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An Overview on the Shipbuilding Market in Current Period and Forecast

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Abstract: The work presents the evolution of the shipbuilding market for the period 2002-2017 and the forecast for the period 2018-2035. Following the dynamics of the shipbuilding market in the period under review, in close connection with the world economic growth, the authors highlight the differences in the pre-crisis period of 2008 and beyond. The study provides information on the evolution of the order book, new orders and deliveries pre-and post-crisis, from which resulting their downward in the post-crisis period, especially for the standard ships that face a surplus of ships. The forecast by SEA Europe and other major shipbuilding associations for the period 2018-2035 shows that the ship demand will be rising, although at a relatively low rate. Analyzing the world market shares by country/region for the 2014-2017 period, it result that the Asian countries dominated the standard ship market, while the European shipyards have specialized in high-value vessels.

Keywords: market evolution of the shipbuilding; ship demolitions; market shares of the order book; new orders of the ships; market shares of completions

JEL Classification: D40

1. Introduction

The shipbuilding market is a competitive, global and continually changing market. It is dependent on the global shipping demand, volume of the global maritime trade, its structure and efficiency. In turn, it depends on world economic growth. Both, the shipbuilding market and the maritime transport demand are influenced by the performance of the international markets, being subjected to the permanent changes in the volume of the maritime trade (Rusu, 2011). This gives a cyclical character to the shipbuilding market. The ship demand increases during the economic growth and drops during the recession.

In order to obtain shipbuilding contracts, the shipyards must be competitive. The competitiveness of the shipyards is their ability to win and execute ship orders in an open competition (Gasparotti, 2014). The competitive position is given by the ship's cost of the production (including labor costs), labor productivity, innovation, world market share, production and ship type (Gasparotti, 2016).

In order to maintain on the unstable ship market, the shipyards must be sufficiently flexible and responsive to a wide range of vessels to ensure greater safety in the use of the production capacity and labor. Projects of this type require experience, more innovation, technology and specialization, ability to build large, sophisticated, safe and environmentally friendly ships (Study on Competitiveness of the European Shipbuilding Industry Within the Framework Contract of Sectoral Competitiveness Studies – ENTR/06/054 Final report, 2009).

The shipbuilding market is dominated by Asian countries, China, South Korea and Japan. Along with these, the European shipyards are an important factor (Gasparotti, 2016).

The work aims to present the dynamics of the shipbuilding market during the period 2002-2017, in relation to the world economic growth, highlighting the differences before the economic crisis in 2008 and afterwards. It is also shown the market dynamics for the main ship types and the world market

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shares by country/region over 2014-2017, showing the share of different countries/regions in the shipbuilding market.

The study is based on information obtained from several data sources.

2. Literature Review

According to (Stopford, 1997), the shipbuilding market is a component of the global shipping market, along with the freight transport market for which the ships are leased and where the freight price (shipping cost) is established, the second-hand ship market and demolitions ship market, dealing with ship cuts and scrapping at the end of their useful economic life.

Wijnolst and Wergeland (1996), referring to the maritime markets, considers the shipbuilding market alongside the demolitions ship market and spot freight market as "real" markets, while the second-hand ship market and the market for timecharters "auxiliary markets", admitting that the latter does not influence the total supply of transport (Wijnolst, 1996).

Since the same shipowners operate in all the markets of the maritime market, the dynamics of these markets is closely correlated: when the shipowner's revenue from arising from the freight traffic on the freight market rise or fall, the change is also felt on the other markets, the second-hand market , the market for new shipbuilding.

The shipping rate, influenced mainly by the world economic growth, has a determined influence on the investment decisions. According to (Volk, 1984), the most investments in the vessel field are related to the high transport rate.

A high transport rate and a high demand for the transport services increase the revenue of the shipping companies/shipowners and they start to invest in the shipbuilding market, to order new ships, often more larger and efficient ships with which they can provide better services and at a lower cost, so it can become more competitive on the ship's market (Knapp, 2008).

A low shipping rate in the maritime transport cycle negatively influences the investment decisions, ie smaller orders for the new ships, but it also influences the maritime and administrative policy (Iwamoto, 2015).

Shipowners with insufficient earnings to maintain their ships and crews reduce the operating costs for ship and crew maintenance, thereby compromising the maritime safety or selling their vessels on the second-hand ship market, and the old ships with no buying deals are dismantled (Hoberg, 2010).

Thus, the fluctuations in freight revenue make the ship market a cyclical market, with periods of ship demand growth alternating with periods of decline.

3. Ship Demand and the World Economy

Demand for new ships is influenced by a multitude of factors.

According to a survey by SAJ (Shipbuiders' Associations of Japan) on the ship demand forecast, the main factors influencing its evolution are (Iwamoto, 2015):

- evolution of the world economy;

- evolution of the world energy consumption;

- changes in the average shipping distance;

- increasing of the fleet productivity as a result of the use of faster and/or larger vessels;

- ship demolitions.

In the forecast for the new shipbuilding requirements corresponding to the period 2018-2035, SEA Europe takes into account the macroeconomic forecasts, referring to the evolution of the world economy and production, energy consumption, age and level of the fleet demolitions, as well as the technological progress and the IMO (International Maritime Organization) regulations on environmental protection by ships (2014); (2017).

The greatest influence on the ship demand has the world economy. Over the time, there was a close relationship between the evolution of the world economy, generally appreciated on the basis of the value of GDP (Gross domestic product), and the volume of the maritime trade, on which the demand for transport depends, respectively the demand for ships.

In the recent years there has been a weaker relationship between GDP growth and the demand for maritime transport, a situation determined by a number of factors that redefine maritime trade patterns (Market Forecast Report, 2017; Newbuilding Requirements 2017-2035 | SEA Market Forecast WG, 2017). At the same time, the evolution of the world economy continues to be the main factor that influence the maritime trade flows.

In the last decades, the world economy has experienced a continuous evolution, so that since 1995 up to the present days, the world GDP has doubled (Jakobsen, 2017). This increase was interrupted at various intervals by recessions of different sizes (caused by the oil crisis 1979, the financial crisis 1989-1992, and the Asia crisis 1997, the "Dot. Com" 2001, and the economic crisis 2008), the largest of which was in 2008. After this the world economy returned slowly, reaching 2.2% in 2012, and 2.5% in 2014 and 2015 by year (United Nations Conference on Trade and Development –UNCTAD-Review of maritime 2016). In 2016, the International Monetary Fund (FMI) appreciates a 3.2% GDP growth (UNCTAD Review of maritime transport, 2016), and a 3.4% growth in 2017 (Lloyd's List Intelligence Shipbuilding Outlook Sample Report, 2016).

The economic growth was generated mainly by the Asian economies, especially China and Japan, and also due to the US and the advanced economies. In 2012, China's economy accounted for 80% of East Asia's GDP and the Pacific region. Besides China, India has had an important GDP growth rate, much higher than the developed countries. During this time, the euro area was uncertain due to the sovereign debt crisis (DNV Report Shipping, 2020).

In the period 2013-2015, the highest growth rates were recorded in the developing countries, with an average of 4.3% per year, of which China by 7.3% and India by 6.8%. The economically developed countries had an average increase of 1.6% per year, of which US 2.2%, EU 1.6%, and Japan 0.6% per year. In the transition economies, after a modest growth in the period 2013-2014 (1.45% per year), GDP fell by 2.8% in 2015 due to the recession in the Russian Federation and Ukraine (UNCTAD Review of maritime transport, 2016).

The projections for the world economic growth, for the period 2017-2035, show that, it will continue, but at a moderate pace (fig. 1) (Market Forecast Report, 2017; Newbuilding Requirements 2017-2035 | SEA Market Forecast WG, 2017).

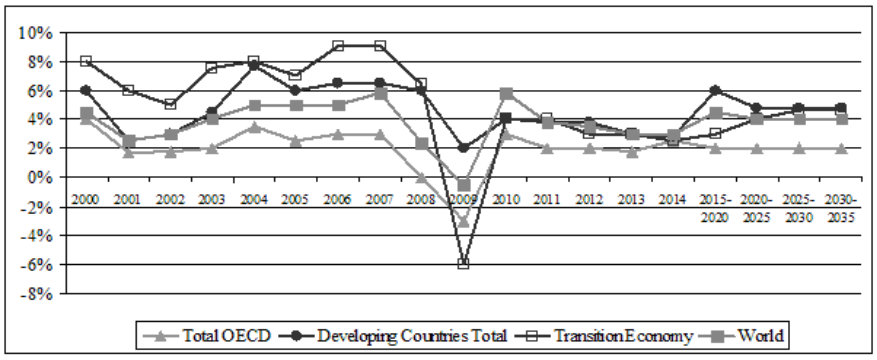

Figure 1. GDP Development (Market Forecast Report. (2014). Newbuilding Requirements 2014-2035 | SEA Market Forecast WG , 2014)

However, the world economy is expected almost to double by 2035 (Market Forecast Report. (2014). Newbuilding Requirements 2014-2035 | SEA Market Forecast WG , 2014). The forecast is based on the oil price uncertainty, the US financial situation, and the growth and recovery prospects of the euro area. In addition, in the most developing countries the economic growth has slowed down and the UK, one of the pillars of the European economy, has left the EU. There are positive expectations from India, whose population is very young, which could increase its purchasing power, as well as from the growing population of Africa and South America (2014); (2017).

In 2030, it is projected that China will have the largest contribution to GDP (28%), followed by the US (15%), while Japan will participate by 4% (Braat, 2014).

The world seaborne trade has increased fourfold (Jakobsen, 2017) between 1995 and the present, but the growth rate after 2011 is continuously decreasing, from 2.6% in 2013 to 2.3% in 2014 and 1.4% in 2015 and 2016 (UNCTAD Review of maritime transport, 2016). Although the global seaborne trade has a lower growth rate than the historical average, it is expected in the long-term, that the growth rate will be higher.

4. The World Shipbuilding Market. Actual

Shipbuilding and maritime transport are the main components of the maritime industry, both being directly dependent on the performance of the international markets. Due to the cyclical nature of shipping, the relationship between the demand for shipping and the demand for the new ships is fluctuating (the relationship between the demand for shipping and shipbuilding is balanced) (DNV Report Shipping, 2020).

After the economic crisis of 2008, the shipbuilding is in a prolonged crisis characterized by an oversupply of ships. This overlaps with a low level of the global economic growth, which has negatively influenced the demand for the new ships and the balancing of the supply-demand balance.

Especially after 2000, the rapid development of the Asian economies and globalization has led to increase the demand for the raw materials and goods. These have generated an increase in the demand for shipping and, consequently, by the ship demand. As a result, the contracting of a high unprecedented tonnage has been placed (289,5 million CGTs (Compensated Gross Tonnes) in 2002-2007 periods).

The global crisis since 2008 has had as a consequence a drastic decline in the global economy and the maritime trade, and therefore in ship demand, and so there has been a substantial oversupply of ships that the market has been unable to absorb. Since 2008, the ship demand has dropped dramatically, especially in 2009 (at 16,55 million CGTs). Since 2010, the world economy and the maritime trade have recovered, being in rising, although with a moderate rate, the ship demand has increased in the period 2010-2012, and especially in 2013-2014. The increase in the ship orders in 2013-2014, compared to previous years (2010-2012) was aimed mainly to replace the existing ships with more efficient vessels. But, the decrease of the transport costs, due to low oil prices has not encouraged the ship owners to continue investing in more fuel efficient vessels, so in the years to come the ship orders have decreased (SEA Europe Shipbuilding Market Monitoring Report No.42, March, 2017). After orders of 45,592 million CGT in 2014, they have dropped to 39,354 million CGT in 2015, and to 10,689 million CGT in 2016, with 72.8% less than in 2015, reaching the lowest level since 1980 (SEA Europe Shipbuilding Market Monitoring Report No.30, April, 2015); (SEA Europe Shipbuilding Market Monitoring Report No.40, April, 2016); (SEA Europe Shipbuilding Market Monitoring Report No.42, March, 2017). The decreasing of the ship orders has occurred due to decreasing the demand for tankers, container ships and bulks (UNCTAD Review of maritime transport, 2016). In 2017, the volume of new ship orders increases to 20,206 million cgt, almost double from 2016 (by 89%).

Order book in 2008 reached a tonnage of 194,16 million CGT, and over declining in the following four years, reached 92,3 million CGT at the end of 2012. A return has taken place for the first time since the economic crisis, for three consecutive years, 2013, 2014 and 2015, when the order book has stopped its downward trend and increased reaching at the end of 2015, a tonnage of 109,69 million CGT. The decrease in the new orders in 2016 led to a decrease in the global order book, reached 5065 ships and 89,2 million CGT, with 18.7% less than 2015, in terms of CGT, and by 16% as the number of ships, in 2017, the orderbook continues to decline reaching 82,764 mil. cgt, being at one of the lowest levels in the recent years. Given the situation in the recent years, we have to admit that it takes time for a resumption of a new naval construction cycle. According to Lloyd's List Intelligence, the crisis in the shipbuilding will continue in 2018 (Lloyd's List at SMM, 2016).

The annual ships deliveries in the period 2008-2015 in average 43,56 million CGT and reached a peak of 51,573 million CGT in 2010 and then declined steadily to 35,336 million CGT in 2016 (SEA Europe Shipbuilding Market Monitoring Report No.42, March, 2017).

The evolution of the order book, new orders and ship deliveries in the period 2002-2017 is shown in Figure 2.

The changing of the ship structure demand involves factors such as: developing the new transport technologies, increasing the size of the ships and their speed, comply with the international regulations on shipbuilding and operation, as well as those related to the environmental protection, (Gasparotti, 2013; 2016).

Figure 2. World commercial shipbuilding, 2002-2016 (SEA Europe Shipbuilding Market Monitoring Report No.41, 2016)

The world order book, compared to their peak values from 2008 and 2009, in 2015-2016 the order book for the container ships declined by 53%, for oil tankers by 55%, for dry bulk carriers by 55% and for general cargo vessels by 79% and continues to decline in 2017 (Stopford, 2017).

Ships demolitions depends on the conditions of the shipping market, the type and age of the ship and the existing regulations, and the demand on the ship demolitions market depends directly on the steel price and the cost of the demolitions operations (Annual Review. Shipping and Shipbuilding Markets, 2017).

Based on the dynamics of ship demolitions, it is noticeable that they are in the period 2004-2007 under 8 million DWT. This drop in volume of the ship demolitions is linked to the rise in steel price, mainly in China, which in 2000-2006 tripled its annual steel consumption, which led to rising the ship prices including those of second-hand. As a consequence, the ship-owners have reduced their volume of demolitions ships, opting to prolong the use of the old shipping vessels (Knapp, 2008).

After that, the demolitions are activated, reaching a record in 2012 (59,5 million DWT). In the first half of 2016, the volume of demolitions increased by 21% compared to 2015, from 35,9 million DWT to 43,4 million DWT (fig. 3) (Shipping Statistics and Market Review 2016, Volume 60 - No. 9/10, 2016).

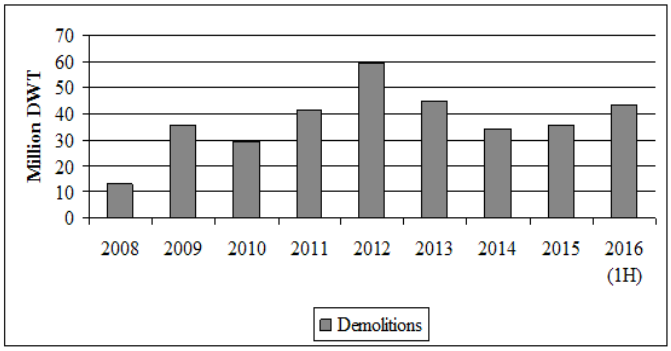

Figure 3 Evolution of the ship demolitions, 2008-2016 (1H) (Shipping Statistics and Market Review 2016, Volume 60 - No. 9/10, 2016)

If we refer to the type of the demolitions ships, starting from 2011 to the present, the market for the ship demolitions is dominated by the bulk carriers. In 2015, the demolitions of the bulk carrier ships accounted for 75% of the total volume (Safety and Shipping Review, 2017). The average age of this segment is high, about 24 years. A large volume of demolitions has had the container vessels, about 10%. Most demolitions in 2015 took place in Asia, 95% of all demolitions, in countries such as Bangladesh, China, India and Pakistan (UNCTAD Review of maritime transport, 2016). In 2016, the bulk demolitions accounted for 69% of the total, followed by container ships by 20% (Lloyd's List at SMM, 2016).

5. The World Shipbuilding Market. Forecast

SEA Europe's forecasts for the demand of the new ships in the 2018-2035 horizons closely linked to the evolution of the global economy show that the demand is on the rise but at a relatively low rate (Market Forecast Report, 2017). The forecasts are affected by the geopolitical situation, the uncertainty of the increase in maritime trade, the global economic uncertainty, the introduction of the technological progress and the environmental protection regulations (Gasparotti, 2013).

It is expected that the ship demand, in the future, will be higher than that predicted on the basis of the economic growth, due to the increasing demand for more sophisticated, larger, safer and faster ships. Also, the compliance with the framework regulations may be a source of demand for new ships. These regulations, especially those related to the environmental protection and energy efficiency (reducing the greenhouse gas emissions, ballast water treatment, using efficient fuels) can be, as promised by SEA Europe, a promising potential for the conversion and modernization of the existing fleet. However, considering that the world's maritime fleet is facing with an oversupply in many segments, SEA Europe forecasts that demand for the new ships is heading for growth rates lower than the historical ones (the lowest annual rate in the last 30 years) (Market Forecast Report, 2017; Newbuilding Requirements 2017-2035|SEA Market Forecast WG, 2017).

The major shipbuilders' associations CANSI (Chinese Association of National Shipbuilding Industry), CESA (Community of European Shipyards Associations), KOSHIPA (Korea Offshore & Shipbuilding Association) and SAJ predict the evolution of the international shipbuilding in a different way (Table 1).

Table 1. International shipbuilding forecast

Comparisons regarding the new shipbuilding requirements forecasted by different associations (Million GTs- Gross Ton)				
	CANSI	CESA	KOSHIPA	SAJ
2009-2020	56,4	54,3	59	54
2020-2025	72,5	63,5	67,1	53,5
2025-2030	71,4	78,8	81	61,4
2009-2030	64,2	63,7	66	55,7

Compared to the period 2009-2020, for the next 5 years (2020-2025), CANSI, for the shipbuilding, forecasts the highest growth, with an average of 3,22 million GTs per year, while the SAJ sees a slight decrease, of 0,1 million GTs per year.

For the period 2025-2030, compared to 2020-2025, of the four shipbuilders' associations, three of them see an increase, but with different rates. The largest increase is projected by CESA (3,06 million GTs per year) and the lowest of SAJ (1,58 million GTs per year), while CANSI predicts a slight decrease (0,22 million GTs per year) (Braat, 2014).

The deliveries of the new ships, over the next five years, are estimated to be considerably lower than those of the past five years. (Lloyd's List Intelligence Shipbuilding Outlook Sample Report, 2016).

6. Shipbuilding Market Segments by Ship Type

6.1. The Shipbuilding Market for Bulk Carriers

The bulk carrier segment faces with the ship oversupply, despite the drop, in the present, of the new orders and the rise of bulk carriers demolitions.

After the strongest order of activity in the years after the crisis, starting in 2011, with the exception of 2013, the new orders dropped to 6,0 million CGTs in 2015, accounting for about 70% of the new orders in 2011 (of 8,6 million CGTs) and only 40 % compared to 14,93 million CGTs in 2014. In 2016, the orders continue to fall, when 50 ships have been ordered with a total of 1,550 million CGTs but grow slightly in 2017 to 174 vessels with a tonnage of 3,963 CGT (SEA Europe Shipbuilding Market Monitoring Report No.42, March, 2017). In 2014-2017 the bulk order book declined by 53% in terms of CGT.

Deliveries in 2014 and 2015 were in average 630 bulk carriers per year, about 11,5 million CGTs per year, almost half compared to 2010-2012 when an average of 1100 bulk carriers was delivered per year. In 2016 and 2017 the deliveries continue to decline, being of 574 ships (10,96 million CGTs) in 2016 and 458 ships (8,732 million CGTs) in 2017. (Figure 4) (SEA Europe Shipbuilding Market Monitoring Report No.30, April, 2015); (SEA Europe Shipbuilding Market Monitoring Report No.40, April, 2016); (SEA Europe Shipbuilding Market Monitoring Report No.42, March, 2017).

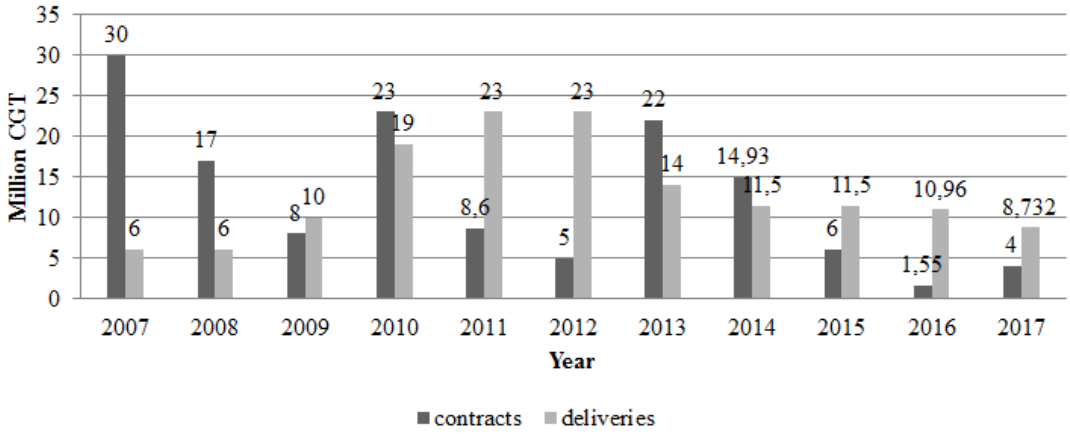

Figure 4. Bulk carriers: New orders and deliveries 2007-2016 (Shipping Statistics and Market Review 2016, Volume 60 - No. 9/10, 2016)

For the future, it is predicted that the ships surplus from the bulk carrier sector will remain the same the next few years, due to the reduced demand for dry cargo transport on the sea. The slow increase in the trade of dry goods is due to the uncertainty of China's imports, the low growth of heavy industry in the rest of the world and the restrictions on coal quality, given the environmental protection (2017).

It is predicted that the trade of grain and minor bulks to increase in line with the development of the emerging economies and the increase of the global population (2014).

It is anticipated that starting with 2020, the demand for the new bulks will increase as a result of the drastic reduction of the fleet due to the demolitions and the possible cyclical factor of the increasing demand for transport (Market Forecast Report, 2017; Newbuilding Requirements 2017-2035|SEA Market Forecast WG, 2017).

6.2. The Shipbuilding Market for General Cargo Ships

After a long-lived decline, the general cargo fleet had a recovery from 92 million DWTs in 2005, to 109 million DWTs in 2009 and 2010, but dropped to 75 million DWTs in 2015 and 2016, a decrease of 32% and the highest since 1980.

With the reduction in the general cargo fleet, its composition has also changed to cargo ships for short distances of less than 10,000 DWTs, so that by 1 January 2016, more than 80% of the active general cargo fleet consisted of smaller ships of 10,000 DWTs, in terms of number of ships (Market Forecast Report, 2017; Newbuilding Requirements 2017-2035|SEA Market Forecast WG, 2017).

New orders in 2011 for general cargo vessels decreased by 46% compared to 2010 (Shipping statistics) and the down trend continued in the coming years, reaching at 46 new ships ordered (0,238 million CGTs) in 2016, which represents 27.5% compared to 2015 (0,867 million CGTs) and 19% compared with 2014 (1,233 million CGTs) and has some growth in 2017 (0,366 million CGTs). (Shipping Statistics and Market Review 2016, Volume 60 - No. 9/10, 2016).

The reduction in new orders for this segment of ships in the recent years was due to stagnation of the short sea shipping, the lack of funding from ship owners and the lack of the availability of banks to finance the new shipbuilding.

At the end of 2016, the order book for general cargo had 296 vessels (2,4 million CGTs), representing 87% of the order book from 2015 (2,745 million CGTs) and 84% compared to 2014 (2,849 million CGTs) continue to fall slightly in 2017 at 2,215 million CGTs.

The deliveries of the general cargo ships dropped strongly during the period 2011-2013 reaching a volume of 2,09 million CGTs, which accounts for less than 47% of 2010 deliveries. Between 2014 and 2016, the deliveries remained approximately constant, with an average of 171 vessels and 1,12 million CGTs per year.

After deliveries of about 1,047 million CGTs in 2017, it is expected that in 2018 they will represent only 476,000 CGT, and in the period 2021-2025 to grow to 74 vessels per year with 616,000 CGTs per year.

There is a significant over capacity in the general cargo fleet, and the new orders are currently at a very low level. In perspective, for the period 2017-2020, SEA Europe estimates a relatively moderate demand of 177 vessels per year with 1,039 million CGTs per year. It is possible, given the significant potential for demolition the existing fleet, the tendency to build more efficient vessels and the pressures on introducing the new environmental regulations that in the period 2018-2020 to produce an increase of the new orders.

For the period 2021-2025, it is forecast that the demand for the new ships will be on average 1,73 million CGTs per year (Market Forecast Report, 2017; Newbuilding Requirements 2017-2035 | SEA Market Forecast WG, 2017). On the long-term, it expects that the global cargo fleet to have downward trend.

6.3. The Shipbuilding Market for Tankers

After a record increase of the new orders in 2006 for the liquid tankers by 77,6 million DWTs, in the period 2009-2012 they dramatically dropped to about 15 million DWTs per year, then the new orders

increased significantly in the period 2013-2015, although not continuous, on average at about 38 million DWTs per year, especially for the crude oil tankers (Annual Review. Shipping and Shipbuilding Markets, 2017).

In 2016, however, the tanker market dropped drastically, especially crude oil tankers, with only 159 tankers (7,75 million DWTs) commanded, far below orders contracted by 495 tankers (49,3 million DWTs) in 2015, but they rise again in 2017 to 26,675 million DWT (264 tanks).

The order book comprised 69,252 million DWT in 2014, rises to 97,442 million DWT in 2015, then stabilizes for the next two years to an average of 75.5 million DWT/year (SEA Europe Shipbuilding Market Monitoring Report No.30, April, 2015).

Tanker deliveries, after record values reached in 2009, are sharply declining in the period 2010-2013, after which they grow in the next year by touching in 2016 a volume of 33,2 million DWTs (425 tankers) in 2016, about 42% more, in DWT terms, as opposed to 2015 (19,342 million DWT and 336 tankers) and 38,298 million DWT in 2017. (Shipping Statistics and Market Review 2016, Volume 60 - No. 9/10, 2016).

The fleet of oil tankers has risen by about 5% per year, over the past decade, higher than the increase of oil trade volume, which has led to an over capacity of the fleet. Because of this over capacity, it is predicted that by 2035, the tanker fleet will grow slower than the oil trade by sea in the period 2015-2035, according to SEA Europe, the requirement for the new oil tankers will be in average of 250 units per year (7,8 million CGTs per year).

In the medium term, in the period 2017-2021, the demand for chemical tankers/petroleum products will be between 10000-60000 DWT that means around 75 units per year.

*LNG (*Liquefied natural gas tankers*) and LPG (*Liquefied petroleum gas tankers*) Market*

The demand for the gas tankers, LNG and LPG increased significantly in the period 2001-2014, but as of 2015, as a result of the fall in gas and oil prices that has led to a reduction of the transport price, the demand for these vessels has dropped dramatically. Thus, if 176 LNG and LPG tankers (8,06 million CGTs) were contracted in 2014, they dropped to 101 units (4,05 million CGTs) in 2015 and to 21 units (0,664 million CGTs) in 2016 (Market Forecast Report, 2017). In 2017 there is some increase in new orders to 1,597 million CGTs.

At the same time, the order book for gas tankers fell from 378 vessels (16,7 million CGTs) in 2014 to 261 vessels (13,1 million CGTs) in 2016, and at 195 ships (10,9 million CGTs) in 2017, while the deliveries increased from 83 units (3,2 million CGTs) in 2014 to 123 units (4,5 million CGTs) in 2016 and to 105 units (3,66 million CGTs) in 2017. (SEA Europe Shipbuilding Market Monitoring Report No.30, April, 2015); (SEA Europe Shipbuilding Market Monitoring Report No.40, April, 2016); (SEA Europe Shipbuilding Market Monitoring Report No.42, March, 2017); (SEA Europe Shipbuilding Market Monitoring Report No 44 (March 2018) full year 2017, 2018).

The very large demand for new LNG and LPG tankers between 2001 and 2014 has created a fleet over capacity. Against this background of over capacity, SEA Europe predicts an increase in the fleet of LNG tankers at a rate of 0.9% per year, in DWT terms, representing an average of 15 units per year, with 1,2 million DWTs per year (0,7 million CGTs per year).

Figure 5 shows the evolution of the new orders and deliveries for all types of tankers in the period 2007- 2017.

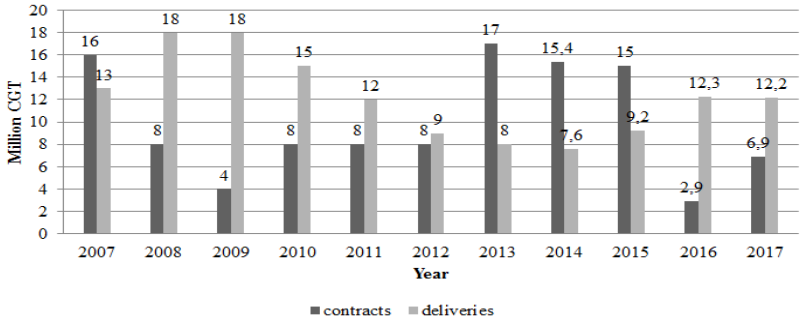

Figure 5. All tanks: New orders and deliveries 2007-2017 (Shipping Statistics and Market Review 2016, Volume 60 - No. 9/10, 2016)

6.4. The Shipbuilding Market for Container Ships

In the first years after 2000, the demand for the new container ships was high. This demand has been driven by the globalization, increasing of the world trade, but also because these ships are more flexible and cost-effective compared to the other types of ships. In the years of the crisis, the period 2008-2009, however, the new orders for the container ships dropped dramatically, from 525 ships contracted in 2007, to only 23 new orders in 2009, after which the new orders increase to 117 vessels (3,6 million CGTs) in 2010 and 222 vessels (8,6 million CGTs) in 2011. There will be a further drop in the container ship demand in 2012 (2,3 million CGTs), after which the demand is rising considerably in 2013 to 273 vessels (9,54 million CGTs). In the years ahead, the orders for the new ships were lower than 2013, but they remained fairly important, in 2015 (265 vessels and 10,475 million CGTs), being the second best level since 2007. The new orders for 69 ships (1,467 million CGTs) were reported for 2016, very little, only 14% compared to 2015, and in 2017 a total of 151 vessels (5,571 million CGT) increased compared to the previous year (Table 2).

Table 2. New container ship orders during 2014- 2017 (Shipping Statistics and Market Review 2016, Volume 60 - No. 9/10, 2016); (SEA Europe Shipbuilding Market Monitoring Report No 44 (March 2018) full year 2017, 2018)

Ship type	2014		2015		2016		2017	
	No	1000 CGT	No	1000 CGT	No	1000 CGT	No	1000 CGT
Container ship	158	5,724	265	10,475	69	1,467	151	5,571

The deliveries of the container ships, after a decrease in 2011 compared to 2010 (by about 19%) had a slight increase until 2015, representing an average of 200 vessels per year. In 2014 and 2015, 206 and 212 container ships were delivered, representing less than half of the ships delivered in 2008 (436 vessels), which it was considered the peak year. However, in 2015, the shipyards have delivered 212 vessels (8,246 million CGTs), an increase over the deliveries in 2008, as a result of the increase of the shipping capacity of these vessels. In 2016, the deliveries dropped dramatically to 130 units (4,5 million CGTs) in 2016 (Figure 6), representing 54.5% compared to 2015, in terms of CGTs and 86 ships (2,95 million CGTs) in 2017.

A feature of the deliveries of container ships during 2011-2016 is the shift to large capacity ships of 12,000 TEUs and more. Their number increased by 45% annually and now represents approximately 25% of the current world fleet (Market Forecast Report, 2017; Newbuilding Requirements 2017-2035 | SEA Market Forecast WG, 2017).

The container ship's order book amounted in 2016 to 436 ships, with 15,9 million CGTs, representing 17% of the world's container fleet capacity, down from 18.5% a year earlier.

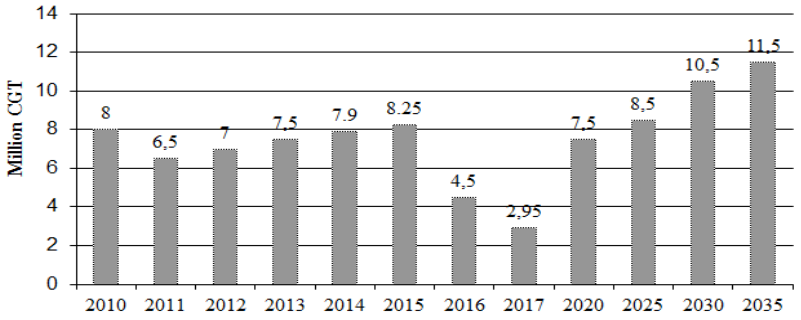

Figure 6. Container Completions Actual and Forecast (Market Forecast Report, 2017; Newbuilding Requirements 2017-2035 | SEA Market Forecast WG, 2017)

The container ships order book in 2016 amounted to 436 ships with 15,9 million CGT, decreasing, representing 17% of the world container fleet capacity, down from 18.5% a year earlier and 372 ships (13,064 million CGTs) in 2017.

Looking ahead, for the period 2020-2035, SEA Europe estimates an increase in container ship demand as a result of the increase in maritime trade. This demand will be lower in the medium term, in the period 2020-2025, with an average of 3,1 million DWTs per year, and higher in the long term, with 9,5 million DWTs per year for the period 2025-2030 and with 10,3 million DWTs per year for the period 2030-2035 (Figure 7).

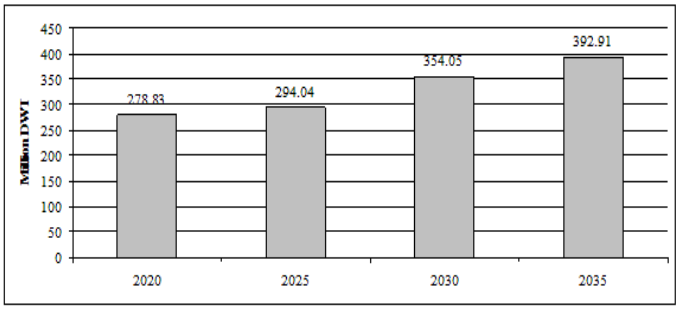

Figure 7. Container fleet requirement forecast (Market Forecast Report, 2017; Newbuilding Requirements 2017-2035 | SEA Market Forecast WG, 2017)

6.5. The Shipbuilding Market for Ferries/Passenger Ships

46 passenger ships with 1,1 million CGTs reported as new orders in 2011, in 2012 the orders were slowing further. In the coming years, the new orders grew, although not continuously, reaching in 2014 83 ships and 2,27 million CGTs and 87 ships and 2,47 million CGTs in 2015. In 2016, the new orders had promising values of 87 ships and 2,96 million CGTs (table 3) (SEA Europe Shipbuilding Market Monitoring Report No.30, April, 2015); (SEA Europe Shipbuilding Market Monitoring Report No.40, April, 2016); (SEA Europe Shipbuilding Market Monitoring Report No.42, March, 2017).

Table 3. New passenger ship orders during 2011-2017 (Shipping Statistics and Market Review 2016, Volume 60 - No. 9/10, 2016); (SEA Europe Shipbuilding Market Monitoring Report No 44 (March 2018) full year 2017, 2018)

Ship type	2011		2013		2014		2015		2016		2017	
	No	Mill CGT	No	Mill CGT	No	Mill CGT	No	Mill CGT	No	Mill CGT	No	Mill CGT
Cruise ships	8	0.9	11	0.7	15	1.8	19	2.0	26	2.32	33	3,088
Passenger/ferry	9	0.0	22	0.2	27	0.05	27	0.06	19	0.036	23	0,036
Passenger/RO-RO cargo	29	0.2	55	0.5	41	0.42	41	0.4	42	0.61	45	0,641
Total	46	1.1	88	1.4	83	2.27	87	2.47	87	2.96	101	3,765

The cruise ships are the fastest growing segment. In the period 2009-2016, the global fleet ocean cruise passenger has continuously increased, from 17200 million DWTs in 2009 to 24261 million DWTs in 2016. In 2015 8 ships (0,67 million CGTs) were delivered, and 11 ships (1,174 million CGTs) in 2016.

The new orders for the cruise ships increased from 2011 in 2017 from 8 vessels (0,9 million CGTs) in 2011 to 19 vessels (2,0 million CGTs) in 2015, 26 ships (2,32 million CGTs) in 2016 and 33 vessels (3,088 million CGTs) in 2017 (SEA Europe Shipbuilding Market Monitoring Report No.30, April, 2015); (SEA Europe Shipbuilding Market Monitoring Report No.40, April, 2016); (SEA Europe Shipbuilding Market Monitoring Report No.42, March, 2017); (SEA Europe Shipbuilding Market Monitoring Report No 44 (March 2018) full year 2017, 2018).

The current order book for the new building cruise has 63 ships (6,0 million CGTs).

In the coming years the demand for the new ships is estimated to be 10-12 ships per year.

The passenger ferry sector includes passenger/car ferries and pure passenger ships.

For the passenger ferry fleet market is quite mature, the fleet remaining, due to lack of the investment, quite constant.

In the period 2011-2016, the new orders continually decreasing and ajung de la 29 vessels in 2011 to 27 ships in 2014 and 2015 with 47000 CGTs, respectively 60000 CGTs in 2015, to 19 ships with 36000 CGTs in 2016 and 23 ships with 36,000 CGT in 2017.

The order book in 2016 consists of 60 passenger ships/ferries with 139000 CGTs, increasing in number of ships, as compared to 2014 and 2015 and 71 vessels with 179,000 CGTs in 2017.

The deliveries of these vessels during the period 2014-2016 have and average value of 45 ships per year but, with tonnage differences from 55000 CGTs in 2014 to 101000 CGTs in 2015 and 95000 CGTs in 2016 (SEA Europe Shipbuilding Market Monitoring Report No.30, April, 2015); (SEA Europe Shipbuilding Market Monitoring Report No.40, April, 2016); (SEA Europe Shipbuilding Market Monitoring Report No.42, March, 2017).

The SEA Europe forecast shows that on medium and long term, the demand for passenger ferry will increase on average by 1.8% per year. In the period 2017-2021, the new passenger/ferry contracts are expected to be in average 66 ships per year (Market Forecast Report, 2017; Newbuilding Requirements 2017-2035 | SEA Market Forecast WG, 2017).

For the passenger/RO-RO cargo fleet, in the period 2003-2015, 207 ships were delivered with a total capacity of approximately 3,7 million CGTs, with an annual average of 16 ships, so that at the end of 2015 the passenger/RO-RO cargo segment has totalized 624 vessels with a capacity of 7,86 million CGTs.

The worst period for the RO-RO market was 2009-2014, when the lowest demand for the new ships was registered. In 2016, the new orders consisted of 42 ships with 0,6 million CGTs and in 2017 by 45 ships with 0,64 million CGTs, slightly above the new orders in 2014 and 2015.

As perspectives, the SEA Europe predicts that the RO-RO fleet requirement will be at modest levels in the coming years, with an annual growth of 1-2%.

The level of the new building requirements is expected to stabilize at an annual average of 20 vessels or 0,55 million CGTs, with a major RO-RO focus. Given the large number of the ships over the age of 20 years, it is estimated that the requirements for the new orders will be determined mainly by the need for replacement.

7. World Market Shares by Country/Region

Based on the market share for the order book in the last four years, 2014-2017, the dominance of the East Asian countries can be noticed, which together exceed 82% of the global order book in 2014 and 2015 and 80.2% in 2016, China is the leader with over 35% (fig. 8). China and South Korea have reduced their market position in 2016 with 2% (from 40,6 million CGTs to 31,8 million CGTs) and approximately with 6% (from 31,2 million CGTs to 20, 5 million CGTs) compared to 2014, while Japan has increased its position in the global order book with 5.5% (from 17,4 million CGTs in 2014 to 19,3 million CGTs) in 2016.

At the same time, the European shipyards increased their position in the global order book by 3%, from 7.7% (8,3 million CGTs) in 2014 to 10.8% (9,6 million CGTs) in 2016 and 15% in 2017 (12,4 million CGTs).

The order book for Europe consists mainly of tankers, ferries, tugs and cruise ships, 67.9% of the Chinese's order book and 58.4% of the Japanese's order book consist of container ships, bulk carriers and offshore vessels (SEA Europe Shipbuilding Market Monitoring Report No.41, 2016).

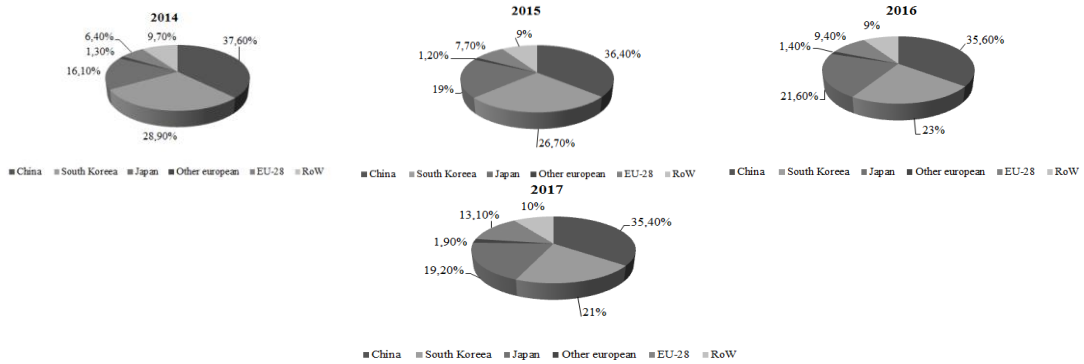

Figure 8. Market shares of order book by main shipbuilding areas, in terms CGT in 2014, 2015, 2016, 2017 (SEA Europe Shipbuilding Market Monitoring Report No.30, April, 2015); (SEA Europe Shipbuilding Market Monitoring Report No.40, April, 2016); (SEA Europe Shipbuilding Market Monitoring Report No.42, March, 2017); (SEA Europe Shipbuilding Market Monitoring Report No 44 (March 2018) full year 2017, 2018)

Based on the market for the new orders over the same time frame, it can be noticed that the shipyards in China, South Korea and Japan have had together, a market share of 87.2% in 2014, 85% in 2015, 64.4% in 2016 and 71,1% in 2017 (Figure 9), which represents a considerable decline. This decline has resulted from the drastic decrease in the new orders worldwide, the year 2016 being the worst year in the history of the shipbuilding. In 2016, China had new orders of 3,3 million CGTs, with 80.5% less than in 2014 and 75% less than in 2015, it continues to remain, still, a world leader with over 30%. Japan and Korea had the largest decline, down from 10,2 million CGTs in 2014 to 1,5 million CGTs in 2016, or 85.3% for Japan and from 12,6 million CGTs in 2014 to 2,0 million CGTs in 2016, or 84.2% for Korea. The decreases were recorded mainly for the container ships, tankers and bulk carriers, but also for the offshore vessels. New contracts declined in 2016 compared to 2015 by 86% for container ships, 80% for tankers and 74% for bulk carriers. For the offshore vessels, they were lower by 65.6% (SEA Europe Shipbuilding Market Monitoring Report No.40, April, 2016); (SEA Europe Shipbuilding Market Monitoring Report No.42, March, 2017).

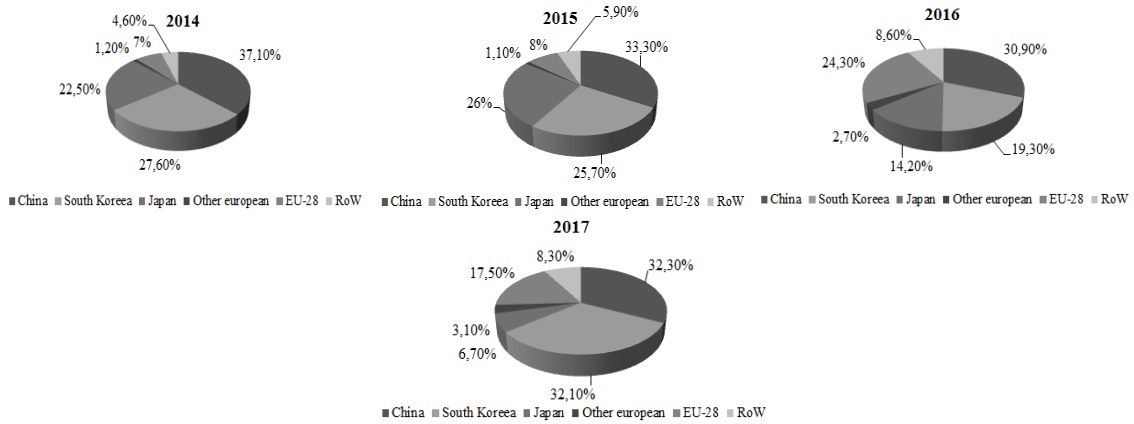

Figure 9. New orders by main shipbuilding areas, in terms CGT in 2014, 2015, 2016, 2017 (SEA Europe Shipbuilding Market Monitoring Report No.30, April, 2015); (SEA Europe Shipbuilding Market Monitoring Report No.40, April, 2016); (SEA Europe Shipbuilding Market Monitoring Report No.42, March, 2017)

The decrease of the orders for the new offshore vessels, determined due to the low oil prices, has made that the Korean shipyards record very large losses in 2015 (SEA Europe Shipbuilding Market Monitoring Report No.41, 2016).

In 2015, Japan's shipyards with a share of 26% are overtaking with little those in South Korea (25.7%), ranking the second place after the Chinese shipyards, and Japan, after 2000, becoming the second largest global shipbuilder (Annual Review. Shipping and Shipbuilding Markets, 2017).

Europe's shipyards have increased their market share from 8.2% in 2014 to 27% in 2016, placing Europe as the second largest market in the global new order after China and before South Korea.

This was due to the new ship orders received by the European shipyards, especially for tankers, cruise ships, RO-RO vessels, ferries, yachts and other non-cargo carrying vessels. In 2017, the European shipyards' market share is 20.6% after China and South Korea.

The issues related to the decrease of the new order ships have occurred in Korea in 2014, and in China and Japan have begun one year, two years later respectively. In front of this situation, the Asian shipyards have entered a process of restructuring and modernization, and the governments of these countries implement the national policies to support the shipyards to increase their market competitiveness and attract more orders. One of the policies is to support the internal ship orders. Thus, the Japanese government is setting up a ship investment company, the Korean government aims to set the financial incentives for the domestic orders, especially for the coastal passenger ships and deep sea fishing vessels, and the Chinese government encourages the shipping companies to eliminate the older ships over 10 years and come with new orders for Chinese's shipyards, offering 40% of the new construction costs, as a subsidy. Four large shipyards in China were subsidized with significant sums of money (about CNY 7 billion) to demolition of 56 vessels (SEA Europe Shipbuilding Market Monitoring Report No.41, 2016).

Besides supporting the internal ship orders, to support shipbuilding, the Asian shipyards form joint ventures and mergers of the shipbuilding companies.

For the development of the cruise industry, the Italian manufacturer Ficantieri and the China State Shipbuilding Corporation (CSSC) formed a joint venture to act as the first contractor to build the first two cruise ships to be built in China for the Chinese market, with an option for two more ships, the first delivery being expected in 2022 (SEA Europe Shipbuilding Market Monitoring Report No.41, 2016).

In order to gain orders for high-value ships, offshore structures and mega containers, the Chinese Jinhai Heavy Industry shipyard intends to invest $ 448 million over the next five years to turn into a

smart shipyard. A yard automation facility and intelligent program to focus on intelligent manufacturing will be introduced. Also, in order to increase its competitiveness on the market, four state-owned companies of the Chinese Shipbuilding Industry (CSIC) are in a fusion process (SEA Europe Shipbuilding Market Monitoring Report No.41, 2016).

In order to cope with the Asian countries' competition, the European naval industry has adopted a specialization strategy, focusing on the building of the complex, high-value ships. This strategy allows it to reduce the effect of higher labor costs compared to Chinese shipyards.

Finland, France, Italy and the United Kingdom are specialized in passenger ships and ferries, Denmark in container ships, and the rest of the countries have a diversified portfolio (Legorburu, 2016).

The European shipbuilding industry is a leader in innovation and is working to maintain its position as a technology provider and cleaner and safer ship (Legorburu, 2016).

Romania with a contracted tonnage of 0,456 million CGTs represents 1% of the global new orders in 2014. It has reduced its position to 0.5% in 2015 with a contracted tonnage of 0,213 million CGTs and has risen in 2016 to 2.7% of the global new orders, with a tonnage commissioned of 0, 292 million CGTs in 2016, being third in Europe after Italy and France (SEA Europe Shipbuilding Market Monitoring Report No.30, April, 2015); (SEA Europe Shipbuilding Market Monitoring Report No.40, April, 2016); (SEA Europe Shipbuilding Market Monitoring Report No.42, March, 2017).

Analyzing the market shares of the completions, as it can be seen in Figure 10, the shares belong to the East of Asia with 83.1% in 2014 and an average of 84.5% over the next three years, the leader being China followed closely by South Korea and at a greater distance from Japan, which represents only 18.6% in 2014, and 18.1% in 2015 and 19.6% in 2017. In 2015, China has mostly built dry the bulk carriers and general cargo ships, South Korea has focused on the container ships, gas carriers and oil tankers and Japan, on dry bulk carriers.

For the same period of time, Europe had a small market share of only 6.8% in 2014 and 5.3% in 2015, but rises to 7.7% in 2017.

Figure 10. Market shares of completions by main shipbuilding areas % in terms of CGT in 2014-2017 (SEA Europe Shipbuilding Market Monitoring Report No.30, April, 2015); (SEA Europe Shipbuilding Market Monitoring Report No.40, April, 2016); (SEA Europe Shipbuilding Market Monitoring Report No.42, March, 2017)

In 2016, in terms of the value, the market share of the completions (Figure 13b) shows that the Asian countries occupy 77%, in which South Korea is leader by 35%, followed by China by 25% and Japan by 17%. Europe ranks fourth with 16%, and the US and Brazil play a minor role in the world shipbuilding with 2% of the deliveries value of the ships. By comparing the value of the new orders

with the value for the completions in 2016, it is noticed that only European shipyards had a higher value of the new orders than the completions.

European shipyards are very strong in their domestic markets, but on the international markets such as the Middle East, Africa, Asia and Latin America are also known.

Although the competitive conditions by their global competitors are not fair, the European shipyards which are not benefiting from subsidies or other protectionist measures, they have succeeded, through the specialization and focus on the innovation, in promoting the market segments such as the passenger ships and other specialized vessels not carrying goods (SEA Europe Shipbuilding Market Monitoring Report No.41, 2016).

8. Conclusions

The ship demand depends on the necessity for shipping, which, in turns, depends on the evolution of the world economy as the main factor that influencing the maritime trade flows.

After the economic crisis of 2008, the shipbuilding is in a prolonged crisis, the longest in the history of the naval industry, characterized by an oversupply of ships. This has coincided with a low level of the global economic growth, which has negatively influenced the demand for the new ships and balancing the supply-demand balance.

After 2008, the market could not absorb the volume of the ordered ships in the years of the economic boom after 2000. It has a slight return in the period 2013-2014, but the ship orders drop dramatically in the years to come, reaching in 2016 at the lowest level since 1980.

The order book, after 2008, has a decreasing trend except for the years 2013-2015, for the first time since the economic crisis, has a comeback. The drastic decrease in the new orders in 2016 has led to a decrease in the global order book until to one of the lowest levels in the recent years.

The ship deliveries reached a peak in 2010 and then they dropped continuously.

The type of ships that have been ordered has changed over the last years. The demand for the standard ships decreases, especially for bulk carriers, but the demand for specialized vessels is increasing (ferries, RO-RO, cruise ships).

For the 2018-2035 horizons, the forecasts made by SEA Europe in close connection with the evolution of the projected world economy, and with a number of other factors that redefining the maritime trade patterns, show that the demand for the new ships is growing, but with low rates, smaller than the historical ones.

The deliveries of ships over the next five years will be lower than those of the past five years.

The analysis of the shipbuilding market segment by ship type shows that for the bulk carriers, general cargo ships and tankers there is a significant oversupply of ships, despite the decrease in the new orders. Looking ahead, it is estimated a relatively moderate demand for these ships.

For the container ships, the new orders have dropped significantly in 2016, after in 2015 has been reached the second best level after 2007. Looking ahead, for the period 2020-2035, an increase in the demand for the container ships is expected as a result of the increase of the maritime trade.

The shipbuilding market for ferries/passenger ships has a continuing growth for the ship demand since 2013 and reaches to 3,765 million CGTs with 101 ships in 2017. The cruise ships are the fastest growing segment. Smaller requests are for passenger/ferries and passenger/RO-RO cargo.

Watching the world market shares by country/region, the Asian countries, China, South Korea and Japan dominate the ship market. Over 2014-2016, the Asian countries occupy over 80% of the world order book and 75.5% in 2017, China being leader with over 35%, followed by South Korea over

20% and Japan over 16%. European shipyards have increased their position in the global order book by 7.3% from 7.7% in 2014 to 15% in 2017.

New orders, in terms of CGTs, are also dominated by the Asian countries, but their market share drops from 87.2% in 2014 and 85% in 2015, at only 64.4% in 2016 and 71.1% in 2017, while the European shipyards have increased their market share from 8.2% in 2014 to 27% in 2017, ranking the second place in the global new orders after China.

The ship deliveries are also dominated by the Asian countries with a share of over 83%, and China is the leader, followed shortly by South Korea and far away from Japan. Europe is increasing its market share from 6.8% in 2014 to 7.7% in 2017, in terms of CGTs.

In order to cope with the Asian countries' competition where protectionist policies and shipyard subsidies are being implemented, the European naval industry, adopting a specialization strategy, focuses on complex ships with high-value.

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