost part of the Mediterranean Sea wedges into the European hinterland, that is the upper Adriatic Sea, is a maritime traffic gate with a huge potential not only for the whole of central Europe, but also for northern Europe. In Monfalcone, which is located close to Trieste, the northernmost port of the Mediterranean Sea, an important banking group (UniCredit) along with a world class container terminal operator (APM), has put forward the idea of creating a new big container terminal with a 2.5 million TEU capacity to host large dimension ships and serve eastern and central Europe (including Bavaria) mainly by rail (Drewry Shipping Consultant 2010). Such a proposal is extremely innovative also because it is made by private operators and with investments that would include only a partial State contribution.

With reference to the ‘upper Adriatic gate,’ in 2010 the works that should enable a series of infrastructures of the TEN priority project, known as the ‘Baltic–Adriatic axis,’ to be acknowledged as part of the core network of the ‘Extended Trans-European Network’ have reached





an advanced level. This would also be a recognition of the role of the Adriatic port gate as a fundamental system for relations between southern and northern Europe.

THE FUTURE OF OTHER TRANSPORT SYSTEMS:

[15]

AIR, ROAD AND RAIL

Although the articles of this thematic issue concentrate on maritime transport, which is perceived as the Mediterranean transport mode *par excellence*, the other transport modes cannot be neglected because of the extremely important role they are playing and could play in this region.

In order to make up for this, the following paragraph will shortly outline some topics concerning air, road and rail transport systems within the transport policy of the Mediterranean region.

*Air Transport*

The assembly of the UfM that met in Rome in 2011 stressed once again the aim of developing ‘air travel potential’ in Mediterranean relations. However, air transport poses some problems in terms of integration in view of the ‘Euro-Mediterranean Aviation Area.’ According to the recommendations of the parliamentary assembly that met in Rome, ‘air transport plays a very important role, owing in particular to the development of tourism and the mobility of immigrant populations; the objective is to improve airport capacity and integrate air traffic management systems with a view to creating of the Single European Sky. These measures will be supplemented by the possible conclusion of “Open Sky” agreements between the EU and the Mediterranean partners concerned and by participation in the European Aviation Safety Agency.’

In general, as various authors have been pointing out for some time, a decisive drive for the development of aviation must come from the national policies of the non-EU Mediterranean countries too. These are the mentioned goals: restructuring and privatising flag carriers, liberalization of air traffic rights and market access, modernization and privatization of major airports, introducing competition in airport ground-handling and modernization of air traffic control and safety/security.

Domestic reforms are essential to prepare for regional integration, while regional integration is to be used as an ‘anchor’ for domestic reforms.

[16] As for the creation and implementation of new scenarios for ‘air transport relations’ between the EU and the non-EU Mediterranean countries, there are models that have worked, starting from the EU–Morocco Agreement. As is well known, this comprehensive aviation agreement, that became effective in December 2005, set down the application of the 3rd and 4th ‘freedom’ with unlimited frequency in both directions in phase 1 and the application of the basic *acquis* package, extended to the 5th freedom, on the part of Morocco in phase 2. The package included safety, passenger rights, ground-handling, competition policy, ATM/Single European Sky and the environment (noise) (Müller-Jentsch 2006).

Anyway, in spite of the progress made especially in regional integration and in bilateral agreements between the EU and non-EU countries (i. e. the agreement with Jordan in 2010), there is still a long way to go to create a Euro-Mediterranean ‘open sky framework.’

#### *Road and Rail Transport*

In general, the topic of road and rail transport is far-reaching and it concerns various operational levels (infrastructures, administration, safety, etc.) and various geographical levels (from the macro-regional to the urban level).

As far as the main priorities in infrastructures are concerned – an aspect we would like to bring to the fore – it is self-evident that they are basically found in areas located on the southern side of the Mediterranean Sea.

As for road transport, we would like to draw attention to the project concerning the motorway interchange of the southern side (which will have to be integrated with the interchange for the production of photovoltaic electricity); it has been slowed down because of financial and political reasons, but it remains an ideal background for numerous partial works meant to connect the motorway along the coast. A case in point is the 1,700-km-long motorway that should connect Egypt to Tunisia across Libya along the *via Balbo*. According to the press, the estimated cost (certainly rounded down) is 3 billion



Euro. However, there is some pressure (and it is becoming all the more relevant in political terms) for the development of trans-saharan connections that should make it possible to connect the coast and its ports with the resource basins in the sub-Saharan belt.

It is worth remembering some complex infrastructural projects that aim at creating a land (rail and road) connection between Europe and Africa. [17]

The first is the tunnel between Spain and Morocco, which has recently been seriously brought to the attention of politicians again (after the first project proposals made in the 1980s) also thanks to the progress made in tunnel technologies. The second, which is still wishful thinking, is the project for a tunnel between Sicily and Africa (about 150 km).

Railway is considered as a real option for internal connections on the southern side: for example, the parliamentary conference held in Rome hopes that there will be the opportunity to 'relieve the congested waterway of the Mediterranean through the rapid implementation of a powerful railroad from Rabat to Cairo for environmentally friendly transport of goods and passengers, as well as to review the ENP to the effect of eradicating any barriers here while improving the investment security and rule of law.'

If you analyse the priority investment programme 2009–2013 put forward for the Mediterranean region (UFM), you will see that besides funding for various ports, there are various rail projects that are relevant for the Mediterranean region: for example, the fast speed train link Casablanca – Tangier (Morocco) and the doubling and electrification of the Tunis Ghardimaou railway line (Tunisia), besides a railway link between the Syrian border and the borders with Iraq and Saudi Arabia (Jordan).

Within a modern action plan for the creation of an advanced and open transport system in the Mediterranean area, trains should not be disregarded, not even in the countries on the southern side.

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# A Look at Euro-Mediterranean Countries from a Trade Logistics Point of View

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THE PROCESS OF GLOBALIZATION and the importance of the geographical areas have shifted focus towards the Mediterranean countries. This focus, without concentrating solely on Europe, has allowed other sea sharing nations to be collaborating. In terms of the Euro-Mediterranean (EuroMed) process we see this on multiple levels (cultural, trade, academic, etc.). In terms of international trade logistics, similar actions are in dire need for development. Looking at the countries that share the Mediterranean and their logistics capacities, the research at hand aims to review individual country performances in terms of logistics income in the Mediterranean region with regard to recent trends and opportunities. The countries concerned in this study are Albania, Croatia, Cyprus, Egypt, France, Greece, Israel, Italy, Malta, Morocco, Slovenia, Spain and Turkey.

## INTRODUCTION

Over time, local markets, international markets and between country relations have become an area of vital importance. Hence, one can observe the basic importance of international marketing through the hot world of international markets a being global economy and 'globalization.' Internationalization, or what has shifted through the term globalization, has also been integrated and well established into the field of marketing itself. To better define a standpoint of looking at marketing from this point of view, a definition of global and international marketing is needed. Briefly when we consider the term of global marketing we see that global marketing is: 'marketing by a firm on a worldwide scale.' On the other hand, when we look at the definition of international marketing we see that: 'Marketing is concerned with developing and managing trade across international boundaries.'

[20] The clearest point lying between the difference stands within the elaboration of the terms. A global marketing approach sometimes conveys the view that the firm's marketing is performed in essentially the same way globally. A company's global marketing strategy and practice can be far more complex, and adaptations can be based on global differences that are clearly within the broad scope of global marketing. On the other hand, international marketing may involve efforts that span multiple countries, but where countries do not differ significantly on a cultural dimension as much as on other characteristics (Dacko 2008, 231, 278). In terms of international marketing and in terms of international trade logistics, historically the importance of the European continent and the Mediterranean bordering countries has been vast. To elaborate on this matter, it can be said that the interdependency of countries bordering on the Mediterranean Sea and their place in terms of trade has been of great importance.

Marketing by definition deals with the performance of activities that seek to accomplish an organization's objectives by anticipating customer or client needs and directing a flow of need-satisfying goods and services from producer to customer or client (Perrault, Cannon, and McCarthy 2009, 6). From a consumer oriented point of view, the directing of need-satisfying goods according to consumers is a vital element of marketing. Apart from being customer oriented, it is a vital point to focus on the distribution of products and services. In this sense the vital importance of logistics arises. By definition we can describe logistics as: the transporting, storing, and handling of goods in ways that match target customers' needs with firms' marketing mix within individual firms and along a channel of client distribution (Perrault, Cannon, and McCarthy 2009, 316). For the Euro-Mediterranean region distribution of products has also become vitally important. But one should look at the area/countries at hand within the world in terms of logistics and in terms of its gains. In this sense, the present research aims to look at individual country performances in terms of logistics income in the Mediterranean region, regarding recent trends and opportunities.

Globalization of international business has contributed to the inbound supply movements from domestic markets towards interna-



tional markets. This observation should be evaluated as an opportunity to penetrate into alternative market segments in international markets, while this could be a threat because of the actions taken not only in domestic markets but also by international sources. Given the technology it is possible to increase the efficiency of international commodity movements which can create an additional profit margin or can increase market dominance in international markets. This should be understood as a fact that firm level competitiveness should be complemented by logistics, in order to improve firm level competitiveness towards a core level competitiveness which could not be easily imitated by rival entities (firm, nation, multinational union). The Euro-Mediterranean region neighboring European Union markets is facing rigorous competition from the single market. As Phillip Kotler depicts: 'The European market, increasing competitive pressures and the continuing drive for greater efficiency have forced distribution service providers, in the first instance, to focus more heavily on service quality improvement, or else risk losing out on invitations to bid for new business. Manufacturers and distribution operators alike have sought to set up pan-European distribution networks, although with mixed results' (Kotler 1999, 932). The current solution seems to depend on the amount of joint action that could be implemented by member Euro-Mediterranean countries.

[21]

## ANALYSIS

The Euro-Mediterranean (EuroMed) countries concerned in this study are Albania, Croatia, Cyprus, Egypt, France, Greece, Israel, Italy, Malta, Morocco, Slovenia, Spain and Turkey. All data in the analysis used are sourced from the International Monetary Fund's (see [www.imf.org](http://www.imf.org))

When we look at these Euro-Mediterranean countries focused on this study in terms of imports, we can say that there is a volume of 812494.331 million US dollars in year 1999 and 1647387.62 million US dollars on 2009 in terms of imports. In the period of 1999–2009, Albania raised its imports from 1154.290 million US dollars to 4548.28 million US dollars. Croatia within the same period raised its total imports from 1626.29 million US dollars to 7980.82 million US dollars.

[22] Cyprus raised its imports from 3617.980 million US dollars to 7855.13 million US dollars. Egypt raised its import performance from 16022.1 million US dollars to 44946.1 million US dollars. France, as one of the big performing countries for the Euro-Mediterranean area, raised its imports from 294178 million US dollars to 554432 million US dollars. Greece developed its imports from 28719.5 to 59293.4 million US dollars in the same period. Israel, with its 33165.5 million US dollars in the year 1999, had imports amounting to 49278 million US dollars. Italy raised its imports from 220323 million US dollars to 413811 million US dollars. Malta raised its import from 2845.920 million US dollars to 3797.91 million US dollars. Morocco also had a raise in its importing from 9924.801 million US dollars in the year 1999 to 32776.8 million US dollars in 2009. Slovenia had a rise in imports from 10082.6 to 23781.4 million US dollars. Spain raised its imports from 144436 to 290774 million US dollars. Lastly, also Turkey had a raise in imports, its total imports in 1999 being 40226, rising to 140921 million US dollars in 2009.

Looking at the Euro-Mediterranean countries in terms of exports we can say that there was a volume of 744751.491 million US dollars in year 1999 and 1551598.970 million US dollars in 2009 in terms of exports. During the period 1999–2009, Albania raised its exports from 351.118 million US dollars to 10473.8 million US dollars. Croatia within the same period raised its total exports from 4302.5 million US dollars to 10473.8 million US dollars. Cyprus raised its exports from 995.038 million US dollars to 1338.110 million US dollars. Egypt has raised its export performance from 3559.360 to 23061.900 million US dollars. France is one of the big performing countries for the Euro-Mediterranean area that raised its exports from 229652 million US dollars to 479261 million US dollars. Greece developed its exports from 10474.1 million US dollars to 19868 million US dollars between the years 1999–2009. Israel with its 25794.3 million US dollars in the year 1999 raised its exports to 47935 million US dollars in the year 2009. Italy raised its exports from 2351752 to 406228 million US dollars. Malta raised its exports from 1983.250 to 2183.810 million US dollars. Morocco also had a raise in its exporting from 7366.850 million US dollars in the year 1999 to 13680.600 million US dollars in





2009. Slovenia has a raise in exports from 8545.93 million US dollars to 13680.600 million US dollars during the 1999–2009 period. Spain raised its exports from 109964 to 223345.2 million US dollars. Lastly, also Turkey had a raise in imports, its total exports in 1999 being 26587 had risen to 220848 million US dollars in 2009.

[23]

Services sector gains can be defined at hands as the total difference in terms of credits of services and debits of services of the countries. Looking at the Euro-Mediterranean countries in terms of these service gains, we can say that service gains amount to 47350.106 million US dollars in year 1999 and 90515.678 million US dollars in 2009. During the 1999–2009 period Albania raised its net service gains from 106.3 to 98.81 million US dollars. Croatia within the same period raised its service gains from 1626.29 million US dollars to 7980.82 million US dollars. Cyprus raised its service gains from 238734 million US dollars to 8513.785 million US dollars. Egypt raised its service performance from 30422.360 million US dollars to 5813.75 million US dollars. France had a fall in its service performance from 18.477 million US dollars to 16.058 million US dollars. Greece had developed its service performance impressively from 7255.1 million US dollars to 17781.7 million US dollars between the years 1999–2009. Israel with its 2053.1 million US dollars in the year 1999 raised its services to 4436.7 million US dollars in the year 2009. Italy drastically reduced its service performance from 1080.5 million US dollars to -14026 million US dollars. Malta raised its services from 456.039 million US dollars to 1266.51 million US dollars. Morocco also had a raise in its services performance from 1112.36 million US dollars in the year 1999 to 5685.11 million US dollars in 2009. Slovenia also experienced a raise in services from 354.4 million US dollars to 141968 million US dollars during the 1999–2009 period. Spain raised its services from 20356 million US dollars to 360111.9 million US dollars. Lastly, also Turkey experienced a raise in services from the 1999's, rising from 7502 to 220848 million US dollars in 2009.

Competitiveness of nations can be described with the ratio between imports and exports. (Şimşek, Seymen, and Utkulu 2007, 11). During the 1999–2009 period Albania lost its competitiveness value from 0.30 to 0.23. Croatia within the same period lost its competitiveness from 0.55 to 0.49. Cyprus also experienced loss in its competitiveness

[24] value from 0.27 to 0.17. Egypt raised its competitiveness from 0.22 to 0.51. France had a fall in its competitiveness from 1.01 to 0.86. Greece slightly lost its competitiveness from 0.36 to 0.33 between the years 1999–2009. Israel with its 0.77 in the year 1999 raised its competitiveness value to 0.97 in the year 2009. Italy has lost its competitiveness in terms of exports/imports from 1.06741 to 0.98. Malta experienced a loss in its competitiveness from 0.69 to 0.57. Morocco also experienced a loss in its competitiveness from 0.74 to 0.41 during the 1999–2009 year period. Slovenia experienced a raise in its competitiveness value from 0.84 to 0.93 during the 1999–2009 periods. Spain experienced a slight loss in its competitiveness value during the 1999–2009 period from 0.76 to 0.75. Lastly, also Turkey experienced a raise in its competitiveness from 0.66 at 1999 to 0.74 on 2009.

Tourism is known to be one of the biggest industries for all nations around the world and a big income source for the Euro-Mediterranean countries. It is attractive not only due to its structure of being a green industry, but also by being a great contributor to the nation's wealth. Over the years, the Mediterranean bordering countries have been a great attraction and a great area of focus. The most suitable and clear data on tourist visitors can be found during the 2000–2007 period. These numbers reflect impressive results in terms of this study's countries of focus which are: Albania, Croatia, Cyprus, Egypt, France, Greece, Israel, Italy, Malta, Morocco, Slovenia, Spain and Turkey. During the 2000–2007 year period, Albania raised its tourism gains from 108 million US dollars to 159. Croatia within the same period raised its tourism gains from 1,993 to 9,252 million US dollars. Cyprus also experienced an increase in its tourism earnings from 1,555 to 1,660 million US dollars. Egypt raised its tourism earnings from 1594 to 1555. France raised its tourism earnings from 15148 to 19065. Greece raised tourism earnings from 4698 to 12257 million US dollars between the years 2000–2007. Israel with its 878 million US dollars in the year 2000 dramatically lost its net tourism earnings to –538 million US dollars in the year 2007. Italy earned net tourism earnings of 10537 to 13390 million US dollars. Malta experienced a good raise in its tourism earnings of 507 to 722 million US dollars during the 2000–2007 year periods. Morocco experienced gains in its tourism from 1773 to 2337 million



US dollars during the 2000–2007 year period. Slovenia experienced a raise in its tourism numbers from 472 to 1181 million US dollars during the 2000–2007 period. Spain experienced a grand raise in its net tourism earnings value during the 2000–2007 period from 24946 to 40654 million US dollars.

[25]

The core reason why this study is interested in tourism is that the balance on services minus the tourism income will provide us with the net logistic performance of countries, which covers freight, insurance and other handling costs. Due to this reason a look at the tourism factor of Euro-Mediterranean nations is a must for this study. The rest of the analysis explores the logistic performance of Euro-Mediterranean countries in terms of recent growth performance, comparisons with export and import performance and in terms of world and region comparisons.

Initially, we shall be looking at whether the development level of member countries has a positive correlation with international trade logistics expenditure data. Findings shown in table 1 reflect the correlation data which are only positive for the majority of the countries at hand between international trade logistics and per capita income. We can look at these results as a formal way of being allowed access to look more in depth at international trade logistics of the countries at hand.

When we look at these countries we see that the Gross Domestic Products (GDP) per capita of Euro-Mediterranean countries vary from each other (table 2). Although the sizes of the nations differ from each other, based on their economic and population structure these nations are different from each other with regard to different factors, which is natural to expect. One can clearly state that there is a relevant increase in performance for all Euro-Mediterranean countries (figure 1).

We can conclude that GDP level reflects the level of development, which also coincides with high trade performance, these creating an opportunity for international trade development.

The following set of data about to be discussed looks at export growth from 2000–2009 for the selected Euro-Mediterranean countries (table 3). As expected, export growth is one of the strongest factors contributing to the international trade logistic growth. The rank-

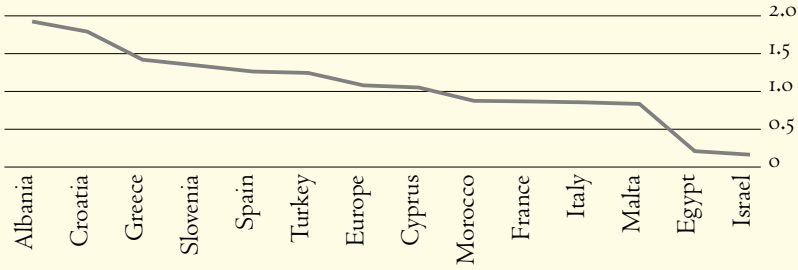
TABLE 1 Output for country trade logistics and GDP correlation

Country	Italy	France	Cyprus	Spain	Egypt	Croatia	Morocco	Albania	Slovenia	Malta	Israel	Greece	Turkey
$R^2$	0.700	0.632	0.250	0.844	0.658	0.008	0.584	0.268	0.748	0.917	0.252	0.900	0.678
Sig.	0.010	0.018	0.207	0.001	0.015	0.832	0.017	0.189	0.006	0.000	0.205	0.000	0.012

TABLE 2 Per capita GDP at current prices in US dollars

Country	2000	2001	2002	2003	2004	2005	2006	2007	Change
Albania	1186.479	1324.604	1444.286	1845.22	2357.385	2622.84	2909.348	3470.486	1.925
Croatia	4737.702	5103.852	5923.071	7597.012	9144.492	10001.75	11058.13	13225.43	1.791
Greece	11614.36	11940.19	13400.07	17552.79	20898.59	22216	24124.35	28105.78	1.412
Slovenia	10018.28	10254.65	11585.91	14571.49	16883.53	17836.82	19396.83	23470.78	1.343
Spain	14421.52	14962.68	16634.17	21104.46	24580.26	26246.24	28276.87	32641.86	1.263
Turkey	4010.854	2906.216	3399.661	4370.556	5582.278	6786.461	7364.859	9003.336	1.245
Europe	12708.5	12927.02	14134.26	17199.17	19954.36	21103.03	22732.09	26442.12	1.081
Cyprus	13398.85	13791.76	14829.85	18460.94	21440.96	22398.83	23877.81	27498.05	1.052
Morocco	1284.273	1293.429	1370.304	1670.736	1888.707	1951.921	2127.517	2409.138	0.876
France	21830.25	21895.23	23662.58	29022.97	33011.71	34151.67	35836.09	40774.03	0.868
Italy	19212.59	19497.84	21168.1	26017.27	29641.52	30312.94	31592.48	35654.53	0.856
Malta	10010.32	9835.143	10731.78	12566.89	14033.87	14803.13	15862.61	18365.56	0.835
Egypt	1419.341	1320.475	1235.541	1037.855	1088.626	1274.366	1426.832	1717.702	0.210
Israel	20328.14	19587.97	17650.44	18259.57	19135.82	19906.01	21113.02	23653.99	0.164
World	5248.336	5145.392	5290.259	5870.509	6526.233	6976.546	7462.231	8288	0.579

Calculations based on data from IMF ([www.imf.org](http://www.imf.org)).



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FIGURE 1 Percentage increase in per capita GDP of Euro-Mediterranean countries, 2000–2009

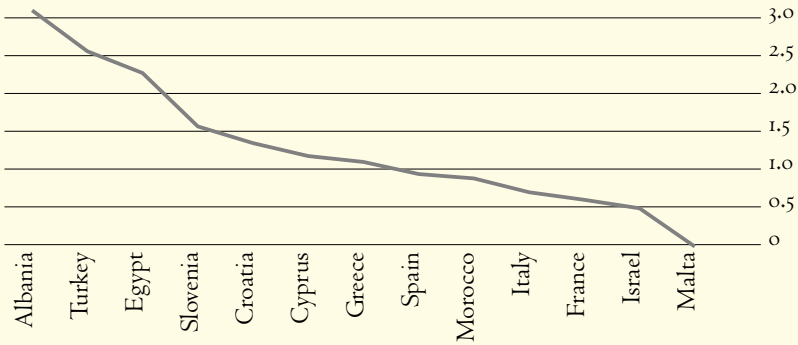


FIGURE 2 Change in exports by Euro-Mediterranean countries, 2000–2009, in percent

ing process simply provides results that Albania’s exports rank at the top, growing by three times for the given time period, while Malta shows the slowest growth rate which in fact reflects a decline of 0.02 percent.

Figure 2 reflects how exports have increased among Euro-Mediterranean countries. As seen from the relevant data, high per capita income countries like France, Italy and Spain did not witness high export growth between 2000 to 2009.

Another source for international trade logistics would be the import data. Examining the table 4 we see that, in the case of imports, Albania ranks at the top while Malta ranks at the bottom. But we see that the ranking in between is relatively different, mainly with regard to Morocco and Croatia. Dominance in international trade logistics does not hinder countries from arranging transport, insurance and other intermediary activities even in the case of imports (figure 3).

TABLE 3 Exports of Euro-Mediterranean countries

Exports	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	Change
Albania	255.7	304.5	330.24	447.209	603.337	656.318	792.873	1078.72	1355.65	1048.05	3.099
Turkey	308.5	347.29	407.19	533.94	685.35	783.68	936.10	1153.61	1408.00	1096.60	2.558
Egypt	706.1	702.4.9	711.77	898.73	12319.6	16073.2	20545.6	24454.6	29849	23089.3	2.270
Slovenia	8807.99	9342.7	10471	12916.3	16064.6	18145.7	21397.2	27151.4	29582.9	22583.2	1.564
Croatia	4573.72	4766.97	5006.19	6311.4	8214.46	8959.81	10644.4	12622.7	14460.4	10717.7	1.343
Cyprus	950.924	975.221	851.758	924.986	1173.46	1544.68	1393.04	1482.91	2130.02	2065.43	1.172
Greece	10201.5	10615	9865.38	12577.8	15739	17631.2	20300.4	23991.4	29162.7	21361.4	1.094
Spain	115769	117522	127162	158049	185209	196580	220696	264053	284346	223911	0.934
Morocco	7418.59	7141.82	7838.9	8771.43	9921.9	10690	11926.3	15146.4	20330	13914.9	0.876
Italy	240473	244931	252618	298118	352171	372378	418074	501281	546301	407160	0.693
France	297557	294181	307201	361.93	421.106	439.452	484.768	548.528	605.322	473.861	0.593
Israel	30890.2	27685.6	27266.3	29939.8	36356.8	39767	43318.5	50285.6	57161.3	45762	0.481
Malta	2478.99	2023.07	2341.87	2591.78	2719.92	2586.89	2937.65	3302.76	3145.26	2417.68	-0.025

TABLE 4 Imports of Euro-Mediterranean countries

Country	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	Change
Albania	-1070	-1332	-1485	-1783	-2195	-2478	-2916	-3978	-4908	-4264	2.985
Morocco	-10654	-10164	-10900	-13117	-16408	-18894	-21683	-29316	-39827	-30546	1.867
Croatia	-7770	-8860	-10652	-14216	-16560	-18301	-21131	-25556	-30416	-20997	1.702
Egypt	-15382	-13960	-12879	-13189	-18895	-23818	-28984	-39354	-49608	-39907	1.594

Turkey	-52882	-38092	-47109	-65883	-91271	-111445	-134669	-162156	-193821	-134554	1.544
Slovenia	-9947	-9962	-10719	-13539	-17322	-19404	-22856	-29466	-33467	-23463	1.359
Cyprus	-3557	-3553	-3735	-4108	-5222	-5792	-6335	-7957	-11063	-7973	1.242
Greece	-30440	-29702	-31321	-38184	-47360	-51900	-64585	-81041	-94209	-64187	1.109
Spain	-152856	-152039	-161794	-203205	-251939	-281784	-325318	-389291	-412631	-286635	0.875
France	-301	-291	-300	-358	-426	-467	-523	-605	-693	-536	0.782
Italy	-230925	-229392	-239206	-286641	-341278	-371814	-430585	-496700	-547347	-403900	0.749
Israel	-34747	-31738	-31992	-33316	-39507	-43887	-47154	-55969	-64399	-46002	0.324
Malta	-3233	-2575	-2681	-3232	-3583	-3709	-4147	-4656	-4771	-3494	0.081

TABLE 5 Logistics expenditures of Euro-Mediterranean countries and ranking classification

Country	2000	2001	2002	2003	2004	2005	2006	2007	Class.	Change
Turkey	11375	9136	7885	10511	12797	15265	13610	13344	Strong	0.17
Greece	32545	28401	277108	46501	9136.2	8764.3	7904.8	10553	Strong	2.24
Israel	2623	2038.3	2180.9	3327.8	3999.5	4139.2	5082.7	4065.4	Strong	0.55
Malta	-169.093	-131.362	-128.952	-73.368	-20.34	189.54	294.14	475.99	Strong	-3.81
Slovenia	-22.4	3.5	78.8	-13.9	63.8	185.5	237.51	246.61	Strong	-12.01
Albania	-89.5	-91.8	-111.21	-112.907	-138.37	-290.32	-148.85	-139.15	Medium	0.55
Morocco	-631.25	-466.49	-541.49	-340.27	-369.11	-174.3	-471.27	-139.98	Medium	-0.78
Croatia	256.15	-921.27	-967.96	-65.98	-267.21	121.67	-742.88	-689.5	Medium	-3.69
Egypt	-581	-818.2	-547.77	-185.84	902.57	-1842.5	-2875.7	-313	Medium	4.36

*Continued on the next page*

TABLE 5 *Continued from the previous page*

Spain	-5664	-4894.3	-4567	-6175.4	-8242.4	-7090.9	-9118.2	-8997.7	Weak	0.59
Cyprus	-12665.2	-10523.6	-11548.3	-12127.9	-14342.1	-10808	-12281	-14025.8	Weak	0.11
France	-15130.8	-13233.8	-14321.5	-15249	-17918.1	-14588.7	-16486.5	-19045.3	Weak	0.26
Italy	-9581.7	-9995.2	-11283.2	-11425.4	-12527.7	-12465.1	-15734.5	-23051	Weak	1.41

TABLE 6 *Logistics expenditures of Euro-Mediterranean countries and change classification*

Country	2000	2001	2002	2003	2004	2005	2006	2007	Change
Italy	-0.020	-0.021	-0.023	-0.020	-0.018	-0.017	-0.019	-0.023	0.136351
France	-25.290	-22.628	-23.603	-21.167	-21.153	-16.089	-16.361	-16.506	-0.34735
Cyprus	-2.810	-2.324	-2.518	-2.410	-2.243	-1.473	-1.589	-1.486	-0.47121
Spain	-0.021	-0.018	-0.016	-0.017	-0.019	-0.015	-0.017	-0.014	-0.34685
Egypt	-0.026	-0.039	-0.027	-0.008	0.029	-0.046	-0.058	-0.049	0.884528
Croatia	0.021	-0.068	-0.062	-0.003	-0.011	0.004	-0.023	-0.018	-1.8703
Morocco	-0.035	-0.027	-0.029	-0.016	-0.014	-0.006	-0.014	-0.003	-0.90987
Albania	-0.068	-0.056	-0.061	-0.051	-0.049	-0.093	-0.040	-0.028	-0.59242
Slovenia	-0.001	0.000	0.004	-0.001	0.002	0.005	0.005	0.004	-4.64695
Malta	-0.030	-0.029	-0.026	-0.013	-0.003	0.030	0.042	0.060	-3.02028
Israel	0.040	0.034	0.037	0.053	0.053	0.049	0.056	0.038	-0.04257
Greece	0.080	0.070	0.067	0.091	0.145	0.126	0.093	0.100	0.254705
Turkey	0.136	0.125	0.090	0.089	0.080	0.080	0.060	0.048	-0.64616
Total	-28.024	-24.979	-26.166	-23.471	-23.202	-17.443	-17.865	-17.875	-0.36216

Calculations based on data from IMF ([www.imf.org](http://www.imf.org)).



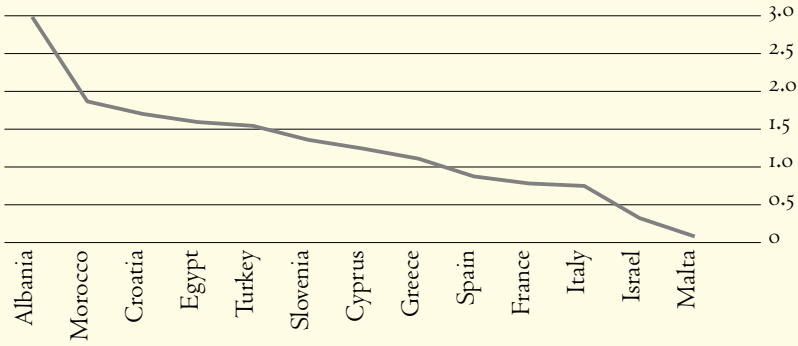


FIGURE 3 Change in imports by Euro-Mediterranean countries, 2000–2009, in percent

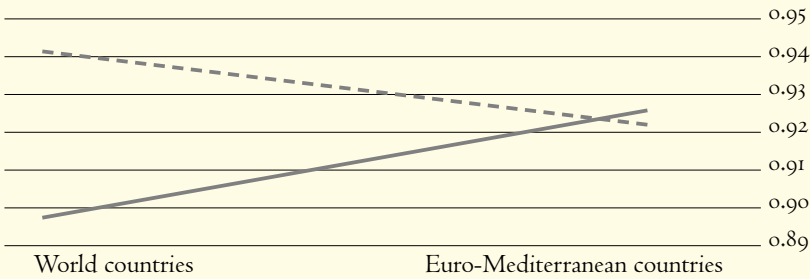


FIGURE 4 Change in imports and exports between the world and Euro-Mediterranean countries, 2000–2009, in percent

To view the overall performance of Euro-Mediterranean region with respect to the world in general reflects that export and import growth for 2000–2009 periods shows the dominance of world exports and Euro-Mediterranean imports (figure 4). From this observation we can state that the contribution to international trade logistics could as well be improved by improving the export performance of the Euro-Mediterranean region. The foreign trade performance of a country or country groups makes use of export + import data, which are defined as trade performance. Looking at the Euro-Mediterranean region, we see that Albania followed by Turkey, Croatia, and Slovenia convey the highest international trade growth among Euro-Mediterranean countries, all showing more than 200 percent trade growth between 2000–2007. To have an overall comparison we have to state that the average of the Euro-Mediterranean region shows a 152 percent increase.

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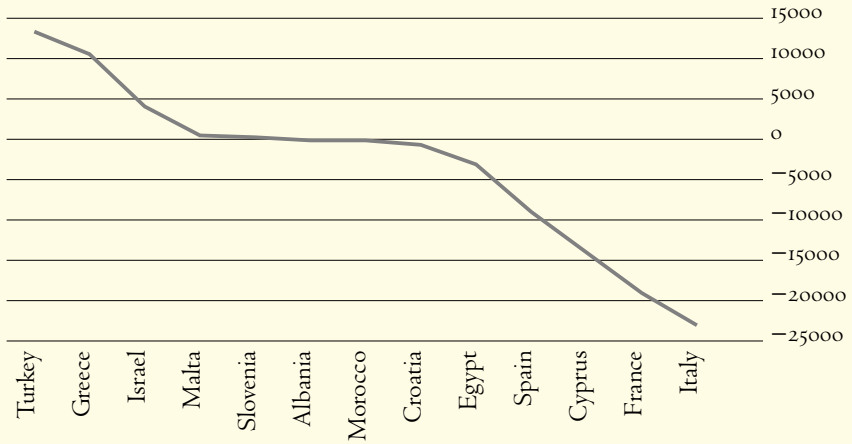


FIGURE 5 Euro-Mediterranean countries logistic expenditures, 2007

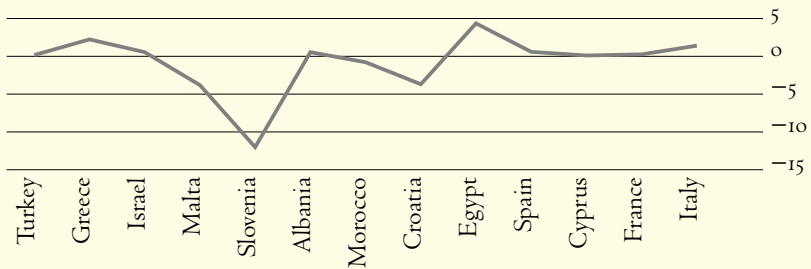


FIGURE 6 Logistic expenditures growth for Euro-Mediterranean countries, 2000–2007, in percent

Turning back to the Euro-Mediterranean region in terms of international trade logistics data, the term balance in trade logistics has been calculated by subtracting net tourism expenditure data from net services (credit & debit) (IFS 2010). Turning back to the Euro-Mediterranean region in terms of international trade logistics expenditure, we see that Turkey, Greece, Israel, Malta, and Slovenia have positive balances reflecting an overall international logistics competitiveness. In the table 5 (see p. 29), the logistics expenditures for given Euro-Mediterranean countries are for the 2000–2007 period. While categorizing, strong, medium and weak logistic performances based on this criterion are given for 2007 period; we can also look at overall logistic expenditure growth to have an overall view of the Euro-Mediterranean region trend for the same time period.

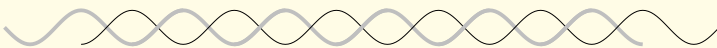


Figure 5 reflects positive and negative logistic expenditure balances for the Euro-Mediterranean region in 2007. Italy, France, Cyprus and Spain, independent of their export and import levels, seem to have negative balances for net international trade logistic expenditures. Countries like Egypt, Croatia, Morocco and Albania seems to have medium level performance with respect to the total group. [33]

Figure 5 solely looks at 2007, while figure 6 looks at the net international trade logistic expenditure growth for Euro-Mediterranean countries during the 2000 and 2007 period. Egypt, Greece and Italy seems to outperform in terms of net international logistic expenditures for the 2000–2007 period, while Slovenia, Malta and Croatia show the least positive performance for the same time period.

Maybe a more intuitive approach should be looking at the net international trade logistic expenditures share in Euro-Mediterranean country performances because of the opportunities born from export and import activities (international marketing actions). A higher share reflects larger net international trade logistic expenditures from the realized external trade.

#### CONCLUSION AND RECOMMENDATIONS

Literature on global supply change has shown drastic changes since 1990. While the 1990s witnessed taxation, tariffs and duties issues shaping up the agenda, the 1990–1995 period focused far more on shoot-ups and large fluctuations in foreign exchange, which strongly distorts gains from trade, during the 1996–2000 period were the discussions concentrated on transfer pricing and exchange rate vulnerability. The recent decade focuses on network and collaboration issues related to global supply change which is complemented by relevant technologies (Meixell and Gargeya 2005, 537). Looking at the classical study by Otto Andersen, international marketing in the field of logistics needs a far more critical view in testing models, which has significantly improved during the last decade (Andersen 1993, 227).

The observations above simply show us that the Euro-Mediterranean region is not exhausting international trade logistic opportunities within its geography (figure 7), given the post 2000 performance (table 6, see p. 30). Especially figure 8 shows that there is a positive

[34]

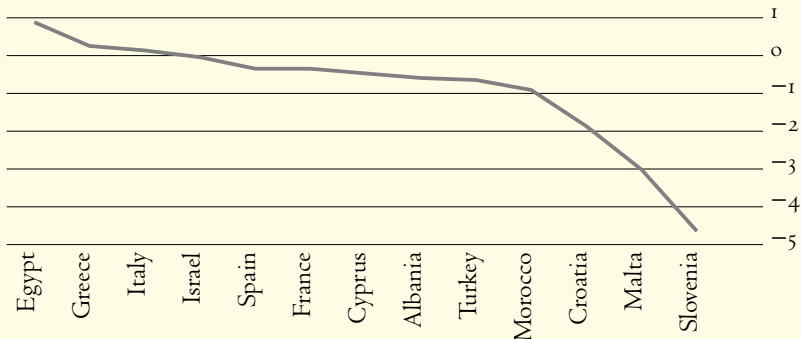


FIGURE 7 Logistics/(export + import) growth for Euro-Mediterranean countries, 2000–2007, in percent

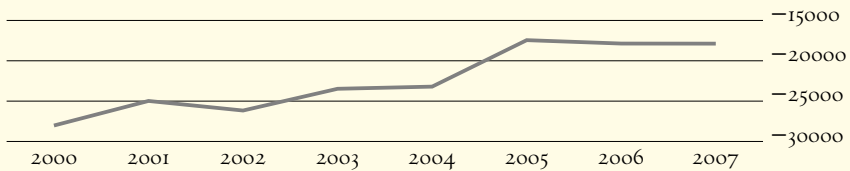
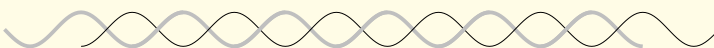


FIGURE 8 Improvements in trade logistics/(exports + imports) for Euro-Mediterranean countries

trend towards logistics expenditures. As a part of the total obtained, one can understand that the international trade is at its limits. It would be wise at this point to assess the policy implications of such an opportunity in two different dimensions as recommendations. One component covers joint efforts that have to be implemented which will improve the performance. The second group of implications should be thought of as an extension of additional marketing efforts to improve firm level performance which will contribute to the overall regional performance. Especially at this point a customer orientation towards international trade logistics is a curiosity point. But one should not neglect the fact that country level collaborations still have to be initiated and adopted at a firm level or at an associations level. There seems to be a lack of overall strategic marketing orientation at a government level and at a firm level. Scale, scope and network alliances at an international multi-country level would create cost efficiency and organizational advantages which will contribute to international trade logistics. In the long term these actions can reflect positive



and mutually beneficial results for the Euro-Mediterranean region.

If we would like to summarize actions to be taken by Euro-Mediterranean countries, the first step should be towards pin – pointing areas of collaboration which should come out of a consensus achieved by joint efforts. This means that the political agenda is far more important than are the technical dimensions of collaboration, given the environment. These efforts should cover international trade agreements with a special emphasis on international trade logistics. Shortening the delivery and customs processes will allow Euro-Mediterranean countries to improve business relations which will create new areas of collaboration. With the world becoming more and more global, turning into a global village, the rise of the internet is also being established within the logistics and marketing world. The restructuring of intermediaries within national and international channels is raising topics of discussion. Through the Euro-Mediterranean process and its structural disintermediation and reintermediation according to Euro-Mediterranean country needs, the restructuring should be revisited. To improve the current environment towards logistics, Euro-Mediterranean countries should look at the requirements of each partnering country to prioritize joint actions which will improve cost sharing and other business opportunities.

[35]

One should not neglect the fact that beyond collaboration, international trade logistics is an area where firm level competitiveness is as important as the legal setting that is supporting it. From the multinational union point of view, collaboration importance is direly needed to raise a higher level of collaboration and international customer satisfaction. The new trend of today's highly competitive markets has been geared towards supply chain and customer service (Coyle, Bardi, and Langley 2003). Such importance is direly needed in terms of the Euro-Mediterranean region to be competitive for the future of the Euro-Mediterranean region. As in most business activities, specific and strategic actions could only be successful by contributing to the overall infrastructure that is needed for business success. Porter suggests that, for international success with the modest goal of prosperity, this requires focusing on topics like: factors (resources, education, and infrastructure), demand conditions, related and supporting industries,

[36] company strategy/structure and competition (Porter 1990). From a micromarketing perspective, there should be common efforts which will improve the firm business level success which could be shared among Euro-Mediterranean enterprises. This simply means that basic level firm efforts should complement governmental policies to make the Euro-Mediterranean region an attraction point for international trade logistics. In a very basic definition products are also responsible for the success of business performance. For this reason the success of international (global) marketing conduct can rely on such factors as defined by Waters (Waters 2003, 337).

Encouraging local, rather than international, suppliers are products that:

- Have relatively low value, or value density;
- Deteriorate or have short shelf life;
- Are sensitive to cultural and other difference;
- Have little differentiation between competitors, or brand loyalty;
- Need high customer contact or personal service;
- Have less emphasis on cost;
- Give limited economies of scale in production;
- Generate social or political pressures to produce locally;
- Have uneven development of markets.

We have started with the goal of assessing the international trade logistics environment within the Euro-Mediterranean region. Initially looking at export and import performance of the region, we see a positive trend which could be evaluated as an opportunity for the international trade logistics market. Secondly, we have calculated international trade logistics data of the relevant Euro-Mediterranean countries by eliminating tourism income from net 'balance of goods and services.' As a third step, we have looked at the share of international trade logistics expenditures as a part of international trade showing the level of opportunity exhausted. Analysis has been extended towards looking at overall trends in trade logistics expenditures, country level performances (trade logistics), which explains that the positive trend is continuing during the last decade, while there are several

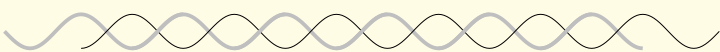


Euro-Mediterranean members who are at very preliminary stages. The last phase has developed regional collaborations that could be implemented, while at the same time emphasizing sector or firm level precautions that could be taken. In an era when direct and e-trade growth is foreseen, the Euro-Mediterranean region deserves the right to take its appropriate share from these developments. [37]

For future research, it is recommended to look at country perceptions based on business orientations and value as a brand within the Euro-Mediterranean region. Distribution and overall brand awareness of countries can be a primary step in engaging and encouraging international trade logistics. Such measurements will require more collaboration, detailed data to interpret and better understand the possibilities and opportunities to improve international trade logistic relations between Euro-Mediterranean countries.

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# A Future Regulatory Framework for CO<sub>2</sub> Emissions of Shipping in the Mediterranean Area

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THIS PAPER TRIED TO FIGURE OUT what will be the regulatory framework for CO<sub>2</sub> emissions from ships in the Mediterranean area, both on efforts from EU and IMO. It is certain, indeed, that a few other areas have been regulated already, but CO<sub>2</sub> emissions in the Mediterranean area are above 30% of total maritime emissions in the EU 27. The EU under the Kyoto protocol 1997 is committed to reduce its GHG emissions by 8% by 2012 vis-à-vis 1990. The Mediterranean area follows the worldwide pattern which is that human activities of all kinds (industrial, recreational, residential) are found near the coast. The Mediterranean area – due to its littoral states – is expected to advance further in trade and thus climatic conditions are likely to get worse. This paper presents first the regulatory framework for the reduction of GHG emissions from ships analyzing the four regulation systems. The Mediterranean, due to its large ports hosting mother ships soon of 16000 TEU is an area for ships to manifest their economies of scale and economies of density, being also a main importing area. Thus the paper made the working hypothesis that the environmental protection must start from ports including littoral states. As shown, the Mediterranean area must be prepared for the ships destined for it to be banned, unless more energy efficient ships are built under incentives (a global levy scheme on marine bunkers) and indicators like EEOI/EEDI in a Maritime emission trading scheme.

## INTRODUCTION

During the last 5 years, there has been growing international concern about maritime air emissions. This concern can be attributed to the fact that the contribution of these emissions to global anthropogenic

emissions has significantly increased and is expected to continue rising in future, if no abatement measures are taken now.

[40] In order to offset the negative effect of shipping on the environment, a regulatory policy framework has already been adopted for maritime emissions, but only for those which are classified as 'local or regional' pollutants. These are only  $\text{SO}_2$  and  $\text{NO}_x$ . An important step for the reduction of  $\text{SO}_2$  emissions from ships was the adoption by the contracting nations of the revised Annex VI of MARPOL 73/78 drafted by the International Maritime Organization (IMO 2008c). But this covers only some environmentally sensitive areas such as the Baltic Sea and North Sea, which are designated 'Sulphur Emission Control Areas' or SECAS. Within these areas, the ships are obliged to use fuel oil with low sulphur content<sup>1</sup> or to use  $\text{SO}_2$  scrubbers with equivalent emissions reduction.

The effectiveness of this specific measure has already been evident, as the contribution of  $\text{SO}_2$  emissions from ships in the SECAS in the European region has decreased, in contrast to the Mediterranean Sea which has not been designated a SECA, although we believe it should be.

Although the international and European communities have made some progress as far as the reduction of local and regional air pollutants from ships is concerned, there is a complete lack of any regulation for maritime  $\text{CO}_2$  emissions, in spite of the belief that these have a global impact on climate change. International Aviation and Shipping are the only greenhouse-gas-emitting sectors which are not covered by the Kyoto Protocol (UNFCCC 1998) or the Copenhagen Accord (UNFCCC 2009).

Moreover, these sectors remain unreported due to 'lack of reliable emission data' and 'lack of an agreed approach for defining responsibility by country' (UNFCCC 2005).

It should also be noted that shipping is the most energy-efficient and environmentally-friendly mode of transport, as it carries as much as 90% of world trade by volume but accounts only for 10% of transport sector emissions. Nevertheless, for a number of reasons set out below, we estimate that shipping will be regulated sooner or later for air emissions worldwide, mainly due to: (1) the growing concern



of the international community about the ‘deep reduction of global GHG/Green house gas emissions’ (UNFCCC 2009), (2) the fact that the contribution of shipping to global GHG emissions has increased, mainly as a result of the lack of regulation of its GHG emissions,<sup>2</sup> and (3) the growth of the international fleet, at least until the end of 2008. [41] We believe that shipping cannot be left out of future regional or international conventions for the reduction of maritime GHG emissions for much longer (Friedrich et al. 2007).

Responsibility for the regulation of GHG emissions from shipping was given to the International Maritime Organization (IMO) and to the Marine Environment Protection Committee (MEPC). These bodies developed a package of interim and voluntary technical and operational measures to offset GHG emissions from shipping, and also introduced market-based instruments to provide incentives for the shipping industry to comply with these measures (IMO 2003; IMO 2009b).

A significant part of the work of the MEPC for the reduction of maritime GHG emissions was the development of some fundamental principles. These were destined to serve as the basis for a coherent and a comprehensive framework for the regulation of GHG emissions from ships to be introduced in the future by the IMO (2008b). The global effect of CO<sub>2</sub> emissions on climate change, as well as the international character of shipping, indicates that the regulatory framework for the abatement of maritime CO<sub>2</sub> emissions must be implemented globally. This means that sooner or later regulation will directly influence maritime transport in the Mediterranean Area, which is the focus of the research reported in this paper.

#### AIM OF THE PAPER

This paper examines (a) how a regulatory framework for the reduction of CO<sub>2</sub> emissions from shipping could be developed – based on the fundamental principles of the IMO – and (b) the ways in which this framework would influence maritime transport flows and logistics networks in an environmentally sensitive area such as the Mediterranean Sea, which is surrounded by many coastal nations on three continents. Our interest has been triggered by the fact that the annual CO<sub>2</sub> emissions from shipping in the Mediterranean area were 65 million tons

[42] (Concawe 2007). This represents more than 30% of the total maritime CO<sub>2</sub> emissions in the EU27. In addition, we must pay attention to the geographical and commercial features of this specific area, which make the Mediterranean a particularly interesting region for the investigation of future trends with respect to our international good, namely the environment.

THE GEOGRAPHICAL AND COMMERCIAL  
CHARACTERISTICS OF THE MEDITERRANEAN AREA

*Introduction*

The most important step, we believe, for a stabilization of GHG concentrations in the atmosphere, and at a level that would prevent dangerous anthropogenic interference with the climatic system, is the implementation of the Kyoto Protocol (UNFCCC 1998). This can be done through the United Nations Framework Convention on Climate Change (UNFCCC), which sets binding targets and mandatory limits on greenhouse gas emissions (GHG) not only for the 37 industrialized countries, but also for the European community as a whole.

Under the Kyoto Protocol, the European Union has made a commitment to reduce its GHG emissions by 8% by the year 2012 compared with 1990. Although, by 2005 there had been a decrease of 7.9% in the total GHG emissions in European Union, over the same period emissions from the transport sector increased by 26%. This represented 22% of the total GHG emissions of the European Union (European Environment Agency 2008).

We have seen that the increased transport volumes have resulted in the growth of GHG emissions, as this has also required increased energy use in the transport sector. This is a growth, however, which prevents the European Union from achieving its Kyoto Protocol commitment. In order to reduce GHG emissions from the transport sector in the European Union, additional measures need to be taken, we believe.

These additional measures should focus on the coordination and optimal use of different modes of transport according to their energy-efficiency, but also concentrate on improvements in the energy-efficiency of each mode of transport.



*Mediterranean Geography/Characteristics*

As is well known, the geographical position of the European Union provides an advantage for the further development of maritime transport flows, as it has a coastline in excess of 67,000 kilometres and a network of inland waterways of about 25,000 km, of which 12,000 km are part of the combined transport road network. These conditions facilitate the transport of certain cargoes (mainly wet and dry bulk) by coastal and sea-river vessels (Blonk 1994). The fact that 60% to 70% of the industrial and production centres of the European Union are located within 150 to 200 kilometres from the coast provides a commercial advantage for the further use of maritime transportation in the form of short sea shipping and river transportation.

[43]

As mentioned above, maritime transport is by far the most energy-efficient mode of transport, as the transportation of goods and people by sea has lower carbon emissions per ton/passenger-kilometre than other modes of transport.

In spite of this, the increased contribution of shipping to global GHG emissions during recent years, due to the lack of any regulation of GHG emissions by the sector and the growth of the international fleet, have made the adoption of a regulatory framework of maritime GHG emissions an obvious next step. Namely, for year 2005, maximum emissions of NO<sub>x</sub>, SO<sub>2</sub> and CO<sub>2</sub> in the Mediterranean area are estimated to have reached 1.45, 0.86 and 64.94 million tons respectively (Concawe 2007). We are almost certain that the inclusion of shipping in a regional or international convention for the reduction of maritime GHG emissions is not far off.

*Commercial Aspects of the Mediterranean Sea*

As far as the Mediterranean Sea is concerned, it should be noted that it is amongst the world's busiest waterways, as it is the destination of 10% of global shipping by vessel deadweight. It is also a major transit area. Around 10,000 vessels transited the Mediterranean area en-route between non-Mediterranean ports in 2006. This emphasis on shipping in transit in the Mediterranean, in addition to the fact that seaborne trade between states with coastlines on the Mediterranean (Mediterranean Littoral States) is relatively underdeveloped<sup>3</sup> (figure 1),

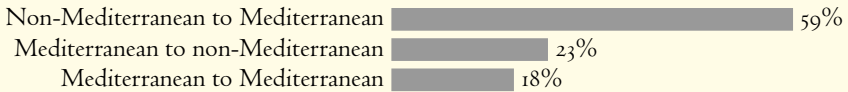


FIGURE 1 Mediterranean littoral states – seaborne trade (tons), 2006

[44]

indicates that the density of international shipping traffic in the area will increase.

The most significant change in the overall traffic patterns in the Mediterranean in coming years will be the development of export routes of crude oil from the Caspian Sea. This oil is currently transported predominantly through Black Sea ports, passing on through the Bosphorus. We expect as a result an increased density of tanker activity, especially in the Eastern Mediterranean, so as to exceed 20 000 voyages per annum (Lloyd's Marine Intelligence Unit 2008). To this we may add the fact that nearly 80% of vessels in transit through the Mediterranean, between two non-Mediterranean ports, are registered under a non-Mediterranean state flag. We believe that maritime CO<sub>2</sub> emissions in the area should probably be dealt with through an international convention for the reduction of maritime GHG emissions as soon as possible.

#### A REGULATORY FRAMEWORK FOR THE REDUCTION OF GHG EMISSIONS FROM SHIPS

##### *Introduction*

In the light of the mandate given to IMO in the Kyoto Protocol of 1997 to address the limitation or reduction of GHG emissions from ships, the Marine Environment Protection Committee (MEPC) agreed that a coherent and comprehensive future IMO regulatory framework on GHG emissions from ships should be based on the following principles (IMO 2008b):

- It should be effective in the reduction of total global greenhouse gas emissions.
- It should be binding and equally applicable to all flag states in order to avoid evasion.
- It should be cost-effective.



- It should be able to limit, or at least effectively minimize, competitive distortions.
- It should be based on sustainable environmental development without penalizing global trade and its growth.
- It should be based on a goal-based approach and not prescribe specific methods. [45]
- It should be supportive in promoting and facilitating technical innovation and R&D in the entire shipping sector.
- It should accommodate leading technologies in the field of energy efficiency.
- And, finally, it should be practical, transparent, fraud-free and easy to administer.

*The basic principles against GHG*

Based on the above basic principles for the adoption of an effective regulatory framework for GHG emissions from shipping, various technical and operational measures, as well as market-based instruments, have been developed in order to offset maritime GHG emissions. Considering the variety of measures proposed and the fact that they could not all be analyzed in this paper, our analysis will be restricted to four possible regulation systems with GHG-reduction potential for interna-

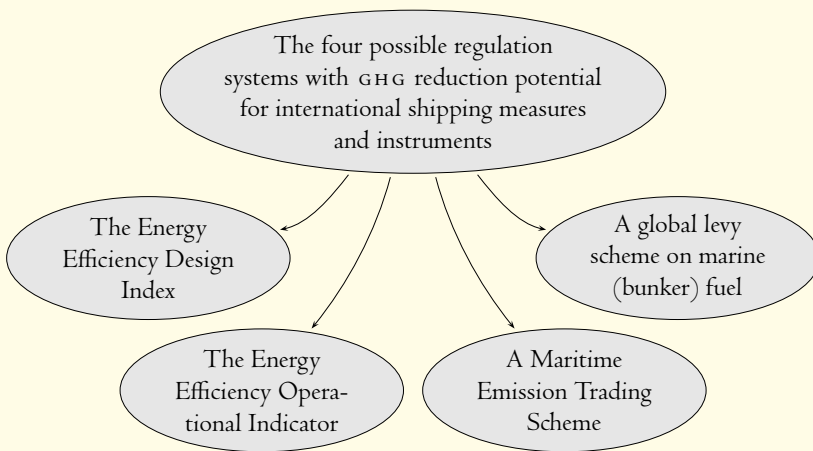


FIGURE 2 The regulation systems for GHG-reduction measures and instruments

tional shipping, as shown in figure 2. We will examine each of the four systems in turn. These are:

- [46]
- 1 The Energy Efficiency Design Index (a technical measure).
  - 2 The Energy Efficiency Operational Indicator (an operational measure).
  - 3 A Maritime Emission Trading Scheme (a market-based instrument).
  - 4 A global levy scheme on marine (bunker) fuel (also a market-based instrument).

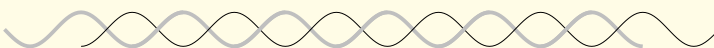
### *The Energy Efficiency Design Index*

The technical policy options for reducing GHG emissions from shipping, which have been considered by MEPC, aim to improve the energy efficiency of the fleet by changing ship design. These are based on the Energy Efficiency Design Index (EEDI) (IMO 2008a). Improved energy efficiency is achieved when the same amount of useful work is done by using less energy. This means that less fuel is burned and less greenhouse gases are emitted. The development of the EEDI – defined below (1) – is an effort to exploit this option to increase design efficiency.

The EEDI expresses the CO<sub>2</sub> efficiency of a ship in a well defined design condition. Efficiency is, in this context, the ratio between the environmental cost and the benefit for society:

$$EEDI = \frac{\text{environmental cost}}{\text{benefit for society}}, \quad (1)$$

where the ‘environmental cost’ of shipping is its contribution to global warming through emission of CO<sub>2</sub> from combustion of fossil fuel, and the ‘benefit for society’ comes from the transportation of vessel’s work capacity related to her type, size and design. In general, EEDI has a constant value, which is going to change if design is altered. The unit for the EEDI is grams of CO<sub>2</sub> per capacity-mile, where capacity is an expression of the cargo-carrying capacity relevant to the cargo that the ship is designed to carry. For most ships capacity will be expressed in deadweight tonnage.





The EEDI produces, for each ship, a figure that expresses its design performance. If we collect data on the EEDI for a number of ships within a category, then baselines that express typical efficiencies of these ships can be established. Based on these baselines (CO<sub>2</sub> indices), a mandatory EEDI for new ships can be developed. This would require them to meet a design CO<sub>2</sub> limit on the value of their EEDI that would be set at a level below the baseline (IMO 2008c).

[47]

All ships built after a certain date would have to demonstrate that their EEDI was better than the target value for EEDI of new ships, a target which should be specific to the type and size of the ship. Consideration should be given, though, to the way the EEDI will be implemented, as different ship types will need different correction factors. There are also practical issues relating to the way the design index will be verified, so that there should not be a flag state designated for a ship at the design stage. 'Different correction factors' mean that the ship-type-specific parameters of various ship types and sizes should be taken into account before the 'baseline' value of EEDI for these vessels is calculated (IMO 2009a). The verification process of the EEDI value of ships is rather complicated and is divided into two stages: (1) limited to the examination of data of input parameters to see compliance with EEDI required before vessel is constructed, and (2) sea trials for the same target as in one (Sames 2009).

The whole process of implementing EEDI for ships we believe will be assigned on to IACS. Moreover, Classification societies are no doubt the appropriate certification agents in technical maritime safety and environmental matters. One European classification society has already carried-out the first ever EEDI certification for a large containership. This class established a 'technical life' for the vessel, which summarizes the relevant technical data and documents indicating calculations towards final EEDI figure (Sames 2010). The EEDI for new ships would obviously serve as a fuel-efficiency tool at the design stage of ships. This would enable the fuel efficiency of different ship designs, or a specific design, to be evaluated, with different inputs such as design speed, choice of propeller and the use of waste heat recovery systems. It would also make rational comparisons easy to achieve.

It should be noted, however, that most modifications of design,

[48] on which the improvement in the value of the EEDI of ships will be based, are primarily suitable for new-buildings. This means that the reductions in GHG emissions that can be achieved by design-based improvements in energy efficiency will be slow, due to the long expected service life of ships. Moreover, the baselines for the value of the EEDI of ships, based on ship-type-specific parameters, could be initially determined for only 7 different ship types and later possibly extended to other ship types (IMO 2008c). This means that only 81% of the total global maritime GHG emissions would be covered by the EEDI, as this is the amount of emissions corresponding to those seven ship types.

#### *The Energy Efficiency Operational Indicator*

Besides the technical policy options for reducing GHG emissions from ships, improved energy efficiency of the fleet can also be achieved at the operational stage by all ships. The MEPC has developed some operational policy options with GHG-reduction potential for international shipping. These aim to improve the operational efficiency of the fleet and are based on the use of the Energy Efficiency Operational Indicator (EEOI) (IMO 2005), defined below (2). The EEOI expresses the CO<sub>2</sub> efficiency (i. e. the fuel efficiency) of a ship. That is to say, the CO<sub>2</sub> emissions per unit of transport work is calculated as follows (in gram CO<sub>2</sub>/tonne identical mile):

$$EEOI = \frac{\sum_i FC_i C_{carbon}}{\sum_i m_{cargo,i} \times D_i}, \quad (2)$$

where (1)  $FC_i$ , is the fuel consumption on a voyage or in a period, (2)  $C_{carbon}$  is the carbon content of the fuel used, (3)  $m_{cargo,i}$  is the total payload carried during a voyage or a period, and (4)  $D_i$  is the distance travelled for a voyage or a period. Thus the CO<sub>2</sub> emission index is equal to the ratio of total fuel consumption of a voyage or a period ( $FC_i$ ) multiplied by the carbon content of the fuel used ( $C_{carbon}$ ) divided by the total payload carried during a voyage or a period ( $m_{cargo,i}$ ) multiplied by the distance travelled for a voyage or a period. Fuel consumption, FC, is defined as all fuel consumed at sea and in port for a voyage or period, by main and auxiliary engines including boilers and incinerators.



As the amount of CO<sub>2</sub> emitted from a ship is directly related to the consumption of bunker fuel oil, the CO<sub>2</sub> index will provide useful information on a ship's performance with regard to fuel efficiency. This will enable ship owners and operators to evaluate the performance of their fleet with regard to CO<sub>2</sub> emissions. It is obvious that, in contrast to the EEDI, the EEOI changes with operational conditions and it may thus be calculated for each leg of a voyage and reported either as a rolling average or periodically.

[49]

In order to promote best practice for fuel-efficient operation of ships, ship owners and operators can establish a Ship Efficiency Management Plan (SEMP). This provides a possible mechanism for monitoring ship and fleet efficiency performance over time and considering possible improvements in a structured fashion. The SEMP provides guidance on the way that the operational efficiency performance of ships can be optimized through technical details (IMO 2008c). These include improved voyage planning, weather routing, just in time arrival of vessels at port, speed optimization and other operational-based measures.

A mandatory requirement for an SEMP would imply that ships would be required to document what is done to manage the operational efficiency of each ship, while the mandatory use of the EEOI for monitoring performance could be part of this policy. Implementation of the EEOI in an established environmental management system should be carried out in line with the implementation of any other chosen indicators. Ships and fleets could then be managed following the main elements of the recognized standards (planning, implementation and operation, checking and corrective action, and management review). The results from monitoring and measurements should be reported to management. A management review may include the review of targets, objectives, and CO<sub>2</sub> index, to establish continued suitability in the light of changing environmental impacts and concerns, regulatory developments, organizational activity changes, and changes in the environment (IMO 2006).

#### *A Maritime Emission Trading Scheme – METS*

The MEPC also identified market-based instruments for reducing GHG emissions from shipping, which address maritime emissions of

[50]  $\text{CO}_2$  directly. These are in contrast to technical and operational policy options, which aim to improve the design and operational energy efficiency of the fleet. The development of a Maritime Emission Trading Scheme (METS) is one of these market-based policy options (IMO 2008c).

Emissions' trading represents cooperation between two countries, companies or organizations that have emission reduction commitments. Any company in a country that has reduced its emissions below the determined commitment can sell its surplus units to another company in a country that may find it more difficult to reduce its emissions and meet its reduction commitment. The idea behind an emission trading scheme is that if allowances can be bought and sold by participants in the open market, then the overall cost of compliance with the Kyoto targets will be restricted to a bare minimum (Criqui and Viguier 2000).

In order to operate an emission trading scheme in international shipping, there are two options. International shipping emissions should be included in a national emissions inventory, or they should be included in the Kyoto Protocol, outside the assigned amounts of Annex I parties (under the auspices of the IMO or other body). A number of distinct characteristics of sea transport makes the allocation of shipping emissions to countries more complicated than in other industrial sectors (IMO 2000). We must mention at this point the difficulty that exists in defining those nations from which the sea transport services are generated, given the fact that both sea transport and its emissions in international trade are at the moment outside control. On top, there is the difficulty of determining the vessel's country of ownership, given the fact that the majority of world's cargo-carrying capacity is registered in developing countries... These have not adopted the Kyoto emission reduction targets (Wit, Kampman, and Boon 2004). Because of the existing difficulties in allocating shipping emissions to countries (IMO 2000), and the fact that international shipping should be dealt with in a global perspective because of its international character, the MEPC has adopted the second option regarding the design of an METS. This means that a cap on global maritime emissions should be established, based on historical emissions and on an absolute target for



their reduction, based on the findings of the Intergovernmental Panel on Climate Change (2007) as to the global emission reductions needed in order to delay or avoid impact on climate change and ship owners would have to buy emission allowances to cover their emissions.

The METS should be open for trade with other emission trading schemes so that the shipping sector could buy allowances from other sectors, which would reduce their emissions at a lower price compared to the abatement costs in the shipping sector. As the cap would apply to global maritime transport, it seems logical that it should be established by an appropriate international organization.

[51]

It is worthwhile to mention that the transaction costs of a METS are relatively high and include large administrative burdens, as maritime emissions have to be monitored first, verified and reported per annum. The entity responsible for monitoring and reporting emissions and allowances will be the ship. This means either the ship operator or the charterer. These report the emissions per annum to the Flag State and give also the relevant amount of allowances. This is a market-based policy option the implementation of which we believe to be assigned to Port State controls. These will write down whether ships have given away the relevant allowances.

However, this option presents problems in practical implementation. The cap on global maritime emissions would have to be negotiated with the parties to the Kyoto Protocol, which would imply rather complicated negotiations. If the cap includes only the ships registered in Annex I countries, there would be an incentive to register ships in non-Annex I countries. We believe that this option would also require difficult negotiations on the distribution of allowances among ship owners.

#### *A Global Levy Scheme on Marine (Bunker) Fuel*

Another market-based instrument developed by the MEPC to achieve GHG emission reductions from ships was an international compensation fund (ICF). This is based on a global levy on marine bunkers (IMO 2007a; 2007b; 2008c). Under this scheme, all ships engaged in international voyages would be subjected to a bunker levy established at a given cost per ton of fuel bunkered. The levy should apply to all ma-

[52] rine fuels, taking due account of different emission factors. This could either be paid by the ships, or by the suppliers of bunker fuel, or by oil refiners. The levy would be channelled to an International Maritime GHG Emission Fund, and clear guidelines for the specific use of this fund would be set so that it could be used to fund research and development (R&D) in shipping or to fund an IMO technical cooperation programme to improve the efficiency of the world fleet.

A carbon charge on bunker fuels would increase fuel costs of vessels, which are in many cases a large (circa 33%) proportion of shipping costs and therefore play an important role in the decisions of ship builders and owners. Since emissions of CO<sub>2</sub> are directly connected to fuel consumption, carbon charges would give ship owners increased incentives to reduce fuel use and emissions (Chupka 2004). This effect is confirmed by historical data, which show that bunker fuel demand responds to changes in bunker fuel price (IMO 2000). A carbon charge on bunker fuels might reduce bunker demand and associated CO<sub>2</sub> emissions through energy efficiency improvements in ship engines and ship design, changes in operating practices including load factors, routing and sailing speeds and various other measures (OECD 1997). Another response of shippers over higher energy prices tends to be slow steaming. This probably will have an impact on proper 'port calling schedules' (Rodrigue, Comtois, and Slack 2009).

However, there are several obstacles to the implementation of a carbon charge on bunker fuels. First, it would be necessary to reach an agreement between countries on implementing such a charge. Even if a levy scheme involved only a small number of countries, it would be important for them to negotiate a range of issues with non-participating countries. Second, the negotiations would need to address issues such as the point of application of the charge, the question of which party/organization would be responsible for collecting and disbursing the proceeds of the charge, and the question of distributing the revenue among various purposes. And third, unless implemented globally, bunker charges can be readily evaded. If they apply to a limited number of countries only, evasion will depend on the location of ports where bunkers can be tanked free of carbon charge. The incentive to avoid the charge will depend on the level of the charge as a proportion of the cost of fuel.



*The European Union (EU) Policy for the Reduction of GHG Emissions from Ships*

In addition to the work of the MEPC on the problem of shipping GHG emissions, the EU has on many occasions made it clear that if the IMO cannot reach an agreement on significant reductions of GHG emissions from shipping, then Europe will move ahead with its own measures and act on its own in order to limit GHG emissions from ships travelling in its territorial waters (Marshall 2008).

[53]

As mentioned above, emission trading is one of the flexible mechanisms approved by the Kyoto Protocol for the accomplishment of the targets that it set for the industrialized countries involved and by the European community for reducing greenhouse gas emissions (2002/358/EC). In January 2005, the European Union Greenhouse Gas Emission Trading Scheme (EU-ETS), based on Directive 2003/87/EC, commenced operation covering 11,500 energy-intensive installations across the European Union. This represents a figure close to 50% of Europe's emissions of CO<sub>2</sub>. International shipping is not included in the EU-ETS because of the difficulty of defining responsibility by country and the fact that it should be dealt with from a global perspective because of its international character.

The inclusion of the shipping sector in the EU-ETS has already been considered by the European Commission, in line with the model used for the inclusion of emissions from aviation in the ETS (Commission of the European Communities 2006). Before taking a position on this matter, though, it is essential to consider some important differences between aviation and maritime transport. A number of circumstances make the allocation of allowances and liability more complicated in the maritime sector than in aviation. Moreover, it is more difficult to access reliable fuel and emissions data for shipping (Kågeson 2007).

In order to link maritime emissions to the ETS, the allocation of allowances and liability could be based on voyages arriving in EU ports, and ships would be liable for their emissions only for journeys ending in a port of the European Union. This model would require the operator to monitor fuel consumption in order to be able to split bunker oil deliveries between voyages to EU ports and to other destinations. However, this principle of allocation might cause a ship on a long dis-

tance voyage to call at a port just outside the EU before proceeding to its final destination in order to minimize the CO<sub>2</sub> allowance that would have to be surrendered.

[54] If the IMO is not able in the short term to take the necessary decisions on the introduction of a cap on CO<sub>2</sub> emissions from international shipping, the European Union could introduce a scheme of its own, a European Maritime Emissions Trading Scheme (EMETS), which would operate in the same way as the global Maritime Emissions Trading Scheme presented above (Kågeson 2007).

In the case of a regional regime, however, only ports in the member states and in candidate countries for accession to the EU would then participate. In addition such a scheme would be administered and monitored by an EU agency, created for this particular purpose. A problem with getting the scheme started is the lack of reliable fuel sales statistics, as this information would be needed in order to know the exact quantity of fuel used in ships calling at the ports participating in the scheme.

WHAT A REGULATION FRAMEWORK FOR CO<sub>2</sub>  
EMISSIONS FROM INTERNATIONAL SHIP TRAFFIC IN  
THE MEDITERRANEAN AREA WOULD BE LIKE

After a brief analysis of the four possible technical, operational and market-based regulation systems with the potential to reduce CO<sub>2</sub> from international shipping presented above, we now come to the consideration of a future regulatory framework for maritime CO<sub>2</sub> emissions in Europe (EU) and more specifically in the Mediterranean area. As mentioned above, the Mediterranean Sea is among the world's busiest waterways and a major transit route. A significant increase in the overall vessel activity within and through the Mediterranean is expected over the next ten years, with an increase in transits through the area of about 23% and an increase in vessel activity within the area of about 18%.

A predominant feature of maritime transportation in the Mediterranean Sea is the fact that economies of scale have already been developed by forming a Mediterranean maritime network. Here the majority of trade is concentrated in larger vessels deployed at lower levels





of frequency. The geographical pattern of the area, with a large percentage of industrial and production centres located within 150 to 200 kilometres of the coast, allows the use of economies of scale in maritime transport, with increased income and reduced costs. In such a maritime network, larger vessels are likely to choose a route that involves fewer port calls in order to accomplish lower average transit times.

[55]

We may add here that soon after the crisis at the end of 2008, container transportation adopted slow steaming, reduction in the size of ships used and a reduction in frequency of calls. But this seems to be temporary, as a recovery in container transportation is noted outside Europe. The recovery is expected to be slower in Europe than in India or China, because many member countries have large debts. This may improve emissions, but this would also be temporary. Economies of scale are practised by liner companies here, and vessels are expected to reach 16,000 TEUS or more.

Coming to the implementation of a regulatory framework for maritime CO<sub>2</sub> emissions in the Mediterranean area, any scheme with CO<sub>2</sub>-reduction potential for shipping would in practice have to be carried out in Mediterranean ports. Enforcement of this scheme should be flag neutral, through port state control, for foreign flagged vessels, and flag administration for vessels falling under national jurisdiction. This means that Mediterranean Littoral States should all adopt the regulation system for ships so that they would exercise exclusive jurisdiction over their ports. Thus ships calling at their ports would be required to comply with the specific regulatory scheme. The agreement for the implementation of a common regulatory framework for maritime CO<sub>2</sub> emissions is extremely difficult for the Mediterranean area, because it involves states from three different continents and having entirely different economies, as well as different attitudes to environmental issues.

Practically, implementing an METS in the Mediterranean would mean that a failure to surrender allowances matching a ship's emissions would result in the banning of the ship from calling in Mediterranean ports. Under a levy scheme on marine bunker fuel, all sales on bunkers within the Mediterranean area would be taxed at a given cost level per

[56] ton of fuel bunkered. A mandatory EEDI or EEOI for ships would require ships to meet, or even exceed, a minimum design or operational efficiency standard in terms of CO<sub>2</sub> emitted per ton-mile sailed. Ships that did not meet this requirement would be banned from Mediterranean ports.

As mentioned above, any regulation system for the abatement of maritime CO<sub>2</sub> emissions should be neutral across all nations and ship categories. This is necessary in order to eliminate the possibility of evasion and leakage of emissions, and to avoid reduced competitiveness of ships complying with regulations. Any regulatory scheme implemented regionally, i. e. only in the Mediterranean area, could easily be avoided by deploying more energy-efficient ships within the Mediterranean and less efficient ships outside the area. This would also lead to unwanted market distortions as ship owners would prefer other maritime routes, where they would not be subject to such stringent regulations regarding the CO<sub>2</sub> emissions from their ships.

A successful regulatory framework for maritime CO<sub>2</sub> emissions in the Mediterranean area would provide strong incentives for ship owners to follow it if it rewarded efficiency and increased the cost of emitting CO<sub>2</sub>. The emitters have an incentive to reduce emissions as long as the marginal cost of reducing emissions is larger than the charge/levy that they would otherwise pay. The implementation of a regulatory scheme would be improved if the probability of being caught and the cost of non-compliance are sufficiently large. This requires a reporting, monitoring and verification system that functions well, where ships are able to provide proper documentation to any port state control showing that they follow the regulations.

One of the most important features that a regulatory scheme with CO<sub>2</sub>-reduction potential for shipping in the Mediterranean would need is the flexibility to allow adjustments of the scheme itself in response to new information or changes in general policy. Increased overall vessel activity, which is expected in the coming years once the crisis is over, within and through the Mediterranean, will result in further CO<sub>2</sub> emissions from maritime transportation in the area. The regulatory framework adopted should be able to respond to changes in activity reflected in new data.



CONCLUSIONS

In this paper, we have attempted to describe a future regulatory framework for CO<sub>2</sub> emissions from shipping in the Mediterranean Area. This was based on the possible regulation systems with CO<sub>2</sub>-reduction potential for international shipping developed by the IMO and the European Union. The special geographical and commercial features of this specific area were also taken into account.

[57]

The Mediterranean, as described above, is among world's busiest waterways, surrounded by states situated in three different continents, with an expected further increase in its overall vessel activity in the coming years. This area forms a particularly interesting region and thus we have investigated its future environmental trends and ways in which these trends would influence maritime transport flows and logistics networks in this environmentally sensitive area.

Our conclusions were, however, limited by the inclusion of only four possible technical, operational and market-based regulation systems for the reduction of CO<sub>2</sub> emissions from shipping. We did not cover the whole variety of measures proposed by the IMO, as they could not be developed satisfactorily in a short paper.

We made it clear that any regulatory scheme chosen for the reduction of maritime CO<sub>2</sub> emissions within the Mediterranean would in practice have to be carried out at Mediterranean ports, through port state control for foreign flagged vessels and flag state administration for vessels falling under national jurisdiction.

We have shown that given the large heterogeneity of states surrounding Mediterranean with entirely different economies, as well as attitudes towards environmental issues, difficulties in adopting a common regulatory framework for maritime CO<sub>2</sub> emissions in the area will arise. However, the fact is that economies of scale have already been developed in the area, forming a Mediterranean maritime network in the logistics chain, implying fewer port calls from vessels – in order to achieve lower average transit times – and the use of larger and well-organized ports. A proper reporting, monitoring and verification system for CO<sub>2</sub> emissions should be established.

We have also pointed out that given the growing concern of the international community about the deep reduction of global GHG emis-

sions and the increased contribution of shipping to them, it cannot be expected that shipping can remain outside a regional or international convention for the reduction of maritime GHG emissions.

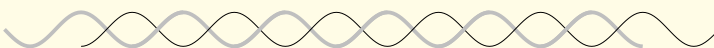
[58] In addition, we have stressed the fact that CO<sub>2</sub> emissions from shipping in the Mediterranean represent more than 30% of the total maritime CO<sub>2</sub> emissions in the EU 27; and are expected to increase even further in the coming years. This implies that a regulatory framework for CO<sub>2</sub> emissions from shipping in the Mediterranean area is going to be imposed in the near future. Moreover, we analysed the influence on transport flows and ship traffic in the area that depends on the correct design and implementation of this framework.

#### NOTES

- 1 Maritime SO<sub>2</sub> emissions are directly related to the sulphur content of fuel oil used for the ship's engines.
- 2 In contrast to land-based industries.
- 3 Representing only 18% of the total Mediterranean Littoral States' trade.

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# The New Port Framework in Spain As a Means to Support the Increase of Traffic Potential in the Mediterranean Sea

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THE ROLE OF SPAIN as ‘ports land’ has grown over the last decades along with the economic development of the country. This has required a modernization process of the Spanish port system, not only in terms of infrastructures but also as an evolution in terms of organization and governance. This is why Spain, like other Mediterranean countries, has gone through a ‘port reform’ process. This article focuses on the reasons and outcomes of this process. After a rather detailed introduction that covers the evolution of maritime traffic in the Mediterranean region and in Spanish ports, which is due to the deep changes that concern the organization of maritime trade (known as the ‘logistics revolution’), this paper provides an overview of the recent Spanish port reform. The Spanish model – which revolves around a central intermediate public authority called ‘Puertos del Estado’ – is extremely interesting for the whole Mediterranean area because it introduces elements like efficiency, autonomy, support to competition, and connections between ports and territories in the port sector, while maintaining a strong policy coordination at State level.

THE IMPORTANCE OF MARITIME TRAFFIC IN THE  
MEDITERRANEAN SEA AND IN SPANISH PORTS

*Maritime Transport in the Mediterranean Sea*

In order to fully understand the description of the Spanish port reform, which is the main topic of this paper, we must consider it as part of a more general picture that portrays the evolution of Spain’s role in the maritime transport system in the Mediterranean Sea and, in more general terms, in the development of the whole traffic system.

TABLE I Evolution of port traffic in the Mediterranean Sea

Category	Annual growth increase between 1997 and 2006 (in %)	Percentage distribution
Liquid bulk	7%	31%
Solid bulk	3%	27%
General goods	8%	36%
Containers	10%	26%
Ro-Ro Traffic	5%	10%
Other		6%
Total	5%	100%

[62]

Maritime transport in the Mediterranean Sea increased by over 50% between 1996 and 2007. Container traffic contributed most to this increase (by over 10% a year) and it was much higher than the level reached by energy products (7%), solids (3%) and general goods (8%).

If the total traffic is split into its components, we can see that 24% of the goods flow in the Mediterranean was made up of energy products, whereas general goods were 36% of the total. At the same time, most transactions in this area concerned EU countries, whereas 8% of the foreign EU trade involved non European Mediterranean countries.

Routes connecting Mediterranean ports with Asia were predominant and this fact brings to the fore some recent trends: an increase of ship dimensions due to the higher load capacity required and what happened to Mediterranean ports, which increased their market shares in comparison with the ports of the Northern Range (i. e. an area that stretches from Le Havre to Hamburg). This determined the rise and consolidation of new hub ports like Port Said, Tangier Med, Algeciras, Marsaxlokk and Gioia Tauro, which became first rate international hubs.

With no embargoes, the traffic and trade levels within the Mediterranean Sea were weak (about a fourth of the total); the south-north traffic became well-established (mainly because of the exportation of oil and gas) as opposed to trade among the southern Mediterranean countries.

Port infrastructures respond to various dynamics. First of all, to the greater ship dimensions and to the fact that now ports need deeper shores. Secondly, port offer dynamics are faster than demands; perhaps





TABLE 2 Main Mediterranean ports (measured in TEU)

Port	(1)	(2)	(3)	(4)	(5)	(6)
Valencia	3,602,112	3,653,890	1.4	1,803,697	1,972,694	9.4
Port Said	3,257,984	3,464,453	6.3			
Algeciras	3,324,310	3,042,759	-8.5	1,474,149	1,482,548	0.6
Gioia Tauro	3,467,772	2,857,438	-17.6			
Istanbul	3,235,329	2,517,059	-22.2	832,493	1,312,392	57.6
Marsaxlokk	2,234,182	2,260,000	-3.2			
Barcelona	2,569,550	1,800,213	-29.9	872,150	899,187	3.1
Genoa	1,766,605	1,533,627	-13.2	678,000	753,262	11.1
Alexandria	1,259,000	1,277,000	1.4			
Damietta	1,236,502	1,263,925	2.2			
Tangier	921,000	1,222,000	32.7			
Haifa	1,251,158	1,133,523	-9.4		631,000	

[63]

Column headings are as follows: (1) 2008, (2) 2009, (3) % variation, (4) January/June 2009, (5) January/June 2010, (6) % variation. Adapted from <http://www.cargo-systems.net>.

this aspect shows an offer overcapacity that may translate into an excess of capacity in some ports and facilities. Lastly, the consolidation of logistics hubs in large industrial areas can be observed.

Behind this there is greater competition among ports, which emphasizes dominant and hierarchical conditions, as well as a higher concentration around ports that are different and selective.

Recently, synergies among ports and other transport modes have generated a greater intermodality and more frequent rail-port connections, as shown by the integration of new companies both in rail, logistics and port areas along the routes that stretch from the Mediterranean Sea to Europe’s hinterland.

*Considerations on Spanish Ports in the Mediterranean Sea*

Spanish ports in the Mediterranean Sea are very important. In Spain there are 13 Port Authorities, one of which is an insular port authority (the Balearic islands), while two correspond to the autonomous cities of Ceuta and Melilla, located on the southern coast of the Mediterranean Sea. All together, they correspond to 267 million tonnes, that is 62.3% of the total Spanish traffic. This great port proliferation de-

TABLE 3 Presence of the major terminal operators and specialized terminals of the main container carriers (2006)

Term. operators	Ports	Spec. terminals	Ports
APM Terminals	Rotterdam, Aarhus, Bremerhaven, Tangier, Zeebrugge, Algeciras, Dunquerque, Port Said, Gioia Tauro, Costanta.	Maersk (APM Terminal)	Rotterdam, Aarhus, Bremerhaven, Tangier, Zeebrugge, Algeciras, Dunquerque, Port Said, Gioia Tauro, Costanta
Eurogate	Hamburg, Tangier, Bremerhaven, Gioia Tauro, La Spezia, Livorno, Ravenna, Cagliari, Lisbon, Rijeka.	Evergreen	Taranto
DP World	Southampton, Tilbury, Shell Haven, Antwerp, Le Havre, Marseilles, Costanta, Yarimca.	Cosco	Antwerp, Naples, Port Said
Hutchison Ports	Fleixtowe, Thamesport, Rotterdam, Gdynia, Barcelona, Alexandria.	CMA/CGM	Antwerp, Zeebrugge, Le Havre, Marseilles, Tangier, Marsaxlokk
PSA Corporation	Antwerp, Zeebrugge, Flushing, Genoa, Venice, Mersin.	MSC	Antwerp, Tangier, Bremerhaven, Marseilles, Las Palmas, Valencia, Genoa, La Spezia, Naples, Venice, Ambarli

Adapted from Ocean Shipping Consultants (2006).

termines a major port traffic aggregation to the point that the three most important Spanish ports for traffic movement are located in the Mediterranean Sea (Valencia, Algeciras and Barcelona) and make up 66% of the whole port traffic in the Spanish Mediterranean. If the ports of Cartagena and Tarragona are considered, it can be claimed that the first five ports in the Mediterranean Sea absorb 85% of the total traffic.

If these ports are analysed on the basis of goods types, the main



[64]

TABLE 4 Features of Mediterranean ports

Port	(1)	(2)	(3)
Algeciras	161.5	1534	0
Alexandria	134.2	1691	32
Barcelona	222	4160	209
Damietta	234.7	1050	0
Genoa	228.3	1926	352
Gioia Tauro	230.8	3011	66
La Spezia	123.5	1297	337
Marsaxkoll	58.3	2360	0
Marseilles	168	2970	290
Piraeus	222.4	3885	178
Port Said	112.2	1315	0

Column headings are as follows: (1) container area (in acres), (2) quay length (in metres), (3) deviation to the Suez-Gibraltar route (in sea miles). Adapted from Italian Ministry of Transport and Merchant Navy (2001); Schinas and Papadimitrou (2001).

[65]

energy ports are Tarragona, Cartagena and Barcelona. In total, the liquid bulks of Mediterranean ports make up 58.41% of the total Spanish traffic. Among the ports specialised in solid bulk, the most important are Tarragona, followed by Barcelona and Almeria; together, they make up 38.5% of the total. As for general goods, Valencia, followed by Algeciras and Barcelona, hold the first three positions and this means that the Mediterranean ports make up 53% of the total Spanish traffic.

Valencia, Algeciras and Barcelona stand out for container numbers too. The port of Tarragona has also recently registered a certain growth. Container cargoes at Mediterranean ports make up 78% of the total Spanish traffic. As for cruising, the passengers number has increased over the last few years.

Barcelona has become the focal point with about 2.5 million cruise passengers, followed by the Balearic Islands with 1.5 million and Malaga with over 650,000 passengers. Mediterranean Spanish ports make up 70.6% of the Spanish share in this sector.

Spanish ports are characterised by the presence of global operators. Hutchinson Port Holdings works in the port of Barcelona, Mediterranean Shipping Co. in the port of Valencia, Dubai Ports and ZIM in

TABLE 5 Statistics on Spanish port traffic in the Mediterranean Sea (provisional data for 2010)

Port	(1)	(2)	(3)	(4)	(5)	(6)
Algeciras	23,601,987	1,475,910	40,263,733	70,320,246	2,802,790	—
[66] Malaga	54,620	772,746	1,434,462	2,382,773	298,401	659,123
Motril	1,279,609	464,442	269,613	1,925,664	3,422	2,335
Almeria	4,459	3,105,224	580,743	3,791,320	2,698	58,743
Cartagena	14,978,265	2,961,640	927,185	18,988,917	63,562	104,294
Alicante	127,887	723,478	1,327,904	2,191,923	146,651	75,795
Valencia	4,964,000	2,629,000	56,000,000	63,877,316	4,150,000	257,000
Castellon	7,674,075	2,940,558	1,834,550	12,487,162	103,724	—
Tarragona	19,476,691	9,427,806	3,699,537	32,776,461	255,409	3,148
Barcelona	11,494,325	3,542,502	27,712,213	43,858,342	1,940,729	2,345,974
Balearic Islands	1,778,352	1,869,013	7,94,387	11,705,305	77,620	1,541,290
Ceuta	959,260	141,410	875,714	2,642,092	9571	4,220
Melilla	72,003	42,473	702,766	829,501	22,389	2,265

Column headings are as follows: (1) liquid bulk, (2) solid bulk, (3) general goods, (4) total, (5) TEU, (6) number of passengers.

the port of Tarragona, and AP. Maersk y Hanjin in the port of Algeciras. In 2011 Hapag Lloyd should have Malaga as its operational basis.

Spanish ports in the Mediterranean Sea export a lot because of the high specialization of the traffics they deal with. The main movement of goods is determined by cars and their component parts, iron and steel products, iron and equipment, paper and wood products.

Lastly, the number of ships that arrive at Mediterranean ports has increased in comparison with 2009. In this respect, the average Spanish growth is 6.3%, whereas the ports of Algeciras (+18.2%), Castellon (+11.8%), Valencia (+4.3%), Motril (+6.0%), Cartagena (+4.7%), Tarragona (+4.1%), Malaga (+2.9%), of the Balearic Islands (+1.4%) and Ceuta (+1.1%) with their respective growth levels make up for the decrease registered by Alicante (-5.2%), Almeria (-3.4%), Barcelona (-2.8%) and Melilla (-0.7%).

The importance of Mediterranean Spanish ports comes to the fore if they are compared to their counterparts in that geographical area:



three of them are among the first ten in Europe for container movement, Valencia ranks first, Algeciras ranks third and Barcelona ranks fifth, while Barcelona and the Balearic Islands are in the top five in the cruise sector.

[67]

THE ORGANISATION OF THE MARITIME AND PORT  
SECTOR: THE INTERNATIONAL CONTEXT  
AND THE MAIN TRENDS

The evolution of maritime flows outlined in the preceding paragraph is not the only aspect that can help understand the changes that are necessary to make to port legislation in order to support the economic dynamics. It is necessary to observe the deep changes that have taken place at world level in the organisation of the maritime and port industry.

*The Five Main Trends in the Global Maritime Sector*

Over the last 30 years, world port organisation has had to make adjustments. In the late 1970s the main maritime hubs corresponded to the commercial powers of the 'Triad' (that is USA, Japan and Europe). Later on, the Gulf countries emerged because of their massive exportation of oil and later still the southern Asian countries and the south-eastern Asian countries, along with some African countries, came to the fore for their exportation of raw materials. However, there is no doubt that in the 1970s oil traffic was the core of commercial flows, which in turn shed light on the export flow originating from Asian countries and dedicated to the sale of manufactured goods and to the importation of raw materials and energy needed to produce them.

The 1980s began with an oil crisis and so the traffic in the Gulf shrank, whereas the rise of Asian economies helped the exportation of raw materials and manufactured goods. The period 1990–2005 was characterised by the exploit of containers and of traffics from southern Asia to the American and European continent. Large development areas were located in the Asian continent, and the decreased relative importance of the EU and of Europe in maritime transport could be perceived: such areas became both importers and receivers of Asian goods.

The main world trends are: (a) the growing globalisation of production and markets; (b) technological development; (c) the strengthening of a port elite; (d) the trend towards transport costs reduction; (e) the rise of new management models in commercial ports.

[68] The growing globalisation is led by large companies and by multinational conglomerates. At the same time, the sharp increase of commercial flows has given a great boost. Maritime traffic has grown, a larger number of countries have become new players and accepted the market's rules, and there is a greater volume of exchanged goods.

This growth of exchange flows translates into changes in the importance of circulation routes. Inter-Asian traffic predominates, followed by transpacific routes and east-west routes.

The second main trend refers to the relevant technological development. On the one hand, the massive introduction of containers has contributed to determining changes in the commercial, logistics and operational world. On the other hand, the dynamics of the 'naval giants' (larger ships) have stimulated a progressive ship specialization. Both are responsible for a major change concerning traffic separation and the use of multi-purpose and ro-ro ships.

The progressive introduction of technological innovations has produced new needs in terms of port facilities and new information and communication technologies. In short, this has had an impact on transport speed, loading tracks and reduced ship stop time in ports.

The third trend refers to the consolidation of a port elite where the larger quantity of goods flows concentrate. This selection and hierarchy dynamic is associated also with greater port competition and rivalry which is based on new selection criteria with a new cargo redistribution towards minor ports (creation of feeder lines). This brings about the consolidation of hub & spoke logistics models. The direct consequence of this process is the reorganisation of maritime fleets and the modernisation of maritime companies.

The fourth trend is the dynamic of transport costs reduction. This process was brought about by labour force reduction, new forms of work organisation and by the technical changes that have an impact both on the ship stop time and on various load management conditions.



Lastly, the fifth trend refers to new management models in commercial ports. The different inter-institutional coordination modes and the greater link with economic and social stakeholders is brought to the fore. The distinct actions concerning deregulation and decentralisation are taken into account. This means that the various political choices at institutional sub-levels are highlighted along with the choices that guide the participation of the various stakeholders of the port, logistics and commercial community. The liberalisation trend of port services has involved most public port administrations, but this phenomenon has involved nearly all of the others too. These routes are associated with a greater volume of commercial exchanges and with the deriving of space redistribution based on the progressive domination of container cargoes.

[69]

Container maritime transport has other features too. First of all, it is possible to determine regular lines, and thus the distribution logic, with greater accuracy. Secondly, new conditions for infrastructure and equipment come into existence; lastly, relevant economies of scale can be brought into being.

By way of example, container transport standardizes the work mode in all feeding chains, it improves transport regularity and safety. These features create a better coordination in maritime transport and in other transport modes.

The way things are, this regularity and this work structure enable one to avoid inactivity and speed up the deriving flows. It is the new maritime transport regulation forms and the networks structure that turn ports into real 'entry/exit ports' of commercial flows, that is into new economic gateways.

Guerrero (2010) divides ports into three groups: (a) the pioneers of central spacing, which are the old container distribution centres; they are located in the 'Triad;' they developed in the 1970s and 1980s and their recession started after that period; (b) the components of the first phase of regional differentiation, which are located at the outskirts of the 'Triad.' They are located around the Persian Gulf, connected to the great hubs and close to the east-west routes; (c) these ports are connected to the second phase of global distribution; they are characterised by great growth and located at the outskirts of the 'Triad.' In

the 1990s they went through alternate growth/recession phases because they were sensitive to competition and to the economic situation.

[70] Two main points emerge from this. The first is that port growth goes hand in hand with the restructuring of maritime networks (Rimmer 1998; Frémont and Ducruet 2004; Yap and Lam 2006) and, most of all, that it is influenced by the new relations of competition, rivalry and complementarity in maritime and land space. As for the second point, it is easy to find asymmetries among the various situations or areas, which highlight the different traffic intensity and the impact of these organisational phenomena and processes. This is how the dynamics of specialized traffic, hub & spoke networks and transshipment intensify.

This is how the best port locations in the world in terms of traffic increase are classified. As Guerrero (2010) states, 'The geographical organisation of ports is far from having been determined.' The restructuring of maritime exchanges offers the chance of highlighting the most attractive and selective features in contrast with those that mark isolation.

#### *Changes in Port Models*

Over the last years, and especially starting from the 1990s, we have seen major changes in port organisation models. In a study on conceptual port models, UNCTAD (1992) set down three key criteria: port development policies concerning strategies and activities; capacity and variety of port activities and integration of activities. This classification enables us to identify three generations.

The first generation, which preceded the 1960s, was characterised by the fact that ports were operating in isolation and as an interface between land and maritime transport. This way, ports remained disconnected from commercial and transport activities; ports were isolated from the surrounding areas and there was no cooperation among them. Lastly, the various companies that operated with ports did so in an independent way, without resorting to common enterprises meant to promote ports at commercial levels.

Second generation ports carry out a whole range of functions and act as centres of commercial, industrial and transport services. Port ac-





tivities include commercial activities and add value to cargoes. Unlike first generation ports, second generation ports are characterised by a close relation between commercial and transport stakeholders and the areas close to ports, that is ports no longer act in isolation but by relating to the transport industry.

[71]

Third generation ports, which characterised the 1990s, are part of the globalisation era. They are dynamic hubs within a complex international production/distribution network. Port management is characterised by the development of integrated transport centres and by the creation of logistics platforms. Port services are specialized and have become more diversified by combining multiple services and performances. These ports are capable of adjusting to technological and equipment developments. Industrial areas are created in ports in order to generate greater load efficiency and the measures used for environment protection and safety are strengthened.

Lastly, third generation ports are characterised by a great improvement in administrative efficiency so as to improve and make uniform administrative documents and bureaucratic procedures.

A limited variety of carriers work within port economies. At first, a concentration strategy based on the attraction power and on the location of the shipowners' and agents' activities is determined in order to achieve progressive costs reduction and an increasing traffic concentration. Afterwards, a traffic intensification strategy that takes into account the number, type and size of ships, and particularly of container ships is drawn up, thereby increasing the quality of the services provided and enabling routes to be extended by including other ports and geographical areas. Lastly, an overall integration strategy based on intermodality is pursued; it has to be capable of developing equipment, facilities, logistics platforms and the networks that are required to establish priorities with reference to service quality, while adding value to the geographical location and the core of international trade.

Two types of analysis are carried out in order to implement these strategies. The first focuses on goods and maintains that ports' tasks are redistributing cargoes, integrating and combining the different land and maritime transport modes, improving and boosting exchange and distribution quality, providing new warehousing functions as well as

TABLE 6 Port model types of the three generations

Item	First generation	Second generation	Third generation
Port development strategy	Bulk loading; trans-port exchange point.	Solid and liquid bulk; transport, commercial and industrial centre.	Bulk and container loading; integrated transport system/logistics platform for international trade.
Type of activity	Loading, unloading, warehousing, shipping services; quays and adjacent maritime areas.	Loading, unloading, warehousing, shipping services; cargo transformation; industrial and commercial services connected to ships; larger port area.	Loading, unloading, warehousing, shipping services; cargo transformation; cargo distribution and information; logistics activities; terminal and port extension ashore.
Organisation features	Independent activities within ports; informal connection between ports and users.	Greater connection between ports and users; poor contacts between port activities; limited contacts between ports and adjacent municipalities.	The port community is compact; port integration through a commercial and transport chain; high connection between ports and areas; greater port organisation.
Production features	Load flow; individual service; low added value.	Load flow; cargo transformation; combined services; improved added value.	Information and load flow; multiple service package; high added value; technology/know-how.

Adapted from UNCTAD 1992.

specialized port facilities like port equipment, coping with the multiplying differentiated areas and the existence of adequate facilities for liquid cargoes, solid and combined goods, along with equipment like cranes, transtainers, containers, terminal automation, etc., which are the essential elements for the consolidation of a hub.

The second type of analysis focuses on ships; port functions require



TABLE 7 Evolution of the features of port facilities

Feature	Beforehand	Now
Stop time	Long. It used to be an important factor.	Short. At present it is very important and as short as possible.
Efficiency	It used to be determined by inventory needs.	Nowadays, the main factor is goods flows management.
Added value	This concerned the concept of goods.	The key factors are invested capital, the existence and structure of global production chains and goods flows circulation.
Restrains	The effects and elements concerning space, time and connections were not taken into account.	Selective spaces (junctures and hubs) are integrated and connected; spaces and time are integrated; time and spaces are integrated.

[73]

the presence of fundamental features that can guarantee the presence of load units like control, access and circulation towers, tugboats, room for manoeuvre, the capability of immobilizing ships, supplies, energy, water and ship repair: these are all good examples of the new and indispensable requirements.

The start of the ‘second logistics revolution’ in maritime transport and in port organisational structures has forced ports to equip themselves with specialized terminals and new facilities. If transport is carried out without breaking up the cargo and through one or more transport modes, it is easier to manage, load, unload and store. Besides, investments in port infrastructures are likely to have greater success than other activities because they generate greater productivity since a container quay can contain and store ten times more loads/goods than a standard quay.

Many port infrastructures are converted into goods exchange platforms; this growth determines the creation of maritime hubs (networks junctions) where mother ships that feed average-size container carriers (feeders) stop, thereby bringing about a new balance: hub/core + logistics platform. This triggers the new development trends of port facilities.

Ports gain importance as ‘functional junctures’ again and carry out

[74] attraction and traffic search functions; they also give impetus through specific territorial development dynamics in order to influence and deviate goods flows. The new port goals translate into: (a) attracting new goods traffic; (b) connecting economic areas and formalizing transport corridors; (c) attracting investments to stimulate territorial and economic development; (d) stimulating 'land-sea' interfaces; (e) constantly adjusting to the new institutional norms and to the economic regulations. This new dynamic determines specialized port growth, greater partnership processes and privatizations that increase rivalry and competence.

THE SPANISH PORT SYSTEM AND THE NEW LAW

*The Structure of the Spanish Port System*

The Spanish port system is made up of 28 Port Authorities that include 64 ports of general interest. Such Port Authorities are individual management units coordinated by the Public Authority 'Puertos del Estado,' which is in charge of carrying out and implementing the port policy drawn up by the government. Law 27/1992 placed the Puertos del Estado in charge of the 'general coordination, along with the various bodies that make up the Administración General del Estado, of the control of port space and of transport modes within state jurisdiction as far as port activities are concerned' (Article 25b).

It must be pointed out that the Spanish Constitution (Article 149) states that ports of general interest are within the exclusive jurisdiction of the State. Controls are carried out with the purpose of analysing the security of assets, the reliability of financial information and the creation of the relevant laws and norms. In spite of this, port laws stress the fact that every Port Authority will carry out its enterprise autonomously. This means that the Spanish port system relies on the Port Authority Puertos del Estado, which acts as intermediary (for the State management and administration), as a management body (with reference to the execution and revision of all actions taken by each Port Authority) and as a collaboration body (mentioned in the Port Authorities common agreement and its corresponding amendments)

The Spanish port system is characterised by a whole range of ports. They can be subdivided as follows:



- By traffic volumes and type. There is a group of ports that generate the movement of over 10 million tonnes and others with a traffic level below a million tonnes. Many of them are specialized in liquid bulks, others in solid bulks. There are some ports where general goods are prevalent and others where container traffic is predominant.
- For being part of international maritime networks. Some ports have substantial connections with maritime routes and with regular transshipment routes.
- There are ports that are closely bound to their hinterlands and can cope with the import/export flows thanks to them.
- There is a high port proliferation beyond the Spanish coastline.

[75]

Those ports reflect the location of industrial economic areas and it can be maintained that no Spanish economic location lacks port connections.

In short, the Spanish port system is distributed along four directrices: (a) the Cantabrian directrix, which stretches from Gijón to Pasajes and includes the ports of Avilés, Gijón, Santander, Bilbao and Pasajes; (b) the Galician directrix that includes five Port Authorities and six ports: San Cibrao, Ferrol, La Coruña, Vilagarcía, Marin and Vigo; (c) the Mediterranean directrix, which includes a large number of port roadsteads. It includes the Port Authorities of Huelva, Cádiz, Sevilla, Algeciras, Málaga, Motril, Almería, Cartagena, Alicante, Valencia, Castellón, Tarragona, Barcelona and the Balearic Islands as well as the ports of the cities of Ceuta and Melilla. In total, they make up 24 ports; (d) lastly, the ports of the Canary Islands, which include seven roadsteads pertaining to two Port Authorities: Las Palmas and Santa Cruz de Tenerife.

Traffic volumes have increased considerably over the last few years with substantial growth rates. Every port could benefit from this increase because they were all involved in the traffic.

Trends are characterised by a high level of specialization and differentiation. Among the ports specialized in liquid bulk there are Cartagena, Huelva, Castellón, Bilbao, Tarragona and La Coruña, whereas among the ports specialized in solid bulks there are Gijón, Tarrag-

TABLE 8 Port ranking 2009 (in tons)

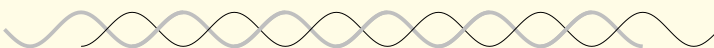
Port	Traffic	Port	Traffic
B. Algeciras	64,203,256	Sevilla	4,501,492
Valencia	57,507,523	Santander	4,422,231
Barcelona	41,793,734	Avilés	3,950,444
Bilbao	31,604,448	Almería	3,836,168
Tarragona	31,310,047	Cádiz	3,835,981
Cartagena	20,513,425	Vigo	3,525,971
Las Palmas	19,034,434	Pasajes	3,467,740
Huelva	17,538,873	Alicante	2,485,821
s c Tenerife	15,012,389	Ceuta	2,201,751
Gijón	14,497,282	Malaga	2,075,342
Ferrol	12,232,590	Motril	1,945,316
Balearic Islands	11,753,831	Marin	1,641,928
La Coruña	11,496,378	Vilagarcía	958,240
Castellon	11,073,077	Melilla	823,202

TABLE 9 Port traffic in Spain 2009

Liquid bulk		143,529,909
Solid bulk		79,133,203
General goods	Conventional	48,652,266
	Containers	127,927,536
	Total	176,579,802
Total port traffic		399,242,914
Other data	Containers number (thousand TEUS)	11,749,298
	Ship number	113,72
	Ship dimensions (GT)	1,619,337
	Passengers number (thousands)	25,328

ona, Ferrol and Huelva. As for goods, Valencia ranks first, followed by Barcelona, Algeciras, Las Palmas, Santa Cruz de Tenerife, Castellon and Vigo, whereas Valencia, Algeciras, Barcelona, Las Palmas and Bilbao stand out for container movements. The most important ports for ro-ro are Barcelona, the Balearic Islands and Valencia, whereas Barcelona ranks first in cruise traffic, followed by the Balearic Islands.

The Spanish port system could benefit from great investments that



were made starting from the early 1980s. Resources were allocated for the construction, adjustment and creation of new infrastructures and equipment. About 9,000 million Euro were invested between 2000 and 2009; this amount was used to create a total of 15,796 meters for mooring, 670 hectares of land surface and 801 hectares of protected waters. [77]

It was observed that the investments made to restructure infrastructures were greater than the capability of attracting new traffic. This means that the Spanish port system is quite capable of coping with new traffic increases and with new lines that stop at port roadsteads.

*The Networks Set Down by the New Law*

The new Spanish port law 33/2010 of the 5th of August changed the law 48/2003 on economic rules governing ports and on port service performance. It was approved by a large majority of the Spanish legislative assemblies because there was a wide parliamentary consensus. The new law gives the port system its own stable and permanent legal framework according to which it is possible to optimize the development of each port and of each combined system so as to contribute to a sustainable growth of the Spanish trade and economy.

The contents of the new law have created the basis for a balance between criteria and goals, which may appear contradictory at first, whereas in fact these elements can be brought under the same roof. In order to make this clear, here is a list of the contradicting elements for which the law strives to find a balance:

- 1 management autonomy under state control
- 2 tariff moderation versus profitability
- 3 flexibility versus supervision
- 4 free market versus regulation
- 5 independent planning versus network integration

Projects have focussed on drawing up a port model that can include various policies and build a body that can integrate them all.

Six integrated policies have been defined that include: State intervention and coordination on industrial policies (meeting the demands of industrial and service specialization like those of the automobile industry or fishing); implementing port maritime activities (this con-

[78] cerns terminal operators, general operators and technical and nautical services); respecting integration concepts in transport modes (through interoperativity, intermodality and networks adjustment); respecting territories (so that local and regional policies can be sustained and protected while bearing in mind the relations between ports and cities); social aspects (to make sure that social and economic stakeholders are represented and involved) and environmental aspects (that is the challenge posed by sustainability along with the need to improve levels).

Which are the new concepts introduced by the law? They are basically ten.

- 1 Greater tariff freedom. Port Authorities can put forward their own tariffs for taxes on ships in transit and for goods depending on their economic situation. The law aims at moving away from the former rigid system.
- 2 Strict economic and financial control based on rationality and balance criteria. The port system must reach an annual profitability of 2.5%.
- 3 Creating ports that are more attractive for private enterprises. This is done to offer greater chances to companies that are interested in establishing their businesses in the area of port services in a given territory by creating activities linked to transport and logistics. In their case, the employment tax becomes more flexible and there are greater contributions for investments made with own capital.
- 4 Safeguarding competition. Free access to port service performances is set down. This means that all the companies that respect the requirements set down by Port Authorities have the right to have a licence to provide port services. At the same time, the application range of self-employment and of services integration is extended with the aim of meeting the needs of all port customers. This enables one to make sure that there are free market rules in every port, while the system is regulated by a framework of fair competition among ports. A new management model concerning labourers is also regulated through a new entity, the Sociedad Anónima de Gestión de Estibadores





Portuarios (SAGEP), which replaces the previous dichotomy that made it possible to combine SEED (Sociedades Estatales de Estiba y Desestiba) and APIES (Agrupaciones Portuarias de Interés Económico).

- 5 More competitive ports in a global economy. Investments on taxes on ships in transit and goods are increased as much as possible in order to make Spanish ports as competitive as possible. This way, Port Authorities will be able to put forward greater investments on traffic with strategic interest, like import/export, maritime transit or specialized terminals like hubs. [79]
- 6 Quality and efficiency as keys to the future. The new law rewards Port Authorities that strive to rationalize the restructuring of infrastructures and to approve infrastructures and facilities, thereby making investments easier in terms of productivity and return level.
- 7 Ports more committed in the social and economic contexts. This law includes several elements through which ports can strengthen connections with their own economic contexts and with cities. The framework for the creation of a solid integration between ports and urban and metropolitan areas is created and the implementation area of each one of them is clearly defined. The law contributes specifically to sustaining and supporting key sectors like the automobile sector and fishing.
- 8 Greater management autonomy through the President of the Port Authority. Greater leadership is awarded so that there is more room for manoeuvre and therefore greater responsibility in managing land and infrastructures and in regulating port service performances. This enables ports' autonomy to be increased, which gives greater autonomy to port systems.
- 9 Greater port integration in the transport system. This means that port authorities have to analyse inter-operativity between port roads and railways and the rest of the transport system of general interest. This is done to guarantee a balanced development of the transport network, which has to meet the demand for routes and goods transport in order to increase the inter-operativity of the various transport systems. The results at stake

with the coastline motorways are emphasized through a development and support formula that aims at guaranteeing regular and more efficient transport in intermodal and environmental terms.

[80]

- 10 A sustainability challenge. The new port law forces each Port Authority to draw up a sustainability report. Such report will be carefully monitored, and operators that offer port services on the basis of a licence, authorization or franchise through good environmental practices will be rewarded with investments.

In short, ports as management units must offer goods owners and maritime carriers the best infrastructures and the best services in comparison with other ports whose influence areas overlap so as to be able to increase traffic. This means that the new port law enables logistics and port costs to be reduced, in order to stimulate competition. This new legal framework grants each Port Authority the freedom to adjust to each territorial area and its specific service offer, thereby stimulating competition between other operators and enabling them to develop the licence models that have been used so far.

Since in most cases infrastructures and services are not offered by a single entity, port competition translates into logistics or port chains; this is 'door to door transport' in contrast with the 'port to port' concept used in the past.

Ports are part of this chain and so they do not want to have direct control over it, since they want to have traffics and become part of multimodal chains through vital entrepreneurial alliances.

#### FINAL CONSIDERATIONS: THE BASIS FOR THE POLITICAL IMPLEMENTATION

The Spanish port system has a distinctive feature: its geographical location adjacent to the great maritime transport routes that can be transformed into a logistics platform for the development of maritime trade. At the same time, ports have a relevant role in external trade since port traffics make up 85% of imports and 60% of exports. This makes ports the 'entry/exit gateway' of local and regional economies.

This means that there is a high number of ports of different dimen-



sions that are located along the coast and that create a bridge between the sea and the territory.

Data on Spanish ports and their traffics in 2010 have been published. Inter annual taxes, that is data on the corresponding month in comparison with the preceding month of the previous year, are over 8% for general goods and 9% for containers. As for the total traffic, in August 2010 it was similar to the level reached in October 2008, which corresponds to a U form, that is to an initial improvement. At the same time, present infrastructures and port structures are sufficient to cover a 6% annual increase in the next five years.

[81]

Our challenge is creating a new entrepreneurial culture in management. Goals are set so as to provide Port Authorities with advanced management autonomy, with economic and financial self-sufficiency, with greater chances of finding more liberalised port services, with a more pragmatic regulation of the public domain in terms of port activities by increasing links with cities; this is done also to reduce port competition and to introduce mechanisms that enable them to have more flexible port taxes.

At present we have a more stable legal framework and we have increased port autonomy, because we have higher coordination and regulation levels thanks to the Public Authority Puertos del Estado. In short, there is a 'new state perception' that derives from the procedure included in the implementation of the new law. It must be pointed out that this law contributes to sustaining both vital economic sectors and the coastal areas close to them.

Expectations for the next financial years are flattering because of the challenge consisting in the integration of maritime and port networks, of the inclusion in global supply chains and of the greater skills possessed by management and qualified personnel that will enable the Spanish port system to experience a *port rebirth*.

This law enables ports to take advantage of the turning point in the port dimension and, on the basis of this dynamic, 'ports will have to cease to be places and become spaces;' 'ports will stop worrying about form and will invest in processes;' last, but not least, 'ports are enterprises' because they will have to generate profit and added value by joining forces with supplied services.

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# Identifying the Right ‘Fit’ What Can Libya Learn from Port Devolution in Malaysia?

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DESPITE THE FACT that Libya and Malaysia are located in different regions of the world, both countries have several ports which operate in similar environments. Malaysian ports have grown quickly since the end of the 1980s, to emerge as efficient, effective and productive. Libya’s government has developed the ambitious objective for its port sector of increasing container throughput in the country’s ports and to participate in the competition to become one of the hub container ports in the Mediterranean. This paper analyzes the results achieved from a change in Malaysia’s port structure and strategy. It then shows that the current situation within Libya’s ports parallels that of Malaysia prior to its implementation of a port devolution policy. A Matching Framework analysis is applied to compare the general situation of the two countries at three different points in time. The final point in time for the Libyan case is deemed to lie at some time in the future and is constructed from the results of the Malaysian success with its implementation of a policy of port devolution. In order to respond to the dynamic operating environment and the new government strategy affecting the Libyan port sector, the paper concludes that an organic structure may provide the best solution for the future success of Libya’s container port industry.

## INTRODUCTION

Libya is located on the southern side of the Mediterranean basin, a region where many ports compete to attract large volumes of transshipment traffic from the principal East-West container shipping lanes. Although Malaysia is located in South-East Asia, its main ports are similarly situated on the Malacca Straits, one of the busiest and most

[84]

important areas of the world for international shipping. Both are developing nations with almost the same level of GDP and both are muslim countries with reasonably comparable cultures. Within the context of the container port sector, the two nations operate in similar environments. In addition, the current economic and port policies of Libya are similar to those that prevailed in Malaysia prior to its implementation of port devolution. However, while Malaysia successfully competes for container transshipment trade within its regional port system, Libya merely has the ambition to do so within its region of interest, the Eastern Mediterranean.

At the end of the 1980s, Malaysia's port development strategy was radically altered, through the adoption of a policy of port devolution. The main objective was to attract transshipment cargoes that were then served by the port of Singapore. Since that time, Malaysian ports have grown both quickly and successfully, built on their efficient, effective and productive performance, with two of Malaysia's ports now positioned as regional hubs. Because Malaysia's port environment and strategies prior to the implementation of its policy of port devolution are almost the same as those of Libya now, the Malaysian case has been selected as an exemplar for Libya's aspirations with respect to its container port sector. Consequently, the approach adopted herein is to review Malaysia's success retrospectively in order to understand Libya's challenges and its potential to follow a comparably successful path through port devolution.

By applying a matching framework at different points in time, this paper analyzes and explains the success of Malaysian container ports. It then aims to transfer that experience by predicting the best future 'fit' of environment, strategy and structure for Libya in order to fulfil its objectives for the nation's container port sector; to enhance performance and convert Libya into a regional container hub. This is achieved through a process of 'benchmarking' port devolution processes.

This paper begins with an overview of the matching framework theory, including a discussion of its pivotal components; environment, strategy and structure. It then provides a brief description of benchmarking and a justification for using the matching framework as the



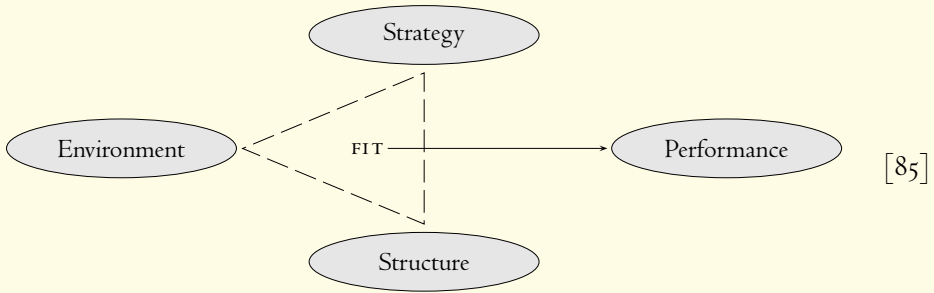


FIGURE 1 The matching framework

basis for benchmarking Libya's container port sector against that of Malaysia. The third section analyzes the main macroeconomic and port policies of the two countries, with specific attention paid to the port industry environment, strategy and structure. The matching framework analysis is conducted in the fourth section, with conclusions drawn and an agenda for further research outlined in the fifth section.

#### THEORETICAL BACKGROUND

Under the matching framework (Baltazar and Brooks 2001) illustrated in figure 1, the process which leads to the better performance of an organisation involves the facilitation of better or more appropriate matching between the characteristics of an organisation's environment, strategy and structure. The matching framework was developed from contingency theory, which itself has its roots in organisation theory and strategic management. The pivotal aspect of the theory underpinning the matching framework is the environment, in particular the operating environment, which has a direct impact on the organisation. The environment, as defined by Miles and Snow (1978), is not a homogeneous entity, but is composed of a complex combination of factors. Underlying theory calls for changes in organisational strategies and/or structure that are attributable to changes in the environment.

Connor, Lake and Stackman (2003) pointed out that there are two sources of change. External sources of change include those elements of the external environment identified by Daft (1992), namely: economic conditions, government, socio-cultural, international sector, in-

[86]

dustry, raw materials, human resources, financial resources, market and technology. The internal sources of change include new knowledge learned, new goals and changes in organisational resources. However, Shrivastava (1994) argues that the environment of an organisation consists of the continually changing competitive marketplace operating within a global economy, and the factors mentioned above represent the forces which impact upon such an environment.

Uncertainty is the outcome of changes in the operating environment. Daft (1992) described the environment as being of low or high uncertainty. High uncertainty environments consist of a large number of dissimilar factors (complex); these factors change frequently and unpredictably. In contrast, with low uncertainty, these factors work in the opposite way. He further argued that environmental uncertainty represented an important contingency for an organisation's structure and internal behaviour. From an organisational theorist's point of view, adjusting the organisation's structure is the best tool for facing uncertainty.

In their seminal work, Burns and Stalker (1961) propose that a close functional relationship exists between the formal structure of an organization and its performance and that this is closely linked to the nature of the business environment in which it is operating. They conclude that dynamic and uncertain environments are best addressed by the adoption of an *organic* structure. This refers to a concept applied in contingency theory to describe an organizational structure that is characterised by a virtual absence of formal hierarchy where the emphasis is on horizontal, rather than vertical coordination, a lack of rigid procedures, very limited functional specialisation and only minimal specification of individual work roles. This form of structure is purported to rely on the power of individual personality and to promote communication and teamwork in the form of loosely-coupled networks of multi-talented individuals who each perform a variety of tasks. It is designed to promote flexibility so that employees can initiate change and adapt quickly to changing conditions (George 2005).

The organic structure lies in counterpoint to a *mechanistic* structure (Weber 1947), which is characterised by being highly centralised and stringently formal, with work distributed to highly specialised roles within a clearly defined hierarchy so as to induce employees to behave





predictably and with accountability. Because roles and routines are formally embedded within the organisation, there is a tendency towards the existence of functional silos. This, together with the fact that senior management is often separated from the dynamic reality of what is happening in the marketplace by multiple layers of bureaucratic hierarchy (Mintzberg 1978), means that this form of organisation structure does not respond quickly or well to environmental turbulence and is, therefore, best suited to more stable or certain environments (George 2005). In other words, this body of theory suggests that formalization decreases organizational adaptability to environmental changes (i.e. organizational agility), thereby increasing the risk of organizational failure. Most empirical studies investigating the validity of this theory (see, for example, Glisson and Martin 1980; Aiken, Bacharach, and French 1980; Covin and Slevin 1989) have supported the proposed inverse correlation between formalization and firm performance in dynamic environments, thus confirming that organizations in dynamic environments do indeed appear to perform better if their structures are more organic. However, the vast majority of these analyses have been based on samples of large and mature organizations and a question remains over whether the relationship is also upheld for smaller organizations in emergent markets (Sine, Mitsuhashi, and Kirsch 2006; Wally and Baum 1994).

[87]

Strategic management has different views with respect to dealing with the environment. Porter (1980; 1985) argues that the organisation may alter its operational environment to cope with change; the organisation may choose, for example, a cost leadership strategy (which is an efficiency strategy) or differentiation (which is an effectiveness strategy). Miles and Snow (1978) argued that the organisation may choose between a defender and a prospector strategy; the former is an efficiency strategy, whilst the latter is innovation. The chosen approach represents a change in the strategy, rather than in the environment itself. However, even if changing the strategy is the solution to facing uncertainty, reengineering the organisation's structure is still necessary. Connor, Lake, and Stackman (2003), Shrivastava (1994), Dobson, Starkey, and Richards (2004), Rosen (1995), Miles and Snow (1978) and Miller (1986) all argue that changing strategy requires changes in the organisation's structure.

TABLE 1 The configuration of the matching framework

Organisation characteristics	Configuration 1	Configuration 2
Environment	Low uncertainty Low complexity and dynamism	High uncertainty High complexity and dynamism
Strategy	Efficiency-oriented Delivery of the basic product or services	Effectiveness-oriented Delivery of peripheral products and services
Structure	Mechanistic Centralised; standardization	Organics Decentralised; mutual adjustment

Adapted from Baltazar and Brooks (2001).

[88]

The aforementioned theories yielded configuration theory, which was aimed at matching environment-strategy-structure in a way which affected or influenced performance. Quite simply, an uncertain environment needs an organic structure and an effectiveness strategy, while a stable environment requires a mechanistic structure and an efficiency-oriented strategy. In consequence, an alternative conceptualisation of the matching framework presented in figure 1 emerges as summarised in table 1.

One of the drivers for change in any given organisation is its operational environment. The seaport industry is no exception, especially since it operates in such a dynamic environment. This dynamism can be attributed to product globalisation, the growth of international trade and technological development in the shipping industry, in addition to inter- and intra-port competition. All of these factors are interrelated; trade growth has had an impact on the world container fleet, which has had an effect on the schedules of shipping lines, where ever-larger vessels have been deployed and more frequent services implemented (Cullinane and Khanna 2000; Notteboom and Winkelmanns 2001; Notteboom 2007).

The movement of containers by larger vessels in hub and spoke systems has secured economies of scale for shipping lines and shippers as the number of port calls in a given region is reduced (Cullinane and Khanna 1999). Thus, ports in the same region compete aggressively for the transshipment of cargoes and for the opportunity to act as a hub (Cullinane and Khanna 2000). Robinson (2002) points out that



ports need to consider themselves as elements within value-driven supply chains; providing value to different parties involved in the system. As such, they provide general logistics and value-added services and, inevitably, this involvement of different parties with different interests makes the port industry more complex. In particular, an important emergent contemporary trend lies with the extension of inland freight distribution to capture cargoes at source and, ergo, to enhance the competitive market positions of ports in the market (Notteboom and Rodrigue 2005). This, together with other recent phenomena, such as the globalisation and increasing concentration of both liner shipping and port industries, has necessitated the adoption of new approaches to port governance.

[89]

The United Nations Conference on Trade and Development (UNCTAD 2007) states that a well-run and efficient port can attract transshipment and, therefore, does not have to depend on domestic supply and demand. Ng (2006) identifies several factors that play an important role in attracting shipping lines to use a port and, therefore, support efforts to establish the transshipment status of a port. These factors include monetary cost, time efficiency (which together make up what is referred to as the *generalised cost* of port calls), geographical location and quality of services offered. This latter factor relates specifically to the effectiveness of ports which, as stated by Brooks and Pallis (2008), leads to the enhanced competitiveness of ports. While enhancing productive efficiency remains an extremely important aspect of improving port operations (Cullinane, Ji, and Wang 2005; Cullinane et al. 2005; Wang and Cullinane 2006; Cullinane and Wang 2006) and a pivotal element of the wider concept of port effectiveness, the matching framework concept suggests that effectiveness-oriented strategies require organic structures to support them and that these are characterised by the flexibility and decentralisation of decision making, both of which can be achieved via the implementation of a policy of port devolution.

Devolution policy includes privatisation as a response to the dynamism of the external port environment and the attempt to ensure that a nation's ports secure a sustainable foothold in the market. The policy includes different approaches, which result in the creation of an

[90]

organic structure; these approaches (decentralisation, corporatisation, commercialisation and privatisation) were all reviewed on the basis of international experience in Brooks and Cullinane (2007). The selection of an appropriate approach that would lead to net benefits in terms of port performance is subject to other factors, such as the major aims and objectives of the government or national port authority. These might include: solving port problems, modernising terminals, introducing new sources of investment, increasing efficiency, reducing port costs and expanding national trade. All or some of these factors have driven changes in port policy in many countries across the world. For instance, the UK government privatised ports primarily to reduce the financial burden on its shoulders (Baird 2000). In Latin America, sources of investment were the major objective behind the implementation of a devolution approach.

Under the matching framework (Baltazar and Brooks 2007), port performance is the outcome of the match or fit between an organisation's external operating environment and its strategies and structure. A better fit will yield better performance, and a poorer fit leads to unfavourable performance. Within the context of the port sector, performance relates to the achievement of government's goals, whatever those goals may be. The matching framework is useful for researchers exploring the performance implications of management decisions in areas which affect the framework variables (Baltazar and Brooks 2007).

If performance leads to success and benchmarking is understood as learning from those who have achieved a superior performance, in order to enhance an organisation's or country's performance, and to achieve a satisfactory level of performance, then the matching framework as applied in this paper might be understood as a fundamental tool for 'benchmarking' port devolution processes. The authors follow Camp (1989, 3), who defines benchmarking as a 'positive, proactive process to change operations in a structured fashion to achieve superior performance.' He states that the benefits of benchmarking 'are that functions are forced to investigate external industry best practices and incorporate those practices into their operation. This leads to profitable, high-asset utilisation businesses that meet customer needs and have a competitive advantage.'

Further, Harris (1995, 16) states that 'benchmarking is the art of



finding out – in a completely straightforward and open way – how others go about organizing and implementing the same things you do or that you plan to do. The idea is not simply to compare your efficiency with others but rather to find out what exact process, procedures, or technological applications produced better results. And when you find something better to use, copy it or even improve upon it still further.' In this respect, the objective of this paper is to benchmark the process that leads to the satisfactory performance of container ports, instead of benchmarking the performance itself, or the technical efficiency of the ports of the two countries. Therefore, the matching framework of Baltazar and Brooks (2001) will be applied in order to go beyond the comparison of technical efficiency in order to understand the processes (as expressed in terms of environment, strategy and structure) that lead to the desired level of port performance.

[91]

UNDERSTANDING ENVIRONMENT, STRATEGY  
AND STRUCTURE IN MALAYSIA AND LIBYA

*Geographical Location*

Malaysia is located in South-East Asia and has a total area of 329,750 km<sup>2</sup> and a coastline of 4,675 km. The country can be divided into two parts. The first is the Malaysian Peninsula (formerly West Malaysia) on the Asian mainland, which is bordered on the north by Thailand, on the east by the South China Sea, on the south by the Strait of Johor, and on the west by the Strait of Malacca and the Andaman Sea. The second part is formed by the states of Sarawak and Sabah, known as East Malaysia, located on the island of Borneo and bordered by Brunei in the north, Indonesia in the east and south, and the South China Sea on the west. Its geographic location puts the country in a central position on the Malacca Strait and consequently represents only a minor deviation for ships transiting the principal East-West trade lanes. The strait is one of the world's most important sea lanes, with about 60,000 ships carrying half of the world's oil and more than one-third of the world's traded commodities, passing through every year (Zubir n.d.). Further, its location gives the country a strategic intermediate position for trade within and around the Indian Ocean and East Asia (see figure 2).

Libya is situated in the Mediterranean in the centre of the North

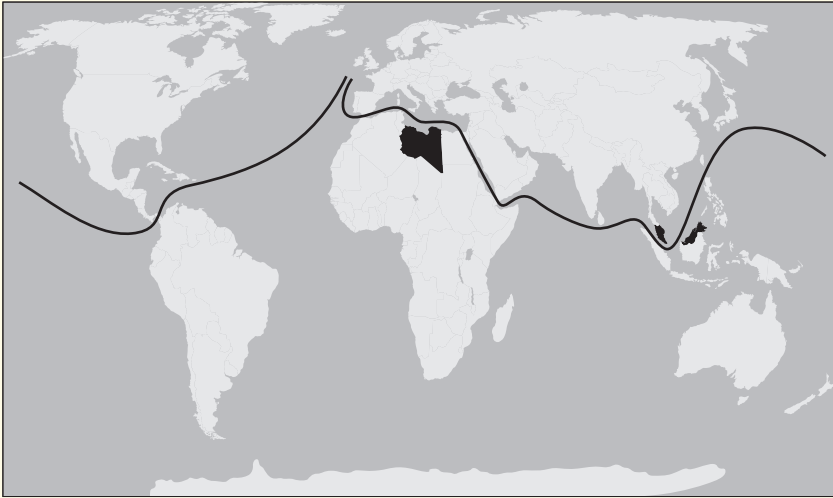


FIGURE 2 Libya and Malaysia with respect to the main shipping lanes

African coast. With an area of 1,759,540 sq km and a coastline of about 1,970 km, the neighbouring countries are: Egypt in the east, Sudan in the south-east, Chad and Niger in the south, Algeria in the west and Tunisia in the north-west (Otman and Karlberg 2007). The principal cities are Tripoli, (the capital of the country), Benghazi (the second largest city) and Misurata. The importance of Libya's location lies in the fact in it holds an intermediate position between Europe, Africa and Asia (Salama and Flanagan 2005). UNCTAD (2008) has pointed out that Libya, Tunisia, Somalia, Eritrea, Sudan and Yemen are the African countries least distant from principal international shipping lanes (see figure 2). Furthermore, Libya has the potential to act as a gateway to other African nations, particularly the landlocked countries to its south (Ghashat 2009).

*Macroeconomic and General Policies*

Malaysia

Malaysia is among the most successful economies in South-East Asia. Since the 1970s, it has successfully evolved from a reliance on the primary sector to being a multi-sector trading economy with particular strength in manufacturing. In 2009, its GDP per capita was \$14,700



(CIA 2009) and industry represented 43.7% of the country's total GDP (World Economic Forum 2009). GDP has grown consistently since the end of the 1970s when it stood at just below \$3,000 per capita (World Economic Forum 2009).

One of the principal reasons for the economic success achieved by Malaysia was the implementation of the New Economic Policy (NEP) introduced at the beginning of the 1970s. The main aims of this policy were the reduction of poverty and economic restructuring. In the middle of the 1970s, the country focussed on expanding its industry, and a series of development plans were implemented to achieve these goals. In the mid-1980s, the Malaysian government enforced a change in its general policy, in order to deal with the international recession which occurred. Thus, the country liberalised its economy, with a remarkable emphasis on privatisation. The new policy was implemented carefully and gradually (Otman and Karlberg 2007). However, from the sixth Malaysian national plan, which lasted from 1990 to 1995, more attention was paid to manufacturing, and to facilitating trade and intermediary trade (Mak and Tai 2001).

[93]

### Libya

Libya's economy relies heavily on the oil sector. Oil revenues, coupled with a small population, have provided Libya with one of the highest per capita GDPs in Africa and the Middle East. In 2009, it stood at \$14,400 (CIA 2009). The oil sector contributed to slightly more than 25% of total GDP between 2003 and 2007, whilst the contribution of the non-oil sector ranged between 72.3% and 76.5%. As a result of this dependence on the country's oil sector, GDP is affected by changes in the oil price (International Monetary Fund 2006). In general, Libya's GDP has witnessed a fairly constant increase, with some fluctuations around a mean rate of growth. In 2005, the rate of growth was 9.9%, and in 2008, it decreased to 3.8%. (International Monetary Fund 2007; World Food Programme 2009).

Libya has always been supportive of state-owned enterprises and civil service employment and has utilised oil sector revenue for this purpose. However, since the lifting of sanctions at the beginning of the twenty-first century that had been imposed on Libya by the United

TABLE 2 Key general indicators for Libya and Malaysia in 2008

Category	Libya	Malaysia
Population (millions)	6.3	27
GDP, 2008 (billions USD)	100.1	222.1
GDP per capita (USD)	14,400.0	14,700.0
Real GDP growth, 2008	3.8%	4.6%
GDP components	Agriculture 1.7%, industry 70.9%, services 27.4%	Agriculture 10.1%, industry 43.7%, services 46.3%
Major policies	Struggling to find alternative sources of income, Privatisation considered, Liberalisation of the economy and moving towards the market in an effort to benefit society.	Moved away from being a single source of income economy, the economy already liberalised, privatisation has been implemented successfully, society has already benefited

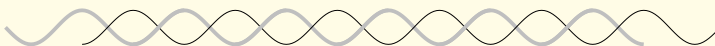
Adapted from CIA (2009), World Economic Forum (2008), International Monetary Fund (2007), Central Bank of Libya (2008) and Otman and Karlberg (2007).

Nations from the early 1990s, the economy of the country has witnessed remarkable growth (Otman and Karlberg 2007). The privatization programme announced in 2003 has contributed to this growth of the country's economy. The government has been preparing the nation for a move towards a market economy, and re-engaging the country in the global economy. At the current time, attention is being paid to developing and upgrading different specific industrial sectors, such as tourism and fishing, in order to diversify the economy away from the oil sector. A more equitable distribution of the country's wealth among its citizens is another main concern of the government.

### *Port Industry Overview*

#### Malaysia

The main container ports of the country are Port Klang, Port of Tanjung Pelepas (PTP) and Penang, which are located on the Malaysian Peninsula. Port Klang is the largest in the country and serves the industrialized region of the country. In 2005, the port was the 12th largest port in the world. The Port of Tanjung Pelepas (PTP) is the tranship-







[95]

FIGURE 3 The location of Malaysia's major ports

ment hub of the country and has been one of the fastest growing ports in the world since it started operations in 1999. Penang Port is the gateway to the northern region of the peninsula. It serves the Malaysia-Indonesia-Thailand triangle. The port is well connected by different modes of transportation. Johor Port handles a variety of cargos and has storage and logistics facilities. It has attracted major carriers such as Wan Hai, Evergreen and PIL. Kuantan Port and Kemaman serve the oil, chemical, gas and petrochemical industries. The focus of this paper is mainly on the major container ports of the country (Port Klang and PTP – see figure 3).

*External Environment.* The South-East Asia region has witnessed remarkable economic growth over recent decades. This has led to the region's current status of enhanced importance for the shipping industry and to the development of the region's ports. The ports in the region have not only expanded remarkably but, since they strategically connect the major economic blocks across the world, they are also competing intensely with each other to attract customers and to position themselves as transshipment hubs within the region.

The most important issue affecting Malaysia's external environment was the global crisis which occurred in 1985. This played an important role in prompting the strategy to alter the structure of the Malaysian economy from being based on agriculture, to one which now revolves around manufacturing and trading. This strategy required the readjustment and development of the country's transporta-

tion system, as well as other sectors which would play an important role in the country's economy. As an integral part of this initiative, Malaysian ports entered the competition for the regional market with the specific aim of serving the country's own trade and competing for transshipment traffic.

[96]

*Strategy.* While Malaysia focussed both on building the state and on national integration in the 1980s, the country's trade depended mainly on the port of Singapore. At that time the port of Singapore was more efficient, and provided lower transactions costs, than any of the Malaysian ports. For the sixth national plan, which covered the period 1990–1995, more attention was paid to facilitating trade and intermediary trade (Fung and Lee 2007). As a consequence of this, the Malaysian government adopted a policy for the port sector aimed at capturing Malaysian cargo so that it would be served through the country's ports, instead of through the port of Singapore.

For achieving the core of the country's port strategy, the state aimed at converting Port Klang to a national load centre, and then a regional hub port and transshipment centre. This ambition was supported by the policies of the country, which were aimed at: (a) developing and expanding the facilities of the port; (b) utilising the existing port facilities; (c) improving the performance of the port and; (d) as a precursor to the port privatisation, initiatives would aim to develop and improve ancillary services, landside transportation and the computerisation of port operations.

The seventh Malaysian plan (1996–2000) involved enhancing the position of Port Klang as a national load centre and establishing free trade zones at the port. The most important aspect of port strategy was allowing foreign equity to be invested in dedicated terminal projects (Mak and Tai 2001). The overall strategy focussed on capturing local cargo and serving it through the country's ports, enhancing the competitive situation of the nation's ports by introducing skilled management and building internal capacity, and then competing with the ports of other nations within the region in attracting transshipment. In so doing, privatisation was adopted and foreign investors were attracted.

*Structure.* In 1986, all Malaysian ports were part of the public sector.



The first step in port devolution was privatising Port Klang. The port was selected as the first public enterprise to be privatised, as a test of the consequences of the government policy of privatisation (Ozman and Karlberg 2007). Four berths for container operations were awarded to Klang Container Terminal (KCT), a joint venture between the Port Klang Authority (PKA) and Konnas Terminal Kelang (KTK), with a 49% and 51% share respectively (Peters 1995; Khalid 2007). The new company leased the facilities for 21 years. The Malaysian government then sold 40% of KCT to the public in order to secure benefits for the public and protect it from privatisation (Peters 1995). After the sale, 20% of the company's shares were in the hands of PKA, 40% were with KTK, 5% were sold to KCT employees and the general public bought 35% of the total share capital.

[97]

The second phase of devolution started in 1990 when an Act on port privatisation was introduced by the government. This action was taken in order to enhance the efficiency of the country's ports and solve the insufficiency of the country's port facilities, both of which were stemming any growth in throughput. About 30% of Malaysia's throughput was being diverted to the port of Singapore (Indran 1992). Facilitating further private sector participation in the port sector was aimed at introducing more equity capital to the sector and making the country's ports more competitive within the region (Malaysian Transport Minister, cited in Reyes 2001).

The third phase of port devolution began in 1994 when the new facilities on Pulau Lumut Island were devolved to Klang Multi Terminal Sdn Bhd (KMT), which is known as Westport (Phang 2000). After the 1990s witnessed the privatisation of Penang, Kuantan and Bintulu ports, the beginning of the 21st century witnessed an increasing participation of the private sector in the country's ports, coupled with a continuous increase in container throughput. The latter was particularly driven by the new involvement of major carriers in the Port of Tanjung Pelepas (PTP). In 2000, Maersk-Sealand bought a 30% share of PTP and a year later was joined by Evergreen, making the port the second largest transshipment port in the region (Lam and Yap 2008). Seven years later, the Malaysia Internal Shipping Company (MISC) signed a contract with Malaysian Mining Corporation (MMC), an investment

TABLE 3 Total container throughput at Malaysia's major ports (1986–2005)  
(million TEUS)

Port	1986	1991	1996	2001	2005
Port Klang	0.242	0.608	1.409	3.759	5.715
PfP	—	—	—	2.050	4.177

Adapted from Containerisation International (<http://www.ci-online.co.uk/>).

holding company that, in 2009, held 70% of PfP shares. It operates a container terminal at PfP and has become the port's third largest customer. In 2009, CMA-CGM became the fourth major customer at PfP (Anonymous 2009a). In addition to what has happened at PfP, other private sector companies hold a 30% stake in Port Klang (Hutchinson International), and manage the port's FTZ (the Dubai-based company, Jafza).

*Outcomes of port devolution.* Port devolution in Malaysia succeeded in enhancing Port Klang as a national load centre and consequently converting it and PfP into transshipment hubs (Khalid 2009). A sustained high level of growth in container throughput (see table 3) is due, in particular, to the development of dedicated terminals. In 2000, for instance, Maersk-Sealand shifted 2 million TEUS from Singapore to PfP and a year later Evergreen moved 1.2 million TEUS to PfP after signing a deal with the Malaysian port (Olivier 2005; UNCTAD, 2007). Both deals related largely to transshipment traffic. Based on Port Klang data, over 50% of the containers handled at the port between 2005 and 2008 were transshipment traffic, while Penang and Johor are the primary handlers for domestic trade.<sup>1</sup>

Privatisation led to increased investment in the port (augmented by government revenue) and improved efficiency in cargo handling (Galal et al. 1994; Agustin 1998). Table 4 shows the government's earnings from the three phases of privatisation of Port Klang. After the last phase, the productivity of the port had increased by 76%, employees' wages have increased by 78% and the quality of services has improved, a benefit felt by consumers. The new management has acted to enhance the quality of the labour force and improve skills. Haarmeyer and York (1993) and Galal et al. (1994) point to the fact that the general cost of the ports has been reduced by about half, the number of public-sector



TABLE 4 Payments received by the Malaysian government from privatising Port Klang

Year	New company	Method of devolution	Amount received by the government
1986	Klang Container Terminal	Sale, Lease of Assets	RM 111 million
1992	Klang Port Management	Sale, Lease of Assets	RM 361 million
1994	Klang Multi Terminal	Sale, Lease of Assets	RM 582 million*

\* The 1994 exchange rate was \$1 = RM 2.564 (see <http://wwp.greenwichmeantime.com/time-zone/asia/malaysia/currency.htm>). Adapted from Otman and Karlberg (2007).

container employees enlarged and the level of pensions has increased.

The role of the Malaysian government post-devolution has been limited to regulation. A regulatory body monitors private sector operations at the privatised ports to ensure they are conducted in a commercial manner. However, there was more than one regulatory body and each one had its own board of directors, headed by a chairman (Hand 2001; Khalid 2007).

### Libya

The National Planning Council (NPC) (2006) classifies the country's ports as either Major or Secondary and as any of Regional, Oil, Transit and Tourism ports. The principal ports relevant for the handling of containerized trade are: Benghazi, Misurata, Elkhoms and Tripoli (figure 4). Container throughput across all major Libyan ports did not exceed 300,000 TEUs in 2008 (Socialist Company Ports 2009).

*External Environment.* The Mediterranean basin is one of the most competitive port regions in the world, due to the fact that many ports are striving to attract high proportions of transshipment and to act as hubs for the east-west and north-south trade. The Mediterranean basin is segmented into three distinct regions, namely the Western, Central and Eastern (Zohil and Prijon 1999). The basin handled about 22 million TEUs a year in 2009. Several ports in the Mediterranean are operating as hubs, such as Algeciras, Valencia and Barcelona in the Western region, Gioia Tauro, Marsaxlokk and Taranto in the central region of the basin, and Piraeus, Izmir, Limassol, Damietta, Port Said



FIGURE 4 The location of Libya's major (●) and secondary (○) ports

and Alexandria in the Eastern region (Vassilopoulos 2004), the latter being in heavy competition with the ports in the central region.

Gouvernal, Debrie, and Slack (2005) state that the region has witnessed remarkable expansion and restructuring over the last decade. In recent years, more countries have sought to participate in the transshipment business. For example, Tunisia has reached the final stage of bidding for the building of a 5 million TEUS hub port at Enfida (Hailley 2009), and Algeria has given a concession to Dubai Ports World (DPW) to operate the container port of Tangier (Anonymous 2009b). These developments have contributed to the dynamic competitiveness of the Mediterranean container shipping environment.

Other factors influencing the environment include the political situation, the economic conditions and technological development. Salama and Flanagan (2005) and Ghashat (2009) have pointed to the fact that Libya is a stable country in terms of its political situation. The economic conditions, while still highly dependent on oil, exhibit constant growth rates, a slight expansion of trade (National Information Agency 2006) and an increasing contribution of the non-oil sector to GDP. At the same time, the Libyan government has engaged in strong efforts, particularly through a policy of privatisation, to lift the burden of providing financial support for public enterprises from its shoulders.

Libya is located in the triangle of existing hub ports in Egypt, Malta, Italy and the Western basin ports; the most competitive, central



part of the Mediterranean basin. The Libyan port sector has remained largely unchanged, in terms of infrastructure, management and operational structure, since the end of the 1970s. This lack of development has led to inefficiency and low productivity and the sector has been falling behind in comparison to those of other countries in the region. In consequence, the sector has become increasingly unable to cope with the growth in the country's economy (Ghashat 2009) and Libya now depends mainly on feeder vessels for serving the country's trade. As a result, its ports are not in direct competition for transshipment traffic with those in the rest of the region. Libyan ports have even lost some of their share of container traffic to neighbouring ports, largely due to the fact that the country's port sector is perceived as having low efficiency and is highly bureaucratic.

[101]

*Strategy.* As part of its general transport policy, the government of Libya aims to maintain and enhance the ports' infra- and superstructure with the intention of increasing the country's overall port capacity. In order to speed up cargo handling processes and enhance efficiency, the government has become very much aware of the importance of equipping ports with the most modern and sophisticated equipment needed to handle unitised cargo. Providing the sector with such equipment has thus become one of its priorities. Providing storage areas inside the ports is also considered important (Annual Report of the General People Committee and its Secretariats 2008). Retaining existing customers and trying to encourage others to use the country's ports, reducing congestion and shortening the time ships spend in port (especially in fulfilling purely bureaucratic requirements) are top priorities of the Libyan Marine Transport and Port Authority (LMTPA).

A key objective of the government is to convert some of the country's major ports to hubs in the Mediterranean basin, competing with other ports in the region to attract transshipment cargoes, as well as meeting the needs of domestic trade. Although not part of any official policy document, the strategy for achieving this objective is clearly to focus only on the ports of Benghazi and Elkhoms as selected candidates for this role. Benghazi port has been selected as a point of transit to serve the cargoes of landlocked African countries. The basis is a Memorandum of Understanding between Chad and Libya (8 Au-

[102]

gust 2009) for the use of Chad's imports and exports. The port has already been used by the World Food Programme (WFP) as a corridor for providing aid for Darfur's refugees via Chad in 2004 (World Food Programme 2004; 2005; 2009). This fundamental function for the port would help greatly in attracting transshipment traffic to Libya's ports.

*Structure.* In 1985, the Socialist Port Company (SPC) was established under law no. 21/1985. The company was established as a 100% government entity, becoming responsible for all the activities and services which were provided by the ports it operated (Ghashat 2009). It also had responsibility for providing the infra- and superstructure needed for operating and managing the sector and acted as the owner of the sector. It tended to contract out some of the sector's functions; for example, the SPC sometimes contracted out the stevedoring function to other companies, such as the Germa Shipping Company.

In 2006, the ownership, management and operational responsibility of Misurata Port was transferred from the SPC to an autonomous new entity, the Misurata Free Trade Zone (the MFTZ), under resolution no. 33/2006 of the General People Committee (the Prime Ministry). In the same year, the General People Committee (the Prime Ministry) issued resolution no. 280/2006, appointing and authorising a General Manager for all Libyan ports except Misurata to supervise most of the regulatory functions of the port in a reporting line to the LMTPA. Having previously managed the sector, the SPC were delegated with the responsibility over solely operational functions. Since the role of the LMTPA was still not fully understood at that time, there were notable conflicts between the duties of the LMTPA and the SPC.

In 2008, the role of the LMTPA (the Port Authority) was activated and empowered. In consequence, it gained more autonomy (but was not fully autonomous) and greater financial flexibility,<sup>2</sup> the sector became more organised and the functions of the sector were demarcated and distributed more clearly between the different entities involved with it. Since 2008, therefore, the role of the SPC has been limited to the operator function, although even some of its operator function has since been transferred to the LMTPA. Despite the activation of the LMTPA role, there remains a significant involvement on the part of the national government.





Although this structure represents the situation for almost all Libyan commercial ports, the port of Misurata is an exceptional case. As mentioned briefly above, the MFTZ became responsible for all functions related to the port (regulator, landlord and operator) in 2006. However, the duty of port state control is still conducted by the LMTPA. The new entity has already leased out one bulk terminal to a foreign cement company; the company became responsible for operating the terminal without making any changes or adding to the infrastructure and/or the superstructure. Such actions illustrate the new autonomy of the MFTZ, especially as this was implemented without any requirement for national approval.

[103]

Up until now, there has been no private sector involvement in the rest of the country's ports, except for inland transportation where the trucks which are used to move cargoes to and from the ports belong to private companies. Some shipping agents own storage areas outside the ports, but such ownership is not common.<sup>3</sup> It is worth noting that the rest of the country's ports are still highly centralised, and suffer from bureaucracy.

Based on a survey conducted by one of the authors in a separate study, the sector in general is still underperforming in terms of capacity utilisation, responsiveness to customer demands and time efficiency. Further, despite the sector's income, it is still supported by the government, especially in respect of major rehabilitation and investment activities.

#### APPLYING THE MATCHING FRAMEWORK

The starting point for undertaking a Matching Framework analysis is the environment. Therefore, an analysis of the environments of the two countries at three different points in time will be instigated. The matching framework is applied to try to determine the effects of a changing environment on the strategy and operational management structure of the port. The Malaysian Port sector environment changed over about 30 years (between the beginning of the 1980s and the middle of the 2000s) as the result of changes in government strategy and policy. Baltazar and Brooks (2001) classify the environment as exhibiting 'low uncertainty' and 'high uncertainty,' while Sanchez and

Wilmsmeier (2007) use 'more uncertain' or 'less uncertain.' For the purposes of this paper, the environmental conditions are referred to as 'stable,' 'uncertain' and 'more uncertain,' since this better describes the Libyan and Malaysian cases at different points in time.

[104]

As can be seen from table 5, the three configurations are developed for both Libya and Malaysia, equating to each of the time periods under scrutiny. The first configuration of the Malaysian case covered the period before 1986, when the port sector was centralised and did not interact with the external environment. As previously mentioned, Malaysian trade was served by the port of Singapore. The Libyan port situation exhibited the same characteristics until 1999, as the sector was isolated from the external world and unresponsive to the external environment because of the United Nations sanctions imposed at the end of the 1980s. During this period, development plans for the ports were stopped and, in consequence, the sector became unable to cope with the changes which occurred in the external environment. This led to many shipping lines changing their port of call to neighbouring ports in order to avoid the low efficiency of the sector that resulted from a shortage in equipment and bureaucratic procedures. Subsequently, a portion of Libyan trade was served by the ports of neighbouring countries (Ghashat 2009). The extent to which the operating environment impacts upon an organisation represents the degree of uncertainty. Therefore, it can be said that, during the first configuration of both countries, the environment was stable, as nothing was affected within the port and there was no interaction with the external environment. Therefore, it can be said that for both countries the sector was essentially a closed system.

In order to respond to the international recession, between 1986 and the mid-1990s, the strategy of the Malaysian government changed. At the beginning of the 1980s, the government believed that the centralised system did not work and, thus, attempted to develop the system into a free market economy, with the first attempt at privatisation seen within the Port Klang Container Terminal.

In the second configuration, the Malaysian port environment changes slightly, and moves from being 'stable' to being 'uncertain,' as the sector tries to serve all of the country's trade and cope with



TABLE 5 Benchmarking the situation of Libya's port sector against Malaysia's case: Applying the matching framework configuration

Characteristics	Malaysia		Libya	
	Before 1986	1986-mid 1990s	Mid 1990s onward	Before 1990s 1999-2009 The future
Environment	Stable; the sector did not interact with the external environment	Uncertain; the sector opened to the market	More uncertain; the completion was considered, thus the situation became more complex and dynamic	Stable; did not interact with the task environment Uncertain, response very slow to the task environment More uncertain, the government tends to open the port to international competition, and entering new market; working as hub and gateway
Strategy	Efficiency; providing a basic services	Efficiency	Effectiveness; customer satisfaction proposed to attract new one	Efficiency; improved, but the customer still not satisfied Efficiency; provide basic services but under perform Effectiveness; attracting new customers
Structure	Mechanistic, centralised	Mechanistic/organic; privatisation introduced but gradually and the government still controls the sector effectively	Organic; the sector becomes highly decentralised, dedicated terminals existed; private entity the main players	Mechanistic; highly centralised and not organised more organised Nothing decided, but based on section 3 and Malaysian experience the structure should be organic

[106]

developments in the shipping industry. The system was moved from being centrally supported and isolated from the international market (not even competing for local cargo), to being one that was subject to market forces. The actions taken fell within the broad policy of reforming the country's economy. However, as discussed above, there were three steps to privatisation; the second step took place in 1992, and was aimed at enhancing the situation at the port. After that, the policy of 1993 was aimed at helping the port become a national load centre, with the final step taken in 1994.

This era witnessed a great change in government policy that had a resounding impact on the environment within which the sector worked; Port Klang emerged as a serious competitor for Malaysian trade that used to be served exclusively by Singapore. With greater private sector involvement, ports began to operate in a commercial manner, with the development of port facilities responding, for the first time, to the possibilities offered by technological development. Thus, the sector gave in to market forces and the environment moved from being stable to uncertain. The government still retained some control, however, as the structure was hybrid; a combination of mechanistic and organic.

In the Libyan case, the second configuration relates to the time since 1999. United Nations sanctions were lifted and the country tried to reposition itself in the international economy. Development plans resumed, and reforming the country's economy became a priority. In order to enhance its performance, many public sector enterprises were privatised, and the economy of the country has since witnessed remarkable growth. Within the port sector, a number of changes have occurred. This includes re-organising the sector through the activation of the port authority role. The sector faces challenges from continuously increasing trade volumes and container throughput. Modernising the sector is seriously considered to help the sector cope with the developments occurring in the market, and the most important thing which happened in this era (1999–2009) was the establishment of the Misurata free trade zone, when the Misurata port became totally under the control of the new entity, leading to intra-port competition. Thus, in an uncertain environment the efficiency-oriented strat-



egy continued to focus on local cargo, despite its low level of success. The mechanistic and centralised structure also inhibited much-needed improvement of port infra- and superstructure, as well as prevented a greater involvement of the private sector. Consequently, Libya has not been able to create a configuration that results in a successful fit. One result is the falling behind of port development and not being able to claim a significant role in its region's port system due to the sector's lack of competitiveness; which stands in significant contrast to the development in Malaysia.

[107]

The third configuration covers the period from the mid-1990s to 2010 for the Malaysian case and equates to the anticipated, and hoped for, future in the case of Libyan ports. The environment can be described as 'more uncertain' in comparison to the previous period. An effectiveness-oriented strategy is of high relevance for maintaining and developing a role in the transshipment market as it requires providing a high level of customer satisfaction. Following the matching framework theory, a 'more uncertain' environment, in tandem with an effectiveness strategy, requires an organic structure. Since the mid-1990s, Malaysia has faced up to competition by allowing foreign equity to participate in dedicated terminals within its container port sector. This represented a remarkable change in the structure, which has facilitated the success of the country's container port sector in competing for, and winning, the right to serve the nation's domestic trade, as well as transshipment cargo.

#### CONCLUSIONS AND RECOMMENDATIONS

Baltazar and Brooks (2001) and Sanchez and Wilmsmeier (2007) explained the outcomes of devolution policy by applying the matching framework. The matching framework applied in this paper has compared the situation of two comparable countries. This was done in terms of the macro and micro environment, in order to understand the processes that led to the satisfactory performance of Malaysian container ports and to provide policy suggestions for the future of Libya's container port sector, particularly its operational and management structure within the context of emerging changes to government strategy and objectives.

[108]

The lessons learned from Malaysia are that port devolution within the context of the 'right' fit can facilitate the development of a nation's port sector from being an 'underdog' within the regional port system to becoming a competitive player. However, the required political will and the length of such a process should not be underestimated. Malaysia recognised the competition facing its port sector within the regional environment in which it operated. It took the dramatic decision to allow foreign equity to participate in dedicated terminals within its container port sector, thus bringing about a fundamental change in the structure of the sector. Not only did the sector prove successful in competing for the country's domestic trade, it was also able to win regional transshipment traffic from Singapore, particularly after it established the new port of PTP in 1999. Most terminals at PTP are dedicated terminals, which helps the country compete aggressively with traditional competitors in the region. Maersk-Sealand and Evergreen, have been attracted to use PTP, rather than Singapore, as their strategic transshipment hub in the region. The attraction of these transshipment volumes has helped Malaysia position itself as a hub nation in the region, with both PTP and Port Klang ranked amongst the top 20 container ports in the world.

The country dealt with the required changes in its strategy by applying an organic structure; within the context of the matching framework theory, the strategy of the Malaysian government led to changes in the structure of its port sector from being a hybrid mechanistic/organic structure to one which was almost totally organic, as characterised by flexibility and decentralised governance. A number of different approaches to devolution were applied. These included adopting two methods of privatisation; (1) a joint venture between the Kelang Port Authority and the Konnas Terminal Kelang bringing a new company into existence, namely the Kelang Container Terminal (KCT), with 35% of the company's shares sold to the public and 5% sold to KCT employees to ensure benefits for all of the stakeholders and; (2) a BOT concession arrangement which has emerged as the most important of the two approaches, since this has helped the country to convert PTP into one of the main transshipment centres in the region.



Malaysia has achieved a very satisfactory outcome from the devolution of its port sector. This includes *inter alia*: in the initial stages, reducing the financial burden of modernising the port, which would otherwise have been placed upon the government; an increase in the profits from the port, expanding the ownership of the employees and general public, serving the whole trade of the country; and in the second phase, helping the country enhance the competitiveness of its port sector and attract transshipment traffic from significant competitor ports within the region.

[109]

By analysing the third configuration of the Malaysian case, it can be deduced that the implementation of devolution policy has been driven by changing government policy and the pursuit of more strategic goals; this confirmed that the 'fit' should be between *goals, environment, structure and operational strategy*. The goals and policy of the government have altered the operational structure of the sector and opened it up to an environment which is already highly dynamic. One of the principal success factors in the case of Malaysia was its ability to convert to an organic structure and achieve a high degree of 'fit' that effectively drove the effectiveness-orientated government strategy. The latter involved the attraction of highly efficient port operators, who were able to compete successfully in an increasingly uncertain environment.

Libya aims to rehabilitate and modernise its port sector, so that it serves the whole country's domestic trade and allows it to develop its ports as hubs within the Mediterranean region. This is almost precisely the same objective as Malaysia had for its port sector prior to the implementation of its policy of port devolution. By applying the matching framework over different timescales, this paper has shown that Malaysia responded to uncertainty by adopting an effectiveness-oriented strategy and organic structure. This has evolved from an initial offering of shares to employees and the public and, more latterly, has culminated in the offering of dedicated terminals to shipping lines; a development trend that has contributed significantly to the country emerging as a hub in the region. There is a significant emergent body of opinion and lobbying which suggests that Libya should do the same in order to achieve its objectives for the future. The question that remains is: what is the right 'fit' for the case of Libya? Within a given

[110]

environment, the answer centres on the ‘right’ structure and strategy to successfully work towards achieving the objectives set by the Libyan government. As we have seen from the matching framework analysis, Libya was not able to sufficiently adjust its strategy when the environment changed from stable to uncertain, and a certain redundancy and lack of flexibility can be observed in its structure. Since the government has recognised that it needs to change its operational strategy, the lessons learned from the Malaysian case also indicate the importance of allowing or facilitating a change towards a more organic structure.

The current governance structure will not work anymore; there is a lack of ‘fit’ between the highly mechanistic structure which currently exists and the increasingly dynamic regional environment within which Libyan ports operate. The sector is currently controlled by corporatized entities that report to central government. In order to deal with the dynamism of the port sector’s operational environment and recent fundamental changes in government objectives and strategies, the governance structure of Libya’s ports needs to be more decentralised in a way that allows for fast and reliable decisions that avoid bureaucracy. However, bureaucracy is not the only problem at Libyan ports; they also need to be developed to cope with the ambitions of the State and the dynamism of their operating environment.

International experience in general (Brooks and Cullinane 2007), and in Malaysia in particular, shows that the introduction of the private sector to ports has yielded a satisfactory outcome. However, the private sector can be introduced through different means, each of which would serve a specific purpose. With Libyan objectives and financial capability in mind, privatising the port operational function would appear to be the most desirable initial solution, preferably through some form of concession arrangement with either global terminal operating companies or with shipping lines that are seeking to establish dedicated terminals within the region. The terms and conditions under which such concessions may be agreed are obviously subject to negotiation, but would be influenced by factors such as availability of funding for infrastructure investment, port and terminal infrastructure development programmes and an assessment of the risks





associated with future fluctuations in currency and interest rate parities, as well as country/political risk.

It would inevitably be the case that the first one or few concessions would be perceived as risky ventures by prospective bidders. As such, the level of concession fee payable will need to be relatively low in order to attract global players into the market and until the future returns from such ventures are known with greater certainty. Thus, the Libyan government will not only need to instigate the required legislation in order to facilitate the privatisation of the port sector on such a basis, it would also have to be prepared to continue to finance infrastructure development (but at a higher level than currently if operations are to be successfully privatised) and, to some extent, even possibly subsidise the operational function, at least over the duration of the first concession or until some efficiency or throughput threshold has been attained. Initial costs associated with privatisation will be high, therefore. However, if the Malaysian experience is anything to go by, the privatisation of container terminals on a concession basis could help Libya to convert one or more of its ports to the status of regional hub (through the development of organic structures within port organisations) and increase sector efficiency and throughput across the board. This will allow the country to utilise its own ports for trade facilitation, reduce the costs of trade and, therefore, help to enhance national competitiveness. In the longer-term, this will lead to enhanced socio-economic welfare within the country and, possibly, greater employment within the sector following on from the short-term cuts that will inevitably arise.

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In summary, the matching framework has provided a guide for the most appropriate policy direction that should be followed. However, further research is required to deal with a number of specific questions: (1) Is the Libyan institutional environment mature enough to accommodate such change? (2) What is the nature of private sector involvement that would lead to the most benefit? (This question arises because this paper shows that devolving some of the port functions to the private sector would be a workable solution; however the possible form this may take is variable.) and; (3) Beyond government objectives, would the selected approach lead to a balance between interests? In

other words, what is the most effective governance structure for leading to a balancing of stakeholders' interests (Daft 1992)?

NOTES

[112]

- 1 For more details see [http://www.portsworld.com/news/pw1jan21\\_08.htm](http://www.portsworld.com/news/pw1jan21_08.htm).
- 2 For further details regarding the Maritime Transport & Port Authority, see resolution no. 81/2008 of the General People Committee, available at <http://www.gpc.gov.ly/myfiles/2008/pdf/decision/81-1.pdf>.
- 3 The information provided is based on the interviews and survey conducted by one of the authors during October 2009.

ACKNOWLEDGMENTS

The authors are grateful to an anonymous referee and the editors of the Special Issue for helpful comments on an earlier draft of the paper.

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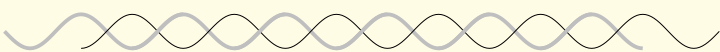


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# Governance of Italian Cruise Terminals for the Management of Mediterranean Passenger Flows

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THE MAIN AIM OF THIS WORK is to understand how different port governance models could correspond to different information systems among the actors (i. e. Port Authorities, cruise terminal concessionary companies and others) of a seaport system. In order to analyse how the information about passenger flows is managed within ports characterized by different governance models, the study focuses on the information system used by concessionary cruise terminal companies to collect, elaborate and report data to the Port Authority. This is an explorative study conducted through a qualitative approach and the use of case study methodology. The cases analysed are four Italian concessionary cruise terminal companies.

## INTRODUCTION

Since 25 years the cruise industry is continuing to grow, despite the world economic crisis (Hobson 1993; Cartwright and Baird 1999; Dickinson and Vladimir 2008; Di Vaio, Medda, and Trujillo 2010).

The increasing dimensions of the ships have contributed to this growth, because it allowed the cruise companies to satisfy new consumers' needs with more elaborated amenities and facilities (Wild and Dearing 2000).

An analysis of the overall cruise international demand from 1995 to 2000 reveals an increase by 70% and almost the same increase has been registered from 2000 to 2008. North America remains the main demanding area, even though in the last decade its weight on the total demand decreased, while the Mediterranean's cruise demand gradually increased (European Cruise Council 2007; 2009; CLIA 2010) (figure 1).

Looking at Europe, according to the European Cruise Council

[120]

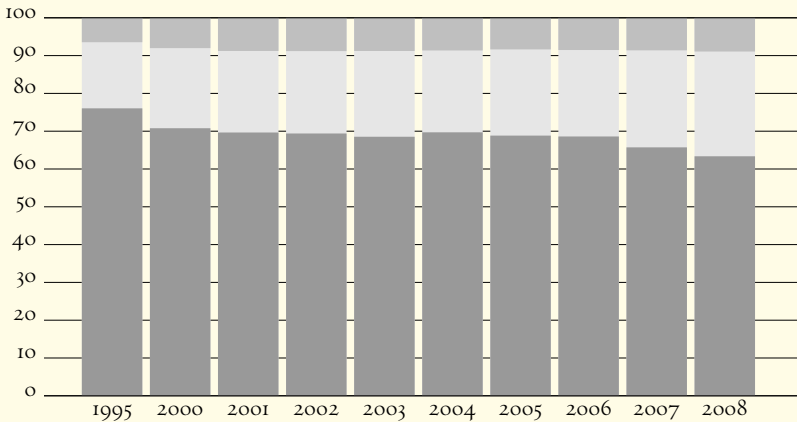


FIGURE 1 The demand for international cruising (1995–2008, dark gray – North America, light gray – Europe, gray – rest of the world; in percent)

(2007; 2009) data, the cruise passenger flows concerned mainly some Mediterranean ports such as Barcelona, Civitavecchia, Naples, Palma de Majorca, Venice and Savona; in the North Europe area, instead, the main attractive ports have been Southampton and Copenhagen. In particular, in 2008 the cruise passengers that embarked from European ports have been about 4.7 millions, of which 1.7 millions embarked from Italian ports (Civitavecchia, Venice and Savona) placing Italy as first in Europe and in the whole Mediterranean area, while more than 1 million passengers embarked from the main Spanish ports (Barcelona and Palma de Majorca), placing Spain as second. Finally, the ports of Southampton and Dover place UK as third country for its embarked passenger quantity (tables 1 and 2).

With reference to the type of traffic handled into ports (embarked, disembarked and in transit) it is possible to distinguish the ports in *home port* and in *transit port*. In the first case, the flow of passengers embarked and disembarked outweighs the transit passengers. In the second case, the transit flow is prevalent.

Following these criteria Barcelona, Civitavecchia and Venice are considered as the main *home* ports in the Mediterranean area; Naples and Livorno instead, as they are interested by considerable flows *in transit* (more than the 80% of the total flows), are classified respectively as first and second *transit* or *call* ports (table 3).



TABLE 1 The number of passengers in the main cruise ports in the Mediterranean area (2008)

Port	Embarked	Disembarked	Transit	Total
Barcelona	573	571	926	2,070
Civitavecchia	500	500	819	1,819
Naples	72	72	1,093	1,273
Palma de Majorca	300	300	531	1,131
Venice	530	530	205	1,265
Savona	309	306	157	772

[121]

Values are in thousands. Based on data from ECC 2009.

TABLE 2 The number of passengers in the main cruise ports in the Northern Europe area (2008)

Port	Embarked	Disembarked	Transit	Total
Southampton	485	485	1	971
Copenhagen	157	154	244	556
Lisbon	21	21	366	408
St Petersburg	0	0	395	395
Tallinn	0	0	377	377
Stockholm	20	20	243	363
Helsinki	20	20	320	360

Values are in thousands. Based on data from ECC 2009.

In particular, the Italian ports in 2008 have been the main destinations of the Mediterranean with almost 5 million passengers. Looking at the other main destinations in the Mediterranean, Greece is the second in the ranking with its 4.3 million of passengers, concentrated mostly on the islands of Santorini, Mykonos and Rhodes (European Cruise Council 2009), followed by Spain and France, with their respectively 3.6 million and almost 1.8 millions passengers (European Cruise Council 2007; 2009).

At the same time, over than 150 cruise ships sailed the Mediterranean coasts with an average of 1,049 calls per ship. The cargo potential of these ships assets amounts to 3.14 million passengers, so that the whole capacity is 25.33 million *passengers per night*, with an average stay on the ships of 8 nights (European Cruise Council 2009). Obviously, the

TABLE 3 The main cruise ports in the Mediterranean (2008)

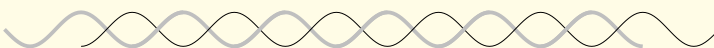
Ports	2006	2007	2008
Naples (Italy)	971,874	1,151,345	1,237,078
Livorno (Italy)	607,848	713,144	850,000
Nice/Villefranche/Cannes (France)	625,016	559,411	761,200
Valletta (Malta)	408,264	487,817	556,861
Marseille (France)	380,000	434,087	540,000
Palermo (Italy)	320,632	471,395	537,721
Bari (Italy)	303,338	351,395	465,739
Limassol/Lamaca (Cipro)	448.815	427,408	376296
Messina (Italy)	253,462	291,296	366,337

Based on data from ECC 2009.

choice of cruise companies to include a port in their routes depends on several factors. The mild weather and the attractiveness of cities placed on the coasts are among these. As matter of fact, the mild and stable temperature of Mediterranean area and the yearly and monthly limited weather ranges, favor the use of ships also for eight months a year, allowing the optimization of ship-itinerary combinations. Further elements that influence cruise companies' choices about destinations are the natural, artistic and cultural resources of towns surrounding ports and the existence of airport and train hub networks (Cottam, Roe, and Challacombe 2007; Soriani et al. 2009).

The technical handling capacity of cruise infrastructures and the services supplied to ships and passengers represent other relevant elements that influence the decision on including a port in their own routes. This capacity is often inadequate so, in recent years, the cruise companies have started to invest in the companies that manage port infrastructure by concession. This trend is confirmed by an analysis on some Mediterranean ports (Di Vaio, Medda, and Trujillo 2011), that shows the growing presence of cruise companies in the ownership structure of cruise terminal concessionary companies, in order to control directly the passenger flows.

This phenomenon is favored by the seaport reordering reforms introduced in many European countries that encourage private investments in port infrastructures. The attraction of private investments is



aimed at improving the efficiency and quality of services supplied (The World Bank 2004).

In Italy, the re-ordering Law no. 84 of 1994 (articles 16 and 18) allocates the concession of activities and port functions to private operators. This configures an organizational model known as *the landlord model*, where the Port Authority has regulatory, coordination and control functions, while the port operations are carried out by private operators with the goal of increasing the passenger flows. However, the law fails to specify the nature of concessionary company ownership and this implies that in the absence of private operators the shareholders are public entities or the Port Authorities. [123]

In other cases, the absence of a clear rule, has led to the creation other governance assets, where the concessionary company ownership is shared between public entities (i. e. Port Authorities) and private operators, and other cases where the ownership is concentrated in the hands of private operators, such as the cruise companies.

This means that a port configures a multi-actors context with different interests that need to meet the main aims of a port, which are: the profitability of infrastructures, related to the quantity of passenger flows managed, and the satisfaction of public interest, related to the sea-transport service itself, the employment of workforce and the development of business economies in the surrounding areas. This requires, among others, the implementation of an integrated information system, seen from both technical and informative profile, able to connect all the actors involved, thus reducing information asymmetries.

So in this context, the aim of this paper is to analyse how different port governance models could correspond to different information systems. In order to verify this aim, we need to investigate, on one hand, the main variables of the governance assets of cruise terminal companies, that is the ownership structure and its stability during time and, on the other hand, the information technologies implemented to measure the passenger flows. In particular, we need to identify the information tools, the content of information flows exchanged and the actors involved in the three phases of handling information on passenger flows (ship agents, cruise companies, terminal concessionary com-

pany and the Port Authority). In the literature, the studies on these arguments are scarce, and this study can contribute to extending the knowledge on the dynamics of governance acting within concessionary companies after the re-ordering law.

[124] For this study, we used the purposeful sampling method, selecting four cruise terminal concessionary companies that manage the infrastructures of the most relevant Italian ports, in terms of passenger flows. The paper is divided into six sections. After this introduction, in the second one the port organization models after the reforms are described. In the third section, the attention is focused on the governance of cruise terminal companies and the role of information tools for handling and managing the passenger information flow in order to support decisional processes of concessionary companies and Port Authorities. In the fourth section the criteria of selection of case studies have been described. In the fifth section, the role of IT for the management of information flows phases is explained: data collection (relationship between ship agent and/or cruise company and cruise terminal company), elaboration (relationship between departments of the cruise terminal company) and the reporting (internal and external). Finally, in the last section we evidence the results of the study and the managerial implications.

#### PORT ORGANIZATIONAL MODELS

The management of a port requires the execution of many activities and functions, and according to how these functions are shared among the actors and to the degree of involvement of private operators, different organizational models are figured out.

In the literature, some authors such as Baird (1995), Liu (1995) and Baudelaire (1997) refer to three organizational models, 'service ports, tool ports and landlord ports', as also indicated by The World Bank (2004); while, according to Goss (1986), Heaven (1995) and De Monie (1996) there are two models: 'landlord port and service port,' as the 'tool port' would represent only a variant of the landlord port (Cullinane and Song 2001).

These models are characterized by a number of variables such as: the subject to which the service is contracted (public, private or mixed); the strategic orientation (local, regional, global); the ownership of the



TABLE 4 The landlord model

Port functions	Public/private	Private/public
Regulatory	Public	Public
Landowner (or Management)	Public	Private
Operations	Private	Private

[125]

Adapted from The World Bank (2004).

infrastructure (including the port territorial area); the ownership of the superstructure and equipment; the management of the quays and so on (The World Bank 2004).

Therefore, according to The World Bank (2004), the port organization models can be distinguished as follows:

- *Service port model*, when the Port Authority owns all infrastructures and is responsible for providing all the port services;
- *Tool port model*, when the Port Authority owns the infrastructure and superstructure and the services are provided by private operators;
- *Landlord port model*, when the Port Authority provides the infrastructure, while the investments in the superstructure and port operations are contracted out to private companies;
- *Private port model*, when all the equipment and services are owned and managed by the private sector, implying the transfer of port area ownership and all facilities to the private sector.

Although these models find confirmation in several theoretical and empirical studies (Baird 1995; Cullinane and Song 2001; Cullinane and Wang 2005, Di Vaio, Medda, and Trujillio 2010), in practice we may have hybrid organizational forms, related to different contexts and needs, or to the fact that the law fails to define precisely the role that private operators have to play.

In particular, we focus on the *landlord model* (table 4), that characterizes Italian sea ports. In this model, the Port Authority endows the landowner (or management) and regulatory functions, while the operation functions, which concern the physical transfer of goods and passengers between sea and land, are in the hands of private operators (The World Bank 2004).

However, some empirical evidences (Di Vaio, Medda, and Trujil-

[126] lio 2011) show that the management function of infrastructures can be played also by private operators. In particular, in Italy, some cruise terminals' infrastructures are managed by concessionary companies, whose ownership can be public (i. e. Port Authority, Chamber of Commerce) and/or private (i. e. cruise companies that in this way can directly control passenger flows).

In this scenario, what distinguishes one port model from another is the ownership of companies to which the Port Authority contracts out the management of infrastructures by concession. So, according to the role that public and private subjects can assume in the ownership structure of cruise terminals concessionary companies, in this study we identify different governance models:

- 1 *Public governance model*, when the ownership is exclusively public;
- 2 *Public/private governance model*, when the ownership is mostly public;
- 3 *Private/public governance model*, when the ownership is mostly private;
- 4 *Private governance model*, when the ownership is exclusively private.

This means that the Port Authority, apart from playing regulatory and coordination functions, in some cases may be the owner and top manager of the concessionary company, while in other cases the Port Authority is a small shareholder with scarce influence on board decision and, finally, in other cases the Port Authority may have no participation in the equity capital, excluding any kind of decisional power in the concessionary company. At the same time, private subjects, such as cruise companies, can assume a relevant or marginal role in the management of port infrastructures, according to the relevance of capital shares they own.

#### GOVERNANCE AND IT IN TERMINAL CRUISE COMPANIES

In order to improve the efficiency of port systems, the reordering Law n. 84/1994 has created the conditions to contract out the management of infrastructures to private operators, until the Port Authorities from being the land-manager become the buyer of services provided by





concessionary companies. In function of this, the relation between the Port Authority and the concessionary company sets up an agency relationship, where the concessionary company has the task of increasing passenger flows, while the Port Authority has to control the activity contracted out, apart from promoting the port destination.

[127]

In order to achieve this aim, the implementation of a valid information system is useful to support the strategic decisions of the Port Authorities about investments and the activity of control mentioned above. The concession of management functions to external providers is a decision that needs to be coherently and adequately supported by valid information systems, because it can create the conditions for information asymmetries.

In the last years, with the growth of passenger flows in the Mediterranean area, actors involved in the governance of port systems have been dealing with huge internal and external information flows that make decisional processes difficult.

This activity could be facilitated by the application of more accessible and integrated information technologies, whose implementation reduces the time needed to elaborate information useful to support the internal management and to improve the efficiency and accuracy for external reporting. So the large application of IT could become essential for the fast and accurate elaboration and transfer of enormous volumes of data inside port organizations, allowing the Port Authority managers to recognize the problems and act more rapidly (Fernandèz-Alles and Valle-Cabrera 2006).

New information technologies could allow the Port Authority to have advanced reporting systems that contain in one database all data, coming from different sources, obtaining in this way more rapid, simple and useful information. There are several differences between static (or separated) information systems, such as excel spreadsheets, and dynamic (or integrated) information systems, where the information needed is available in real time and the traceability of data is complete (Rom and Rohde 2007; Kia, Shayan, and Ghotb 2000; Lee-Partridge, Teo, and Lim 2000).

However, the theoretical assertion of these positive effects does not lead automatically to its implementation, considering the high costs

and acceptance resistances to the introduction of new technologies (Granlund and Malmi 2002).

[128]

Therefore, in order to reduce information asymmetries, it is necessary to implement an information system able to guarantee access to the 'continuous flow of selected, elaborated and integrated information' that, on one hand, allows an increase in the 'rationality of internal decisional process,' while on the other hand, it should allow transfer of the information to the Port Authority for complying with the contractual obligations and eventually to other external stakeholders' informative needs.

#### METHODOLOGY

The research has been conducted through the case study methodology. The criteria that have been followed for the selection of case studies are:

- 1 The relevance of passenger flows handled by the concessionary cruise terminal company;
- 2 The ownership structure of companies to which the management of infrastructure has been contracted out;
- 3 The stability of ownership structure.

With reference to the relevance of passenger flows, we distinguished the *home* ports from *transit* or *call* ports; to analyze the ownership structure, we selected the concessionary companies characterized by the main governance models as explained in the previous section, and that had a stable structure in the last three years.

The concessionary companies selected are:

- Venezia Terminal Passeggeri SpA (VTP) and Porto di Livorno 2000 Srl (Livorno 2000), respectively home and transit ports, whose ownership can be assimilated to a *Public governance model*. In particular, from the ownership structure analysis results it can be seen that these companies, though their juridical status is private, are mostly or completely owned by public entities. For example, one of the shareholders of VTP is APV Investimenti SpA, which is completely owned by the Venice Port Author-



TABLE 5 Ownership structure of VTP and Livorno 2000 (public governance model) (2006–2008)

VTP		Livorno 2000	
APV Investimenti SpA	35,50%	Port Authority	73,08%
Chamber of Comm. Venice	2,50%	Chamber of Comm. Livorno	26,92%
Finpax Srl	21,00%		
SAVE SpA	21,00%		
Veneto Sviluppo SpA	17,50%		
Venice Municipality*	2,50%		

\* From July 28th, 2008 the share has been sold and distributed among Chamber of Commerce Venice (2.60%), Finpax Srl (22.18%) and SAVE (22.18%). Based on data provided by the Chamber of Commerce and individual concessionary companies.

[129]

ity, while the other private companies are owned by public subjects. The Port Authority of Livorno is the majority shareholder of Livorno 2000, while the remaining equity is owned by the Chamber of Commerce of Livorno, another public entity. The ownership structures of VTP and Livorno 2000 identify different organizational models, according to the (direct or indirect) participation of the Port Authority in the ownership structure of cruise terminal companies (table 5).

- Terminal Napoli SpA (TN) and Roma Cruise Terminal Srl (RCT), respectively *transit* and *home* ports, whose ownership structure configures a *Private/public governance model* for TN and a *Private governance model* for RCT. TN is almost completely privately owned (95%): the 45% of its equity is in the hands of cruise companies (Costa Crociere SpA, MSC Crociere SpA and Royal Caribbean Ltd) and 20% is owned by Marininvest Srl (it is the financial holding of MSC Crociere SpA). The ownership of RCT, instead, is equally shared between two cruise companies (Costa Crociere SpA and Royal Caribbean Ltd) and Marininvest Srl (table 6).

To collect data for our study we conducted interviews and submitted semi-structured questionnaires to managers that handle and use data on passenger flows (accounting manager, commercial managers, general directors and the board).

TABLE 6 Ownership structure of TN (private/public governance model) and RCT (private governance model) (2006–2008)

TN		RCT	
Alilauro SpA	20%	Costa Crociere SpA	33,33%
Costa Crociere SpA	20%	Marinvest Srl*	33,33%
Intership Srl	10%	Royal Caribbean Cruise Ltd	33,33%
Marinvest Srl	20%		
MSC Crociere SpA	5%		
Royal Caribbean Cruise Ltd	20%		
Port Authority	5%		

\* Marinvest Srl is the holding company of MSC Crociere SpA. Based on data provided by the Chamber of Commerce and individual concessionary companies.

The questionnaire was articulated in three sections, one for each phase of the information management process (collection, elaboration and internal/external reporting). The questions were aimed at investigating the following aspects: the actors involved and the function they play; the nature and quantity of data elaborated; technologies used; the procedures employed; the frequency and timing of operations; the integration degree of information exchanged between the concessionary company and Port Authority. The questionnaire was submitted by phone to accounting and sales managers, while some CEO members were interviewed face to face.

#### CASE STUDIES

VTP and Livorno 2000, whose ownership and management is 'completely' public, present different degrees of automation of the several steps that characterize the passenger flow data management function.

VTP's infrastructures are employed only for cruise flows, while the Livorno 2000 infrastructures are also used for ferries flows, operated by the same concessionary company.

As evidenced in table 7, in the first phase VTP passenger flow data are collected by clients (ship agents or cruise companies) with the support of a general accounting software platform, named AS400 (IBM), into which the agent periodically enters the passenger flow data.

The software interface enables the ship agent to enter data about



TABLE 7 IT for the support of data handling on passengers flows

Phase	Information Flow (actors)	Concess. comp.	IT tools	Information	
1 Data collection	From ship agents or cruise companies to CTC	VTP Livorno 2000 TN RCT	Accounting Software (AS400) E-mail or fax to Acc. Dept. E-mail or fax to Acc. Dept. E-mail or fax to Acc. Dept.	Pax and ships number; time (arrive, departure); other ship information (i. e. tons); other accounting information	
	2 Processing	From Acc. Dept. to Sales Dept. (other departments) by CTC	VTP Livorno 2000 TN RCT	AS400 multi access (GD, administrative, IT, sales, technical, security, armament) Excel sheet Excel sheet Excel sheet	Reports (statistic data – variation percentage (monthly, three monthly, yearly), graphs, incidence)
	3 Internal reporting	From Sales Dept. to Board by CTC	VTP Livorno 2000 TN RCT	AS400 multiaccess – monthly or according to need (AIS: direct access) Via e mail and hand delivery – monthly or according to need Via e mail and hand delivery – monthly or according to need Via e mail and hand delivery – monthly or according to need	Reports
External reporting	From CTC to PA	VTP Livorno 2000 TN RCT	Logis – direct access – monthly Via e mail and hand delivery – monthly Via e mail and hand delivery – monthly Via e mail and hand delivery – monthly	Reports Reports and accounting schedules	

Based on data provided by the concessionary companies.

[132] services demand, number of transit passengers, number of home passengers (embark and disembark passengers) and other information related to the docking of ships (i. e. number involved, name of ship, vessel size etc.). The data collected are used by VTP for invoicing (passengers, berths, etc.) the services supplied to clients.

In the Livorno 2000, instead, these data are received via email or fax and reported by employees in a software for management accounting. This program is used by the terminal company to invoice and apply the fares to the ship agent or cruise companies.

These collected data are then elaborated. In this second phase the software used by VTP allows multi-access from its departments (administrative, technical, sales & marketing, operational, security). The software is useful also for statistics elaborations on the passenger and ship flows, but it is not possible to distinguish from data collected the passenger flows of each of the VTP infrastructures (i. e. terminals no. 103, no. 107/108, no. 117, San Basilio 1 Isonzo and Riva Sette Martiri quay). This impacts negatively on the usefulness of these data for the support of VTP management decisional processes, because they are not able to measure the 'performance' of each infrastructure. The software for management accounting of Livorno 2000 allows users to extract some useful information, such as trends during time, incidences, average values and so on. In both terminal companies the collected data are substantially quantitative. After their elaboration, data on cruise passenger flows are transferred to cruise company management (internal reporting) and Port Authority (external reporting) (third phase).

In VTP the internal reports are automatically generated and all information is transferred electronically. In Livorno 2000, instead, managers export data from the software into excel sheets that are transferred to the head office. Regarding the external reporting to the Port Authority the two companies have instead a different degree of automation of their information systems. VTP transfers its data to the Venice Port Authority through an integrated information system named Logis (Logistics Information System). The software is based on a document workflow system implemented by the PA that permits the transfer of statistics in real time and for users to have information on pas-



senger flows any time they need and without mistakes or incongruities. The system is also able to collect information on other sectors of the maritime industry. It is a web-based application that, by using a standard internet browser such as Internet Explorer and Mozilla Firefox, allows accredited users (shipping agency, terminal operators, etc.) to send data online to all requiring offices (Port Authorities, Police Offices, etc.). In summary, the implementation of this system allows for informatization of all material data exchange processes between the Port Authority and the other actors of the port, improving the quality of information flows and creating an integrated 'seaport system.' Livorno 2000, instead, monthly transfers its reports on excel spreadsheets via email or fax to the Port Authority. The data transferred are then aggregated to measure the total flow of cruise passengers in the seaport of Livorno. Unlike the VTP, Livorno 2000 has not implemented a program of integrated information system.

[133]

The information and communication processes, organizational and operational procedures and planning and control systems of TN and RCT, whose management is mostly or exclusively private, instead, have an almost similar level of automation.

TN's infrastructures and RCT's infrastructures are employed only for cruise flows.

As evidenced in table 6, in the first phase (data collection) the procedures and the degree of automation are mostly the same as in the two previous cases.

In the second phase, the data are processed and in RCT they are elaborated by an accounting software, while in TN the data are elaborated by the commercial department though excel spreadsheets.

In the third phase, the two cruise terminal concessionary companies follow different procedures. The TN commercial department transfers every month (via email) statistics reports to the General Director, the General Coordinator and the administrative manager, who subsequently transfer them to the Board. In RCT, monthly via e mail, the General Director receives from accounting department the statistics reports. After the transfer of data on passenger flows, TN Board may assume only operative decisions on the optimization of cruise flows. The strategic decisions on the traffic increase are assumed by other

authorities (regions, municipalities) and the Port Authority. The RCT board, instead, is able to decide how to increase passenger flows and the productive capacity of the terminal.

[134] With reference to data transfer to the Port Authority, both the concessionary companies employ the same procedures and the same automation tools. TN transfers (every month and via e-mail) the statistic reports to the Port Authority, which aggregates data elaborated by the berths managed directly by the Port Authority. These two terminals periodically transfer to the Port Authority's administration also a list of values billed and payments received for the security rights. TN also sends to the Port Authority the accounting schedules.

We can observe that the information system on cruise passenger flows for these two cases is automatized, but it is not integrated.

#### CONCLUSIONS

This paper contributes to the existing literature by investigating and relating new variables that have still not been considered up to now in cruise terminals management.

The analysis of case studies evidenced how different organizational models are associated with different informative systems (integrated or not). The organizational models, thus, tend to influence the cruise passenger flows management and the integration and automation of information systems that support the cruise terminals' governance and the Port Authority decision making processes.

The results, in fact, show that when the concessionary company is completely or mainly owned by cruise companies the increase of passenger flows is strictly related to the attraction capacity of cruise companies' routes. Moreover, in this case the information system used for the collection, elaboration and transfer of data is not integrated under the technical profile, and the access to information by the several actors involved in the process is not so easy and immediate.

When the concessionary company, instead, is completely or mainly owned by the Port Authority, the implementation of an integrated information system seems to be encouraged by the public actor itself, allowing the user to improve the timeliness and quality of data. In particular, comparing two cases where the public ownership is pre-





dominant, it is evident that the integration of information systems is higher in VTP, whose ownership is in the hands of a special purpose company completely owned by the Port Authority.

Furthermore, although the Law 84/94 assigns to private operators the goal of increasing the passenger flows and of carrying out port operations such as cargo handling, leaving to the Port Authority only regulatory, coordination and control functions the cases analyzed do indeed show the role of private companies is limited to investing in specialized infrastructures, without any involvement in decisional processes.

[135]

However it is important to consider the main limitations of this paper. First at all, the paper is based only on four cases and the data are qualitative, so the results can not be considered extendable. Secondly, we considered only the ownership structures of a concessionary company, while other relevant variables could influence the decision on implementing integrated information systems.

Future empirical researches have to be conducted to investigate how the two variables 'public/private ownership' and 'integration of accounting information systems' are correlated.

#### ACKNOWLEDGMENTS

The authors are grateful for the generous contributions of the cruise terminal operators, in particular Dr. N. Coccia and Dr. D. Sirabella (TN), Eng. G. Spadoni (Livorno 2000), Dr. M. Patuzzi (RCT) and Dr. R. Perocchio and Dr. S. Tiepolato (VTP). We wish to thank Professor Gennaro Ferrara from the 'Parthenope' University Naples for his insightful comments on this topic. We would also like to thank the anonymous referees for their recommendations. Any errors are entirely attributed to the authors.

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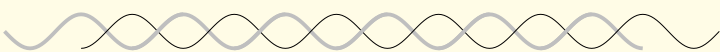
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[137]



# Criteria for Container Port Choice: Focus on the Mediterranean

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IN A COMPETITIVE PORT ENVIRONMENT, ports act as interfaces between different transport modes. Therefore, it is important to determine the key factors that guide freight forwarders in choosing a specific port. This paper aims to identify those factors and criteria influencing their decision in choosing a port, detailing the elements that influence the choice between Mediterranean ports and the northern range ones. A detailed literature review reveals a considerable range of factors affecting the decision of port choice. This theoretical step is complemented by a survey method applied to the Mediterranean port of Genoa and compared to the northern port of Antwerp that are strategic nodes for the traffic flows toward Central Europe. The data collected were analysed using the Factor Analysis method. This research shows that the main elements affecting port choice can be grouped into four broad factors: port connectivity, electronic information, cost and port productivity, and logistics and administration of the container. It is discussed how these factors are evaluated from the freight forwarders' perspective.

## INTRODUCTION

Globalisation and increased competition are two of the main forces currently shaping the development of the port sector. The novelty in this global economy is the degree of interdependence between actors and the possibility to choose worldwide the inputs, intermediate or finished products and services. This leads to increased competition in every step of the logistics chain. There is, therefore, an international decomposition of productive processes and a global delocalization of manufacturing. As markets became global, so did transport chains, and concepts such as integrated logistics and supply chain management emerged. These trends in manufacturing and logistics require more transport and more often, i. e. transport intensive.

[140]

Ports act as interfaces between different actors, such as road, rail, inland waterway, maritime transport and logistics operators. In a competitive port environment it is important to determine the key factors that guide the users in choosing a specific port. The knowledge of these factors can help a port in improving its market share and growth. Efficiency gains, which are generated within the container port, will have a direct impact on the competitive advantage of its users and affect the economic potential of both origin and destination hinterlands.

The purpose of this paper is to identify what are the main factors and criteria influencing the freight forwarders' decision in choosing a port. The attention will be focused on the selection between Mediterranean ports and north European ports. When analyzing these factors it is relevant to bear in mind that the choices of the economic actors are based upon different elements. Such elements are related not only with the technical characteristics of the port, but with hinterland and logistic services offered. The topic of the current paper is a well-known problem, which has not been properly tackled by port authorities nor by transport operators.

The strong competition between northern and southern European ports is explained by the constant effort to the steal market share from the competitor. Currently most of the traffic going to the centre of Europe is shipped through the northern ports. The Mediterranean ports are facing a complex situation, not being able to attract enough volume to allow for real competition.

From an European transport policy, there is a willingness to improve connectivity between different transport modes and along key transport corridors. An example is the European rail corridor 24, connecting the port of Rotterdam to the port of Genoa; this action is seen as one of the most urgent measures for promoting a more sustainable modal split of the freight transport within the European Union.

In this paper two European ports have been selected as a case study: the port of Genoa in Italy and the port of Antwerp in Belgium. The two ports are different in terms of morphological development, traffic volume and business activities, but nevertheless linked by their important role in the European maritime context and by their function as gateways to central Europe.



Antwerp and Genoa are representative of the Northern Europe Hamburg–Le Havre range and the Mediterranean range, respectively. The reason for not selecting the biggest transshipment ports, such as Rotterdam and Gioia Tauro, is due to the fact that they do not compete on their hinterland; while Genoa and Antwerp could be competitors in central Europe. [141]

The choice of the port of Genoa was mainly due to its relevance in the Mediterranean maritime scenario. Genoa is one of the main ports in southern Europe and, given its favourable position in the north of the Mediterranean, constitutes a strategic node for freight flows towards central Europe (Bacelli, Ravasio, and Sparacino 2007). In 2008 Genoa was the 7th largest port in the Mediterranean range and the 15th biggest in Europe in throughput. It handled 1767 million TEU and was the 2nd Italian port after the transshipment port of Gioia Tauro ([www.ci-online.co.uk](http://www.ci-online.co.uk)).

The port faces some challenges to its future growth. On the one hand, the location of the port poses a problem to hinterland connections, as the city of Genoa is surrounded by the Apennines Mountains and effective rail and road connections to the prosperous northern Italy and central Europe are still missing. On the other hand, the lack of available space for the port's expansion is a major issue that constrains its development.

According to Midoro, Ferrari, and Parola (2007), the potential for growth in port throughput is directly correlated to the improvements in port infrastructure for logistics activities, accessibility to the port area, administrative procedures and port operations efficiency.

The port of Antwerp, it is the 2nd largest in Europe for overall traffic with 189 million tonnes handled in 2010 ([www.ci-online.co.uk](http://www.ci-online.co.uk)). Antwerp's central location in north west Europe allows for excellent accessibility to the major European industrial centres and a large potential consumer base; Antwerp lies on the river Scheldt, and as a port it is dependent on the river. In order to ensure navigability and cater for new developments in shipping there are plans to deepen the navigation channel. Some of the elements that prevent the port of Antwerp from becoming a market leader are related to its accessibility despite a transport network of around 270 km of roads, 1000 km of railway lines and 300 km of pipelines (Huybrechts et al., 2002).

In the last two decades there has been an increased rate of containerization in the Mediterranean ports. This trend is expected to lower the unit transport cost and help to reduce the margin between the cost of trade between Northern Europe and Mediterranean countries.

[142]

The choice of interviewing freight forwarders allowed the authors to obtain a broad and clear idea of the current situation of the ports, as these operators have a wide perspective of the transport and logistic chain.

To meet this paper's purpose a methodology based on qualitative analysis has been developed. First, a detailed review of the literature on port choice reveals a considerable range of factors affecting the decision in choosing a port. Second, based on the literature review, a set of elements was considered and a 5 – point Likert scale questionnaire was elaborated (refer to annex 1). Third, the questionnaire was submitted to a sample of 46 companies, with a positive response from 39 freight forwarders, currently operating in the ports of Genoa and Antwerp. The interviewed were asked to rank each of the elements on a scale from 1 (not relevant) to 5 (very relevant). The data collected were analysed using a Factor Analysis (FA) method.

Some of the relevant elements that can influence the companies in the decision making process of choosing a port are: availability of efficient equipment, access to the hinterland of the port through rail and road connections, freight charges for the service, operational performance of the port, transit time, port service reliability, logistics facilities, efficient customs procedures, availability of added value services and presence of electronic data tools (Morchio 2003).

The results of the FA show that in the case of Genoa and Antwerp the factors affecting the choice of the port can be distinguished in four factors: (1) connectivity of the port, (2) electronic information, (3) cost and port productivity and (4) logistics and administration of the container. The findings of our mathematical approach lead us to confirm what has been argued in the literature review, and also in the general understanding of the operators dealing with port problems on a daily base.

The remainder of the paper is organised as follows: in the next sec-





tion a description is given of the methodology used. In section three, a detailed review is presented on the existing literature on factors influencing port choice. Section four presents the questionnaire design and responses, while section five handles the descriptive and statistical analysis, the FA and the results. The final section draws some conclusions and comments on future research. [143]

#### METHODOLOGY

The methodology used in this research is based on qualitative analysis and consists of four steps that build on the previous one:

- 1 Review of the literature on the existing academic research on the topic of port choice and outline the major findings;
- 2 Development of a questionnaire using the information from the previous step. We opted for a 5 – point Likert scale questionnaire, ranging from 1 (not relevant) to 5 (very relevant). Submission of the questionnaire to a sample of freight forwarding companies operating in the ports of Genoa and Antwerp. The interviewed were asked to rank each of elements.
- 3 Analysis of the data collected through this survey using the FA method.
- 4 Validation of the findings of these case studies against previous academic research.

As mentioned above, the analysis of the relevant criteria for the port choice has been done using an FA approach. FA is a multivariate statistic data reduction technique that aims to explain the common variance in a number of variables within a single variable called factor. The main purpose of FA is to generate groups of correlated elements taken from the initial data set, and through this process it is possible to capture latent or not clearly observed dimensions (Stevens 1986). In other words, if two variables show a strong correlation with the same factor, some of the correlation between the two variables is explained by their common factor (Dillon and Goldstein 1984).

This method allows for the substitution of the original variables with a lower number of factors, not naturally interdependent, obtained with a linear transformation of the original ones. Following this pro-

cess it is possible to reduce the number of variables that explain and describe a phenomenon (Kim and Mueller 1978).

LITERATURE REVIEW ON PORT CHOICE

[144] Several studies (Slack 1985; D'Este and Meyrick 1992; Dalenberg, Daley, and Murphy 1988; 1989; 1991; 1992a; 1992b; Daley and Murphy 1994; Lirn et al. 2004; Song and Yeo 2004) rely on surveys of port users to get information on factors influencing port choice. Slack (1985) established that the number of voyages and the inland freight rates were most important factor concerning port choice. Relevant port characteristics included the connection to inland transport services and availability of container facilities. The author concluded that 'the choice of port depended more on the price and quality of service offered by land and ocean carriers than on the attributes of ports themselves.'

D'Este and Meyric (1992) conclude that in most cases the port is just another factor that the shipper evaluates in the selection of a carrier. The authors suggested that as carriers increased their scale of operations and shippers began soliciting prices for door-to-door service rather than individual segments, the port selection shifted from the shipper to the carrier. With the deregulation of the maritime industry, rates were no longer so closely related to distance. Carriers could offer less-direct routes that were cost-efficient for the shippers as well as themselves. As shippers adjusted to the deregulated environment, carriers began to select the route for shipments. In selecting the route, carriers would consider the shippers' interests to capture their business. The authors concluded that in the selection of a port, decision makers seem to value service characteristics more highly than price characteristics.

Considerable research has been done on factors used by various parties in their selection of international maritime ports, namely: the viewpoints of worldwide maritime ports, water carriers (Dalenberg, Daley, and Murphy 1989), US based international shippers (Dalenberg, Daley, and Murphy 1991; 1992b), international freight forwarders (Dalenberg, Daley, and Murphy 1992a), and purchasing managers (Daley and Murphy 1994). The authors gather the perspectives of the various parties, since they represent different interests and roles in global



logistics. These studies have discovered numerous differences between shippers and carriers, but mainly between ports and the other players. Yet, analysis of the relative importance of the selection factors shows a high degree of similarity between shippers and carriers.

In order to analyse liners transshipment port selection, Lirn et al. (2004) applied the Analytical Hierarchy Process (AHP) method to 47 selected relevant service attributes established from a literature review. The authors then conducted two rounds of Delphi surveys involving experts in industry and academia. This process allowed for categorizing these attributes into four main service criteria: physical and technical infrastructure, geographical location, management and administration and terminal cost. These are further subdivided into 12 sub-categories. [145]

The results of the AHP analysis targeting 20 carriers and 20 port operators show that both container carriers and port service providers have a similar perception about the most important service attributes, for port selection; however, the weights among the sub-criteria reveal some differences between the two survey groups. Through the AHP survey the authors revealed that the five services attributes such as handling cost, proximity to main navigation routes, proximity to import/export areas, infrastructure condition, and feeder network are the most important service attributes of transshipment ports.

Song and Yeo (2004) aimed at identifying the factors contributing to the overall competitiveness of Chinese main ports. Their focus is on elements concerning geographical location as well as logistics and operational services provided by the ports. A survey was conducted on a sample of 180 professionals including ship-owners, shipping company executives, shippers, terminal operators and academics and researchers. This resulted in a list of 73 factors for port competitiveness. Then at a second step, the opinions of 70 specialists narrowed this list down to the five most important criteria for the port competitiveness, namely cargo volume, port facility, port location, service level and port expenses.

Similarly to Lirn et al. (2004), an AHP method was used to evaluate the priorities among the identified factors, concluding that the location factor plays the most significant role for a port's competitiveness. The

authors argue that port facilities and services can be improved upon, whereas geographical location and cargo volume are considered to be taken for granted.

[146]

An alternative approach to researching the factors influencing port choice is to base the analysis on the observed port decisions. Examples in the literature of statistical analysis of a targeted set of shipments are Malchow and Kanafani (2001; 2004), and Tiwari, Itoh, and Doi (2003). Both these studies gather data on import shipment choices for a given point in time, select commodities and then estimate a multinomial logit model to identify the effect of certain factors on the port choice.

To explain the selection of a port for four types of cargo exported from the US, Malchow and Kanafani (2001) used a multinomial logit model. The authors' intention was to test the significance of distance (ocean and inland), frequency of sailings, and average size of vessels sailing along a route. They conclude that ocean distance and inland distance have a significant influence on export port selection, but sailing frequency and vessel capacity are not considered as important criteria.

In 2004, Malchow and Kanafani applied once again a discrete choice model to the assignment of shipments to vessels/ports. The purpose was to evaluate competition among US export ports. The authors assumed that shippers' preference for a port is established by choosing a carrier providing a service through that port. Findings reveal that geographic location, port characteristics and characteristics of vessel schedules are critical port selection factors, with port location being the most significant of the three factors.

Tiwari, Itoh, and Doi (2003) use data obtained from a survey of shippers of containerised cargo in China in 1998 to model the port choice behaviour of shippers using a discrete choice model. The authors conclude that the most important factors are the distance of the shipper from port, distance to destination (in case of exports), distance from origin (in case of imports), port congestion, and shipping line's fleet size. The authors also analyse the elasticities of changes in these variables and their impact on the market share of shipping line-port combinations.

Blonigen and Wilson (2006) examine port choices of US import



shipments for the period 1991–2003 using a model of bilateral trades. This model was developed to capture factors such as locations of the traders, total transportation costs on the links and nodes that connect the traders, including the ocean rate, the port costs, and the internal transportation rate. In a following step, the impacts of each of these factors on the ocean port choices made by shippers for imports into the USA are tested. The study findings stress that distance and transport prices are very significant factors with quite elastic responses by shipments. It is interesting to note that unlike in previous studies, the authors conclude that the efficiency of an individual port has a significant role in determining its share of activity.

[147]

Based on the literature review, a set of elements was considered and a 5 – point Likert scale questionnaire was elaborated and submitted to a sample of freight forwarding companies currently operating in the ports of Genoa and Antwerp. The next section explains the survey conducted and used in this research.

#### SURVEY

The survey was conducted through a structured questionnaire that was submitted to freight forwarding companies in the ports of Genoa and Antwerp. The contacts were taken from the Genoese Freight Forwarder Association and from the Belfirst data base. For the purpose of our research we decided to contact the largest companies which have a more significant market share. Thus, the sample selection was done according to the level of annual sales, number of employees and to the type of ownership, as indications of the dimension of the company.

The field work was comprised of two phases: a telephone contact followed by a face-to-face interview. A first contact with the Genoese companies was taken through telephone interviews, in March and April 2008. During this first step the purpose of the research was explained and a check was made on availability for a face-to-face interview to be conducted in May 2008. For the interviews in Antwerp, the telephone contacts were taken in September 2008 and the face-to-face interviews took place in October and November 2008.

In the first phase a sample of 46 companies were contacted. Out of the 46, 41 declared their availability for participating in the study.

TABLE I Schematic summary of literature review on port choice

Author(s)	Scope	Research Findings
Slack (1985)	Survey of port end users and freight forwarders engaged in trans-Atlantic container trade between the US mid-West and Europe to identify port selection criteria.	Most important elements in the selection of a port are: number of voyages, inland freight rate, port's connection to inland transport services, availability of container facilities
D'Este and Meyrick (1992)	Study the potential determinant factors of port choice. A survey of companies purchasing shipping services in overnight RO/RO ferry trade was conducted.	Determinants of port choice may be quantitative: route factors, cost factors and service factors, and qualitative: flexibility and ease of use, port's marketing efforts, tradition, personal contacts and level of cooperation that may be developed between the shipper and the port.
Dalenberg, Daley and Murphy (1988)	Identify and explain port selection factors from the viewpoint of worldwide water ports (1988); water carriers (1989), US-based international shippers (1991; 1992b), international freight forwarders (1992a), and purchasing managers (1994).	A survey was conducted on those five different groups using the following factors: large and/or odd-sized freight, large volume shipments, handling charge, loss and damage, equipment availability, pickup and delivery, shipment information, claims handling, and special handling.
Lirn et al. (2004)	Analysis of liners transshipment port selection using the AHP method.	The survey revealed that the five most important service attributes of transshipment ports are: handling cost, proximity to main navigation routes, proximity to import/export areas, infrastructure condition, and feeder network

*Continued on the next page*

However, during the second phase of the field work two other companies declared their unwillingness to take part. The final sample of forwarders was composed of 39 operators, which means an 85% response rate. The face-to-face interviews took place at the freight forwarders' offices. The vast majority of the offices have the same location, in the port area of the two cities, along or very close to the port access.

[148]



TABLE 1 *Continued from the previous page*

Author(s)	Scope	Research Findings
Song and Yeo (2004)	Identify factors contributing to competitiveness of Chinese main ports.	The five most important criteria for the port competitiveness are: cargo volume, port facility, port location, service level and port expenses
Malchow and Kani-fani (2001)	Explain the selection of a port for four types of cargo exported from the US using a multinomial logit model.	Tests the significance of: distance (ocean and inland), frequency of sailings and average size of vessels sailing along a route. The study shows that ocean distance and inland distance have significant influences on export port selection. Frequency of sailings and vessel capacity are not considered as important criteria.
Malchow and Kani-fani (2004)	Evaluate the competition among US export ports by applying once again a discrete choice model to the assignment of shipments to vessels/ports.	The critical port selection factors are: geographic location, port characteristics and characteristics of vessel.
Tiwari, Itoh, and Doi (2003)	Analysis of port and shipping line selection criteria using a discrete choice model where each shipper faces a choice of 14 alternatives based on shipping line and port combinations.	The empirical results indicated that these elements are important: distance of the shipper from port, distance to destination (in case of exports), distance from origin (in case of imports), port congestion, and shipping line's fleet size.
Blonigen and Wilson (2006)	Analysis of port choices of all US import shipments from 1991–2003 using a model of bilateral trades.	Concluded that: distance and transport prices are very significant factors and the efficiency of an individual port has a significant role in determining its share of activity.

[149]

It is relevant to stress that the interviewees were general managers and chairpersons of the companies. This allowed us the possibility of gathering more accurate and precise information.

During the interviews, the respondents were asked to fill in the

[150]

questionnaire in annex with the support of the interviewer. The questionnaire was mainly divided into two parts: the first part concerns some general information about the company, while in the second part the interviewed were asked to express their opinion on 35 variables, i. e. elements potentially affecting port choice; and rank them on a 5 – point Likert scale, from 1 that stands for ‘not relevant’ to 5 ‘very relevant.’

The data collected through this survey were analysed using the FA method. FA has shown to be a useful approach when investigating port competitiveness among ports and choice criteria affecting port users (Haezendonck 2001; Gardner, Lalwani, and Mangan 2002).

In this paper a correlations matrix was performed and the FA was conducted in exploratory form. The FA was conducted through an iterated principal component analysis, and the first iteration, considering just the factors with an eigenvalue greater than one, produced a result of 9 factors.

Considering the high number of factors obtained from the first step, it was decided to proceed with the identification of a more appropriate number of factors. To identify factors, the total variance explained and the screen plot were considered. In the screen plot the shape of the curve was analysed; a shape fall in the eigenvalues curve often suggests that the factors on the upper side of the fall curve are the ones that should be maintained.

In the FA, a Varimax (orthogonal) rotation was performed and the SPSS software was used to process the data.

#### ANALYSIS OF THE RESULTS

An important clarification, related to the number of variables and the total observations of the survey needs to be pointed out. The companies interviewed were 39, and the initial numbers of variables were 35, later reduced to 30 as explained below. It is possible to argue that the number of observations is too small when compared to the number of variables, and this aspect has to be considered when analysing the final results of the FA.

The reduction from 35 to 30 variables was also due to the low relevance of some of them; the process of selection of the relevant variables





was conducted by looking at the ‘component score coefficient matrix’ and excluding the ones that scored very low in all the four factors.

The companies in the sample are located in a specific area of the cities of Genoa and Antwerp, close to the container terminals. Due to historical and economical reasons, the forwarding activity is traditionally located very close to port facilities; in fact, for the case of Genoa, the managerial offices are located within 1 km of the SECH container terminal and within 15 km of the Voltri container terminal. The average distance of the offices from the port of Antwerp is 5 km; in this case it is important to notice that the port is developed over several channels and along the river Scheldt.

[151]

The distance between the port and the offices is an important criterion for choosing a port. Nevertheless, in the case of the selected ports, this element may not be considered of great influence, since the location of the managerial offices is almost equal for all the operators.

A descriptive statistic approach shows that the average number of employees of the freight forwarders in the sample is 58, and the average annual sales was 27.8 million Euro in 2007. Another indicator of the company dimension is related to the legal type of ownership and in our sample 64% of the forwarders are ‘public limited company’, 33.3% ‘limited liability company’ and just 2.5%, i. e. one company is a ‘commercial partnership.’

In the questionnaire it was asked who takes the decision of choosing a port: the forwarder, the sender or the consignor of the good. The results show that for 62% of the companies the forwarder is the operator who chooses the port, 15% of the companies declared that the sender or consignor selected the port with the forwarder, 13% declared that the sender chooses the port, and four companies did not answer this question.

The data collected through the freight forwarders’ interviews show

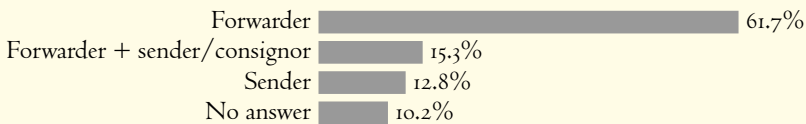


FIGURE 1 Who decides which port to call?

TABLE 2 Explained variance of the factors

Component	Initial Eigenvalues		
	Total	% of variance	Cumulative %
1	9.452	31.505	31.505
2	3.111	10.371	41.876
3	2.730	9.101	50.977
4	2.080	6.177	57.911

[152]

the relevance of 30 variables that can potentially affect the port choice; the results were analysed using the FA method. After performing the FA, the results led us to have four factors affecting the choice of selecting a port.

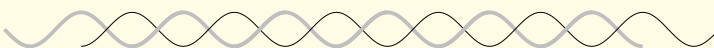
- 1 Connectivity of the port;
- 2 Electronic information;
- 3 Cost and port productivity
- 4 Logistics and administration of the container.

These four factors explain 57.91% of the total variance, while the first factor alone accounts for 31.5% of the total variance, as can be seen in table 2.

It can be observed that the first factor constitutes the most important criterion that the freight forwarders consider when choosing a port. This result appears clear when looking at the screen plot, since the first factor is considerably above one in the eigenvalue scale (figure 2). There is a clear distinction between factor 1 and all the other components.

Table 3 clearly shows the weighed relevance of each of the variables in the detected factors.

The first factor named ‘connectivity of the port’ comprises several variables related to customs procedures and characteristics, such as customs hours (0.712), customs efficiency (0.711) and also customs procedures. This element is particularly relevant for the freight forwarders since it is related to the legal procedures the goods have to follow for entering and exit the port. Another variable strictly related to the connections that the port has with the several stakeholders is handling facilities, and this variable scored also very high (0.639).



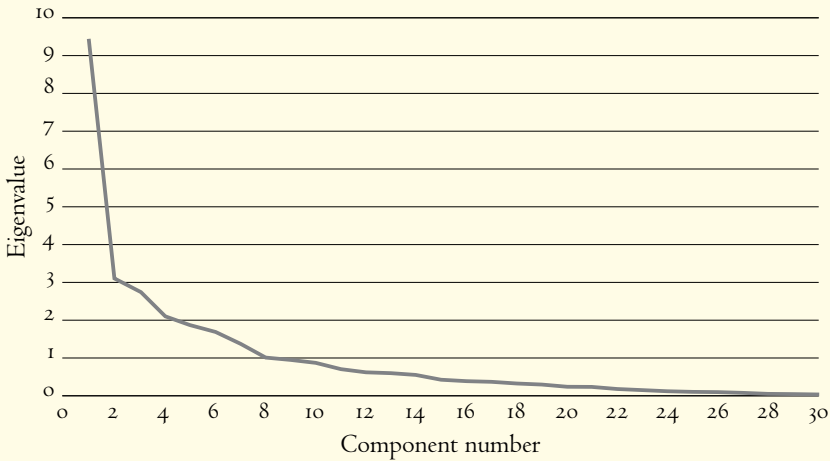


FIGURE 2 Scree plot

In relation to the port connectivity, it is important to underline one aspect that emerged from the responses of the Genoese interviewees, i. e. the lack of efficiency in the procedures and the numerous operations that need to be carried out. By contrast, it appeared that the same operations in the North of Europe are faster and less complicated.

The relevance that forwarders give to hinterland connections is represented by the variables related to the road/train connections and costs. The rail component, connections (0.672) and costs (0.656), score more than road connections (0.530) and road costs (0.321); also the generic variable hinterland connections is present in factor 1. Road, rail and hinterland connections constitute the physical connections that the port requires.

Although this second factor is important in both, in reality a major difference exists between the two ports. While Antwerp is connected to the hinterland via road, rail and inland navigation, Genoa can use just the first two, for obvious reasons. In this respect, the problem is not just related to the lack of inland waterways, but also to the scarce efficiency of the rail services, which means that most of the cargo is arriving at or leaving the port by trucks.

Other variables related to the connections of the ports are the presence of forwarders in the port and the frequency of the maritime service; both of these variables score lower in factor 1.

TABLE 3 Rotated component matrix

Item	Component			
	1	2	3	4
Customs hours	.712	.363	.225	
Customs efficiency	.711	.457	.121	
Rail connections	.672			.198
Rail cost	.656	.116	.118	.128
Handling facilities	.639		.360	
Customs procedures	.606	.404	-.123	.346
Hinterland connections	.550		.483	-.238
Road connections	.530	-.266	.161	
Forwarders' presence	.509		.135	-.413
Frequency of maritime service	.325	.229		.291
Road cost	.321	.288	.219	-.214
Track/trace	-.132	.835	.144	
E-commerce		.791		.118
Electronic information		.772	.184	
Added value service	.209	.736	.239	
Electronic customs procedures	.554	.623		.314
Total time of container in port	.200	.510	.230	.166
Transit time	.210	.365		

*Continued on the next page*

[154]

It is relevant to focus the attention on the first four variables of factor 1, two of which are related to customs activities and the others related to the rail connections of the port. These elements constitute, according to this analysis, the most important ones to be considered when choosing a port.

Factor 2 corresponds to 'electronic information', so named since the vast majority of the variables included in this factor are related to information technologies and exchange of information. The variable that scores the highest correlation with the factor is the possibility of tracking and tracing the goods (0.835), followed by the relevance of e-commerce (0.791) and availability of electronic information devices (0.772). The other variables included in factor 2 are, in order of relevance, added value services, electronic customs procedures, total time

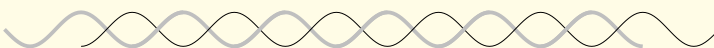


TABLE 3 *Continued from the previous page*

Item	Component			
	1	2	3	4
Terminal productivity	.169	.301	.825	.183
Strikes		.215	.738	.277
Terminal competition	.347	.113	.695	.216
Port charge		.356	.668	
Working port hours	.533		.640	
Working relation with port workers	.111		.629	
Maritime companies competition	.423	.148	.552	.341
Availability of empty container at inland port		.112	.328	.808
Availability of empty container at port			.344	.806
Location taking/delivering container	.312	-.284	.138	.595
Fill/clear out procedures	.409	.430	.221	.565
Booking documentation reliability		.393		.560

[155]

of the container in the port and transit time, those last two variables being directly related to the availability of electronic procedures that allow a faster operation.

The third factor titled ‘cost and port productivity’ comprises seven variables that are related to the port itself and the activities and services offered. The first variable is exactly related to the terminal productivity (0.825), followed by the possibility of having strikes at the port and terminal competition. The variable ‘port charges’ is the one related to the cost of the port (0.668).

All the other variables are strictly related to the activities and characteristics of the port, as is the number of working hours in the port which – together with the presence of maritime companies – has a strong correlation with factor 1. The variable ‘working relation with port workers’ has an impact on the productivity and the performance of the entire port system.

The fourth factor is identified as ‘logistics and administration of the container’, and the three variables correlated with the logistics of the container are: availability of the container in the inland port (0.808), availability of the container at the port (0.806) and location for taking and delivery of the container (0.595). The remaining two

variables are more related to the administrative procedures that the container has to follow, such as the procedures of fill and clear out and the booking and documentations.

[156] Summarising, using the FA it was possible to identify four factors that shed light on the elements that influence forwarders when choosing a port for their operations. These four factors, in order of importance, are:

- 1 Connectivity of the port;
- 2 Electronic information;
- 3 Cost and port productivity;
- 4 Logistics and administration of the container.

As has been already observed, these four factors explain 57.91% of the total variance, while the first factor alone accounts for 31.50 % of the total variance. It can be observed that the first two factors, connectivity of the port and electronic information, explaining 41.87% of the total variance, constitute the most important criteria that the freight forwarders stated to consider when choosing a port.

What has been concluded in this paper follows the finding of the previous literature dealing with this topic. As Lirn et al. (2003) remark, the location of the port is crucial in choosing a port, as well as the administrative and management aspects; two elements that appear also from factor 1 of our FA. Our results were also in line with the study by Song and Yeo 2004, where they stress the importance of port location, service level and port expenses.

#### CONCLUSIONS

A review of the literature on port choice revealed that considerable research has been conducted on this topic. Several studies rely on surveys of port users to get information on factors influencing port choice (Slack 1985; D'Este and Meyrick 1992; Dalenberg, Daley, and Murphy 1988; 1989; 1991; 1992a; 1992b; Daley and Murphy 1994; Lirn et al. 2004; Song and Yeo 2004). It is also common to use AHP to prioritize survey responses in a determined way by giving weights to various factors (Lirn et al. 2004; Song and Yeo 2004).

An alternative approach to researching the factors influencing port



choice is to base the analysis on the observed port decisions (Malchow and Kanafani 2001; 2004; Tiwari, Itoh, and Doi 2003). These studies gather data on import shipment choices for a given point in time, select commodities and then estimate a multinomial logit model to identify the effect of certain factors on the port choice.

[157]

In early studies a number of factors such as geographical location, port characteristics and port fees are identified as relevant.

A case study with 39 forwarders operating in the ports of Genoa and Antwerp was performed. The respondents were asked to evaluate the relevance of several variables on a Likert scale and the data were processed through an FA method. The results of the FA lead to the conclusion that the main factors affecting the forwarders port choice behaviour are four: connectivity of the port (factor 1), electronic information (factor 2), cost and port productivity (factor 3) and logistics and administration of the containers (factor 4).

The outcome of this statistical approach leads us to confirm what was already argued in the literature review and allows us to underpin analytically what can be learned from the experience and empirical knowledge of the forwarders.

As previously mentioned, the main problems of the port of Genoa are related to its location, port (in)efficiency and to the time spent in the operational procedures due to bureaucratic and administrative reasons, while for Antwerp the critical aspects are mainly related to the port accessibility. The competition between the northern and Mediterranean ports seems to be played also on the hinterland side of the port. In this context Genoa has to improve its hinterland connections and optimise their efficiency. This aspect can be considered also in terms of missing infrastructure and links, therefore the European interventions could be a substantial help in promoting the role of the Genoese port. The other crucial aspect is mainly related to bureaucratic reasons and chiefly to customs procedures. Also in this case the problem could be seen as a local issue, although the general national customs system seems to lack behind compared to what is happening in North Europe.

These elements seem to be, at the same time, the main criteria that the forwarders consider. Therefore, the growth and future devel-

opment of the ports of Genoa and Antwerp depends on proactively solving these issues.

[158] Whilst we understand that restricting this analysis to two ports does not allow us to generalise results, we would like to propose further research on this topic that could be developed, in the future, in three different areas, namely:

Enlarge the type of companies in the sample to include other port users, such as terminal operators and shipping lines. This would enable us to understand whether the identified factors for port choice are perceived to be the same or if there are other factors to be considered. Additionally, it would also be interesting to confront the results stated by freight forwarders with the perception of port operators.

Systematise this research to other ports in the Hamburg–Le Havre and Mediterranean range to understand if the decision factors identified above are common to the ports in these two areas or if factors are specific the ports of Antwerp and Genoa.

Thirdly, it would be interesting to understand how these factors would change if different types of ports were to be considered such as, for instance, a pure transshipment or regional port.

#### ACKNOWLEDGMENTS

The authors would like to thank Professor Hilde Meersman and Doctor Enrico Ivaldi for their useful comments on the earlier version, as well as the companies that took part in the survey.

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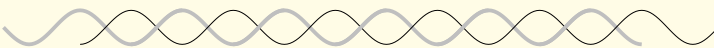
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[160]

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# Résumés

## Jeter un coup d'œil sur les pays euro-méditerranéens : quelle vision pour logistique commerciale

SINAN FIKRET ERK

Le processus de la mondialisation et l'importance des zones géographiques ont changé d'orientation vers les pays méditerranéens. Cette orientation, sans se concentrer uniquement sur l'Europe, a permis à d'autres nations qui partagent la mer méditerranée d'intensifier leur collaboration. En termes de le processus euro-méditerranéen (EuroMed), qui peut être étudié sur plusieurs niveaux (culturelles, commerciales, universitaires, etc.) Et en termes de la logistique du commerce international, des actions similaires seront inévitable pour le développement entre les pays qui partagent la mer Méditerranée et de leurs capacités logistiques, la recherche dans un coté vise à examiner les performances de chaque pays en termes de revenus de la logistique dans la région méditerranéenne en ce qui concerne les tendances récentes et les possibilités de croissance. Les pays concernés dans cette étude sont l'Albanie, la Croatie, Chypre, Egypte, France, Grèce, Israël, Italie, Malte, Maroc, Slovénie, Espagne et Turquie.

IJEMS 4 (1): 19–37

## Un futur cadre réglementaire pour les émissions de CO<sub>2</sub> de la marine marchande dans la région méditerranéenne

ALEXANDER M. GOULIELMOS, KONSTANTINOS V. GIZIAKIS,  
ET ANASTASIA CHRISTODOULOU

Cet article a essayé de interpréter ce que sera le cadre réglementaire sur les émissions de CO<sub>2</sub> originaires des navires dans la région méditerranéenne, à la fois sur les efforts de l'UE et l'OMI. Sans doute, en effet, que quelques autres domaines ont été déjà réglementés, mais les émissions de CO<sub>2</sub> dans la région méditerranéenne sont au-dessus de 30% des émissions du transport maritime total dans l'UE<sup>27</sup>. L'UE dans le cadre du protocole de Kyoto de 1997 s'est engagée à réduire ses émissions de GES de 8% d'ici 2012 vis-à-vis de 1990. La région méditerranéenne à travers le monde suit le modèle que toutes activités humaines de toutes sortes (industriels, récréatifs, résidentiels) devront être localisés près des côtes. La région méditerranéenne poussée par son intérêt

[162]

économique devrait améliorer ses productivités. Les conditions climatiques par conséquent sont susceptibles de s'aggraver. Cet article examine d'abord le cadre réglementaire pour la réduction des émissions de GES provenant des navires en analysant quatre systèmes de régulation. La Méditerranée, en raison de ses grands ports d'accueil des navires de 16000 EVP. Elle représente donc une zone pour les navires de travers intensive, étant aussi un domaine principal importateur. Dans un autre côté, le document fait l'hypothèse de travail que la protection de l'environnement doit commencer à partir des ports, y compris les Etats bordiers. Comme le montre, la région méditerranéenne doit être préparé pour interdire les navires destinés, à moins que les navires plus économes en énergie sont construits selon des incitations (un système de taxe mondiale sur les soutes maritimes) et les indicateurs comme EEOI/IDÉE dans un système d'échange d'émission maritime.

IJEMS 4 (1): 39–60

### Le « New Port » en Espagne comme un moyen de soutenir l'augmentation du potentiel de circulation dans la mer Méditerranée

FERNANDO GONZÁLEZ LAXE

Le rôle de l'Espagne comme « la terre des ports » avait augmenté au cours des dernières décennies avec le développement économique du pays. Cela a nécessité un processus de modernisation du système portuaire espagnol non seulement en termes d'infrastructures, mais aussi une évolution en termes d'organisation et de gouvernance. C'est pour cela l'Espagne, comme d'autres pays méditerranéens, a été soumise au processus de réforme portuaire. Cet article met l'accent sur les raisons et les résultats de ce dites processus. Après une introduction assez détaillée qui reprend l'évolution du mouvement maritime dans la région méditerranéenne ainsi que dans autres ports espagnols, des changements profonds sont mise en place concernent l'organisation du commerce maritime bien libellé « révolution logistique », ce document vise donc a analyser la réforme portuaire espagnole récente. On va relever comment le modèle espagnol appelé « Puertos del Estados » – doit être l'exemple à suivre pour tout le bassin méditerranéen, puisqu'il introduit des éléments tels que l'efficacité, l'autonomie, le soutien à la concurrence, et les connexions entre les ports et dans les territoires secteur portuaire, tout en maintenant une coordination politique forte au niveau de l'Etat.

IJEMS 4 (1): 61–82



## Identifier les bon « plan » quelle leçon pour la Libye du l'expérience de la Malaisie

HESHAM M. GHASHAT, KEVIN CULLINANE  
ET GORDON WILMSMEIER

Malgré le fait que la Libye et la Malaisie sont situées dans différentes régions du monde, les deux pays ont plusieurs ports qui fonctionnent dans des environnements similaires. Les Ports Malaisiens ont développé rapidement depuis la fin des années 1980, ils ont été émergé comme opérants, agissants et productives. Le gouvernement libyen a mis en-œuvre l'objectif ambitieux de son secteur portuaire tant au niveau de l'augmentation de la circulation de caissons dans les ports du pays, et au niveau de participation à la compétition afin de devenir l'un port Méditerrané par excellence. Cet article analyse les résultats obtenus à partir d'une étude cible le changement structurel du port de la Malaisie. L'étude montre ensuite que la situation actuelle dans les ports parallèles de la Libye que de la Malaisie avant sa mise en œuvre d'une politique de déconcentration port. Une analyse avait été appliquée pour comparer la situation générale des deux pays en utilisant trois différents critères. Le document conclut que la structure organique peut fournir la meilleure solution pour la réussite de l'industrie des ports libyens.

[163]

IJEMS 4 (1): 83–117

## Gestion d'actifs au sien des gares maritimes italiens transportant de passagers Méditerranés

ASSUNTA DI VAIO ET GABRIELLA D'AMORE

L'objectif principal de cet article est de saisir comment deux différents modèles de gestion des ports pourrait correspondre à différents systèmes d'information entre les acteurs (autorités portuaires, les sociétés concessionnaires terminal de croisières et autres). Afin d'analyser comment l'information sur le débordement des passagers est géré au sein des ports caractérisés par différents modèles de gouvernance, l'étude met l'accent sur le système d'information utilisés par les concessionnaires entreprises aussi bien que gares de croisière d'accueil. Il s'agit donc d'une étude préliminaire menée sur une approche qualitative en utilisant une étude de cas de quatre concessionnaires italiennes gérante un terminal de croisière.

IJEMS 4 (1): 119–137

## Critères de sélection des conteneurs du port : vision sur la Méditerranée

MONICA GROSSO et FELICIANA MONTEIRO

[164]

Dans un environnement compétitif, les ports jouent un rôle d'une interface entre les différents modes de transport. Par conséquent, il est important de déterminer les facteurs clés qui encouragent les transitaires de faire choisir d'un tel port. Ce document vise à identifier les facteurs et les critères qui influencent la décision des transporteurs quand ils choisissent entre les ports, en précisant les éléments qui influencent le choix entre les ports de la Méditerranée et ceux du bordure du nord. Un examen détaillé de la littérature révèle un nombre considérable de facteurs qui influent sur la décision du choix du port. Cette étape théorique est dont on a utilisé une méthode d'enquête appliquée au port méditerranéen de Genova et par rapport au port du nord d'Anvers qui sont des nœuds stratégiques pour les flux de trafic vers l'Europe centrale. Les données recueillies ont été analysées en utilisant la méthode de l'analyse factorielle. Cette recherche montre que les principaux éléments influençant le choix du port peuvent être regroupés sur quatre grands facteurs : la connectivité des ports, des informations électroniques, le coût et la productivité des ports, et de la logistique et l'administration du conteneur. Il est expliqué comment ces facteurs sont évalués du point de vue des transitaires.

IJEMS 4 (1): 139–160



# Povzetki

## Pogled na evro-sredozemske države iz zornega kota transportne logistike

SINAN FIKRET ERK

Proces globalizacije in geografska lega postavljata v zadnjem času v ospredje sredozemske države. Ker se v središču pozornosti niso znašle samo evropske sredozemske države, je to priložnost tudi za druge, neevropske države v Sredozemlju. Znotraj evro-sredozemskega procesa povezovanja (EuroMed) se to dogaja na več ravneh – kulturni, gospodarski, akademski in ostalih. Tovrstne iniciative so nujno potrebne tudi na področju mednarodne transportne logistike. S pregledom dežel, ki si delijo sredozemski prostor in njegove logistične zmožnosti, skuša ta raziskava podati primerjavo posameznih držav po prihodkih na področju logistike v sredozemlju glede na trenutne usmeritve in priložnosti. V študiji so bile zajete Albanija, Ciper, Egipt, Francija, Grčija, Hrvaška, Izrael, Italija, Malta, Maroko, Slovenija, Španija in Turčija.

IJEMS 4 (1): 19–37

## Bodoči regulacijski okvir za izpuste CO<sub>2</sub> v pomorskem prometu v Sredozemlju

ALEXANDER M. GOULIELMOS, KONSTANTINOS V. GIZIAKIS,  
in ANASTASIA CHRISTODOULOU

Članek skuša ugotoviti, kakšen bo prihodnji regulacijski okvir za izpuste CO<sub>2</sub> v pomorskem prometu v Sredozemlju, tako na podlagi prizadevanj EU kot IMO. Izpusti na nekaterih drugih področjih so bili sicer že regulirani, izpusti CO<sub>2</sub> v Sredozemlju pa predstavljajo 30 % vseh izpustov v pomorskem prometu znotraj EU<sup>27</sup>. EU se je s Kjotskim protokolom iz leta 1997 zavezala, da bo do leta 2012 zmanjšala izpuste toplogrednih plinov za 8 %. Tudi Sredozemlje sledi enakemu vzorcu, kot ga najdemo drugod po svetu in po katerem so človeške dejavnosti vseh vrst (industrija, bivališča, prosti čas) zgoščene v obalnem pasu. Pričakovati je, da se bo zaradi gospodarskih dejavnosti sredozemskih držav pomorski promet v sredozemlju še povečal, zaradi česar se bodo klimatske razmere verjetno še poslabšale. Članek najprej predstavlja regulacijski okvir za zmanjšanje izpustov toplogrednih plinov v pomorskem prometu z analizo štirih regulatornih sistemov. Sredozemlje je s svojimi pristanišči za matične ladje s kapaciteto 16000 TEU področje, v katerem lahko

[166]

ladje prikažejo prednosti svoje ekonomije obsega in hkrati poglavitno področje uvoza blaga. Zato je bila delovna hipoteza članka, da se mora zaščita okolja začeti v pristaniščih in vključiti obmorske države. Kot je bilo prikazano, se mora Sredozemlje pripraviti na možnost prepovedi prometa ladjam, ki sedaj plujejo po njem; edina alternativa je gradnja energijsko bolj učinkovitih ladij v skladu z iniciativami za zmanjšanje izpustov v pomorskem prometu.

IJEMS 4 (1): 39–60

## Nova organiziranost pristanišč v Španiji kot način podpore povečanju prometnih zmognosti v Sredozemlju

FERNANDO GONZÁLEZ LAXE

Vloga Španije kot »dežele pristanišč« se je v zadnjih desetletjih okrepila skupaj z gospodarskim razvojem države. To je narekovalo posodobitev španskega sistema pristanišč, in to ne samo na področju infrastrukture – potreben je bil tudi razvoj na področju organizacije pristanišč in upravljanja z njimi. Zaradi tega Španija, tako kot tudi druge sredozemske države, morala izpeljati proces »reform pristanišč«. Pričujoči članek se osredtoča na vzroke in rezultate tega procesa. Po dokaj podrobnem uvodu, ki obravnava razvoj pomorskega prometa v Sredozemlju in španskih pristaniščih, do katerega je prišlo zaradi velikih sprememb v organizaciji pomorskega prometa (znanih kot »logistična revolucija«), članek poda tudi pregled reform španskih pristanišč, do katerih je prišlo pred kratkim. Španski model – ki je organiziran okrog centralne pristaniške uprave imenovane »Puertos del Estado« – je zelo zanimiv za celotno področje Sredozemlja, ker uvaja učinkovitost, avtonomijo, spodbuja tekmovalnost ter povezovanje med pristanišči in zaledjem, ob tem pa ohranja trdno in usklajeno politiko na tem področju na državni ravni.

IJEMS 4 (1): 61–82

## Iskanje pravega načina: Kaj se lahko Libija nauči iz decentralizacije pristanišč v Maleziji?

HESHAM M. GHASHAT, KEVIN CULLINANE,  
in GORDON WILMSMEIER

Kljub dejstvu, da se Libija in Malezija nahajata v različnih delih sveta, imata obe državi pristanišča, ki delujejo v podobnih razmerah. Malezijska pristanišča so se od konca 80 let zelo povečala in se uveljavila kot zelo dejavna in





učinkovita. Tudi Libijska vlada je za svoja pristanišča pripravila zelo ambiciozen načrt, po katerem bodo povečali pretovor zabožnikov in se vključili v tekmovanje s konkurenco na tem področju; njihova pristanišča naj bi postala ena od ključnih pristanišč za pretovor zabožnikov v Sredozemlju. Članek najprej analizira uspehe, ki so jih v Maleziji dosegli s spremembo strukture in organizacije svojih pristanišč, nato pa pokaže, da je sedanji položaj libijskih pristanišč podoben položaju v Maleziji pred decentralizacijo pristanišč. Za primerjavo splošnega položaja v obeh državah v treh različnih obdobjih je bila uporabljena metoda analize ujemanja. Cilj se v libijskem primeru nahaja nekje v prihodnosti in je določen na podlagi malezijskih uspehov pri uvajanju politike decentralizacije pristanišč. V odgovor na zahteve dinamičnega okolja, v katerem delujejo pristanišča, in strategijo libijske vlade na tem področju, članek ugotavlja, da je organska struktura pristanišč lahko najboljši način za uspeh na področju pretovora zabožnikov.

[167]

IJEMS 4 (1): 83–117

## Upravljanje italijanskih potniških terminalov za nadziranje potniških tokov v Sredozemlju

ASSUNTA DI VAIO in GABRIELLA D'AMORE

Glavni namen članka je ugotoviti, kako se različni načini upravljanja pristanišč ujemajo z različnimi informacijskimi sistemi, ki jih uporabljajo akterji (pristaniške uprave, koncesionarji, ki upravljajo s potniškimi terminali in drugi) v sistemu morskih pristanišč. Da bi preučili, kako se informacije o potniških tokovih obdelujejo v pristaniščih z različnimi načini upravljanja, se študija osredotoča na informacijske sisteme, ki jih koncesionarji potniških terminalov uporabljajo za zbiranje podatkov ter njihovo obdelavo in posredovanje pristaniškim upravam. Gre za poizvedovalno raziskavo z uporabo kvalitativnega pristopa in študije primerov. Narejena je bila na primerih štirih italijanskih koncesionarjev potniških terminalov.

IJEMS 4 (1): 119–137

## Kriteriji za izbiro terminalov za zabožnike v Sredozemlju

MONICA GROSSO in FELICIANA MONTEIRO

V tekmovalni panogi, kakršna je pomorski promet, so pristanišča vmesni člen med različnimi načini prevoza. Zato je pomembno, da določimo ključne dejavnike, ki vodijo špediterje pri odločitvi za posamezno pristanišče. Članek skuša poiskati dejavnike in merila, ki vplivajo na izbiro pristanišča, posebej

[168] tiste, ki vplivajo na odločitev pri izbiri med sredozemskimi pristanišči in tistimi na severu Evrope. Podroben pregled literature je pokazal, da obstaja precejšen razpon dejavnikov, ki vplivajo na izbiro pristanišča. Pregledu teorije je sledila primerjava sredozemskega pristanišča, kakršno je v Genovi, s pristaniščem v Antwerpnu na severu; obe pristanišči sta strateški vozlišči prometnih tokov proti Srednji Evropi. Zbrane podatke smo preučili z metodo faktorske analize. Raziskava je pokazala, da je pglavitne dejavnike, ki vplivajo na izbiro pristanišča, mogoče združiti v štiri skupine: prometne povezave, informacijska podpora, cene in storilnost pristanišča ter logistika in upravljanje pretovora zabojnikov. Obravnavana je bila presoja teh štirih skupin dejavnikov z zornega kota špediterja.

IJEMS 4 (1): 139–160



*Continued from the front inside cover*

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*Euro-Mediterranean University, Slovenia, and University of Nova Gorica, Slovenia*



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English to French Translations

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Design and Typesetting

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Print run: 500.

Printed in Slovenia

by Mediashop, Škoflje.

# EMUNI University ENPI Project

The project intends to sustain and support the development of academic mobility, tune the academic accreditation and validation processes of university and professional education within the Union for the Mediterranean and serve as a reference to future cooperation amongst academic and professional bodies within the region for Ministerial and Institutional cooperation in line with the external dimension of the Bologna Process and the parallel initiatives established on the international level in professional qualifications and academic mobility. It should also serve as a platform of possible cooperation with the European Research Area and the ancillary initiatives which bring together the world of work with the world of academia.

The project focuses on the mission of the EMUNI University which includes:

- Developing quality of higher education through the implementation of study and research programmes
- Aiming to become an international university with a special focus on cultural diversity

- Establishing an environment which will have a stimulating effect on connecting different nationalities and cultures in an academic sphere

The aim of EMUNI University ENPI Project is bringing new innovative solutions in Euro-Mediterranean region on priority fields of Union for Mediterranean:

- De-Pollution of the Mediterranean
- Maritime and Land Highways
- Civil Protection
- Alternative Energies
- Higher Education and Research
- The Mediterranean Business Development Initiative

Main activities are:

- Developing new postgraduate study programmes in the field of Union for Mediterranean priorities
- Developing University Policies
- Dissemination of project achievements (Journals, Regional Days, Conferences)
- Developing academic and scientific innovation



EMUNI is  
co-funded by  
the European Union

