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Italian Maritime Economy

The Mediterranean as new key crossroads:
outlooks, geomaps and Italy's role on the Silk Road

4th Annual Report

2017

srm

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The Mediterranean as new key crossroads: outlooks, geomaps and Italy's role on the Silk Road

Annual Report 2017

Giannini Editore

Publication based on data information available at May 2017.

Graphic and editorial design:

Marina RIPOLI

ISBN-13: 978-88-7431-878-0

2017© Giannini Editore

Naples - 6/b, via Cisterna dell'Olio
www.gianninispa.it

“Joins the sea that separates the countries”
Alexander Pope

Published by

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Acknowledgements and Notes

The 2017 Annual Report on *Italian Maritime Economy* is part of a broader research project launched by SRM and called "Permanent Observatory on the Economy of Maritime Transport and Logistics", from which the specialised website www.srm-maritimeconomy.com was born. This has the primary aim of monitoring and analysing the dynamics and economic impact of the sector in the economy of the country with a European and Mediterranean scope.

We wish to thank all the supporting partners of the project: Assoporti, Autorità Portuale di Sistema del Mar Ionio, Autorità Portuale di Sistema del Mar Tirreno Centrale, Contship Italia, Federagenti, Federpesca, Grimaldi Group, Lotras, Unione Industriali di Napoli.

A special thanks goes to BANCO DI NAPOLI for cooperating in the presentation and spread of the results of this research. In particular, we wish to thank President Maurizio BARRACCO and General Manager Francesco GUIDO. We would also like to express our gratitude to the *Desk Shipping* of Mediocredito Italiano for the active participation in this research project.

We also thank the different banks of INTESA SANPAOLO for collaborating in the phase of data and information gathering and for the help in spreading the results of the research.

A special thanks goes also to: Gian Enzo DUCI and Michele PAPPALARDO (President and member of board Federagenti), Ambrogio PREZIOSO (President, Unione Industriali di Napoli), Michele LIGNOLA (General Manager, Unione Industriali di Napoli), Francesco TAVASSI (President department of Logistics, Intermodality and Transport, Unione Industriali di Napoli), Paul KYPRIANOU (Director, External Relations Grimaldi Group), Sergio PRETE (President, Autorità Portuale di Sistema del Mar Ionio), Daniele TESTI (Marketing & Corporate Director, Contship Italia), Luigi GIANNINI (President, FEDERPESCA), Zeno D'AGOSTINO (President, Assoporti), Armando DE GIROLAMO (Sole Administrator Lotras), Pietro SPIRITO (President, Autorità Portuale di Sistema del Mar Tirreno Centrale).

The Monographic section of this volume was possible thanks to four important scientific missions SRM carried out and which made it possible to sign agreements with prestigious centres of studies and to gather data, information and documents which resulted in considerable value added to this publication.

During the different missions and through direct visits of the ports it was possible to comprehend the most interesting port models and maritime phenomena currently affecting Chinese, Northern European and Israeli ports.

The first mission took place in Shanghai (China) in December 2016 and a special thanks is hereby due to the Shanghai International Shipping Institute (SISI) for the support it provided SRM's researchers.

SISI has also edited one of the chapters of the Report and we would like to thank President and Secretary General Mr. Zhen HONG for the hospitality and support provided.

Thanks also to Yang Yan BIN, Operations Department Assistant Manager of the Zhendong Terminal run by Shanghai International Port Group, for their support during the visit of the Port of Shanghai.

The second mission was carried out in Rotterdam in February 2017 and a special thanks goes to Michele ACCIARO, Professor at KLU-Kühne Logistics University of Hamburg for his support and for editing a chapter of the Maritime Report.

During this mission it was also possible to reach an agreement with Professor Bart KUIPERS and Dr. Onno DE JONG of Erasmus University Rotterdam, who have written one of the chapters of this report.

The success of SRM's mission in The Netherlands was also possible thanks to the active participation of the following companies and institutions: Victor SCHOENMAKERS (Director, Corporate Strategy Port of Rotterdam), Arenso BAKKER (Partner at Stig Delta), Rommert DEKKER (Professor, Erasmus University of Rotterdam) and Mare STRAETMANS (Managing Director Port XL).

The third mission took place in Tel Aviv, Haifa and Ashdod in Israel in March 2017 and for this a special thanks goes to the *Corporate & Investment Banking* Dept. of INTESA SANPAOLO. A special thanks also goes to Dani SCHAUMANN (Global Country Advisor) for the crucial support provided to our successful mission.

The success of SRM's scientific mission is also due to the active participation of the following companies and institutions that granted us interviews and provided material and documentation: Cristina CAPUTO (Head of the Economic and Commercial Office, Italian Embassy in Israel), Massimiliano GUIDO (Trade Commissioner, ITA-Italian Trade Agency), Daniel AMI (Co-founder and CEO, Windward), Rotem ABELES (Business Development, Windward), Rafael BEN-ARI (VP Shipping Global Services Directorate, ZIM), Daphna DVIR (Planning & Development Division Manager, ZIM), Dov FROHLINGER (Chief Operating Officer, Israel Ports), Omer GOLDSCHMIDT (Business Development, Windward), Yehuda HAYUTH (Consultant, Ports, Shipping & Intermodal Transport), Yehuda HEIMLICH (Business Development & Environmental Director, Ashdod Port Company), Yigal MAOR (Director General Ministry of Transport Administration of Shipping and Ports), Matan ROZEN (Environmental Manager, Ashdod Port Company), Yoram SEBBA (President, The Israel Chamber of Shipping).

The fourth mission was carried out in Athens (Greece) in April 2017 and a special thanks goes to the International Propeller Club and in particular to Umberto MASUCCI and President of section Propeller Piraeus, George XIRADAKIS for their crucial support to a mission that included a long visit of the port of Piraeus. Also important was the assistance provided by Mr. Tassos VAMVAKIDIS, Commercial Manager of Piraeus Container Terminal.

We also wish to thank the Asian Infrastructure Investment Bank (AIIB) and in particular Laurel OSTFIELD, Head of Communications and Development, for the interview they granted us.

This volume features a series of thematic geo-maps about naval routes which made it possible to improve the analyses and information of this Report. Such materials have been produced thanks to the collaboration with ITHACA and to this regard we would like to thank Professor Piero BOCCARDO for the significant support provided.

A special thanks also goes to CENTRO EINAUDI of Turin for participating in this research project. The director of this institution, Mr. Giuseppe RUSSO, is the author of one of the chapters of this report.

A special thanks to Jinglei YANG, Associate professor, Department of Logistics Management, Nankai University, for the support given during the elaboration of Chapter VII.

Finally, we wish to thank all Italian and foreign Port Authorities for providing up-to-date data on traffic.

A special thanks for their collaboration goes to: Fiorinda CORRADINO (Autorità di Sistema Portuale del Tirreno Centrale), Tiziana MURGIA (Assoporti), Teresa PUGLIESE (Mediocredito Italiano), Paola RUSSO (Unione Industriali di Napoli), Felicetta STANCO (Unione Industriali di Napoli).

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NOTES:

SRM has edited this Report taking on full responsibility for its overall design and coordination. Detailed authorship of each chapter is as follows:

- Ch. I by Giuseppe RUSSO;
- Ch. II and VIII by Anna Arianna BUONFANTI;
- Ch. III by Michele ACCIARO
- Ch. IV and IX by Dario RUGGIERO;
- Ch. VI by Alessandro PANARO;
- Ch. V by Liu WEIRONG and Zhao NAN;
- Ch. VII by Bart KUIPERS and Onno DE JONG.

See page 219 for further detail.

Contents

The Annual Report Italian Maritime Economy *has reached its fourth issue. This publication is becoming increasingly noteworthy in demonstrating the weight and importance of maritime transport and logistics to Italy and to Europe as a whole.*

International maritime trade, naval connectivity, logistics efficiency and the presence of big players of the sector are now considered by all international think tanks as key benchmarks when measuring the economic performance of a certain area of the world.

Therefore, SRM's Observatory continues to attentively monitor the dynamics and phenomena that characterise the Mediterranean, also in relation with the global scenario. The year 2016 witnessed many crucial events such as the expansion of naval gigantism, the inauguration of the new Panama Canal, the port reform in Italy, China's numerous and significant investments in ports and maritime terminals in the MENA area and many more.

As far as investments are concerned, it is important to highlight that the Mediterranean is ripe with opportunities. A sea where all kinds of ship transport a wide range of goods such as containers, bulk and vehicles on a daily basis, the Mediterranean is one of the main nodes of global maritime trade, thus the interest of China in the so called Mare Nostrum is fully understandable, and reveals a long-term vision for investments.

Last year SRM informed its readers that the Dragon was launching strategic projects in our area, i.e. Cosco's €350 million investment in Piraeus port and the other significant investments carried out in The Netherlands (Rotterdam) and Italy (Vado Ligure). All of these represent clear signals of a strong interest.

Therefore, the One Belt One Road Initiative begins to present its challenge, with China intending to build an important pathway, allowing it to increase international relations with Eurasia. This impressive action plan comprises resources to be utilised in ports, airports, railways and logistics and Italy must ensure it plays a key role for itself in this scene.

As is common with its style of research, SRM checked the field for what underlies the statistics and data we can gather on such a big topic. Researchers travelled to China, The Netherlands, Greece and Israel to obtain information and analyse the most interesting aspects of portuality in these countries, thus enriching this volume with first hand accounts from the sector of shipping. Indeed, it is only through direct observation that we can fully understand the extension of the Chinese phenomenon currently contributing to increasing the centrality of the Mediterranean. This area in fact, continues to gain importance despite the political instability that some of its countries are experiencing.

The port reform in Italy represented an important step forward but it is necessary to look further afield. A restructuring process has been started, however, it is necessary to finalise it quickly as our maritime-logistics competitiveness needs to be pushed to high excellence levels.

As traditionally stated by SRM, we need to bear in mind that Italy has always been a maritime country, benefiting from an enviable geographical position at the centre of the Mediterranean and with ports and ship owners which still today represent one of the symbols of the country.

Maritime import-export in Italy amounts to over €220 billion and 500 million tonnes of goods per year. Additionally, the country is first in the Short Sea Shipping sector in the Mediterranean and the Black Sea. Furthermore, what is true for Italy as a national economy is even more relevant for its southern regions, the so called Mezzogiorno, which significantly contribute to the aforementioned figures.

Investments in infrastructure, intermodality and development of the workforce are three aspects of maritime economy where Italy needs to make significant progress in order to take advantage of its geographical position and intellectual potential.

Our observatory has continued to grow thanks to important agreements and collaborations launched this year with the Erasmus University of Rotterdam and the Shanghai International Shipping Institut, two important centres of studies which have contributed two specific chapters to this 2017 Report. In particular, in December 2016 the SISI invited SRM to join the Global Shipping Think Tank Alliance, an agreement between the fourteen most important research centres in the world. SRM is proud and honoured to participate in this collaboration and considers this an important acknowledgement of the fact that its research is striving towards reaching the highest possible standards.

Our ambition is to continue to be a reliable reference for operators, institutions, shipping associations and evidently the banking sector, of which SRM is a direct expression. We aim to provide analysis and reflection which may contribute to raising awareness of the importance and weight of the shipping sector for Italy and above all for the south, as we continue to consider the Mezzogiorno *as a key player.*

Paolo SCUDIERI

Objectives and organisation of the Annual Report

The 2017 report on the maritime economy, one of the core pieces of research of SRM's Observatory on Transport and Logistics, has now reached its fourth edition and this year's volume is based on two mainstays. Firstly, there is a general and consolidated section aimed at providing an outline of the main data of the sector both on a national and global scale. Secondly, the Report moves on to approach a topic that SRM has been analysing systematically over time, namely the evolution of China's investment in ports and maritime terminals in the Mediterranean and Northern Europe.

This phenomenon is still today having an influence on thel *Mare nostrum* and on the North Sea and this is likely to continue for a long time due to the fact that the Dragon has planned significant infrastructural investment with the aim of achieving the goals set by the *One Belt One Road*. This project provides for the creation of seaborne and land routes which will allow China to expand its trade relationship with Europe and Asia mainly through the implementation and/or improvement of all sorts of transport infrastructure.

This year SRM's researchers have travelled to countries where some of the aforementioned investment has been planned or implemented, so as to comprehend in more detail the significance of the figures underlying these operations. Missions have been carried out in Shanghai (China), Rotterdam (The Netherlands), Tel Aviv, Haifa, Ashdod (Israel) and Athens (Greece) with the aim of analysing the different port and logistic models in each country, the strategies employed by ports in response to current maritime and economic phenomena, and, last but not least, the initiatives that China has launched. Clear examples of this are: the investment of state-owned Cosco in the ports of Piraeus and Rotterdam, the terminal that Shanghai International Port Group intends to run in Israel, and the terminal in Vado Ligure in Italy. Many more examples could be hereby cited. All of these initiatives confirm the strong interest of Chinese players in the Mediterranean, currently considered as a gateway to explore new frontiers of development in import and export.

Therefore, the maritime economy appears to be an important topic not only for its weight in terms of companies, infrastructure and investment, but also because it has started to shape the global geo-economic scene.

Nonetheless, the present research also addresses other important phenomena characterising the global economy and which will affect the Mediterranean and, consequently, Italian portuality. One of these is the unstoppable growth of ship size. A closer look at the orderbook, in fact, reveals that by 2020 there will be 1,043 vessels bigger than 7,500 TEU (105 of which bigger than 18,000) and they will account for 52% of total available capacity (in 2016 this figure was 46%). As an example of this, at the end of April 2017 Maersk Line announced that *Madrid* Maersk had gone on its maiden voyage on the Asia-Europe route. This is the first unit to start service of eleven second-generation containerships of class "Triple-E" with a load capacity of over twenty thousand TEU.

Madrid is the first operative ship of twenty-seven container vessels ordered by the shipping liner in 2015 amongst which there are ten Triple-E class, nine 15,000 TEU units and seven 3,596 TEU ships that will be ready in 2018. Twenty of these new vessels will be used on routes between Asia and Europe. The eleven 20,000 TEU ships will sail to Northern European ports while the nine 15,000 TEU will be used on Asia-Mediterranean routes.

As a consequence, competition in the container sector is likely to revolve around the availability in ports and terminals of equipment and quays that will allow it to receive ships of the aforementioned sizes.

Together with the growth of ship size, we are witnessing an increasingly extreme policy of collaborations and mergers, which has resulted in three big alliances, *2M*, *Ocean Alliance* and *THE Alliance*, cornering the market and that are working to cover global routes of transport with frequent services. On the main routes such as Asia-Med and Asia-Northern Europe these liners have acquired almost the whole of the market only leaving small shares to other operators. Furthermore, SRM continues to monitor the dynamics of Suez and Panama, the two canals that have affected traffic routes just as expected not only in terms of quantity of transited goods – the North-South route of Suez registered a 17.6% increase in the first trimester 2017 – but also on ship types. For example, Panama can currently allow access to 14,000 TEU vessels and to ships loaded with natural and liquid gas, a significant fact also in terms of future prospects of traffic for ports in Central America.

This report also focuses on Short-sea traffic, which represents a point of excellence for our country: Italy, which in fact has a 36% market share in this sector in the Mediterranean. Ro-Ro traffic in Italy (50% of which is carried out in the Mezzogiorno) is a major strength for the country which boasts of excellent ship owners with terminals all over the world. It is therefore important to support this sector so as not to lose market share in sectors where our know-how is consolidated and recognised. The same can be stated for the traffic of bulk, both solid and liquid, which represents a major sector for our ports (50% of total traffic).

After a period of difficulty caused by the long elaboration process of the latest reform, Italian ports are trying to recover their competitive drive, as newly appointed presidents work to design new strategies to follow and the new Port System Authorities clarify the role they will play on this stage. Our ports need new life, new characters looking in the direction of logistics and intermodality, and with an awareness of their role as tools at the disposal of industry and tourism which maritime operators can completely rely on.

Other ports continue to invest and to innovate, and this is a clear signal of a constantly renewing competitiveness that now depends on efficiency and effectiveness of infrastructure. The modern port should not merely be a place where ships dock but also needs to present itself as: a) a pivot for the internationalisation of the industrial system, b) a centre of excellence for tourists reaching their destinations or disembarking in our cities, c) an instrument to encourage relationships with other countries and d) a creator of economic, logistics and human capital.

It is necessary to take into account the Mezzogiorno, source of approximately 50% of total Italian port traffic and where two thirds of its international trade is carried out by sea – as a key area deserving appropriate investment and strategies.

Southern Italy, in fact, has a strategic position, close to the Suez Canal and right in the epicentre of the main international routes, namely the markets of Northern Europe and Middle and Far East. These considerations clearly highlight the importance of the role this territory could play in terms of economic growth of the country.

This is the aim SRM intends to pursue with its work, by promoting awareness of these complex and constantly changing phenomena. The world of the sea travels fast and therefore maritime-economic factors, together with the changes they bring about, need attentive and constant monitoring.

This Report in fact, only represents a small part of numerous in-depth analyses, articles and interviews that our Observatory carries out and that will continue to produce in order to pay close attention to our maritime sector.

Our country is at the centre of the Mediterranean and should, both now and in the future, implement the right policies required to rise to the challenges of competitiveness posed by this position. This is the diktat which influenced our research project. Monitoring and analysing the dynamics, routes, projects and players which are more often than not looking at mare nostrum as an area of strategic interest.

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Before introducing the topics of this research it is necessary to highlight that for this issue of the Annual Report SRM acted in synergy with national and international centres of study which have contributed their specific know-how to enrich and further specialise the content of the papers hereby presented.

This is the case of the new partnership with *SISI-Shanghai International Shipping Institute*, with which an agreement was signed – involving twelve other centres of research from Europe, the U.S. and the Far East – with the aim of developing analyses of the maritime sector. Another example of collaboration is the agreement with the Erasmus University Rotterdam that has elaborated a specific in-depth analysis of the One Belt One Road Initiative and its impact on Northern European ports. Last but not least, the collaboration with *Centro Einaudi* in Turin which has significant experience of analysing aspects linked to the geo-economic changes we are currently experiencing and forecasting as a consequence of globalisation.

The three aforementioned scientific collaborations add to those established with the *Universities of Hamburg* and *Antwerp*, with *Certet-Bocconi* and *Prometeia*, with which SRM has long-standing relationships. Thus, it appears crucial for our policy of research to be firmly and systematically linked to centres of research in Italy and abroad that may complement the Report with experience and evidence so as to make this publication increasingly more important as a reference point for the port and shipping sectors.

As far as the organisation of the research is concerned, we can state that it reflects the objectives set out as the first part is about the economic situation whereas the second follows a monographic approach.

Chapter one, titled "The global scenario. Strengths, weaknesses and progress of globalisation at the beginning of 21st Century" is important to gain an understanding of

the general context in which we are operating. Globalisation, as the author claims, has surely benefited many countries since in the years of its success there was an increase in the average income, which grew from $8,900 per capita in 1990 to $14,700 in 2015. In the same period, globalisation also contributed to the reduction of general poverty as the percentage of world population that can spend less than $1.90 per day fell from 35% in 1990 to 10.7% in 2014. Forecasts show that despite protectionism, globalisation will not stop and in fact it has now moved to an advanced stage where emerging economies such as China generate new flows of FDIs and new economies (i.e. African countries) attract capital from all over the world. Although in 2016 international trade grew less than the world GDP for the first time since 2001, the first trimester of 2017 marked a change, and trade and GDP have been following parallel trends since then. The trends of world trade in pure volumes show different but positive percentages of growth depending on the origin and destination of goods. A closer look at trade volumes 2000-2015 of pure goods exported or imported per continent reveals the following increases: a) +2.2% annual imports in Europe, b) +3.2% average annual imports in America, c) +6.9% average annual exports in Asia and d) +9.5% average annual imports in Africa. Therefore, the global economy is not slowing down and neither are the exchanges it produces

All of this is in line with the contents of chapter two that provides an up-to-date analysis of the features of ports and shipping in a global and European context analysing in detail the dynamics of the different categories of traffic. Furthermore, the essay analyses the special features and the value of the sector in the Italian territorial and economic context with reference to distinctive aspects such as fleet, volumes moved, routes and port traffic. A detailed look is also given to the state of implementation of the Italian port reform with interesting aspects that were considered important to highlight. The chapter then goes on to analyse the trends of containerisation and the most significant statistics such as those of the Ro-Ro sector – a benchmark for gauging the tendencies of the automotive sector, one of the most important in the world – as well as those of bulk which tell us that world trade continues to grow albeit at a slower pace. Thus, it is necessary to pay attention to other phenomena in terms of strategy planning. For instance, is there a real issue with overcapacity or have carriers carefully scheduled orders as a consequence of planned ship-breakings and possible economic scenarios? Will goods volumes from China increase? Or will the changes in routes produced by American protectionism affect market trends? Last but not least, will the automotive sector continue to grow? These are some of the questions this report attempts to answer.

The third chapter, edited by the University of Hamburg, deals with an innovative topic, “sustainable ports”. In this contribution it is argued that development strategies for a sustainable future of ports need to be exclusively elaborated by thoroughly evaluating the economic activities carried out in ports, their potential on the market and external costs linked to them. Ports need to adjust their strategy within a sustainable framework and distribute their resources with the aim of maximising the generation of value in the long term. It is also important to find smart ways of reducing the impact on the environment, especially if the port is nestled in a city. This is the only way for port communities and urban centres to coexist and develop simultaneously.

Interesting points of view are analysed in chapter four, elaborated by SRM and revolving around a self-produced analysis of the balance sheets of sample worldwide container-carrier companies holding approximately 80% of TEUs transported. The analysis is based on three factors: i) the growth of companies in terms of turnover and investment, ii) profitability and iii) financial viability. Therefore, this chapter unveils evidence of the health of big carriers: according to our estimates turnover is expected to decrease slightly but in the long term it should stand at acceptable levels providing no big shocks take place. Companies are managing to maintain margins of profitability that can guarantee return on investment and ensure economic and financial stability, at least in the short-medium term. Additionally, there seems to be a good balance between financial sources and uses.

The monographic section of this research mainly revolves around China and is composed of case studies and essays representing different points of view on the strategic moves that the Dragon is making as well as on the *One Belt One Road Initiative* (henceforth OBOR) with special attention to its maritime part known as *Maritime Silk Road*. This monographic study is made up of tiles that have been carefully chosen and which analyse five main aspects of the OBOR:

- the way it is developing, from the point of view of China, thanks to the analysis provided by Shanghai International Shipping Institute. For instance, in 2016 investment in the huge ports of this country amounted to approximately $18.6 billion.
- The consequences on the Med Area (SRM's analysis in chapter six) and therefore what the most interesting projects involving the *Mare nostrum* are, such as Piraeus, Vado Ligure, Port Said, Haifa, Istanbul.
- The role of Northern Europe with a special focus on the port of Rotterdam (chapter seven, edited by the Erasmus University Rotterdam). Particular attention is paid to the way technologically advanced ports are preparing to receive the *Silk Ships*, a term SRM coined to indicate the vessels transporting the goods flows generated by the initiative.
- The case study of Israel and of the East Mediterranean ports of Haifa and Ashdod (chapter eight of SRM) that analyses how a country initially wary of Chinese maritime investment finally changed its policy and welcomed it to the major terminals currently under construction.
- In chapter nine, a focus by SRM on the *Asian Infrastructure Investment Bank* (AIIB). This is a multilateral financial institution led by China and created for promoting economic integration and interdependence in the Asian region as well as for liaising closely with other multilateral development banks such as the World Bank and the Asian Development Bank. The main objective of the bank is to finance the development of infrastructure in Asia and nearby regions. At first, in fact, it was designed as an instrument mainly aimed at supporting the projects of the OBOR however, its mission was then expanded. The essay provides a detailed analysis of this process.

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We wish to conclude this introduction to the volume by thanking SRM's researchers and the partners of this project who believe in our work and in this adventure we have embarked upon. A special thanks goes to all the authors who have contributed to increasing the value of this research.

Hoping we have been able to provide factual support to those convinced that the development of the economy of maritime transport and logistics is a priority for our country. The challenge has been set.

Massimo DEANDREIS

Part One

Competitive and economic scenarios of maritime transport

Chapter I

The global scenario. Strengths, weaknesses and progress of globalisation at the beginning of 21st Century

1. Stages, processes and achievements of globalisation after WWII

1.1 1944-1990 American globalisation

In 1920 the British Empire ruled over 458 million people, a fifth of the global population living on a quarter of the Earth's surface. This represented the heyday of a model of globalisation based on the collection of people and nations under one flag, one economy and, in a broader sense, one policy. Claims of decolonisation, along with the economic and military competition of Japan, the U.S. and Germany, put an end to the British global hegemony and after WWII a new model of global economy established itself, revolving around the four aforementioned countries together with France, Italy and from 1975 Canada. The seven most advanced economies of the world (G7) possessed more than half of the global production of goods and services and their economic power, as well as the monetary hegemony of the Dollar, lasted until the start of the last decade of the 20th Century. This period ended due to a series of factors that happened in just a dozen years.

1.2 1990-2007 The new globalisation and the new protagonists

Firstly, it was planned economies that fell into a crisis and they progressively converted to the market economy starting with the programme of liberalisations introduced by Russian prime minister and liberal economist Egon Gajdar. Two worlds that had been apart until that moment found in international trade a common ground for collaboration. This became so intense that also international capitals, though initially wary, started to invest in Russia from 1999, when a federal law regulated and protected foreign investments in Russia which grew until they reached a peak of $69 billion in 2013.

The defrost of relations between the West and East was accompanied by reforms and liberalisations in post-Mao Zedong China. Chinese reforms were introduced by politicians like Deng Xiaoping aiming to transform China into one of the most prosperous and advanced nations of 21st Century. Although these reforms have failed to provide The People's Republic of China with a democratic system (power is still in the hands of the Communist Party), economic progress has been achieved according to expectations by establishing different relations with developed countries, and in particular the U.S.

China's progress started with the decentralization of decisions in the agriculture sector, which was followed by the freedom to make profit in light industry activities and to reinvest these in sectors with higher technology and capital. The Chinese industry flourished in the 1980s thanks to lower labour costs than those of Western countries. In order to boost Chinese exports to the rest of the world, in 1994 the exchange rate between Chinese and American currency was devalued overnight from 5.7 Renminbi per

Dollar to 8.7, a value which reached 8.28 in the following years. The openness of China to international trade further increased in 2001, when the country joined the WTO, the multilateral organisation which regulates international trade. One of the directions of the new globalisation was marked in this way: Asia became the factory of low/intermediate-technology consumer goods and accepted, more or less implicitly, to reinvest the dollars cashed in US bonds, therefore financing a passive balance sheet and allowing Americans to live beyond their means, at least temporarily.

China's growth and the economic reforms in Russia took place while Europeans, after long reflection culminated in the Maastricht Treaty (1987), decided to transform the customs Union (EEC) in a proper common market of people, businesses and capital: the European Union. This provided willing countries with a new currency (the Euro) which, thanks to a wider economic base, would be less subject to changes caused by economic circumstances than the individual national currencies. The Euro was also expected to be in high demand globally as reserve currency, a sort of alternative to rival the Dollar. As a consequence, prospects of competition with the Dollar would raise in the emission of financial instruments bound to collect and bring to Europe part of the capitals seeking investment opportunities. These came both from the rich Arab countries and from Asia, where economies had benefited from exports and were able to reinvest abroad.

1.3 Multi-flag and no-flag organisations

Since the 1990s a vast constellation of emerging countries made a name for themselves in a world market where there seemed to be room for everyone. The system of multinational companies changed too since these had to face the circumstances and turn themselves into global companies. This mainly means being able to offer global services and products made with uniform standards and technologies and aimed at fulfilling consumers' needs, which started to look alike across the five continents.

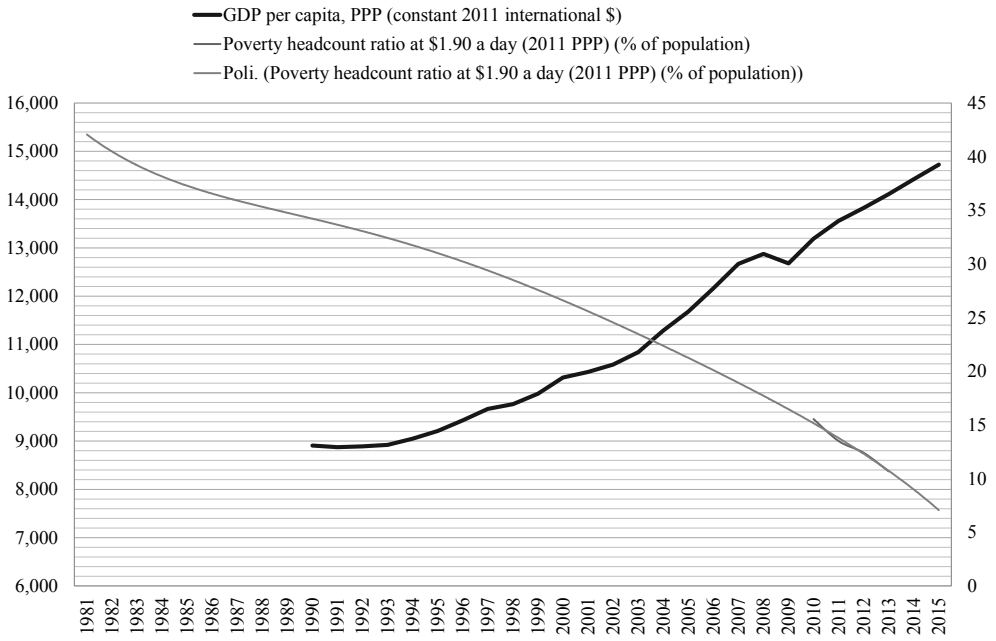
Global companies started to play an increasingly crucial role: from 1995 to 2014 the turnover of the "Fortune Global 500" companies grew from 34% to 40% of the world GDP. Furthermore, companies from all over the world joined this club while at the same time the number of North American companies on the list steadily decreased. From 2001 to 2012 the number of North American companies fell from 215 to 144 while that of Asian companies rose from 116 to 188. In the same time frame the number of European companies remained stable, growing from 158 to 160.

1.4 The benefits of globalisation

The results of globalisation have been mainly beneficial (Graph 1). For example, in the years of its success globalisation caused an increase in the average per capita income worldwide, which grew from $8,900 in 1990 to $14,700 in 2015 (constant dollar value 2011, according to Purchasing Power Parity[1]). In the same period, globalisation also contributed to the reduction of general poverty as the percentage of the world's population that can spend less than $1.90 per day fell from 35% in 1990 to 10.7% in 2014.

[1] http://data.worldbank.org/indicator/NY.GDP.PCAP.PP.KD

Trends of GDP per capita and poverty in the world (1981-2013)



GRAPH 1 - SOURCE: elaboration on World Bank data

Some aspects of globalisation, though, have badly affected the privileged positions of developed countries. The increase in the number of economies participating in the global market, the support to competition in trade exchanges and the promotion of freedom of investment and movement of capitals and people contributed to eroding part of consensus with which globalisation had been welcomed no more than thirty years earlier.

2. SIDE EFFECTS: FOUR CRACKS IN THE MODEL OF GLOBALISATION

2.1 The Middle Class is stopped in its tracks

Firstly, the middle class of developed countries was stopped in its tracks by the competition of cheaper labour force and skills available in emerging countries. Furthermore, the living standard of the middle class in rich countries was also affected by new advances in IT and microelectronics which contributed to cutbacks in the most common positions once held by white-collar workers. Finally, the middle classes also had to witness fiscal problems such as the financing of welfare services, thrown into crisis by an increase in the populations' average age and by a growth of the spending on

pensions. In 1992 Frederick R. Strobel[2] published in the U.S. the first long essay on the economic decline of the American middle class and this set the first alarm bells ringing. Strobel focused on the increasingly high level of debt necessary to support consumption and spotted the first examples of sub employment, which the middle class seemed to accept reluctantly. In 2006 Brookins Institution set the second alarm bell ringing with a study on urban areas which highlighted that middle class residential neighbourhoods had fallen from 58% to 41% between 1970 and 2000, mainly due to a rise in the price of households. This forced many middle class families to move away from their traditional areas and to more reasonably priced neighbourhoods with fewer services and a lower standard of living. Finally, in a study published before her appointment to the Fed, Janet Yellen highlighted that in 25 years (1979-2005) the richest 20% of wage earners had increased its income by 69%, the second quintile (fourth from the bottom) had shown a growth in income of 29% while the third quintile (the middle one) had only increased its income by 21%, just slightly more than the two poorest quintiles, which had grown by 17% and 6% respectively. The real middle income substantially declined in the years of globalisation and many could foresee the prospect, become reality after the Lehman Crack, that part of the sons of the American middle class would have worse living standards than those of their parents.

2.2 A marginal role for small enterprises

The second crack in the model of globalisation can be found in the world of small and micro enterprises. The revolution in global consumption produced a redistribution of turnovers and profits to the advantage of those companies that were able to reach a global size. We witnessed not only a growth of the GDP share of profits in comparison with that of labour (cheaper due to the increase of abundance as a result of increased international mobility), but also an increase in the profits of big and medium internationalized enterprises. At the same time profits plummeted for small and medium local companies which did not reap the rewards of globalisation coming from an enlarged market and lower costs of production. This has become particularly relevant in some sectors such as distribution, where small entrepreneurs have seen their incomes cut by two phenomena: a) the expansion of global retailers such as Wal-Mart, Carrefour, Ikea or Decathlon and b) the growth of e-commerce which naturally led to a concentration of trade profits. As a consequence of the crisis and transformation of the retail sector one of the traditionally most common ways to climb the social ladder was blocked, and for working and lower-middle class people access to commerce and trade ceased to represent an opportunity to reach entrepreneurial success.

[2] Strobel, F.R. (1993). *Upward Dreams, Downward Mobility: The Economic Decline of the American Middle Class*, Rowman & Littlefield Publishers, 28th January 1993.

2.3 Risks and dangers of financial liberalisations

The third crack of globalisation can be found in financial markets. The game of communicating vessels in international financial markets facilitated the bypass of the cautious regulations of credit thus favouring the assumption of excessive risks by banks and credit intermediaries, so much that these caused systemic damage when turned unsustainable by unexpected changes in the market. The Lehman Brother case showed that it had become possible to concentrate in the hands of one American intermediary an excessive credit risk in just one sector (subprime lending[3] in real estate). This risk burdened only partly on Lehman Brother's balance sheet, having been also dispersed globally through securitisations whose real level of risk was opaque for final purchasers. Whether right or wrong, the liberalisation and globalisation of financial markets were met by public outcry due to the risk that the Lehman phenomenon could happen again, despite the regulators' countermeasures that followed this crisis. The finance world and its freedom also came under attack by the press and the public due to the bonuses and incentives bankers were granted notwithstanding their alleged responsibility in causing a worsening of the living standards for Western middle classes. Another cause of outcry was the discovery of offshore financial tax havens where, according to an enquiry[4] conducted in 2012 by James Henry (former chief economist at McKinsey), the super-rich may be hiding $21 trillion, equivalent to 120% of the U.S. GDP. A further $2.1 trillion may be being kept offshore by the major American companies.

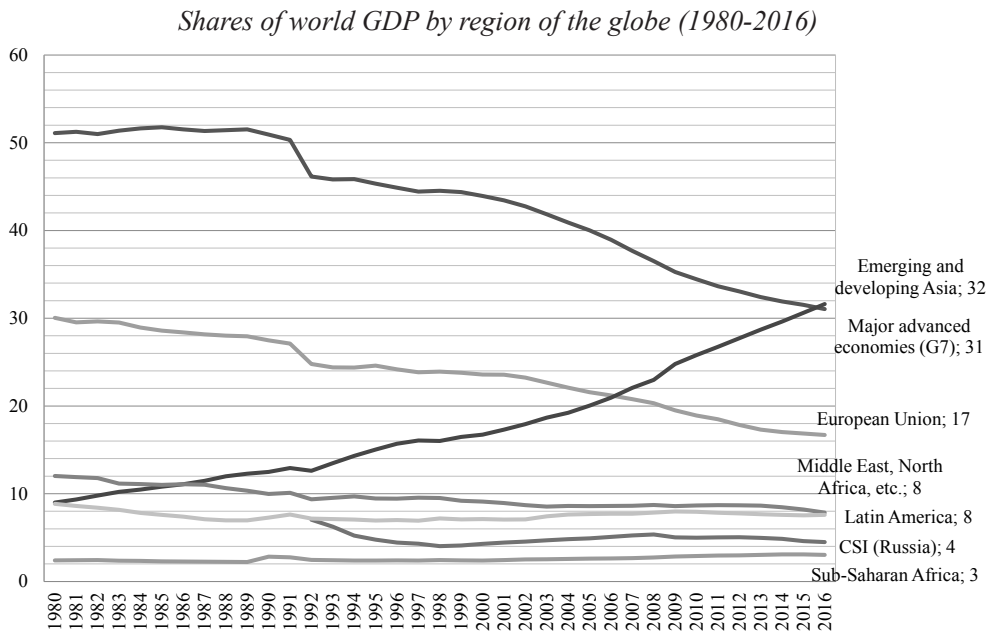
2.4 The dangerous relation between globalisation and lack of security

A further side effect of globalisation is represented by the relative ease with which local events tend to lead to global insecurity. Facilitating the goods trade and the movement of capitals and people seems to support the trade of weapons both legally and legally, with the latter currently estimated at $1 billion per year.[5] Furthermore, the training and deployment of legal and illegal armies of contractors has also become easier and the number of countries bypassing the diplomatic control of super powers has grown. Consequently, security costs grow in terms of GDP share of developed countries and, along with other causes of tax increases, contribute to inflating a bill that the average taxpayer begins to blame on globalisation.

[3] Case, K.E. (2008). "The Central Role of Home Prices in the Current Financial Crisis: How Will the Market Clear?" in *Brookings Papers on Economic Activity*, Fall 2008, Brookings Press

[4] https://www.theguardian.com/business/2012/jul/21/global-elite-tax-offshore-economy

[5] http://www.havocscope.com/tag/arms-trafficking/



GRAPH 2 - SOURCE: elaboration on IMF, WEO database, April 2017

3. THE 2008-2009 CRISIS AND THE END OF WESTERN ECONOMIC SUPREMACY

3.1 Asia overtakes the West

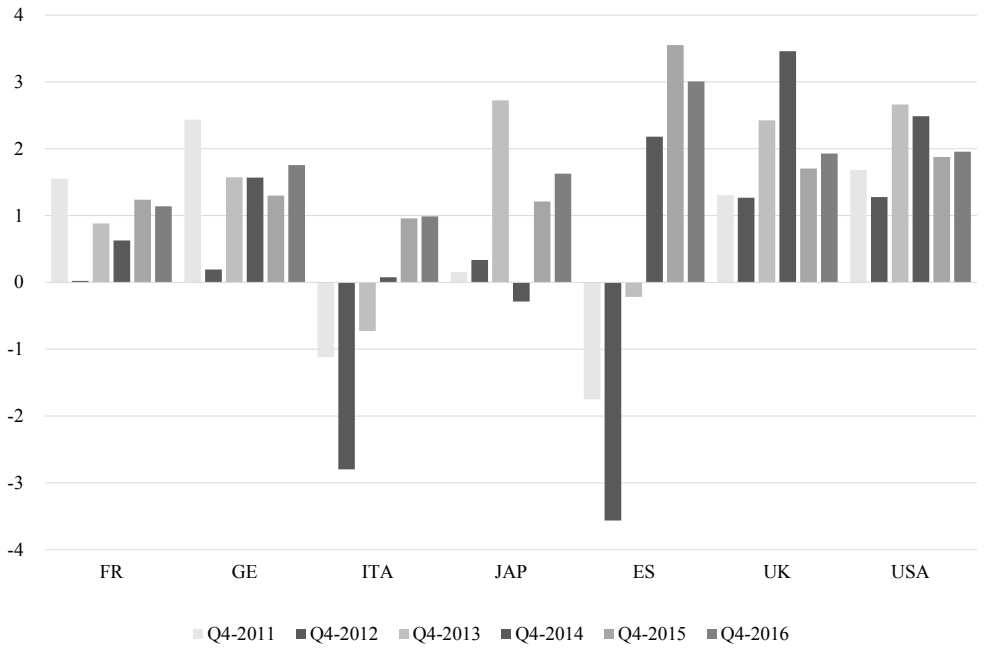
In 2008, the year of the Lehman-crack, the Western middle class is still in favour of globalisation, mainly because its effects have appeared detrimental only to future prospects of wealth. In 2008, though, things start to change. Not only have the G7 countries not been able to produce half of the world's GDP for the first time since 1995 (Graph 2), the year when globalisation started to speed up its pace, but they have also slowed down and lost significant ground. In 2008, Asian emerging countries overtook the production of the whole European Union and in the following years China and Asia continued to grow while the G7 countries either fell into recession and stagnation or were stuck in low growth phases. In 2016, the share of world GDP (according to PPP) of Asian emerging countries overtook that of the G7 countries which had been in the lead globally since the end of WWII. Seventy-two years after Bretton Woods (1944) emerging Asia put an end to the G7 dominion of world GDP. The G7 countries suffered a decline similar to the post-1920 fall of the British Empire, but this lasted four times as long. The consequences of this change can be found in every sector and are particularly evident in the monetary one. In 2009 China signs bilateral agreements with Russia and Brazil, to establish that imports from these countries will be regulated in RMB. The growth of this currency does not stop and in November 2013 it becomes the second in the world for trade exchanges after the Dollar, overtaking the Euro. On 1st December 2015 the RMB joins the International Monetary Fund's basket of reserve currencies as a consequence of

the fact that China's exports had accounted for 12.4% of international trade exchanges in 2014. This formal recognition, though, does not happen to the proportional detriment of the other reserve currencies but only of the Euro, which is certified by international organisms as the real currency in crisis at the beginning of the millennium. The Euro is even in worse condition than the Yen, notwithstanding the fact that Japan's public debt reached 250% of its GDP in 2016.

3.2 The 2009 crisis and the structural factors of the 'slow recovery'

The G7 countries face the 2009 crisis in fairly disordered but effective ways. Some of these countries, i.e. the U.S., recover from the crisis in 2010 while others, like France, take a little longer and others (Italy) fall back into crisis. As a matter of fact, in none of the G7 countries does GDP growth reach the same pre-crisis levels but in fact generally settles at around 2% (Graph 3).

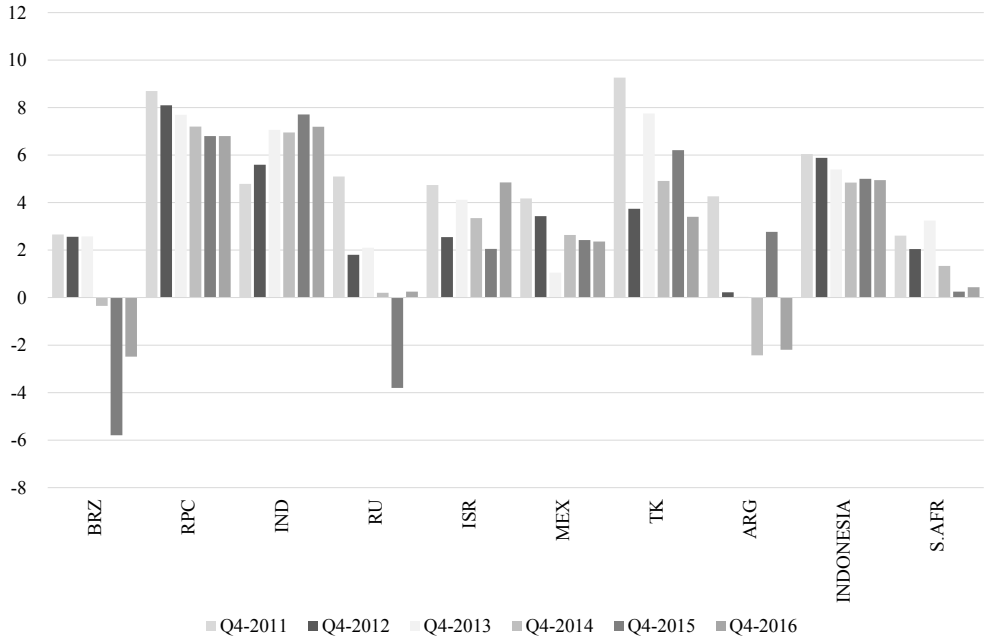
The recovery of real GDP in developed countries (2011-2016)
Annual trend growth rates at the end of each year



GRAPH 3 - SOURCE: elaboration on IMF, WEO database, April 2017

Compared to that of developed countries, GDP growth in Asian emerging countries only show a temporary and limited halt.

The recovery of real GDP in some emerging countries (2011-2016)
Annual trend growth rates at the end of each year



GRAPH 4 - SOURCE: elaboration on IMF, WEO database, April 2017

The 'slow recovery' syndrome surprises experts who, just after the crisis, foresee the sudden arrival of a V-shaped recovery, according to Friedman's rubber band theory. In fact, the slow recovery takes place in all the countries due to important long-term structural changes. In other words, the American situation is not elastic for demographic reasons, as borne out by Stock and Watson[6]. It is the demographic variables, and in particular the retirement of the first baby boomers, that cause at least half of the decline in consumption along with a fall in the figures of active population, which lead to a reduction in potential GDP. In Europe, structural factors linked to demographic weakness are not the only thing to contribute to the slow recovery: a stiffness in public balance sheets of the countries in crisis, burdened by past debt, is accompanied by a rigidity of European policies of response. The sovereign debt crisis causes uncertainty between 2011 and 2012 and the preparation of anti-crisis measures aimed at reassuring markets and strengthening the Euro does not finish until 12th September 2012, when the German Federal Constitutional Court approved the European Stability Program. This represents a turning point as Germany is the country most oriented to applying austerity by establishing that countries resort to their internal resources, and not to those of the EU, in case of crisis. Also in the banking sector Europe finds solutions to the credit crisis

[6] STOCK, J.H. & WATSON, M.W. (2016). *Why Has GDP Growth Been So Slow to Recover?*, typewritten, October 2016.

originated from the 2009 non-performing loans[7] which accounted for a 5.6% of the total credit distributed, with significant concentrations in certain countries. But it is not until 2016 that a unified mechanism of resolution to solve the banking crisis is put into place thanks to a 2014 European regulation.

In practice, the crisis structurally transforms the economic model of the G7 countries. As a consequence, the new model will not be based on fiscal policy tolerance, balance sheet deficit, low growth of total factors[8] productivity[9], errors in the allocation of private and public capital[10], low competition in Europe[11] and rigidity in European labour markets[12].

4. Consequences of the crisis

4.1 European institutions lose their citizens' trust

Due to the slow recovery, the Fed has long persisted in a low interest rate policy, even beyond the term of its Quantative Easing. In Europe, the BCE's Quantative Easing could end in 2018 but the Central Bank has implicitly signalled that the recovery is fragile and that the defeat of deflation is still too recent to abandon an expansive monetary policy (Graph 5).

Now that the crisis has mitigated its effects, average unemployment in the Eurozone in 2017 is 9.7%, a lot higher than the pre-crisis level (7.5%) and many observers wonder what this figure would have looked like if interest rates had not been forcedly kept at zero or negative value. Even more remarkable is the fact that the management of the crisis and some political decisions have contributed to marked differences between voters of the different European countries and to creating a distance between European representatives and institutions, who seem to be considered less trustworthy by their citizens, as borne out by periodical surveys of the Commission. Euro barometers (Autumn 2016) indicate that only 61% of European citizens trust Europe but in many cases this percentage is lower than 50% and the Italian figure (45%) is the third to last, even lower than that of the Britain, where a majority of the population voted for Brexit.

[7] https://www.eba.europa.eu/-/eu-banks-better-capitalised-in-2015-but-npls-remain-of-concern

[8] OECD (2015), *The Future of Productivity*, Parigi.

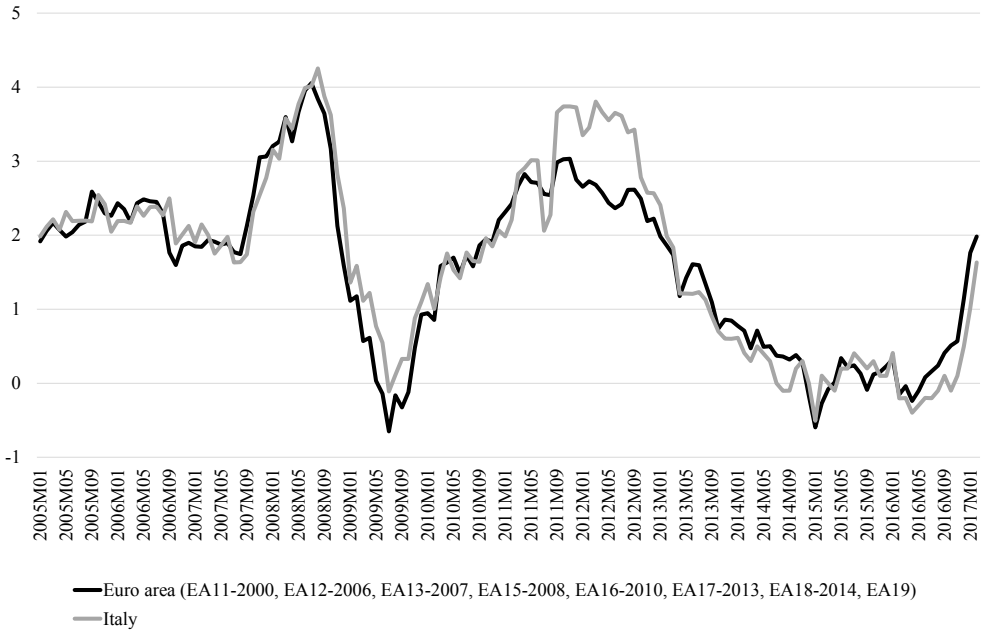
[9] http://country.eiu.com/article.aspx?articleid=1493879133&Country=France&topic=Economy

[10] Gamberoni, E., Giordano, C. & Lopez-Garcia, P. (2016). "Capital and labour (mis)allocation in the euro area: some stylized facts and determinants" in *ECB Working Paper*, No 1981.

[11] http://www.nytimes.com/2012/09/06/business/global/daily-euro-zone-watch.html

[12] Tasci, M. & Zenker, M. (2011). "Labor Market Rigidity, Unemployment and the Great Recession" in *Economic Commentary*, Federal Reserve Bank of Cleveland, No 2011-11.

European and Italian deflation and the effectiveness of Quantitative Easing
Percentage trend rates of inflation in the Eurozone and in Italy based on the HCPI



GRAPH 5 - SOURCE: elaboration on Eurostat data

4.2 The crisis fuels populisms and demands for neo-protection

The adjustment to globalisation standards in developed countries, and in particular in Europe, aims at making advanced economies more competitive. Reforms, though, require sacrifice which affect citizens and voters who already feel like the victims of globalisation. This fuels consensus of populist political forces who promise a revival of protectionist policies, as if these were useful to safeguard jobs and increase national prosperity. The rise of populist political parties takes place in critically damaged countries like Greece, in those where problems are on average acceptable like Spain and Italy and also in wealthier countries such as France and the UK. These political ideologies are sometimes far-right and on other times occasions far-left.

In Europe, the migrant crisis erupted in 2015. According to UNHCR figures, in 2014 the number of forced migrants and asylum seekers had grown by 40% compared to 2011, reaching almost 60 million individuals, the highest historical figure since the end of WWII. The migrant crisis highlights a new European asymmetry, namely the unbalanced assumption of responsibility by frontier countries and the rest of Europe which again fuels populist political parties. The general growth of consensus for these kinds of parties has two main effects: on the one hand, it reduces governability in Western democracies because governments are formed through grand coalitions where different parties collaborate on policies that were unthinkable ten years ago. On the other hand, a certain level of shift towards protectionism makes its way into economic policies.

4.3 Brexit: a concise account of a separation that does not benefit anyone

The results of the Brexit referendum (26th June 2016) were mostly unexpected and caused Conservative Prime Minister Cameron to resign the day after the result. Although uncertain as to the costs of Brexit, no winners are likely to be declared. The UK will have to pay a pricey bill to comply with the commitments taken on the public European balance sheet 2020 (about £50 billion, according to Brussels' demands). Banks and asset managers will move 71,000 jobs to mainland Europe, according to a study of consultancy firm Oliver Wyman, and there will be significant outflows of people and investments also in the sector of research. The other 27 countries of the Union will also have to bear some costs, including an increase of their contributions to the EU balance sheet or some reduction in the spending for structural policies funded by Brussels). They will also have to renounce London's help in the management of the migrant crisis and difficulties will also raise in the reorganization of international institutions, such as those of defence. We will probably witness an increase in transaction fees in many sectors where the EU had produced effective mechanisms of international cooperation.

4.4 The crisis of the monetary cooperation

Neo-protectionism also causes some countries to act independently. For instance, it is Switzerland that makes an unexpected move in January 2015, when the Swiss Central Bank suddenly suspends its decision to the peg the Swiss Franc against the Euro, with markets open and without any notice. As a consequence, the Franc increases in value by 12% and Swiss currency reserves decrease proportionally. There may be more countries on the verge of following suit. The Czech Republic, for instance, may not renew the fixed exchange rate regime expiring this year while its president has announced that he would hold a referendum on Czech participation in the EU and NATO. Also Denmark is amongst the countries encountering difficulties in maintaining its fixed exchange rate against the Euro while Poland, though having decided to adopt the Euro, is postponing the decision because it may lack the parliamentary majority necessary to carry out a constitutional reform. This seems even more risky if we take into account that Euro barometers have been indicating since 2011 that the Polish believe adopting the Euro would bring more drawbacks than benefits.

4.5 The oil crisis also affects those who caused it

One of the most controversial neo-protectionist moves is that with which Saudi Arabia, leader of the OPEC, destabilizes international oil prices by removing its production ceilings. In the meantime, global oil offer exceeds demand due to a series of factors: a) a reduction in the use of petroleum for electricity, b) the discovery of many new oil reserves thanks to improved geophysical techniques and c) the development of fracking in the U.S. and Canada. In particular, fracking has allowed the U.S. to reach levels of internal oil production similar to those of the 1950s. The Saudis decided to stop the stabilization of oil prices mainly to price new North American producers out of the market. In just few weeks crude oil prices fell from $107 to $37 per barrel and finally settled at around $50, the current price. Prices were so low that just in 2015

thirty-six American companies of the Oil & Gas sector went bankrupt[13]. Nonetheless, the remaining companies managed to restructure themselves and most of them succeeded in staying in the market even with oil prices below the $50 threshold. This was achieved through a reduction in the financial leverage which implies writing off past investments (sunk costs) and introducing a considerable number of cost-saving innovations[14]. The contemporary global economy, though, is so interconnected that it is impossible to take all its links into account, thus the consequences of any choice become highly unpredictable. The oil shock failed to bring the American oil industry to its knees but threw the Saudi public spending off balance, as this was predominantly based on oil exports. From 2012 to 2015, Saudi Arabia, who was responsible for making this move, passed from a 13% of GDP fiscal surplus to a 17% deficit, thus forcing sovereign wealth funds of oil countries to make their first disinvestments in history.

4.6 American neo-protectionism is only a possibility, but its reasons are unfounded

Neo-protectionism has succeeded in persuading even the U.S., one of the promoters of multilateral international trade relations and of the transformation of the GATT[15] in the WTO[16]. In March 2017 President Donald Trump signed an executive order to ask the Secretary of Commerce to identify any foreign trade abuses. This falls within the scope of the model of economic policy that in 2016 contributed to the success of the 45th American president who used the slogan *America First*. Such unbalances and abuses will undoubtedly be found and the American administration will either put forward or threaten to impose customs duties but it is almost certain that these will not contribute to cutting the $500 billion American trade deficit. The situation appears in fact quite different from the one depicted if we also take into account the share of turnover American companies produce abroad. Most American enterprises listed in the S&P500 (the index of the top 500 US companies) produce their foreign earnings through foreign legal entities. Thus, these figures are not included in the total exports of the overall trade balance but do appear in consolidated financial statements of the S&P500 which are handed in to the Secretary of Commerce on a quarterly basis. According to a recent study (2015)[17] recente (2015) 47.8% of earnings of the top five hundred American Companies come from abroad, in particular Europe (14%), Asia (14%), Latin America (4%) and Africa (8%). If we consider that capitalization of the S&P500 amounts to $20 billion and that the P/S rapport is 2.07, we can conclude that the earnings produced abroad by the top 500 American companies amount to $4,600 billion, twice as much as official exports of goods and services produced in the U.S. and then sold abroad, and then sold abroad which amount to $2,316 billion according to the latest data (first trimester 2017).

[13] http://marcellusdrilling.com/2015/11/list-of-36-oil-gas-companies-that-filed-for-bankruptcy-in-2015/

[14] https://www.nytimes.com/2015/05/12/business/energy-environment/drillers-answer-low-oil-prices-with-cost-saving-innovations.html?_r=0

[15] https://it.wikipedia.org/wiki/General_Agreement_on_Tariffs_and_Trade

[16] https://www.wto.org/

[17] http://www.marketwatch.com/story/sp-500-companies-generate-barely-over-half-their-revenue-at-home-2015-08-19

Therefore, American deficit in the trade balance cannot be reduced for two reasons: a) imports include foreign products of American companies and b) since 1970 $26,400 billion of direct international investments have been deployed in the global economy, $5,141 billion of which originated from the United States. Trade deficit thus appears to be a rough, distorted and out-of-fashion way to gauge the dependence of the US on imports. Direct foreign investments are a more complex side of the coin in comparison with the growth of trade exchanges because they imply the establishment of enterprises abroad, the recruitment of workforce and the participation in foreign enterprise capital. All of these factors thus increase interdependence between nations as links between countries do not depend on mere frontiers that can be opened or closed as needed or required of. Finally, it seems impossible to calculate the earnings produced abroad by the $5,141 billion of US investments over the last 45 years. If these were to be taken into account, American exports would probably double and the trade deficit would turn into a surplus. Furthermore, just as was the case with Saudi oil, the consequences of neo-protectionism in commerce – for instance, in the case of companies whose ownership is shared by two countries – could damage the country imposing or threatening customs duties more than the sanctioned country, because the latter may be home to many enterprises of the former.

5. Globalisation does not stop

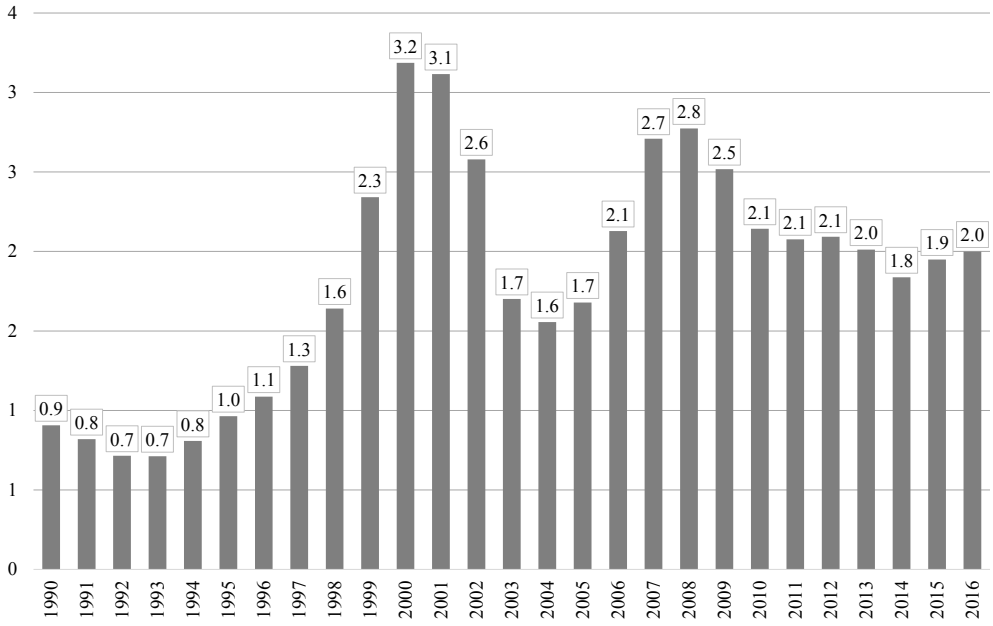
5.1 The case of FDIs coming from emerging countries

It is now necessary to shed light on Foreign Direct Investments, a sector where the U.S. is again a protagonist in terms of monetary commitment (Graph 7). FDIs are made by companies in foreign countries with the aim of seeking two kinds of expansion: a) vertical, through the performance abroad of one of their main activities in order to take advantage of reduced costs and b) horizontal, reproducing abroad the same activities they perform in their country of origin with the aim of obtaining a competitive advantage.

Fully diversified activities abroad aimed at increasing the range of products also represent other types of direct investments which take place in the form of univocal property or joint ventures in the countries receiving the investment. In all of these cases, expansion strategies are undertaken by enterprises wanting, and having the ability to, increase their activities because they believe foreign markets offer better opportunities than national ones which may have reached saturation.

It seems to be the case that foreign direct investments fall within the scope of an evolved phase of internalisation processes of enterprises and economies and it follows that historically advanced countries have been the main international investors. Nonetheless, over the last ten years (2005-2015) we find that China and Hong Kong have been amongst the major economies carrying out FDIs (Graph 7). In particular, China has increased its share from $10 billion per year at the beginning of the century to the current $120 billion per year.

Flows of global FDIs, percentage of world GDP (1990-2016)
(triennial moving averages)



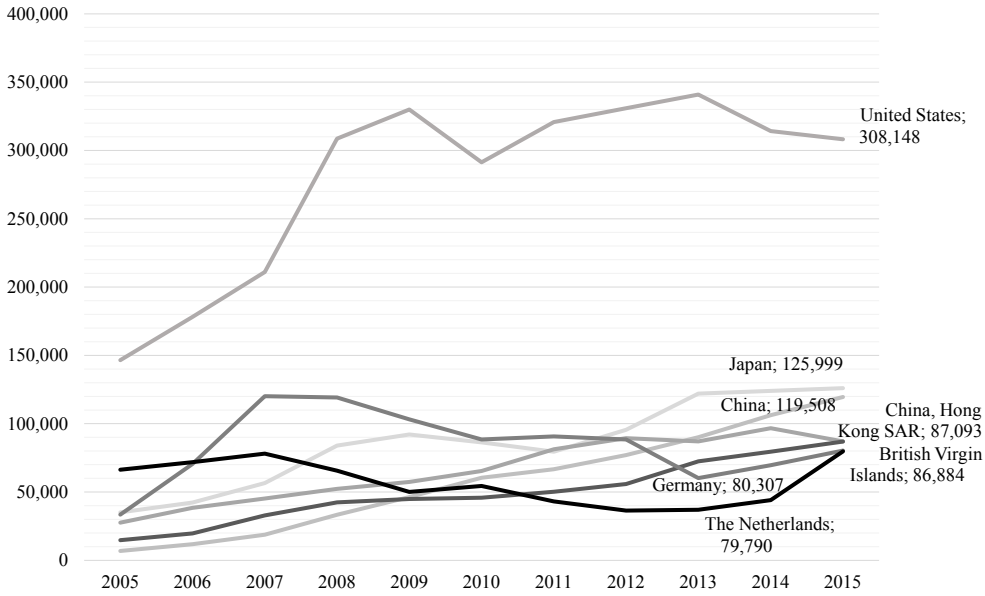
GRAPH 6 - SOURCE: elaboration on UNCTAD and IMF data, WEO database, update April 2017

There are several reasons why a country like China, historically a receiver of FDIs from G7 countries, has started to invest abroad and these include international strategies[18]. China[19] has become an economic superpower and is aiming to participate in the development processes likely to occur place in regions and continents such as Africa, which are forecast to experience a fast-paced growth in the next thirty years.

[18] XIA, J., MA, X., LU, J.W. & YIU, D.W. (2014). "Outward foreign direct investment by emerging market firms: A resource dependence logic" in *Strategic Management Journal*, Wiley Online Library.

[19] CHEN,W., DOLLAR, D. & TANG, H. (2016), "Why is China investing in Africa? Evidence from the firm level" in *The World Bank Economic Review*.

Outgoing FDI trends of the top seven originating countries (triennial movable averages). In millions of Dollars



GRAPH 7 - SOURCE: elaboration on UNCTAD data

5.2 Forecasts of growth in Africa and FDIs as binders of the global economy

Seven out of the top fastest growing economies are already operating in Africa and in particular in the Sub-Saharan area. Important and modern energy projects are being developed and revolutionary urban areas are being designed (i.e. Tech-City of Konza in Kenya[20]). Africa is also currently home to the biggest market of infrastructures and constructions of the next fifty years and investments in Hi-Tech and start-ups can be found[21], as borne out by the example of IBM, who decided to establish its twelfth IBM Research Lab in Nairobi. In 2015, Africa received seven-hundred and five FDIs amounting to $54 billion, 15% of the world total.

Along with Asia, Africa offers the greatest potential of development in the 21st century and it logically follows that investments reach this continent from economies that already have a high level of technological development and savings not completely absorbed by their internal markets. This implies a certain degree of maturity and irreversibility of the globalization process. As more and more countries and economies provide their outgoing FDIs with companies, capital, technology and organizational know-how, national flags have consequently become blurred in local economic systems. Global FDIs accounted for 0.8% of the world GDP in 1990 and they originated from the most advanced countries, above all the United States.

[20] http://edition.cnn.com/2013/05/30/business/africa-new-cities-konza-eko/

[21] MUNEMO, J. (2015). "Foreign Direct Investment, Business Start-up Regulations, and Entrepreneurship in Africa" in *Economics Bulletin*. researchgate.net

In the modern economy (2016), FDIs account for 2% of GDP (Graph 6) and come from both historically rich countries and emerging economies that have developed over the last three decades.

It seems clear, thus, that globalization progresses in terms of quality and resists the numerous trade neo-protectionist measures. It is undoubtedly possible that a certain economy of the world may decide to renounce to Swiss cheese or Italian mopeds, but almost no country in the world will ever be in the position to turn down FDIs on its territory and indeed most economies try to attract as many FDIs as possible in order to increase their internal investment rate and enhance both income per capita and employment. With time, an increase in the number of economies able to promote FDIs and the consolidation of global companies has resulted in the following: a) it optimizes the allocation of savings on a global scale and b) it makes global interdependence between different economies almost irreversible.

6. Forecasts for the global economy and commerce 2017-2020

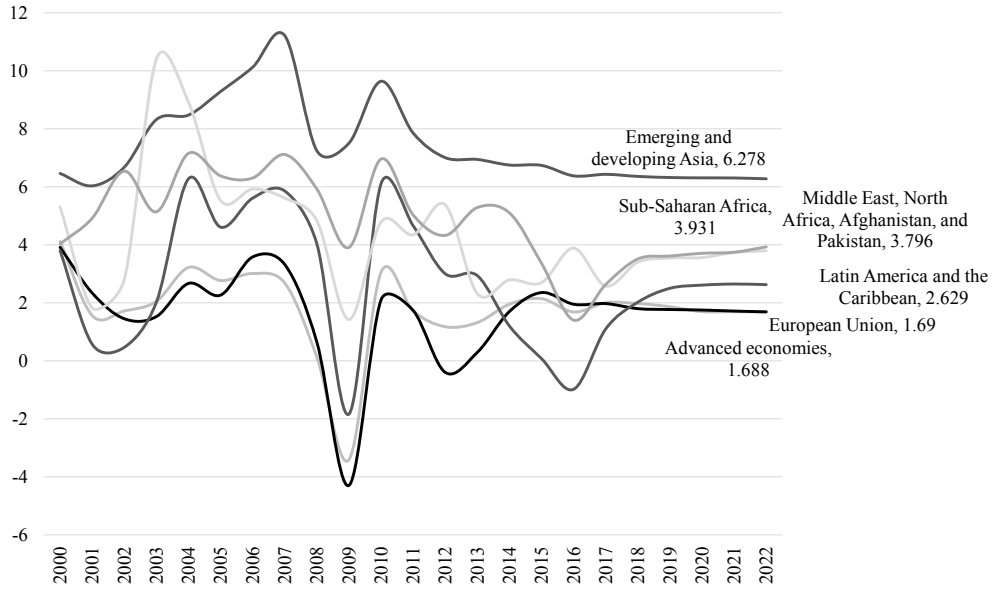
6.1 The third crisis is over

The growth prospects presented in the World Economic Outlook of April 2017 tend to confirm (Graph 8) that the third economic crisis in ten years (after the 2009 Lehman crack and the 2011 European sovereign debt) has come to an end. It seems that the crisis ignited by the 2014 fall in energy prices is over, after hitting the Middle East, Russia and the Latin American countries and causing a scaremongering of deflation in Europe, so much that the BCE had to resort to Quantative Easing in order to contrast deflation risks, which delayed recovery in some peripheral countries of the EU like Italy. The oil crisis has certainly had some consequences[22]: the Gulf countries have not recovered their international purchasing power and as a consequence they had to impose taxes on foreigners and local nationals therefore ending the tax-free living regime that characterised them and thus eliminating part of the consent that such fiscal generosity gave the rulers. In a recent statement, the Chairman of Aramco claimed that a new peak-oil scenario may have been postponed for several years, which means the Middle-East will have to move from a model based on oil income to a new one built on the technology that past oil revenues will allow it to purchase worldwide. Last but not least, the oil crisis has also brought Venezuela's economy to its knees, where clashes are currently taking place between the government and the opposition, but the country's economic weight on the recovery of the Latin American area seems to be unimportant.

A closer look at IMF estimates and forecasts seems to reveal that the latest low-oil price shock has ended and as a consequence markets appear to have been freed of the uncertainty they had been experiencing. Therefore, global growth of GDP could restart although at a slower pace than prior to the three crisis that took place in less than ten years.

[22] https://www.theguardian.com/world/2017/jan/31/saudi-arabia-tax-approved-oil-revenues-slump

Real, historical and predicted annual growth rates of GDP
IMF data according to main cluster of countries



GRAPH 8 - SOURCE: elaboration on IMF WEO database, update April 2017

6.2 Two variables taking their toll on the global economy

In the spring of 2017 a situation of slow-paced but widespread recovery prevails in the global economy according to official forecasts and analysis by major economists. There are two main risk factors in this scenario: the first concerns China and its debt. The Asian country is now the second economy in the world and half of the overall debt created between 2005 and 2015 in the world was issued through bonds of Chinese companies or government agencies. The ratio between total debt and GDP reached 277% in the first few months of 2017, growing by 25 percent compared to the last trimester of 2016. At this point, and this is a major cause for concern, the debt grows due to interest and analysts are worried that it could get out of control before authorities have undertaken the necessary measures to limit it without halting the process of internal economic development[23]. This risk may be mitigated by the fact that the Chinese debt is mainly internal, as Chinese financial markets are not open to Western investment, with a few exceptions. Therefore, should a Chinese domestic debt crisis occur, the rest of the world would not be directly affected by the devaluation of credits to Chinese citizens. What could spread negative consequences to the rest of the world is only a reduction in Chinese internal demand, which would imply a decrease in Chinese imports and negative effects on the turnovers of foreign direct investments made in China.

[23] http://www.zerohedge.com/news/2017-03-10/china-central-bank-admits-it-has-debt-problem-warns-no-easy-solution

The second risk factor is represented by neo-protectionist policies linked to the success of populist political parties which rose as a reaction to twenty years of globalisation. As stated above, neo-protectionism is an old-fashioned ideology. Protecting one economy from the rest of the world has never brought any advantages that could empirically be proven and thus it appears beyond dispute that such a confuted theory cannot lead to anything more than commercial quarrels. Furthermore, no effective limit can be imposed on international trade. This is mainly because we have created a world where FDIs are accepted and welcomed as a means of enhancing global productivity and as a way of optimising the geographical allocation of global savings and capital revenues. In other words, FDIs create connections between economies of the world which are unlikely to be reversed and no country may consider limiting FDIs without affecting its own economic interests. Thirdly, we need to take into account the fact that neo-protectionism provides political movements opposing the market economy with an economic theory they tend to put forward through the new media, as commonly occurs in the third millennium. The internet, in particular, fosters the spread of any radical economic and social theories regardless of their scientific grounds. Nonetheless, the risk of widespread neo-protectionism is overrated. An international survey[24] of twenty thousand people from nineteen countries conducted by YouGov revealed that 70% of the people surveyed believe globalisation benefits their living standards[25]. Even in those countries where globalisation has many detractors, the number of supporters is higher in the younger age groups.

6.3 If recovery is maintained exchanges will grow but from different origins and destinations

In the moderate growth scenario forecast until 2020, prospects of trade traffic are positive. Global trade in value slowed down in 2009 and following this its growth was weak. According to WTO estimates, in 2016 global trade growth (+1.3%) was lower than that of GDP[26] (+2.3%) for the first time since 2001. At the end of 2016, though, global trade started to follow a more significantly positive trend and in 2017 the WTO forecasts a 2.7% GDP growth and 2.4% global trade growth.

Trends of global trade according to pure volumes show varying growth rates in different origins and destinations of goods, but these are all positive. This means that the following years will be characterized by a general growth in the movement of goods but also by marked differences between various origins and destinations. A closer look at volume growth indexes (Graph 9) of exports (X) and imports (M) from 2000 to 2015 reveals significantly diversified average annual growth trends: a) +2.2% of European imports, b) +3.2% of imports in America, c) +6.9% of Asian exports and d) +9.5% of imports in Africa.

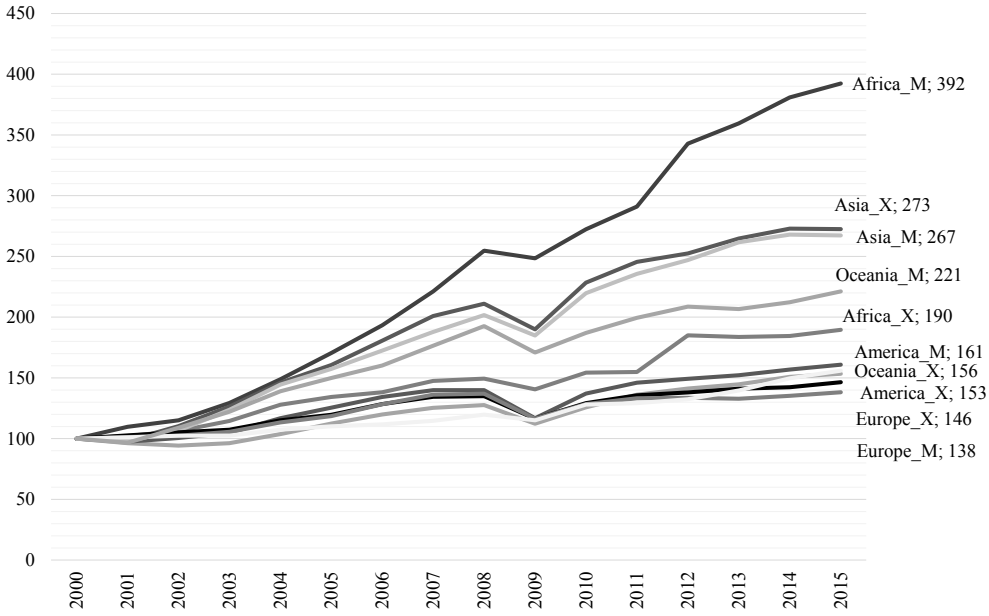
In conclusion, one can confidently state that the global economy is not slowing down, nor are the exchanges it produces.

[24] https://sputniknews.com/society/201611231047757756-globalization-popularity-yougov-poll/

[25] Only in France the number of detractors of globalisation is higher than that of the supporters.

[26] https://www.wto.org/english/news_e/pres17_e/pr791_e.htm

Growth indexes (basis 2000=100) of exports (X) and imports (M) in volume by country of origin or destination



GRAPH 9 - SOURCE: elaboration on UNCTAD data

Chapter II

The scenario of maritime transport. Italian ports in global shipping

1. Foreword

Shipping is a sector directly linked to global trade and this depends on economic trends as well as on the capacity of countries to import and export.

Business in global transport and therefore shipping are experiencing an unusual situation since America, Europe and Asia seem to be questioning their trade policies after years of fast-paced globalisation and internationalisation.

This chapter aims to analyse performances in the sector of maritime transport, which is still the preferred means to move goods and is currently characterised by two main factors: overcapacity and a weakness of demand. Port performances on a global scale and strategies aimed at attracting goods will also be scrutinized.

Furthermore, a closer look will be given at the role of Italy in the Mediterranean context as this country continues to attract huge flows of goods which pass through the new Suez Canal on the East-West route. In particular, this part will be aimed at examining in detail the Italian port reform, its state of implementation and the future prospects of Italian ports.

Finally, detailed statistical tables with data related to the sector and topic have been attached in the appendices.

2. The international context and its consequences on shipping

When analysing the shipping scenario one needs to evaluate how its trends are affected by a series of economic sectors, the first of which is international trade as 80% of global import-export in tonnes and 70% in value is transported by sea.

Since 2009, maritime transport has shown a slow but upward trend and for the first time in history it has exceeded the threshold of 10 million tonnes of goods. A further growth in this sector is expected as by 2030 seaborne goods are forecast to reach a figure in the region of 17 billion tonnes[1].

In 2016 world economic growth was slow and unevenly distributed and showed global trends weakened by the poor performance and difficulties experienced by big emerging countries. This had a negative impact on international trade and prices of raw materials which plummeted to the same historical lows they reached during the 2008-2009 crisis.

The global economic scenario is still characterised by instability after a decade of deep restructuring which was consisted of: a) persisting crisis of industrial production

[1] UNCTAD (2016). *Review of maritime transport*.

in the majority of European countries, b) a slowdown of growth in newly industrialised countries and c) commercial traffic trends showing lower growth rates than those of production, in contrast to periods prior to the crisis.

Total inflation on a global scale has remained stable and low prices of oil[2] and other raw materials have attenuated inflationary pushes. On the one hand, general inflation has remained low in most advanced countries and in China, but on the other it has registered remarkably higher values in some big economies such as Russia, Brazil and Turkey.

Economic recovery in the Eurozone has been possible mainly due to the dynamics of private consumption and fixed investments even though these positive trends have slowed down recently due to a decrease in exports.

Furthermore, the slowdown of China also affects global economic trends: in 2016, GDP grew by 6.7%, a level close to that set out by the government. Short-term indicators also seem to highlight a gradual slowdown in a context of restructuring where an export-oriented economy will be moved to a model based on internal consumption. Recession has also hit Brazil and to a lesser extent Russia, where general trust has deteriorated. Amongst the big emerging countries, only India seems to have escaped the negative trends. The US has grown by 1.6%, one percentage point on 2015, and due to a push towards higher internal production caused by the new protectionist policy, emerging economies will have to measure themselves against a less welcoming context. The decrease in the oil price is making matters worse for some countries such as Russia and Venezuela whilst benefiting other Asian countries who are oil importers.

The political and economic difficulties of the last few years have led to a slowdown of international trade which showed a decrease of 3.2% expressed by value and an increase of 2.2% by volume in 2016. This divergence between the data by value and by volume is due to a fall in the prices of raw materials occurred in 2016 (i.e. oil price = -17%[3]). Furthermore, it is important to highlight how the relation between international trade (by volume) and world GDP has changed over time. Variations in these two categories currently tend to be in line with each other while in the past international trade used to grow 1.5/2 times as much as GDP. The year 2015 represents a turning point because for the first time world GDP growth was higher than that of international trade by volume, a tendency that characterised 2016 as well.

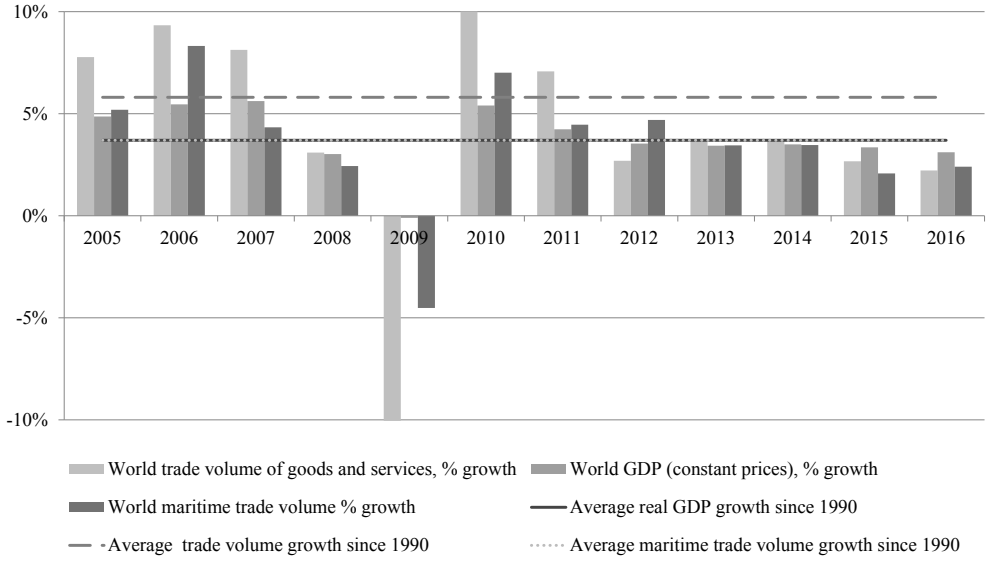
In the first trimester of 2017, world GDP and trade followed parallel upward trends[4].

[2] See Chapter I – The global scenario. Strengths, weaknesses and progress of globalisation at the beginning of 21st Century.

[3] Statista, *Average annual OPEC crude oil price*.

[4] See Chapter I.

World GDP, international and maritime trade. 2005-2016



GRAPH 1 - SOURCE: SRM on BRS, IMF, UNCTAD, 2017

The overall scenario depicted above has taken its toll on maritime transport, directly dependent on international trade and the backbone of globalisation, which has consequently experienced slow growth over the last ten years. Furthermore, trends in this sector are not only subject to the global macroeconomic scenario but also to other factors that are developing quickly and may have a significant impact in the long run. In particular, big infrastructural projects, trade policies implemented by big countries and social changes such as population growth, increasing urbanisation and the spread of e-commerce. It will also be necessary to evaluate the effects on maritime transport of the fourth industrial revolution, i.e. the spread of digitalization in production processes and the concepts of circular and sharing economy that may affect production structures and models thus causing changes in the transportation sector.

Over the last few years a large number of infrastructural projects have been announced, started and completed with the aim of improving connectivity, facilitating access to logistics chains for suppliers and consumers, favouring trade and integration between different regions of the world. The new canals in Panama and Suez, for instance, or the One Belt One Road initiative and the Partnership for Quality Infrastructure, all have the potential to stimulate growth, push trade and reshape the global shipping network by creating new business opportunities.

The effects of China's foreign policy should not be underestimated as this country is making important moves on the global stage, occupying economic and trade positions in areas where the US and Europe used to be leaders until a few years ago. This is borne out by the close relationships between China and many African and Latin American countries. The One Belt One Road initiative is likely to have a big impact on world maritime traffic: it was launched in 2013 with the aim of establishing new trade routes and promoting higher connectivity between China, Asia, Europe and Africa.

This ambitious plan is comprised of projects to build a series of infrastructures for transport and trade that will involve sixty countries embracing 65% of the world population, about one-third of world GDP and one-fourth of all the goods and services traded in the world. This will have numerous consequences on the maritime industry, starting from the opportunities generated by a growth of international trade which will contribute to improving the balance between offer and demand in maritime transport. Demand of dry bulk, for instance, is forecast to increase as a consequence of the need to move materials for the construction of infrastructures; this will probably improve the standard of living in the countries involved in the OBOR thus enabling more people to become middle class and creating a need for more services of shipping and logistics.

Furthermore, the strengthening of maritime connections between China and the port of Piraeus through the Indian Ocean and the Suez Canal may create a valid alternative to the Northern Range ports as the connection with central and Eastern Europe is shortened by 10 days thanks to the railways connecting the Greek port to destinations in those areas. The land routes included in the OBOR will also provide strategic logistic alternatives above all for the transport of time-sensitive or high value-added goods. The different railways already in place between China and Europe offer advantages in terms of length of travel with an average time of 15 days while 30-40 days are necessary for seaborne transport. This represents an important alternative for the point of view of transport but it is necessary to highlight here that the transport of containers via railway accounts for less than 1% of China's overall exports. Many investments have been made and planned in order to make the land route a valid alternative to complement the maritime one.

The partnership for Quality Infrastructure between Japan and the Asian Development Bank is aimed at developing investments in infrastructures. Japan, through measures of economic cooperation, is offering $110 billion to finance the enhancement of quality of infrastructures in Asia in the next five years[5].

Another key factor that may play a role in the evolution of world traffic is politics: protectionism and isolationism are gaining favour in many parts of the world and they will inevitably affect international trade. Whether right or wrong, transport is considered the engine of globalisation and as such it opens the way for foreign competition which poses a threat to internal economic development and employment. De-globalisation is a trend supported by many political movements that intend to strengthen and give priority to internal production. Five of the top six economies in terms of GDP (the US, China, Germany, the UK and France) will reconsider their trade policies in 2017[6]. In particular, the decisions that will be made as a consequence of Brexit in the UK, a key player in world shipping, will affect maritime transport, internal port and logistic infrastructures as well as funding and training in the maritime sector.

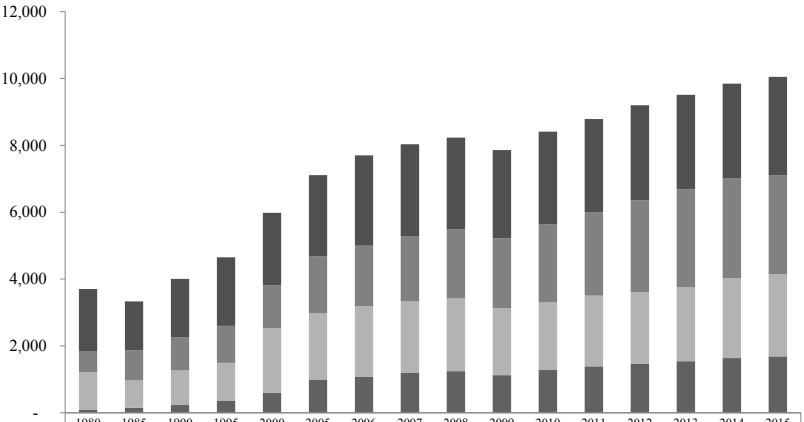
At the same time, new tendencies such as the spread of e-commerce have brought new changes and opportunities for maritime transport. About 20 billion devices are estimated to be connected by 2020 (15 million today), and this will produce savings amounting to $8 billion thanks to increased efficiency in the supply chain.

[5] UNCTAD (2016). *Review of maritime transport*.
[6] IHS Markit (2017). *The maritime world in 2017*.

3. Performance and evolution of maritime transport

According to data provided by UN agency UNCTAD, in 2015 world maritime traffic exceeded for the first time the 10 billion tonne threshold showing an increase of 2.1% on the previous year, a lower rate than the average one of the last decade. 2015 was a special year also because for the first time since the big recession there was a decrease in the main dry bulk (-1.1%) whose traffic amounted to 2.95 billion tonnes. This aspect was heavily influenced by China as its economy slowed down causing a fall in imports and also because the Asian giant has been working to diversify the composition of its GDP through an increase in services. On the other hand, growing trends were shown in liquid bulk (+4.3%), other dry goods and containers (+2.9%).

International seaborne trade (million tonnes). 1980-2015



	1980	1985	1990	1995	2000	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Oil and gas	1,871	1,459	1,755	2,050	2,163	2,422	2,698	2,747	2,742	2,642	2,772	2,794	2,841	2,829	2,825	2,947
Main bulk commodities	608	900	988	1,105	1,295	1,711	1,814	1,953	2,065	2,085	2,335	2,486	2,742	2,923	2,985	2,951
Dry cargo other than main bullk commodities	1,123	819	1,031	1,125	1,928	1,975	2,112	2,141	2,173	2,004	2,022	2,112	2,150	2,218	2,393	2,463
Containers	102	152	234	371	598	1,001	1,076	1,193	1,249	1,127	1,280	1,393	1,464	1,544	1,640	1,687

Graph 2 - Source: SRM on UNCTAD, 2016

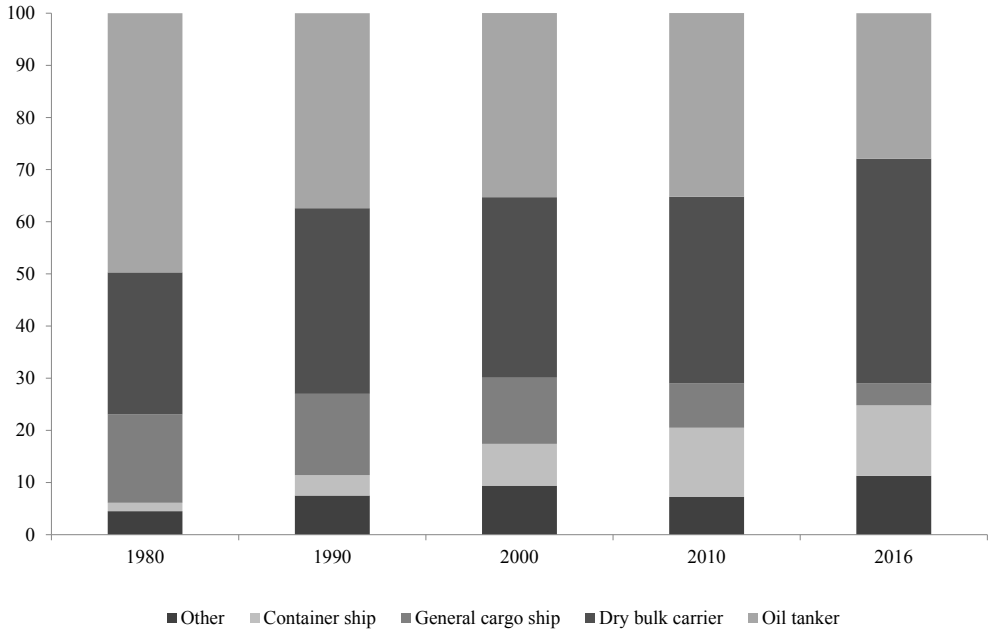
Emerging economies continue to represent the most significant component of maritime transport with 60% and 62% shares of loaded and unloaded goods respectively. These economies have consolidated their position as exporters of raw materials while strengthening their role as sources of demand for consumption and as prominent players in global production processes. In particular, Asia attracts 39% of loads and 51% of unloads.

The earliest data of 2016 show a recovery in maritime traffic of 2.4% supported by a growth of 3.6% in liquid bulk reflecting the impact of low oil prices and of the switch from coal. Dry bulk continue to show a slow upward trend (+1.4%) just like the container sector (+1.5%).

World fleet tonnage grew by 3.2% in 2016, the lowest rate in a decade and the orders of new ships amounted to just 34.1 million dwt, less than a third than that of 2015[7].

The graph below shows changes in the composition of the world fleet from 1980 to 2016, highlighting that in the time frame analysed the share of containerships and dry bulk carriers grew significantly.

World fleet by type of ship (% share in dwt)



* "Other" includes: Gas carrier, Chemical tanker, Offshore, Ferry and passenger ship, other (non classifiable).

GRAPH 3 - SOURCE: SRM on UNCTAD, 2016

Despite a limited orderbook, year 2016 in world shipping was characterised by a weaker demand than expected and by overcapacity. In particular, these two phenomena have impacted on the market of dry bulk generating a historically low Dry Bulk Index of 290 in 2016. Since then, the index has shown a recovery but its 2016 average value (673) is still far from that of 2015 (718). Dry bulk carriers are facing this delicate phase of the market by adopting an approach similar to that of container carriers, namely by establishing alliances aimed at rationalising costs and sharing risks. The most important of these alliances is Capesize Chartering which was launched in February 2015. Forecasts for the sector are still positive thanks to a fight against overcapacity carried out through ship-breaking and by consistently keeping orders to a minimum.

[7] BRS GROUP (2017). *Annual Review.*

As regards the liquid bulk sector, the Baltic Clean Tanker Index and the Baltic Dirty Tanker Index showed a downward trend in 2016, with average values of 486.99 (637.63 in 2015) and 725.73 (819.42 in 2015) respectively.

Finally, also in the container sector demand was not sufficient to absorb available capacity, which caused freight rates to decrease by 19%, with an average China Containerised Freight Index of 712 in 2016 (it was 875 in 2015). This fall was significant enough to cause Hanjin Shipping to be declared bankrupt. Furthermore, other carriers have had to tighten their belts while also having to face an increase in oil prices which made them try to save as much fuel as possible.

Other responses to the aforementioned negative conditions in the container sector are currently underway and they include: a) a higher market concentration obtained through a large number of big mergers and acquisitions as well as alliances and cooperation agreements aimed at operating on the major routes with higher efficiency, and b) the launch of increasingly larger vessels in order to create economies of scale. Such phenomena, in a scenario characterised by a slowdown of demand, are justified by the need to rationalise routes, improve rates of loading and reduce competitive pressure on freight rates. These elements have made carriers stronger in negotiations with ports, so much that the latter now have an urgent need for infrastructural investment aimed at dredging the seabed and improving the organisation of quays required to handle the loading peaks caused by the call of bigger ships.

The strategy of alliances over the last year has caused a further concentration in the sector, with the merger between COSO and CSCL, the acquisitions of UASC by Hapag Lloyd and Hamburg Sud by Maersk, and with the announced alliance between Japanese NYK, K Line and MOL.

The top five ocean carriers currently control approximately 54% of the world container fleet: in 2005 this percentage was around 36%. Due to a reorganisation of alliances between carriers, since April 2017 there have been three main groups forming the backbone of world container traffic and they are formed as follows:

- **Ocean Alliance:** CMA CGM/APL, Cosco Shipping, Evergreen, OOCL.
- **The Alliance:** Hapag Lloyd/UASC, NYK, MOL, K-line, Yang Ming.
- **2M:** Maersk, MSC, HMM.

Big alliances are operating mainly on the main East-West routes which have shown an increase of 1.2% reaching 52.5 million TEUs.

Containers moved along the main East-West routes, 2014-2015 (million TEUs)

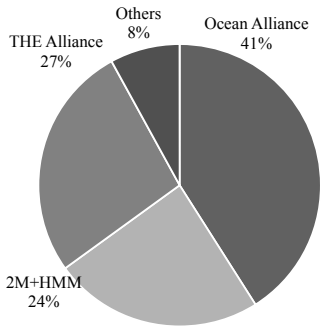
	Trans-Pacific		**Europe-Asia**		**Transatlantic**		**Major East-West Container routes**
	Eastern Asia-North America	North America-Eastern Asia	Asia-Europe	Europe-Asia	Europe-North America	North America-Europe	
2014	15.8	7.4	15.2	6.8	3.9	2.8	51.9
2015	16.8	7.2	14.9	6.8	4.1	2.7	52.5
Var. % 15/14	6.6	-2.9	-2.2	0	5.4	-2.4	1.2%

TABLE 1 - SOURCE: UNCTAD, 2016

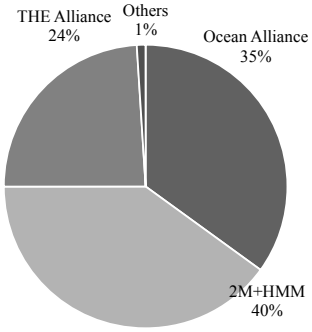
The following graphs show the market shares of the alliances on the main routes:

Market shares of the top three alliances on the main East-West routes

Far East-North America Capacity share



Far East- Europe Capacity share



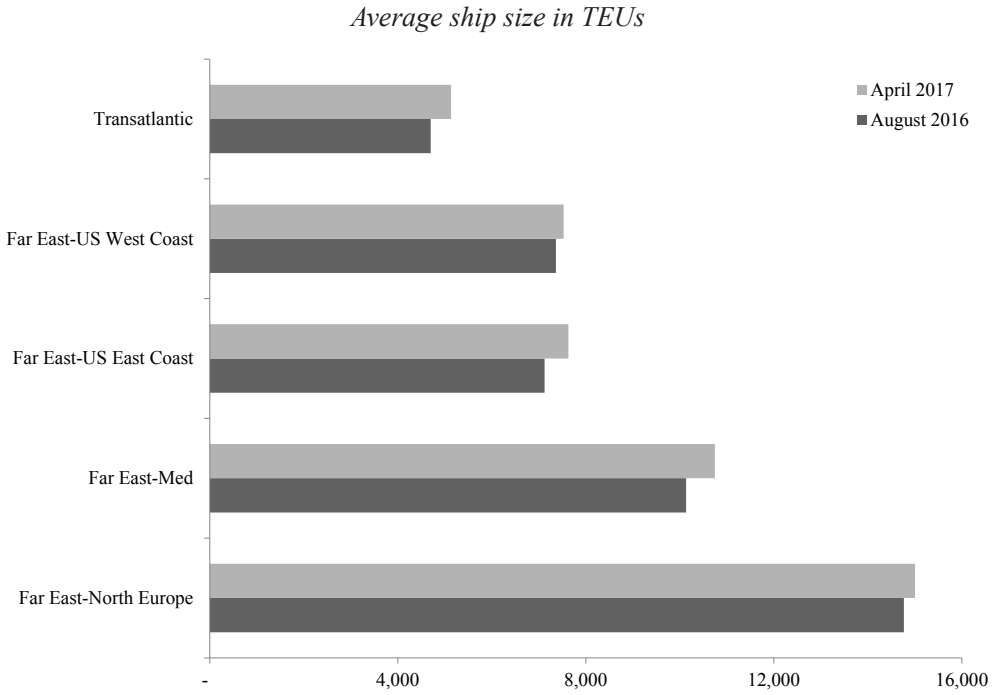
Graph 4 - Source: SRM on Alphaliner 2017

It is nevertheless necessary to highlight that the terms of these alliances (i.e. rationalisation of services, reduction of costs, better use of vessels) are limited to services of seaborne transport, which means that each carrier can keep its own agreements with port terminals as well as railways and road transport[8]. Therefore, much is still to be done as regards the integration of logistic chains and the integrated vision of a door-to-door cycle. This could offer consumers value added in terms of increased efficiency so as to stimulate them and thus indirectly support innovation in productive and industrial processes.

Another important phenomenon shaping the container sector is the use of increasingly bigger vessels, especially on East-West routes: average size of the world fleet grew at annual rates of 1.9% in the period 2001-2009 and 18.2% in 2010-2015[9].

The following graph illustrates average ship sizes on various East-West routes as a consequence of the new alliances operating since April 2017.

[8] Bologna S. (2017). *Tempesta perfetta sui mari. Il crack della finanza navale.*
[9] UNCTAD (2016). *Review of maritime transport.*



GRAPH 5 - SOURCE: SRM on Alphaliner, 2017

For instance, Maersk Line, the first shipping liner in the world, announced that it would use eleven new mega containerships (20,500 TEU each, ordered in 2015) on the Far East-North Europe routes, while nine new 15,200 TEU vessels will be employed on the Far East-Med ones.

This aspect has limits though, as a study by Drewry Shipping Consultants highlighted in 2016, since it seems that increasing ship size to over 18,000 TEU can grant a reduction on shipping and port operation costs accounting to a mere 5% of the overall costs of the network. Furthermore, economies of scale decrease as ship size grows above the 18,000 TEU threshold. Critics of naval gigantism usually point out the following disadvantages of the phenomenon: a) reduction in frequency of services, b) high peaks in container traffic, c) smaller choice for carriers and increased risks for the supply chain due to a concentration of trade on fewer ships, d) increased external costs caused by the need to carry out dredging operations and expand port areas for cargo handling. It has been estimated that transport costs of a megaship can increase by $0.4 million per year (one third for port equipment, one third for dredging and one third for port infrastructure and inland areas[10]). In the future, these factors may lead to more acquisitions and mergers between the shipping industry and port terminals.

For instance, in the spring of 2017 there was congestion in Shanghai, the first container port in the world, which caused the average delay of containerships to increase by 43%, reaching 53 hours.

[10] *Idem*.

4. The role of ports in the organisation of maritime transport

The organisation of maritime transport, as illustrated in the paragraphs above, significantly affects volumes of traffic costs of transport and economic competitiveness, as it allows for ports to play a crucial role in the increasingly complex management of the seaborne transport of goods.

The analysis of routes and of the composition of fleets has highlighted that East-West routes are the busiest traffic-wise, as illustrated by data on port performances:

Top 20 ports in the world by TEU handled

Rank	Port	Country	2014	2015	2016	Var.% 16/15	Var.% 15/14
1	Shanghai	China	35,285,000	36,537,000	37,100,000	1.5%	3.5%
2	Singapore	Singapore	33,870,000	30,922,400	30,903,700	-0.1%	-8.7%
3	Shenzhen	China	24,030,000	24,200,000	24,000,000	-0.8%	0.7%
4	Ningbo-Zhoushan	China	19,450,000	20,626,000	21,560,000	4.5%	6.0%
5	Busan	South Korea	18,680,000	19,460,000	19,850,000	2.0%	4.2%
6	Hong Kong	China	22,226,000	20,073,000	19,579,000	-2.5%	-9.7%
7	Guangzhou	China	16,160,000	17,570,000	18,900,000	7.6%	8.7%
8	Quingdao	China	16,620,000	17,500,860	18,000,000	2.9%	5.3%
9	Jebel Ali	UAE	15,250,000	15,590,000	14,800,000	-5.1%	2.2%
10	Tianjin	China	14,057,000	14,085,000	14,500,000	2.9%	0.2%
11	Port Klang	Malaysia	10,945,804	11,890,000	13,169,577	10.8%	8.6%
12	Rotterdam	The Netherlands	12,300,000	12,234,535	12,385,168	1.2%	-0.5%
13	Kaohsiung	Taiwan	10,590,000	10,260,000	10,500,000	2.3%	-3.1%
14	Antwerp	Belgium	8,977,738	9,653,511	10,037,318	4.0%	7.5%
15	Xiamen	China	8,600,000	9,180,000	9,613,700	4.7%	6.7%
16	Dalian	China	10,130,000	9,300,000	9,600,000	3.2%	-8.2%
17	Hamburg	Germany	9,700,000	8,800,000	8,910,000	1.3%	-9.3%
18	Los Angeles	USA	8,340,066	8,160,458	8,380,000	2.7%	-2.2%
19	Port Tanjung Pelepas	Malaysia	8,500,000	9,100,000	8,300,000	-8.8%	7.1%
20	Long Beach	USA	6,820,806	7,192,066	6,775,171	-5.8%	5.4%
	Top 20		**310,532,414**	**312,334,830**	**316,863,634**	**1.4%**	**0.6%**

Table 2 - Source: SRM on Port Authorities and Alphaliner, 2017

In 2016 the top twenty container ports in the world accounted for 57.1% of the top one hundred whilst also handling 317 million TEUs with an increase of 1.4% on the previous year. Therefore, the table shows a more marked growth in comparison with the previous year when the increase amounted to 0.6%. Shanghai consolidated its lead, while the nine Chinese ports ranked in the top twenty bring the total number of Asian ports to 14. Other areas of the world are represented as follows: three ports in Europe, two in the U.S. and one in the UAE.

Therefore, the table clearly shows the leadership of Chinese ports in the container sector: in 2016 China moved 218 million TEUs, a 3.6% growth on the previous year. Data related to the first quarter of 2017 also highlight a good performance showing that

TEUs moved amounted to 47.9 million, an increase of 6.7% on the same period of 2016.

China is also the leader in the LSCI index elaborated by UNCTAD, which measures the maritime connectivity of a country. The first non-Asian country in this ranking is the U.S. in sixth position.

The Mediterranean sea continues to be the main transit route between Europe and Asia. Thus, the ports along this route are carrying out improvements in productivity, reliability and quality of service in order to increase their competitiveness. The goal of improving average efficiency has already been achieved and also infrastructure is becoming better able to handle increased traffic. Investments in the area are numerous and significant as resources are being channelled towards completing or improving infrastructures dedicated to receiving megaships and handling cargo. In particular, China is investing consistently in the area. For instance, in 2016 the port of Piraeus in Greece became the centre of distribution of Chinese goods travelling to Europe and it is now the Mediterranean hub of reference for the vessels of Chinese liner Cosco Shipping. The shareholdings in Port Said and Alexandria (Egypt) and in Kumport (Turkey) fall within the same action plan[11].

Increasingly modern and efficient ports are needed more than ever in the current scenario of maritime transport of containers. As a consequence of the reorganisation of the big alliances last April 2017, terminals have been undergoing a process of selection as the new network requires a considerable reduction in the number of port-to-port connections on the key routes Asia-Europe and Trans-Pacific. Studies have shown that in big regions, such as Asia and the Mediterranean, costs can be cut by a maximum 5.4% if the number of transhipment hubs is reduced from three to two/one[12].

Therefore, competition between terminals is becoming increasingly stiffer and does not reflect any geographical strategy. Despite the huge East-West flows of goods, the area is not the main destination of container services as these are mainly directed towards Northern Europe. Ports in this area, in fact, have an advantage in terms of size, efficient connections with inland areas and high value added logistic services. Mediterranean ports are nevertheless showing more dynamic growth rates in a different context of hub and spoke distribution typical of Mediterranean portuality.

After completing considerable infrastructure projects such as the Maasvlakte II in Rotterdam, a terminal that can receive multiple megaships at the same time and handle cargo in a completely automated way, over the last few years, as demand remained weak, Northern Range ports have also been channelling their efforts on innovation and intangibles. Latest developments in IT (i.e. tracking and tracing systems) have considerably improved transparency and performances thus enhancing the competitiveness of the logistic chain. Furthermore, new and unprecedented initiatives have been launched by the Port Authority of Rotterdam. For instance, project PortXL[13]

[11] See. Chapter VI – Maritime and logistic presence of China in the Med & Gulf area: from a transit sea to a strategic sea.

[12] JOC (March 2017). *Fewer major transhipment hubs likely in new alliances.*

[13] The project revolves around ten start-ups and the Port Authority will be supported by international companies such as EY, Cambridge Innovation Center / Venture Cafe, Van Oord, Erasmus Centre for Entrepreneurship, Heineken, Innovation Quarter, Rabobank Count / First Dutch, Vopak, Damen, E.ON and Boskalis.

is an incubator of start-ups with a programme of activities revolving around the port and its connected industries. The new incubator aims to find new companies in the following sectors: transport and logistics, energy production, chemical products, refinery and maritime transport. Thanks to PortXL it is possible to find start-ups and link them to important companies and introduce them to a wide network of experts in the sector. Through this project the port can attract a larger number of innovative activities in the region and show what is has to offer.

The strategy employed by the port of Rotterdam marks a new path for growth as it transforms the port from a mere infrastructure into the pivot of economic activities that are not limited to logistics and transport and contribute to taking the country forward in the pursuit of new innovation goals.

5. Italy in the world scenario. Factors that caused the port sector to reform

In a Mediterranean sea representing the ideal route for East-West flows of goods Italy holds a privileged geographical position, so much that our country has long been considered as a natural logistics platform.

Italian ports handle a total volume of goods traffic amounting to 484 million TEUs, which makes Italy third in Europe after The Netherlands and Britain. Nonetheless, in the period 2010-2015 this volume grew at a slower pace than that of the European average or of our main competitors in the Mediterranean.

Also, in the container sector statistics show that Italy, though fully recovered from the crisis, has not managed to take advantage of its position to attract flows of goods and has suffered with the primacy of Northern Range ports and with the growth of other Mediterranean competitors.

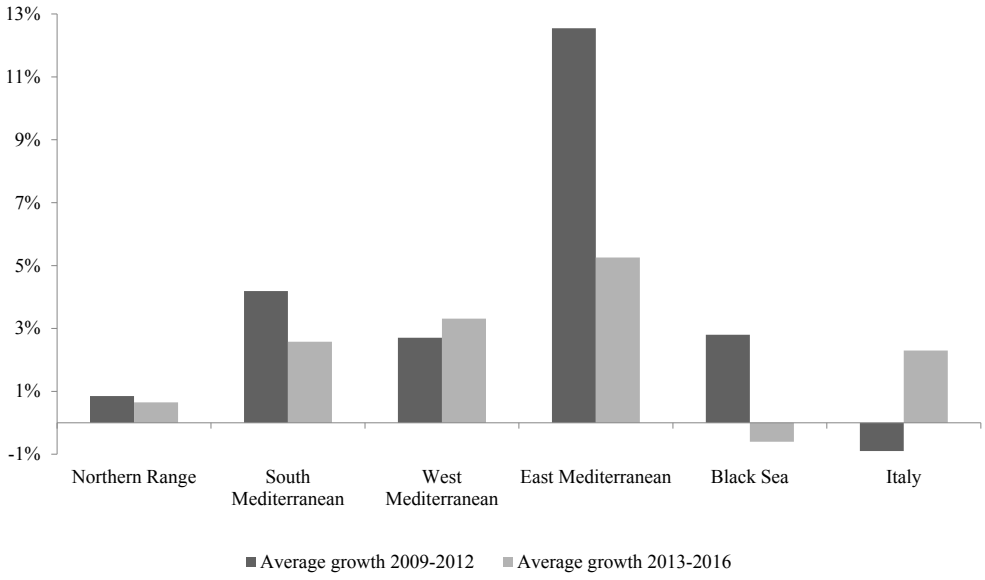
Over the last four years the average growth of the top five Italian container ports (Gioia Tauro, Genoa, La Spezia, Livorno, Cagliari) was 2.3%. This figure is lower than that of other ports along the Mediterranean but higher than that of the Northern Range ports which are slowing down probably due to the fact that saturation levels have been reached.

If we expand the analysis to the national port system as a whole, we notice that 10.57 million TEUs were handled in 2016, with an increase of 3.8% on the previous year. As proven by a study carried out by Contship[14], in Italy hub ports[15] (Gioia Tauro, Taranto, Cagliari) and gateway ones have shown different performances since 2007.

[14] Contship (2017). "Inside the industry: a mixed performance at Italian ports" in *Business news*, 28th March 2017.

[15] We define "hub" a port where the transhipment share is higher than 50% of the total.

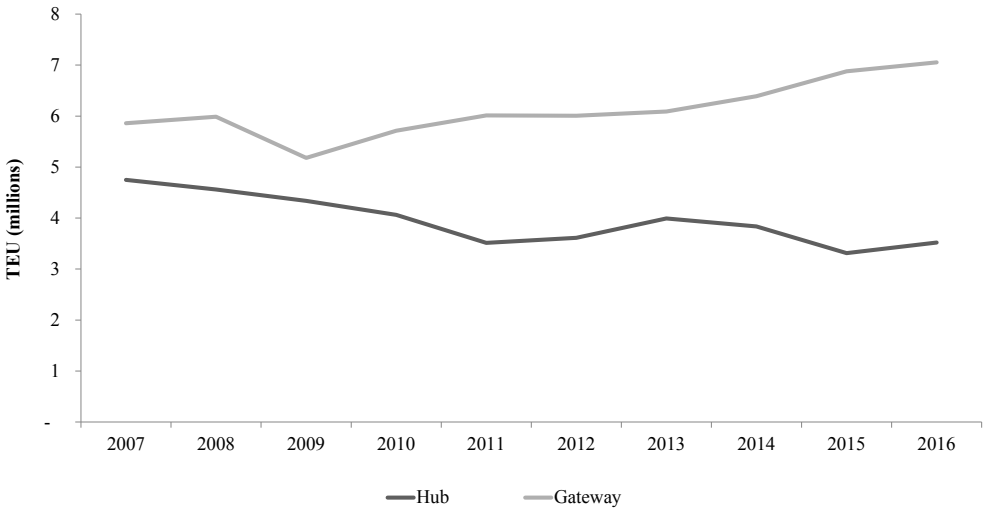
Average annual growth of container traffic (TEUs)



* Only ports handling over 700,000 TEUs.

GRAPH 6 - SOURCE: SRM on Port Authorities, 2017

Containers handled by hub and gateway ports in Italy (Million TEUs)



GRAPH 7 - SOURCE: SRM on Contship, 2017

Hub ports suffered the worst consequences due to competition: in 2007 they handled 4.75 million TEUs while in 2016 this figure went down to 3.5 million.

Only two Italian ports hold a place in the world ranking of the top one hundred container ports: Gioia Tauro (ranked 53rd) and Genoa (70th). Transhipment in Genoa accounts for approximately 9% of the total and thus the port is a gateway to the potential market lying behind it and encompassing the Padan Plain, the South-East of France, Switzerland and southern Germany. On the other hand, Gioia Tauro has a 97% share of transhipment which has proven a disadvantage over the last few years as competition in this sector has become stiffer due to the progress made by other Mediterranean ports such as Tanger Med (Morocco), Port Said (Egypt), Marsaxlokk (Malta), Algeciras, Valencia, Barcelona (Spain) and others in Greece. Furthermore, a recent study carried out by the OECD[16] warns against the risk that port hubs are too dependent on shipping alliances, as is the case of Gioia Tauro that completely relies on 2M.

African transhipment ports, characterised by lower costs of labour than those of Italy, can offer lower operative costs and, similarly to Spanish ports, are equipped with recently modernised infrastructures allowing it to speed up operations in the handling of goods on land which are faster than those carried out in Italy also due to swifter bureaucracy. Finally, it is necessary to highlight that big shipping players are currently trying to create their own dedicated transhipment bases as is the case with the port of Pireaus, which Cosco has transformed into the centre of distribution of Chinese containers directed to Southern and Eastern Europe.

In order to better comprehend the extent to which port competitiveness is changing on the global stage, SRM has compared the average Liner Shipping Connectivity Index[17] in the period 2004-2016 in three different port areas: Northern Range (NR), North Africa + Turkey (NA+T) and North Mediterranean (NM)[18].

The Graph 9 shows how the gap between South and North bank ports has sensibly reduced in the twelve-year span analysed by UNCTAD as a consequence of increased competitiveness of infrastructures in those areas that continue to strengthen their position on the market despite social and political instabilities.

It is nevertheless necessary to highlight that maritime transport in Italy is not only based on containers. In 2016, in fact, our country moved 484 million tonnes (+1%) of bulk and boasts a significant share of Ro-Ro traffic.

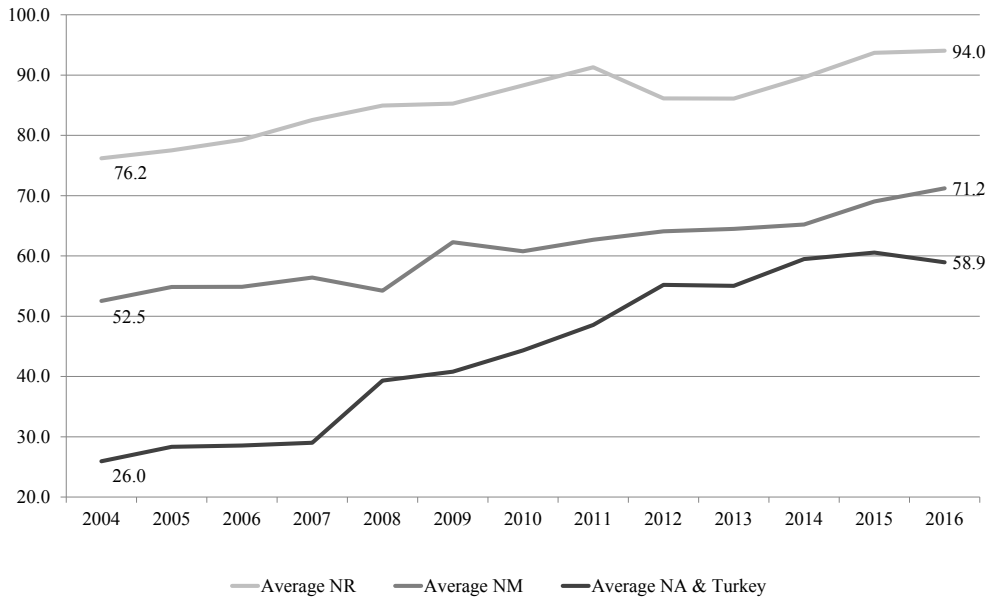
In particular, the Ro-Ro sector is an element of distinction for Italian portuality. Developed mainly to guarantee territorial connectivity with the major islands, Ro-Ro traffic has also consolidated its international position over the past years. In terms of type of transport, Short Sea Shipping (carried out by Ro-Ro vessels) is a sector where Italy is the undisputed leader in Europe, the Mediterranean and the Black Sea. Italy also boasts the presence of leading shipping liners in the sector.

[16] Merk, O. (April 2017). *Le fide globali per il sistema portuale*.

[17] The Liner Shipping Connectivity Index is calculated by UNCTAD and measures the competitiveness of port and logistic systems in 157 countries based on the network and on the quality of liner services offered by ports. China 2004 = 100.

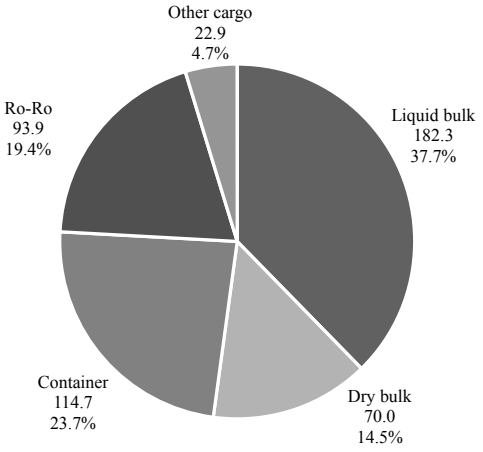
[18] Northern Range (NR) includes Germany, The Netherlands and Belgium. North Mediterranean comprises Spain, France, Italy and Greece. North Africa + Turkey embraces Morocco, Egypt and Turkey.

Growth of the Liner Shipping Connectivity Index in three port areas



GRAPH 8 - SOURCE: SRM on UNCTAD, 2016

Type of goods moved by Italian ports (million tonnes)



GRAPH 9 - SOURCE: SRM on Assoporti and Port Authorities, 2017

Notwithstanding the aforementioned remarkable achievements, seaborne goods movements in Italy constantly fluctuate below the 500 million tonne threshold despite the significant expansion of export flows transiting the Mediterranean from the Middle East to Europe and from Europe to North America.

The reasons that prevented our port system from seizing the potential advantages of a generally favourable scenario are numerous and represent a topic that SRM has always addressed in its studies. Italy seems to lack a system strategy and a shared and coordinated programme, which has prevented the rationalisation of investments based on the single vocations of ports. Furthermore, bureaucracy and lengthy procedures have made it difficult to complete or update infrastructures, which is the main reason why it has been impossible to ensure efficiency in terms of cost and timeliness of the handling of goods in ports. The drawbacks of this situation are significant, as they have affected the competitiveness of our manufacturing companies in a period where exports have been playing the role of sole engine of economic growth. The port sector, in fact, represents the "main partner for the distribution and the allocation of manufacturing goods of the country", as 37% of Italian import-exports in volume travel by sea.

6. Italian port legislation. From the 84/94 reform to Decree 169/2016 titled "Reorganisation, rationalisation and simplification of port authorities"

The history of Italian portuality has its turning point in port reform number 84 passed in 1994. That law replaced the old public-service model and entrusted the management of public spaces to Autorità Portuali (Port Authorities), public owned institutions with control functions theoretically separated from the operative ones entrusted to the private sector.

This reform was passed in a period of big changes for the global market of shipping and mainly aimed at fulfilling the need for integration of Italian portuality within the context of increasingly globalised markets, above all through the long term concessions of quays in the most significantly growing sector, namely containers.

Regulations introduced by the 84/94 reform, though appropriate to the context at the time, have not managed to face changes in the market and in particular have failed to achieve the strategic aim of identifying systemic objectives for Italian ports.

In a context where portuality and maritime logistics are rapidly evolving in the Mediterranean, in Europe and in the rest of the world according to increasingly complex industrial and organisational standards, the Italian port system is characterised by organisational and operative fragmentation as it lacks an organic strategy plan.

A long and complex regulatory path has been undertaken with the aim of revamping portuality and logistics in order to provide Italian ports with the competitive instruments they need to seize opportunities for development and growth. This process concluded with the Piano Strategico Nazionale della Portualità e della Logistica (National strategic plan for Portuality and Logistics) of 2015[19].

The Plan takes into account the peculiarity of the Italian context characterised by the presence of many ports along a very much extended coast with special geomorphological features.

[19] In August 2015 the Italian government passed the PSPNL as indicated by article 29 of Decree 12th September 2014, number 133 (*Sblocca Italia*) upon proposal by the Ministry of Infrastructure and Transport.

These factors make it difficult to concentrate in fewer ports the functions that can potentially benefit from economies of scale. Furthermore, almost all Italian ports are located near the centre of historical cities. The plan includes the following strategic objectives aimed at marking prospects of development:

- Improve competitiveness in the logistic and port systems
- Favour the growth of traffic of goods and people
- Promote intermodality in goods traffic

These objectives should be achieved through a strategy based on the value of the "sea system" in terms of an increase of traffic. The plan also provides instructions for policies to be implemented on a national level, both specific to each sector and common to the production system as a whole, which will contribute to recovering some competitiveness in the maritime economy.

The strategy is made up of ten objectives:

1. Simplification and stream-lining
2. Competition, transparency and upgrading of services
3. Improvement of accessibility of maritime connections
4. Integration of the logistic system
5. Improving the performance of infrastructure
6. Innovation
7. Sustainability
8. Reliability and programmability of financial resources
9. National coordination and partnership cooperation
10. Modernisation of the system's governance

As regards point 10, the asset of port governance outlined by law 84/1994 and based on the "one-port" dimension has proven inappropriate to fulfil the need for efficient allocation of resources for investments. This was mainly due to the fact that it lacked a national strategy aimed at homogeneously developing the port system.

Thus, the Plan introduces a new model of governance that comprises the rationalisation, reorganisation and concentration of the twenty-three actual Port Authorities into Autorità di Sistema Portuale (Port System Authorities).

On **4th August 2016** the Italian government passed **decree number 169** containing measures for the **"reorganisation, rationalisation and simplification of port authorities"** which, together with other actions, aims at improving the competitiveness of ports and supporting the role of Italy as Mediterranean hub and European logistic platform taking advantage of its position in the middle of four European corridors (Mediterranean, Rhine-Alpine, Baltic-Adriatic, Scandinavian-Mediterranean).

The main principles of the decree are: a) simplification of procedures aimed at favouring the transit of goods and passengers, b) promotion of strategic decision centres for ports in homogeneous areas, c) administrative reorganisation, d) central coordination of the Ministry and e) more centralised strategic choices. These are expected to reduce competition between near ports and stimulate cooperation in order to help Italian ports to reach the same levels as those of their European competitors.

- **Bureaucratic simplification**
  The decree has introduced a Sportello Unico Doganale e dei Controlli (Office for Customs and Checks) which will replace the old 113 administrative procedures carried out by twenty-three different bodies. This authority will be coordinated by the Agenzia delle Dogane (Customs Agency). Furthermore, a new Sportello Amministrativo Unico (Office for administration) has been created to offer assistance in carrying out all the administration and authorisation procedures needed in trade and industrial operations. These should dramatically reduce the timeliness of customs and administration procedures which so far have been considerably longer than those of rival major international ports. Simplifications and discounts will also be offered for arrivals and departures of ships.

- **The promotion of strategic decisional centres: the Port System Authorities**
  Italian ports have been reorganised in fifteen port system authorities, strategic decisional centres based into major cities, namely the ports defined as core by the European Community. The port system authorities are the following: Genoa, La Spezia, Livorno, Civitavecchia, Cagliari, Naples, Palermo, Gioia Tauro, Taranto, Bari, Ancona, Ravenna, Venice and Trieste.
  The decree allocates fifty-four nationally significant ports to the fifteen port system authorities. Regions are allowed to ask for certain regional ports to be admitted to the system authorities. The locations of port system authorities are given the strategic role of coordinating and programming of the ports in their area. These will also work to attract investment and encourage cooperation between the different public entities and administration offices. Finally, the port system authorities will function closely with the ministry of transport and infrastructure, especially as regards the Development Plan of Port System (Piano Regolatore di Sistema Portuale) and the infrastructure plans to be completed with national or European funds.

- **Administrative reorganisation**
  Port System Authorities are run more swiftly than their old counterparts; there is a president, the managing board, a Secretary General and an auditing committee. On a national level, the reduction in the number of managers is significant, from 336 to approximately 70.
  The managing board is composed of: a) the President, nominated by the Ministry of infrastructure and with the approval of the regional governor(s) of the area. They need a proven track record and the right qualifications and have major decision-making powers, b) a member nominated by the regional government, two members if the port system authority comprises two regions, c) a member nominated by the mayor of each metropolitan area present in the port system, d) a member nominated by the mayor of each former port authority present in the port system, e) a representative of the maritime authority who can only vote if they are competent.
  In order to ensure consistency with the national strategy, the Ministry of Transport and Infrastructure will host a national coordination committee of port system authorities. This body will have the important role of coordinating major investment in infrastructure, planning the development of ports and public concession strategies as well as marketing and promoting the port systems internationally. This committee

is formed by the presidents of the port system authorities and is coordinated by a person nominated by the Ministry of Transport and Infrastructure.

In order to ensure effective communication with economic and social players in ports, each port system authority will host a partnership committee composed of the president, the commander of the port and by a representative for each of the following categories: ship owners, industrial entrepreneurs, operators, shipping agents, intermodal logistic operators, railway operators, maritime agents, auto carriers, tourism and trade operators. Three places will be held by three workers of port companies. This is an advisory body on socio-economic partnerships and its representatives will be allowed to participate in the decision-making process but will be prevented from voting on administration measures.

The authorities will have the possibility to rely on territorial offices of call, in the headquarters of the actual port authorities. These offices have the task of making proposals on local matters and are in charge of other administrative, decision-making and surveillance procedures.

- **Other actions being undertaken for logistics and portuality**
  The Ministry of Transport and Infrastructure is deploying other instruments aimed at strengthening logistics and portuality to enable ports to rise to the challenges posed by the global maritime scenario. Such challenges include the doubling of the Suez Canal, naval gigantism, the need to attract investment and to form important industrial partnerships, an increase in competitiveness in Northern Europe, North Africa, Piraeus, the Balkans and the Far East.
  The actions currently being undertaken include:
  - Simplifications on excavations and dredging in the Environmental Bill
  - "last mile" rail links: the RFI contract comprises many railway-port connections
  - Revision of old projects and unlocking of investment
  - "ferrobonus" and "marebonus" (€200 million worth of incentives allocated by the financial Bill 2016).

Table 3 shows the performance of the Italian portuality organised according to the new port system authorities[20]. Infographic 1 illustrates the implementation status of the Reform as of 31st May 2017 and indicates the bodies that have already been appointed to the fifteen Port System Authorities.

The National committee of ports has yet to be established.

Data show that the new governance introduced by Decree 169/2016 has not yet been fully implemented. In three Port System Authorities presidents are still being appointed and in many others the managing boards are still vacant.

Decree 169/2016, however, represents a turning point in Italian regulations as it was passed after port legislation was the subject of long political debates. This law lays the foundation that will allow our port system to recover its competitiveness in the shipping sector of the Mediterranean.

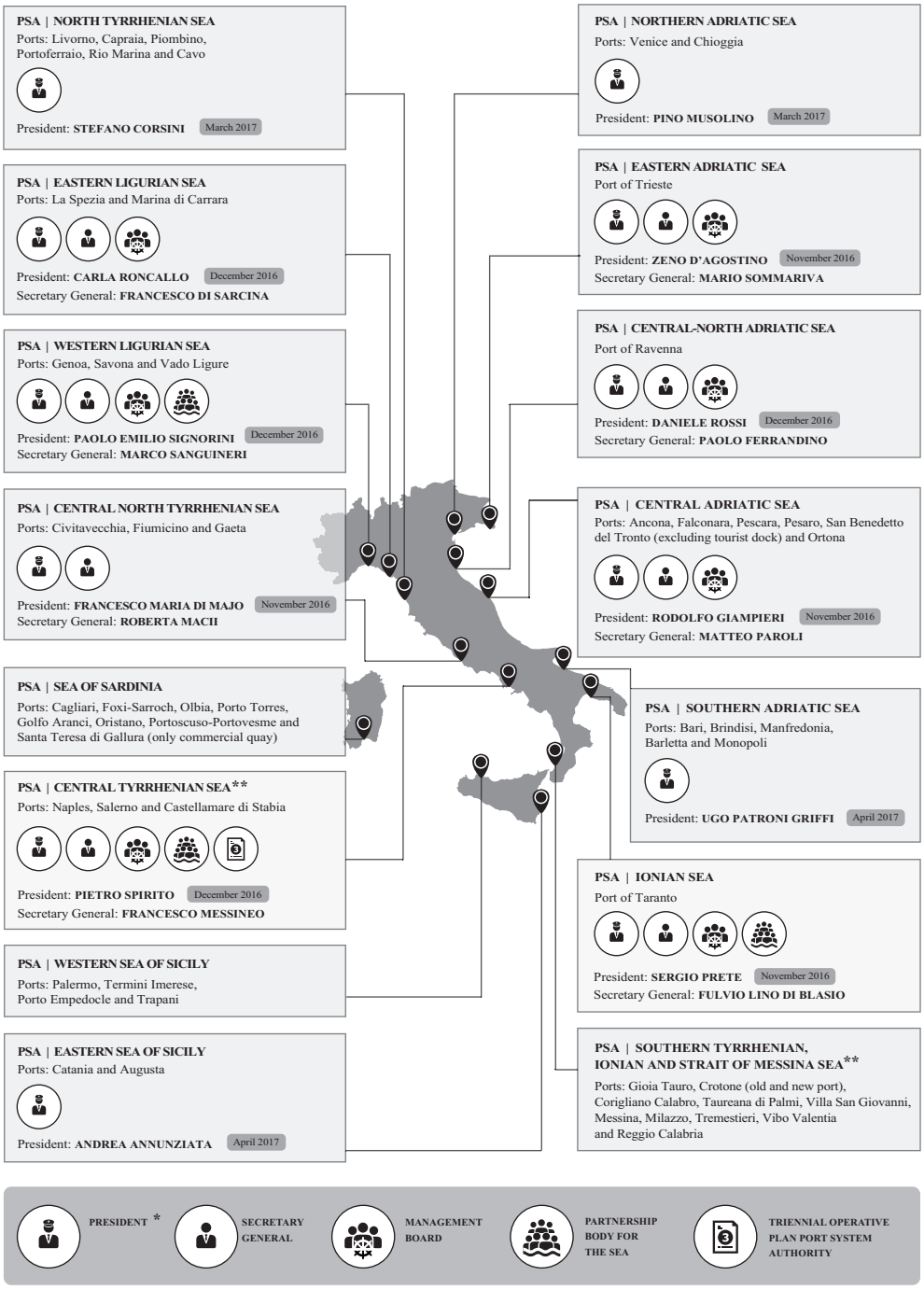
[20] The data regarding the port system authorities have been obtained by adding up the value of each former port authority. Therefore, goods movements of ports that were not part of port authorities have not been considered.

Movement of goods and passengers of Port System Authorities as of 2016

Port System Authority	**Liquid bulk** (tonnes)	**Dry bulk** (tonnes)	**Container** (tonnes)	**Ro-Ro** (tonnes)	**Other cargo** (tonnes)	**Total** (tonnes)	**TEU**	**Passengers**	Of which cruise-goers
Central Adriatic Sea	5,025,241	438,166	1,240,347	2,236,749		8,940,503	185,846	1,005,079	54,901
Central-North Adriatic Sea	4,339,528	10,734,033	2,563,399	1,876,677	6,449,127	25,962,764	234,511	48,002	45,904
Southern Adriatic Sea	2,973,772	6,599,690	1,280,508	5,516,199	146,610	16,516,779	73,450	1,659,352	406,145
Eastern Adriatic Sea	42,756,341	5,340,066	5,384,517	8,735,962	1,656,182	63,873,068	487,479	199,594	134,401
Northern Adriatic Sea	9,031,737	8,882,187	5,614,737	1,052,207	2,427,027	27,007,895	605,875	1,777,612	1,625,850
Ionian Sea	5,534,336	13,736,471	-	24,147	5,373,896	24,668,850	375		
Western Ligurian Sea	21,735,502	5,105,673	22,747,685	11,435,448	1,549,491	62,573,799	2,352,511	4,329,828	1,927,612
Eastern Ligurian Sea	749,012	1,514,331	12,811,894	-	1,000,606	16,075,843	1,305,205	520,600	520,600
Central Tyrrhenian Sea	5,224,316	6,223,778	10,172,979	12,850,790	1,073,308	35,545,171	872,053	8,528,615	1,417,546
Central North Tyrrhenian Sea	5,328,711	5,954,827	615,146	4,778,668	129,656	16,807,008	74,208	4,122,059	2,341,552
Southern Tyrrhenian, Ionian and Strait of Messina Sea	16,578,453	294,475	34,000,000	5,943,203	-	56,816,131	2,797,070	7,036,201	367,269
North Tyrrhenian Sea	8,399,616	2,497,878	9,196,116	16,775,144	2,028,161	38,896,915	800,475	9,597,879	851,521
Sea of Sardinia	27,768,402	1,302,686	8,452,226	9,769,145	48,476	47,340,935	723,037	5,010,287	468,452
Western Sea of Sicily	496,029	256,172	127,470	5,846,162	-	6,725,833	12,160	1,921,933	510,078
Eastern Sea of Sicily	26,361,266	1,121,986	497,986	7,018,110	12,406	35,011,754	49,198	243,746	101,042
TOTAL	**182,302,262**	**70,002,419**	**114,705,010**	**93,858,611**	**21,894,946**	**482,763,248**	**10,573,453**	**46,000,787**	10,772,873

TABLE 3 - SOURCE: SRM on Port Authorities, 2017

State of implementation of Decree 169/2016 as of 31st May 2017



* The date shown next to the president's name is that of the appointment decree. ** Salerno will keep financial and administrative autonomy until 31st December 2017, and Messina until 30th June 2017 (Prime Ministerial Decree 11th January 2017).

INFOGRAPHIC 1 - SOURCE: SRM

The shipping sector is one of the most significant for the Italian economy. According to data provided by Federazione del Mare, between 1995 and 2015 it helped to increase productivity and employment by 65% and 60%. In Europe, shipping contributes €325 billion of member countries' GDP and provides 1.2 million jobs. In Italy, on the other hand, shipping has the so called 2-percent factor: €32.6 billion of GDP (2%) and 471,000 jobs (2% of workforce). The main weakness of this sector in Italy has been ports, and thus there is an urgent need to implement the measures provided by the reform so as to enhance Italy's competitiveness in the global shipping scenario.

7. Conclusions

The shipping sector is characterised by trends, both on a global and local level that will affect its evolution in the years to come. The variables that are likely to play a role are not linked to economic trends (in a recovery phase according to the latest outlooks) but to political trends.

The age of globalisation, of which shipping has been the backbone and which has led to a significant increase in intercontinental goods traffic, could be subjected to the risks of a radical change of the international political situation. In particular, amongst the phenomena opposing globalisation we can find Brexit and the widespread rise of nationalism across Europe.

Over the last few years shipping liners have faced a slowdown in the growth of volumes transported but have not managed to keep under control the level of freight rates. This was due to the fact that they put on the market more hold capacity than necessary with the aim of speculating and then maintaining market shares against competitors. In this context, the threat posed to shipping by a shift back to protectionism appears to be particularly dangerous.

It is nevertheless important to state that, as outlined in chapter 1, globalisation can not be stopped despite the rise of neo-protectionism. Important factors to consider are the new flows of FDI (Foreign Direct Investment) activated by former emerging countries (i.e. China) and developing economies attracting capital from all over the world. Another important phenomenon is linked to this and may affect the evolution of shipping: the growth of investment in the sector of construction, and in particular transport infrastructure, mainly found in developing economies. The Global Construction 2030 indicates that investment in construction will account for 14.7% of the world GDP in 2030, showing an increase of more than 2% on 2014, and that 57% of this growth will occur in China, India and the US. This figure is due to reach 70% of global growth in the sector if we include Indonesia, the UK, Mexico, Canada and Nigeria. In order to better gauge the influence of transport on the aforementioned spending increase, the example of China's latest infrastructure investment can be analysed. The Asian Development Bank has estimated that between 2010 and 2020 the financial requirements for infrastructure in Asia will amount to over $8,000 billion. These should cover costs of the completion of numerous projects started in the last few years such as land connections between Asia and Europe, a high-speed railway network in South East Asia as well as the ports of Central Eastern and Southern Asia.

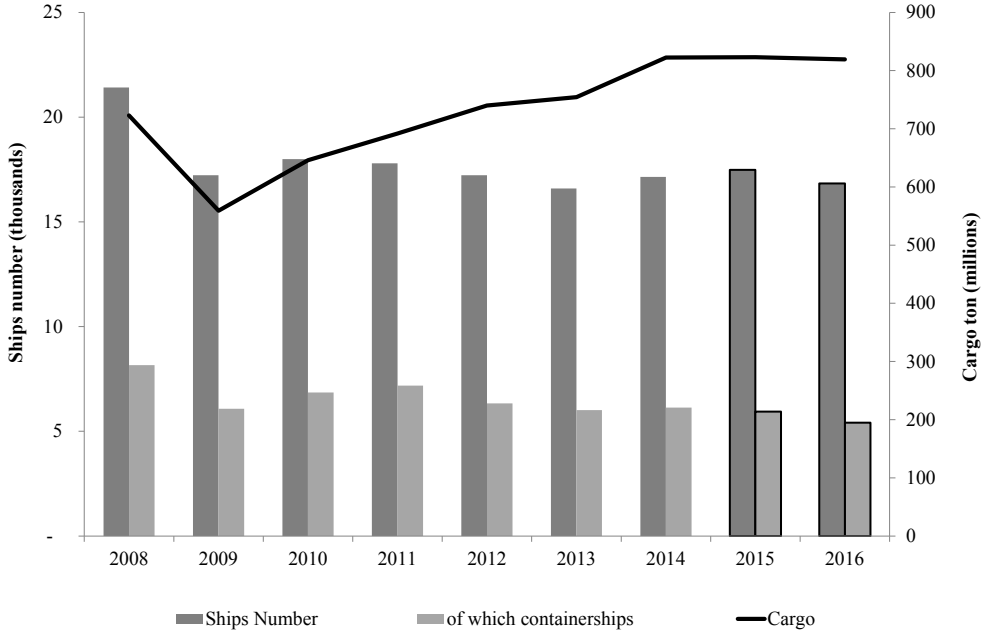
The impact of big infrastructure work is not limited to national level as many of the infrastructure projects promoted and completed over the last few years significantly affect route plans of intercontinental traffic. Clear examples of this are: the doubling of the Suez Canal, the enlargement of the Panama Canal, the OBOR strategy and the new Gotthard Base Tunnel. This infrastructure is the world's longest and deepest traffic tunnel and will significantly influence traditional routes of goods to and from Central-Northern Europe.

Within the rapidly evolving global scenario outlined so far, Italian ports have suffered the negative consequences of a long period of paralysis without any system strategic visions setting the priorities and objectives to achieve. The reform introduced through Decree 196/16 is now providing new instruments aimed at enhancing competitiveness. It is hoped that its measures will be fully implemented in the near future.

Statistical Appendix

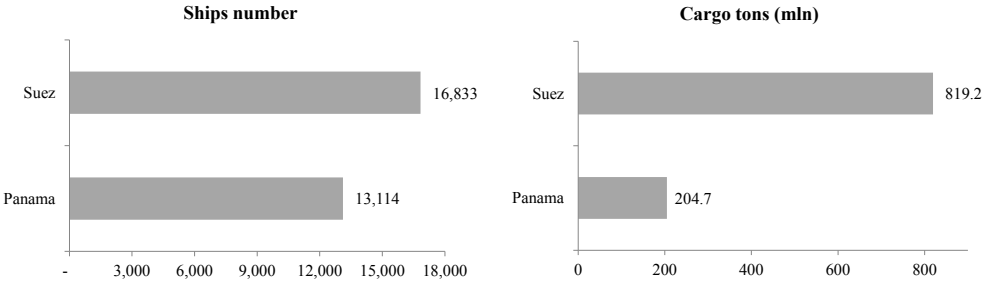
Deep Sea Shipping

Ships and cargo traffic in the Suez Canal. 2008-2016



Graph 1 - Source: SRM on Suez Canal Authority, 2017

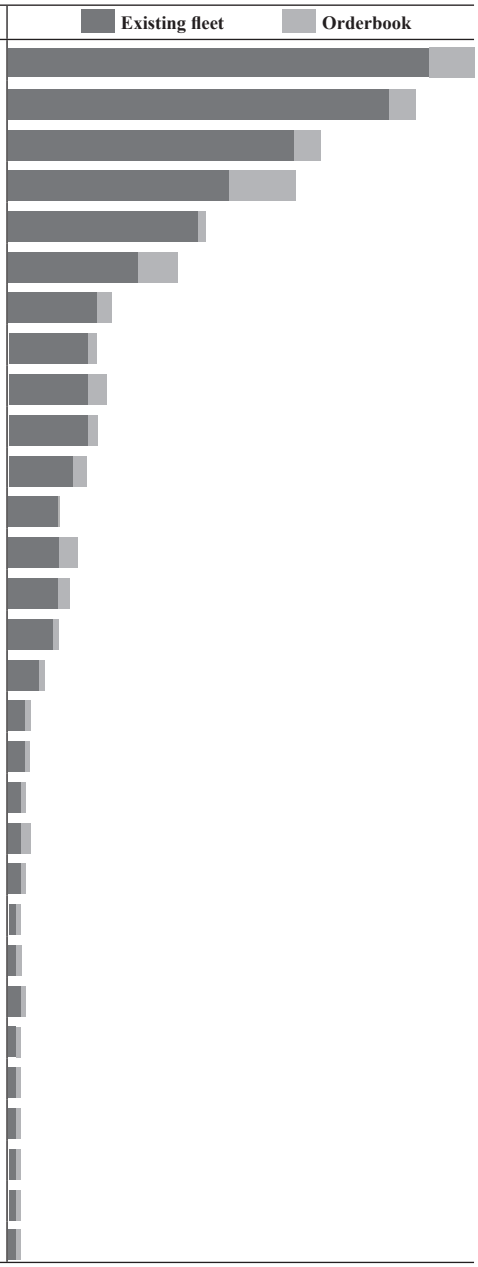
Ships and cargo passed through the Panama and Suez Canals. 2016



Graph 2 - Source: SRM on Panama Canal Authority and Suez Canal Authority, 2017

Top 30 global container operators. May 2017

Rnk	Operator	TEU	Share
1	APM-Maersk	3,339,671	16.0%
2	Mediterraneo Shg Co	3,048,240	14.6%
3	CMA CGM Group	2,291,950	11.0%
4	COSCO Shipping Co Ltd	1,736,375	8.3%
5	Hapag-Lloyd	1,538,118	7.4%
6	Evergreen linea	1,023,949	4.9%
7	OOCL	689,987	3.3%
8	Yang Ming Marine Transport Corp.	603,283	2.9%
9	NYK linea	590,585	2.8%
10	Gruppo Hamburg Süd	565,156	2.7%
11	MOL	499,704	2.4%
12	Hyundai MM	378,209	1.8%
13	PIL (Pacific Int. Linea)	371,833	1.8%
14	linea K	358,498	1.7%
15	Zim	353,815	1.7%
16	Wan Hai Lines	229,283	1.1%
17	X-Press Group Alimentatori	143,350	0.7%
18	KMTC	122,193	0.6%
19	SITC	103,310	0.5%
20	Gruppo dell'IRISL	97,671	0.5%
21	Arkas Line / EMES	72,031	0.3%
22	SM Linea Corp.	69,633	0.3%
23	Sinotrans	69,407	0.3%
24	Quanzhou Uno Sheng Shg Co	67,073	0.3%
25	TS Lines	64,552	0.3%
26	Simatech	62,747	0.3%
27	spedizione Zhonggu	60,240	0.3%
28	Unifeeder	56,137	0.3%
29	Gruppo Transworld	51,754	0.2%
30	Grimaldi (Naples)	50,622	0.2%



Graph 3 - Source: SRM on Alphaliner, 2017

Cellular fleet growth forecast 2017-2020 (based on orderbook as at January 1st, 2017)

SUMMARY

- The fleet has risen by 1.5% during 2016.
- The fleet shoud rise by 3.7% during 2017, 5.4% during 2018 and 0.1% during 2019.
- The average growth for 3 years from 1/1/2017 to 1/1/2020 stands at 3%.

Fleet as:	**31 Dec 2016**		**31 Dec 2017**		**31 Dec 2018**		**31 Dec 2019**		**31 Dec 2020**		**Rise p.a. (3 years)**
TEU nominal	**ships**	**TEU**	**ships**	**TEU**	**ships**	**TEU**	**ships**	**TEU**	**ships**	**TEU**	
18,000-21,000	47	890,497	72	1,394,786	100	1,936,384	105	2,026,384	105	2,026,384	31.5%
13,300-17,999*	126	1,829,534	149	2,163,994	164	2,374,792	173	2,500,532	173	2,500,532	11.0%
10,000-13,299	215	2,511,886	258	3,001,219	281	3,296,119	283	3,319,719	283	3,319,719	9.7%
7,500-9,999	475	4,176,453	482	4,241,045	482	4,241,045	482	4,241,045	482	4,241,045	0.5%
5,100-7,499	471	2,911,464	436	2,939,526	476	2,939,526	476	2,939,526	476	2,939,526	0.3%
4,000-5,099	679	3,077,443	669	3,030,959	669	3,030,959	669	3,030,959	669	3,030,959	-0.5%
3,000-3,999	249	864,922	284	919,461	276	960,761	278	967,861	279	971,361	3.8%
2,000-2,999	621	1,571,908	661	1,674,589	691	1,754,825	693	1,760,425	693	1,760,425	3.8%
1,500-1,999	590	1,008,431	625	1,071,092	641	1,100,492	646	1,109,614	646	1,109,614	3.2%
1,000-1,499	696	804,466	736	827,368	739	855,706	740	856,868	740	856,868	2.1%
500-999	749	557,712	754	561,015	755	561,615	755	561,615	755	561,615	0.2%
100-499	188	60,837	195	63,115	197	63,835	197	63,835	197	63,835	1.6%
TOTAL	5,106	20,265,553	5321	21,888,169	5,471	23,116,059	5,497	23,378,383	5,498	23,381,883	4.9%
TOTAL after exp. Scrap/Slip	5,106	20,265,553	3,117	21,018,504	5,202	22,146,394	5,197	22,158,718	5,084	1,912,218	3.0%
Rise 12 months	**2016>**	**1.5%**	**2017>**	**3.7%**	**2018>**	**5.4%**	**2019>**	**0.1%**	**2020>**	**-1.1%**	

* Note on neo-panamaxes - The ships of 13,300 to 14,000 TEU with neo-panamax gauge are counted in the 10,000-13,299 TEU segment.

Rise p.a. (3 years) represents the average per annum growth during the three years 2017-2018-2019.

TABLE 1 - SOURCE: SRM on Alphaliner, 2017

World's leading ports by total volume, 2014-2016 (Thousands of tons)

Rank	Port	Country	2014	2015	2016	Var.% 16/15	Var.% 15/14
1	Ningbo-Zhoushan	China	873,470	889,000	917,800	3.2%	1.8%
2	Shanghai	China	755,290	717,400	642,900	-10.4%	-5.0%
3	Singapore	Singapore	581,270	574,900	593,300	3.2%	-1.1%
4	Suzhou	China	479,000	543,190	n.d.		13.4%
5	Tianjin	China	540,510	540,000	550,000	1.9%	-0.1%
6	Guangzhou	China	500,360	521,000	521,800	0.2%	4.1%
7	Tangshan	China	500,800	490,000	515,800	5.3%	-2.2%
8	Qingdao	China	477,000	497,490	500,800	0.7%	4.3%
9	Rotterdam	The Netherlands	444,730	466,360	461,177	-1.1%	4.9%
10	Port Hedland	Australia	421,290	452,940	460,400	1.6%	7.5%
11	Dalian	China	423,000	415,000	428,700	3.3%	-1.9%
12	Rizhao	China	353,230	361,000	350,600	-2.9%	2.2%
13	Busan	South Korea	346,100	359,010	n.d.		3.7%
14	Yingkou	China	330,700	338,500	347,000	2.5%	2.4%
15	South Louisiana	United States	291,830	292,757	294,914	0.7%	0.3%
16	Yantai	China	237,000	251,000	265,400	5.7%	5.9%
17	Hong Kong	China	297,737	256,559	256,730	0.1%	-13.8%
18	Zhanjiang	China	n.d.	n.d.	255,200		
19	Huanghua	China	n.d.	160,000	245,100	53.2%	
20	Port Klang	Malaysia	217,289	219,843	n.d.		1.2%

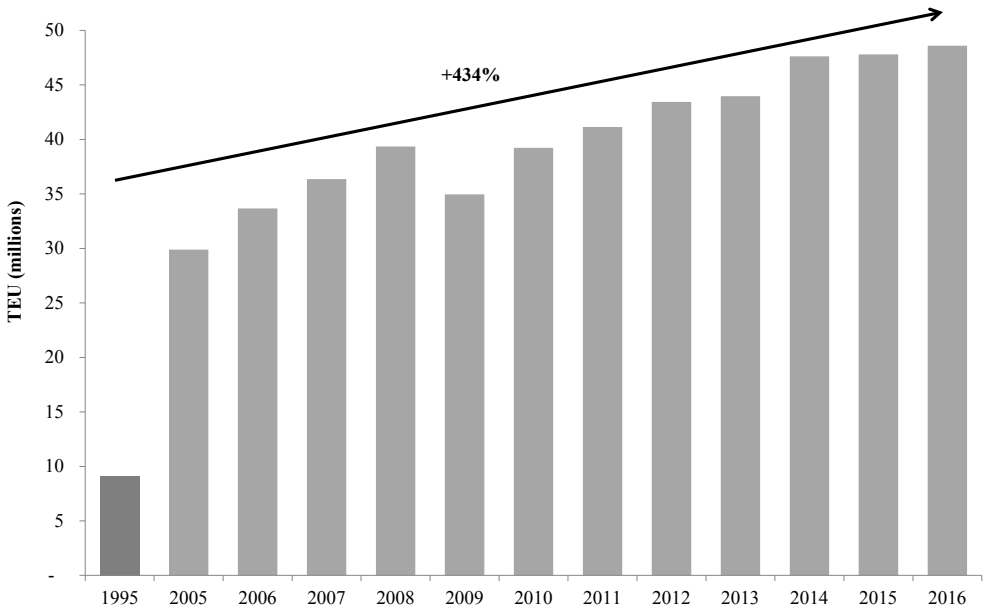
Table 2 - Source: SRM on UNCTAD, Informare, Port Authorities, 2017

Top 30 ports in EU and Med (TEU). 2008 and 2016

RANK		TEU 2016	TEU 2008
1	Rotterdam	12,385,168	10,784,000
2	Antwerp	10,037,318	8,663,000
3	Hamburg	8,910,000	9,737,000
4	Bremen	5,488,999	5,448,000
5	Algeciras	4,759,571	4,554,901
6	Valencia	4,722,273	4,441,949
7	Felixstowe	3,745,000	3,200,000
8	Piraeus	3,749,709	434,000
9	Marsaxlokk	3,080,000	2,900,000
10	Port Said	3,000,000	3,258,000
11	Tanger Med	2,963,654	921,000
12	Istanbul-Ambarli	2,802,000	2,262,000
13	Gioia Tauro	2,790,000	2,969,802
14	Le Havre	2,519,000	2,450,000
15	Genoa	2,297,917	2,172,944
16	Barcelona	2,237,818	1,893,557
17	Southampton	1,710,000	2,000,000
18	Zeebrugge	1,400,000	2,210,000
19	Alexandria	1,661,917	1,259,000
20	Sines	1,513,000	230,000
21	Mersin	1,453,038	868,000
22	Ashdod	1,443,000	828,000
23	La Spezia	1,272,425	1,303,017
24	Haifa	1,268,000	1,251,000
25	Marseille-Fos	1,250,000	1,179,910
26	London	1,185,041	1,167,000
27	Beirut	1,147,219	1,211,033
28	Las Palmas	916,597	1,251,000
29	Koper	844,758	354,000
30	Damietta	810,311	1,237,000
	Top 30	**93,363,733**	**82,439,113**
	% of the total		
	Italy	6.8%	7.8%
	Northern Range	40.9%	44.7%
	North Africa	9.0%	8.1%
	Spain	12.6%	13.2%
	UK	7.1%	7.7%

TABLE 3 - SOURCE: SRM on Port Authorities, 2017

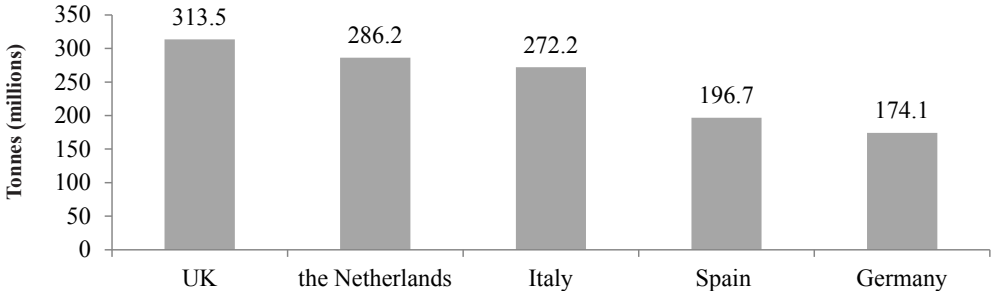
Container throughput growth in the Med ports (TEU)



GRAPH 4 - SOURCE: SRM on Port Authorities, 2017

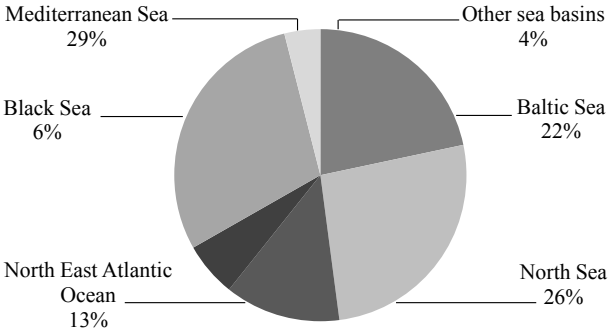
Short Sea Shipping

Cargo handled by SSS in the top 5 countries EU-28. 2015



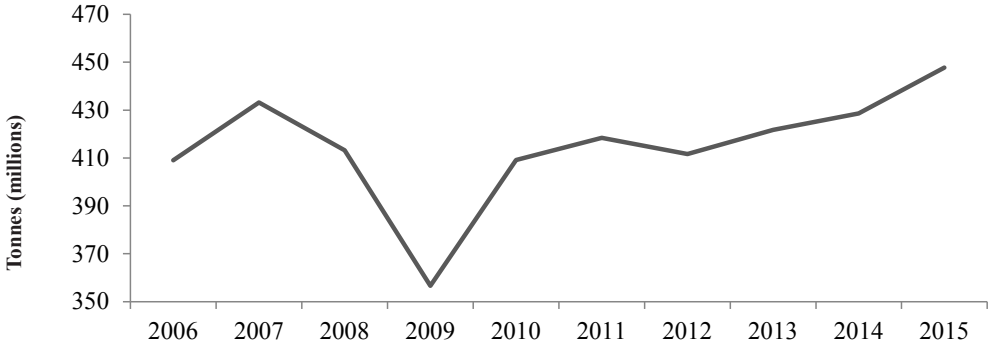
Graph 5 - Source: SRM on Eurostat, 2017

EU-28 SSS of goods by sea region in 2015



Graph 6 - Source: SRM on Eurostat, 2017

SSS of goods by Roll-on/Roll off in EU-28 ports (gross weight of goods in million tonnes). 2006-2015



Graph 7 - Source: SRM on Eurostat, 2017

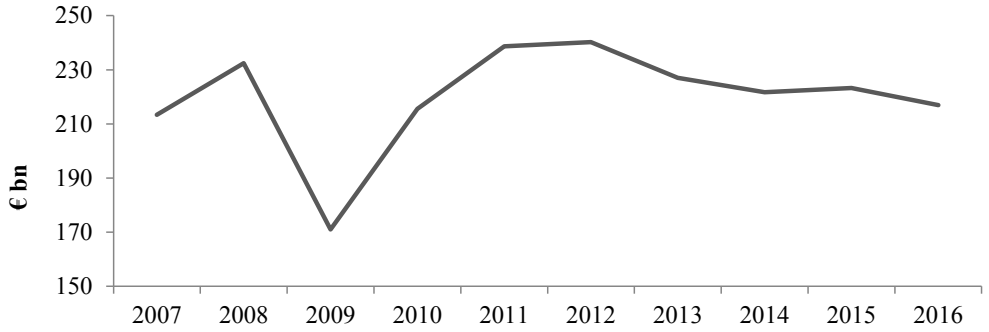
SSS of goods by reporting country and sea region of partner ports in 2015 (gross weight of goods in thousand tonnes)

Countries / Sea Basin	Total	Baltic Sea	North Sea	North East Atlantic Ocean	Black Sea	Mediterranean Sea	Other sea basins
European Union (28 countries)	**1,810,899**	442,610	536,598	261,696	123,132	598,455	81,096
Belgium	**131,176**	25,083	41,014	20,819	2,429	38,339	3,491
Bulgaria	**21,451**	60	598	539	9,658	9,266	1,330
Denmark	**73,055**	37,414	27,828	1,896	682	1,404	4,307
Germany	**174,077**	94,553	55,220	10,944	1,024	11,218	1,425
Estonia	**23,673**	14,351	6,806	780	n,d,	1,395	341
Ireland	**40,005**	1,201	16,080	21,584	212	678	251
Greece	**98,158**	906	5,191	963	16,093	73,508	1,496
Spain	**196,668**	10,147	28,719	43,221	11,867	96,511	13,534
France	**169,279**	14,489	33,614	50,904	11,029	50,327	9,166
Croatia	**11,863**	300	60	69	2,844	8,233	358
Italy	**272,172**	**6,385**	**5,908**	**4,558**	**35,369**	**215,572**	**4,380**
Cyprus	**6,929**	90	884	147	446	5,360	3
Latvia	**56,187**	16,229	26,845	4,500	221	8,300	92
Lithuania	**31,348**	18,533	8,690	2,631	21	1,390	84
Malta	**3,409**	44	249	74	138	2,896	9
The Netherlands	**286,231**	86,602	91,411	28,539	12,457	33,030	34,192
Poland	**55,789**	25,495	20,440	3,428	136	5,423	868
Portugal	**44,909**	2,203	10,411	12,871	3,579	15,775	71
Romania	**31,285**	190	1,939	1,491	11,513	16,147	5
Slovenia	**11,336**	476	52	43	335	10,423	7
Finland	**85,492**	48,244	29,296	2,457	695	2,723	2,078
Sweden	**151,505**	88,956	50,111	6,632	353	5,466	1,730
United Kingdom	**313,498**	30,653	160,743	102,105	2,089	27,604	1,878
Norway	**160,418**	23,522	114,167	13,642	1,278	3,294	4,515
Turkey	**268,491**	7,409	22,589	9,202	77,472	145,542	12,043

TABLE 3 - SOURCE: SRM on Eurostat, 2017

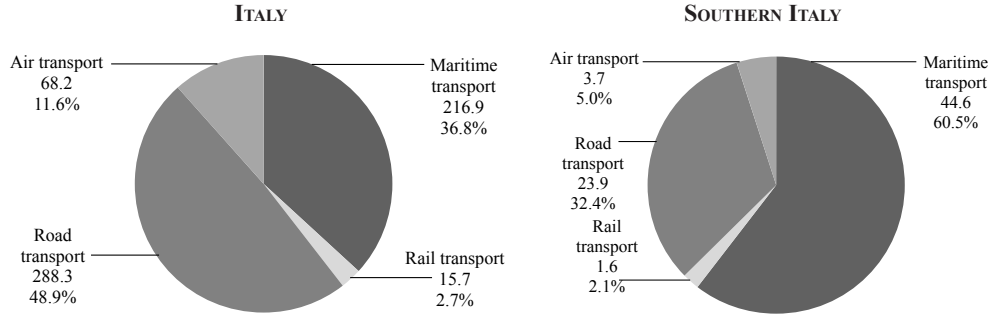
International Trade Relations

Italian maritime import-export. 2006-2015



Graph 8 - Source: SRM on Istat Coeweb, 2017

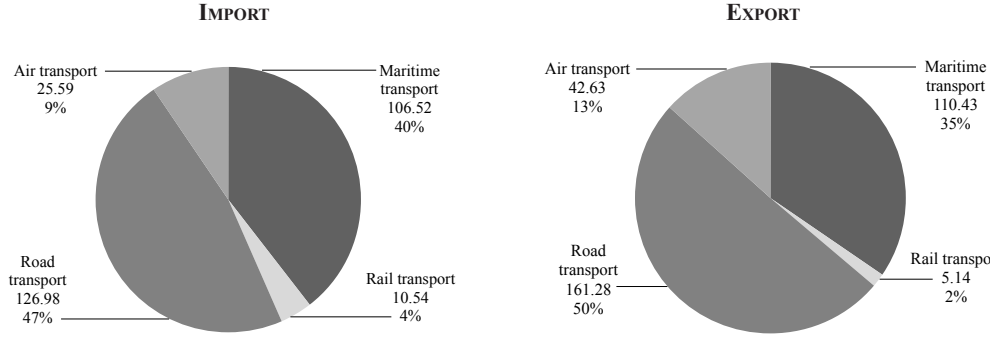
Import - export by mode of transport (data in billion €). 2016



* Transport modes statistically identified were considered. "Not declared" and "Other means of transport" were excluded.

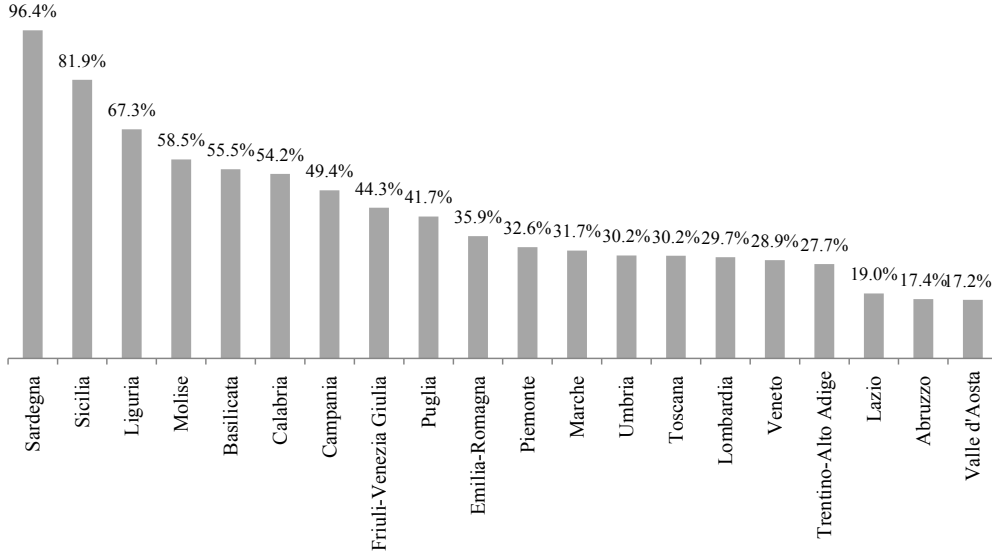
Graph 9 - Source: SRM on Istat Coeweb, 2017

Italian import - export by mode of transport (data in billion €). 2016



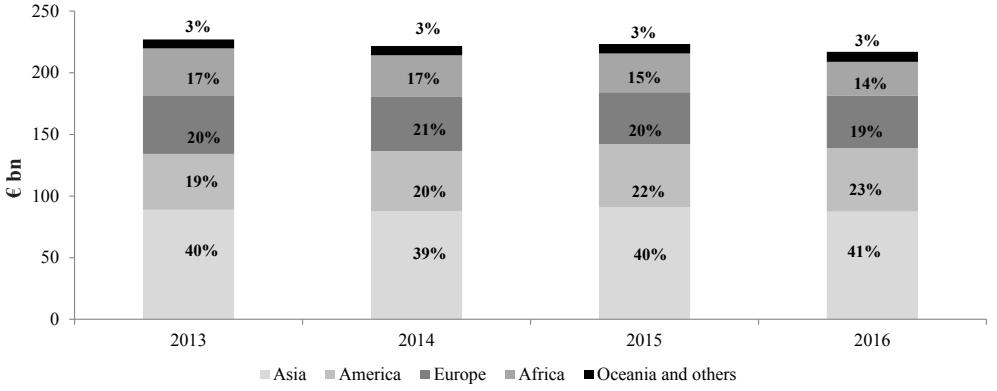
Graph 10 - Source: SRM on Istat Coeweb, 2017

Italian maritime export by region: market share percentage of the total. 2016



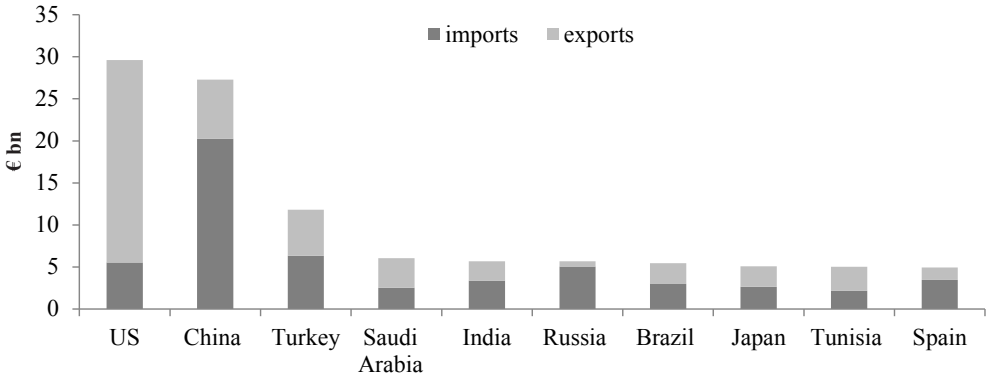
GRAPH 11 - SOURCE: SRM on Istat Coeweb, 2017

Italian maritime trade by target area. 2016



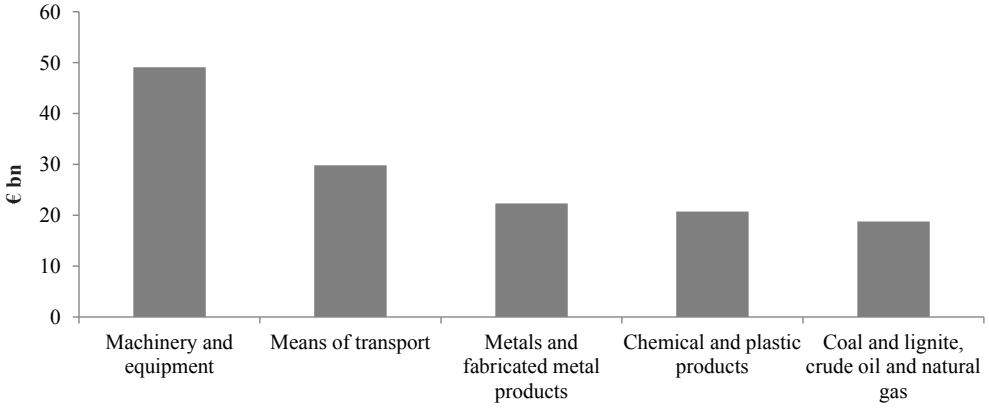
GRAPH 12 - SOURCE: SRM on Istat Coeweb, 2017

Italian maritime trade: top ten world partners 2016



GRAPH 13 - SOURCE: SRM on Istat Coeweb, 2017

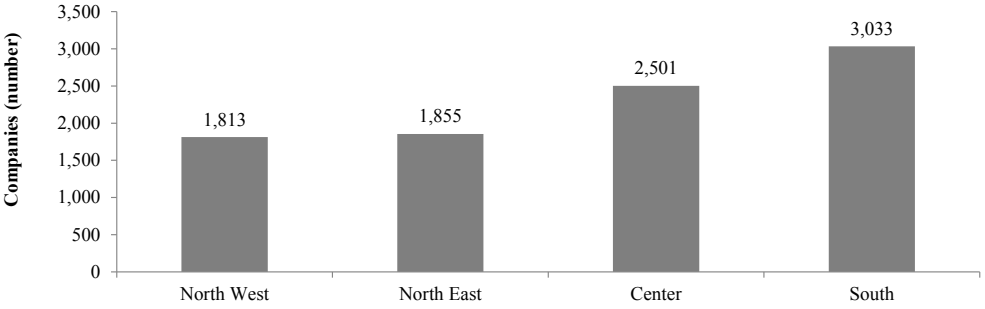
Main commodity categories of Italy's maritime trade. 2016



GRAPH 14 - SOURCE: SRM on Istat Coeweb, 2017

COMPANIES OF THE ITALIAN MARITIME CLUSTER

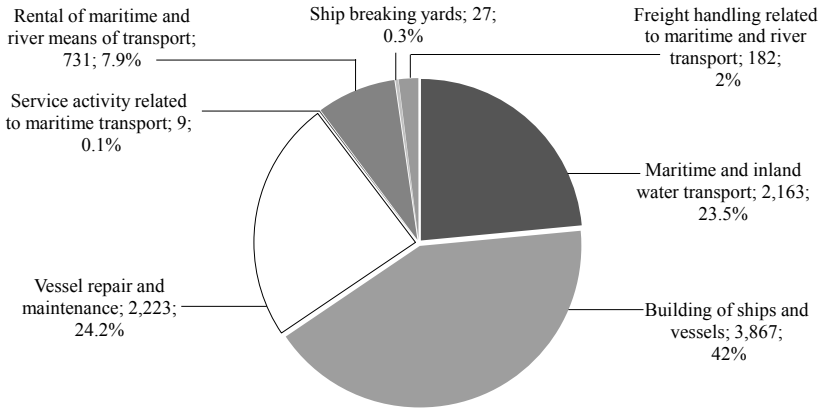
Companies of the maritime cluster by macroarea



* Data at August 31, 2016.

GRAPH 15 - SOURCE: SRM on Unioncamere, 2016

Companies of the maritime cluster sorted by business sector (number and percentage)



* Data at August 31, 2016.

GRAPH 15 - SOURCE: SRM on Unioncamere, 2016

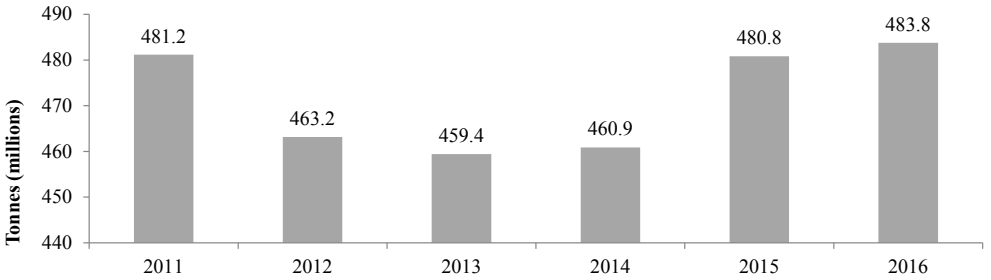
Italian merchant fleet (2014-2015)

Ships of 100 gt and over	31.12.2015		31.12.2014		Var. 2015/2014	
	N.	000 gt	N.	000 gt	N.	gt
Liquid cargo ships	259	4,348	273	4,751	-5%	-8%
Dry cargo ships	193	7,043	202	7,092	-4%	-1%
Mixed and passenger ships	432	4,479	440	4,583	-2%	-2%
Obo Carriers	1	33	1	33	0%	0%
Auxiliary services ships	591	689	587	696	1%	-1%
Total	1,476	16,592	1,503	17,155	-2%	-3%

TABLE 4 - SOURCE: SRM on Confitarma, 2016

The Italian port system performance

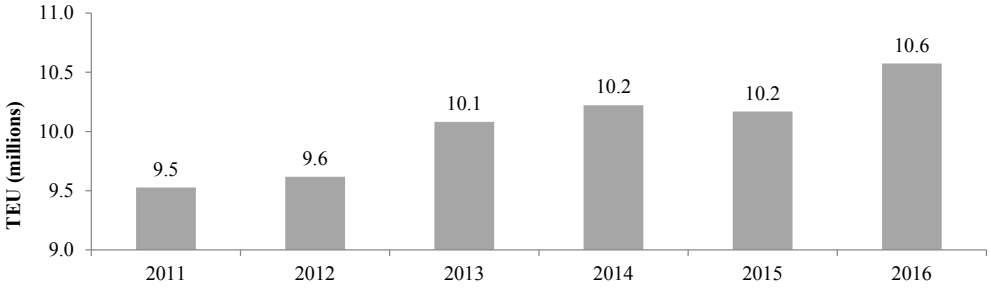
The Italian port system's total throughput (tonnes). 2011-2016 *



* Data concerning Portonogaro date back to 2015 while data concerning Gioia Tauro are estimates based on the containers handled by the port in 2016.

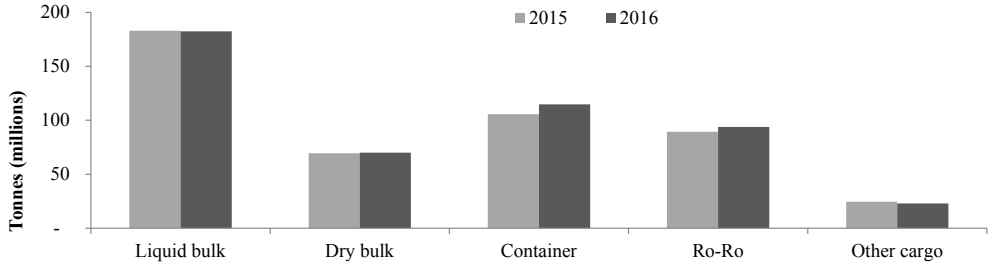
Graph 17 - Source: SRM on Port Authorities and Assoporti, 2017

The Italian port system's container throughput (TEU). 2011-2016



Graph 18 - Source: SRM on Port Authorities and Assoporti, 2017

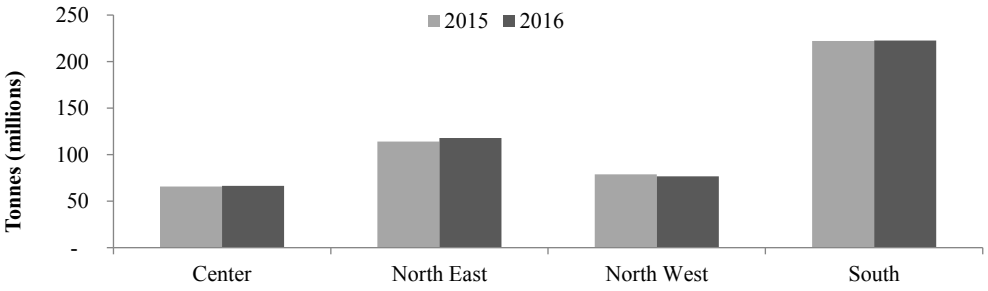
Type of cargo handled by the Italian port system. 2015-2016 *



* Data concerning Portonogaro date back to 2015 while data concerning Gioia Tauro are estimates based on the containers handled by the port in 2016.

Graph 19 - Source: SRM on Port Authorities and Assoporti, 2017

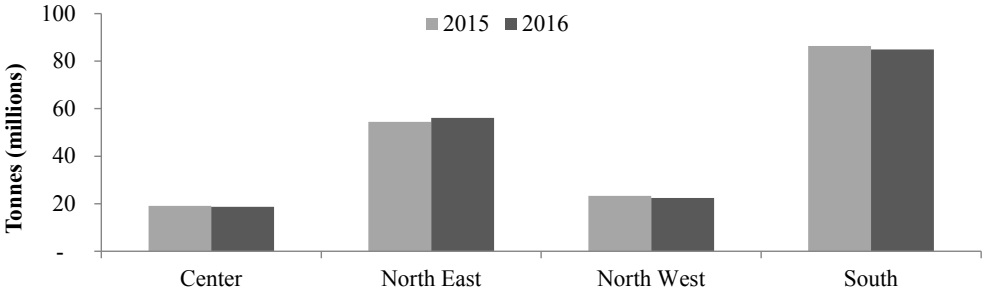
*Total cargo handled by macroarea. 2015-2016**



* Data concerning Portonogaro date back to 2015 while data concerning Gioia Tauro are estimates based on the containers handled by the port in 2016.

GRAPH 20 - SOURCE: SRM on Port Authorities and Assoporti, 2017

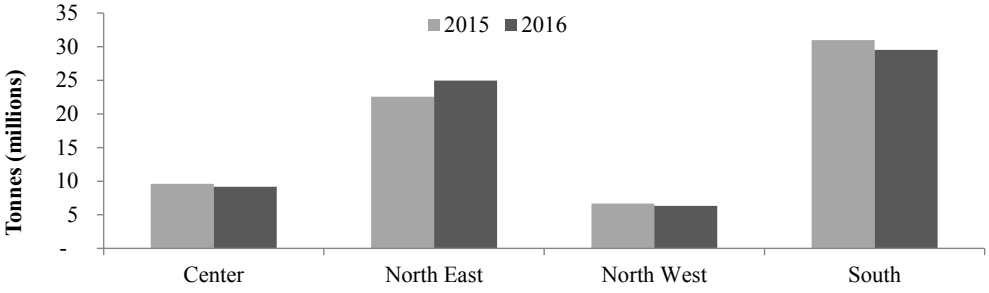
*Liquid bulk handled by macroarea. 2015-2016 **



* Data concerning Portonogaro date back to 2015 while data concerning Gioia Tauro are estimates based on the containers handled by the port in 2016.

GRAPH 21 - SOURCE: SRM on Port Authorities and Assoporti, 2017

Dry bulk handled by macroarea. 2015-2016

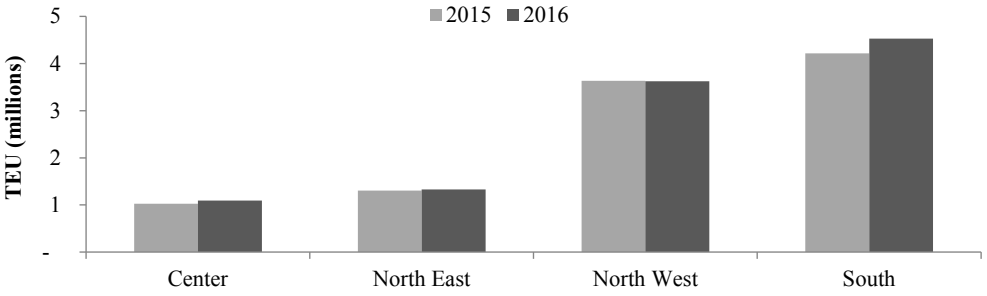


GRAPH 22 - SOURCE: SRM on Port Authorities and Assoporti, 2017

Ro-Ro handled by macroarea. 2015-2016

GRAPH 23 - SOURCE: SRM on Port Authorities and Assoporti, 2017

Container handled by macroarea. 2015-2016



GRAPH 24 - SOURCE: SRM on Port Authorities and Assoporti, 2017

Italian ports total throughput (Tonnes). 2014-2016 and var % 2015-2016

Port	2014	2015	2016	Var. 2015-2016
Ancona	8,568,956	8,593,062	8,940,503	4.0%
Augusta	25,208,176	26,342,608	27,128,097	3.0%
Bari+Barletta+Monopoli	5,997,099	6,375,626	6,436,516	1.0%
Brindisi	10,873,201	11,774,738	10,080,263	-14.4%
Cagliari-Sarroch	33,432,415	41,082,556	40,020,252	-2.6%
Catania	6,791,195	7,557,779	7,883,657	4.3%
Chioggia	1,530,198	1,591,081	1,764,077	10.9%
Civitavecchia-Fiumicino-Gaeta	15,587,776	16,568,803	16,807,008	1.4%
Genoa	50,967,570	50,225,831	49,829,585	-0.8%
Gioia Tauro	32,278,717	34,775,000	34,000,000	-2.2%
La Spezia	15,747,227	15,087,892	14,186,943	-6.0%
Livorno	28,335,156	32,712,473	32,815,851	0.3%
Marina Carrara	1,667,548	1,399,825	1,888,900	34.9%
Messina-Milazzo	22,092,149	23,206,784	22,816,131	-1.7%
Monfalcone	4,286,382	4,451,422	4,635,875	4.1%
Naples	20,124,549	20,996,522	22,396,568	6.7%
Olbia-G.Aranci-Porto Torres	8,094,269	7,341,738	7,320,683	-0.3%
Palermo-Termini Im	6,530,142	7,151,449	6,725,833	-6.0%
Piombino	6,214,100	6,491,785	6,081,064	-6.3%
Portonogaro	1,010,867	1,027,716	1,000,000	-2.7%
Ravenna	24,460,154	24,738,989	25,962,764	4.9%
Salerno	12,211,658	12,943,969	13,148,603	1.6%
Savona-Vado	12,086,989	13,389,930	12,744,214	-4.8%
Taranto	27,855,066	22,715,899	24,668,850	8.6%
Trieste	57,153,931	57,161,194	59,237,193	3.6%
Venice	21,779,058	25,104,218	25,243,818	0.6%
TOTAL	**460,884,548**	**480,808,889**	**483,763,248**	**0.6%**

* Data concerning Portonogaro date back to 2015 while data concerning the Gioia Tauro Port Authority are estimated on the container handled by the port in 2016.

TABLE 6 - SOURCE: SRM on Port Authorities and Assoporti, 2017

Italian ports container throughput (TEU). 2014-2016 and var % 2015-2016

Port	2014	2015	2016	Var. 2015-2016
Ancona	164,882	178,476	185,846	4.1%
Bari+Barletta+Monopoli	35,932	60,009	71,593	19.3%
Brindisi	407	329	1,857	464.4%
Cagliari-Sarroch	717,016	747,693	723,037	-3.3%
Catania	33,162	49,595	49,198	-0.8%
Civitavecchia-Fiumicino-Gaeta	64,387	66,731	74,208	11.2%
Genoa	2,172,944	2,242,902	2,297,917	2.5%
Gioia Tauro	2,969,802	2,546,805	2,797,070	9.8%
La Spezia	1,303,017	1,300,442	1,272,425	-2.2%
Livorno	577,471	780,874	800,475	2.5%
Marina Carrara	384	68	32,780	n.s.
Monfalcone	753	714	980	37.3%
Naples	431,682	438,280	483,481	10.3%
Palermo-Termini Im	14,344	12,896	12,160	-5.7%
Ravenna	222,548	244,813	234,511	-4.2%
Salerno	320,044	359,328	388,572	8.1%
Savona-Vado	81,755	90,443	54,594	-39.6%
Taranto	148,519	-	375	n.s.
Trieste	506,011	501,268	486,499	-2.9%
Venice	456,068	560,301	605,875	8.1%
TOTAL	**10,221,128**	**10,181,967**	**10,573,453**	**3.8%**

TABLE 7 - SOURCE: SRM on Port Authorities and Assoporti, 2017

Italian ports Ro-Ro throughput (Tonnes). 2014-2016 and var % 2015-2016

Port	2014	2015	2016	Var. 2015-2016
Ancona	2,018,055	2,175,673	2,236,749	2.8%
Bari+Barletta+Monopoli	2,397,570	2,395,626	2,790,874	16.5%
Brindisi	2,178,466	2,516,001	2,725,325	8.3%
Cagliari-Sarroch	3,044,741	3,725,438	3,974,366	6.7%
Catania	6,080,288	6,627,358	7,018,110	5.9%
Civitavecchia-Fiumicino-Gaeta	3,948,687	4,473,138	4,778,668	6.8%
Genoa	8,010,875	8,413,397	8,594,711	2.2%
Gioia Tauro	127,493	-	n,d,	n.s.
Livorno	10,794,856	11,373,082	12,413,062	9.1%
Messina-Milazzo	5,598,809	5,851,320	5,943,203	1.6%
Monfalcone	183,505	222,257	275,586	24.0%
Naples	5,495,654	5,656,116	5,903,741	4.4%
Olbia-G.Aranci-Porto Torres	5,859,732	5,608,217	5,794,779	3.3%
Palermo-Termini Im	5,310,232	5,785,906	5,846,162	1.0%
Piombino	3,880,489	4,378,933	4,362,082	-0.4%
Ravenna	1,792,466	1,591,870	1,876,677	17.9%
Salerno	6,994,620	7,045,070	6,947,049	-1.4%
Savona-Vado	2,231,166	3,388,986	2,840,737	-16.2%
Taranto	-	-	24,147	n.s.
Trieste	7,286,668	8,356,699	8,460,376	1.2%
Venice	1,115,604	806,912	1,052,207	30.4%
TOTAL	**84,349,976**	**90,391,999**	**93,858,611**	**3.8%**

TABLE 8 - SOURCE: SRM on Port Authorities and Assoporti, 2017

Italian ports cruise passengers (number). 2014-2016 and var % 2015-2016

Port	2014	2015	2016	Var. 2015-2016
Ancona	37,220	39,277	54,901	39.8%
Bari	561,273	367,611	400,875	9.0%
Brindisi	25,450	151,922	5,270	-96.5%
Cagliari	81,844	266,688	258,066	-3.2%
Catania	89,527	80,357	101,042	25.7%
Civitavecchia	2,141,195	2,271,652	2,341,552	3.1%
Genoa	824,109	848,227	1,017,368	19.9%
La Spezia	483,564	667,446	507,531	-24.0%
Livorno	626,356	697,955	807,935	15.8%
Marina di Carrara	1,550	8,600	13,069	52.0%
Messina-Milazzo	319,750	327,702	371,303	13.3%
Naples	1,113,762	1,269,571	1,306,151	2.9%
Olbia-Golfo Aranci	164,995	238,256	210,386	-11.7%
Palermo-Termini Imerese	531,712	546,884	510,078	-6.7%
Piombino (Portoferraio)	27,365	43,240	43,586	0.8%
Ravenna	43,887	39,982	45,617	14.1%
Salerno	143,346	189,545	111,395	-41.2%
Savona	1,018,794	982,226	910,244	-7.3%
Trieste	44,236	139,369	134,401	-3.6%
Venice	1,750,698	1,601,042	1,625,637	1.5%
TOTAL	**10,030,633**	**10,777,552**	**10,776,407**	**0%**

* The datum includes embarkations, disembarkations and transits.

TABLE 9 - SOURCE: SRM on Port Authorities and Assoporti, 2017

Chapter III

Sustainable Ports. Why Ports Redefine their Strategiesto Better Take into Consideration their Environmental and Societal Impacts

1. Foreword

Several ports have been working on improving their sustainability profile in the last decades and few ports globally can afford today to ignore the negative impacts associated with the economic activities taking place within or in proximity of the port. As awareness of environmental and social issues increases globally, port sustainability is not a matter for developed countries only, although still are the major ports in Europe, Asia and North America that lead the way on environmental and social issues. The increasing presence of green marketing and promotion among major ports, for example, is a sign of the perceived need of port administrators to profile the port in the eye of an increasingly critical public opinion. Although there is a great variety in the degree of commitment towards sustainability among various ports (Lam and Notteboom, 2014), there is a general tendency towards making sure that everything good the port does in terms of reducing its negative impacts is publicised.

In addition to the materials made available on the Internet, several port authorities have developed strategic documents and sustainability reports that show how the port administrators intend to develop the port further and what has been achieved in the last year. Some of these documents are probably more exercises in public relations than hard commitments towards sustainability, but the tendency towards at least a broader debate on sustainable ports is certainly a positive development.

This tendency has generated a renewed interest both among academics and port specialists in the reasons behind such efforts, the effectiveness and opportunities of such sustainability strategies and the impacts on port management. Although environmental and social issues among ports are not a new topic, it has been suggested elsewhere (Acciaro, 2015), that the overall deregulation that has characterised the port industry in the last decades, has certainly increased the value associated with developing corporate social responsibility (CSR) among port authorities and, consequently, the need for a CSR strategy.

Notwithstanding the differences among governance models and legal frameworks, many port authorities have evolved from pure public administrations (or parts thereof) to somewhat autonomous, financially independent, and more-or-less market-oriented entities, often more similar to private companies, than public bodies (Van der Lugt, Dooms, and Parola, 2013). Privatisations and corporatisation have changed the structure of the sector in many countries. But in addition to this fundamental change in the nature of port administrations, several developments in the sector are likely to increase the need for a corporate responsibility strategy aimed at strengthening the sustainability profile of the port.

A major reason is the changing volume and nature of port traffics. Whereas in some ports, increasing volumes produced congestion and more noticeable negative effects, often without an equal increase in local benefits, in other ports, the decrease in volumes has resulted in the disengagement of local communities and political agents, that would favour the redevelopment of port areas to other uses. Furthermore, the extension of the port hinterland well beyond the boundaries of the port nearest municipalities has risen doubts on why should local communities pay the price for improved connectivity elsewhere. Containerisation and industry specialisation have made cargo movement almost invisible to the general public, so that consumers are often unaware of the enabling role played by transport and logistics in global supply chains. This lack of visibility in the industry has contributed to disenfranchise local communities from ports and freight transport in general.

Even in those cities (e.g. Hamburg) that culturally and socially maintain a strong connection to the port, as a result of local pride or tradition, often entertain such relationship with nostalgia and the image that the public has of the port is more of the romantic buzzling nineteenth century quays, than of modern mechanised container terminals. And after all why should it be otherwise? What connections can citizens find in a highly automated, capital-intensive sector where the majority of the few people employed are highly specialised and work far away from the city?

A recent study by the OECD (Merk and Notteboom, 2013) compared labour productivity among major ports, highlighting how workers in larger harbours, probably because of economies of scale, tend to reach higher productivity levels. Although the evidence is not conclusive, it appears that as labour productivity per worker increases, the number of jobs, especially in large ports, does not increase at the same rate. It would be useful to investigate how the relationship between port direct employment and value-added generated by worker changed over time. But, it could be inferred that through automation and the transition towards less labour intensive technologies, the traditional arguments that has seen ports as employment catalysts is superseded. In another study (Acciaro 2008) it is shown how in some cases the employment impacts associated with port operations might have become less relevant.

Naturally, port employment, albeit important, is not the only positive impact associated with port activities. Extensive research has highlighted the positive impacts associated with improved connectivity (e.g. Wilmsmeier and Hoffmann, 2008; Yeo, Roe, and Dinwoodie, 2008; J. Lam and Yap, 2011), but there is evidence (Low, Lam, and Tang 2009) that as hinterland and maritime networks develop connectivity can be maintained independently of the hub port status. This is also the positive result of competition among ports that derives from the expansion of the contestable hinterland as the efficiency of transport and logistics chains inland expands (Acciaro *et al.*, 2017; Ferrari, Parola, and Gattorna, 2011). It has been shown, that ports, even in well-connected and developed regions cannot be easily replaced (Danielis and Gregori, 2013), and how ports play a pivotal role in fast developing economies (Shan, Yu, and Lee 2014).

The accurate assessment of the positive impacts of ports, either in terms of value added, employment or connectivity, remains a complex issue, and while it can be argued that especially for developing countries, the benefits most likely outweigh the costs, in other cases, when negative external costs are considered, the situation might not be as

clear. In some cases avoiding to evaluate or evaluating inaccurately the negative external costs associated with port activities and ignoring potential alternative uses in terms of opportunity cost could result in the overestimation of the positive impacts of the port. This is not equivalent to advocating a general closing down of port facilities, but stating the need for accurate measurement, and certainly in this respect the academic community has a role to play to further advance our understanding of methods and models for the correct assessment of port direct and indirect impacts.

Ignoring or underestimating port negative impacts contributes to the creation of a lack of trust among port administration and the public opinion, and in the face of stricter regulation and the increasing role of corporate responsibility for port operators and port authorities, maintaining the licence to operate requires transparency and science-based information.

In this paper the case is made for the elaboration of development strategies for a sustainable port future on the basis of a careful assessment of the economic activities carried out in the port, its market potential and the associated external costs. Given the rather exploratory nature of the topic, this contribution should be seen as a discussion paper, with the objective of highlighting research avenues and policy intervention areas aimed at making ports more competitive allowing port communities to develop sustainably minimising the costs for society and the environment.

2. Port Impacts and Corporate Social Responsibility in the Port Sector

Port economic activities generate a wide range of external environmental and societal effects (e.g. Dinwoodie, Tuck, & Knowles, 2012; Grewal & Darlow, 2007). Port authorities are required to take action to minimise the negative impacts on local communities and society in general and strive to maximise the value generated by port activities. In many ports around the world port authorities are also responsible for the development and implementation of port expansion plans and the assessment of the benefits and costs associated with such expansions is critical (Verhoeven, 2010). Port authorities act generally also as landlords, and they exert a great influence on the definition of the terms of concession agreements and in the provision of incentives for terminal operators and port users (Monios and Bergqvist, 2015). It is therefore understandable that they are often obliged to take responsibility for the environmental and social effects deriving from port activities and that they should keep a close watch on such impacts.

Ports are exposed to a variety of environmental effects, some of which derive from the nature of ports on the overlap between land and sea, while other are manmade. A distinction can be made between natural and anthropogenic pressures for ports (Vandermeulen, 1996). These pressures result often in conflicts for port resources utilisation, which range from commercial cargo loading and unloading operations, to industrialisation, tourism and fisheries. Given the scarcity in many regions of the world of port areas and the high costs of developing new ports, these conflicts are likely to increase in relevance over time.

Port authorities have then an important part to play in the moderation and resolution of such conflicts, and often represent the commercial and economic interests of the port,

but, given the public-private character that many port authorities enjoy around the world, need to account also for the interest of the public and of the local community, from which, in the end, depend for their agency. The management of stakeholders can be considered as one of the main tasks of port authorities (Dooms, Verbeke, and Haezendonck, 2013).

Port pressure and resource utilisation conflict

Natural pressure	Anthropogenic pressure	Resource utilisation conflict
• Siltation » Riverine » From local run-off • Long-shore drift • River bed shifts • Salinity fluctuations • Flooding • Land erosion • Sedimentation	• Effluents • Sewage sludge • Petroleum and chemical spills • Marine based pollutants • Pathogens • Passage and storage of hazardous materials • Hydraulic/sedimentation modification • Urbanisation • Industrialisation	• Historical use • Artisanal fisheries • Aquaculture • Aggregate mining • Industrialisation • Port development • Expansion • Deepening • Tourism/recreation (marinas) • Water quality (cooling intakes, public aquaria) • Wetlands preservation • Commercial shipping

TABLE 1 - SOURCE: adapted from Vandermeulen 1996

Port societal impacts have somewhat been less studied beyond employment impact and connectivity both for ports and their hinterlands (e.g. Wilmsmeier and Hoffmann, 2008; Jacobs and Lagendijk, 2014; Chang, Shin, and Lee, 2014; Daamen and Vries, 2013; Iannone, 2012; Acciaro *et al.*, 2017). Certain issues, such as labour safety and social provisions have been investigated extensively in the past (Fabiano *et al.*, 2010; Barton and Turnbull, 2002) while other issues, such as gender equality and diversity, have only marginally been discussed in the port sector(Hiranandani, 2014; MacNeil and Ghosh, 2017).

Notwithstanding the scant academic literature on some societal and environmental impacts of port activities, the interest from the side of the civil society, the press, and local politicians has progressively increased and the scrutiny on the actions of port authorities is likely to remain high for several reasons. Firstly, port authorities are responsible for the adoption and often the enforcement of national, regional and global environmental and social regulation (Chlomoudis and Pallis, 2002; Verhoeven, 2010; Barton and Turnbull, 2002), and as such are expected to protect the public interest. Secondly, lack of due diligence and underestimation of societal and environmental risks may result in expensive disruptions in port operations and port expansion projects (Ho and Ho, 2006; Yap and Lam, 2013) fuelling public discontent. Thirdly, ports are often beneficiary of public funds and therefore subject to political and legal enquiry beyond private companies (Haralambides *et al.*, 2001; Meersman, 2005).

One of the consequences of the increasing interest on port environmental and societal impacts is that ports have progressively undertaken bigger efforts in their corporate social reporting, whether as part of the legal obligations to issue formal reports or simply as the result of the desire to communicate their commitment to social or environmental issues that ostensibly lie beyond their basic business objectives.

This is part of their effort to acquire and maintain a so-called licence to operate (Daamen and Vries, 2013; D.-W. Song and Parola, 2015; Van der Lugt, Dooms, and Parola, 2013). This aligns with the overall practice that has come to dominate corporate marketing and branding efforts.

In addition to the three reasons outlined above, a fourth important one for which port authorities are increasingly focusing on sustainability relates to competitiveness. Clearly being able to better manage stakeholders and avoid conflict with local communities would be a source of competitive advantage. Moreover it has been suggested (e.g. Gilg, Barr, and Ford, 2005; Young *et al.*, 2009), at least in B2C that a strong sustainability image could attract consumers sensitive to societal and environmental issues. The relationship between sustainability and demand in B2B relationship is even more tenuous, and probably the maritime sector is more driven by lower costs than ethical considerations.

However, it could be argued in a supply chain collaboration perspective, which seems to support the value of sustainability in consolidating logistics relations (e.g. Colicchia *et al.*, 2013) that a better environmental and social performance could benefit ports (Acciaro, 2015). Furthermore, as port compete largely as part of a supply chain (Robinson, 2002), and there is increasing evidence that sustainable supply chains can generate competitive advantage (Hsu, Tan, and Mohamad Zailani, 2016; Markley and Davis, 2007), ports could become more competitive by becoming more sustainable. Evidence, however, so far is limited (Adams *et al.*, 2009), and a more sustainable orientation could increase port competitiveness either through increasing agility (Acciaro, 2015) or by making ports more innovative (Acciaro *et al.*, 2014).

It should be stressed here that the focus should be on voluntary actions that go beyond the current regulatory requirements and the fundamental business objectives of increasing market share or profit. The focus is then primarily on CSR. In practice, the degree of adoption by port authorities of CSR policies varies from country to country and even among ports in the same region. Some port authorities limit their efforts to comply with regulation or respond to issues arisen in the local or national press, other have taken a more proactive approach and aim at aligning their CSR with their corporate strategy. To date only a few articles have focused on the role that CSR plays or could play in the port sector (Acciaro, 2015).

Some recent contributions mostly focused on environmental issues and environmental monitoring and reporting (Wang *et al.*, 2017; Asgari *et al.*, 2015; Lu, Shang, and Lin, 2016; Puig, Wooldridge, and Darbra, 2014; Dinwoodie, Tuck, and Knowles, 2012), other highlighted the role of CSR in facilitating stakeholder management (Rosa Pires da Cruz, Ferreira, and Garrido Azevedo, 2013; Lam, Ng, and Fu, 2013; Dooms, Verbeke, and Haezendonck, 2013). This is rather at odds with the extensive literature on CSR in other sectors (Aguinis and Glavas, 2012). Before looking into how ports could take into consideration their environmental and societal impacts in the definition of their CSR strategies, it is expedient to provide a taxonomy of port impacts.

3. A TAXONOMY OF PORT IMPACTS

Although, as it has been illustrated in the previous section, there is a wide range of research that has focused on port impacts, a well-structured taxonomy has so far not been provided. Economic activities in ports generate a huge variety of impacts, many of which are hard to measure, take place outside of the port legal boundaries and their significance is a matter of societal valuation. For example, port employment impact estimates, although measured for decades, still are marred by enormous uncertainty. An analogous claim can be made for the value added generated by port activities. Many environmental impacts are not confined by the boundaries of the port, among which air pollution and congestion are some of the most well-known examples. What can be considered acceptable levels of safety in port activities is often a matter of great difference among countries, depending of legal requirements and social conventions.

Using the well-known triple bottom-line perspective these impacts can be subdivided into economic, social and environmental. This subdivision is by necessity a simplification. Economic impacts often cannot be looked at in isolation and environmental impacts often have social and economic implications. Consider for example the economic impacts in terms of employment generated by loading and unloading operations in a chemical plant within the perimeter of the port. The existence of the chemical industry has favoured the growth of employment in that sector, that could be classified as port-indirect employment, but could, for example, compromise traditional fisheries or tourism. At some point the chemical plant might have to be decommissioned, resulting in large unemployment that could not be absorbed by the traditional industries. A similar discussion could be made in view of the health and environmental costs associated with certain port activities.

It is also useful to further categorise impacts on the basis of the activities that generate them. This generally is done making reference to the economic proximity of the activity to the port. Well-established categorisations have been developed in the area of port economic impact studies (port-required, port-attracted and port-related activities (Yochum and Agarwal, 1987), or port required, port-related and port-induced activities (Musso, Benacchio, and Ferrari, 2000). Port-direct (or port-required) activities are those that exist as a result of the port and that would not be carried out without the port, such as loading and unloading of cargo. Port indirect (or port-related or port-attracted) activities are those that could take place elsewhere, but that have a distinctive advantage in taking place in the proximity of the port. It might be worth differentiating between port-related and port-attracted, where in the former more emphasis is placed on the industrial linkages between the activity, ship-repair and ship training activities for example, while in the latter, the geographical linkages are highlighted—e.g. power plants and steel mills. Port-induced activities are those that would take place even without the port, but the presence of the port determines a substantial increase in the activities. Consider for example a restaurant that benefits from cruise passengers, or the services offered by the banking sector, or trucking.

Impacts needs also to be differentiated from a geographical point of view into local, regional and global. This is particularly clear in the case of environmental impacts, which local issues, such as water, soil and air pollution, often calling for much more attention than global impacts, such as those associated to climate change, or regional impacts,

such as congestion and accidents. Finally a valuable subdivision can be related to the various phases of cargo movement, distinguishing between the activities taking place on water, at berth, on land, and further categorising those along the various transportation phases, e.g. on the ship, at the loading and unloading, in the terminal area, at the gate, etc.

A broader categorisation can be made on the basis of who is affected by the port impacts and where the impacts most strongly become apparent, by whom or where the impacts are generated, and by the type of activity that is generating the impact.

Examples of port impact categorisations

Triple bottom-line	**Economic proximity of port activity**	**Geographical proximity**	**Cargo movement / location of impact**
Economic	Port direct	Local	Water
Societal	Port indirect	City	Berth
Environmental	Port induced	Regional	Yard
		National	Gate
		Global	Hinterland

TABLE 2 - SOURCE: Author's composition

4. SUSTAINABILITY IN THE PORT SECTOR: TOWARDS A STRATEGY REDEFINITION

The categorisations provided in the previous section can be used as a starting point to identify the areas that can be considered in the definition of a CSR strategy for port. It is important to stress that an effective CSR strategy would need to be a defining component of the port strategy, and no simply a nice-to-have add-on or, worse, an exercise in public relations. A recent, admittedly partial, review of CSR actions undertaken by various ports globally (Acciaro, 2015) identified the wide spectrum of CSR policies representing all generally accepted purposes of CSR, that is value creation, risk management and corporate philanthropy. An overview of the CSR actions carried out in the ports is reported in the table below.

The review showed a great deal of variety among the initiatives that ports engage in and advertise, ranging from ports which had little to no corporate responsibility actions, notwithstanding extensive websites in the English language and ports that instead provided detailed coverage of their initiatives. Rarely, however, CSR was embedded in a coherent vision and linked to the business model of the port. Some activities were similar across ports in the same range. Such similarity could be the result of the fact that similar issues call for similar responses or that port administrators might be looking at the CSR policies of the neighbouring harbours.

Corporate Responsibility actions in 10 major global ports as presented on publicly available documents in 2014

CR action	Port authority									
	Antwerp	Hamburg	Hong Kong	Jebel Ali	Los Angeles	New York/ New Jersey	Pusan	Rotterdam	Shanghai	Singapore
Air quality	■	■	■		■	■		■		
Biking						■				
Cooperation with foreign ports								■		
CSR mgmt.		■			■					
CSR vision	■	■		■	■			■		
Education activities				■						■
EKPI		■			■			■		
Employment	■			■	■			■		■
Energy (conservation)						■				■
Energy (renewables)	■	■			■	■				
Gender issues				■						■
Global Reporting Initiative	■	■								■
Greening construction						■				■
Habitat and wildlife protection						■	■	■		
Healthcare				■						
Humanitarian aid and charities				■						■
Local communities	■	■			■		■	■		
River environmental mgmt.		■								
Stakeholders mgmt.	■				■			■		
Sustainability report	■	■						■		
Transparency								■		
Triple bottom line	■			■						
Urban redevelopment						■		■		
Waste management	■					■				

TABLE 3 - SOURCE: adapted from Acciaro (2015)

In the last few years, there has been substantial increase in the amount of public information made available by port authorities as a result of the need to increase public accountability and the increase in sustainability efforts made by ports. The port of Ningbo Zhoushan, the largest port in the world in terms of throughput, has, reportedly, also been developing a sustainability strategy as a result of the increasing environmental externalities (Cui, 2017) and the increasing focus of the Chinese economy, under the leadership of Jinping Xi, to pursue sustainable development goals with substantial impacts also on ports and coastal management (Wang *et al.*, 2017).

Greenhouse gas (GHG) emission reduction is a dominant theme in many port CSR efforts, and local issues figure prominently. Given the limited emissions generated by port activities, large efforts are on reducing the emissions from ships while at port (Gibbs *et al.*, 2014). GHG emission reduction is only part of a much wide set of policies aimed at reducing emissions, generally to the benefit of local communities, such as in the case of nitrogen oxides, sulphur oxides, particulate matter, etc. (e.g. Tichavska and Tovar, 2015; Winnes, Styhre, and Fridell, 2015). Emission reduction policies in the hinterland have also been widely studies, with particular focus on how to reduce emissions from trucking, e.g. the California Clean Air Action Plan (CAAP) (Giuliano and Linder, 2014).

Many strategies appear to focus on new port infrastructure developments, highlighting the efforts made by the administrations to compensate for nature, reduce congestion and improve the logistics within the port. Most studies, however, have emphasised the economic benefits deriving from improved infrastructure both in terms of development and connectivity (L. Song and van Geenhuizen, 2014; Asteris and Collins, 2007).

The overall tendency of ports to account for sustainability in the definition of their development strategies can be observed on multiple fronts. Strategies for ports can be differentiated on the basis of their actions on natural environment and on people. As far as the natural environment is concerned actions can be grouped in:

- Energy efficiency.
- Fauna and biodiversity protection.
- Water quality.
- Air quality.
- GHG emissions.
- Soil.
- Vegetation reconstitution, reforestation and preservation.
- Compensation areas and area planning.
- Noise reduction.
- Recycling and waste management.
- Landscape and light pollution.

As far as the actions aimed at reducing negative impacts on people we can consider the following:

- Health support actions.
- Accidents reduction and prevention.
- Training and education.
- Congestion reduction.
- Gender equality and diversity.
- Protection of sites, building and areas of historical and social value.
- Workers protection and social security.
- Charity activities.

In addition to these general categories there could be other based on local issues, such as waste management, and some policies could be categorised under various heading or be even in conflict with each other. Among the policy instruments taken by port authorities to minimise the negative external effects of port activities, the following six instruments appear among the most widely used:

- *Regulation*
  Port authorities have the possibility of imposing regulation within the port that goes beyond the requirements of the national or international law. For example, Los Angeles, Oakland, Seattle and Vancouver, Hong Kong and other ports have adopted low sulphur fuel requirements ahead of regulation.
- *Infrastructure*
  Port authorities can develop facilities aimed at reducing the negative external effects of shipping and port operations. Examples include onshore power supply or new port infrastructure located in areas less with lower environmental or societal impacts.
- *Coordination*
  Several initiatives, such as the Hong Kong-based Climate Change Business Forum, aim at offering a platform to discuss the challenges of climate change and share best practices at port level. Similar initiatives exist under the auspices of industry associations such as the European Sea-Port Organisation (ESPO) or the International Association of Ports and Harbours (IAPH), other organisation (e.g. PIANC), or among port users (Clean Cargo Working Group).
- *Impact on terminal operators*
  Port authorities can influence the behaviour of terminal operators and other port tenants by promoting the use of alternative energy sources, offering incentive programmes for employees training. This can be done though concession agreements or voluntary incentive schemes.
- *Foster the uptake of new technologies*
  Ports can provide excellent opportunities for the test and uptake of new technologies, ranging from ICT to renewables, energy efficiency and automation. These technologies can provide a good opportunity for reducing the negative external impacts of port activities and improving their bottom line.
- *Incentives*
  Especially towards port users, a wide variety of incentives (taxes or rebates) could be developed to stimulate more sustainable behaviours. A common example is constituted by rebates on port dues based on environmental indexes such as the Clean Shipping Index.

5. Conclusions

Accendiamo un faro sugli investimenti diretti all'estero (IDE), settore che vede There is increasing evidence that ports around the world are progressively taking steps to better account environmental and economic impacts in their strategies. Embedding a sustainability vision in the port strategy is likely to enhance competitive advantage through risk mitigation, better stakeholder management and port customer value creation. Few ports, however, have taken a proactive role in including sustainability as a pillar in their development strategies.

Devising strategies for a sustainable port requires the analysis of the economic activities carried out in the port, their market potential and a careful assessment of the associated external costs. A strategy aimed at strengthening the competitive position of the port through sustainability needs to build on a CSR vision that is beyond a mere exercise in public relations. Local communities, the press and local politicians have become critical of sustainability practices that that lack substance. The port and shipping sector rely today primarily on traditional media channels, but as stakeholder media gain importance, a new risks may emerge and is likely in the future to further influence port authorities' strategic agendas. The significance of the risks (and opportunities) posed on organisations by stakeholder media is only recently becoming apparent (e.g. Lee Hunter *et al.*, 2013), and port authorities appear very vulnerable to these risks.

Deploying the assets of the port so to maximise their value generation in a long-term perspective and finding smart ways to reduce negative impacts is the only way port communities can thrive. Building on a solid CSR vision, can contribute to strengthen the port competitive position and fend off criticisms. But port authorities also need to refine their public relations and communication strategies.

The future presents a variety of opportunities for ports to build on their sustainability profiles. In particular four areas of development are likely to impact ports in the coming decades and should be carefully looked into:

- *Climate change* is one of the main issues affecting society and transport and logistics in particular with wide-reaching consequences for ports that go beyond the severity and frequency of extreme weather events, in terms of cargo split, upcoming regulation and socioeconomic impacts. In addition to adequate strategy aimed at improving port infrastructure adaptation to climate change (Becker *et al.*, 2013), ports should look into the risks associated with climate change in a comprehensive and unbiased manner.
- *Sustainable tourism* is an opportunity for coastal areas that often rely on ports to act as catalysts and offer adequate infrastructure. Most port authorities, however, have a better grasp of the complexity of cargo movements than of tourism and might overlook some of the opportunities offered by this sector. In particular ecotourism and the impacts and demand of the cruise industry will become more important in the future.
- *Energy management* is one of the frontiers of efficiency in ports and terminals. Ports are at the centre of a wide network of energy flows, on the majority of which the port authority has little to no influence. Nonetheless, as the maritime sector proceeds through a fuel transition from oil-based fuels to other alternatives, ports need to gain a better control of the power generation and consumption taking place in the port (Acciaro, Ghiara, and Cusano, 2014; Acciaro and Wilmsmeier, 2015).
- *Renewables* are likely to play an increasing role in ports not only as a result of the possibility of developing power generation within the port boundaries, such as tidal, wave and wind power generation, but also for the business opportunities offered by the offshore sector. For many port authorities, this represents an opportunity that can result in new jobs and that could have an impact also on the local communities.

This overview is certainly not exhaustive but aims at illustrating that sustainability does not have to be a void marketing and branding exercise for port authorities. CSR can be a powerful instrument in the hands of port managers, not only to abide to the highest standards of business ethics, but also to create an organisation that is more successful and agile, better at interacting with its stakeholders and at creating value for its customers, that is respectful of local communities and of the environment: in other words a more sustainable port.

Chapter IV

Finance and economic performances of the big carriers: analyses and scenarios

1. Foreword

In order to give a thorough picture on the economic trend and the forecast scenarios for the maritime sector, SRM has carried out a balance sheet analysis of a sample of 10 shipping companies among the top 15 worldwide (ranked by the amount of TEU carried), which cover about 80% of TEU transported globally (source: Alphaliner).

The analysis focuses on three aspects:

1. *growth* (in terms of both turnover and investments);
2. *profitability*;
3. *financial soundness*.

As better shown later in this chapter, there are some clear points emerging from the analysis:

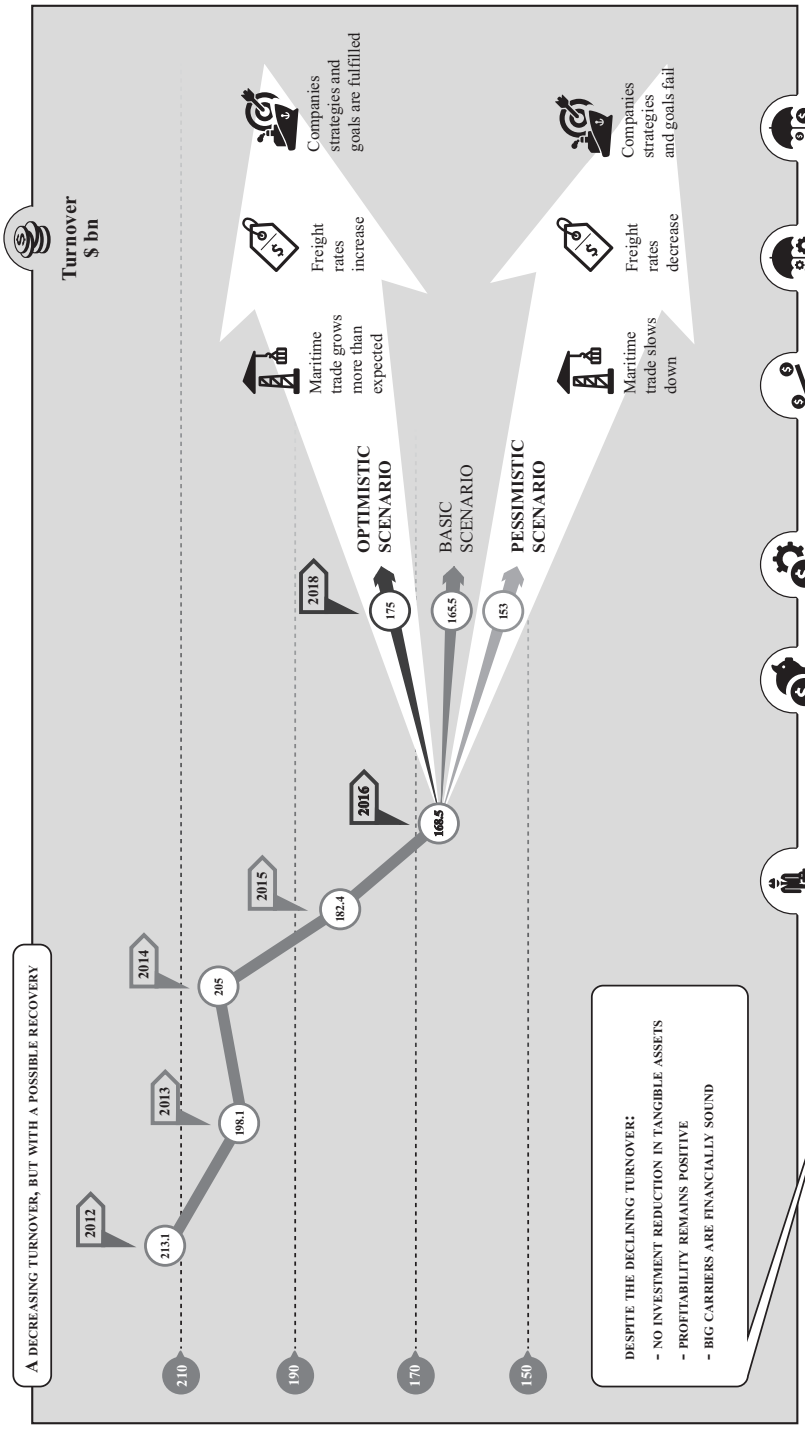
- The companies' turnover is falling, but, according to SRM's forecasts, in the absence of severe shocks, over the next few years it is expected to stabilize at 2016 level;
- Although the turnover is decreasing, companies are preserving positive profit margins, adequate to repay shareholder investments and to make them survive in the short-medium term;
- Thanks to their profitability, as well as other management factors, these big carriers have been able to preserve a good financial structure: they are not excessively indebted and, timewise, there is a good balance between investments and their financial sources.

The chapter first estimates the total turnover generated by the 15 major carriers, and propose a forecast of it in the near future (2017 and 2018). Then, an analysis of the main ratios of growth and profitability is carried out. The chapter ends with the examination of the financial structure of the companies analysed.

2. Growth and profitability: analyses and forecast scenarios

The weak demand and chronic overcapacity (which have been forcing down freight rates) have led to a reduction of total revenues (*turnover*) of the major players in the shipping business in recent years. Since the value of sales was not available for all the fifteen big carriers in the period analysed (2012-2015), SRM has made "an estimate" of the *total turnover* generated by these companies. After the peak recorded in 2012 (over $210 billion), the total turnover fluctuated between 2013 and 2014, and then decreased during 2015 and 2016. Under the baseline scenario, the value will stabilize around $165 billion in the following years (a significant value, higher than the GDP of Qatar, and close

Big carriers' balance sheets: a declining turnover with still positive profitability ratio



INFOGRAPHIC 1 - SOURCE: SRM

*SRM's estimates.

to that of New Zealand and Greece). However, sales could either recover and exceed $170 billion (optimistic scenario), or fall to below $155 billion (pessimistic scenario). Which of the three scenarios above is to be the actual one will depend on the following factors: maritime trade, the price of services (freight rates), achievement of companies' strategic goals.

The analysis of the economic performances of 10 shipping companies (among the first 15 big carriers) shows a 7% average reduction of turnover in 2013, followed by a slight recovery in 2014 (+3.5%) and a new decrease in 2015 (-11%).

More in detail, in 2013, the companies recorded a slight drop in the value of total assets (i.e. total investments; -0.8%), especially with regards fixed tangible assets (-11.3%). Shareholder funds and the number of employees fell too.

Although 2013 was a negative year growth-wise, big carriers preserved good indices of profitability: the average *Return on Equity* (RoE) amounted to 2.8%; the *Return on Asset* (RoA) was 4.1% and the *Return on Sales* (RoS), which shows the amount of sales that translates to operating income, amounted to 5.3%.

With regard to 2014, a general improvement in the growth ratios was recorded: revenues increased (+3.5%), as well as the value of total investments (+5.5%), with a stronger dynamic for investments in tangible assets (+19.5%); Shareholder funds increased as well, while the number of employees recorded a slight decrease (-1.3%). Profitability improved too in 2014: the RoE reached 8.2%, while the RoA (3.9%) did not record significant changes. Stable also the RoS.

2015 was an unusual year: while it recorded a more marked fall in sales (-11%) and in total investments (-7.5%), on the other hand, investments in tangible assets registered just a slight decrease (-1.9%) and the number of employees even increased by 1.9%.

This gives a very clear message: big carriers have decided, at least for the time being, not to reduce their investments in physical and human capital; that also means that they do not expect big reductions in their activities in the next few years. Of course, the drop in turnover has taken its toll on the profitability of companies, which, however, is still positive: RoE of 3.6%; RoA of 2.5%; RoS of 3.4%.

There are two interesting aspects emerging from the analysis (they allow to better discern the characteristics of big shipping companies compared to those of companies operating in other sectors): 1) the *turnover ratio* and 2) the *incidence of non-operating income*.

The *turnover ratio* compares the sales of a company to its asset base; it has shrunk over the last years to 78.8% in 2015 (each 100 euro invested in the company generated a turnover of about 73 euro). Given the efficiency of these companies (the RoS is positive), an improvement in the *turnover ratio* (therefore in the ability to increase their business, with the same quantity of investment) would result in a further increase in profitability. The other aspect mentioned concerns the *incidence of non-operating income* (or non-core income), which is calculated by dividing the net income of the company by its operating income. An index greater than 1 is the consequence of a positive result in terms of non-operating income, while if it is lower than 1, it means that losses can be detected in "non-core" activities. As for the panel of companies analysed, this ratio has always been lower than 1 in the period considered; that means there is potential for improvement in the efficiency of non-core activities.

Finally, looking at the scatter plot in which the companies making up the sample are positioned according to the *growth of the turnover* and the RoA in 2015, we witness that for the majority of the companies, their ratios are similar to their average. So the feature *"declining sales - still positive profitability"*, albeit with different intensities, concerns almost all the big carriers.

Growth and development ratios

Growth ratios (% change on previous year)	**2013**	**2014**	**2015**
Turnover	-7.0	3.5	-11.0
Total assets	-0.8	5.5	-7.5
Tangible fixed assets	-11.3	19.5	-1.9
Shareholder funds	-3.6	1.8	-9.6
Employees	-2.7	-1.3	1.9

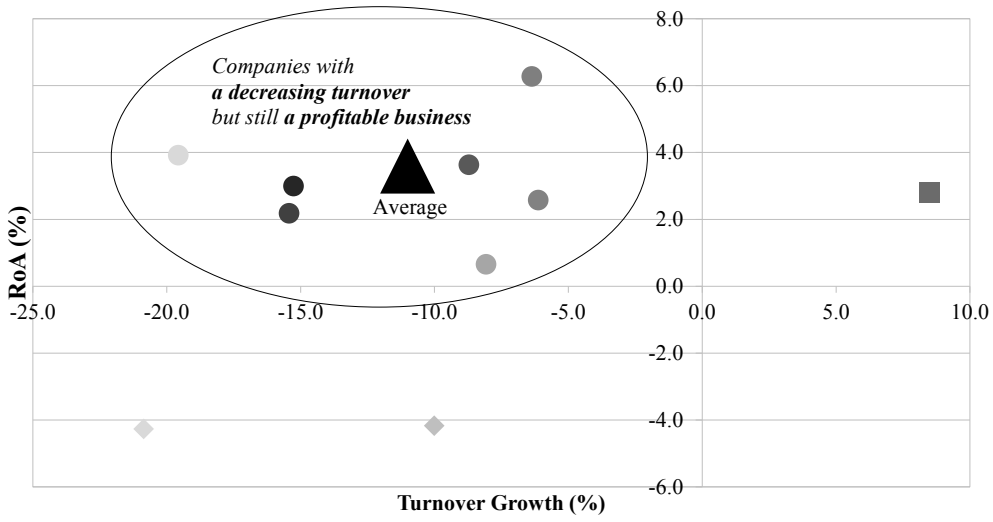
TABLE 1 - SOURCE: SRM on balance sheets and annual reports data

Profitability ratios

Profitability ratios (%)	2012	**2013**	**2014**	**2015**
RoE	1.1	2.8	8.2	3.6
RoA	3.2	4.1	3.9	2.5
Turnover Rate	82.3	77.1	75.7	72.8
RoS	3.8	5.3	5.1	3.4
Not operating margin ratio	0.2	0.3	0.9	0.6

TABLE 2 - SOURCE: SRM on balance sheets and annual reports data

The big carriers: turnover falls, but profitability is still positive
(Turnover growth and RoA; %; 2015)



GRAPH 1 - SOURCE: SRM on balance sheets and annual reports data

In conclusion, according to the analysis of the indicators of growth and profitability, the following points can be highlighted:

1. Big shipping companies are now suffering from the combined effects of overcapacity and a sluggish demand. Their turnover has fallen over the last few years. However, in the absence of major shocks, it is to stabilize;
2. Even though their turnover recorded a stronger decrease in 2015, big carriers have decided, at least for the time being, not to reduce their investments in physical and human capital;
3. Their profitability ratios are still positive. However, adequate rationalization of investments and a recovery of sales, will increase the productivity of these companies and so their profitability indexes. There's also room for improvement in the management of non-core activities.

3. Financial soundness

Although in the 2012-2015 period the level of activity of big carriers slowed down and their profitability slightly decreased, no impact was observed on their financial balance.

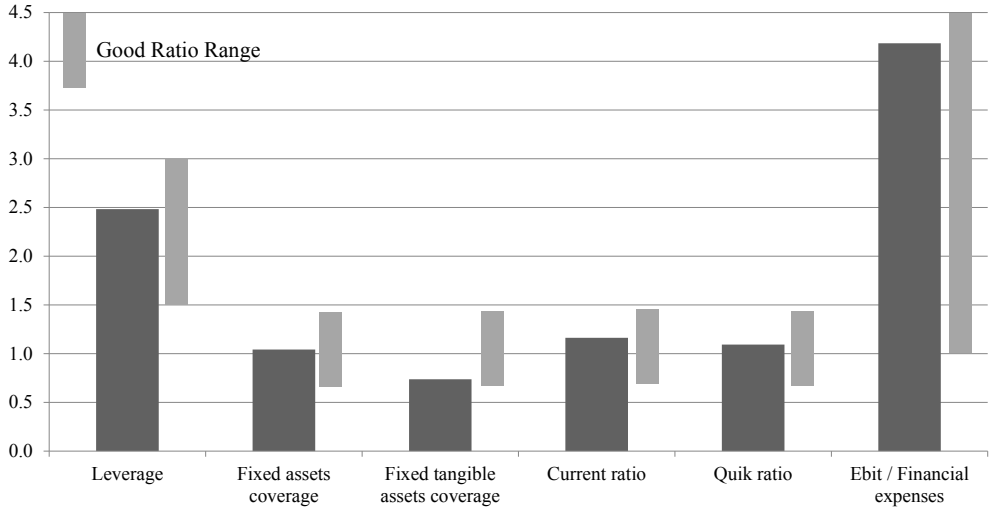
In 2015 the *leverage* (the ratio between total assets and shareholder funds) was 2.5 (that is, 1 of each 2.5 euro of total assets is financed by equity and the remaining 1.5 euro by debt capital). In other words, these companies have a fair level of indebtedness and are financially sound. The *fixed asset coverage index*, which is the ratio of long-term financial sources to fixed assets, was still good. It was 1 in 2015; that means that shareholder funds and other long-term financial sources provide full coverage of financial sources needed for consolidated investments. Some further thought on the structure of enterprises emerge by analyzing the *Fixed tangible assets coverage ratio*, which was 0.7 in 2015, that is, shareholder funds do not ensure the full coverage of the investments in fixed tangible assets; in fact, big shipping companies have made big investments in material assets over the last years, and had to resort to external capital to fully fund their physical structure.

In terms of liquidity, the ratio of current assets to current liabilities (*current ratio*) was over 1 in 2015 (1.2 to be precise), thus ensuring a good coverage of short-time liabilities; the *quick ratio* (which is the ratio of current receivables and more liquid assets to current liabilities) was also good (1.1). Consequently, these companies are fully able to repay short-term debts with the immediate disposal of assets.

It is worth noting that big carriers do not have a high financial exposure. In fact, if one compares the total financial costs incurred by the companies with their operating income (*Ebit/Financial expenses ratio*), the index is 4.2 (Ebit is 4.2 times higher than financial expenses; it is not only big enough to cover financial expenses but also leaves money to remunerate other factors of production.

Analyzing *financial soundness* through the whole 2012-2015 period, no any other particular element emerges, as ratios do not show significant changes. Therefore, big companies have been in a state of financial equilibrium in the whole period examined.

Solvency and liquidity: ratios are within the range of financial equilibrium
(Data as at 2015)



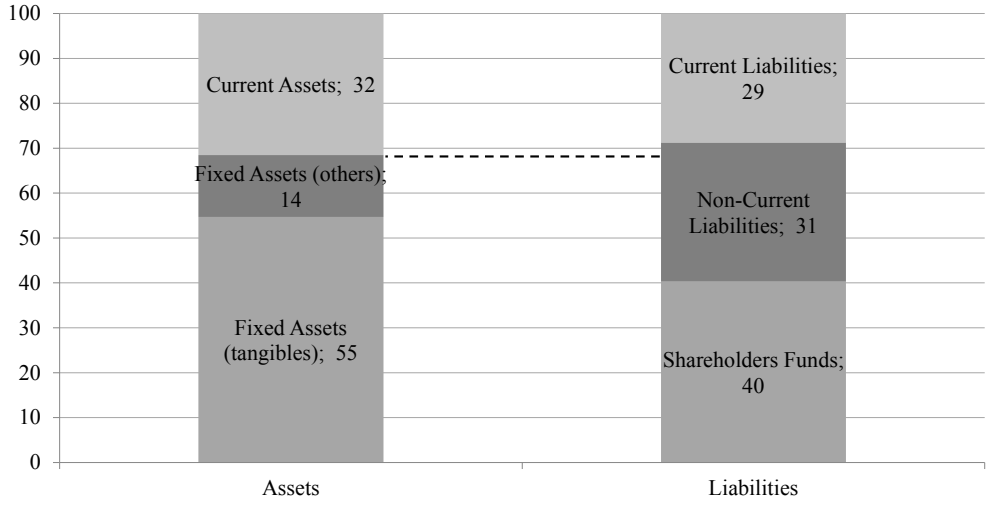
GRAPH 2 - SOURCE: SRM on balance sheets and annual reports data

Solvency and liquidity: big carriers have been financially sound
in the whole period considered

Financial Soundness	2012	**2013**	**2014**	**2015**
Leverage	2.3	2.3	2.4	2.5
Fixed assets coverage	1.0	1.1	1.1	1.0
Fixed tangible assets coverage	0.9	0.9	0.8	0.7
Current ratio	1.0	1.2	1.3	1.2
Quik ratio	0.9	1.1	1.2	1.1
Ebit / Financial expenses	4.6	6.2	6.6	4.2

TABLE 3 - SOURCE: SRM on balance sheets and annual reports data

Solvency and liquidity: a comparison between the asset and liability items (Data as at 2015)



GRAPH 3 - SOURCE: SRM on balance sheets and annual reports data

4. CONCLUSIONS

In order to better understand the balance sheet ratios for big companies in the shipping sectors, we must take into account the following factors that characterize the current scenario: 1) Shipping companies made conspicuous investments in the past, and now that global trade is slowing down, they are suffering from overcapacity; 2) Overcapacity and a weak demand cause *freight rates* to go down, as shown in the graph published in the *Alphaliner magazine* (2017, No. 9), which show that the freight rate declined throughout 2016 both for the West and the East routes; 3) the fall of freight rates has caused a decrease in the turnover of companies.

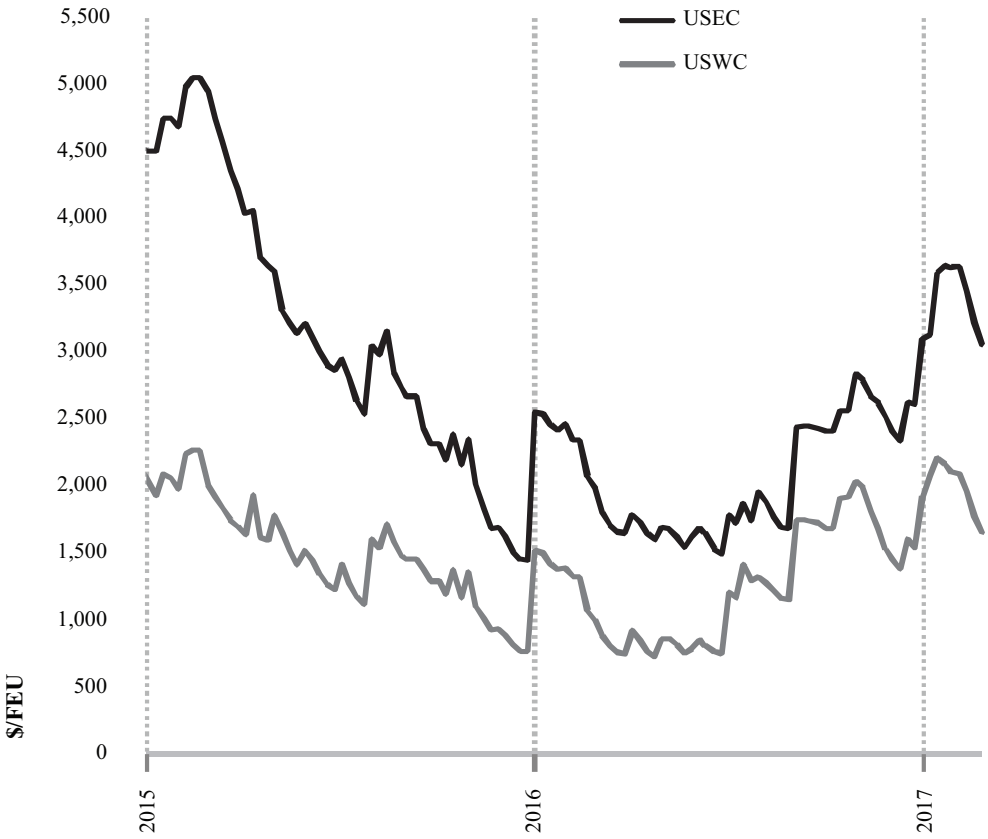
That said, we now wonder what effects such a decline in turnover has had on investments and on the economic and financial soundness of shipping companies.

1. *Investments*: a first important point, emerged in the analysis of growth ratios, is that despite the declining turnover in 2015, big carriers did not reduce their investments in tangible assets; at the same time an increase in the number of employees was recorded. Therefore, the physical structure of big shipping companies remains sound and untouched.
2. *Profitability*: obviously, the reduction of turnover has brought to a decrease in companies' profitability. However, the main ratios (RoE, RoA and RoS) remain positive for big shipping companies. In order not to compromise their economic and financial soundness, companies are required to make further efforts in preserving the level of sales and increasing efficiency in core-activities.

3. *Financial soundness*: big carriers are financially sound. The fall of revenues has not caused any economic loss and so not damaged their finances. These companies are well-capitalized and, timewise, financial sources are consistent with investments.

Obviously, the shipping industry is facing a period of change (alliances and mergers happen one after another). Companies still sail on uncertain "waters", but can rely on an efficient corporate structure, as well as sound financial accounts.

Freight rates for the WEST and the EAST routes
(Data as at 2015)



FEU: Forty Foot Equivalent Units
USWC: US Weast Coast
USEC: US East Coast

GRAPH 4 - SOURCE: Alphaliner (2017), *Weekly Newsletter*, Issue 09

APPENDIX

Ratio	Formula
RoE = Return on Equity	Profit after tax / Shareholders funds
RoA = Return on Assets	EBIT / Total Assets
RoS = Return on Sales	EBIT / Turnover
Turnover ratio	Turnover / Total Assets
Leverage	Total assets / Shareholders funds
Current ratio	Current assets / Current liabilities
Quik ratio	(Current assets - Inventory) / Current liabilities
Fixed assets coverage	Shareholder funds and long-term liabilities / Fixed assets
Fixed tangible assets coverage	Shareholder funds / Fixed tangible assets