srm

in cooperation with ALEXBANK

The new Suez Canal: economic impact on Mediterranean maritime trade

maritime economy

2015

"The New Suez Canal: economic impact on Mediterranean maritime trade"
is a research carried out by SRM in cooperation with CERTeT-Bocconi
within the Permanent Observatory on Maritime Transports and Logistics
www.srm-maritimeconomy.com

Research Director:

Massimo DEANDREIS

Coordinator:

Alessandro PANARO

Authors:

Oliviero BACCELLI (CERTeT)

Anna Arianna BUONFANTI (SRM)

Olimpia FERRARA (SRM)

Roberto ZUCCHETTI (CERTeT)

Data and analyses updated to July 2015.

Graphic design and publishing development: Marina RIPOLI

The present document has been drafted with the support of:

GRIMALDI GROUP

contship italia group

TABLE OF CONTENTS

EXECUTIVE SUMMARY

- Egypt ranks **19th** (out of 157 coutries) in the Unctad's "Liner Shipping Connectivity Index" which measures competitiveness in the maritime system based on the network and the quality of the container liner service offered by the ports. Within the Middle East, it is amongst the countries with the highest improvement rate: **compared to 2004 the index value increased by 20 points**.

- In addition, between 2007 and 2014 Egypt rose **35 positions** in the Logistic Performance Index ranking reaching the **62nd position** (World Bank indicator measuring logistics competitiveness of 160 countries in the world).

- These indicators are expected to grow further after the new Suez Canal.

- With the same per capita income, countries with better logistics performance grow more, by 1% of GDP and 2% of foreign trade. The expectations of Egypt's economy are based on this positive data.

- **In 2014 822 million tonnes of goods passed through the Canal**; 416 million of which were southbound while 406 million were northbound, (about 8% of the total amount of goods handled globally).

- **Between 2000 and 2014 the Canal's traffic trends** recorded a 120% increase in the transit of goods. The revenue generated by the Suez Canal between July 2014 and March 2015 amounted to $4.1 billion, up by 2.5% compared to the same period of the previous year.

- Over the same period, north-south **container trade volumes** (which account for 50% of all the volume's trade) grew by 187% while the south-north ones grew by 219%, and in 2014 reached a substantial balance (212 million tonnes north-south and 222 million tonnes south-north). **Petroleum products** also grew significantly; from 50 million tonnes in 2000 to 178 million tonnes in 2014 (+251%)

- If we pay attention to the northbound maritime traffic via Suez, **the increasingly crucial role of the Gulf** as origin of the shipments appears clear. As a matter of fact, in 2014, 34% of the shipments (137 million tonnes) originated in this area which was second to Southeast Asia, where the shipments amounted to 161 million tonnes.

- The types of vessels which will take greater advantage from the new Canal will be **container ships**; thus **the role of Port Said**, where considerable infrastructural projects are currently ongoing, is fundamental.

- **The area of the new Suez Canal will be able to compete with the major logistics regions in the world** and in particular with Northern European cities such as Rotterdam and Hamburg.

- **The 2015 orderbook** provides for an increase, by 2018, of the fleet of container ships amounting to about 7%, with the figure rising to 72% if we consider the megaship ranging from 18.000 to 21.000 TEUs, and 20.7% for the fleet from 13.000 to 18.000 TEUs.

- The estimates for 2018 predict a number of 83 megaships, mainly concentrated in the far North-East of Europe and far East-Mediterranean routes where the Great Alliances also operate - amongst others - the 2M and the Ocean Three which, on the Asia-Med route, holds a market share of respectively 39% and 27%.

- The potential impact on the choice of the routes by shipping companies is evident when considering that the opening of the new Canal led to **a decrease in the transit time from 18 to 11 hours**. In particular, it is estimated that using the Suez route, **any shipping company may have an average saving of 5-10% of total operating costs** (depending on routes and distances). For example, on the Honk Kong-New York route, the new Canal, with its reduction in transit time, might be a valid alternative to Panama.

- The reduction of transport costs, combined with the increased capacity of the Canal, might have important implications both on the hierarchy of the Mediterranean ports and on the volume of traffic bound for the Mediterranean which, in 2015, remained at 19% (up, if compared to 15% in 2005).

- As for **Italian ports**, which currently handle 460 tonnes of goods, the new Suez Canal represents a favorable opportunity: more and larger ships in transit require an adequate and urgent infrastructural upgrade which also includes the dredging of the seabed and investment in logistics and innovation.

- The strengthening of the Mediterranean-Suez-Gulf route is a strategic opportunity both for Egypt and Italy, especially for its Southern regions, which could develop its natural role as a logistics platform in the heart of the Mediterranean, thus supporting as well the Italian economy.

Introduction

The paper intends to call attention to the major economic repercussions expected in the sectors of transport, logistics, tourism, and in the businesses directly or indirectly associated with the intercontinental maritime transport deriving from the enlargement of the Suez Canal and in the synergic logistics activities planned by the Egyptian Government and expected to be completed in the next few years.

Over the last decade, trades passing through the Canal recorded significant annual increases, with the exception of the three years between 2009 and 2011, and increasing by over 300 million tonnes between 2004 and 2014 when it changed from 520 to 822 million tonnes. The upward trend and the pressure for a greater predictability of the transit time – an element increasingly important for container traffic that represents more than 50% of the volume of the market served by the Canal – pushed the Egyptian Government to realize, in a very short time, an investment of considerable economic and geopolitical importance.

The focus of the analysis is the impact which the expansion of the Suez Canal may determine on the traffic in the Mediterranean and it takes into account the specific geographical background in the area of the Canal and in the Sinai Peninsula and the expansion as part of a specific path of economic growth driven by public long term strategies. In particular, special attention is directed at the possible increase in the exchange between Mediterranean countries and those of the Gulf, in light of the recent evolution of international policies which will lead to the full inclusion of Iran amongst the countries involved in the commercial exchanges with leading companies in the Western world.

The strategic importance of the project will imply important consequences also in the relationship between Italy and Egypt, both because exchange between the two countries in 2014 reached €5.2 billion (+10.2% compared to 2013), and because Egypt is the only country in the world of a significant size for which Italy is the main export market.

The study is structured so as to address the role of Egypt within the world supply chain and the effects of its most recent strategic investments in maritime and port economy. The study, in particular, analyzes the traffic trends and the new infrastructure built along the Suez Canal. The analysis offers an exhaustive overview of the expanding work in the Suez Canal as well as the enlargement of the ports on the Egyptian Mediterranean and Red Sea coasts which can be the principal beneficiaries of the work along with those overlooking the Gulf. The last part contains a summary of the evaluation of the direct and indirect economic effects, with an insight on maritime and port economy.

The role of Egypt in the world supply chain

Egypt has a primary role in the world supply chain thanks to the production and consumption cycle activated by the presence of 85 million citizens which makes Egypt the principal country in North Africa and due to the metropolitan area of Cairo where over 15 million inhabitants live and which makes it the second larger African city after Lagos. As a matter of fact, Egypt's relevance derives almost entirely from its geographic position, being at the intersection of the main maritime flows between East and West of the northern hemisphere. Furthermore, it features some of the major African ports (Alexandria, Damietta and Port Said) and airports (Cairo).

Despite these elements of comparative advantages, throughout history Egypt drew little economic benefits from logistics and transport on the routes both to and from the African continent and on the intercontinental routes, failing to fully exploit the Suez Canal, to implement industrial policies and not addressing the development of this sector. Also the commitment of Egypt in pursuing the success of the COMESA-EAC-SADC tripartite Free Trade Area is certainly meant to help reversing this situation, assuring a better exploitation of its geographical potential (SRM will soon release a study in which the potential benefit for Egypt from a stronger African trade integration will be highlighted).

The biannual report "Connecting to compete" from the World Bank examines in detail the strategic elements of Egyptian transport and logistics through the Logistics and Performance Index (LPI)[1]. Such an indicator is the result of a collaboration between the World Bank, the main operators of logistics and scholars. The report, compiled every two years (World Bank, 2014) has the specific purpose to help the countries identify the strengths and weaknesses of their port system so as to program their investment in a more effective way. As a matter of fact, the study of the World Bank points out that with the same per capita income, countries with better logistics performance grow more, by 1% of GDP and 2% of trade.

While technological progress, the commercial exchange at a global level, and the liberalization of investments are generating new opportunities, other global supply chains are presenting new challenges that can only be overcome by those countries that will facilitate rapid, reliable and economical freight handling. Hence, with the LPI, the World Bank aims at focusing the attention on a matter of global importance and providing groundwork for dialogue between governments, private sector operators and civil society to be able to support them in defining shared reforms promoting the realization of investment in infrastructure, and promoting multilateral cooperation

[1] In the definition of the World Bank, logistics involves a number of essential activities - ranging from transport, storage, groupage of goods and customs operations, sorting within countries and payment systems - which affect different operators and both public and private. Therefore, a competitive global logistics network is the backbone of international trade and having a positive impact on economic activity of the country, its improvement is a fundamental development objective for policymakers.

needed to avoid the rising costs of commercial exclusion and escape the vicious circle of the so called "logistics unfriendliness".

It is generally acknowledged that an efficient logistics chain may foster the development of trade and growth. In fact, LPI endorse this theory showing that a better logistics performance positively affects the expansion of trade, export diversification, the ability to attract foreign direct investment and economic growth.

The Logistics and Performance Index[2] summarizes the results of the countries on six complementary areas of evaluation.

- Efficiency of the clearance process.
- Quality of trade and transport related infrastructure.
- Ease of arranging competitively priced shipments.
- Competence and quality of logistics services.
- Ability to track and trace consignments.
- Timeliness of shipments in reaching destinations within the scheduled or expected delivery time.

Global trade is vehicled amongst different nations by a network of logistic operators whose effectiveness, largely depends on country-specific factors such as trade procedures, transport infrastructure and telecommunications, and domestic markets for support services. In this context,

[2] In particular, the LPI provides a multidimensional assessment of logistics performance of a country by placing it on a scale ranging from 1 (worst score) to 5 (best score). The evaluation is the result of the survey carried out online on more than 5,000 individual country assessments provided by about 1,000 international shippers and express carriers in order to compare the logistics profiles of 155 countries. The selected sample of operators is based on the assumption that their opinions count as they decide the traffic routes to follow and influence companies in matters of choice of location, selection of suppliers and identification of the target market.
To the World Bank the priority issues on which to intervene in order to improve performance in the field of transport and logistics are as follows:

- A liberalization of the markets of logistics services that may encourages local players to increase the quality of supply. This is especially true for the sectors of road transport and customs that are essential to the efficient delivery of goods by international shippers.
- Time and cost of import and export.
- The reliability and predictability of the supply chain, as in countries where performance is low, importers and exporters incur higher costs to mitigate the effects of unreliable chains.
- The provision and the quality of infrastructure for trade that is a catalyst for growth. With the term "infrastructure" the World Bank defines both infrastructure for freight transport and passenger, and those typical of th information and communication technology which are widely used for the treatment of data for trade.
- The efficient border management and coordination of the various agencies involved in customs operations: agencies responsible for the enforcement of sanitary and phytosanitary standards and fulfilment of product standards seem in fact to be one of the causes of delays in the process of customs clearance of goods in many countries, because they often involve the need for additional bureaucratic procedures and inspections.
- The skills related to logistics in the strict sense and knowledge of commercial procedures.

The criteria concern both traditional themes (customs procedures and infrastructure quality) and elements of the most recent interest (shipments' tracking and tracing systems, on-time delivery, and expertise in the domestic logistics system) which are particularly important in an industry where there is a tendency to increasingly reduce warehouses, to adopt just-in-time management systems and to implement global supply chains.

Germany, the Netherlands, Belgium and Great Britain attain higher positions in the ranking compiled by the World Bank in 2014 with scores above 4.00 (4.12, 4.05, 4.04 and 4.01, respectively) while Egypt occupies only the 62nd position with a score of 2.97, though with a net improvement compared to the figures of 2007 and 2010 which ranked them 97th and 92nd respectively.

The figure of 2014 is lower than that of 2012, when Egypt occupied the 57th position.

All this shows how extensive the logistics gap is, revealing that Egypt has to bridge in the geo-economic context of the Middle East in which the United Arab Emirates, Qatar, Turkey and Israel respectively occupy position numbers 27th, 29th, 30th and 41st of the World Bank ranking thus highlighting the results of specific development strategies. Furthermore, other countries like Saudi Arabia, Bahrain, Cyprus and Oman have invested in targeted policies in this area managing to rank better than Egypt at 49th, 52nd, 58th and 59th respectively.

The table below shows Egypt's performance and highlights the areas where an improvement occurred as well as those which are still critical.

In detail, Egypt scores 2.85 in the efficiency of the clearance process; 2.86 for infrastructure; 2.87 for the ease of arranging competitively priced shipments, 2.99 for the competence and quality of its logistics services; 3.23 for its ability to track and trace consignments; 2.99 for the timeliness of shipments. Egypt seems to have considerable problems with the timeliness of shipments and with the organization and prices of international shipments, parameters in which it ranks respectively 99th and 77th in world ranking. Furthermore, although it experienced an encouraging improve-

Egypt ranking in the Logistics Performance Index (LPI)

	RANKING					SCORE *				
PARAMETER	2007	2010	2012	2014	Δ 07-14	2007	2010	2012	2014	Δ 07-14
Customs	119	122	69	57	+62	2.37	2.61	2.98	2.85	+0.48
Infrastructure	119	106	45	60	+59	2.08	2.11	2.60	2.86	+0.78
International shipments	111	110	51	77	+34	2.00	2.22	3.07	2.87	+0.87
Competence and quality in logistics services	96	54	50	58	+38	2.38	2.87	2.95	2.99	+0.51
Tracking &Tracing	72	101	66	43	+29	2.62	2.56	2.86	3.23	+0.61
Timeliness	96	81	64	99	-3	2.85	3.31	3.39	2.99	+0.14
LPI	**97**	**92**	**57**	**62**	**+35**	**2.37**	**2.61**	**2.98**	**2.97**	**+0.60**

Table 1 - Source: World Bank, Logistics Performance Index report, various years

* *Minimum* 1 and *maximum* 5.

ment in all the parameters compared to 2007 when its average LPI was 2.37, in 2014 it was 2.97. It must be recognized that Egypt is still well away from nations such as the United Arab Emirates (LPI 3.54) Qatar (3.52), Turkey (3.50) and Saudi Arabia (3.15).

In any case, Egypt ranks second amongst the nations of Africa, behind South Africa which is the 34th.

Over the past decade, the main investment in transport infrastructure carried out in Egypt took place in the port area and helped it rise from the 119th position in the LPI ranking in 2007 to the 60th in 2014.

In particular, major investments were realized in Port Said and Damietta in the Mediterranean.

Port Said is the principal Egyptian transhipment port located along the Suez Canal. Within the port, which becomes fully operational starting in 2004, there are several terminal operators belonging to world leading companies in the industry of containerized traffic, like APM Terminal, (Maersk group) and COSCO Pacific. The port is divided into two parts, Port Said and Port Said East, the first featuring an 800 thousand TEUs capacity, and the second with 2.7 million TEUs. The infrastructure is spread over an area of 90 hectares with a draft raging from -14 m to -16.5 m and it comprises of 21 quay cranes. Trade rose from 1.62 million TEUs in 2005 to 3.96 in 2013. The development plans of the infrastructure include an expansion of up to 5.4 million TEUs.

Damietta's port was built in 1988, 8km west of the Nile estuary. The container terminal is managed by the Damietta Container & Cargo Handling Co. and is spread over 62.5 hectares and comprises of 4 quays. The draft is -14.5 m and it features 8 quay cranes with an annual capacity of 1.2 million TEUs. Some projects aimed at the realization of a new container terminal, which will expand the handling capacity up to 4 million TEUs, are currently ongoing.

Thanks to these investments in these given ports, the principal maritime companies in the container field decided to include Egypt in their worldwide service network, contributing to significantly improve the Liner Shipping Connectivity Index (LSCI), elaborated by UNCTAD as a tool to monitor the trends in the sector. The index summarizes five elements of competitiveness in the maritime industry: number of ships; their container-carrying capacity in TEUs; maximum vessel size; number of services; and number of companies that deploy container ships in a country's ports.

The table below shows Egypt's prime position, higher than that of Turkey, Greece, Lebanon, Israel and Jordan. In the Middle East, no other countries recorded a similar improvement, therefore in this particular ranking Egypt follows only United Arab Emirates and Saudi Arabia.

The development of the Suez Canal is part of an economic development path which saw the transport, maritime and port sector at the center of a number of enormous infrastructural and organizational investments aimed at recovering efficiency in worldwide trades as witnessed by the improvements in Egypt's position in the World Bank rankings (up by 35 positions in the Logistics Performance Index between 2007 and 2014) and in the UNCTAD world rankings where Egypt in

2015 is 19th with a value of 61.5 compared to the 67.4 of Italy and to 68.8 of Japan, it rose three positions compared to 2010.

Position of Egypt in the Liner Shipping Connectivity Index by UNCTAD *

Nation	2010	2011	2012	2013	2014	2015
United Arab Emirates	63.4	62.5	61.1	67.0	66.5	70.4
Saudi Arabia	50.4	60.0	60.4	59.7	61.2	64.8
Egypt	**47.6**	**51.2**	**57.4**	**57.5**	**61.8**	**61.5**
Turkey	36.1	39.4	53.2	52.1	52.4	52.0
Oman	48.5	49.3	47.3	48.5	49.9	48.4
Greece	34.3	32.3	45.5	45.4	47.2	46.8
Lebanon	30.3	35.1	43.2	43.2	42.6	41.8
Israel	33.2	28.5	31.2	32.4	31.8	33.2
Jordan	17.8	16.7	22.8	22.7	22.6	26.2

Table 2 - Source: UNCTAD, Liner Shipping Connectivity Index report, various years

* China 2004 = 100.

Canal's traffic trends and a synthesis of the planning framework of the new infrastructure

Traffic trends

Since its opening in 1869, the Suez Canal has become the main transport route between Asia and Europe. By changing the route of Magellan which travelled around the Cape of Good Hope, this impressive feat of engineering significantly shortened the distances between the two continents, increasing the safety of traffic and restoring the centrality of the Mediterranean as a crossroads to the major shipping routes worldwide. If you consider a typical route between South East Asia and Europe, such as Singapore-Rotterdam, the saving in terms of distance in respect to the route which circumnavigates Africa is about 3,000 nautical miles, about 9 fewer days of navigation at a speed of 15 knots. Evidently, shorter distance and time corresponds to lower costs of transport. The importance of this route is confirmed if we consider the years between 1967 and 1975 when, as a result of the tensions that followed the nationalization of the Canal by the Egyptian Government and of the Six Day War, navigation in the Canal was prohibited causing a contraction in

international trade and, along with other factors, one of the greatest recessions of the post-war era. Interestingly, the first ship that crossed the Suez Canal on June 5, 1975, after eight years of closure, was a ship of the Italian shipping company Ignazio Messina, which is headquartered in Genoa and is a leader in the trade between the Mediterranean, the Red Sea and East Africa.
Between 7% and 8% of all the total cargo traded globally passes through the Canal[3]. In 2014 this implied the passage of 822 million tonnes of products, 416 million of which went southward while 406 million went northward[4].

Ships and cargo passing through the Suez Canal

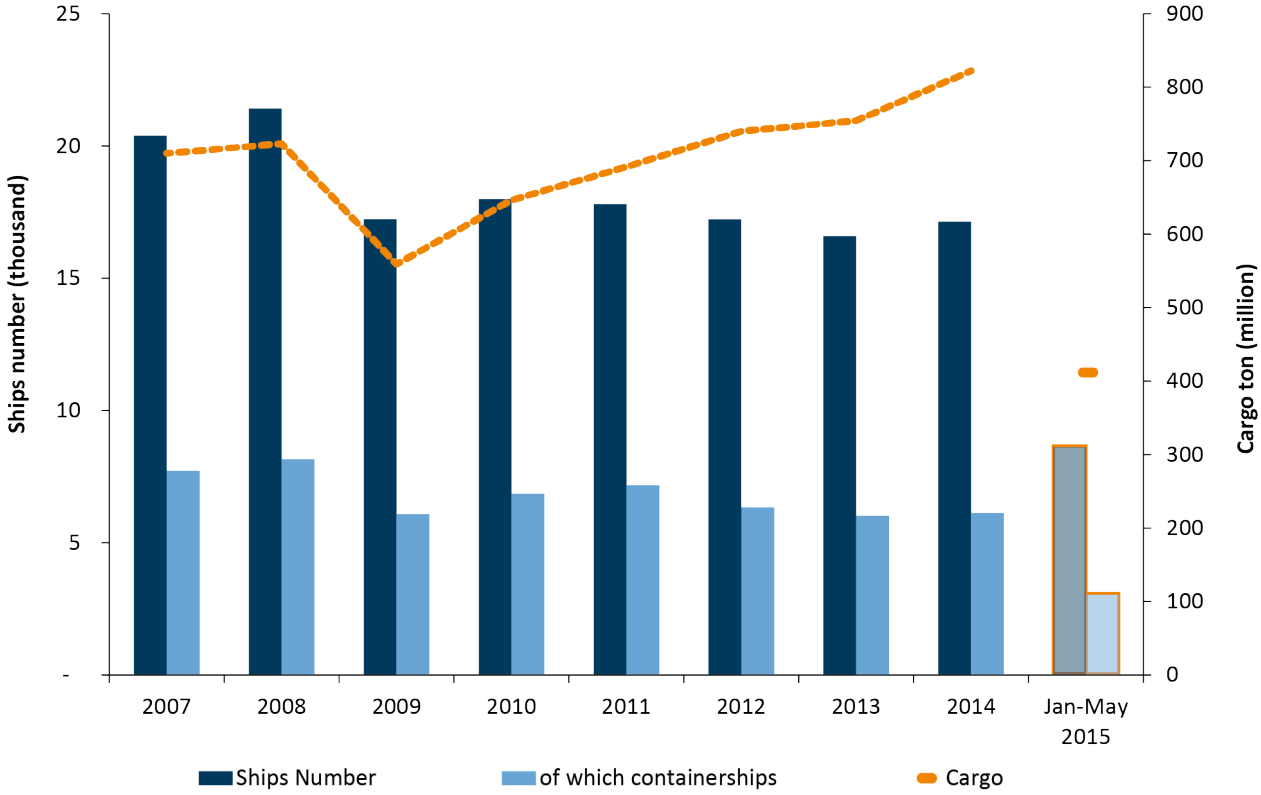

Figure 1 - Source: Suez Canal Autority

Between 2000 and 2014 the trend in the sector were very positive (overall +123%) with south-bound traffic which grew more (+162%) compared to the northbound ones (+94%). This differentiated trend confirmed also itself in the first 6 months of 2015 compared to the same period of 2014 showing +7.7% in southbound traffic and a slight drop in northbound traffic (-1.2%) mostly due to a reduction in the tonnage of crude oil (-21.7%).
About 53% of all the 2014 traffic was made up of container ships (55% northbound and 51% southbound), 11% of these ships transported crude oil (17% northbound and 4% southbound),

[3] World Shipping Council, The Suez Canal - A vital shortcut for global commerce, 2014.

[4] The statistics discussed in the following paragraphs are collected by the Authority of the Suez Canal and made available on the website www.suezcanal.gov.eg

5% of the cargo was made up of grains (0.1% northbound and 9.3% southbound).

The containerized flows influenced the evolution of maritime transport through the Canal, in fact they globally grew by 202% from 2000 to 2014 (although differently with reference to the routes). As a matter of fact, north-south containerized trade volumes grew by 187% while the south-north ones grew by 219%, and in 2014 reached a substantial balance (212 million tonnes north-south and 222 million tonnes south-north). This result can be explained by looking at the operation of international trade characterized by the phenomenon of globalization driven by the relocation of production to countries with low labor costs, mainly in the Asian continent. In addition, over the last few years, the use of sacks to stow into the container goods that previously used to be stowed as bulk or general cargo has progressively led to the spread of containerization in a growing number of productive chains (coffee, cocoa, seeds, fertilizers and feed for fish). This partly explains the contraction between 2000 and 2014 of some types of trades passing through the Suez Canal; cement -96%, coal and coke -61%, timber -49%.

Along with containers, oil products are increasing significantly (crude oil, gasoline, diesel, naphtha, LPG, other petroleum products) rising from 50 million tonnes in 2000 to 178 million tonnes in 2014 (+251%). Of this, 48%, which is the equivalent of 87 million tonnes, is represented by crude oil. Between 2000 and 2014 the trade of crude oil between the Middle East and Europe grew by 205%, driven especially by traffic coming from the south, which grew by 40.7 million tonnes, up from 28.2 to 68.9 million tonnes, over the same period.

In particular, considerable development came after 2009 when an historic low was recorded over the last decade in northbound crude oil trade (15.7 million tonnes). From 2010 there was a radical re-design of these flows substantially due to the block of extraction activities in Libya, balanced by the oil from Saudi oil fields and the partial return on the European markets of the oil from Iraq. It was also stabilized by the expansion of the Canal which made the transit possible for large oil vessels to avoid a transit to the Cape of Good Hope thus creating new important flows in the Suez Canal while supporting Egypt's ambition in the refining sector.

Another extremely significant commodity traded through the Suez Canal is LNG which impressively grew from 2 million tonnes in 2000 to 24 million tonnes in 2014 (+1,145%) This confirms the trend which sees Europe switching to a more balanced energetic mix, using more natural gas rather than traditional raw materials as coal.

The evolution of transport for grains is considerable too; from 17 million tonnes in 2000 to 39 million tonnes in 2014 (+127%), it reflects the change of some productive systems relevant for Europe which, over the last years have become exporters of agricultural commodities notably as a result of the growth in China's domestic consumption and to the fact that this country buys most of its grain from abroad[5]. As a result, the overall export of grains coming from the EU and Ukraine

[5] Pitzalis S., "Mercato cereali, vige l'incertezza", Agrinotizie.com, April 14th 2014.

grew largely between 2006 and 2014 (+132%).

The analysis of this traffic direction shows that while in 2001 and 2007 there was a clear prevalence of northbound flows -57% on average - from 2008 there was a progressive and continuous shrinkage of transport from Asia to Europe which continued over the first half of 2015, reducing the amount of northbound flows by 49%. This outcome is due to the economic crisis which greatly affected European consumption in particular. The 2007-2009 period was noticeable as at the time the south-north passages through the Canal reduced drastically by more than 160 million tonnes. When observing the overall 2014 tonnage, it shows that trade by routes are not particularly unbalanced although in the south-north route 2014 volumes are far from the peak reached in 2007 when it reached 424 million tonnes; the north-south traffic, on the other hand grew constantly reaching, in 2014 a record of 416 million tonnes, well above the 295 million tonnes in 2009.

If one excludes container traffic which, as previously illustrated, has 50% of the weight, the composition of some flows change, especially for energy products. In 2014 from south to north 68.9 million tonnes of crude oil passed through the Canal, equal to 17% of the total amount of traffic on this route. Larger volumes of refined products accounting for 14% travel on the opposite route while the amount of crude oil drops to 4%, equal to 18 million tonnes. All in all, there is a growing flow of crude oil intended for refinement travelling northward, while southward the traffic of gasoline and naphtha, which are oil derivatives, is increasing.

For goods travelling northwards the main target area is North-Western Europe which comprises of the Northern Range and United Kingdom that however grows at a reduced rate; by 12% between 2001 and 2014 from 110 million tonnes to 122 million tonnes. Over the same period, Northern Europe's share on the total south-north transits through the Suez Canal fell from 52% to 30% mainly in favor of the Mediterranean which regained 22% thanks to the growth of the East and South-East of the Mediterranean (Egypt, Israel and Turkey) where in 2014 25% of the south-north traffic was bound for. In this situation, Western Mediterranean regains positions compared to Northern Europe; +3% between 2001 and 2014, just as Northern Mediterranean which recorded +2% over the same period.

If one pays attention on the northward traffic, what clearly emerges is the increasingly crucial role of the Gulf as an origin of shipments. As a matter of fact, in 2014, 34% of the shipments (137 million tonnes) originated in this area which was second to Southeast Asia where the shipments amounted to 161 million tonnes. In 2001 the Gulf generated only 24% of the total amount of northbound traffic; about 49 million tonnes. This growth was determined by energy sector trends which are found in the Arabian region, the main mining area in the world. In addition, it is possible to conjecture that northward traffic originated in the Gulf come also from manufactures deriving from the high value logistics areas present in the region and particularly in the vast Special Economic Zones of the UAE.

The main south-north cargo flows in the Suez Canal: var % 2001-2014

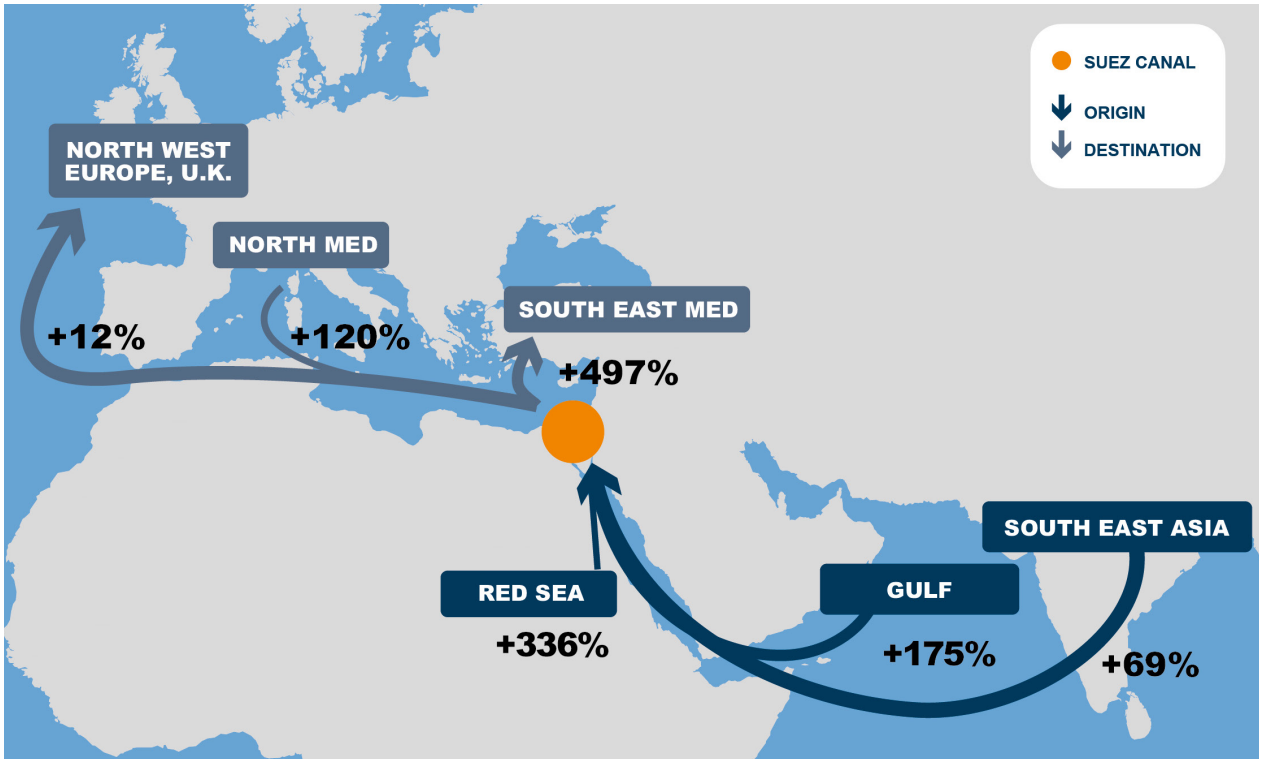

Figure 2 -Source: SRM on Suez Canal Authority data (data available from 2001)

The main north-south cargo flows in the Suez Canal: var % 2001-2014

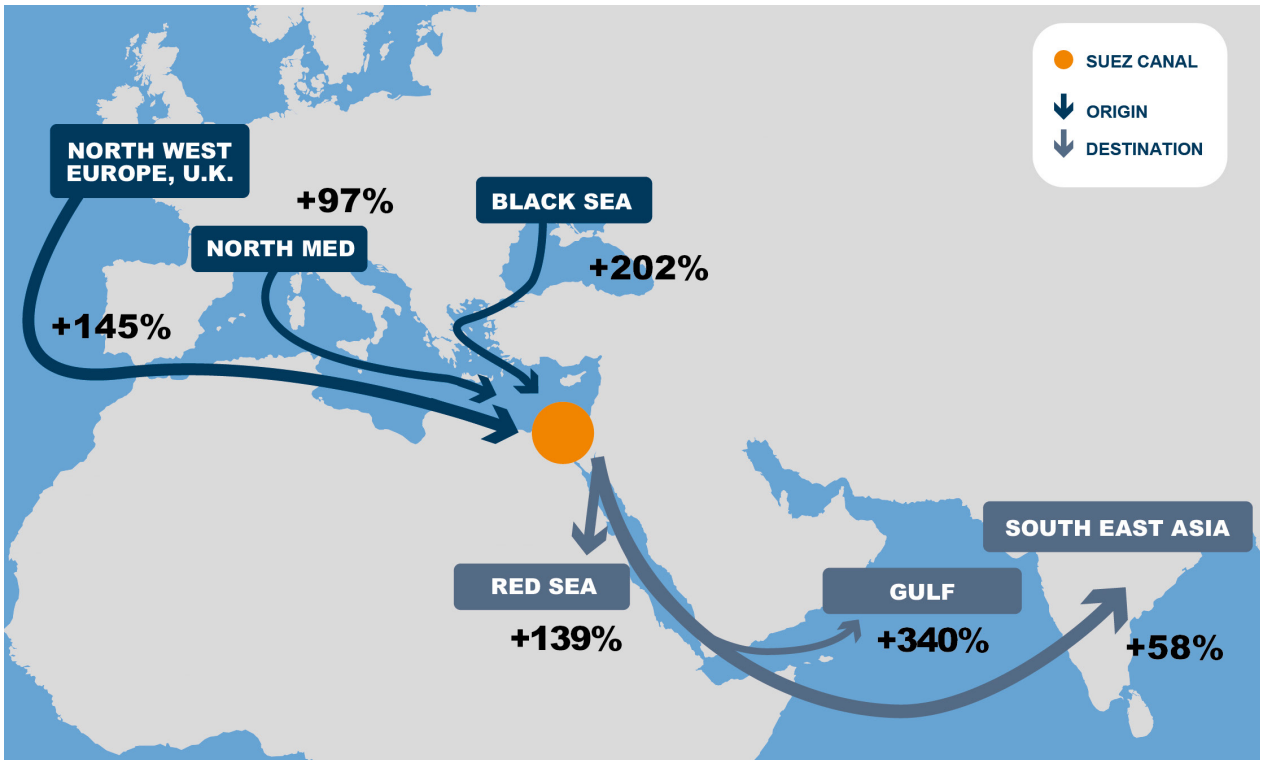

Figure 3 - Source: SRM on Suez Canal Authority data (data available from 2001)

* The cargo flows are represented by arrows whose thickness indicates the absolute value in terms of goods.

Destinations of northbound traffic

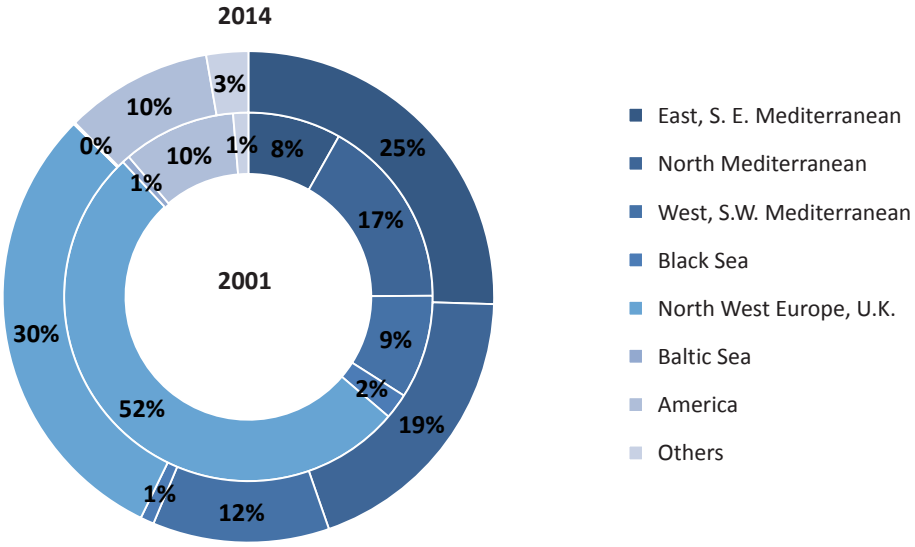

Figure 4 - Source: Elaborations on Suez Canal Authority data, various years

Origin of northbound traffic

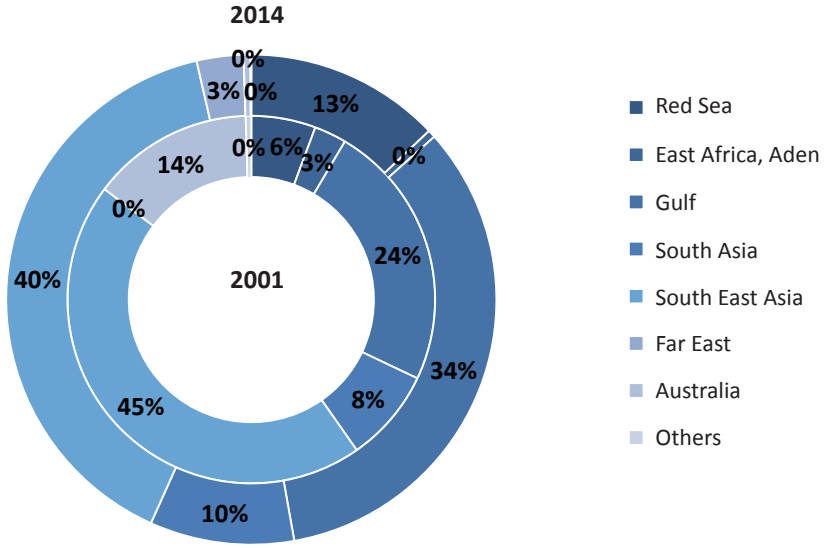

Figure 5 - Source: Elaborations on Suez Canal Authority data, various years

As for north-south trades, the ongoing evolution is due to the dynamics regarding the target areas in the Gulf. In 2014 this area received 83 million tonnes shipments through the Suez Canal amounting to 20% of the total goods passing through the Canal along this route (it was 12% in 2001). The growth of the Gulf as a European exports target area was detrimental to Southeast Asia which accounted for 46% in 2001 and for 46% in 2014. The above data shows that trade between Europe and the Gulf grew exponentially mainly as a result of the socio-economic dynamics which characterized the countries in this area and which brought a remarkable growth of welfare and the diversification of investments financed by revenues from the sale of crude oil.

Destinations of southbound traffic

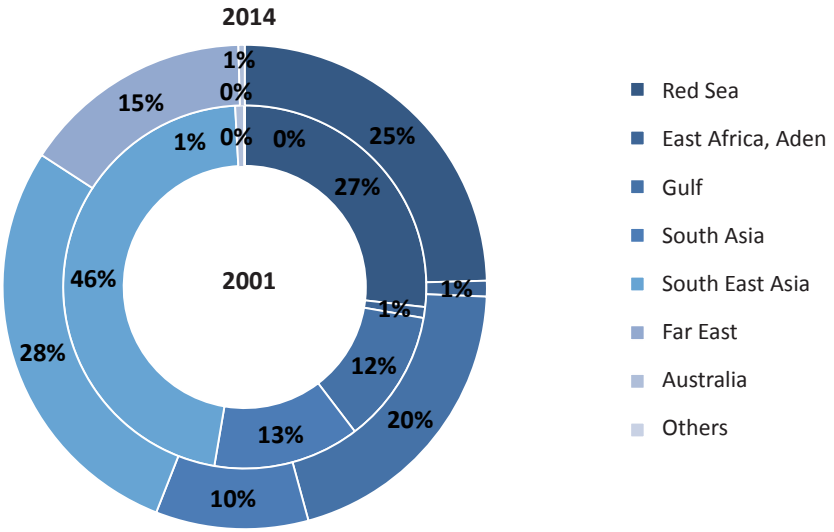

Figure 6 - Source: Elaborations on Suez Canal Authority data, various years

Origin of southbound traffic

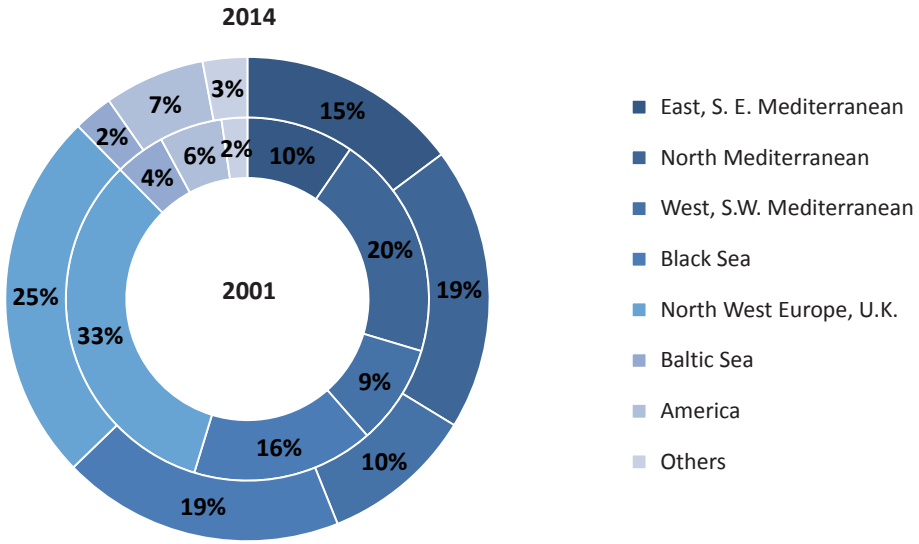

Figure 7 - Source: Elaborations on Suez Canal Authority data, various years

Finally, a remarkable element regards the dynamics of containerized goods. Between 2000 and 2008 container traffic through the Canal grew at a 10.9% annual rate in terms of CAGR, (Compound Annual Growth Rate). Over the same period there was also a progressive reduction of the average weight per TEU, which fell from 10.2 to 9.5 tonnes. This trend in fact, is due to the re-positioning of empties as a result of a rebalancing of the trade on the Asia-Europe route; from 2.1 million TEUs in 2001 to 8 million in 2008. In 2008 northbound container traffic was higher than those in the opposite direction by more than 32 million tonnes. In 2014 this difference shrunk to 10 million tonnes showing that the export of the European economic system was regaining its competitiveness. Since 2009, in conjunction with a rebalancing of the flows, the average fill rate

per TEU increased again reaching 10.4 tonnes.

The analysis of the average TEUs transported per ship is particularly interesting, it progressively rose during the period under examination: from 3,044 TEUs in 2000 to 6,863 TEUs in 2014. This indicates the average growth of container ships passing through the Canal due principally to the naval gigantism trend which has characterized the shipping industry over the last twenty years.

The new Suez Canal

The Suez Canal is one of the main hubs of world maritime trade and featured 17,000 ships in 2014 which meant, until the construction of the new channel, on average about 47 units per day. The Canal spreads along 192km between the bay of Port Said and the Gulf of Suez and was meant to permit the simultaneous transit of three vessels; from north to south (departing at 00.00 from Port Said), from south to north, (departing at 06.00 from Suez) and from north to south (departing at 07.00 from Port Said) with a crossing point at the Great Bitter Lake and at the Ballah by-pass. The transit speed was limited to 6-8 knots and allowed to pass the Canal in 12-16 hours with a distance of 2-3 km between the vessels which varied according to the type of load.

The Suez Canal generated for Egyptian Authorities revenues of over US $5 billion and in 2014 this accounted for almost 2% of the Egyptian GDP[6]. More in detail, in 2014 the Suez Canal Authority collected almost US $5,465.30 million meaning an average toll of more than US $318,713 per ship[7]. The average revenue attributable to the Canal has significantly increased over the last few years: in 2000 it only amounted to US $137,321 on average. The modernization of the Canal, inaugurated in August 2015, through a series of works on a stretch of 72km today allows the simultaneous transit of a greater number of ships, doubling by 50% the capacity of the previous channel. The works included the excavation of a new 35km long route placed side by side to the old one and the expansion and deepening of the present Canal on a 37km path. Furthermore the current way will be dredged up to the depth of -24 m. The construction of six underground tunnels for the passage of vehicles by road and rail connection with the Sinai Peninsula has also been planned. Finally, the works include the deepening of the two by-pass: Great Bitter and Ballah.

The estimated cost for the overall project amounted to US $8.2 billion. The Egyptian army was in charge of organizing and managing the execution of the work, which implied 25 national companies which were granted a concession. According to the press, the Egyptian Government declared that the investment costs will not affect the Canal fares[8].

[6] CIA World Factbook 2015, considering the nominal GDP, calculated at current values in US dollars for the year 2014.

[7] Suez Canal Authority, Brief Fiscal year Statistical Report, www.suezcanal.gov.eg.

[8] Saleh H., “Sisi bolsters nationalist appeal with $8bn Suez Canal investment”, Financial Times, September 1st 2014.

As a result of the works the daily capacity of the Canal increased by up to 97 vessels. If this new capacity is fully used, based on the Government's estimates and taking into account the current fares, it would produce a potential increase in revenues of more than US $13 billion to 2023.

The new Canal solves the issues related to the ships' long waiting times at the entrance of the Canal and at the by-pass points. The estimated average time for anchorage in the roadstead during transit in the Canal was a maximum of 18 hours. The overall navigational time amounts to 12-16 hours. The waiting time is a maximum of 3 hours.

Egyptian authorities emphasized the construction of this new transport system and hypothesized a direct effect linked to a further growth of international trade between Asia, Middle East, Europe and the East Coast of the United States with an indirect effect strictly connected to support and logistics services to maritime and port activities.

Along with the new Canal, the Egyptian Government developed the "Suez Canal Corridor Area Project" (SCZone), an enormous investment plan aimed at making the Canal region a center of economic development, thanks to the realization of research centers, industrial hubs, and logistics areas along this connecting route between East and West. Within this context, the New Canal is a necessary but not sufficient condition for the success of this impressive initiative.

The regional development plan for the Suez Canal

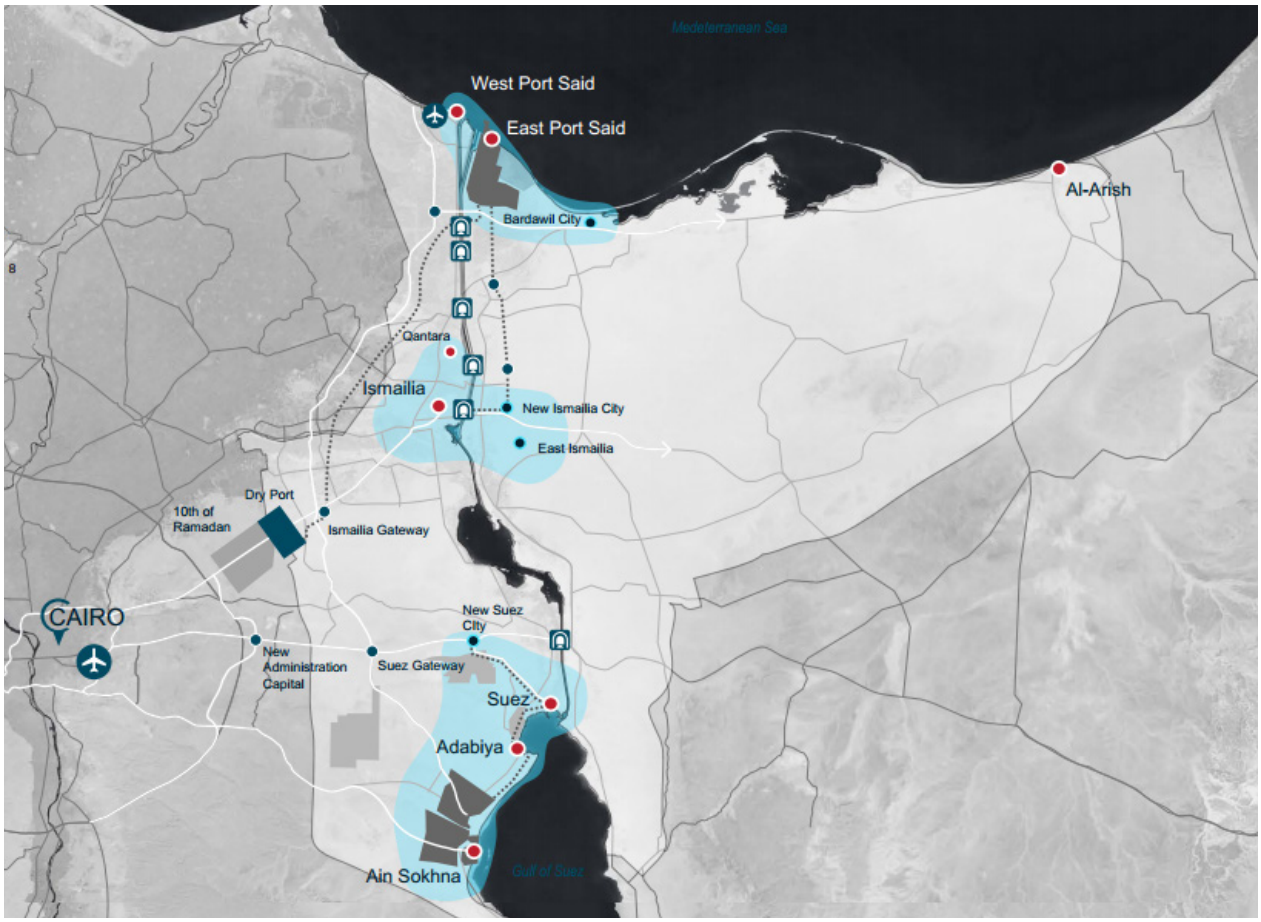

Figure 8 - Source: Suez Canal Area Development Project

The SCZone project intends to promote the development in three areas of the region which have immediate availability of space where infrastructures can be built on: Port Said in the north of the Canal, Qantara (Ismailia) halfway between the two accesses and Ain Sokhna, in the south, in the Gulf of Suez.

A plan from the Egyptian Government was presented in a Master Plan in March 2015 and more detailed guidelines were provided in August 2015. The Master Plan sets 2030 and 2050 as deadlines for the intermediate and final realization of the project. The focus of the project is the building of an area which is able to compete with the principal European and Middle Eastern logistics regions. These include Rotterdam, Hamburg and Jabel Ali while exploiting the Canal's obligatory passage points for trade between East and West as a central element. The project aims at taking advantage of the large available areas in the region.

The Egyptian Government has also conceived a project for Port Said which includes the development of the port by an increase in capacity of up to 20 million TEUs by 2050 through the building of an infrastructure on an area exceeding 22,000 hectares, 2,600 of which are intended for the port's expansion.

At its full capacity, Port Said contains 3.3 million TEUs, but already by the end of 2015 a new area in the port will come into operation and will allow an increase in the annual capacity amounting to more than 5 million TEUs (the so called Phase 2). Port Said's container terminal, also known as "Suez Canal Container Terminal" (SCCT) is an infrastructure which came into operation in 2004 and serves as a transshipment port for the trades in transit in the eastern region of the Mediterranean[9]. The terminal works 24/7 and is managed by SCCT (Suez Canal Container Terminal), a company controlled 55% by APM Terminal (Maersk group) and 20% by COSCO under a 49-year concession. The remaining shares are held by local stakeholders; 10.3% belongs to the Suez Canal Port Authority, 5% to the National Bank of Egypt and finally, while 9.7% is owned by Egyptian private investors. Currently the terminal is used by Maersk Line, COSCO Pacific, K-Line, Yang Ming, Hanjin, and CMA-CGM. The container terminal will be flanked with a solid bulk terminal, a general cargo terminal, a terminal for the logistics of new and used cars and one for the storage of liquid bulk with a 5 million tonnes capacity.

The dry port will include an industrial and residential area which will cover an area of 4,000 hectares, 80% of which will be intended for manufacture. In the rest of the area of commercial activities, retail sales, and areas designated for residential use will prevail.

Thereafter, Port Said will be connected to the town of Ramadan in the center of Egypt, and in the long term it will also be connected with Ain Sokhna through a line which parallels the Suez Canal.

[9] Shipping & Marine, "More than a phase", June 19th 2014.

At the same time, halfway between Port Said and Ain Sokhna, around Ismailia, a residential area will be built in Qantara intended for light and small manufacturing industries, over an area of 670 hectares.

Finally, the port hub of Ain Sokhna, south of the Canal, near Suez, will be fully developed. This port is already dealing with container traffic which is managed by DP World, one of the main terminal companies in the world. The Egyptian Government aims to develop the present port by building a container terminal featuring an annual handling capacity of 5.2 million TEUs, 6 quays and covering an overall area of 1,390 hectares. The container terminal will be coupled with infrastructures for the storage of liquid and dry bulks.

The port of Ain Sokhna will be the access point to a new productive area with over 8,000 hectares behind the port. About 50% of this new productive site will be allocated for light productions, 20% for heavy industry, and the remaining areas will be for commercial and residential purposes.

The expected impact on maritime trade

Current challenges

The building of the New Canal of Suez allows a reduction in, and a greater predictability of, transit times of the intercontinental east-west connection between Asia, Middle East, Europe and the east coast of the United States. Moreover, in the medium term it will address more effectively the request for a greater capacity. The new Canal increased its transit capacity to 97 ships compared to the previous average of 49 ships.

The project's objective was to maintain the strategic role of the Canal preserved within the geo-political panorama linked to international trade and, finally, the importance of Egypt between all major world markets.

In this respect, Notteboom e Rodrigue (2011) point out that in the last few years new challenges arose for the Suez Canal as an intersection of the traffics between East and West[10].

The growth of piracy attacks in the sea area between Somalia and the Red Sea, for example, resulted in a higher cost of transit through the Canal, due to higher insurance premiums and a higher need for staffing and security systems. If in 2005 there were 45 pirate attacks to vessels navigating the Gulf of Aden, the Red Sea and the international waters off the coast of Somalia, in 2011 they were 230. The increase in the expense due to piracy was estimated at US $100,000-115,000 per journey. However, attacks by pirates in the region experienced a drastic reduction, reaching

[10] Notteboom T., Rodrigue J. R., "Challenges to and challengers of the Suez Canal", Port Technology International, Bernard Henry, London, Autumn 2011.

a historic low in 2013, with 15 events. According to the International Maritime Bureau, Somali pirates have been deterred by multiple factors; amongst them the key role of international navies engaged in military control of these waters, the increased use of best practices by vessels, the use of armed security teams on board and a situation of greater stability in the central government of Somalia[11].

The current arrangement of the Canal has reached its limit for transit of larger vessels, although Suez allows for vessels larger than those allowed in the Panama Canal. Not surprisingly ships for liquid bulk transport are generally classified by dimension, and the Suezmax are those ships with the maximum dimension allowed in the Canal: gross tonnage between 120,000 and 200,000 tonnes, a maximum draft of 20.1 m, and width not exceeding 50 m. Larger ships cannot pass through the Suez Canal; they are for example bulk carriers for transportation of crude oil, called Very Large Crude Carriers and Ultra Large Crude Carriers, which can reach up to 320,000 gross registered tonnes. Currently these ships travel on routes passing the Cape of Good Hope.

Traffic through the Canal also depends on the dynamics linked to the oil price trend. As pointed out by Notteboom and Rodrigue, (2011) low bunker prices correspond to a greater availability of shipping companies in order to extend the routes performing the so called slow streaming routes[12]. In periods of capacity oversupply and low prices of bunker, shipping companies tend to reformulate the routes thus lengthening the journey, as it happened in 2009 when A.P. Moller-Maersk, CMA CGM and the Kuwait National Petroleum Company moved part of their traffic to the circumnavigation of Africa, although afterwards the increase in the bunker price led to a change of policy.

The Cape of Good Hope route has margins for growth at the expense of the Suez, especially as regards to the south-south trade in the Southern Hemisphere and especially with a strong economic growth of the African continent in the forthcoming decades.

In addition to the Cape of Good Hope route, another issue of growing interest regards the possible development of the Arctic route which allows a saving of around 22% on a Far East-Northern European connection, as is the case of Shanghai-Rotterdam.

This route, usually open between July and November, offers a considerable potential for development due to the large energy resources present in the area and not to the intercontinental routes. It is estimated that about 13% of the global oil reserves and 30% of those of natural gas are located in the Arctic Region. However, despite the obvious savings in terms of distance and the recent improvements in infrastructure to support the safety of navigation, the Arctic route

[11] Confitarma, Relazione Generale 2014, Teseo Editore, Rome, 2014 and ICC International Maritime Bureau, "Piracy and armed robbery against ships. Report for the period 1st January – 31st December 2014", London, January 2015 and Middleton R. , "Le conseguenze della pirateria nel Corno d'Africa", Note Osservatorio di Politica Internazionale, n° 11, May 2010.

[12] Notteboom T., Rodrigue J. R., "Challenges to and challengers of the Suez Canal", Port Technology International, Bernard Henry, London, Autumn 2011.

has some considerable operational limits due to the unpredictability of weather, thus requiring a sailing cruise of about 8 knots which allows ships and vessels to anticipate problems linked both to the presence of icebergs and to the need for a sudden change of direction in case of uncertainty with respect to the depth of the muddy bottoms –with constant changes depending on the meteorological conditions, often unsuitable to the passage of large ships.

This type of restriction makes the route inviable for the regular container services and it is also off route with respect to the flows of oil products and grains. Even in future scenarios involving a possible extension of the period of navigability, due to higher average temperatures in the area, the Arctic route will have a very marginal role and will be complementary to the transits in the Suez Canal, unable to be a real alternative for all the main flows that use the Suez route[13].

In the light of the considerable investment made for the renewal of the main world Canals (Suez and Panama[14]), it is particularly interesting to focus on the effects this may produce on the trades between Asia and the East Coast of the United States, taking into account that the ships passing through the Suez Canal and which depart from America account for 6.7% of the southbound flows and 9.7% of the northbound ones.

As shown in the table 3, traffic between China and the East Coast of the USA (for example between Hong Kong and New York) find the Panama Canal more convenient than the Suez Canal, if the only factor taken into account is distance. Actually, over the years, the strategic choices of shipping companies showed that there are a wide range of countries in Southeast Asia comprising of Southern China, Vietnam, Malaysia, Indonesia, Singapore and South Korea where the competition between the two routes takes into account many other factors rather than nautical distance alone. As a matter of fact, the strategic elements systematically considered by shipping companies to decide the routes – and in the case of the major shipping companies usually both service options are offered[15], – include:

- the possibility to apply economies of scale at their best in bunker consumption using large vessels (for example, exceeding the limit of 14,500 TEUs which will be the upper limit of capacity to access the new Panama Canal that will be opened in the course of 2016);
- the possibility to cross different routes on intercontinental hubs, fundamental for the balance of flows, like Colombo, Dubai, Port Said, Gioia Tauro, Malta, Algeciras, Tangier;
- the cost of the Canals' tolls.

[13] The study of the CPB Netherlands Bureau for Economic Policy Analysis (CPB), entitled "Melting Ice Caps and the Economic Impact of Opening the Northern Sea Route", published in May 2015, indicates that about 66% of current traffic flows crossing the Channel Suez are potentially interested in the Arctic Route, but the real chance that the meteorological conditions and infrastructure development needed to make this change of route operationally possible are very remote.

[14] In mid-2016, after eight years of work and a government investment of more than US $5.2 billion, the new system of locks and access routes will be able to increase the size of ships and reduce the time of transit in the connection Canal between the Atlantic Ocean and the Pacific Ocean.

[15] This is, for example, the case of Maersk, that in 2015 offers TP10, TP11 and TP12 services on the Busan-Miami, Shanghai - Shanghai-Charleston and Norfolk routes via Suez.

Analysis of the distance and time of navigation of some routes between Asia Europe and the East coast of the USA

The Shanghai-Rotterdam case		
Route	**Distance (in nautical miles)**	**Hypothetical days of navigation (15 knots)**
Arctic Sea	8,031	22
Suez	**10,525**	**29**
Panama	13,411	37
Cape of Good Hope	13,843	38
Strait of Magellan	17,184	47
The Yokohama-Rotterdam case		
Route	**Distance (in nautical miles)**	**Hypothetical days of navigation (15 knots)**
Arctic Sea	7010	19
Suez	**11,133**	**31**
Cape of Good Hope	14,448	40
The Hong Kong-New York case		
Route	**Distance (in nautical miles)**	**Hypothetical days of navigation (15 knots)**
Panama	11,207	31
Suez	**11,593**	**32**
Cape of Good Hope	13,686	38
The Shanghai-New York case		
Route	**Distance (in nautical miles)**	**Hypothetical days of navigation (15 knots)**
Panama	10,852	30
Suez	**12,370**	**34**
Cape of Good Hope	14,468	40
The Shanghai-Houston case		
Route	**Distance (in nautical miles)**	**Hypothetical days of navigation (15 knots)**
Panama	10,138	28
Suez	**13,932**	**39**
Cape of Good Hope	15,176	42

The impact of the Suez Canal's expansion

- Route where Suez is already more competitive
- Route where the potential competitiveness of Suez against Panama is considerable
- Route where the potential competitiveness of Suez against Panama is evident
- Route where there are no significant effects

Table 3 - Source: Authors' elaborations on sea-distance.org information

A specific analysis conducted by specialized research firm Alphaliner[16] on the choices by shipping companies that offer services for container traffic on the route between the Far East and the East Coast of the United States, showed that the 25 services offered in July 2015 were arranged so as to benefit the via Panama route (16) compared to that via Suez (9). In terms of offered capacity, the two routes are actually more balanced. As a matter of fact, 51% of the supply passes through Panama (equal to 73.000 TEU per week and ships with an average capacity of 4.570 TEUs) compared to 49% passing through Suez (70,000 TEUs and an average capacity of 7780 TEUs per ship). It should be pointed out, however, that the data above (n. of services and capacity) are continuously changing as the thresholds of convenience change rapidly during the year. In fact, in February 2015 the number of services offered was 20, 12 of which were from via Panama and 8 from via Suez, however Panama only accounted for 44% of the offered capacity. This confirmed a trend which, in spite of a few fluctuations, saw a reduction on the capacity offered by Panama during the last five years and also considering that in February 2010 74% of the offered capacity passed through Panama. Over the last few months, the trend modified from 44% to 51% along with a reduction in bunker price.

The increased predictability in the timeliness of the transit in the Suez Canal, the strengthening of local transshipment hubs and the choice not to increase the Canal's fares will be three elements which will contribute to reducing the effects of increased competition, on the routes between Asia and the East Coast of the United States, resulting from the massive expansion of the Panama Canal whose opening is expected by mid 2016.

The development of multimodal corridors between Europe and Asia's ability to compete with the main maritime routes will represent another critical element to take into account when planning the development of the Canal. In this regard, it should be noted that in 2014 there was a rapid growth in direct railway connections between Asia — and particularly China — and Europe, performed by many railway companies grouped in consortia and alliances, including the German DB Shenker. However, just like the Arctic route, this alternative has a limited competitive potential as the economic advantages are significant only on certain routes which originate or head to the northern areas of China and Northern Europe. As a matter of fact, the organizational complexity which derives from balancing the interests of many railway companies involved and the technical limitations (numerous changes of locomotive and different track gauges) will halt the competitive potential even in the long term, involving overall flows of less than 100-200 thousand TEUs, compared to more than 40 million TEUs that have already crossed the Suez Canal.

Within this scenario, the most solid alternative – albeit feared by Egyptian Authorities – is the project (still under study) of the Israeli government to build a high-speed rail alternative to the Canal, linking the port of Eliaat in the Gulf of Aqaba on the Red Sea with to Ashdood in the Mediterranean Sea.

[16] Alphaliner Weekly newsletter, n° 28, 2015.

The economic effects

The new Canal allows for greater reliability in the maritime transport services on all the principal east-west routes, with a reduction in journey times, especially on the routes between Mediterranean and the Red Sea-Gulf area, due to a reduction in waiting times. The types of vessels which take greater advantage from the realization of the new Canal are container ships which represent the major share of traffic that exceeds 50% of the higher value of goods and for the service's organizational arrangements that require the prerequisite of the reliability and timeliness in order to cross the goods' flows in the hub ports.

This type of maritime transport only developed in the Mediterranean since the second half of the 1970's and in the Gulf only since 1980 (year of completion of the first part of the port of Jebel Ali in Dubai). However this led to a radical change in the managing of the trade flows and in the relation between port and dry port. Unitization of cargoes by containers allowed significant increase of productivity in international logistics. The result was a sharp reduction in both the cost of the maritime route (due to the use of economies of scale in the cargo hold management) and in port costs and terrestrial shipments thanks to the simplification and standardization of handling, and also thanks to the increased use of land transport through the enhancement of intermodality.

Some recent econometric studies of academic nature demonstrated the existence of a real causal link in the increase of trading amongst the countries and the use of containerization in goods' transport[17]. As a matter of fact, increasingly larger ships, the rationalization of the number of ports and investments, and the growth of port productivity allowed the exploitation of new economies to reduce transport cost, thus allowing companies to exploit localization economies making maritime trade one of the key drivers of globalization after the Cold War.

The reduction of uncertainty in the timing of shipments also increasingly fostered the development of multinational productive chains inspired by a present model of production based on the minimization of stocks and the exploitation of the advantages resulting from the differences in labor costs and international product specializations.

As evidence of the dynamism in the sector, the container fleet capacity to 1st of January 2015, as Alphaliner's data shows, reached 18.37 million TEUs amounting to +6.3% compared to the previous year at an overall growth rate of 162% over the last ten years.

Maritime transport is based on organizational models which imply higher fixed costs on total costs. In fact, the cost of crew, administrative staff, supply and in particular of bunker increase in a smaller proportion if compared to the size of the ship and this fact promoted a research for economies of scale on the routes where the demand is greater. Unit costs decrease when the ship's

[17] "Estimating the Effects of the Container Revolution on World Trade", by Daniel Bernhofen, Zouheir El-Sahli and Richard Kneller, Lund University, Working Paper 2013:4, February 2013.

size increases also due to economies of scale important in both construction and investment. This trend intensified in the light of the enormous changes expected in the forthcoming months thanks to the modernization of the two fundamental channels for world trade: the Suez Canal and the Panama Canal.

Another considerable effect will influence the hierarchy of ports in the Canal area. With the increasing spread of containerization and the concentration of supplies, the major shipping companies have become more selective in the choice of port terminals as on where to disembark. In the context of a "naval gigantism" and growing forms of oligopoly, a change in the approach to the logistical organization both in port and at territorial level is needed, pushing for a progressive and higher level of integration between port facilities, inland terminals and multimodal corridors. Consequently, the competitiveness of a port in the new network of container scheduled services is not bound only to the geographical location but also by the overall quality of the services offered, especially in terms of connections with other transport networks. The presence of plants and equipment used for rapid embarkation and disembarkation of containers and the transmission of such relevant information is crucial, which makes it possible to quicken the operation in the yard and the load transfer between transport modes. The port also becomes a place where industrial activities are concentrated, where to locate parts of the production chain with added value will take advantage of the stores and services offered by the logistics centers. These issues are particularly considerable for an under-developed Egypt as well as for Northern Italy's gateway ports which are the target of a large share of traffic from Suez. It, in fact, accounts for 51% of the containers handled in Genoa and 47% of those which are in transit from the port of La Spezia.

In 2014, 6,129 container ships passed through the Suez Canal with a total amount of goods amounting to 42,064,840 TEUs. On average, the cargo carried per ship was 6,863 TEUs.

The analyses above proves that the opening of the New Suez Canal will allow a greater dependability of maritime transport services on the long east-west routes between Asia, Europe and the East Coast of the United States with a consequent reduction in travel times estimated at, on average, 12 hours per transit in both directions. If one considers the large number of ships involved (the estimation for 2015 is to overcome 18,000) and the massive quantity of transported goods (over 850 million tonnes worth €2,300 billion by the end of 2015), it is interesting to evaluate the economic benefits derived from this investment which may lead to a reduction in the cost of world trade.

Drawing on the concept of generalized cost of transportation, it is possible to affirm that the advantages of the new situation may be taken in both the reduction of the operational costs and the time necessary for transportation.

The reduction of waiting times allows one to cut costs which are proportional not to the distance but to the time of travel. They mainly are managing costs of the assets related to the ship, including the amortization of the ship, operating costs of the ship and its crew, as well as other minor

items such as the cost of insurance, administrative fees etc.

The Suez Canal is crossed by a wide variety of ships which consequently have very different operating costs. In order to obtain a rough estimate of operating costs that can be saved with the entry into operation of the new infrastructure, it was assumed an average value for the main categories of ships, deduced from the operating costs periodically estimated by the British company Drewry [2014] which include the crew, insurance, routine maintenance on board and on site, spare parts, the lubes and administrative tasks. To these items it should be added the ship's amortization, but the cost of fuel was not considered because the new channel saves waiting times and reduces the navigation distance.

Operating costs by type of ship and estimated annual savings (in Euro)

Ship Type	Number of ships in transit in 2014	Daily operating costs including amortization	Reduction of annual operating costs by type of ship
Tankers	4,053	17,743	35,957,058
LNG Ships	614	58,013	17,809,872
Bulk Carriers	3,051	12,263	18,706,813
Combined Carriers	4	15,086	30,172
Generalised Cargo	1,259	13,077	8,231,821
Container Ships	6,129	24,009	73,575,986
Ro / Ro	228	17,432	1,987,283
Car Carriers	1,003	17,432	8,742,303
Passenger Ships	67	303,591	10,170,298
Others	740	13,077	4,838,402
Total	17,148		180,050,008

Table 4 - Source: Elaboration on traffic data drawn from the Suez Canal Authority 2014 annual report and on operational costs drawn from "Ship Operating Costs Annual review and Forecast", Annual Report 2014/15, Drewry 2015, with data in Euro based on the Euro/US Dollar rate of 1.11 (exchange as of July 10th 2015)

The estimates of reduction in annual cost, synthesized in the previous table regarding a streamlining of the assets of 12 hours, refer to the typical vessels which currently cross the channel (for example, container ships with an average capacity of 8,000 TEUs, tankers with capacity of 110,000 gross tonnage (GT), bulk vessels of 75,000 GT, LNG ships of 80,000 cbm).

A second effect of the time saved is the lower time of capital immobilization. This estimate first requires to assess what is the total value of goods annually in transit through the Canal are.

The Bank of Italy recently published a study [Banca d'Italia 2014] which estimates the average value per tonnage transported by different types of ships, for both import and export. Considering the high homogeneity of prices on the global markets, it is correct to attribute these average values to the load of ships sailing from Suez and, in particular, the values of Italian exports to southbound flows and the values of imports for opposite flows.
In its study the Bank of Italy does not include two values: natural gas and automobiles. For these two types of commodities the ISTAT data on Italian foreign trade was used, and in this case as well, export was linked to the southbound flows while import to the opposite flow.
Table 5 shows the flows of goods in transit in the Suez Canal in 2014: by adopting the average values derived as described above, we come to estimate that the total value of goods in transit in both directions exceeds €2,250 billion.

Estimation of the annual value of cargo in transit in the Suez Canal (in Euro)

Ship Type	Tonnes in transit through the Canal by direction[1] (figure as 2014)		Estimated average value (Euro * tonne) (to 2014)		Estimated annual value of cargo in transit by route (in billions of Euro, 2014)		
	N/S	S/N	N/S	S/N	N/S	S/N	Total
Tankers	55,258	82,891	727	715	40.150	59.271	99.422
LNG Ships	8,942	27,359	485	587	4.338	16.058	20.396
Bulk Carriers	61,564	24,198	315	218	19.393	5.285	24.678
General cargo	7,542	5,779	2,335	1,124	17.612	6.493	24.105
Container Ships	264,789	270,034	2,773	2,831	734.273	764.412	1,498.685
Ro-Ro	3,095	2,967	2,997	1,641	9.275	4.869	14.144
Car Carriers	30,111	29,267	10,035	9,350	302.159	273.654	575.813
Total	**431,301**	**442,495**			**1,127.200**	**1,130.042**	**2,257.243**

Table 5 - Source: Elaborations on traffic data drawn from the Suez Canal Authority 2014 annual report and from the figures in Banca D'Italia, Quaderno di Economia e Finanza, n° 223, 2014, "L'indagine sui costi del trasporto internazionale delle merci in Italia: metodi e risultati". The figures of Banca d'Italia are referred to 2012 and were updated based on an estimation of inflation between 2013 and 2014 of 5%. Date referring to LNG and car carriers are drawn from ISTAT
[1] The traffic volumes data broken down by type of ship does not exactly coincide with the data on the type of source and destinations (873 million compared to 822 millions of tonnes in 2014) due to the different methods of estimation by the Suez Canal Authority.

The first item per value regards container traffic, because of the high volumes traded as well as for the high average value of the cargo. The second represents automobiles, although the volume transported is lower than bulk carrier, its value is undoubtedly higher.

How much does the immobilization for 12 hours of this massive amount of raw materials and products cost? In order to reply to this question it is necessary to set a cost of capital, which for simplicity, we considered to be 5% consistent with those normally used in the field.
Applying this rate of interest the resulting estimate is that the cost of freight for one year amounts to €112.86 billion, equivalent to about €155 million for 12 hours.
Overall, applying the new capacity of transit to the 2014 flows, every year €180 million due to lower operating costs and €155 million for lower freight immobilization would have been saved, for a total of €335 million.
Over time, traffic will grow and this growth, it was hypothesized, will be different per each type of traffic, as shown in table 6.

Estimated annual growth rate by type of ship in the Suez Canal

Ship Type	Estimated annual growth rate from 2015 to 2045
Tankers	2.0%
LNG Ships	4.0%
Bulk Carriers	3.0%
General cargo	1.0%
Container Ships	4.0%
Ro-Ro	3.0%
Car Carriers	3.0%

Table 6 - Source: Authors' estimations

Projecting for 30 years the estimated benefits obtained in 2014 and taking into account the growth rates above, one can estimate that the financial net present value of the economic benefits brought by the new infrastructure amounts to €8.7 billion. This value is the sum the benefits accrued from two specific items:

1. lower operational costs for maritime companies, equivalent to a discounted value of €4.9 billion.
2. lower costs of immobilization of cargo for importers and exporters on a world scale, for a discounted value of €3.8 billion.

Based on the present hypothesis, without any tariff changes, shipping companies would be the only beneficiary but, given the high competitiveness of the freight market, these advantages would mostly go to producers and consumers.
With the growth of traffic, the channel would have saturated: estimating 70 ships as the maximum number of daily transits, without the expansion already carried out, the Canal would have saturated by 2029. From that year on, some possible income would have been lost without the

expansion of the main parts of the Canal. If we consider that the average income for a transit in the Canal amounts to US $318,713 (€287,128 according to the exchange rate of July 10th, 2015), and count the number of ships that would have been rejected annually and discount the lost revenue, we come to a financial net present value of €32 million, which is considered one of the direct benefits produced by the construction of the new channel.

It seems appropriate to point out that the extension of the routes for traffic which could not transit the Canal would considerably increase environmental and climate operating costs and externalities.

The reduction in transport and cargo immobilization costs, along with the increased capacity and safety of the Canal, may have substantial repercussions on the major short routes and, in particular on the volumes traded between Mediterranean, Red Sea and Gulf also in light of the fact that the roads are impassable due to the Syrian War and the war in northern Iraq.

As a matter of fact, savings in transport time of about half a day due to the improvement of navigability of the Canal and the reduction of waiting times, generate an average saving per ship of about €10,500 due to lower operating costs and about €9,000 for the saving on the immobilized cargo. All these costs represent on average a minimum percentage of the total operating costs along the main routes crossing the Channel. Actually, the savings for ships with high operational costs can be far greater: it is the case of cruisers that can achieve cost savings of around €150,000 for each transit and therefore for the classic services with routes starting and ending at the same point, the saving amounts to about 300,000 Euro. Another example regards ships with a higher average value of the cargo transported, such as container ships, for which the savings in terms of lower cost of immobilization for the 12 hours can be estimated at about 16,748 which means 85% greater than the average trades. These savings will certainly decrease the Maritimes companies' current threshold of convenience to opt for "slow streaming" through the Cape of Good Hope.

The overall importance of these savings increases when the distance travelled decreases. If one considers, for instance, a connection between the ports of Jeddah in Saudi Arabia and the port of Tanger Med in Morocco which takes 8 days of navigation, the savings resulting from the lower time of transit in the Suez Canal (reduction of operational costs and of costs related to the immobilization of the cargo) could reach up to 5.7% of the overall transport cost[18]. This reduction in costs can be a further incentive for the operators to intensify trade flows, for example, on routes between the eastern Mediterranean and the Gulf or between the Black Sea and the Arabian Peninsula. Within this context a geopolitical observation should be added after the various forms of international embargoes against Iran have been lifted. In fact, thanks to the signing which took

[18] The calculation is made considering an estimate of 8 days of operating costs, based on of the data previously described for container vessels with an average capacity of 8,000 TEU, 7 of which spent in motion while 1 is spent for the stopover to access the Canal and wait for the priority ships, with an average consumption of 140 tonnes per day of bunker and a rate of €315 per tonne of bunker (average data of the first week of July 2015).

place on July 14 2015 after a long negotiation lasting nearly ten years between Iran and the International Agency for Atomic Energy (IAEA), a new development of these trades is expected. International exchanges to and from the main western markets will benefit from a nation with 80 million inhabitants, the third largest exporter of oil, with a diversified production, comparable to that of Turkey.

Also for the cruiser market the effects of increased reliability and the reduced time of transit may have implications in terms of potential development. Nevertheless this is a specific segment of the maritime sector which is based on economic logic that is completely different from the areas previously treated, being closely related to the dynamics of global tourism. Prerequisite for the growth of this sector is political and social stability as predictably, cruising is particularly susceptible to geopolitical safety.

Although the Mediterranean is the leading European region for cruise businesses, and second world destination after the Caribbean islands, the transits in the Canal amount to a few dozen ships per year. Actually, in 2014 they were only 67 cruise transits. The main ports for cruising in the Mediterranean are Barcelona, Civitavecchia, Venice, the Balearic Islands and the port of Piraeus. Italy, Spain and Greece lead the statistics in terms of passengers handled. According to the traffic data collected by "Medcruise", the association that gathers 70 cruise ports in the Mediterranean, these illustrate that the market is mainly concentrated in the western region, where 70% of passengers is handled. Adriatic sea follows with 19% and the Eastern Mediterranean with 10%. The Black Sea seems completely irrelevant, with 1% of the market[19].

A positive evaluation of the potential effects of the completion of the project on the cruise market derives from the following considerations:

- The market is now mature (there are 170 vessels involved in more than 2,700 tours and all major cruise lines have significant orders up to 2021) and in spite of the continuous attempt to propose new routes in over one hundred ports already involved in the Mediterranean, the need to evaluate new proposals is particularly felt by major shipping companies[20]. For example, it should be noted that as soon as the political conditions allowed cruisers in the Caribbean, they have immediately added Cuba on their itineraries as home port (as is the case of MSC Cruises, for example), with the aim of offering novelties to consumers.

[19] The ports of the Adriatic region are: Bari, Brindisi, Corfu, Dubrovnik / Korcula, Koper, Kotor, Ravenna, Rijeka, Sibenik, Split, Trieste, Venice, Zadar. Black Sea ports are: Batumi, Constantza, Odessa, Sevastopol, Sinop, Sochi. Ports of eastern Mediterranean are: Alanya, Cyprus, Heraklion, Igoumenitsa, Kavala, Kusadasi / Bodrum / Antalya, Mersin, Patras, Piraeus, Souda / Chania, Thessaloniki, Volos. Ports of the western Mediterranean are Alicante, Azores, Balearic Islands, Barcelona, Cagliari, Cartagena, Castellon, Ceuta, Civitavecchia. Ports of the French Riviera, Genoa, Gibraltar, Huelva, La Spezia, Lisbon, Livorno, Madeira, Marseille, Messina, Monaco, Motril-Granada, Malaga, Naples, Ports of the North of Sardinia, Palamos, Palermo, Portimao, Portoferraio, Savona, Sete, Tarragona, Tenerife, Toulon-Var-Provence, Ports of Tunisia, Valencia, Valletta. See MedCruise Association, "Cruise activities in the MedCruise ports. Statistics 2013", A MedCruise Report, Piraeus, 2014.

[20] Cruise Line International Association, 2014 State of the Cruise Industry Report, 2014.

- Currently the ports of the Red Sea that already accommodate the services offered by various companies (including MSC, Costa Cruises, Regent, Cunard) are Egypt (Hurghada, Safaga and Sharm El Sheikh), Israel (Eilat) and Jordan (Aqaba). Actually, they are stopovers inserted into routes which link macro areas (for example, between the Mediterranean and the Gulf or the Mediterranean and East Africa and Indian Islands) or within world tours, with a number of stopovers per year which is still very low, as they are not part of regular routes. As opposed to the Canary Islands which are instead fully involved in regular routes of 10-12 days in the Western Mediterranean.
- The full involvement of the leading ports of the Red Sea in Egypt and Jordan in the Eastern Mediterranean itineraries which last 10-12 days with a home port in Venice, Piraeus, or Istanbul, becomes technically possible by reducing the time required for the round trip of the Suez Canal.

In 2014 the port of Tenerife in the Canary Islands hosted over 840,000 cruise passengers (+79% compared to 2009), becoming the tenth port of the Enlarged Mediterranean area. Taking into account such experience, in the medium term this opportunity could result in a number of cruise passengers, distributed amongst the five major ports in the north of the Red Sea, potentially close to a million (about 4% of the market value of the Mediterranean in 2014 and comparable to that of Santorini in the Eastern Mediterranean), with approximately 250 routes (2 stops on average in the area from ships with around 2,000 passengers on board), with around 500 transits of the channel (round trip).

Based on investigations carried out in other contexts of the Mediterranean[21] an economic impact can be estimated on the territories due to the direct purchases of cruise passengers along with crew and the shipping companies in the local area, which amounts to about €120 per passenger. This way the estimate of potential socio-economic effects from the additional development of the cruise sector in the Red Sea would bring about €120 million a year. An important element of this development can be potentially activated by the two leading companies on the Mediterranean market: Costa Cruises and MSC Cruises, which have their headquarters for the coordination and development of the Mediterranean market in Genoa.

[21] CERTeT, Indagine demoscopica impatto socio-economico dell'attività croceristica a Civitavecchia, 2015; Venice Port Authority, L'impatto Economico della crocieristica a Venezia, 2013; Wild G.P., European Cruise Sector Survey Project, 2010; Risposte e Turismo per Camera di Commercio di Livorno, La rilevanza e gli impatti economici dell'attività crocieristica per il territorio livornese, 2014; CLIA Europe, Contribution of Cruise Tourism to the Economies of Europe, 2013; European Cruise Council & Global Economic Impact Study, Business Research and Economic Advisors, 2013, Table 6: Global Passenger and Crew Spending by Category.

The expected impacts on the Italian port

The effects of the new Suez Canal and the development of Egyptian ports on the network of Italian ports are expected to be of two types depending on the competitive position in the context of the Mediterranean port system. This would bring about both new opportunities of development for the realities involved in imports and exports that will become more substantial in the medium to long term, and new threats, especially in the short term, resulting from the strengthening of competition for terminal operators active in the transhipment.

Benefits. The benefits derive primarily from:

- **reductions in navigation times** to the Red Sea and the Gulf;
- **decrease in operating costs** of the ships (excluding bunkers) on average between 5% and 10%;
- **redesign of the regular lines** (container and Ro / Ro) able to expand the number of ports involved in the same period of the organizational model of routes, usually 14, 21 or 28 days for these routes.

Additional benefits may be granted to shipping companies that run these types of routes between the Mediterranean, the Red Sea and the Gulf. In particular, among all, those which will benefit from greater trade are those affiliated to the major alliances in the container sector which include this route within longer services (for example, between the Indian subcontinent and Southern Europe) and with specific routes.

Amongst the shipping companies offering specialized services, an important role is held by Italian Grimaldi Lines in Naples and Tarros in La Spezia. At present, the only stops they make in the ports of the area are in the Egyptian ports on the Mediterranean, within the Ro/Ro Adriatic and Euro Agean services of Grimaldi and the three services for container traffic of Tarros: the Genoa-La Spezia-Salerno-Piraeus-Istanbul-Mersin-Alexandria-Salerno, the Venice-Ancona-Evyop-Istanbul-Beirut-Latakia-Mersin-Alexandria-Koper-Venice, and the EastMed, involving all major Turkish, Lebanese and Egyptians ports (Alexandria and Port Said).

A leadership position in the relations between Europe and the Southern area of the Red Sea and the Gulf is held by the Ignazio Messina Spa from Genoa, offering services to all major ports in the Middle East, including four ports of Iran. In particular, in the area of the Red Sea and the Gulf it offers a regular biweekly service in six ports with a direct line with the Genoa-Salerno-Aqaba-Jeddah-Djbuti-Bander Abbas-Abu Dhabi-Jebel Ali-Djibouti-Jeddah-Misurata-Castellon-Genoa lasting eight weeks, and four ports with the liner offered every three weeks from the Mediterranean to the Red Sea and South-Eastern Africa lasting 10 weeks.

The main Italian terminal areas specifically meant for import-export of this type (Ro-Ro and con-

tainer) are in Genoa (Terminal Ronco Canepa managed by Ignazio Messina Spa), La Spezia (Terminal del Golfo run by Tarros), in Salerno with Salerno Container Terminal Spa (Gallozzi Group) and in Venice (Venice RO- Port-MOS and TIV). In Venice, the full operation of some major investments dedicated to Ro/Ro traffic therefore allows significant room for growth. Genoa also has plans for significant infrastructural interventions that however will be able to accommodate developments in traffic expected from Eastern Mediterranean and the Red Sea by the end of 2016. The other ports instead, will have to intervene with targeted investments in order to avoid a situation of congestion.

In the cruise sector, the system of Italian ports of southern Italy made up mainly of the ports of Naples, Salerno, Bari and Catania, could benefit from the reduction in the time of transit in the Suez Canal directly. In fact, as mentioned in the paragraph above, the possibility of extending to the Red Sea the cruise routes of eastern Mediterranean could not only put fresh elements in a mature market, but also extend the season to autumn and winter, times when some of major companies prefer to transfer the ships in the Caribbean Sea. This option may encourage cruising companies to consider the possibility of using (for one or more ships) one of the southern ports as home port for the tours in Greece, Egypt and Jordan and, for the routes where travelling time exceeds a week, even Turkey.

This kind of opportunity requires a strong integration with the air service in a 'fly & cruise logic' and the availability of adequate cruise terminals for the operation of the beginning and end of the cruise, as the only basin of the South Italian market is not enough to assume services of this type on a continuous basis throughout the year. This type of opportunity for potential development is offered to other ports with strong ambitions in the cruise sector, such as Piraeus and Istanbul. They can count on a network of air services particularly widespread especially on an international scale, compared to the realities of Southern Italy. The aim to pursue is being able to offer services similar to those offered, for example, in Palma de Mallorca, from where many cruise itineraries in the Western Mediterranean depart. They also include the Canary Islands, where integrated and high level services for both port and intermodal connections are offered.

Competitive threats. While talking about Egypt's competitive advantages we have to highlight that competitive threats are to be found for the Italian ports of transhipment especially in the short run. In fact, the expected reinforcement of the ports north of the Canal such as Port Said and Damietta, engaged in traffic transhipment hubs & spokes and interlining types, also made possible by the development of regular predictable routes between the Mediterra-

nean and the Red Sea, could be a factor that can divert some flows from the Italian to the Egyptian ports retracing what has happened in the recent past. In fact, between 2004 and 2006, Gioia Tauro, for example, lost about 10% of traffic to the benefit of the Suez Canal Container Terminal at Port Said, operated by APM Terminals, part of the Maersk Group. At that time, it was enough that Maersk, by far the first client of the Calabrian terminal, shifted one of his main lines directed from Asia, to the Mediterranean, to Port Said resulting in a loss for Gioia Tauro of over 330,000 TEUs.

In the same period (2004-2006) the Egyptian port of transhipment, protagonist of a turbulent growth, rose from 865.000 to 2.7 million TEUs, while Gioia Tauro in 2014 had still not recovered traffic lost since 2004. The response from the ports of Cagliari and Gioia Tauro to this possible contraction in flows is an increasing productivity of terminal operations, especially on the Ultra Large Container Carrier (ULCC) with a capacity of more than 15,000 TEUs that are used on routes between the 'Europe and Asia. This market segment in fact is the most sensitive to the cost differentials of transhipment operations by virtue of the significant volumes traded in each port, which can even amount to more than 4,000 movements per single ship. In fact, the possible differences, estimated at a few tens of Euros at most per TEU handled, can actually generate annualized savings amounting to several million Euros for these services on a weekly basis. Such figures are able to fully justify any lengthening of feeder routes to their final destinations, especially in an economic environment in which oil prices and, consequently, maritime bunkers, are relatively limited.

The conclusion in this paragraph presents some estimation, reflection and qualitative hypothesis about the value, in terms of TEUs, that the ports of Southern Italy may gain after the completion of the project of global modernization of the canal. The analysis took as an example the route Far East-US East Coast used to handle around 7.4 million TEUs per year[22].

Based on a recent analysis by Alphaliner[23] (see. Par. The economic effects), 51% of the total capacity of the traffic on this route passes through the Pacific Ocean and the Gulf of Mexico via the Panama Canal, (3.79 million TEUs), and 49% through the Indian Ocean and the Mediterranean Sea via the Suez Canal, (3.64 million TEUs). Assuming that the expansion of the Suez Canal subtracts some of the 16 existing regular services via Panama (a plausible event given the greater reliability and reduced transit times due to the modernization of the Egyptian channel), it can then be estimated that about 25% of these trades could potentially go via SUEZ increasing the Canal and the Mediterranean volumes by approximately 949,000 TEUs.

Therefore, Italy, which has a market share of 18% of transhipment traffic in the MED (as of 2013),

[22] SRM on Alphaliner data (2015).

[23] Alphaliner Weekly newsletter, n°.28, 2015.

might be able to get additional traffic estimated at over 170,000 TEUs.

However, it should be noted that the number of services and the tonnage supply offered by liner shipping companies in the container industry are dependent upon many variables as the thresholds of convenience (oil prices, freight rates, channels transit fees, etc.) are subject to continuous variations dependent on many factors related to the international economy.

Conclusions

As shown by data and estimates, the expansion of the Canal will affect naval traffic and trade positively, representing an opportunity to grasp the opportunity for an enterprise and for shipping companies. The first will have the chance to count on more rapid cargo shipping and therefore on better processes of internationalization, the latter will be able to streamline routes and logistic systems.

The new Canal is not just a huge infrastructural project. It is also expected to become a center of economic commercial and logistics interest for the whole of Egypt.

All this will increase the centrality of the Mediterranean, which already circulates 19% of world traffic of goods and whose traffic increased in the past 15 years by more than 120%. In addition major port investments are being implemented in the various countries of the basin (for example, Tanger Med, Piraeus, Algeciras, Valencia).

The circulating fleet is also likely to increase with the growing presence of large ships and big players; as a matter of fact, one should be reminded that the vessel of the 2M (Maersk, MSC) and Ocean Three (CMA CGM, UASC, CSCL) alliances travel in the Mediterranean. Other major container shipping companies are using 20,000 TEU ships on many routes of interest for Italy such as Asia-Med and Gulf-Med.

The presence of the mega ships and the investment of competitor ports must lead the Italian ports, with those of the South at the head of the queue, and especially those of transshipment, to invest in infrastructure, technology and logistics to avoid losing market share, and above all not to miss the new opportunities that will arise from the enlargement of SUEZ.

Thereafter, the relaunch of Italy and of the South should imply the reorganization of the port system which is placed at the center of the development agenda of the country. In addition, attention should be paid to the new traffic of the Canal, which may be brought about in the short, medium, and long term, along with stronger trade and economic relations with Egypt being established.

Accordingly, the Suez Canal is a strategic passage for world trade and the modernization underway, which was concluded on Aug. 6, 2015, is by far the most important after the construction of the canal in 1869 and the completion of some areas to bypass the crossings which occurred in 1980 in the areas of Port Said, Ballah, Timsah and Deversoir, which made possible the crossing of flows

for 78km out of 192km of total length. The modernizations subsequent to 2001 and 2010 had more limited effects, although considerable for the transit of crude oil, as it allowed the port to accept ships up to 210,000 and later to 240,000 GT as a result of the expansion of the longitudinal sections in the tightest spots. The completion of the works in August 2015 avoided the need to set up a convoy of ships in alternating ways and, therefore, it was possible to reduce the average time of transport while increasing reliability, punctuality and safety at sea.

This intervention for the Canal's expansion, which had an injection of US $8.2 billion investment, finds justification in a long-term strategic vision, which aims to put Egypt's economy at the center of world trade, thus giving a strong sign of confidence in the future to domestic investors, who contributed to the financing of the work through massive subscription of bonds closely related to the project, and to the international community.

The economic relevance of the Canal for the Egyptian Government also lies in the fact that it represented a stable source of income with more than US $5.4 billion a year derived from transit fees. Moreover, the effects of this specific improvement of the transport system in Egypt will positively affect its trade whose revenues amount to about €2,257 billion (slightly more than twice the value of goods that pass through the Panama Canal),

The net present value of the direct economic benefits calculated over a time horizon of 30 years and arising from the reduction in shipping companies' operating costs is estimated at €4.9 billion. While the benefit deriving from lower costs of immobilization of cargo for importers and exporters on a world scale, amounts to a discounted value of €3.9 billion.

It should be pointed out that these direct effects depend on several factors, including the future tariff policy of the Authority of the Channel (which in fact has already declared itself reluctant to increases in pricing over the forthcoming years), and the average cost of bunkers used for ships engaged in the various maritime services as the trends in these two variables affect the thresholds of convenience of the use of some alternatives to the Channel (via Panama or via Cape of Good Hope).

To summarize, the direct economic benefits for the operators of the transport sector may be higher than US $8.7 billion. In fact, to this figure environmental benefits should be added, due to the reduction in the number of hours spent waiting and for anchoring operations of all the ships transiting the Canal. In addition, what needs to also be considered is the reduction in the number of ships that would have found it more convenient to travel longer sea routes (as, for example, via the Cape of Good Hope) instead of Suez, had the new investment not been implemented and allowed for increased capacity and reduction in time. The modernization of the Canal is also an intervention which is able to improve navigational safety. The economic evaluation of the environmental effects and the possible reduction of accidents are beyond the scope of this work, but they are estimated in some million Euros per year, contributing to an assertively positive assessment in

terms of cost-benefit analyzes.

In terms of indirect effects, the new canal allows the completion of a process of development in the transport and logistics sector which has been successfully administered over the past decade, as evidenced by the benchmark analysis of the World Bank and UNCTAD. In addition, it is a prerequisite for the industrial development in the vast areas targeted by the under completion Master Plan (still under completion) by the various Ministries of the Egyptian Government and whose guidelines are expected to be presented at the end of 2015. Amongst the indirect effects, there is a good chance to see some of the leading ports of the Northern Red Sea to be included in the Mediterranean cruising routes.

The main effects in terms of transport will account for the east-west routes and the logistics chains of containerized cargo (almost balanced between the two routes), oil products (with high prevalence of flows from south to north for oil crude and more unbalanced from north to south for refined products) and grain trade (almost exclusively from north to south).

In relative terms, the main beneficiaries will be medium-range flows (between the Mediterranean and Gulf) or very long range flows (China-East Coast of the United States) of containerized cargo. As a matter of fact, in the first case the relative advantage, consequent to the reduction of transit times, can lead to a reduction in operating costs in navigation (excluding bunker) of 5-10%, on these types of routes. Besides, it will be a factor able to diversify the services offered, having a positive effect on areas which are growing fast, such as the Gulf, a place where some of the greatest potential for the development of maritime trade is now concentrated. Amongst the factors of development already illustrated, a worthy mention should be attributed to the return of Iran into the network of world commercial trade after the end of the embargo by the major Western countries, and the development of Special Economic Zones in the area, which become an attractive element for assembly and processing of products marketed on a large scale, thus constituting a major drive to sea traffic.

The flows on long-range routes will benefit the most, from being able to maximize economies of scale with the use of Ultra Large Container Carrier without the limitations of the Panama Canal but with the chance to cross, along the route, the transhipment port of Port Said. In fact, this port will be further developed in stages, until it will be able to moor more than 20 million TEUs, making it comparable, in the long run, to realities such as Singapore or Hong Kong.

As pointed out in the previous paragraphs, land or sea alternative passages through the Canal are very limited for most of the flows and the realization of ambitious projects (such as the modernization of the railway between Asia and Europe, or the construction of new pipelines from the Gulf area to the Eastern Mediterranean), is not foreseeable in the short or medium term.

The predictable effects on ports are the following.

- **Lower concentration of cargo traffic of containerized or Ro/Ro cargo between the areas of the eastern and central Mediterranean along with the Red Sea and the Gulf**. Indeed, the reduction of waiting times could foster the development of new regular routes to the ports of the Red Sea, even with ships of smaller sizes than those currently used, being able to offer services with an average duration of 14 or 21 days and the possibility to add 1 or 2 stops as a consequence of the speeding up of the maritime route. Furthermore, the geopolitical situation of utter instability in Syria and in Northern Iraq precluded the possibility to use overland routes like those between Turkey and the states bordering the Gulf. This effect could increase the volumes shipped by sea, albeit in a limited way, and reduce the average capacity of container ships transiting the Canal in the coming years.

- **Further enhancement of the Egyptian ports of transhipment and in particular of Port Said**, which will take advantage of two elements: the extension of the network of services offered (which derive from the development described in the previous paragraph) and the ability to offer services also to the Ultra Large Container Ships (exceeding 14,500 TEUs), on routes between Asia and the East Coast of the United States. However these ships will still find a dimensional constraint when transiting via the new Panama Canal. The same effects can be expected for Dubai's Ports, which in 2014 became the ninth most important port for traffic worldwide, handling more than 15.2 million TEUs, a strong increase compared to the 11.6 of 2010. In fact, the transhipment ports of the UAE may benefit from the diversification of services between the Gulf and the Mediterranean, and from the proximity to the ports of Iran, which might be involved in international trade, after the end of the international embargo by the main Western markets.

- **Inclusion of the Red Sea area** (Hurghada, Safaga and Sharm El Sheikh in Egypt, Eilat in Israel and Aqaba in Jordan) **in the cruising itineraries in the Eastern Mediterranean**, with a consequent intensification in the offer of new services.

Bibliography

Venice Port Authority (2013), L'impatto Economico della crocieristica a Venezia

Banca d'Italia (2014), "L'indagine sui costi del trasporto internazionale delle merci in Italia: metodi e risultati", Banca D'Italia, Quaderno di Economia e Finanza, n° 223

Baccelli O., Barontini F. (2013), L'Italia in Europa. Le politiche dei trasporti per rimanere in rete, EGEA, Milan

Baccelli O., Ravasio M. and Sparacino G. (2007), Porti italiani. Strategie per l'autonomia finanziaria e l'intermodalità. Il caso dei porti liguri, EGEA, Milan

Bernhofen D., El-Sahli Z. and Kneller R. (2013), "Estimating the Effects of the Container Revolution on World Trade", Lund University, Working Paper, n°4

CERTeT (2015), Indagine demoscopica impatto socio-economico dell'attività croceristica a Civitavecchia

CIA (2015), The World Factbook

CLIA Europe (2013), Contribution of Cruise Tourism to the Economies of Europe

Confitarma (2014), Relazione Generale 2014, Teseo Editore, Rome

CPB Netherlands Bureau for Economic Policy Analysis (CPB) (2015), Melting Ice Caps and the Economic Impact of Opening the Northern Sea Route

Cruise Line International Association (2014), 2014 State of the Cruise Industry Report

Drewry (2015), "Ship Operating Costs Annual review and Forecast", Annual Report 2014/15

Ducruet C. (2015), "The polarization of global container flows by interoceanic canals: geographic coverage and network vulnerability", Maritime Policy & Management, n° 1

European Cruise Council & Global Economic Impact Study (2013), Business Research and Economic Advisors

ICC International Maritime Bureau (2014), "Piracy and armed robbery against ships. Report for the period 1st January – 31st December 2014", London

Kenawy E. M. (2015), "The expected economic effects of the new Suez Canal project in Egypt", European Journal of Academic Essays, 1(12): 13-22

MedCruise Association (2014), "Cruise activities in the MedCruise ports. Statistics 2013", A MedCruise Report, Piraeus

Middleton R. (2010), "Le conseguenze della pirateria nel Corno d'Africa", Note Osservatorio di Politica Internazionale, n° 11

Notteboom T., Rodrigue J. R. (2011), "Challenges to and challengers of the Suez Canal", Port Technology International, Bernard Henry, London

Pitzalis S. (2014), "Mercato cereali, vige l'incertezza", agrinotizie.com

Risposte e Turismo per Camera di Commercio di Livorno (2014), La rilevanza e gli impatti economici dell'attività crocieristica per il territorio livornese

Rodrigue J. P., Comtois C. and Slack B. (2013), The Geography of Transport Systems, Routledge, London

SRM (2015), "Italian Maritime Economy", 2nd Annual Report, Giannini Editore, Naples

SRM (2014), "Economic Relations between Italy and Mediterranean Area. Annual Report", Giannini Editore, Naples

Saleh H. (2014), "Sisi bolsters nationalist appeal with $8bn Suez Canal investment", Financial Times

Shamah D. (2014), "China Harbour Engineering Subsidiary to Build New Port at Ashdod in Israel", Reuters, http://www.reuters.com/article/2014/06/23/shipping-israel-idUSL6N0P45AD20140623

Shamah D. (2014), "China Firm to Build New Ashdod 'Union Buster' Port", The Times of Israel, http://www.timesofisrael.com/china-firm-to-build-new-ashdod-union-buster-port/

Shipping & Marine (2014), "More than a phase"

Suez Canal Authority, Brief Fiscal year Statistical Report, www.suezcanal.gov.eg

Tiezzi S. (2014), "China's Egypt Opportunity", The Diplomat, http://thediplomat.com/2014/12/chinas-egypt-opportunity/

Wild G.P. (2010), European Cruise Sector Survey Project

World Bank (2014), Connecting to compete. Trade logistics in the global economy, http://www.worldbank.org/content/dam/Worldbank/document/Trade/LPI2014.pdf

World Shipping Council (2014), The Suez Canal - A vital shortcut for global commerce, www.suezcanal.gov.eg

Webliography

www.alphaliner.com
www.academia.edu
www.dailynewsegypt.com
www.gtmglobaltrends.de
www.nationalgeographic.it
www.porttechnology.org
www.telegraph.co.uk
www.theguardian.com
www.sczone.com.eg
www.sea-distance.org
www.srm-med.com
www.suezcanal.gov.eg
www.un.org
www.unctad.org
www.voxeu.org
matisak.wordpress.com
marokko.um.dk
shipandbunker.com

maritime economy