SLOW STEAMING AND SHIPPING PERFORMANCES: HOW A SLOWING DOWN STRATEGY CAN SPEED UP THE SHIPPING MARKET PERFORMANCES

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ABSTRACT

The research focuses on the impact of the shipping practice to decrease the commercial speed, in order to reduce the bunker costs, on the current service patterns and how these patterns could change in the near future. The reduction of the commercial speed, commonly referred to as *slow steaming*, has been introduced to contain the negative effects of the recent economic crisis by cutting navigation costs and reducing at the same time the market supply as well as to assure a more efficient deployment of the fleets. Nowadays, this practice seems to induce a strong effect on the maritime routes and on the port competition, opening new scenarios related to the possibility to differentiate the shipping services with more profitable, fast and direct services between big ports and cheap - but slow - services among the small ports.

The analysis is mainly based on raw data derived from international databases (i.e. Containerisation International and Drewry) and interviews of shipping operators and Port Authorities (PA) with the final goal to draw not only a general model to forecast the possible changes but also the expectations and the possible reactions of the main actors.

This new carriers' strategy could obviously have a great effect on the container sector and in a new type of services' differentiation of the market. Moreover it can also affect the port competition due to a reduction in the total amount of ports called in the long-distance routes. The main results will be connected to the analysis of the possible implications in the service supply as well as in the actors' competition on both the shipping and ports' side.

The paper analyses the main world trade routes and, after depicting the impact in the most important shipping services, it focuses the analysis on the commercial routes between Asia and Europe. The slow steaming can have an effect on the competitiveness

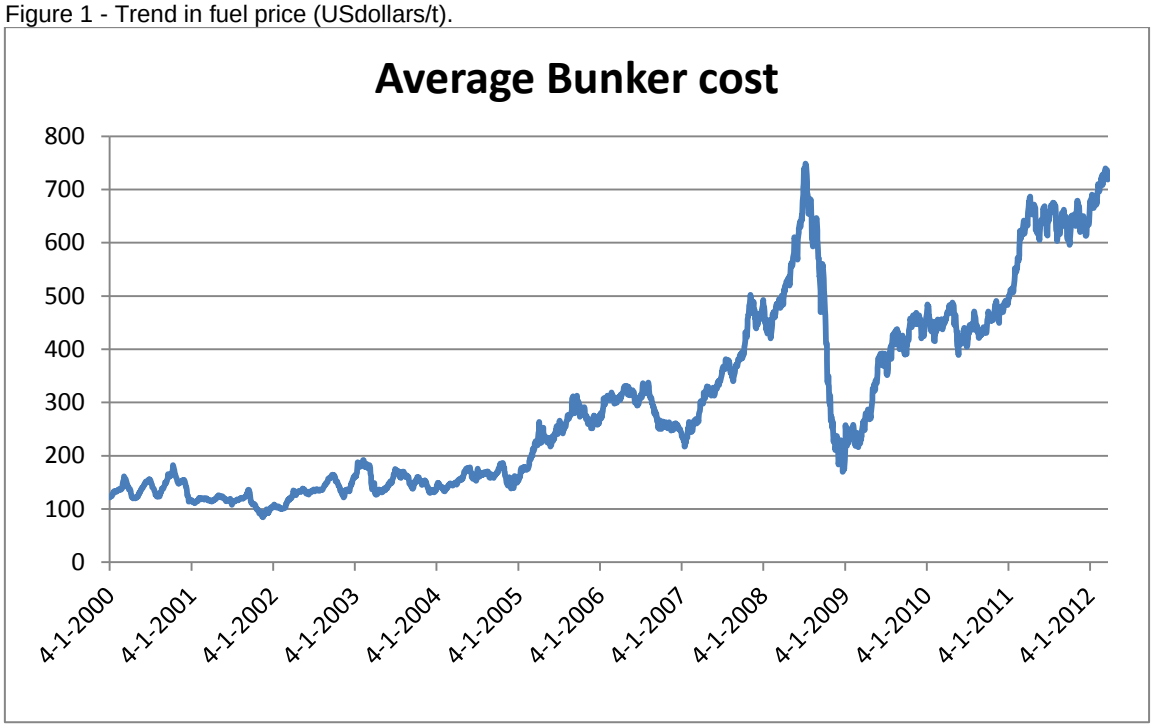
of both carriers and ports and to their possibility to compete in the market. The research will be focused on understanding this implication.
The paper is organized as follows: after a brief introduction (Section 1), Section 2 focuses on the slow steaming development in the shipping industry and unveils why it is seen as an answer of the current shipping criticalities. Section 3 describes the impact of the slow steaming on the service patterns between Asia and Europe and also shows the evolving competitive games among both carriers and ports in these regions. Section 4 reveals the possible reactions of various market players (i.e. shipping operators, Port Authorities), discussing how they could manage possible changes in the shipping service strategies; lastly Section 5 addresses some final remarks and conclusions, also providing indications for further research.

Keywords: Slow steaming, Cost reduction, Shipping networks, Container ports

1. INTRODUCTION

In the recent years the shipping industry has registered a slowing down mainly due to the economic crisis that stopped the fastest growth characterizing the early 2000s. This new landscape had different impacts on the maritime sector because of the complexity of the relations between several areas of the world and of the different impact of different production characteristics on the maritime sectors.
The launching of the new 18,000 TEU ships, the increase of the partnerships of global alliances and the raising of the bunker costs are only some of the issues the shipping industry has to face in the present and in the next future as well (Informare, 2011; UNCTAD, 2010; Imai, 2004; Wijnolst, 1999).
As shown in Figure 1 from the beginning of 2000 the bunker cost has registered a remarkable increase that is still going on. Only exception of the constant growth appears the 2008, right after the economic crisis. Figure 1 has been built using an average value of the bunker costs in three main shipping fuel markets – Singapore, Rotterdam and Malta – and two kind of fuel, the High Sulphur Fuel Oil and the Low Sulphur Fuel Oil.
Currently, the fuel is almost eight times more expensive than ten years ago when the average value in most of the ports was around 130 US$ (Notteboom and Vernimmen, 2008) against a current average value of almost than 800 US$, slightly more than the peak reached in the beginning of 2008, right before the economic crisis.

Figure 1 - Trend in fuel price (USdollars/t).



Source: Authors' elaboration from BunkerWorldIndex, 2012.

The current situation push the shipping companies to find solutions in order to increase their revenues also because at the same time they have registered a reduction of the freight rates mainly connected with the persistence of a low level of demand due to the economic crisis (Drewry, 2011). Moreover, the introduction in the market of always-bigger ships than in the past had the effect of changing the cost structure, helping the companies to rationalize their services and stressing the importance of the load factor in order to make services profitable.

As shown in Table 1, the most important factor in managing bigger ships is the different cost structure that makes the fuel costs as well as the insurance cost more important than in the past[1]. Moreover, the fuel cost appears even more strategic, as it accounts for almost an half of the operational costs of a mega-containership.

Table 1 - Example of the impact of different cost items on the total operative costs, according to the ship size.

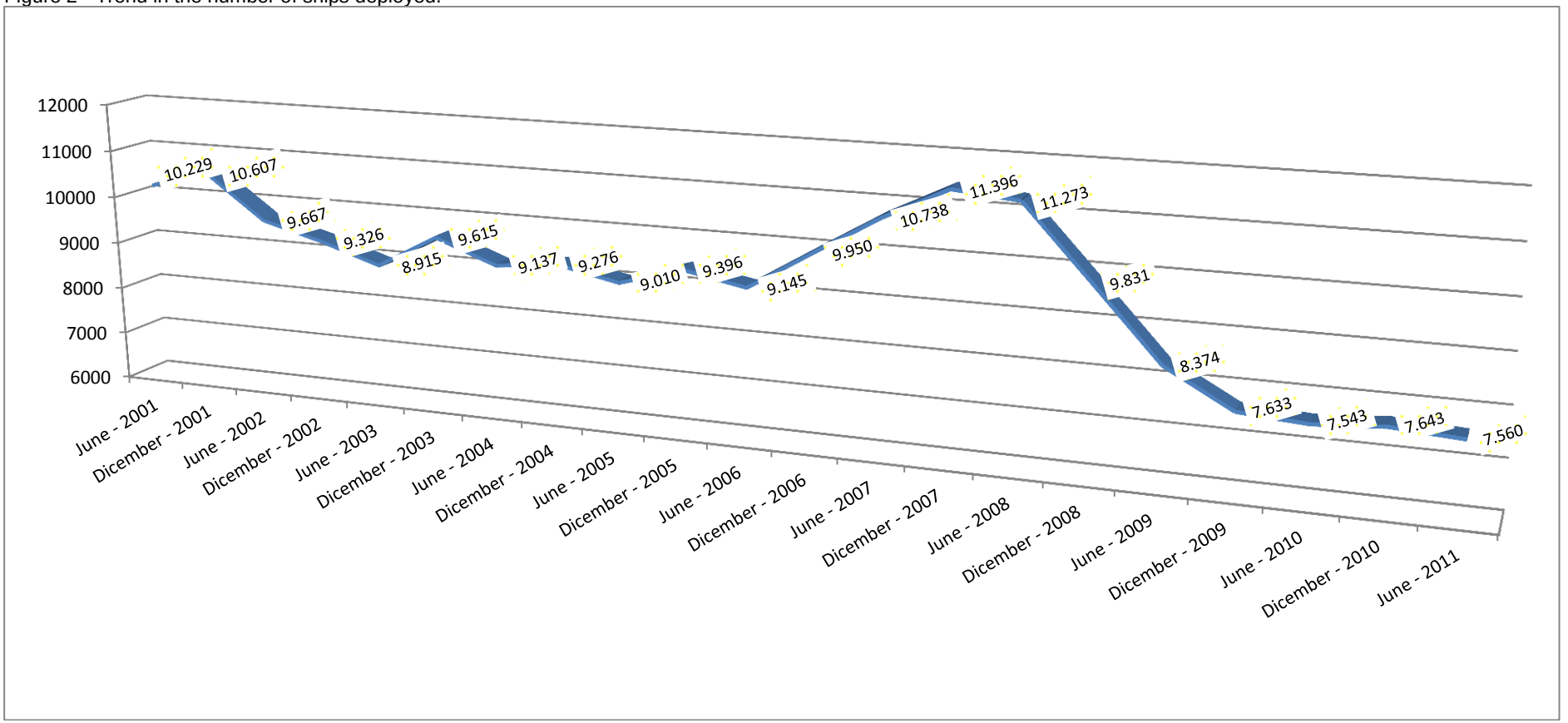
Size (TEU)	**4,000**	**10,000**
Crew	10%	6%
Mantainance	11%	9%
Insurance	9%	13%
Administration	2%	1%
Fuel	41%	45%
Other Operational costs	27%	25%
Total cost	100%	100%

Source: Authors' estimation on Drewry data, 2012.

[1] The impact of fuel costs on the overall average costs may be different from the operational costs. Anyway the overall cost depends on the chartering contracts as well as the capital invested an so it's not so easy to determine a general value. For this reason, only operational costs are presented.

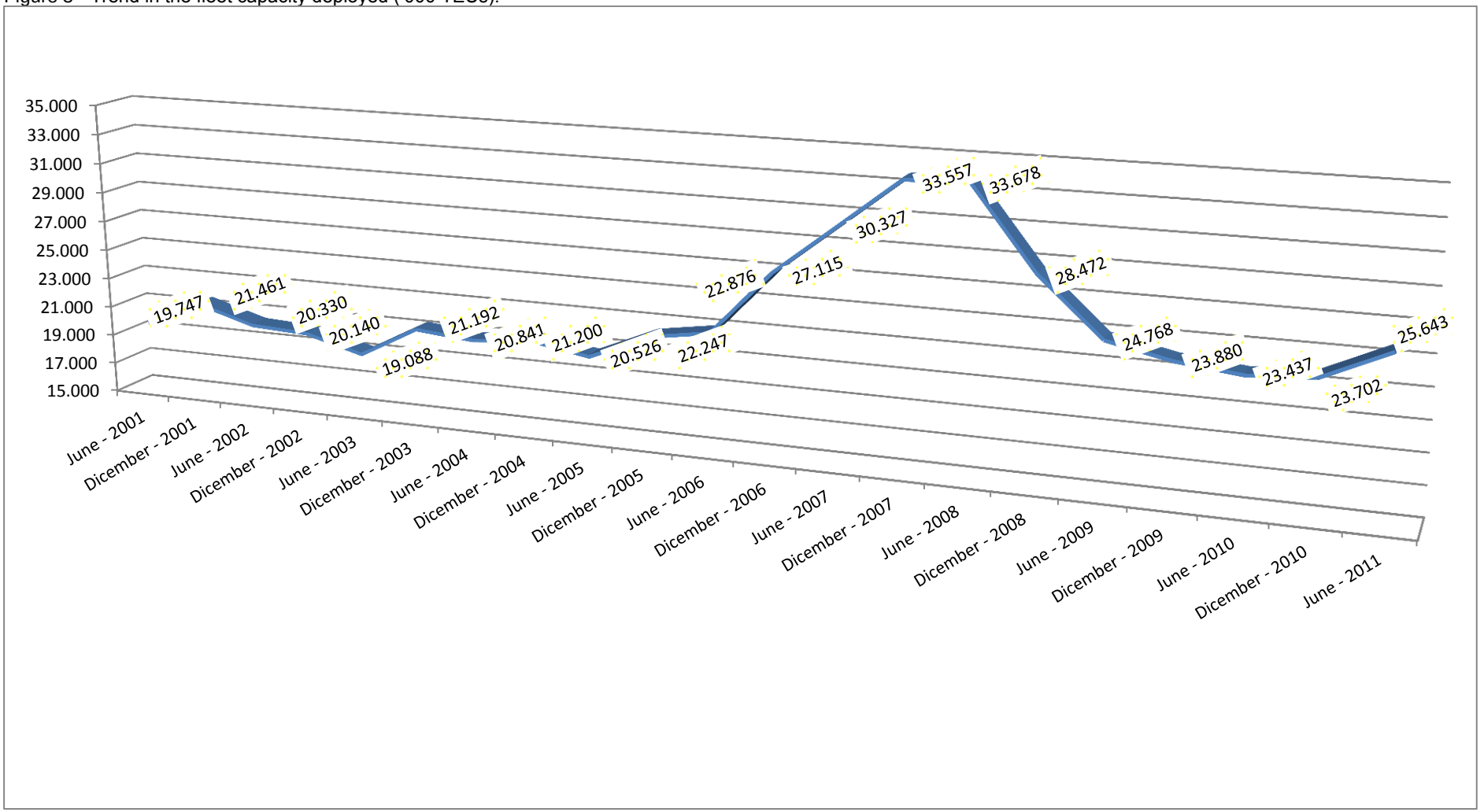
In this scenario characterized by a relevant reduction of freight rates, the most strategic behavior for the shipping companies appears the control of the fuel cost and the rationalization of the organized services.
In this respect, it is worth emphasizing one of the biggest trends in the current market scenario: i.e. the reduction of the number of vessels deployed on the main routes, starting from the early-2000s, so from the period in which the fuel cost started to raise (Informare, 2011; Liu *et al*, 2011).
Different data has been collected from the Containerisation International database and summarized in Figure 2 and 3. The number of ships decreased of more than 25% in the last decade with a little increase during the 2006-2007 period because of a potential expansive economic cycle that incentivized several companies to invest in the maritime sector.
On the other hand, as shown in Figure 3, the total deployed capacity has increased of about the 30% with a maximum point reached in the 2007 of more than 33 million of TEU deployed in the main maritime routes by the carriers.
The fact that at the same time – and for almost a decade – the capacity deployed has increased while the total fleet has decreased demonstrates an establishment of a new service structure that try to use differently a less number of vessels, calling in the same number of ports but in different ways than in the past.
Another important factor connected with the importance of the bunker cost, together with the reduction of the vessels, is the reduction of the vessel speed in order to reduce the fuel consumption and increase the profitability of the liner service. This fact strongly affects the transit time in calling different ports (Notteboom and Cariou, 2011; Zacharioudakis, 2011) as well as the quality of the service provided – as also stated by several journals (e.g. Informare, 2011) – because of the necessary cuts in the port called, preferring only the big ports that can guarantee enough containers to the carriers (Cullinane and Khanna, 2000).
Despite the potentiality of this new strategy, few researches have been developed until now, and only recently studies (Cariou, 2011; Yap *et al*, 2011; Psrafitis and Kontavos, 2010), are mainly connected to some consultant purpose or to the some specific aspect of slow steaming policy without an extended analysis having the aim to underline the possible shipping actors' criticalities and the new market structure. Therefore, the analysis below is mainly based on raw data derived from international databases (e.g. Containerisation International and Drewry) and interviews to shipping operators and PAs, with the final goal to draw the possible changes, expectations and reactions of the main actors involved. The study tends to highlight the potentiality of the application of the slow steaming in the shipping market: due to the few previous studies and the quite recent introduction of this practice, it seems hard to draw a model useful to predict possible future impact of the slow steaming so the aim of this paper is to be a key to the reading the phenomenon in order to allow further analyses and be aware of potential development due to this practice.

Figure 2 - Trend in the number of ships deployed.



Source: Authors' elaboration from Containerisation International data, 2011.

Figure 3 - Trend in the fleet capacity deployed ('000 TEUs).



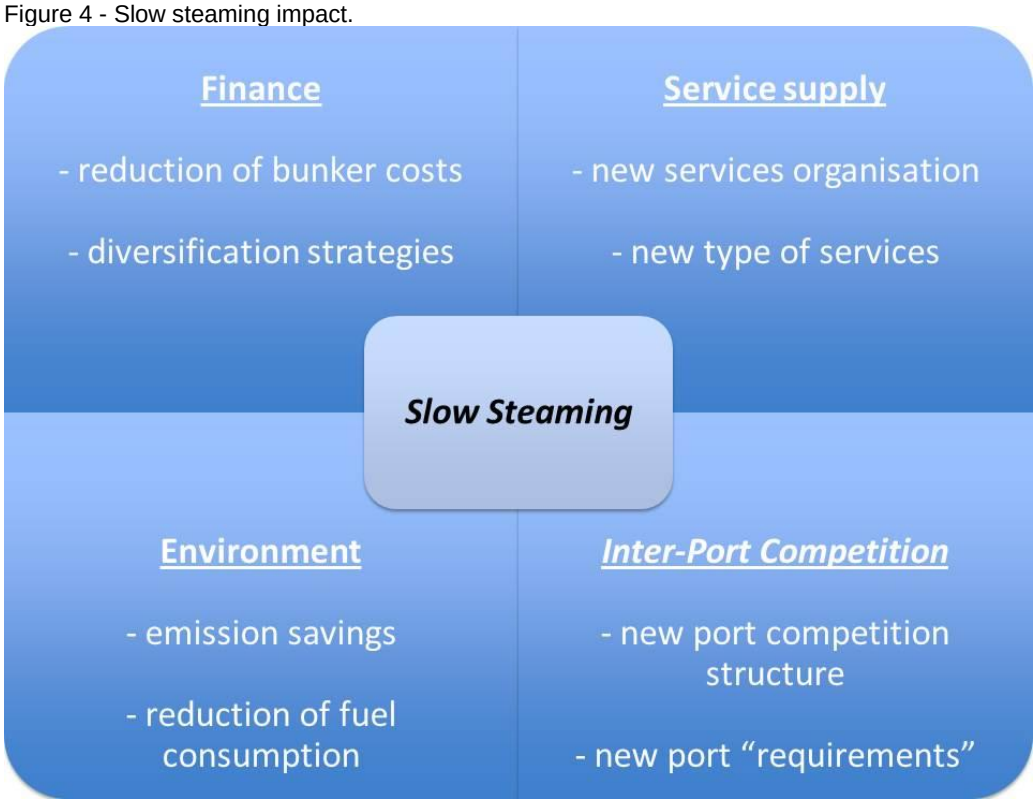
Source: Authors' elaboration from Containerisation International data, 2011.

The paper is organized as follows Section 2 focuses on the introduction of the slow steaming in the shipping industry and unveils why it is seen as an answer of the current shipping criticalities. Section 3 describes the impact of the slow steaming on the service patterns between Asia and Europe and also shows the evolving competitive games among both carriers and ports in these regions. Section 4 reveals the possible reactions of various market players (i.e. shipping operators, Port Authorities), discussing how they could manage possible changes in the shipping service strategies; lastly Section 5 addresses some final remarks and conclusions, also providing indications for further research.

2. SLOW STEAMING: AN ANSWER TO RAISING CHALLENGES

Because of the above-mentioned scenario many firms react slowing down the average speed of vessels, generating a costs reduction and a partial re-designing of the sector.
In fact, this new strategy influences several characteristics of the shipping industry, related to: finance (i), environment (ii), maritime services (iii) and inter-port competition (iv), as shown in Figure 4.

Figure 4 - Slow steaming impact.



Source: Authors' elaboration, 2012.

From a *financial* point of view, slow steaming appears as an immediate and direct answer to the financial problem of profitability, reducing the main operating cost item of a liner shipping

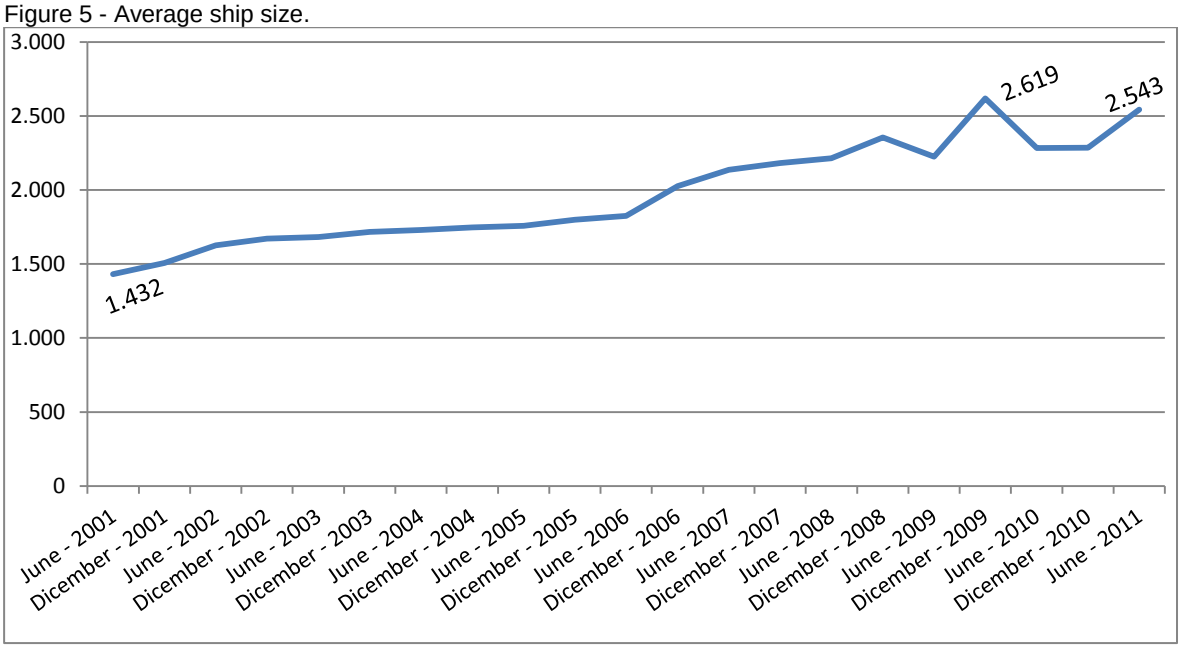
company. According to Drewry (2011), a speed reduction from 26 to 22 knots can impact almost 50% of the bunker cost of a mega-containership and a little bit more on the cost of a 5,000 TEU's ship. This choice drives shipping companies to a better service organization and to a diversification of the services in order to assure the needed load factors to make profitable a mega-containership. This mainly because a decrease of the vessel speed impacts on the transit time, for example making a Shanghai-Rotterdam string almost 20% slower. Moreover, the technical structure of ship engines doesn't allow the companies to go under a certain speed threshold, depending on the technology of the ship, and this may limit the adoption of this policy.

The reduction of the speed, however, also means a decrease of the fuel consumption with an immediate *environmental* benefit. This is basically true but the amount of fuel tonnage saved and the related polluting effects largely vary depending of the ships. Averagely it can be account that a ship used in an inter-continental route could save around the 30% of the previous consumption in case of a 4 knots speed reduction (Drewry, 2011). At the same time, slow steaming is influencing the emission of ports and ships itself because of the reduction of the calling ports and the introduction of new ships that guarantee less emissions than the old ones. It's interesting to notice that some companies, as CMA-CGM, introduced an emission calculator to use the reduction of the speed, and so of the emissions, as a competitive advantage as a company involved in the new green economy solution.

The new *services* structure is affected by the fact that not all the shipping consumers have the same time value and so the new "Hub&Spoke" system that is necessarily applied to guarantee the connection to all the ports of the network with less ships at a lower speed can give them the services that they will. For this reason many companies have started to offer some express services, faster than the normal ones but also much more expensive, as the Maersk line ones in some specific trade routes (Shippingonline, 2012). From the first time in the modern maritime sector this situation allows the operator to sell different services, trying to compete using a differentiation strategy that should assure a competitive advantages to those firms that are able to structure these new services.

Apart from the possible differentiation policy, another interesting impact is the needed change in the called ports because of the different characteristics of the new ships (e.g. the size). As shown in figure 5, the average ship size in the container routes is almost doubled in the last decade with a constant trend, registering few – and only temporary – exceptions and with an even stronger feature in the main liner services, as shown below in paragraph 3. In the same period the maximum average capacity value has grew of more than 3 times, starting from a value of a little bit less than 5,000 TEU in the early '00.

Figure 5 - Average ship size.



Source: Authors' elaboration from Containerisation International data, 2011.

A big increase in the average ship size indirectly means a different service structure as well as more difficulties to call many ports around the world, at least without a reduction in the transit time.

The impact on the container terminals and on the *port competition* is one of the main aspects on third parties of this new strategy. If a carrier has to choose among ports it will surely call at the ones that can guarantee the highest possibility to load containers, mainly because of the need to cover more fixed costs than in the past due to the increasing of the ship size itself. This scenario has immediate consequences on port policies and depending of which type of port is analyzed; it can be possible to draw the possible alternatives:

- transshipment ports should benefit from this situation because of the concentration of the inter-continental services in few ports in which a carrier may establish its regional base;
- medium-small size ports could be damaged by the introduction of the slow steaming because of the absence of the needed demand in their catching area in order to justify the call of big vessels, moreover they could register a possible lack in the infrastructures;
- gateway ports should have good chance to increase their traffic attracting new services only if their catching area and infrastructures allows a remarkable "call size";
- a "new-comer" port should be penalized from this scenario because the high risk connected to possible un-loaded space in the big containerships.

The alternatives introduced above can draw a situation in which the impact of possible emerging ports is reduced than in the past researches (Ferrari et al., 2011) because of the high risk connected with the potential cargoes loadable on the ships. This risk could be enough to reduce the attractiveness of these harbors for a mega-containership although

possible regional transshipment ports could be used, as in the case of North Africa ports for the Europe-Far East trade route. Moreover, even in the existing ports the changes due to this strategy can be huge. If a company decides to establish a new "express" service, it has to choose among ports in order to reduce their number and so giving the fast service not increasing the speed too much but simply choosing a few number of ports. Generally an "express" service is a route offered with a minor transit time than the normal connections. For instance, one of the companies that introduced fast container services – Maersk Line – can guarantee a transit time of one third less than most of the its competitors in the Europe-Far East route, reducing the called ports in comparison of the old services. Of course, this should increase the competition of the ports as well as the requests from the carrier to have efficient services in order to satisfy the consumer's willing, offering reliable and fast maritime connections.
Then slow steaming option provoked a complex mutation within the industry, which should allow the achievement of environmental goals, to both port and shipping operators. Moreover, the biggest changes should affect the container routes supply with an impact on the possibility to attract traffic by different ports as well as to diversify the services from the global carriers.

2.1. Long Run strategy vs Short Run Strategy

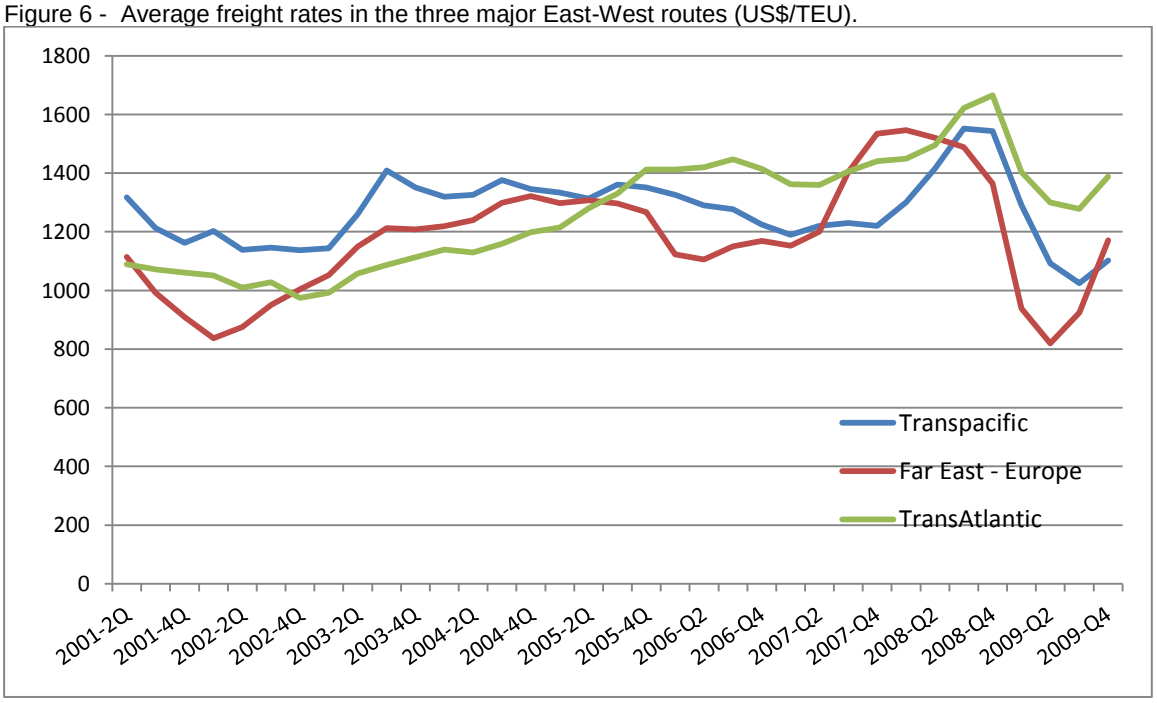
An interesting criticalities concerning the discussion on the impact of the slow steaming on the shipping market is connecting to the possible effects on the long run. Normally, slow steaming is only related to the short run as an easy answer to the economic crisis and the connected contraction of the shipping sector. Several reports (e.g. Drewry, 2011) highlight the fact that the new deployment of the fleet is mainly due to necessity of a rationalization depending on some cyclical considerations, as the overcapacity issue.
Anyway, some general trends can show a possible convenience of the slow steaming also in the long run. First, the increasing of the proportional impact of the bunker cost on the overall operational costs – if the ship size increases, as shown in Table 1 – means that bunker will be always a key factor in the competition as long as the main competitors will go on booking mega-containerships. Due to the relationship between speed and bunker consumption, slow steaming may be a key element in the competition among the biggest carriers also in the future. Second, according to several studies (e.g. Tongzon, 2009; Grosso e Monteiro, 2008; De Langen, 2007; Tongzon and Sawant, 2007) the qualitative aspects of transport services are becoming more important than in the past and now they are competitive factors, in several cases even more important than the pure transport cost factor. According to this feature, the transport reliability will be a really important element to vie in the container sector and the possibility to go to a slower scheduled speed gives to the enterprise more room to prevent possible problems (i.e. delays) in the transport chain and to assure more effectiveness in reaching the final destination. Third, some of the main companies in the shipping market assure the achievement of a balanced average (slow) speed that allows to keep constant maintenance costs (e.g. Laerke, 2012) while in many cases the possibility to have increasing maintenance costs was considered to be the biggest weakness of the slow

steaming practice, at least for an engineering point of view. Moreover, the introduction of slow steaming in the Short Sea Shipping services (SSS) – as argued in some interviews made to Mediterranean SSS companies and PAs (e.g. Grimaldi lines, Genoa Port Authority) – demonstrates as this strategy could be profitable also in the medium distances and not only in the long routes, becoming common also for intra-regional traffic.
The abovementioned considerations seem to highlight the importance of the slow steaming and its potential for the future of the shipping sector, not only as an answer to the crisis but also as a stable competitive tool.

3. POTENTIAL IMPACT ON THE TRADE ROUTES

The general trends go together with the trend into the main commercial routes that even stressed the scenario described above, giving more importance to the slow steaming policy.
The first characteristic is shown in Figure 6, in which the freight rates register a general growth with the exception of the 2008-2009 period. Despite this raise in the tariffs, the registered growth is quite low in comparison with the bunker costs: while in the same period fuel price has grown of more than four times, the tariffs registered a maximum difference of 30% in respect of the starting point while at the end of 2009 they came back almost at the same level of the 2001.

Figure 6 - Average freight rates in the three major East-West routes (US$/TEU).



Source: Authors' elaboration from Containerisation International data, 2011.

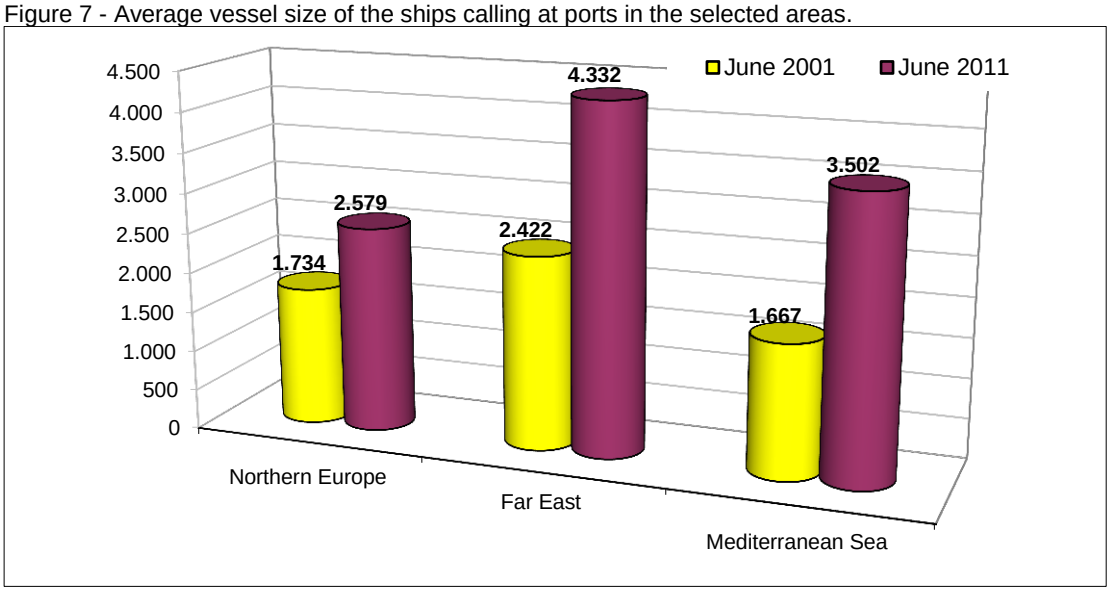
The above figures are even clearer considering the fleet deployment in the two main maritime areas, i.e. Europe (Northern Europe as well as Mediterranean) and Far-East. These

regions are commercially relevant because carriers concentrate there over 58% of the overall container capacity as well as 45% of the total number of ships.

First, the average size of containerships deployed in these areas almost doubled for services connecting Far-Eastern and Mediterranean ports, while it registered a less increase in the Northern Europe (Figure 7).

Interesting is also to note that Far–East/Northern Europe services have doubled the average ship size reaching 8,000 TEUs, being the routes in which are used the biggest vessels. At the same time, the ships used to connect Mediterranean and the Far East have been registered an average size of about 6.200 and they have grown of only 50% in the last decade. In general the trade routes between these three regions registered the highest numbers for capacity deployed and number of ships with the only exception of the transpacific lines.

Figure 7 - Average vessel size of the ships calling at ports in the selected areas.



Source: Authors' elaboration from Containerisation International data, 2011.

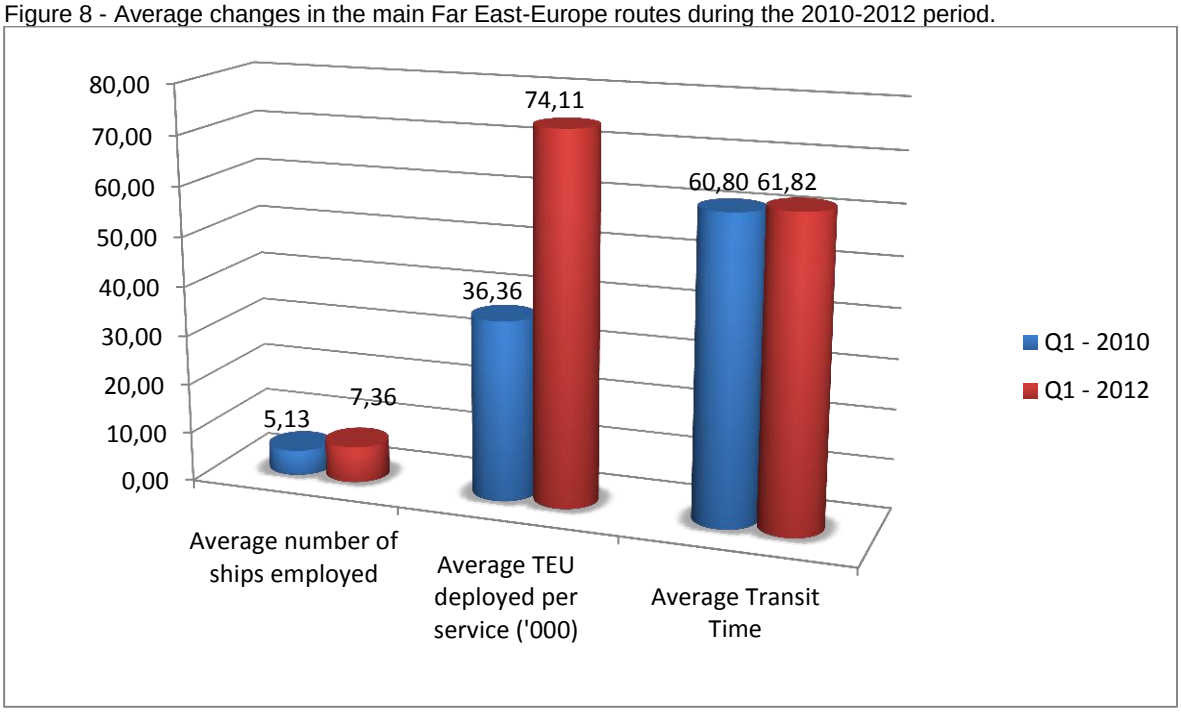
In accordance with Drewry database and with the information of some Port Authorities, at the same time the number of connections between these three areas has been slight reduced but the most important thing is that Europe as whole register a decrease of almost the 15% with a reduction of the ships used to connect Europe to rest of the world of almost 40% of the vessels used a decade ago, against a value of 15% for the services calling in the Far East. It's interesting to notice that in the same period the total capacity deployed in the three areas register an increase of 27% for the Northern Europe, 35% for the Far East and slightly close to 1% for the Mediterranean Sea. The growth in the capacity, together with the reduction of the ships used, is justified by the growth of the ship size and the rationalization of the past services.

Even if the biggest differences cannot be observed by the use of aggregated data, it is worthy to underline the Drewry database data that highlight how global carriers are restructuring their services, mainly in the Far East-West trade. In fact, currently the companies are concentrated the ships in few slower services with a transit time much bigger than in the past, and then they're offering different services, as the EA9 for the Maersk line,

in which they reduce the transit time even of the 10% in order to attract consumers in the peak routes.

Figure 8 resumes some differences in the most important characteristics of the services, underlining how the main companies have drastically changed all the main features of the offered connections between Far-East and Europe. To well understand the figure, it is important to underling that more than 80% of the services registered changes and the majority of the routes were deleted and substituted with other ones. Apart from the huge increase in the average capacity deployed on the single routes, the most important impacts of the slow steaming are the increasing of the transit time – 1 day more on average but with a maximum of 70 days against 63 days 2 years ago – and the growth of the ships used – 2 more ships on average – in order to reduce the slowing down.

Figure 8 - Average changes in the main Far East-Europe routes during the 2010-2012 period.



Source: Authors' elaboration from Containerisation International data, 2012.

This policy has obviously another effect on the structure of the current routes that is the concentration of the services in only some of the main ports. Studying the number of services calling in some European and Mediterranean ports coming from the port of Shanghai, for example, it is interesting to be underlined that the Mediterranean hinterland ports register a slight decrease, even only in the last year, of one/two services (e.g. the port of Genoa and Trieste) while the big Northern European ports were able to catch new services even in an economic crisis period (e.g. the port of Hamburg register an increase of almost the 10% of the services between the end of the 2011 and the beginning of the 2012). Symmetrically to reduce the possible time losses in the port and so another reduction of the overall transit time, the chosen ports should assure high level of efficiency and an adequate demand: these conditions affect the possibility of the entrance of new ports in the networks because of the high risk that new solutions could give to the entire service. This fact appears as really important for the future development of the maxi investments in the port industry, mainly did

in the North Africa countries. Therefore studying the routes between Far East-Europe, in the period 2010-2012, an important feature is that in the routes maintained during the 2 years no new ports have been introduced, despite the presence of several possible ports with high potentiality on the ideal route (e.g. Indian and North African ones).

4. POSSIBLE MARKET EVOLUTION

In the recent past, a discussion started about possible implications of slow steaming in the maritime and shipping market. In general, these studies focus the attention on specific topics as the impact on the formation of the bunker surcharge (e.g. Notteboom and Cariou, 2011; Cariou and Wolff, 2006), on the fleet deployment (e.g. Drewry, 2011), or the environmental impact of the shipping industry (e.g. Faber *et al*, 2012; Ferrari and Tei, 2012).
Until now only few reports merges the new data with the previous researches in order to underline the overall impact on the structure of the maritime services and the possible organizational effects.
The previous sections have underlined a quite clear situation: in the main routes, as the Europe-Far East, the shipping companies are reducing the number of ships deployed and increasing the average capacity of ships. The combination of the fuel cost increase with the slow growth of demand, pushed the companies to slow down the average speed and to redistribute the fleet in order to maintain the same transit time or to drastically reduce the transit time of the less profitable routes. These facts considered together introduce for the future some possible alternatives in the port and shipping market evolution:

- the reduction of the number of ships deployed together with the necessity to guarantee the same transit time pushes the carriers to delete some calls and to cut some services. In general, these are the causes for the creation of more complex networks among the alliance partners. This scenario partially explaines the enforcement of shipping companies' alliance in the end of 2011 (e.g. the CMA-CGM and MSC agreement and the enlargement of some Asiatic alliances). At the same time the carriers may find profitable to differentiate the services through a different service structure (i.e. calling into different ports in the backhauling route) or applying surcharges on the faster services.
- the increase of the average ship size contributes to the selection of the ports called. In particular, excluding, the small ports or those that cannot efficiently serve big container vessels due to physical or infrastructural gaps. This fact creates an increasing of competition among ports and carriers and it pushes the Port Authority to have an increase in the efficiency in order to attract the new services.
- bigger vessels and greater port investments, than in the past, increases the rigidity of the sector in a time in which the financial crisis is not over yet. An answer to the demand-crisis and to the cost-raise could negatively affect the financial stability of many shipping companies – as the Maersk line demonstrates – and it can be turned in a period of reshuffle of the industry.

This scenario draws a particular situation in which opportunities to open new markets are mixed with possible huge threats for either the shipping companies, the ports and the terminal operators.

From the carriers point of view the adoption of slow steaming contributes to reduce the current financial deficit that many companies have accumulated during the past three years. This result is obtained reducing the operating costs (i.e. the fuel component) and also increasing the possibility to attract new demand applying a product differentiation based on the different transit times (different call in respect to other carriers) and speed (normal vs fast services) characterizing each service. At the same time this policy brings new criticalities because it increases the fixed costs (i.e. through a massive use of mega-containership) increasing the level of the break-even point and reducing the possible calling ports due to physical limits or due to the high efficiency needed to the port operations in order to assure the transit time without increasing the cruise speed.

From the port point of view, the adoption of slow steaming and the deployment of bigger vessels determine a demand for investments in port infrastructures and it is at the same time a threat due to the possible cuts in the number of ports called by the ships. This fact could bring the port sector in a new era in which a different hierarchical structure can be introduced and in which big ports (i.e. transshipment ports along the way and big gateway ports at the beginning/end of the route) concentrate a big share of the traffic while the other harbors can have only a small presence in the international services, reducing their relevance in the liner sector. For instance, the relative proportion in the number of international services calling at Trieste and Genoa in respect to those calling at Rotterdam and Hamburg (i.e. one to ten) seems to be a starting point between hinterland ports that cannot catch mega-containership and other European ports that can do it.

This hierarchical structure could also reduce the possibility to new ports to be inserted into the international network, as the North African ones or some new ports facing the Indian Ocean and the Red Sea. Alternatively, the increasing financial rigidity of shipping liners could determine that the major actors will concentrate their efforts on the main routes leaving to the small players to operate on the others. Despite the huge investments foreseen in most ports of developing countries, the carriers could prefer to call at them only using minor services (in terms of capacity deployed).

So it is possible to find several pros and cons to the introduction of slow steaming but the most relevant effects should be a change in the maritime services with an high differentiation of the services – and of the relative freight rates – and consequently a new competitive structure of the ports.

5. CONCLUSION

In order to understand the possible impact of the slow steaming, some different trends have been pointed out. The new services that shipping operators are organizing in order to save on the bunker cost can strongly affect all the port and maritime industry. Even now, that this strategy just started, some differences can be appreciated as the reduction of the services on the main routes, a different disposition of the fleet and a general increase in the ships size. If the trend goes on, in the recent future some big changes in the shipping patterns can be occurred. The most important ones seem to be connected to the port choice and to the service differentiation. The former one is mainly linked to the new service organization that needs fewer calls in big and well-equipped ports that can assure the needed traffic. This situation can lead in a new hierarchical structure of the ports and in different level of competition with less possibility for new ports to come inside the main routes. On the other hand, the slowing down of the services opens new possibility to organize “express” routes in which a company can offer the same connection but with different transit time or compete with the other offering faster solutions. The differentiation of the services can open new possibilities in the shipping market characterized, until now, by only a “standardized product”.
Slow steaming can introduce new competitive patterns in both port and shipping industries but it requires a deep analysis for the consequences that can bring in the sector. The tendency to increase the ship size, for instance, increases the fixed cost of the carrier and, indirectly, of the ports – because the needed infrastructures – reducing the flexibility of the companies in a period of crisis. Therefore, the reduction of the general number of ships can also reduce the possibility for a carrier to quickly change the services’ supply, without affecting all its routes and so reducing the possibility to call in potential new ports. On the other hand the growing of the ship size and the reduction of the possible calls, can be a big threat for the Port Authorities and a new competitive barrier for all the ports that cannot assure a minimum traffic level or that have physical limits on their terminals.
Slow steaming can also have effects on the possibility of new comers of the port sector to be introduced in the main global routes. This fact can obviously have a great influence on the regional trade and development, and it should be considered in the evaluation of the new port investments in several regions (e.g. North Africa).
So even if the slow steaming starting as a solution for the increasing bunker prices, it has several impacts and most of them could be seen as threats for many shipping actors.

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