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Shipbuilding Market Developments Q2 2018

15-16 May 2018
Paris, France

This report provides an overview of recent developments in the shipbuilding industry, based on data available until March 2018.

The report has been declassified by the Working Party on Shipbuilding (WP6) on 15 May 2018 and will be made available on the OECD WP6 website. This final version addresses some comments received during the meeting and includes minor changes for clarification and readability.

This version cancels and replaces the one uploaded on 6 September 2018 and corrects formatting issues in order to align it with the version available on the OECD WP6 website: http://www.oecd.org/sti/ind/shipbuilding.htm

This document is available in PDF format only.

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Executive Summary

The present paper presents an overview of the current market situation in shipbuilding based on data available until April 2018. The report is divided into three sections. In the first part we briefly look at economic and regulatory developments that might have an impact on shipbuilding. The second part tries to shed some light on shipbuilding demand by looking at recent trends in contracts and the orderbook as well as prices. Finally, the third part elaborates on shipbuilding supply by detailing market shares among countries and companies.

According to the OECD March 2018 Interim Economic Outlook, global GDP growth will further gain strength in 2018 and 2019 with an expected annual growth of 3.9%. While trade, with a projected growth rate of approximatively 4% in 2018 and 2019, and private investment have bounced back, new tensions and key vulnerabilities could derail the recovery.

In this context of relatively high global GDP growth and recovery in trade volumes, future demand growth for shipping is expected to grow by 3.4% in 2018, with differences among ship types. While UNCTAD expects an annual growth of containerised trade by 5.0% and bulker trade by 5.6% until 2022, crude oil trade is expected to increase by only 1.2%. Although shipbuilding demand is not monotonically related to demand for shipping, these projections give some indication of the longer term direction of ship demand to be considered, in addition to the replacement of existing ships being scrapped.

Following very low levels of contracting in 2017, shipbuilding companies continue to operate in a challenging market environment with a comparatively low orderbook, at a level below half of its peak reached in 2008. As contracting remained below deliveries in 2016 and much of 2017, the global orderbook declined significantly, meaning that a growing share of yards are expected to become inactive, which would weigh on the economic health of the industry. Recently, however, contracting picked up slightly, mainly driven by a re-emergence of orders for bulkers. Newbuilding prices continued to increase slightly as well.

Shipbuilding construction is highly concentrated geographically, with Korea, the People's Republic of China (hereafter "China") and Japan accounting for more than 85% of global production. When regarding company shares within each segment, however, most sectors cannot be classified as concentrated. Only the market for cruise ships, which is dominated by EU yards, shows some higher degree of concentration.

The forward cover, a measure for how much work yards still have in their current orderbooks, declined to comparatively low levels. While European yards seem to be in a rather comfortable position with their forward cover reaching nearly five years, Korean yards face the more challenging situation of less than two years of upcoming work in their books.

1. Key Developments Driving the Shipbuilding Industry

1.1. Trends in economic activity

With a growth rate of 3.7% in 2017, global GDP saw its strongest increase since 2011. According to the OECD March 2018 Interim Economic Outlook, global GDP growth will further gain strength in 2018 and 2019 with an expected annual growth rate of 3.9% (OECD, 2018[1]). GDP in G20 economies is predicted to grow by 4.1% in 2018 and 4.0% in 2019. China and India are expected to continue growing strongly, with 6.7% and 7.2% in 2018 and 6.4% and 7.5% in 2019, respectively.

As of October 2017, UNCTAD estimated that the world seaborne trade would rise by 2.8% in 2017 compared to an increase of 2.6% in 2016. Major bulk commodities were expected to see an increase by 5.4%, while containerised trade was projected to grow by 4.5% in 2017. However, growth in tanker trade was projected to slow down in 2017, with crude oil trade estimated to grow by less than 1%, and trade in refined petroleum products and gas expected to grow by 2%. Until 2022, UNCTAD expects global seaborne trade volume to increase by a compound annual growth rate (CAGR) of 3.2%. While crude oil trade should increase by a CAGR of 1.2% over that period, trade volume of containers and the five major bulks is projected to increase by CAGR 5.0% and 5.6%, respectively (UNCTAD, 2017[2]).

In its latest projections of April 2018, Clarkson Research expects global seaborne trade to grow by 3.4% in tonnes and 4.0% in tonne miles. Total dry bulk trade is projected to grow by 2.7% in 2018. Global seaborne oil trade is expected to grow by 2.9%, driven by an increase in Chinese and Indian imports, which together are projected to represent around 80% of the increase in crude oil trade. Containerised trade is predicted to increase by 5% in 2018 (Clarksons Research, 2018[3]; Clarksons Research, 2018[4]).

The above-mentioned developments give an indication of the expected future growth in GDP and trade volumes. When trying to derive shipbuilding demand from these measures, two caveats should be kept in mind however. First, global trade volumes might not react to changes in global output in a way they used to, i.e. an increase in world GDP may not necessarily imply a proportional increase in total trade transactions. Second, an upswing (downswing) in shipping demand may not necessarily cause a rise (decrease) in the number of new ship construction.

1.2. Trends in environmental regulations and their possible effects

In order to mitigate the negative effects of vessels on the environment, a number of regulations related to environmental protection have been introduced by governments and international organisations. Demand for new (and more environmentally friendly) ships could increase if regulations apply to existing vessels and retrofitting in order to be in compliance might be unfeasible or costly, leading to increased scrapping of old ships. The main regulations that are likely to influence future shipbuilding demand namely are: the

Ballast Water Treatment Convention (BWTC), the *Energy Efficiency Design Index* (EEDI) and *Emission Control Areas* (ECAs).

Entering into force on 8 September 2017, the *Ballast Water Treatment Convention* (BWTC) aims to prevent the spread of harmful aquatic organisms caused by a ship's discharge of ballast water and sediments. All vessels that operate beyond their domestic waters need to have a Ballast Water Management System installed by 2024 the latest. Retrofitting due to this regulation could amount to 20% to 50% of retrofitting capacity (OECD, 2017[5]). As retrofitting can be rather expensive, owners of older vessels might opt to sell their ships for scrapping instead. Recent OECD work suggests that the introduction of the BWTC could lead to an additional scrappage of 11 to 54 million compensated gross tonnage (CGT) in the upcoming years (OECD, forthcoming[6]).[1]

As a technical measure aimed at reducing CO_2 emissions, the *Energy Efficiency Design Index* (EEDI) prescribes a minimum level of efficiency per tonne mile. All vessels constructed after the regulation entered into force on 1 January 2013 need to be compliant with the standard, which mandates an initial CO_2 reduction level by 10% compared to a baseline. Requirements are tightened every five years in order to stay ahead of technological improvements. In that context, large size bulkers registered improved hull designs, which positively influence the EEDI (OECD, 2017[5]).

During its 72nd session on 13 April 2018, the Marine Environment Protection Committee (MEPC) adopted an Initial GHG Strategy *"to reduce the total annual GHG emissions by at least 50% by 2050 compared to 2008, while, at the same time, pursuing efforts towards phasing them out entirely"* (IMO, 2018[7]).

According to MARPOL Annex VI "Regulations for the Prevention of Air Pollution from Ships", vessels operating within *Emission Control Areas (ECAs)* are subject to stricter emission limits. The regulation sets NO_x limits, separated into three different Tiers, with Tier I and II applying globally and Tier III in ECAs. Sulphur oxide (SO_x) emissions are limited to 0.1% in ECAs since January 2015, and are to be capped globally at 0.5% from 1st January 2020 onwards. As exhaust from LNG powered vessels has a lower sulphur content than that of traditional heavy fuel oil, the regulations could trigger an increased demand for this more environmentally friendly engine type (IMO, 2018[8]).

1.3. Other trends potentially affecting the shipbuilding market

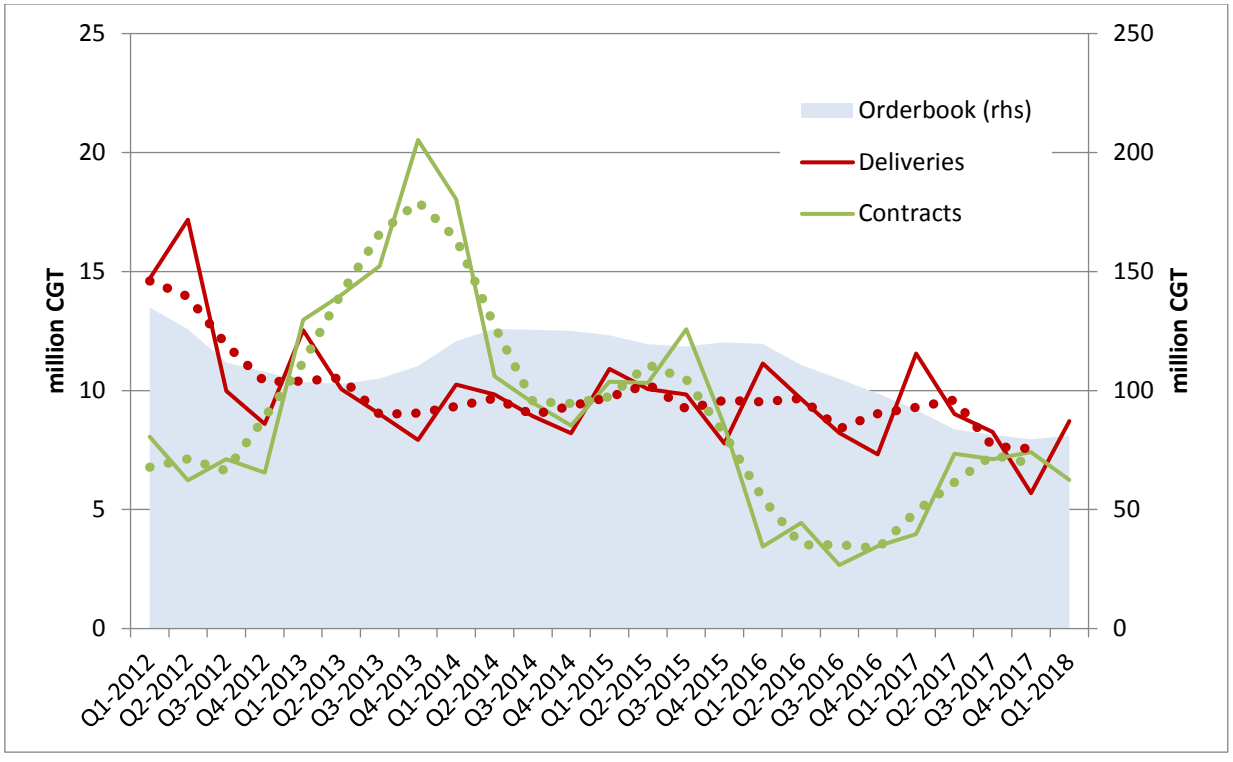
One possible boost for global newbuilding demand could stem from Chinese leasing finance which enables the construction of vessels both in China and in foreign shipyards. The main form of leasing structure is sale and leaseback which can be in the form of an operating lease with a purchase option in the end of the charter period.

2. Shipbuilding Demand

2.1. Orderbook by ship type

As of March 2018, the global orderbook registered ships totalling approximately 78 million CGT, thus continuing to remain at historically very low levels. In year-on-year (y-o-y) terms this represents a decline of around 10%, and is almost 66% lower than the peak in September 2008.[2] The orderbook continuously declined after 2008 before stabilising in 2013 and staying above 120 million CGT throughout 2014. With deliveries stable and new contracting at record lows, the orderbook again decreased substantially in 2016, declining by around ¼ from January 2016 to January 2018. In the course of 2018, new ordering picked up again from its lows, but declined in the first quarter of 2018.

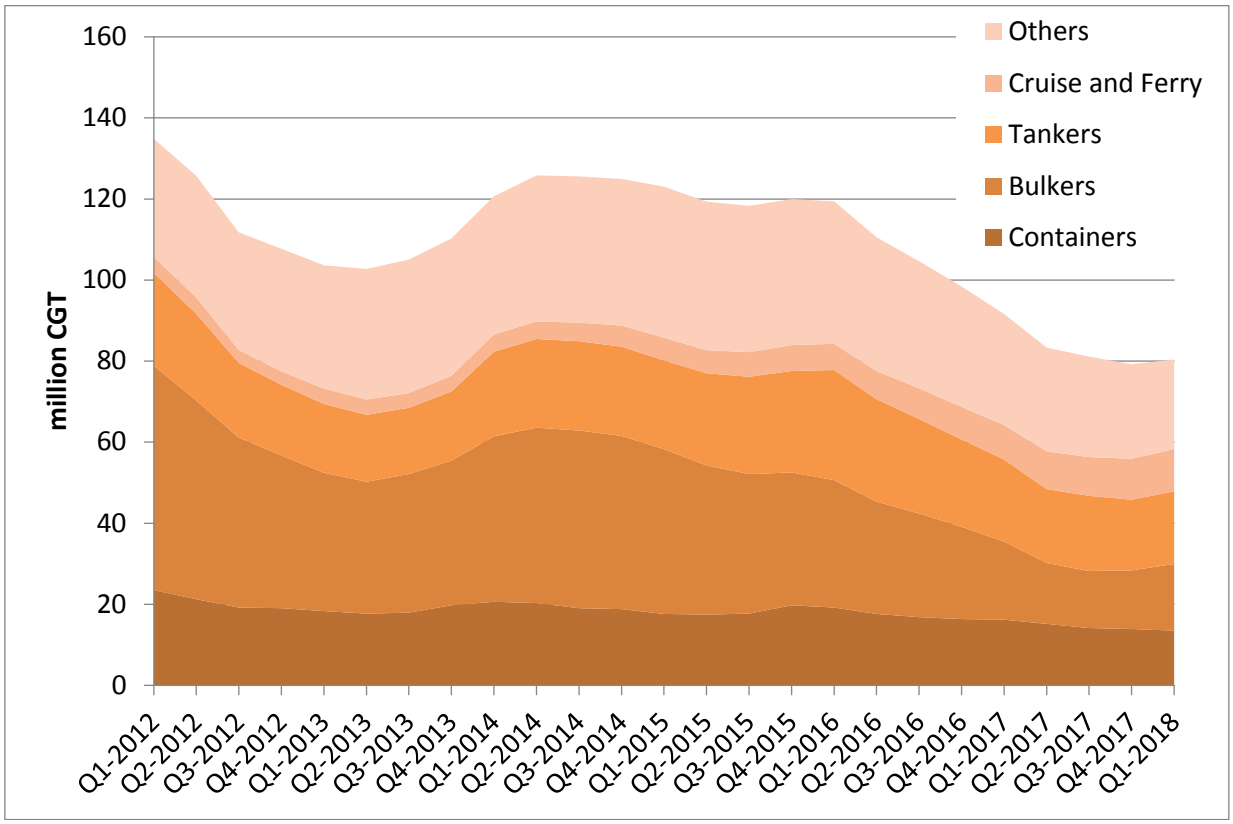
Figure 1. Orderbook, Contracts and Deliveries, quarterly



Note: Quarterly data, dotted lines show three quarters centered moving averages.
Source: OECD representation based on Clarkson's World Fleet Register.

Analysing the orderbook by ship type reveals the extent to which each segment was affected by the overall decline. When compared to the levels of January 2015 (the middle of the period when the orderbook remained relatively stable), tankers have been affected the least by the decline with a decrease of 18% in terms of CGT. Containers registered a slightly stronger decrease, with the current global orderbook 23% shorter than two years ago. The drop in the orderbook for bulkers, however, was more severe, with a decline of 60%, resulting from the near disappearance of new bulker orders in the second half of 2016. The segment of cruise ships and ferries was the only one of the analysed sectors that exhibited an increase in its orderbook over this time horizon, which was mainly due to the strength in the cruise ship market.

Figure 2. Orderbook by ship type



Note: Quarterly data. The category tanker includes oil tankers, chemical tankers and special tankers.
Source: OECD representation based on Clarkson's World Fleet Register.

2.2. New contracts by ship type

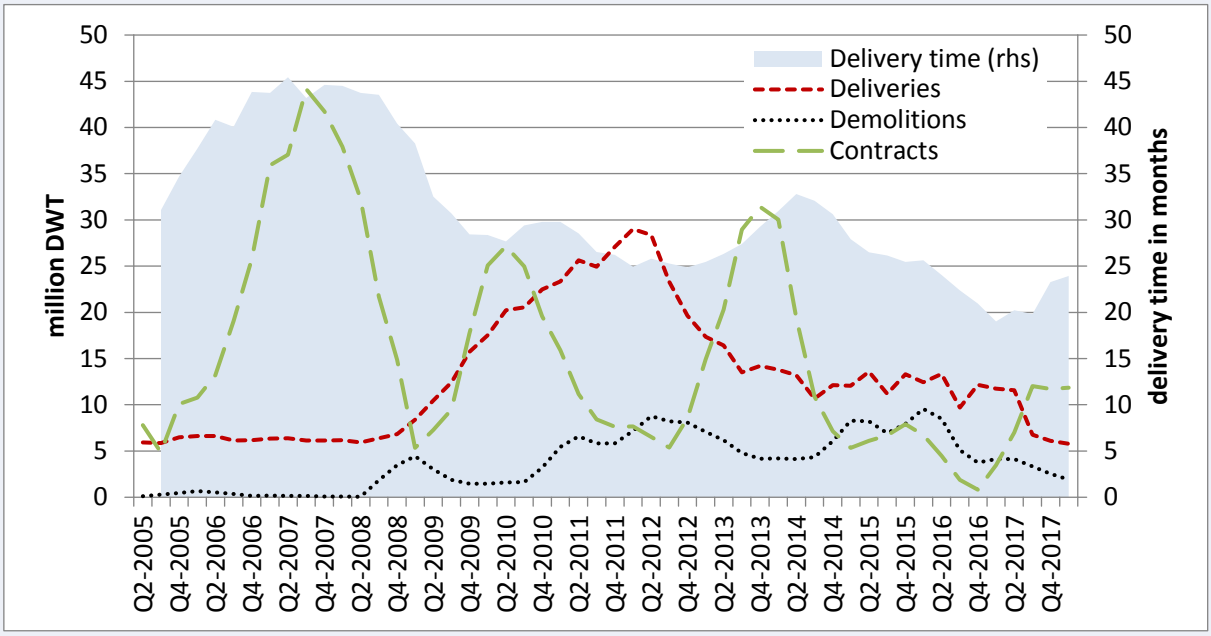
Contracting for new ships has picked up again in 2017 after a period of comparatively low ordering activity in 2016, when monthly new contracts stayed below 2 million CGT and the quarterly average barely reached 3.5 million CGT. Total contracts in 2017 have been approximately 80% higher than in 2016, with all the main outlined sectors registering growth. This is true especially for the bulker segment. After the very low level

of ordering of bulkers in the second half of 2016, the sector re-emerged in 2017 and contributed significantly to the rise in overall contracts after its low in 2016.[3]

Box 1. A glimpse at the market for bulkers

The shipbuilding market is, as outlined, an extremely cyclical industry. This can be observed for instance at the segment for bulkers. While ordering activity for new bulkers soared in 2013, new contracts almost disappeared in the second half of 2016. Looking further back, a similar pattern emerges with spikes in new ordering, followed by troughs. Figure 3 well illustrates this volatile development. Additionally, the (weighted average) of contract durations for ships ordered in the respective period is plotted. This illustrates two things: Firstly, high ordering activity is followed by longer delivery times. And second, the peak in deliveries in 2011 and 2012 seems to stem mainly from orders around 2007 and was further extended by deliveries of ships ordered around 2010. It can further be observed that demolitions consistently stay (far) below new deliveries, indicating an extended expansion of fleet capacity.

Figure 3. Developments in the segment for bulkers

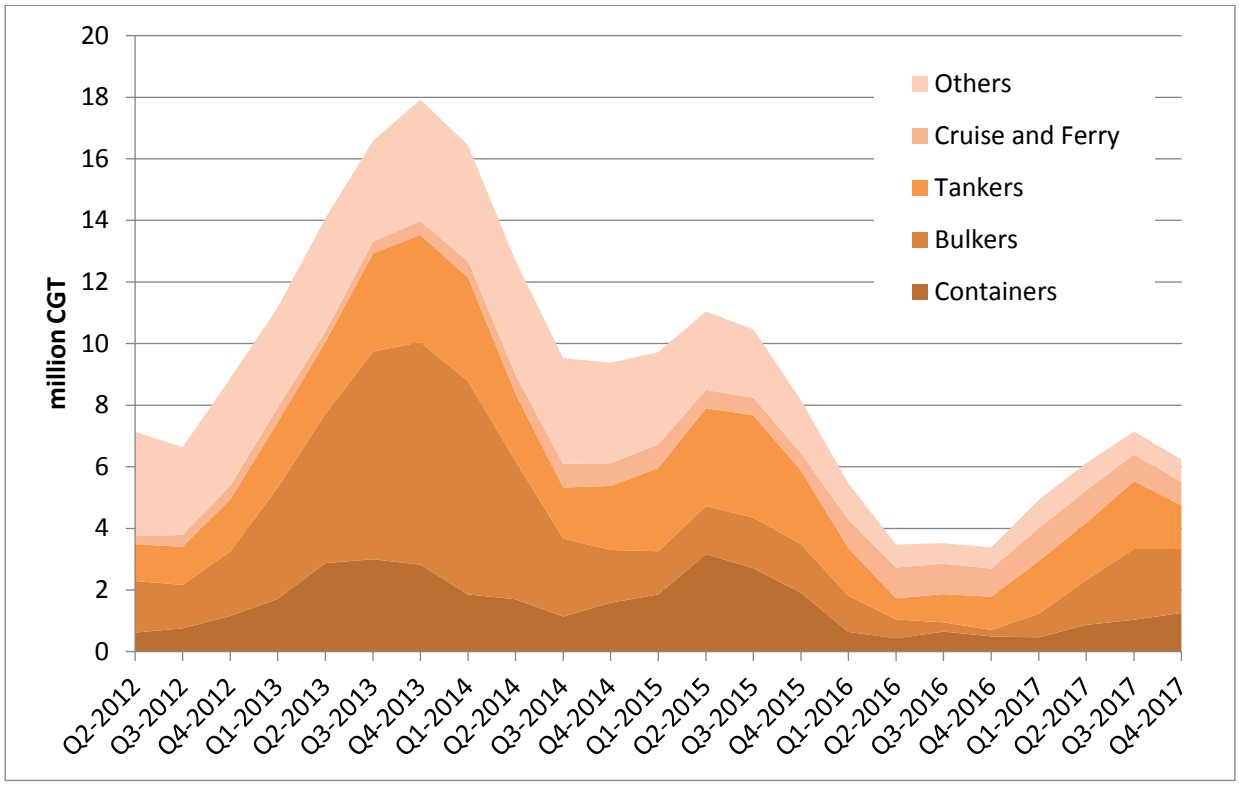


Note: Data in three months centered moving averages, data for deadweight tonnage (DWT) has been used as the graph is limited to one ship sector.
Source: OECD illustration based on data from Clarkson World Fleet Register.

The cyclicality in ordering stands in contrast to the long-run need for ships. Dry bulk trade (and thus the actual need for shipping capacity) increased steadily in terms of tonne miles during the last 20 years (with the only exception of a decrease in 2009) **(Clarksons Research, 2018[4])**, while the more volatile development of new contracts seems to be rather unrelated to these economic fundamentals. This disequilibrium could then lead to rather volatile freight rates, which in turn might encourage cyclical ordering.

The cyclicality of new ordering activity can easily be gauged looking at Figure 4. New contracting has reached approximately 63 million CGT in 2013 and dropped to 14 million CGT just three years later, equalling a decline of 78%. Quarterly and monthly data similarly exhibit strong variability.

Figure 4. New contracts by ship type, quarterly



Note: Quarterly data, with centered three quarters moving averages depicted in the graph in order to facilitate the recognition of trends. The category tanker includes oil tankers, chemical tankers and special tankers.
Source: OECD representation based on Clarkson's World Fleet Register.

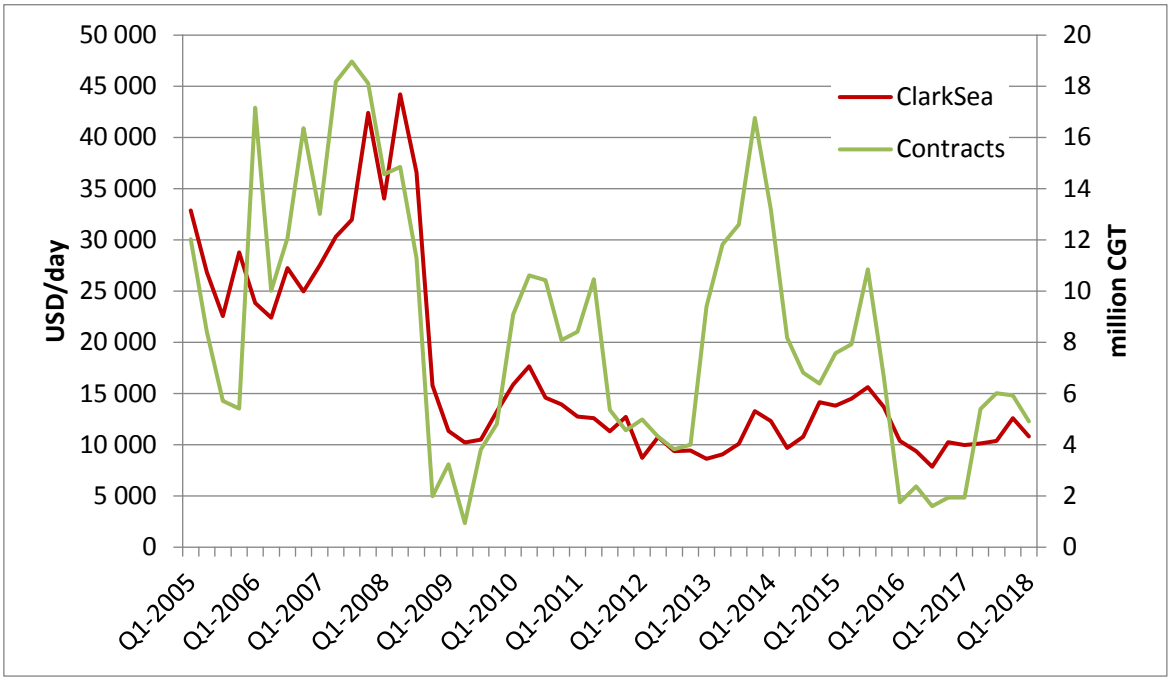
2.3. Market sentiments and price developments

2.3.1. Freight rates and new contracts

By calculating the daily earnings for the main ship types, weighted by their share within the fleet, the ClarkSea Index approximates the profitability of the shipping sector. After its recent peak in July 2015, the index fell by more than half in just one year and reached its low in August in 2016. As of March 2018, it stands around USD 11 000 per day. Given that the ClarkSea Index approximates the present profitability of the shipping sector, one could assume that it is closely related with new contracts, inducing shipbuilders to place orders for the construction of vessels in expectation of higher earnings. However, a correlation of the two measures seems to hold only to some extent.

Especially the increase in new contracts in 2013, which was mainly due to an increase in bulker orders (as outlined above), is not reflected in the ClarkSea Index.

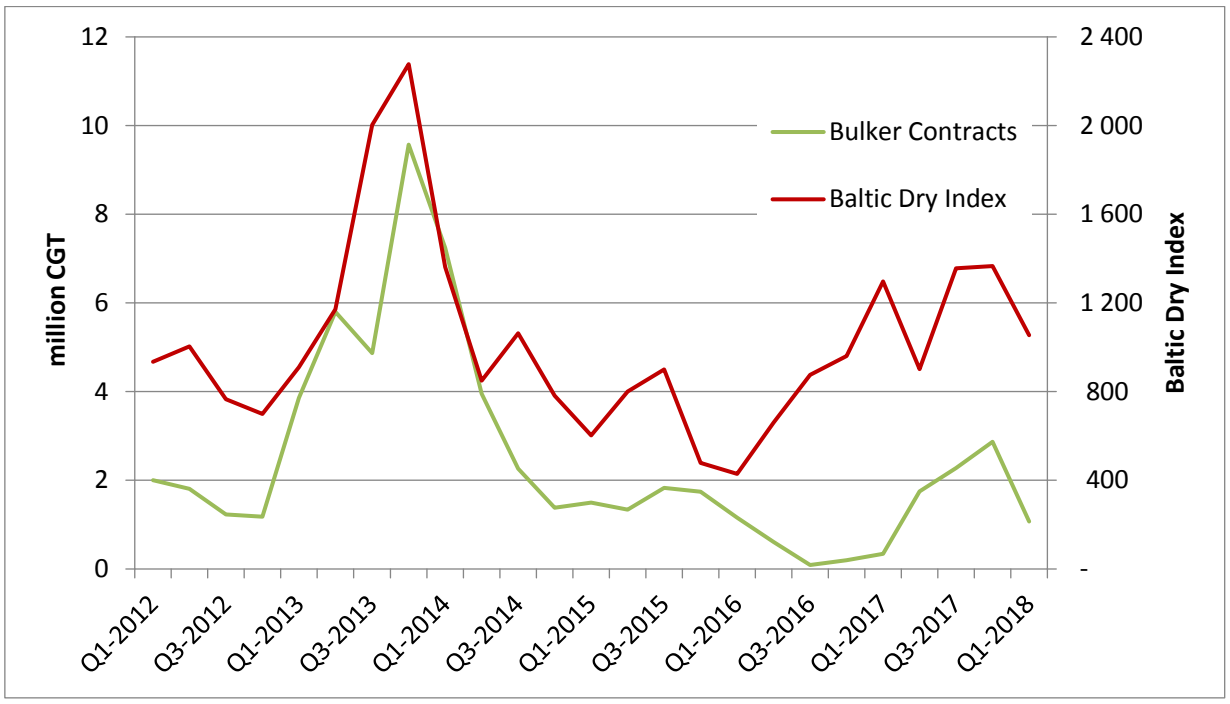
Figure 5. ClarkSea Index and new contracts, quarterly



Note: Data for new contracts only includes orders for oil tankers, bulkers, containers as well as LNG and LPG carriers to best relate to earnings from shipping represented in the ClarkSea index. All data are on quarterly basis.
Source: OECD representation based on Clarkson World Fleet Register and Clarkson Shipping Intelligence Network.

With a narrower focus than the ClarkSea Index, the Baltic Dry Index includes the daily freight rates of the main shipping routes for Capsizes, Panamaxes, Supramaxes and Handysize bulk vessels.[4] The index has seen its most recent peak in the fourth quarter of 2013, after which it decreased and hit its low in the first quarter of 2016. Although it decreased slightly in early 2018, it now still stands significantly higher than two years earlier. Contracting for bulkers seems to correlate with the Baltic Dry Index to some extent, although new orders did not follow the recent upswing experienced by the index to the same degree.

Figure 6. Bulker contracting and Baltic Dry Index, quarterly



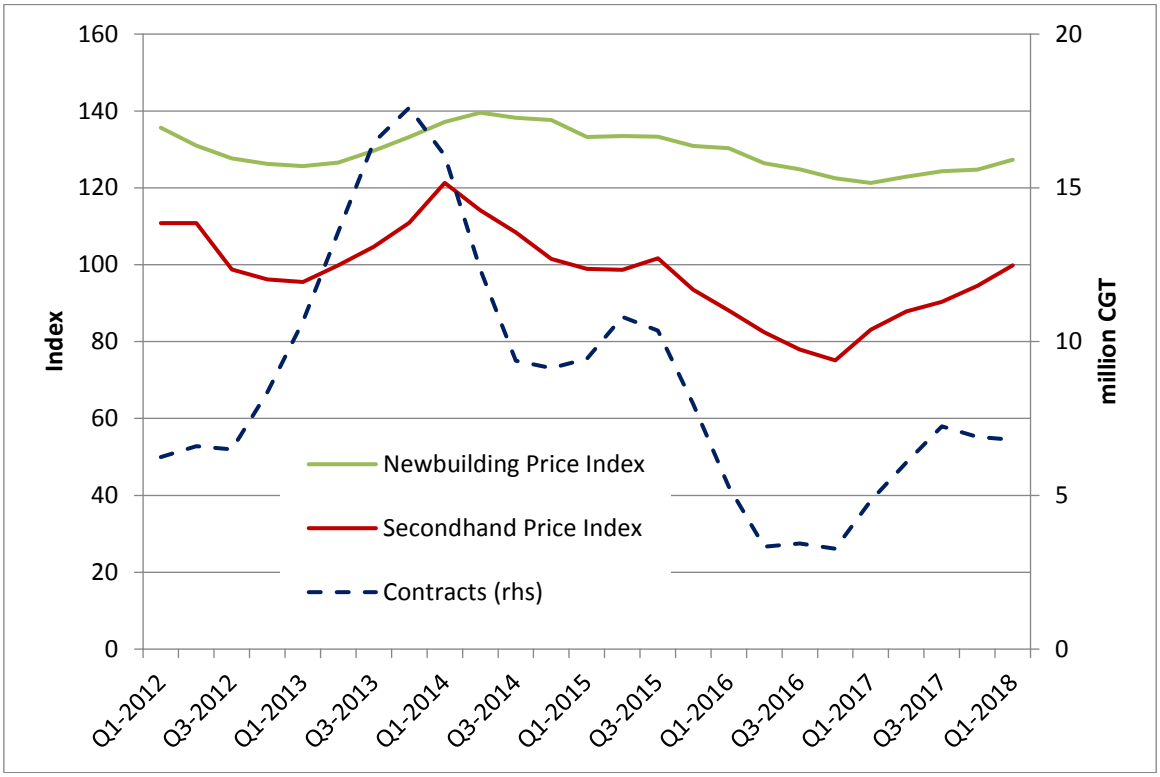
Note: Quarterly data, contracting data refers to contracts during period specified, Index data shows the closing values at end of period.
Source: OECD representation based on Clarkson Shipping Intelligence Network and Thomson Reuters Eikon.

2.3.2. Price Developments

While contracting activity gives an insight into the health of the shipbuilding industry, the price level at which new vessels are purchased is also a useful indicator. While it has to be kept in mind that prices for new ships vary among classifications, Clarkson's Newbuilding Price Index [5] gives an indication of overall price developments in the industry. This index recently continued its upward movement, which started in 2017, and now (as of March 2018) stands at 127 points, albeit 9% lower than its most recent peak in May 2014. For the last several years, the index has been moving in the band between values of 120 and 140. It thus trends between its low in 2002 (around 106) and its peak in 2008 (up to 191). Although more volatile, the Secondhand Price Index[6] shows a similar pattern as the newbuilding prices, with an average difference of 32 points for the period January 2012 and January 2018.

New contracting volumes soared until October 2013 when it reached almost 18 million CGT per quarter, before starting its downward trend and bottoming out in April 2016. Ordering began to recover at the end of 2016, though showing a slight decrease over the period July 2017 through January 2018. As can easily be gauged from the graph, trends in contracting seem to precede developments in the price indices. [7] Developments in contracting, however, are more volatile than changes in the indices for second hand and especially newbuilding prices.

Figure 7. Price indices and contracts

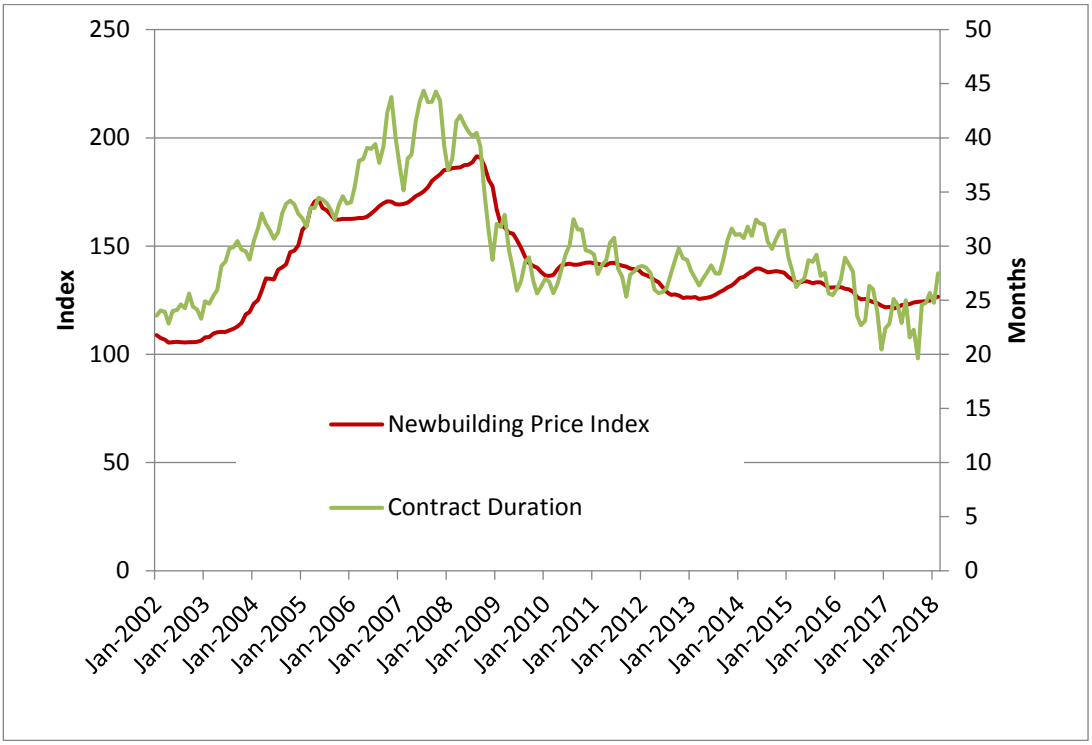


Note: The values for price indices depict their value at the end of the specified quarter. Data for contracts is the three quarters centered moving average of quarterly contracts in terms of CGT.
Source: OECD calculations based on data from Clarkson's Shipping Intelligence Network.

Newbuilding prices seem to not only correlate well with new contracts, but also with other measures, like contract lead times (or contract duration[8]) and the Dow Shipping Index. Both are explored further in the following. Contract duration[9] can be used as a measure for the extent shipyards' capacities are utilised and can thus give an indication about the balance of demand for new built ships and their supply.

As illustrated in Figure 8, Clarkson's Newbuilding Price Index and contract durations move in the similar pattern, with changes in contract duration preceding changes in the Newbuilding Price Index. As historically increases in contract durations have coincided with a following increase (or stabilisation) in newbuilding prices, the latest uptick in contract lead times might give some hope of a stabilising price level. Box 2 gives some very preliminary analysis. However, in order to determine if contract duration could be used as a predictor for newbuilding prices, further statistical analyses would be necessary.[10]

Figure 8. Contract Durations and Newbuilding Price Index



Note: Contract duration is derived from the Clarkson World Fleet Register by taking the difference between the built date and the contract date. To facilitate the recognition of trends, the three months centered moving averages are depicted for this series.
Source: OECD calculations based on Clarkson's World Fleet Register and Shipping Intelligence Network.

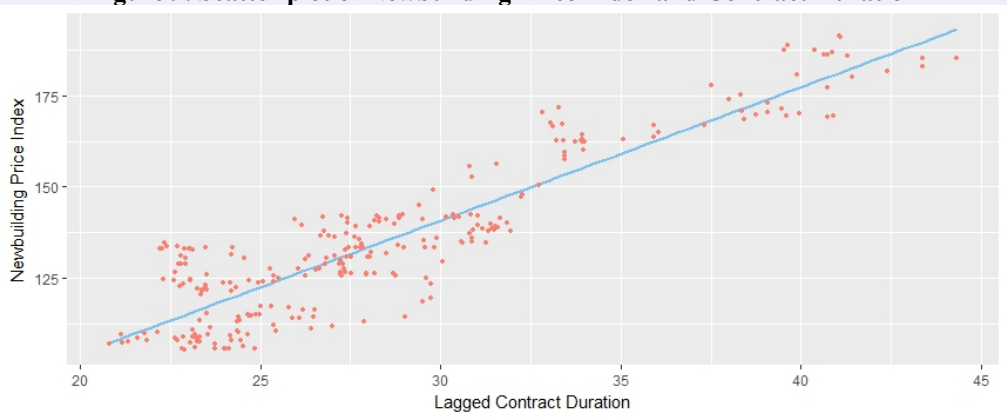
Another interesting interaction worth analysing could be the relationship between the health of shipping companies (represented by their stock performances) and the prices of new ships. The Dow Jones Global Shipping Index measures the stock performances of global shipping companies and might thus be a good proxy for the state of the shipping sector. If shipping companies are profitable they might be more inclined to buy new vessels. The increase in demand might then drive up new building prices.

As can easily be seen from Figure 11, both indices trend upward from April 2013 to April 2014 and then start to decrease. While the downward trend of the Dow Jones Shipping Index stopped in December 2015, the price index bottomed out in April 2017. From December 2015 on, the Dow Jones Shipping Index remained rather stable between 430 and 550. The Newbuilding Price Index on the other hand started to increase from 120 in April 2017 to 128 in March 2018. In general, the Dow Jones Shipping Index is more volatile than the newbuilding prices. Box 2 gives further preliminary analysis of their relationship.

Box 2. Descriptive examination of the relation between the Newbuilding Price Index and other variables

A great number of economic determinants could have an influence on newbuilding prices. Among these, global trade volume, steel prices, secondhand prices, scrapping prices and capacity utilisation of yards are just a few examples. Therefore, in order to determine the effects of these variables on newbuilding prices, sophisticated econometric models are required, based on historical data. Nevertheless, for descriptive purposes, some simple correlations between newbuilding prices and other variables can be informative. More specifically, as Figure 9 and Figure 10 suggest, contract duration and the Dow Jones Shipping Index seem to be rather well correlated with the Newbuilding Price Index.

Figure 9. Scatter plot of Newbuilding Price Index and Contract Duration



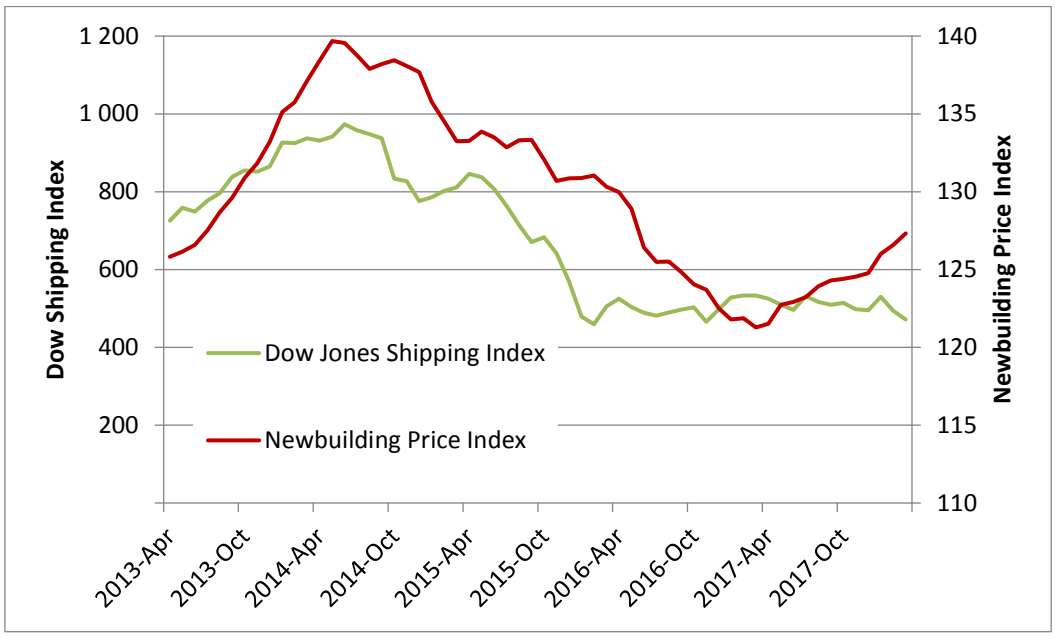
The above graph includes data over the period from June 1996 to February 2018. The contract duration series is lagged to represent the notion that capacity utilisation in time '*t−1*' may be correlated with prices in time '*t*'. In this setup, the graph shows that longer contract durations correlate with higher prices.

Figure 10. Scatter plot of Newbuilding Price Index and Dow Jones Shipping Index

Source: both graphs OECD representation based on data from Clarkson World Fleet Register and Clarkson Shipping Intelligence Network.

The above scatter plot suggests a positive relationship between the Newbuilding Price Index and the Dow Jones Shipping Index. The graph is created using the lagged values of monthly averages of the Dow Jones Shipping Index and monthly values of the Newbuilding Price Index over the period April 2013 – March 2018 and shows that a high/low Dow Jones Shipping Index in time '*t−1*' correlates with a high/low Newbuilding Price Index in time '*t*'. The strength of this relationship should not be construed as indicating a causal effect. Further econometric analysis will be necessary to establish a statistically significant link between different variables and the newbuilding prices.

Figure 11. Dow Jones Shipping Index and Newbuilding Price Index



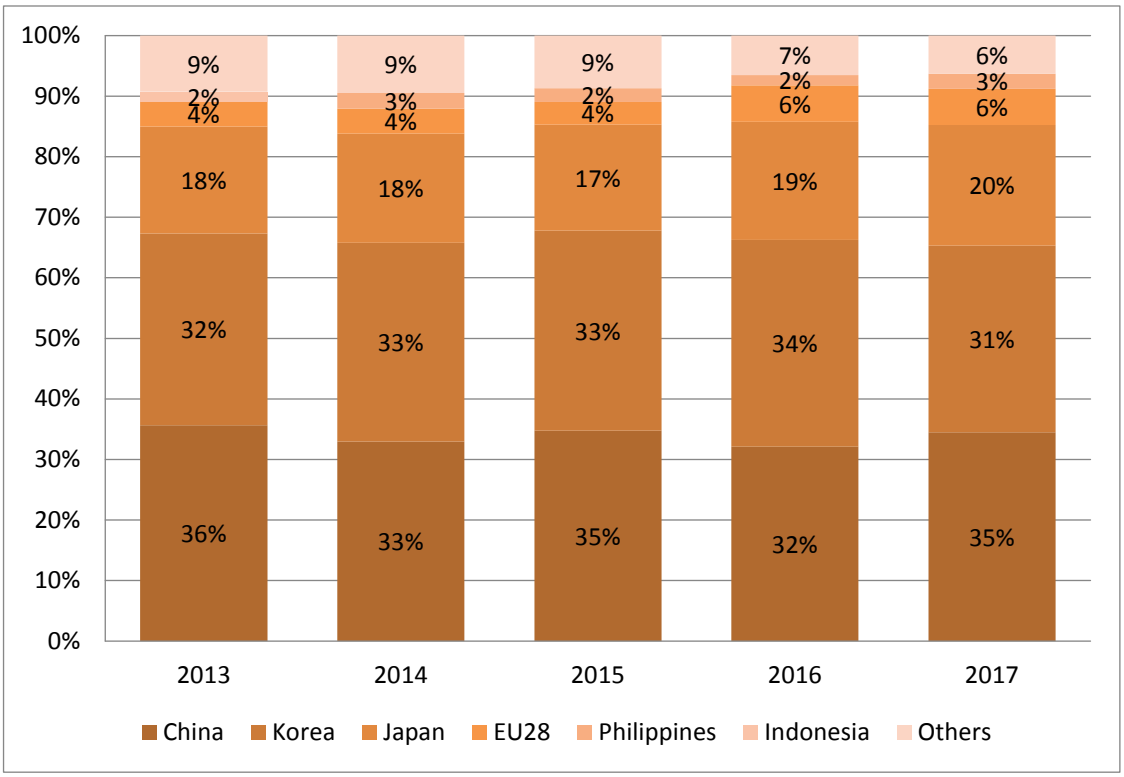
Note: Dow Jones Shipping Index data are monthly averages, New Building Price Index data are end of month values.
Source: OECD representation based on data from Clarkson's Shipping Intelligence Network and S&P Global.

3. Shipbuilding Supply

3.1. Market shares by shipbuilding economy

Shipbuilding production in terms of CGT is strongly concentrated in the three East Asian economies China, Korea and Japan, which in 2017 represented 86% of all CGT delivered. This high percentage has remained relatively stable over the last years. China is the largest shipbuilding economy, followed by Korea, Japan and the European Union (EU). Rank five has been taken over by the Philippines from Indonesia in 2014.

Figure 12. Development of country market shares in CGT deliveries, by year



Note: The five largest shipbuilding economies are depicted, measured in CGT.
Source: OECD calculation based on Clarkson World Fleet Register.

While giving good insights into the development of market shares among countries, the graph conceals absolute production values. Overall deliveries decreased slightly in 2017. In terms of CGT, Chinese deliveries in 2017 increased slightly compared to 2016 (+1%), while the Philippines registered a strong increase of 41% with deliveries reverting to its 2015 level. The other top 5 shipbuilding economies, Korea, Japan and the EU28, all delivered less ships in 2017 compared to 2016, measured in CGT. With −4% and −7%,

the decline has been rather moderate for Japan and the EU28, respectively, but more pronounced for Korea with −15%.

While China and Japan accounted for 35% and 20% of all deliveries in 2017 in terms of CGT, respectively, their share of total value of ships delivered in that year is somewhat lower with 28% in the case of China and 17% for Japan. Korea delivered 31% of all vessels in terms of CGT in 2017, but 35% in terms of value. Finally, European shipyards[11] accounted for 7% of deliveries in CGT, but could capture 13% of the value. A similar picture arises when considering new orders in 2017, for which European shipyards dominated the industry with orders totalling approximately USD 22 billion in 2017, driven by the strong cruise ship market, ahead of China (USD 18 billion) and Korea (USD 16 billion). Japan secured orders worth USD 3.8 billion (Clarksons Research, 2018[9]). Of the total 63.8 billion in new contracts in 2017, this translates to shares of 34% for total Europe, 28% and 25% for China and Korea and 6% for Japan.

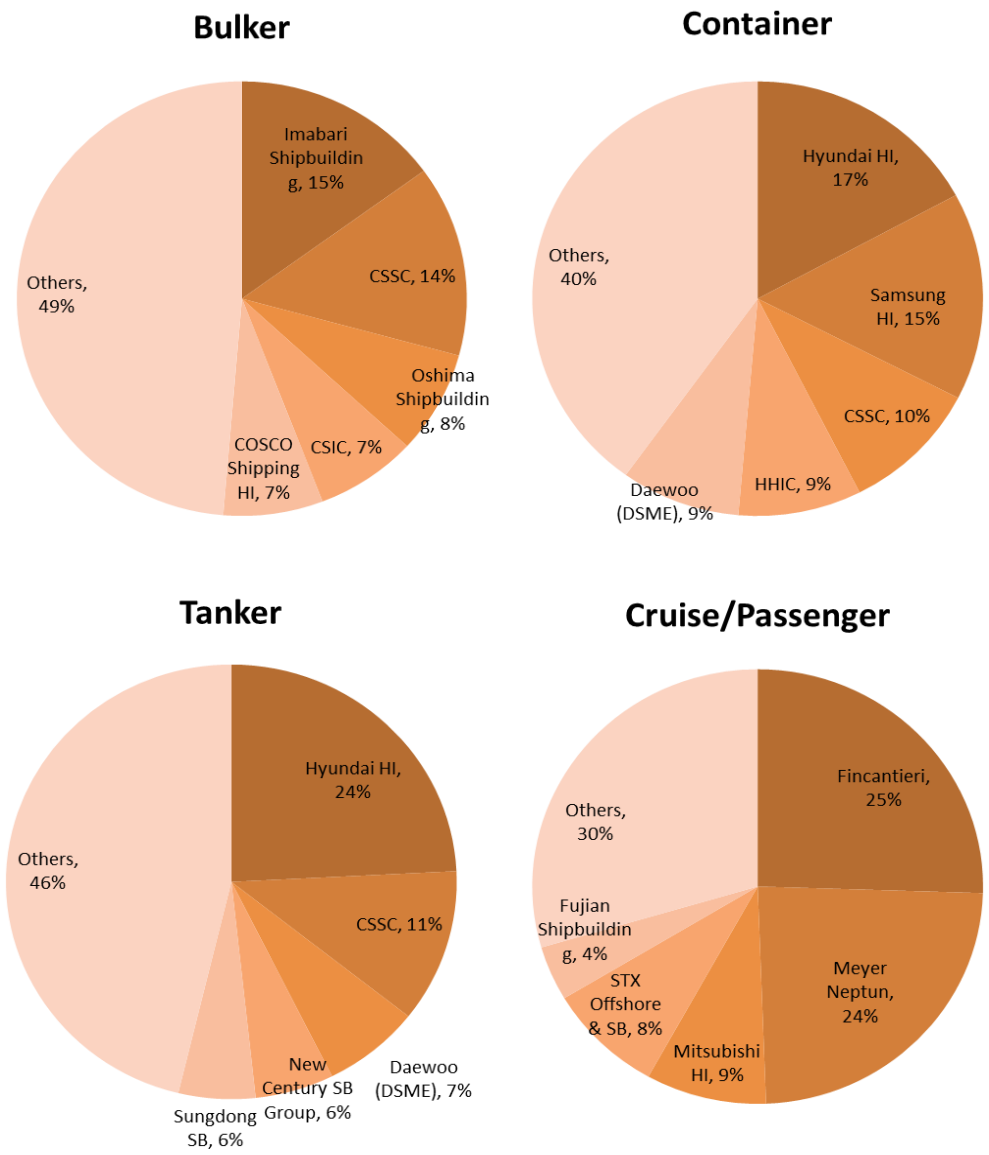
3.2. Market concentration by shipbuilding economy and by ship type

As Korean deliveries of bulkers dropped significantly in 2017 to a market share of 2%, China could consolidate its lead in this segment, increasing its share from 48% to 54%, followed by Japan with 40%. In 2017 Korea continued to dominate the sectors containers and tankers with a share of 43% and 45%, respectively, although having lost its absolute majority of 53% of deliveries in each market in 2016. China as well as Japan consequently could increase their shares in both these segments. While 32% of container ships and 30% of tankers produced in 2017 were made in China, Japan followed with shares of 12% and 14% in the respective segments. As for containers, the Philippines could significantly increase their position in that segment, doubling their market share to 8%. The EU continues to dominate the market for cruise ships and passenger vessels by a wide margin, with deliveries in terms of CGT in 2017 amounting to 61%.

Analysing the company shares of deliveries in 2017 in terms of CGT in each of the main market segments yields a similar picture when regarding the nationality of the different firms, but also reveals less concentration. Thus, although all four segments are rather concentrated geographically (bulker, container and tanker in East Asia and cruise ships in Europe), the market seems to be more competitive when regarding the number of players. As evidenced by its high export share[12], shipbuilding is a global industry in which yards/companies are in international competition for contracts. It is therefore informative to have a closer look at the market shares of companies for the main ship types in order to analyse the competitive situation in the different segments.

Calculating the global Herfindahl–Hirschman Index[13] (HHI) for each segment yields a value of 0.073 for bulkers, 0.096 for containers and 0.093 for tankers. Only the cruise ship and passenger vessel market is slightly more concentrated with 0.142. One reason for this might lie in the fact that building cruise ships requires different work flows, inputs and advanced technology. An indication for this can be seen in the values, as the price to CGT ratio is about twice as high for cruise and passenger vessels than for the three other investigated ship types bulkers, containers and tankers (where prices for ships are available). Switching between building containers and tankers might be easier for companies than entering the cruise ship market, which has higher entry barriers (Stopford, 2009, p. 399[10]). Thus, shipyards' higher flexibility among some ship types might render these segments more competitive (Stott, 2017[11]).

Figure 13. Company market shares within segments, 2017 deliveries



Note: The category "Cruise/Passenger" includes cruise ships as well as passenger vessels. The category "Bulker" includes the groups "bulk carriers" and "bulk ore carriers". All ships from 100 GT are included in this graph.
Source: OECD calculation based on Clarkson World Fleet Register.

To put these values into perspective it is interesting to note that the US Department of Justice (2015[12]) defines a market with a HHI between 0.15 and 0.25 as moderately concentrated, and highly concentrated from 0.25 and above. Similarly, according to the EC Merger Regulation (2004[13]), the European Commission is unlikely to investigate mergers that result in a post-merger HHI of below 0.1. The average HHI for the last 5 years in each of the above ship segments was below 0.15 and single values did not

exceed 0.2 for more than the last 10 years.[14] Following the cited definitions, the different segments can thus be identified as low to moderately concentrated. This, however, is only a very preliminary analysis without prejudice to the actual competitiveness of the market. Defining ownership structures or market segments differently might yield dissimilar results.

As to the latter, experts have suggested to define the international commercial shipbuilding market as any vessel above a ship size of 5 000 GT, differentiating between the market for cargo vessels and the passenger ships. Firstly, different types of cargo ships might be part of a yard's product mix, with some potential to substitute between the construction of these types (in this case namely containers, bulkers and tankers). Secondly, the assembly of cruise ships requires different equipment, human capital and supply chains and thus represents a different product category. The threshold of 5 000 GT is set to define the international shipbuilding market because smaller ships tend to be ordered at the home country as the share of transaction costs become prohibitively high for international ordering in those cases (Stott, 2017[11]).

According to this definition, the shipbuilding market for cargo vessels[15] can be defined as rather fragmented with an HHI of around 0.06 for the last 5 years (2013-2017), and the passenger ship market seems to be moderately concentrated with an HHI of around 0.2 for the same time period. If we further restrict the latter market segment to only contain cruise ships[16], the sector becomes highly concentrated with an HHI of 0.37.

3.3. Orderbook and forward cover

The above-mentioned development of new contracts staying below deliveries in 2016 and much of 2017 has led to an overall decline in the orderbook. As the different ship types experienced dissimilar patterns of new orders, shipbuilding countries with a focus on these ship types saw their orderbooks decline to differing degrees.

A comparison between past deliveries and the current orderbook gives a first indication of the prospects of shipbuilding economies. While China and Japan accounted for 35% and 20% of deliveries in 2017, respectively, they capture a slightly higher share of the current orderbook (37% and 21%), in terms of CGT. Korea on the other hand delivered 31% of CGT in 2017, but has only 20% of all CGT on order. The EU28 registers a much higher share in the orderbook (13%) compared to its deliveries in 2017 (6%), which reflects the recently strong ordering activity in the cruise ships sector.

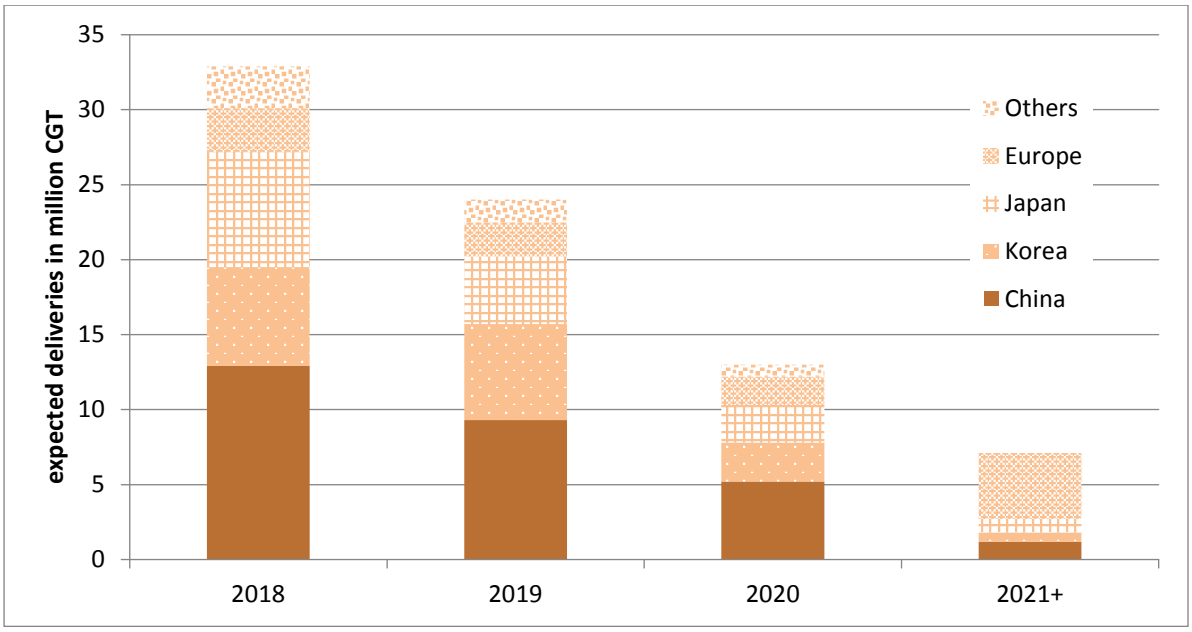
For individual shipyards, a decline in the orderbook means a shorter period of time until they see the end of their work. The "forward cover" is a measure for this, defined as the current orderbook divided by deliveries in the previous year in CGT terms (Clarksons Research, 2017[14]). As of January 2018 forward cover stood at 2.4 years globally. Historically, it has already been lower in 2013 with 2.1 years, albeit with a much stronger orderbook. In 2008, the peak of the last cycle, forward cover reached 5.4 years.

While in 2013, forward cover was rather similar for all four major shipbuilding economies, ranging between 2.1 and 2.6 years, the measure is much more dispersed today. This comes as ordering activity differed among ship types and countries tend to have a focus in certain sectors. As of January 2018, China and Japan registered 2.5 and 2.4 years of forward cover, respectively. With 1.6 years, Korean forward cover is on its lowest value since over a decade. All three economies registered a decline the second

(Japan) or third (China and Korea) consecutive year. Shipbuilders in the EU28 were in a more comfortable situation in this respect, with 4.9 years of forward cover. As a rule of thumb, yards prefer their forward cover to be above 24 months in order to have sufficient planning security. The fact that some economies are under or close to 2 years forward cover illustrates the challenging situation for shipbuilders in these economies.

Finally, looking at expected deliveries gives a good illustration of these differences in the current orderbook and the resulting dissimilarities in forward cover. While China accounts for most of the expected deliveries (based on the orderbook as of March 2018) from 2018 through 2020, Europe has most of the orders that are due in 2021 and beyond.

Figure 14. Expected deliveries based on orderbook March 2018



Source: OECD representation based on Clarkson World Shipyard Monitor March 2018 (Clarksons Research, 2018[9]).

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Endnotes

[1] To illustrate, the tanker market has experienced a significant increase in scrapping activity since mid-2017. While many factors influence scrapping decisions (e.g. fleet age, freight rates, scrap prices), regulations are likely to play a role (Tanker Insights, 2017[15]).

[2] If not otherwise noted, percentage changes are based on CGT values.

[3] From Q4/2016 to Q4/2017, the increase in new orders in terms of CGT was to 76% due to the increase in contracts for bulkers.

[4] As of 1 March 2018, values for Handysize bulkers are no longer included in the index.

[5] Clarkson derives the Newbuilding Price Index by averaging the USD per dwt values of various ship types.

[6] The second hand prices are collected by Clarkson Research, for various sizes and ages of vessels for the main vessel types and relate to market sales.

[7] There are numerous factors that can influence newbuilding prices. The fact that trends in contracting seem to precede developments in the price index should not be understood as a causal link. More econometric analysis would be necessary to establish a range of causal factors.

[8] We call the actual delivery time "contract duration" and the expected delivery time "contract lead time" (the latter to be consistent with Clarkson).

[9] Using Clarkson data, contract duration is calculated by subtracting the contract signing date from the built date.

[10] To use contract durations as indicator, expected contract durations (or contract lead times) need to be used. For checking the validity of an eventual method, historical expected contract lead times are necessary, which are available. Due to data restrictions, the values depicted in the figure are based on calculations derived from Clarkson World Fleet Register and thus include actual contract durations for older and expected contract durations for newer contracts. For the current purpose, however, the two series are sufficiently similar.

[11] This category also includes non-EU countries like Norway.

[12] In 2017, Japan exported 51%, China 70% and Korea 87% of its produced ships in terms of CGT.

[13] The Herfindahl–Hirschman Index is a measurement for market concentration. It is calculated as the sum of the squares of the market shares. The value is thus between 0 and 1, with 0 indicating perfect competition (as the theoretical case of an unlimited number of firms) and 1 perfect monopoly with a single firm capturing the entire market.

[14] Looking at shipbuilding as a whole, these values did not exceed 0.06 for several decades.

[15] Here we only included bulkers, containers and tankers in the calculation.

[16] Still restricted to vessels larger than 5 000 GT.