

SHIPPING MARKET REVIEW

MAY 2017

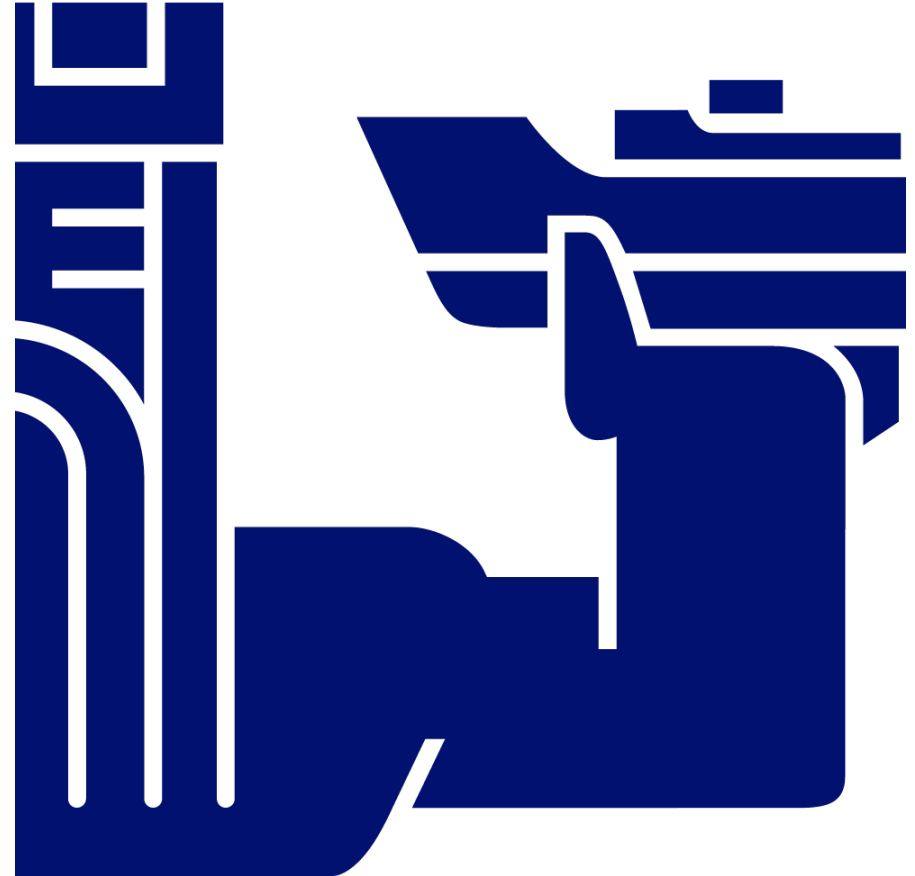


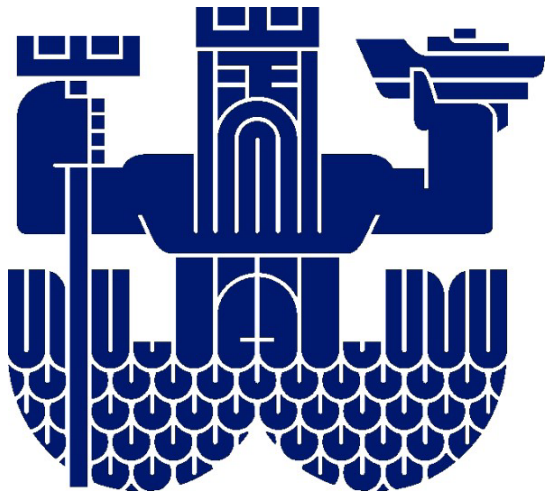
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SHIP FINANCE**

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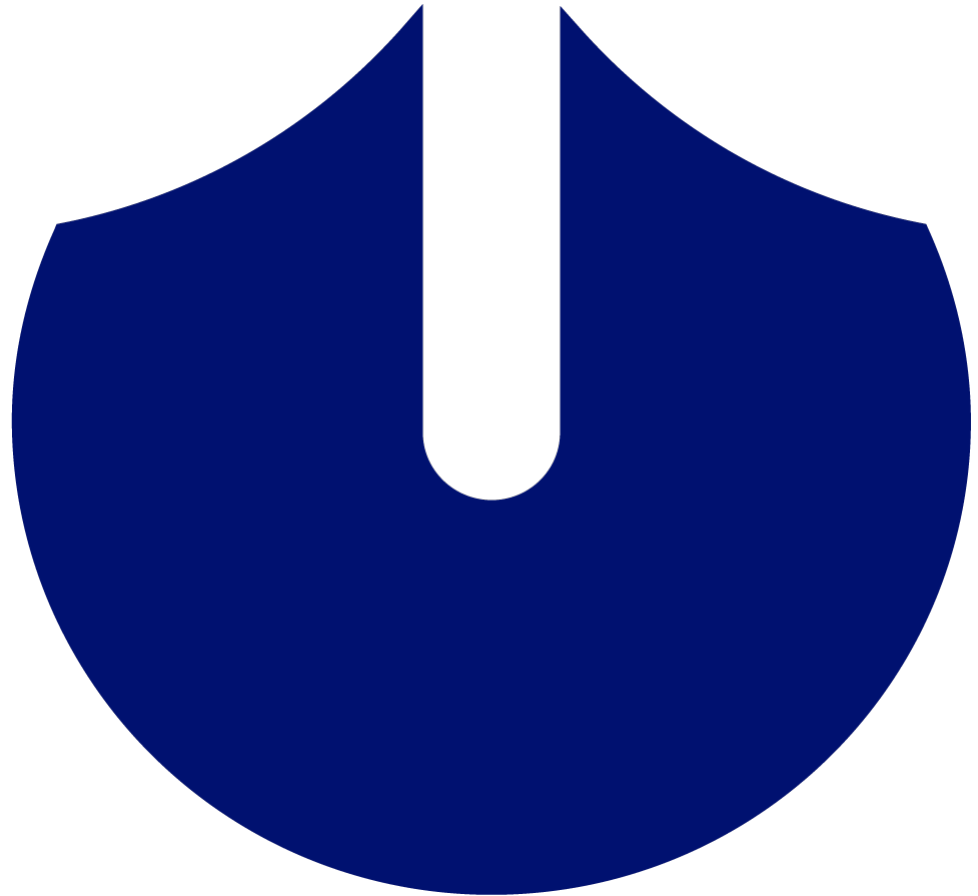
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FOREWORD

Our bi-annual Shipping Market Review is intended to promote discussion of the medium to long-term challenges facing the shipping industry and to highlight some global perspectives that might serve as an outlook. The current edition of the report, is the sixth report where we analyse and discuss the potential implications from the global economy's tectonic shifts.

The outlook for the world economy and seaborne trade is shrouded in uncertainty since the combined effects of the fourth industrial revolution (e.g. artificial intelligence, robotics, the internet of things, 3D printing and digitalisation) and the ageing consumer base seem able to disrupt everything we know about economic growth, from labour markets to trade relations.

The fourth industrial revolution is paving the way for long-term gains in efficiency and productivity. The global economy's dependence on fossil fuels is expected to decline, and global value chains, from raw materials to intermediate goods to finished goods, are expected to shorten. This means trade dynamics and trade patterns are expected to be redefined. Trade volumes may stagnate, travel distances may shorten and the efficiency of the world fleet could improve considerably.

Emerging economies, especially in Asia, have been the growth locomotive for seaborne trade volumes and the global economy since 2008. Labour and raw materials have been the fuel powering these economies, but it is global consumers that have been steering this progress.

The outlook for many of the emerging economies is increasingly subject to harsher conditions, since global consumers – the buy side of the global economy – are no longer demanding the same goods and raw materials as they did in the past. This represents a huge challenge for the emerging economies which need to create employment for the millions of people waiting to enter the global

economy and hence become consumers that can move into cities (i.e. urbanisation) and eventually drive future growth in seaborne trade volumes.

This report is devoted to emphasise that the emerging economies ability to create jobs for their growing populations is the single most important prerequisite for future growth in seaborne trade volumes. Global demand, across all ship segments, is likely to grow more slowly in the years to come than it has done in the past.

Long-standing trends are being broken, since technological innovation has started to deliver on the promises dreamed about for several decades. We are in a period of innovation on many different fronts. To grasp the full potential of the combined forces, we need to reset our internal navigation systems. These new technological advances are bringing about unparalleled changes to the global economy.

This represents the first blueprint for a new architecture for the shipping industry. Other industries have already seen new patterns of consumer behaviour that are forcing market participants to adapt the way they design, market and deliver products and services. A key trend is the development of technology-enabled platforms that combine both demand and supply to disrupt existing industry structures. Similar trends could easily find their way to the shipping industry. It could mean that entire new business models will have to be developed to serve the industry. To us, it seems clear that the fourth industrial revolution could reshape large parts of the shipping industry within a decade.

Danish Ship Finance, May 2017

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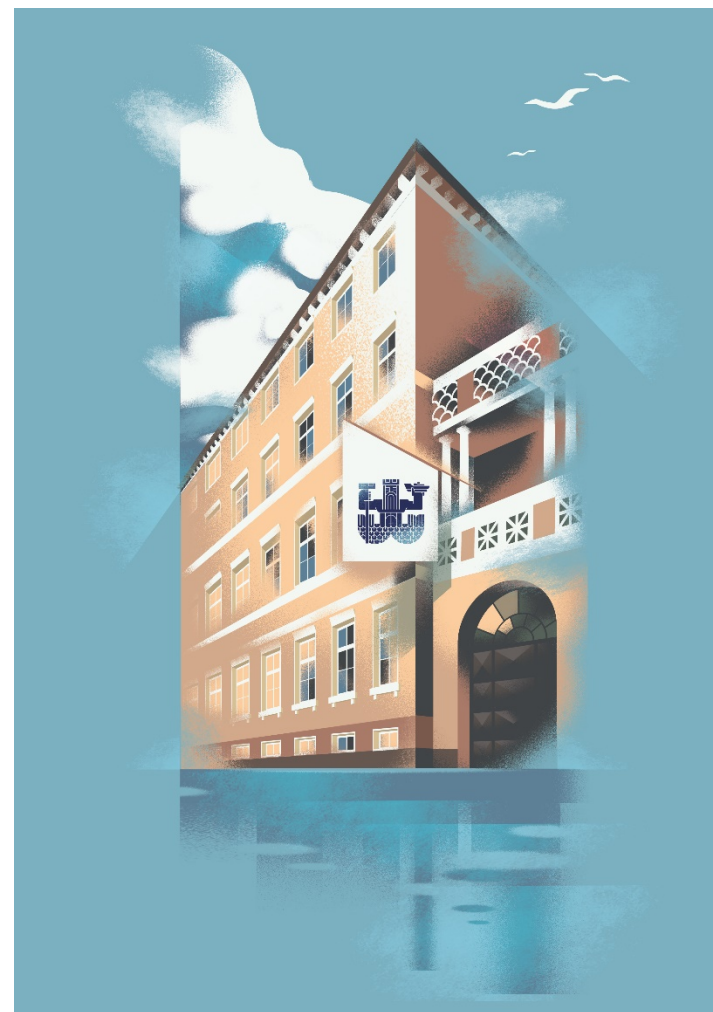
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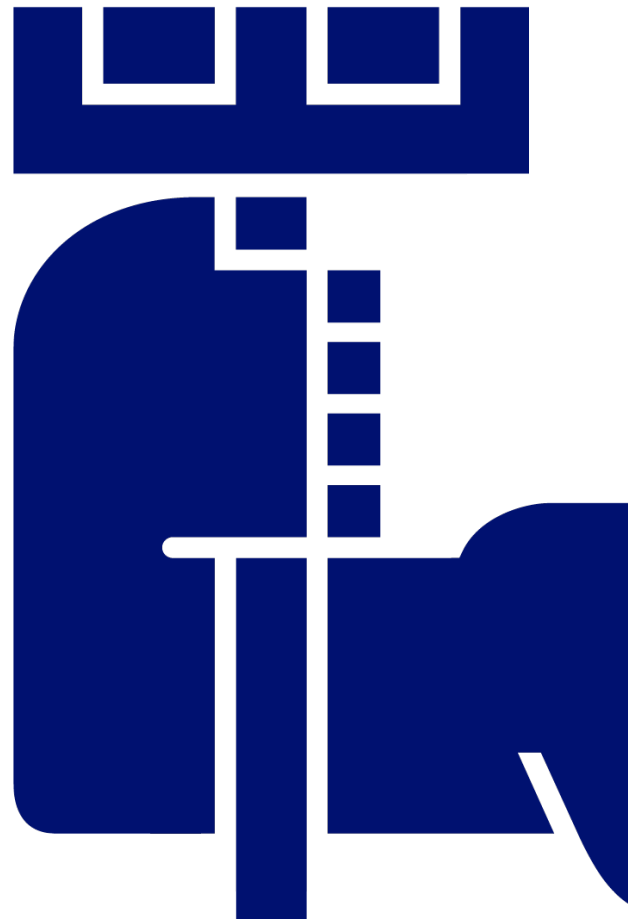
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EXECUTIVE SUMMARY

SHIPPING MARKET REVIEW – MAY 2017



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EXECUTIVE SUMMARY

This report reviews key developments in the shipping market and the main shipping segments during the period December 2016 to May 2017 and indicates possible future market directions. Please read the disclaimer at the beginning of this report carefully.

In this report, we present a discussion of the potential long-term developments that may shape the outlook for the shipping industry. The first section of the report, the General Review and Outlook, outlines the macroeconomic perspectives from which we analyse the long-term outlook for the individual ship segments. We try to provide a clear-eyed view on how to navigate the changing demand landscape. In line with our previous two reports, the point we try to make is that over the next decade the combination of ageing consumers and the advent of the fourth industrial revolution will introduce seismic changes to consumer demand and transform the way we consume and supply not only energy but also goods and services.

These changes are important to bear in mind, since their implications are massive. Take the energy sector as an example. For decades, the energy business has been long-term in nature. Finding and developing new sources of fossil fuels take time, and so does developing the infrastructure needed to provide a steady stream of energy services to customers in different locations. The latest technological innovations in the energy industry – from renewable energies and smart grids to advances in oil drilling techniques – are changing this, and parts of the global energy supply have become increasingly flexible. The actual size of the potential from these innovations remains uncertain in the short to medium term, but to us it seems beyond doubt that a more flexible energy system, with a growing contribution from renewable energy sources, is gaining pace across most regions.

The oil and gas industry has responded to this new energy landscape by reducing exploration and production spending significantly since the 2014 peak. This has led to speculation about an inadequate future supply of oil, but actual oil production continues to surprise on the upside since producers have managed to improve the recovery rates of existing fields. Oil inventories are currently high and OPEC has cut production to support the oil price. Recent forecasts predict that the world could experience an oil shortage sometime in the early 2020s if investments do not pick up. However, we consider this prediction highly uncertain, since new technologies have continued to unlock resources that were once considered inaccessible and have increased the efficiency of extraction techniques. New technologies are also dampening the demand outlook for fossil fuels, though, since they are creating alternatives to existing energy sources (e.g. electric cars).

On the demand side, most forecasts hinge on the assumption that global population growth will continue to drive global economic growth by turning farmers into consumers. Many buy into the expectation that urbanisation will continue to expand. The general assumption is that this expansion will be powered by fossil fuels and that more people joining the world economy will create more trade-intensive global consumers. And with the global middleclass set to expand within the next decades, energy demand is expected to go up.

Such a scenario appears to neglect some of the nascent changes related to job creation stemming from the fourth industrial revolution, not to mention an ageing consumer base. The integration of China and other emerging economies into the world economy was enabled by global consumers' demand for (manufactured) goods and fossil fuels. The ageing of these consumers, combined with the advent of the fourth industrial

revolution, is causing a shift in consumer spending and raising the barriers for job creation. This could reduce GDP growth in emerging markets and potentially create fewer jobs and reduce seaborne trade volumes. We would therefore urge our readers to consider a scenario where the urbanisation process may turn out to be less powerful than in the past. That could happen if the urban areas are unable to employ the migrant workers.

The single most important message we strive to deliver in our *General Review and Outlook* is that global demand, across all ship segments, is likely to grow more slowly in the years to come than it has done in the past.

The composition of the world fleet is ill-suited to the expected transformation of trade volumes. The world fleet is young, the average vessel is larger than in the past, and more vessels are on order. Younger vessels are being scrapped, since few old vessels remain. The general outlook for the shipping industry is therefore bleak. Freight rates and secondhand prices are low across the board, and shipyards are closing, or reducing capacity, due to overcapacity. Future demolition will lower the average age of vessels scrapped and continue to reduce the value of older vessels through a shortening of their economic lifetime. The industry is simply positioned for growth in seaborne trade volumes and is very vulnerable to forces that may reduce growth in trade volumes.

The shipping industry will undergo a transformation in the years to come. We expect to see a gravitational shift towards different vessel types, smaller parcel sizes and in some segments even fewer cargoes shipped. We maintain our long-term growth estimate for seaborne trade volumes, of about 1% per annum on average until 2030, but this forecast may contain many surprises in terms of commodity classes, trading routes and distances and could mask a temporary drop in seaborne trade volumes in some segments that might leave fleet utilisation depressed for quite

some years. Some players are already adapting successfully, while others are lagging.

Still, it is important to keep in mind that long-term trends only define the dynamics in play. These dynamics may easily be outgunned by temporary forces defining short-term demand. Even in oversupplied markets, the temporary forces could become sufficiently powerful to raise freight rates and secondhand prices for several months, sometimes even longer. This is essentially what we are currently seeing in the Dry Bulk market.

In general, we would urge our readers not to interpret short-term spikes as signs of a more lasting recovery and to continue to show restraint with regard to ordering new vessels.

SHIPBUILDING

The Shipbuilding industry is seeing order covers decline rapidly and more yards are beginning to feel the pressure from a thinning orderbook. Contracting remains very low and in the period from the start of 2016 to the end of the first quarter of 2017, the industry restocked only 35% of annual active yard capacity. Deliveries of vessels exceeded new contracting by a factor of three. Worst hit were South Korea and Japan, where six vessels were delivered for every new order placed. In China, the number was only three, but the reason for this low number was a very weak delivery performance. In contrast, Europe received more orders than it delivered, due to seemingly insatiable demand for very large Cruise vessels.

Market fundamentals indicate that contracting of new vessels could stay low over the next one to two years, because the overcapacity that has built up in many of the major shipping segments is weighing on fleet utilisation, freight rates and secondhand prices. Until the overcapacity is brought down and fleet utilisation improves, there will be limited demand for new vessels and thereby also yard capacity. We estimate that current fleet utilisation is around 80-85% and that it could take three

years for utilisation to go above 90%. Hence, the yard capacity required to support future demand for new vessels is expected to be markedly below the 45 million cgt of active annual capacity available today.

The two-tier structure of the industry is becoming more pronounced and the number of active yards is declining. The number of first-tier yards, defined as those having received new orders within the last 18 months, is declining, but this group is keeping active newbuilding capacity constant. The outlook for the second-tier yards – those that have not received any new orders within the last 18 months – is getting bleaker, however, and both the number of yards and active newbuilding capacity are declining rapidly. Around 200 yards are scheduled to deliver their last orders in 2017.

We expect more yards to be left without orders and forced to close, if not permanently then temporarily, until the market regains balance. However, even if contracting remains low in the coming years, the consolidation of the industry could lead to higher newbuilding prices in some segments, because prices will be settled between fewer parties.

CONTAINER

Liner companies are still working to consolidate their positions through mergers, acquisitions and alliances. Within the next 12 months, we expect to see many larger vessels returned to the tonnage providers as the liner companies and their alliance partners optimise their new trading networks. This strategy is aimed at increasing box rates, which is likely to be at the expense of tonnage providers. Timecharter rates and secondhand prices for larger ships are expected to decline even though box rates are improving, since container demand is increasing more slowly than the fleet and more vessels are coming off hire.

All players, tonnage providers and liner companies alike, are thus subject to the expected spillover effect from lower timecharter

rates for larger vessels in the form of a reduction in secondhand prices. Moreover, if more of the larger vessels are scrapped, the average scrapping age of these vessels will decline and lower the expected economic life of the fleet. This is in effect a two-fold blow, since both lower timecharter rates and a shortening of the expected economic life are expected to put downward pressure on secondhand prices.

The smaller vessels (i.e. those below 8,000 teu) could begin to benefit from a shrinking fleet, since it appears that some owners are considering reversing the cascading effect by deploying leaner and smaller vessels on some trade lanes, pushing some larger ships out, in a reversal of the prevailing practice of reducing the marginal cost per teu moved. It may be too early to call it a trend, but even without this, the smaller vessels could begin to benefit from their shrinking fleets.

The route to a market recovery for the larger vessels seems long and costly. A new value proposition is emerging, but it might not be for all. Additional value could be created through digitalisation of the industry. The established players are centrally positioned to benefit from this but could become marginalised if they fail to move into the digital space. The champions of disruption are the ones that are creating a new and significantly enhanced value proposition for customers. Such a new value chain holds the potential to redefine the ecosystem of Container trading.

DRY BULK

The Dry Bulk market has experienced an extraordinary window of increasing freight rates in the past few months. Market sentiment has improved significantly even though fundamentals have deteriorated and freight rates remain low. A number of temporary factors ranging from order deferrals, vessel idling and longer travelling distances to Chinese fiscal stimuli and scrapping have facilitated higher utilisation of the active fleet. Investors have responded strongly and have been driving up secondhand prices beyond the improvement in freight rates. Secondhand prices rose

by close to 30% during the first four months of 2017. The Capesize segment showed the highest jump, with the price of a five-year-old vessel rising from around USD 25 million at the end of February to USD 33.5 million at the end of March.

Structural changes, especially related to Chinese demand, could drive down seaborne import volumes of iron ore, coal and building materials much more quickly than most investors seem to be factoring in. This, combined with the fact that the apparent improvement in fleet utilisation is based on temporary factors, means we believe the current recovery in secondhand prices could offer a unique exit opportunity. Still, the ongoing recovery in freight rates could last throughout large parts of 2017 and potentially even into 2018. However, when the Chinese government abandons its fiscal stimuli programmes and resumes its rebalancing efforts, Dry Bulk demand could be subject to a sudden drop in transport volumes.

OFFSHORE SUPPLY VESSELS

Global oil supply has become more price-elastic, since technological innovation allows producers to adjust to changes in demand more rapidly. This is in particular the case in North America, where advances in horizontal drilling techniques, combined with hydraulic fracturing, have enabled producers to tap into shale deposits and thereby add incremental oil-producing capacity in a relatively short development cycle. This has dampened the appetite for new offshore exploration. In combination with the higher degree of autonomy of later-generation offshore rigs (e.g. including dynamic positioning and more internal storage capacity), this has structurally reduced demand for offshore supply vessels.

The low fleet utilisation (below 50%) is shaping the outlook for Offshore Supply Vessels. More than 1,500 vessels (30% of the fleet) are currently registered as being laid up and a large part of these do not have active class certificates. This basically means that these vessels are unlikely to re-enter service and become an

active part of the fleet, if owners do not get a contract in place to cover the reactivation costs.

The larger ship segments (i.e. AHTS >12,000 BHP and PSV >3,000 dwt) seem to be somehow better positioned for a recovery in freight rates than the smaller ones. Still, some of the larger vessels could turn out to be overequipped for the needs of the future, and the size of the orderbook, if it is delivered, clouds the outlook significantly.

The outlook for secondhand prices is bleak, as they will find little – if any – support from increases in freight rates that do not stem from demolition of vessels. Current secondhand prices are being supported by some degree of illiquidity, since many vessels are being put into lay-up rather than scrapped or sold. The few vessels that are being sold – at heavy discounts – are labelled as distressed sales. Current secondhand prices could be facing significant downside risk if demand fails to employ a larger share of the fleet. Prices for vessels maybe as young as ten years old seem the most exposed.

CRUDE TANKER

Market fundamentals worsened in the Crude Tanker segment in 2016, as the fleet expanded rapidly and outstripped otherwise strong growth in distance-adjusted demand. This led to steep declines in freight rates. The VLCC segment experienced the most severe downturn, partly because the US replaced seaborne imports from the Middle East with domestic production and Canadian imports. At the end of April 2017, the 1-year timecharter rate stood at USD 26,575 per day for a VLCC, USD 18,200 per day for a Suezmax and USD 16,000 per day for an Aframax – an average decline of around 15% from the December levels.

The bearish market has reduced secondhand prices, especially for older vessels, to some of the lowest levels since the beginning of the 2000s. The average secondhand price declined by around 17% in 2016 but increased marginally during the first four months of

2017. Some investors seem to believe that we are near or past the bottom of the cycle.

We argue that the combination of a large and front-loaded orderbook, a young fleet, high oil inventories and demand expectations in the region of 1% calls for some caution. The fleet is predicted to increase by at least 5% in 2017 and 3% in 2018. Freight rates will decline further if demand fails to employ the incoming vessels. While the implementation of the Ballast Water Management Convention in September may reduce fleet availability if owners decide to scrap older vessels instead of investing in them, with a positive impact on freight rates, this could also depress secondhand prices through a reduction of the fleet's expected economic lifetime.

The Crude Tanker market is expected to be weighed down by strong supply growth in 2017, which will put pressure on freight rates and secondhand prices. We find it unlikely that there will be demand factors strong enough to counterbalance the high fleet growth, and we therefore expect the Crude Tanker market to remain difficult for the next 12 months.

PRODUCT TANKER

Product Tanker timecharter rates are low, since supply continues to grow ahead of demand. High inventory levels, modest growth in refinery throughputs and declining utilisation rates at the world's refineries have weakened the opportunities for geographical arbitrage trading of petroleum products and hence lowered Product Tanker demand. During the first quarter of 2017, tonne-mile demand waned and utilisation of the Product Tanker fleet declined. Older vessels are being traded, while owners appear unwilling to sell younger vessels at current prices. Secondhand prices remained relatively stable during the first four months of 2017.

The fleet is scheduled for growth, which dominates the outlook. We expect that the high inventories of refined oil products will

enable an increasing share of demand to be fulfilled via stock draws in 2017. This, combined with slowing growth in refinery throughputs and limited arbitrage trading, leads us to forecast approximately 2% growth in Product Tanker demand for 2017.

Timecharter rates and secondhand prices for LRs are expected to decline during 2017 and going into 2018, as too many vessels are scheduled to enter the fleet too quickly. If demand for LRs plateaus at current levels, all vessels older than 15 years would need to be scrapped for timecharter rates to be maintained at current levels. In the event of this, secondhand prices would decline by approximately 12-15% from current levels. MRs are better positioned to absorb the orderbook and could, in theory, uphold both current timecharter rates and secondhand prices if vessels not being employed are scrapped. This could be achieved just by scrapping vessels older than 25 years.

Still, fleet availability could temporarily be reduced ahead of the Ballast Water Management Convention, which comes into effect in September 2017, as some owners may choose to bring forward their vessels' surveys to postpone having to make investment decisions. Older vessels could be scrapped if owners decide that it is not worth investing in them. In short, the new regulations could briefly improve utilisation of the Product Tanker fleet during the summer months.

LPG

The LPG market is currently flooded with excess vessel supply, especially VLGCs and MGCs. Demand increased by approximately 5% in 2016, but fleet growth surged to 18%. In 2017, net fleet growth is expected to be around 10%, almost three times the rate of expected demand growth. Freight rates are approaching historically low levels and secondhand prices are declining.

The weak market has so far not led to an increase in demolition activity. The young age profile of the fleet seems to be keeping a

lid on demolition. When owners begin to scrap, the average age of vessels scrapped could quickly begin to decline to a level that becomes destructive for secondhand prices.

Investors' appetite for new vessels seems to have cooled off with the low freight rate environment, which means that the current orderbook is scheduled to run out quickly. The fleet is predicted to grow by approximately 3% in 2018 and 2% in 2019.

Freight rates will begin to recover when fleet additions fall short of demand growth. This could materialise as early as the second half of 2018, but any significant recovery in freight rates is unlikely before 2019.

The demand outlook remains strong and we expect to see new orders placed in 2018 with expected delivery in 2020. We predict that secondhand prices could continue to decline going into 2018 even when freight rates start to recover. ■

GENERAL REVIEW AND OUTLOOK

SHIPPING MARKET REVIEW – MAY 2017



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GENERAL REVIEW AND OUTLOOK

THE SHIPPING INDUSTRY IS STRUGGLING WITH OVERCAPACITY IN MOST SHIP SEGMENTS. FREIGHT RATES AND SECONDHAND VALUES ARE LOW ACROSS THE BOARD AND YOUNGER VESSELS ARE BEING SCRAPPED. SEABORNE TRADE VOLUMES CONTINUE TO INCREASE BUT SIGNIFICANTLY SLOWER THAN PREVIOUS TRENDS. WE ARGUE THAT SEABORNE DEMAND HAS NOT DECOUPLED FROM THE GLOBAL ECONOMY; THE GLOBAL ECONOMY HAS SIMPLY REDIRECTED TOWARDS SERVICES.

AGEING CONSUMERS REDIRECT GROWTH TOWARDS SERVICES

Emerging economies, especially in Asia, have been the growth locomotive for the global economy since 2008. Labour and raw materials have been the fuel powering these economies, but it is global consumers that have been steering this progress. Today, global consumer patterns are being redirected towards activities that are not as trade- and energy-intensive as in the past. There is a structural and a technological component to this shift. The structural component relates to the ageing consumer base we are seeing in most of the major economies. From North America and Europe to Japan and China, consumers are ageing. These consumers continue to spend, even though their disposable income generally shrinks upon retirement, but we are seeing a gradual but persistent shift in their spending towards services that often are domestically produced (e.g. health care, leisure spending). The technological component relates to the trends emerging from the fourth industrial revolution including circular economic principles and the sharing economy.

HIGHER PRODUCTIVITY OF THE GLOBAL ECONOMY

The fourth industrial revolution is disrupting some very basic mechanisms that have been facilitating massive growth in seaborne trade volumes over the past decades. It is increasing the efficiency and productivity of the global economy and is raising the barriers for job creation. The outlook for many of the emerging

economies is increasingly subject to harsher conditions, since global consumers – the buy side of the global economy– are no longer demanding the same goods and raw materials as they did in the past. This represents a huge challenge for the emerging economies which need to create employment for the millions of people waiting to enter the global economy and hence become consumers that can move into cities (i.e. urbanisation).

HIGHER BARRIERS FOR JOB CREATION

The global shift towards services is not, by itself, a problem for the world economic outlook – in fact, quite the opposite in many regions. But if the shift towards services (or digitalisation or the fourth industrial revolution) raises the barriers for entry-level jobs and/or reduces the number of low-skilled jobs in mining, manufacturing, heavy industry, oil and gas and elsewhere, then it represents a great challenge for the emerging economies' ability to integrate with the world economy. This is not to say that technological innovation is destroying jobs, or that there will be no job creation from, for example, the renewable energy revolution. The point is that the barriers to future job creation may be raised to an extent that it is difficult for low-skilled workers in emerging economies to enter the global workforce. Besides, the increased efficiency of future growth may reduce the job creation spillover effects between sectors and industries. For example, a kilowatt-hour produced from a renewable energy source such as solar or wind power may contain fewer production steps and demand less maintenance and hence create fewer jobs than if it was produced from the oil and gas industry or the mining industry.

THE FUTURE BELONGS TO ASIA...

Future world economic growth is expected to be less resource- and trade-intensive and create fewer jobs than prior to 2015. We believe that the forces currently in play will introduce far-reaching changes that will redraw major parts of the world economy's

architecture and require significant changes to the infrastructure that serves it. This represents a huge challenge for the shipping industry, since most segments are positioned for considerable growth in trade volumes. Most long-term forecasts currently assume that the ageing consumer base in many of the OECD economies leaves little room for trade growth. Future growth in trade volumes is most likely to come from Asia. China and India are predicted to be the drivers of growth across most, if not all, seaborne asset classes through a push towards urbanisation fuelled by their rising populations. However, such a scenario appears to neglect some of the nascent changes related to job creation arising from the fourth industrial revolution, not to mention the ageing consumer base.

...ALTHOUGH CHINESE DEMAND MAY BE LEVELLING OFF

It is easy to envisage the Chinese economy continuing to grow, but let us consider a scenario where the economy has reached a state of maturity, with demand for construction activity, for example, largely satisfied. At that point, demand for construction activity goes into maintenance mode, not because the economy is in recession, but simply because the existing stock of buildings is sufficient to support economic growth. Such a situation could cause import volumes of building materials to decline and could even reduce the economy's demand for labour, energy and fossil fuels. If we factor in efficiency gains across various sectors, these effects intensify, and even more so if we take into account an ageing workforce (or a shrinking population) that is redirecting its spending towards services.

URBANISATION WITHOUT JOBS CREATES SLUMS

What about urbanisation? Urbanisation, the process of migrating rural workers into cities, is sometimes presented as the single most important step in the Chinese growth story. The construction of cities and even the demolition of buildings clearly create short-term GDP growth, but it takes a strong and diverse economy to sustain this growth over a longer period and hence earn a yield on the construction investments. Our point with the example above

is that initial job creation is pivotal for sustained economic growth. A large pool of low-skilled workers only represents an enabler for growth if it can actually be employed. The migration of people from rural areas into cities simply creates slums if the economy cannot create the necessary jobs for them – and slums are often GDP-negative. These observations are highly relevant to the outlook for the shipping industry.

THE SWEET SPOT OF THE PAST...

Before we proceed to the outlook, let us take a step back to identify which activities facilitated the massive increase in global economic activity and trade growth between 1990 and 2015. The simple answer to this highly complex question seem to be that we have supplied consumers in North America, Europe and Japan with cheap labour, fossil fuels and low priced manufactured goods. The initial powertrain of this dynamic was clearly the consumers (i.e. the buy side), but the expansion of the global labour force allowed this trend to continue for two decades without significant wage increases. The effective size of the global labour force, the sell side, more than doubled when first Eastern Europe, then India and finally China joined the world economy in relatively quick succession, over just two decades (i.e. the 1990s and 2000s). The offshoring of production not just to a single country but increasingly to a complex global network of component manufacturers enabled massive job creation that generated energy and seaborne trade-intensive spillover effects from the global boom in demand for electricity, construction materials, fossil fuels, metals, containerised goods (including various industrial intermediate materials) and plastics.

...WAS BUILT ON MANUFACTURING JOBS...

An illustrative case to consider to grasp the importance of these particular dynamics is to acknowledge the importance of the initial job creation in the manufacturing sector for the Chinese growth story. Low-skilled manufacturing jobs, in China and in many countries before, have been the first enabling step in the process of becoming integrated into the world economy. The job creation

in the manufacturing sector creates additional demand for new infrastructure projects, housing, and domestic services. And when more people move into cities to work (i.e. urbanisation), it encourages demand for further construction activity. The process whereby people are increasingly employed in a broader set of sectors in various jobs marks the growth path towards a more mature economy. It is generally thought that resource intensity peaks when the economy builds up and begins to level off when the economy turns towards services.

...AND URBANISATION

China’s rapid industrialisation, its urbanisation on a massive scale, and its surging economic growth were the primary factors that employed the growing world fleet in the beginning of the new millennium. By 2015, China was consuming more than half of the global supply of iron ore and thermal coal and about 40% of the world’s copper. It is important to recognise that China’s growth was unprecedented and that it happened at about ten times the rate at which the UK improved average incomes during the Industrial Revolution — and on around 200 times the scale.

WE SHOULD NOT EXPECT TO SEE ANOTHER CHINA

We should consider whether other countries could replicate China’s rapid integration into the world economy, albeit on a smaller scale. The world has never been short of emerging economies with large populations that dream about economic growth. Can we expect India, Indonesia, Pakistan or Nigeria to become the next China, kicking off another commodity super-cycle that employs large parts of the underutilised world fleet? The simple answer to this very complex question is no. We should not expect to see another China – quite the opposite, in fact, simply because global consumers, the buy side, are ageing and about to retire.

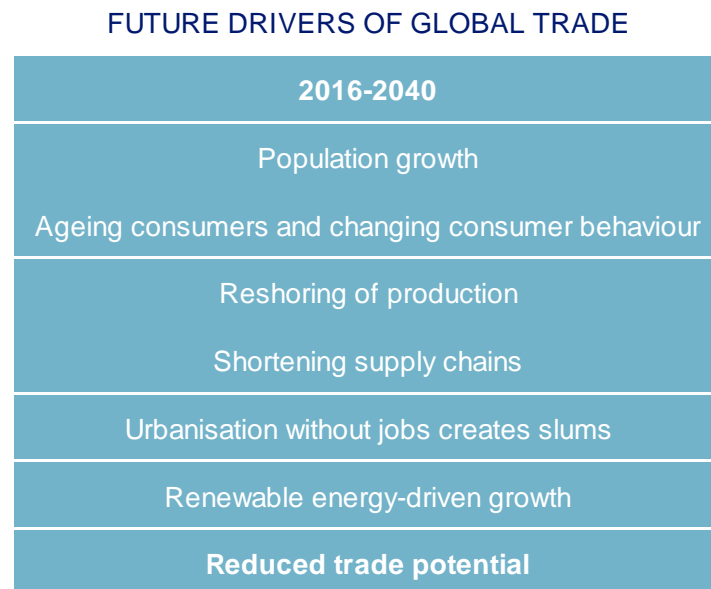
SEISMIC CHANGES TO CONSUMER DEMAND

Our point is that the combination of ageing consumers and the advent of the fourth industrial revolution will, over the next

Figure GRO.1



Figure GRO.2



decade, introduce seismic changes to consumer demand and transform the way not only energy but also goods and services are consumed and supplied.

RENEWABLE ENERGY IS A TECHNOLOGY

Let us take energy as an example. Technological advances will continue to bring down the cost of renewable energy such as solar and wind power, as well as the cost of storing it. This will continue to increase the role of renewable energy in the global energy mix. The success of renewable energy has spilled over into the oil and gas industry, for which medium to long-term demand expectations have been reduced. On the supply side, sophisticated data analytics and technological innovation are enabling resource producers to identify, extract, and manage resources that were once inaccessible as well as increasing the efficiency of extraction techniques.

TECHNOLOGY IS CHANGING ENERGY SUPPLY

The market for offshore supply vessels provides another good example of how technological innovation is changing the way energy is supplied. Global oil supply has become more price-elastic, as technological innovation allows producers to adjust to changes in demand more rapidly. This is especially the case in North America, where advances in horizontal drilling techniques, combined with hydraulic fracturing, have enabled producers to tap into shale deposits and thereby add incremental oil-producing capacity in a relatively short development cycle. When the oil price collapsed in 2014, North American tight oil producers were among the first to halt development of new fields because they could idle drill rigs. But when prices increased, they were also among the first producers to return to market, as they could bring those same rigs online again quickly. Consequently, tight oil production in North America is now the marginal source of supply for the foreseeable future. Large-scale megaprojects, such as oil sands development and deep-water projects, might be less likely to proceed given their long lead times and high capital costs, as well as concerns about their environmental impact. The advances

being made in onshore development have dramatically lowered the current appetite for new offshore exploration projects. Technological advances are also playing a role in the production units: many of the newer offshore rigs are equipped with dynamic positioning and more internal storage capacity, reducing the demand for offshore supply vessels. In short, technological innovation has left the market for offshore supply vessels heavily oversupplied.

INDUSTRIES ARE IN TRANSITION...

The transformative nature of the world economy's new architecture is creating a new ecosystem for global consumers. Technology is shifting the boundaries of production and distribution, not only within industries but also between industries. We continue to argue that the forces currently in play are about to disrupt, or at least significantly streamline, large parts of the underlying industries that shipping currently serves. Some of these industries (e.g. the automotive, mining, and oil and gas industries) are already in transition and are seeing their market outlooks change rapidly, while other industries (e.g. the petrochemical industry and manufacturing) seem to be approaching the tipping point, whereafter the potential consequences of new technologies could change their market dynamics completely.

...WHICH IS REDUCING THE OUTLOOK FOR SEABORNE TRADE

The shipping industry is expected to undergo a massive transformation. We anticipate a gravitational shift towards different vessel types, smaller parcel sizes and in some segments even fewer cargoes shipped. We still expect to see long-term growth in seaborne trade volumes averaging about 1% per annum until 2030, but this forecast may contain many surprises in terms of commodity classes, trading routes and distances, and could mask a temporary drop in seaborne trade volumes in some segments that might leave fleet utilisation depressed for quite some years. ■

SHIPPING MARKETS AT A GLANCE

SHIPPING MARKET REVIEW – MAY 2017



**DANISH
SHIP FINANCE**

SHIPPING MARKETS AT A GLANCE

THE MAJORITY OF SHIPPING SEGMENTS ARE EXPERIENCING DIFFICULT TIMES, WITH LOW FREIGHT RATES AND DECLINING SECONDHAND PRICES. WITH MORE VESSELS YET TO BE DELIVERED, WE MAINTAIN A CAUTIOUS APPROACH TO MOST SEGMENTS.

The shipping market continues to struggle with overcapacity and low freight rates. Demand is increasing by approximately 2% per year but is failing to absorb the incoming vessels in most segments. Utilisation of the world fleet remains low. Demolition of vessels continues to be high, although the previously supercharged activity level has levelled off. Some segments have already scrapped most old vessels, which means that further demolition will lower the average age of vessels scrapped. This trend could intensify in the years to come if the tanker segments begin to scrap younger vessels.

FREIGHT RATES STILL UNDER PRESSURE FROM LOW FLEET UTILISATION

The ClarkSea Index remains low. At the end of April 2017, it stood at USD 11,300 per day, up approximately USD 4,000 per day from its all-time low in August 2016. The low index reflects the fact that most of the larger ship sizes are now struggling with low utilisation, although it should be noted that the Dry Bulk segment regained some of the lost ground during the first four months of this year (fig. 1).

BUNKER PRICES REMAIN LOW BUT ARE INCREASING

The massive decline in bunker prices that commenced at the end of 2014 and continued throughout 2015 provided some welcome relief, as it cushioned some of the effect from falling freight rates. Bunker prices have more than doubled since January 2016 but remain 40% below their five-year average. Prices dropped 1% during the first four months of 2017 (fig. 2).

Figure SM.1

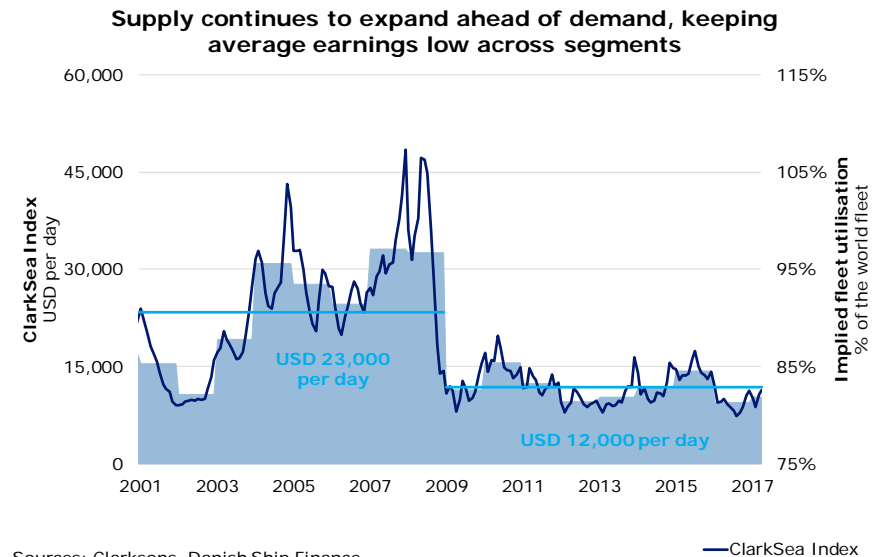
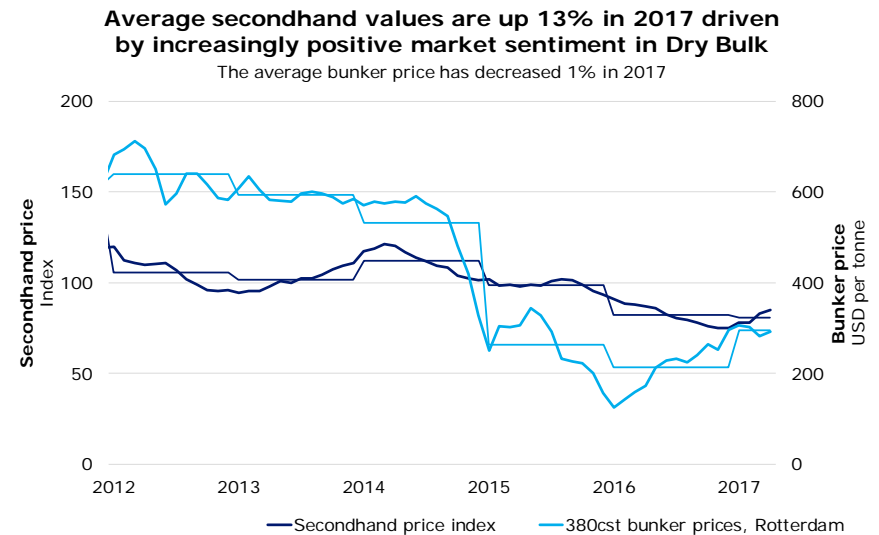


Figure SM.2



THE AVERAGE SECONDHAND PRICE HAS REACHED A NEW LOW

The average secondhand price declined by 14% in 2016 but regained some of the lost territory during the first four months of 2017, rising 13% (fig. 2). In the Dry Bulk segment, however, secondhand prices have significantly outpaced the improvement in freight rates. It appears that some investors are afraid of missing the bottom of the cycle and strongly believes in an imminent market recovery. While we share some of the optimism for the next six to 12 months – for reasons we discuss in detail in the Dry Bulk section – we consider the current situation a rare and unexpected exit opportunity in an oversupplied market. Structural changes could drive down seaborne import volumes of iron ore, coal and building materials much more quickly than most investors seem to be factoring in.

SCRAPPING SEEMS TO BE COOLING OFF

The low freight rate environment has increased owners' incentive to scrap older vessels. In 2016, a total of 44.5 million dwt was scrapped, up from 39 million dwt in 2015. Activity seems to have cooled off somewhat during the first four months of 2017 with a little over 10 million dwt demolished. The average age of vessels scrapped has declined from approximately 32 years in 2009 to 26 years in 2016. The average scrapping age so far in 2017, measured by number of ships, has increased by a year to 27 years, since a significant number of old Offshore Supply Vessels have been scrapped (fig. 3).

SECONDHAND PRICES ARE FACING A STRUCTURAL CHALLENGE

Freight rates have been supported by the massive demolition of vessels seen since 2009. The unintended and sometimes undetected side effect of the extensive scrapping, in a low freight rate environment, has been a more structural depreciation of secondhand prices through a reduction of older vessels' economic lifetime (i.e. cash flow period). In several segments, the average scrapping age has dipped below the expected operating lifetime of

Figure SM.3

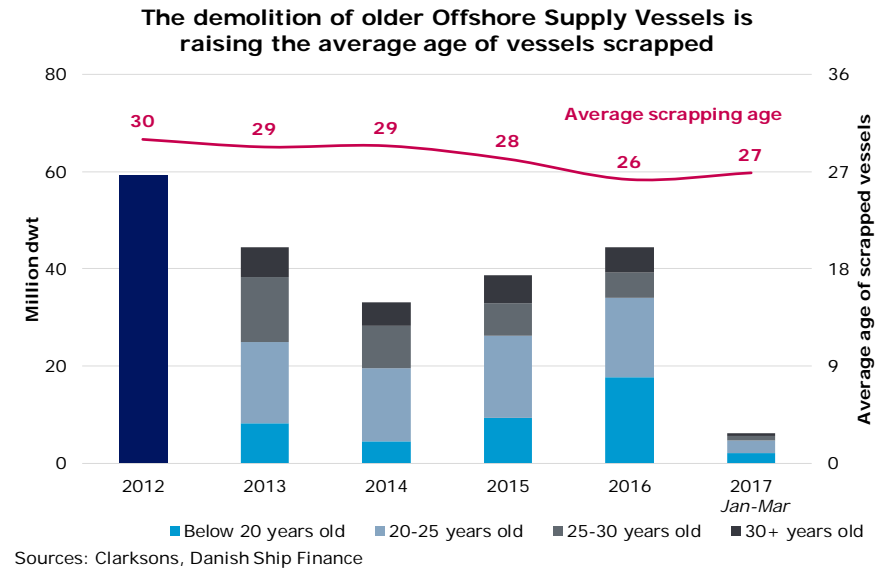


Figure SM.4

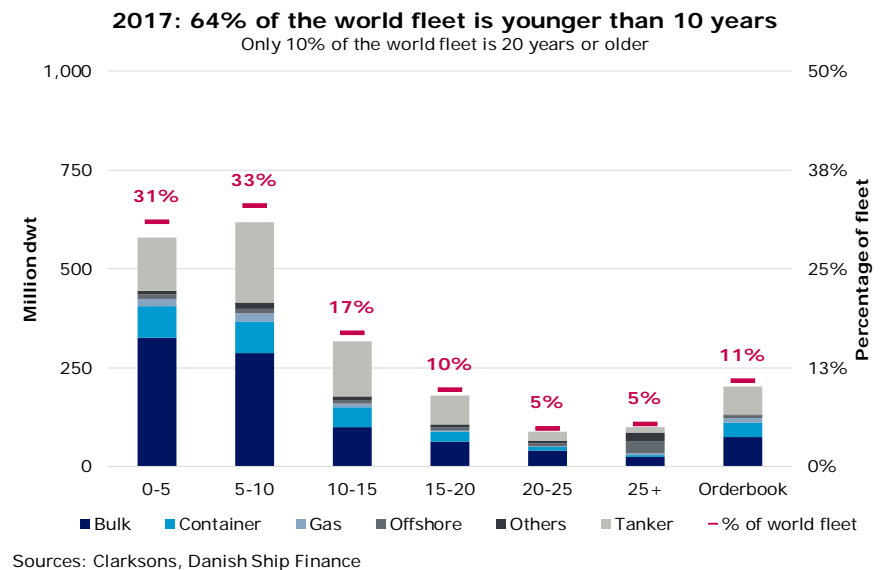


Figure SM.5

the vessels (e.g. 25 years for standard vessels). This has reduced the fleets' expected remaining lifetime (i.e. cash flow period) and hence secondhand prices. In short, when all vessels older than 25 years have been scrapped in a segment, each additional vessel scrapped will in theory lower the value of the fleet.

PRICES MAY NOT REFLECT THE UNDERLYING RISK

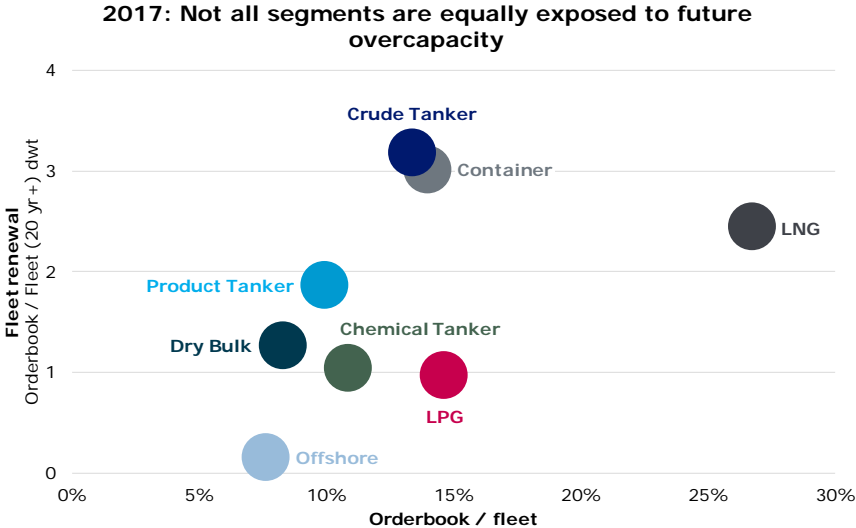
The larger Dry Bulk vessels, unlike for the segment as a whole, and the smaller Container vessels (i.e. below 8,000 teu) have on average been scrapped prematurely in previous years. The shortening of their cash flow periods has caused their secondhand prices to drop beyond their lower timecharter income. The recent rise in Capesize secondhand prices, however, has clearly outstripped the recovery in timecharter rates. This teaches us an important lesson: prices are as likely to reflect market sentiment as fundamentals. Still, it is important to keep in mind that the downside risk to current Dry Bulk prices has only increased.

MASSIVE INFLOW OF VESSELS IN 2017 CHALLENGES THE OUTLOOK...

Shipyards are in a difficult position, since three ships left the shipyards for every new order placed during 2016 and the first quarter of 2017. The global orderbook has come down to approximately 3,300 vessels or 11% of the current fleet in dwt terms. This is the lowest volume of vessels on order since 2003. At the aggregated level, this appears to be positive for the freight rate outlook, but more than 50% of the orderbook is scheduled to be delivered during the remaining months of 2017. Although some vessels might not be delivered according to schedule, very few segments will be able to absorb large fleet additions without current freight rates coming under significant pressure (fig. 4).

...ESPECIALLY FOR TANKERS

The tanker segments (i.e. Crude and Product Tankers and LPG Carriers) are facing the risk of a sudden drop in secondhand prices. The low scrapping activity in recent years has masked the fact that few older vessels remain in the fleets, especially among the larger ships. When more vessels are delivered, owners will begin to scrap



Sources: Clarksons, Danish Ship Finance

in response to the low freight rate environment. We therefore expect most of the larger ship segments to see a reduction in the economic lifetime of older vessels in the years to come. It remains to be seen how secondhand prices will react, but there is a risk that prices could depreciate further (fig. 5).

NEW REGULATIONS COULD SUPPORT SHORT-TERM FREIGHT RATES

The shipping markets could find some temporary support from the implementation of the Ballast Water Management Convention. By September 2017, all vessels must comply with the convention after undergoing their next special survey. To postpone making a decision – whether to scrap or to invest – some shipowners might bring forward their older vessels' next special survey to before September. This could, theoretically, reduce the fleet availability during the summer months and hence provide some short-term relief for freight rates. A spike in freight rates would be welcome but should not be considered a sign of the market recovering. If shipowners decide to scrap older vessels rather than invest in them, this could exacerbate the downside risk in secondhand prices. ■



SHIPBUILDING

SHIPPING MARKET REVIEW – MAY 2017



**DANISH
SHIP FINANCE**

SHIPBUILDING

THE SHIPBUILDING INDUSTRY IS SEEING ORDER COVERS DECLINE RAPIDLY. THE NEED FOR CONTRACTING TO PICK UP HAS BECOME URGENT FOR MANY YARDS. ACTIVE YARD CAPACITY CONTINUES TO DECLINE AND MANY YARDS ARE SCHEDULED TO DELIVER THEIR LAST ORDERS IN 2017.

THE SHIPBUILDING MARKET AT A GLANCE

ORDERING ACTIVITY CONTINUES TO BE WEAK AND THE SITUATION AT MANY SHIPYARDS HAS DETERIORATED FURTHER DURING THE LAST SIX MONTHS.

THE ORDERBOOK IS DOWN TO 80 MILLION CGT

The orderbook has declined by 30% since the beginning of 2016 and by the start of April, it had come down to 80 million cgt – the lowest level since 2004 (fig. 1). New ordering in 2016 totalled just under 12 million cgt or close to 600 vessels, placed at 175 yards – one-third of the volumes contracted in 2015. In the first quarter of 2017, another 3.7 million cgt, or 140 vessels, was ordered at 50 yards. Over the period from the beginning of 2016 to the end of the first quarter of 2017, 195 different yards attracted new orders and the industry restocked only 35% of annual active yard capacity (fig. 2). Europe, however, restocked 147% of the region's active capacity, driven by continued high demand for very large Cruise vessels, which accounted for the largest share of contracting, measured in cgt. Ordering of tankers also picked up somewhat, especially Product Tankers.

THE ASIAN SHIPBUILDERS HAVE BEEN HIT THE HARDEST

The decline in the orderbook has severely affected all builder regions, except Europe. South Korean and Japanese yards have been hit hardest, and in both countries, deliveries in the period exceeded new contracting by a factor of almost six. In China, this number was close to three and in Europe it was below one, since new contracting exceeded deliveries. The lower number in China does not mean that Chinese yards were more successful in attracting new

Figure SB.1

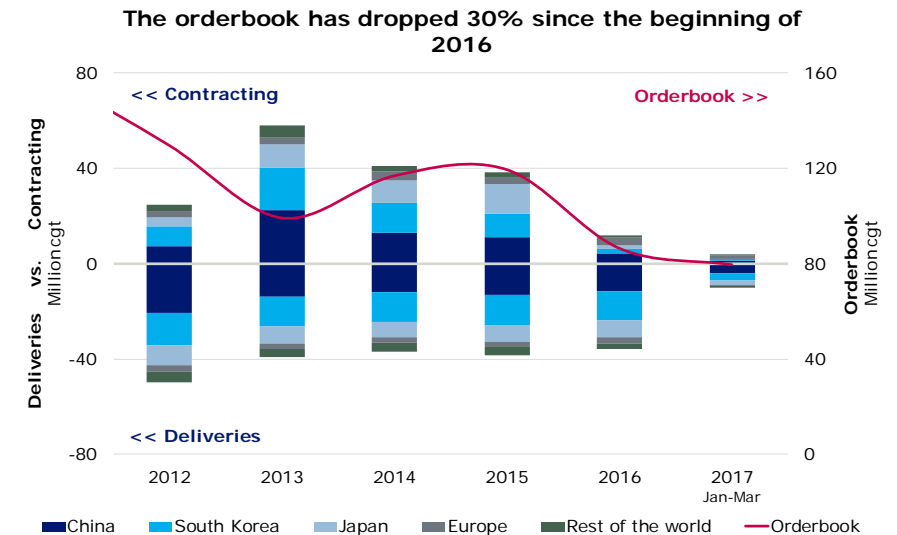
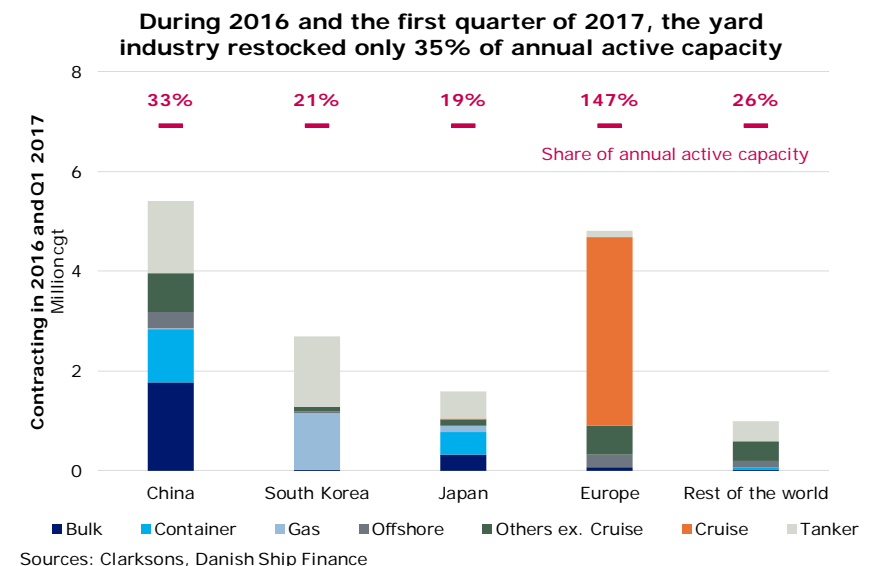


Figure SB.2



orders, but rather that orders were not delivered on schedule. The Chinese yard industry delivered just under 50% of scheduled orders in 2016, because a large share of orders were either cancelled or postponed. The delivery ratios in South Korea and Japan were significantly higher – 82% and 72%, respectively.

NEWBUILDING PRICES ARE DOWN BY 9% SINCE THE START OF 2016

The rapidly declining orderbook has maintained the pressure on newbuilding prices, and the weighted average newbuilding price has come down by 9% since the start of 2016 (fig. 3). The Bulk segment experienced a minor increase in newbuilding prices during the first quarter of 2017 due to a growing interest in ordering new vessels and higher steel prices. According to Clarksons, the price of steel has increased by around 40% since October 2016.

ORDER COVERS HAVE DECLINED SIGNIFICANTLY FOR ASIAN BUILDERS

Order intake has been low for a long time and this is beginning to show in the industry’s order cover. At the start of May, the global order cover had come down to 1.8 years from 2.1 years a year ago, driven by steep drops in the three major Asian shipbuilding nations (fig. 3). South Korea’s order cover came down to just 1.4 years and China’s to 1.6 years. In Japan, the order cover is still above two years, while the recent interest in Cruise vessels has raised Europe’s order cover to three years.

ACTIVE YARD CAPACITY HAS CONTINUED TO SHRINK

As a consequence, 21% of annual active yard capacity is estimated to have less than one year of order cover (fig. 4). At the start of 2016, the share was only 14%. One-third of South Korean yard capacity has less than one year of order cover. These yards are at risk of running out of orders within the next year. Some yards have already run out of orders, while others have scaled down active capacity, and we estimate that annual active yard capacity has fallen to around 45 million cgt, a decline of 5% from our 2016 estimate. Moreover, the number of active yards (i.e. yards with an orderbook or that completed deliveries in the first quarter of 2017) has dropped to around 500 from some 600 in 2016.

Figure SB.3

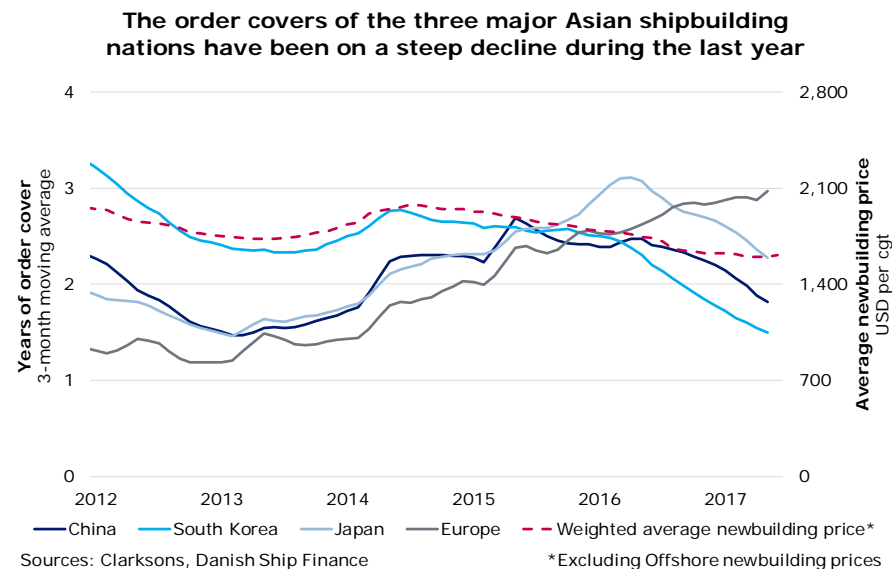
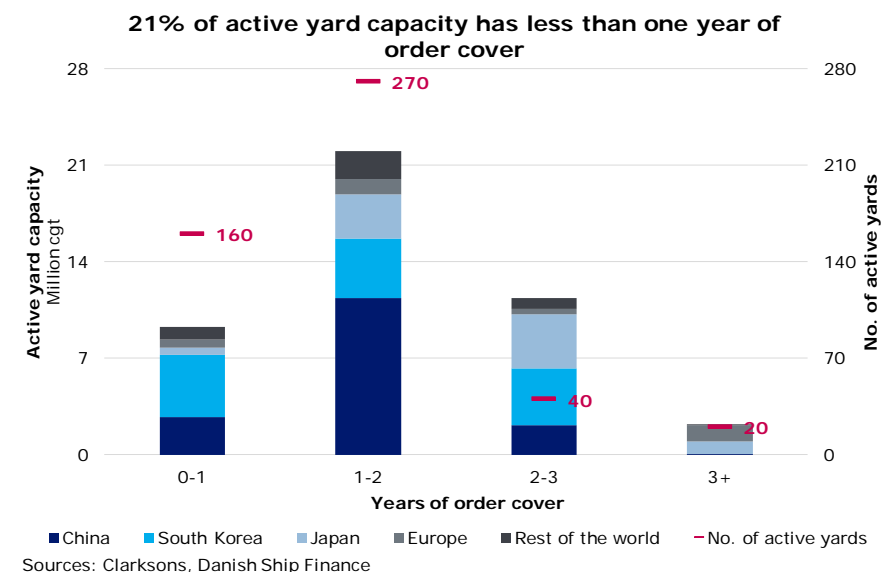


Figure SB.4



THE OUTLOOK FOR THE SHIPBUILDING INDUSTRY IS STILL CHARACTERISED BY THE NEED FOR FURTHER CONSOLIDATION. WE EXPECT CONTRACTING WILL REMAIN LOW AND THAT MORE YARDS WILL HAVE TO CLOSE OR IDLE FOR THE INDUSTRY TO READJUST TO LOWER FUTURE DEMAND FOR YARD CAPACITY.

The orderbook is approaching critically low levels, which is beginning to show in shipyards' order covers. More than 200 yards are scheduled to deliver their last orders by the end of 2017 and survival is dependent on contracting picking up.

OVERCAPACITY IS EXPECTED TO KEEP CONTRACTING LOW...

As we argued in our previous two reports, overcapacity issues in many of the major shipping segments could keep contracting low for some time. The overcapacity is weighing heavily on fleet utilisation, freight rates and secondhand prices. In theory, it is unlikely that contracting will resume to any meaningful extent until fleet utilisation increases.

...AND DELAY THE RECOVERY OF THE SHIPBUILDING INDUSTRY

In an attempt to quantify the overcapacity in the shipping industry, and thereby determine how long it will be before demand for new vessels can start to strengthen, we look at the world fleet, excluding what we label the Others segment (i.e. Ro-Ros, Ferries, Cruise vessels, Dredgers, etc.).

THE OVERCAPACITY IS EXPECTED TO GROW MARGINALLY IN 2017

We estimate that utilisation of the world fleet is currently 80-85%, and that fleet overcapacity is around 100 million cgt as of April 2017. This overcapacity is not expected to be absorbed overnight and could grow marginally during 2017. The orderbook holds 38 million cgt scheduled to be delivered during the rest of 2017 (fig. 5). All else being equal, these orders will add to the existing overcapacity and bring it to 138 million cgt by year-end 2017 (fig. 6). However, scrapping is expected to pick up as low freight rates in some segments, coupled with the Ballast Water Management Convention, increase shipowners' incentive to scrap vessels. Applying

Figure SB.5

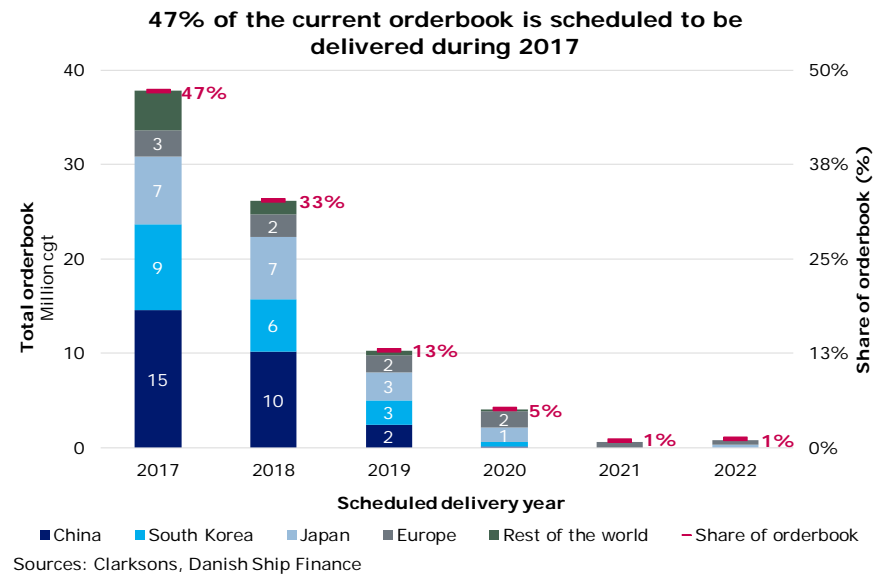
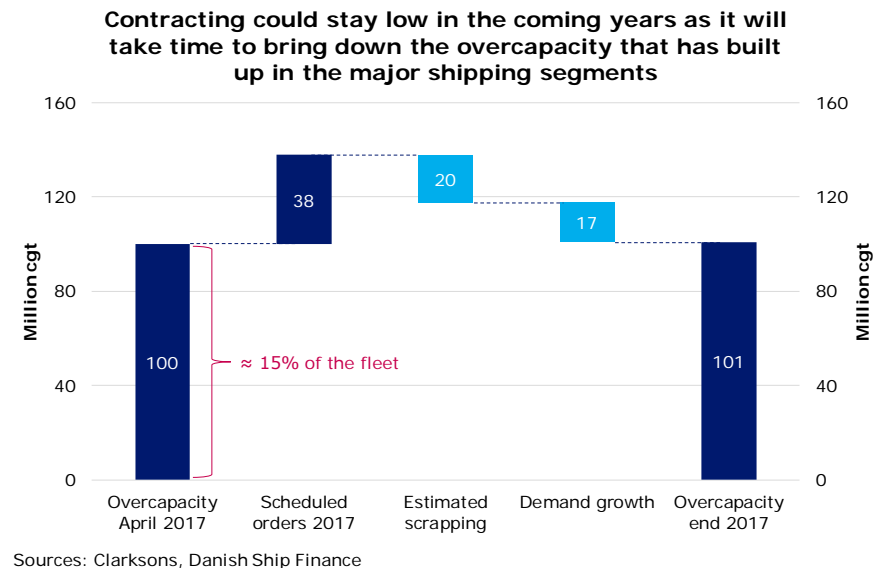


Figure SB.6



a relatively aggressive scrapping estimate of 20 million cgt per annum (scrapping has averaged 12 million cgt annually over the last 12 years) and adjusting for the additional vessel demand created by 2% annual growth in seaborne trade, we expect overcapacity to grow marginally by year-end 2017 (fig. 6).

IT COULD TAKE THREE YEARS FOR FLEET UTILISATION TO REACH 90%

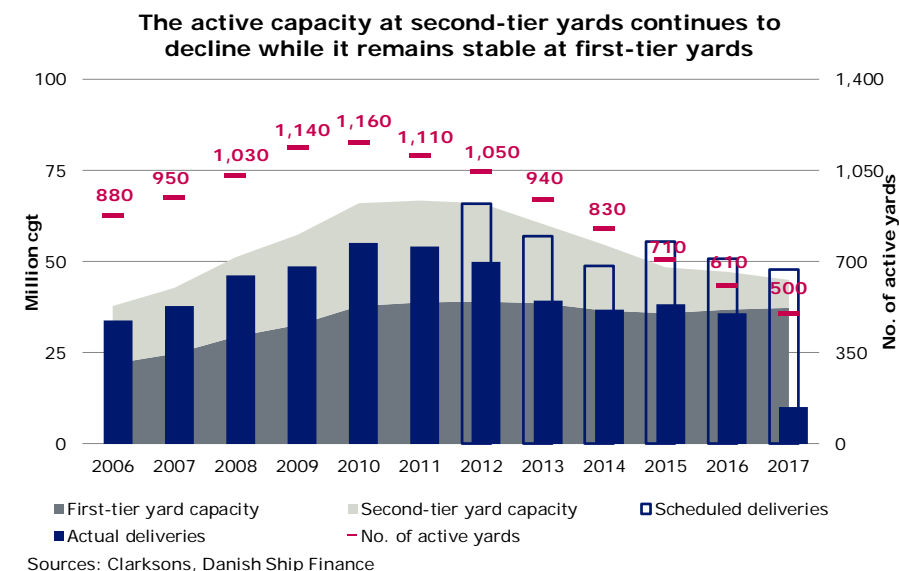
Applying the same approach and assumptions to the next couple of years, and assuming that no new orders are placed, it will take three years for fleet utilisation to rise above 90%, up until year-end 2019. This calculation is of course very simplistic – new orders will be placed and spare capacity in the various shipping segments will develop differently – but the example serves to illustrate the possible drag that the shipping overcapacity will exert on demand for yard capacity going forward.

THE YARD CAPACITY REQUIRED FOR FUTURE DEMAND COULD HALVE

Even if the current overcapacity and orderbook are absorbed and the world fleet and seaborne demand become balanced, the yard capacity that we estimate will be required in the coming years is well below what is available today. In a scenario where fleet utilisation is 100% and seaborne demand grows at an annual rate of 2% (seaborne demand has grown by an average of 1.3% over the last five years), the yard capacity needed for the world fleet to grow in line with demand is only 24 million cgt – roughly half the current active capacity, assuming yard utilisation of only 70%.

THE TWO-TIER STRUCTURE OF THE INDUSTRY IS BECOMING CLEARER

We do not necessarily expect that active yard capacity will halve in the next three to five years, but we are convinced that we will see significant further reductions over the coming years. The two-tier structure of the industry is becoming more pronounced. The number of first-tier yards, i.e. those that have received new orders within the last 18 months, is declining but this group is keeping active newbuilding capacity constant. The outlook for the second-tier yards, which have not received any new orders in the last 18



months, however, is getting bleaker and both the number of yards and active newbuilding capacity are declining rapidly (fig. 7). First-tier yards are currently accountable for around 37 million cgt of active yard capacity and 240 of active yards, while second-tier yards account for 8 million cgt and 260 yards (fig. 8).

SECOND-TIER YARDS COULD BECOME REDUNDANT

We believe that the second-tier yards in many ways are becoming redundant and that they will continue to struggle to attract new orders. Considering that the first-tier yards have restocked only 42% of their annual capacity since the beginning of 2016, it seems there is plenty of spare capacity at these yards to cover a potential increase in contracting.

FIRST-TIER YARDS ARE ALSO SEEING ORDER COVERS DECLINE

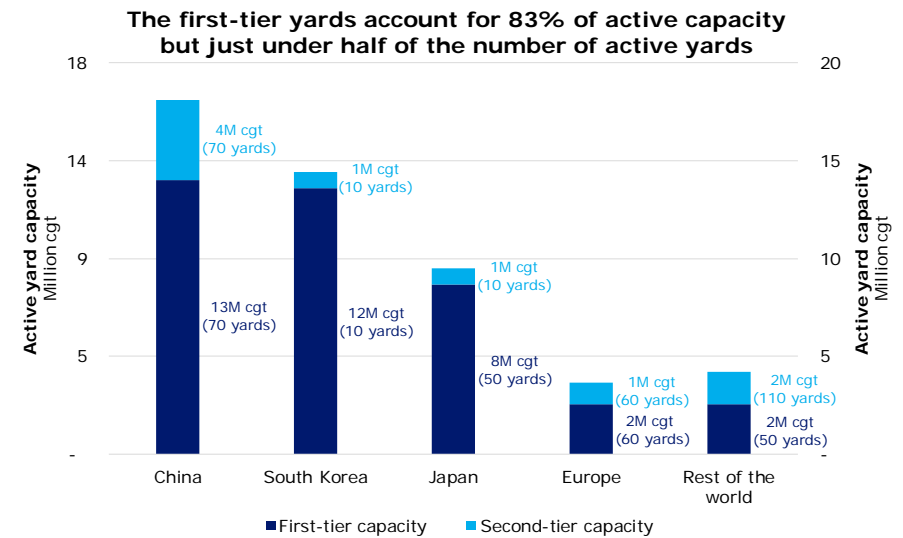
Despite attracting new orders and generally having a better outlook, the first-tier yards are also struggling with declining order-

books and shortening order covers. The number of first-tier yards has fallen by approximately 50 over the last year and the share of first-tier capacity with less than one year of order cover has increased from 6% to 15%, driven primarily by a fall in South Korean and to a lesser extent Chinese order cover. Moreover, around 50 of the 240 first-tier yards are scheduled to deliver their last orders in 2017. Hence, just because a yard has recently received new orders, its continued operation is not guaranteed.

CONSOLIDATION COULD SUPPORT PRICES DESPITE LOW CONTRACTING

We expect the consolidation process to continue in the coming years and that more yards will be left without orders, forcing them to close – if not permanently, then temporarily until the market regains balance. Even if contracting remains low for the next one to two years, the consolidation of the industry could lead to higher newbuilding prices in some segments, because prices will be settled between fewer parties. Tougher lending requirements, triggered by the huge losses incurred by both the shipyards and their banks after having offered overly concessional contract terms for a prolonged period, could accelerate the consolidation of the industry by ensuring that only the strongest yards are able to obtain financing. ■

Figure SB.8

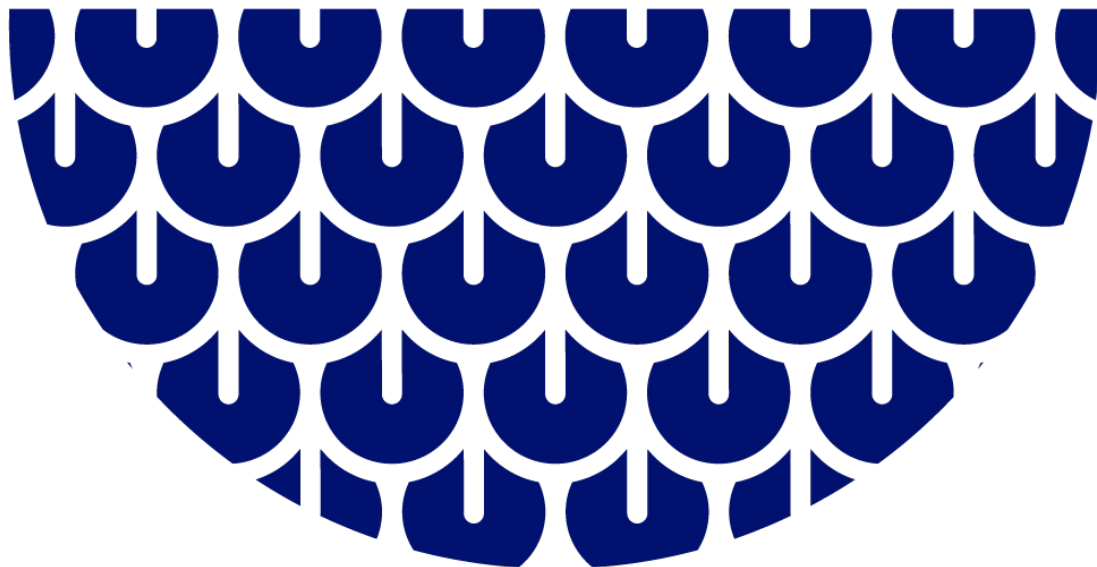


Sources: Clarksons, Danish Ship Finance

NB: The numbers might not add up due to rounding

CONTAINER

SHIPPING MARKET REVIEW – MAY 2017



**DANISH
SHIP FINANCE**

CONTAINER

THE CONTAINER INDUSTRY IS OVERSUPPLIED AND VALUE IS BEING DESTROYED. LINERS ARE CONSOLIDATING THEIR CAPACITY, WHILE TONNAGE PROVIDERS ARE FINDING IT INCREASINGLY DIFFICULT TO EARN A YIELD ON THEIR INVESTMENTS. SECONDHAND PRICES FOR LARGER SHIPS ARE EXPECTED TO ADJUST TO SIGNIFICANTLY LOWER EARNINGS EXPECTATIONS. A NEW VALUE PROPOSITION IS EMERGING, BUT IT MIGHT NOT BE FOR ALL.

THE CONTAINER MARKET AT A GLANCE

THE EXCESS SUPPLY OF LARGER SHIPS IS STILL FLOODING THE MARKET. HOWEVER, BOX RATES HAVE IMPROVED, SINCE SUPPLY HAS BEEN CURBED BY EXTENSIVE SCRAPPING, ORDER DEFERRALS AND IDLING OF VESSELS.

The Container market is oversupplied with large ships, but from a general perspective it seems that fundamentals are improving. In 2016, the Container fleet expanded by just 1.3%, due to historically high scrapping levels and order deferrals, while demand grew by 2.5%, more than twice as high as in 2015. However, these numbers mask the skewed development of the Container fleet. The fleet of vessels below 8,000 teu declined by 5% in 2016, whereas the fleet of vessels above 8,000 teu grew by 10%, measured in teu. These figures clearly indicate a two-tier market, but within this structure we find tonnage providers which are being squeezed by liner operators working more closely together to utilise a larger share of their own fleets. In March 2017, more than 1.3 million teu (6% of the fleet) was idled – almost 80% of idled vessels was below 8,000 teu, measured in number of vessels. This figure clearly illustrates that an increasing share of the fleet needs to be excluded from the market before sustainable box rate improvements can occur. Despite the recent improvement in box rates, the market is still facing low rates and some vessel sizes are still struggling to cover their OPEX.

Figure C.1

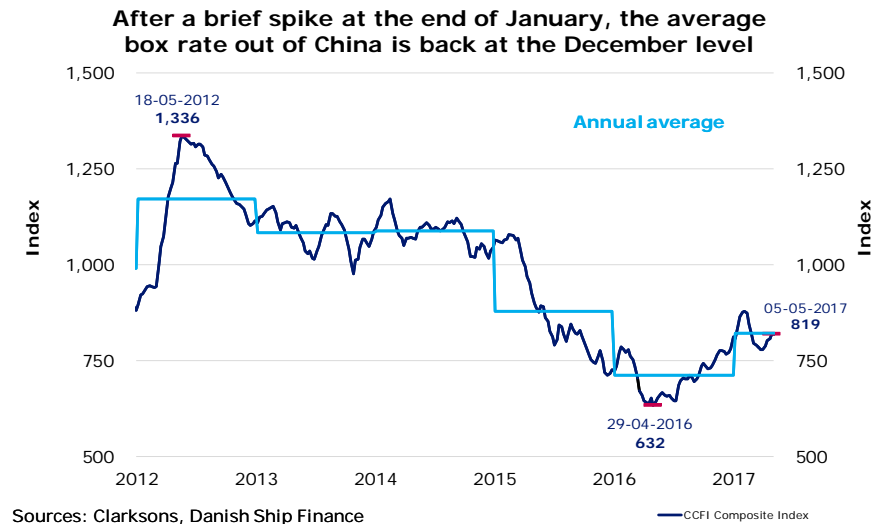
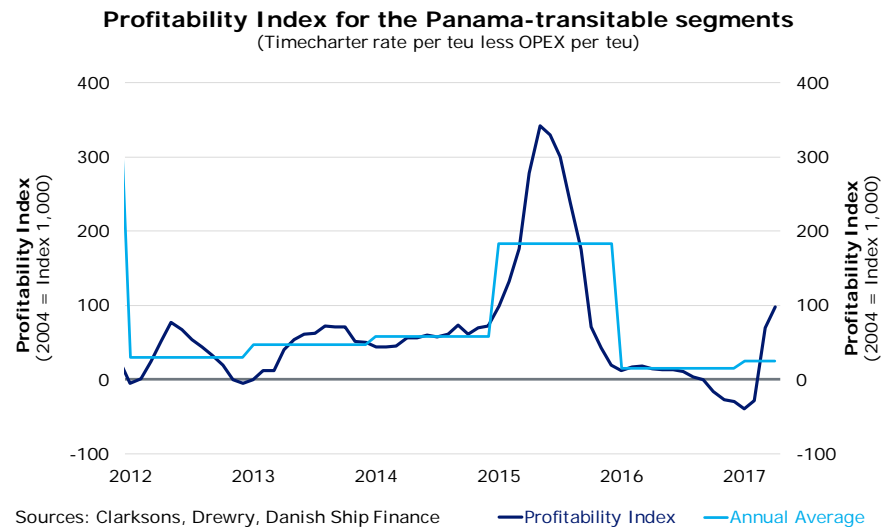


Figure C.2



AVERAGE BOX RATE UP BY AROUND 1% FROM THE DECEMBER LEVEL

Box rates continued to increase during the fourth quarter of 2016 and reached a peak at the end of January, in the days leading up to the Chinese New Year. The average box rate out of China therefore peaked at index 878 at the start of February before dropping to index 819 by the beginning of May – well above the average annual rate of 2016 (index 712), but still below the average of 2015 (index 879) (fig. 1).

TIMECHARTER RATES STARTED TO RECOVER IN MARCH 2017

Timecharter rates did not experience the same upward trend in 2016 as box rates, primarily due to the Old Panamax segment reaching a new low point in December. However, the first four months of 2017 saw rates improve, especially for the Old Panamax segment which began to take off in March (fig. 2). Whether this reflects fundamentally stronger demand for the vessels or a temporary effect caused by the reshuffle of the alliance networks remains to be seen.

THE SECONDHAND MARKET PICKED UP TOWARDS THE END OF 2016

Activity in the secondhand market declined in 2016 compared with the previous two years and the turnover rate for the year was 2% of the fleet, down from 4% in 2015. However, activity started to pick up towards the end of 2016, and during the first quarter of 2017, vessels amounting to 355,000 teu were sold for further trading, a sizeable share of these in the 2,000-8,000 teu category.

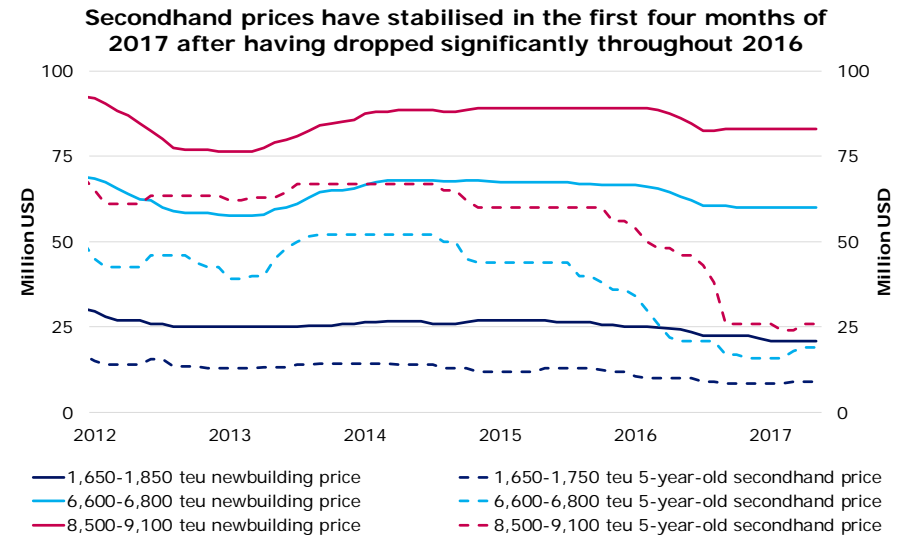
SECONDHAND PRICES STABILISED IN THE FIRST QUARTER

The uptick in sales activity began to filter through to secondhand prices to some extent during the first quarter of 2017. Secondhand prices stabilised at very low levels, following the steep decline in 2016, although prices for vessels below 8,000 teu started to trend upwards slightly towards the end of the period and into April (fig. 3).

SCRAPPING AND ORDER DEFERRALS REACHED NEW HIGHS

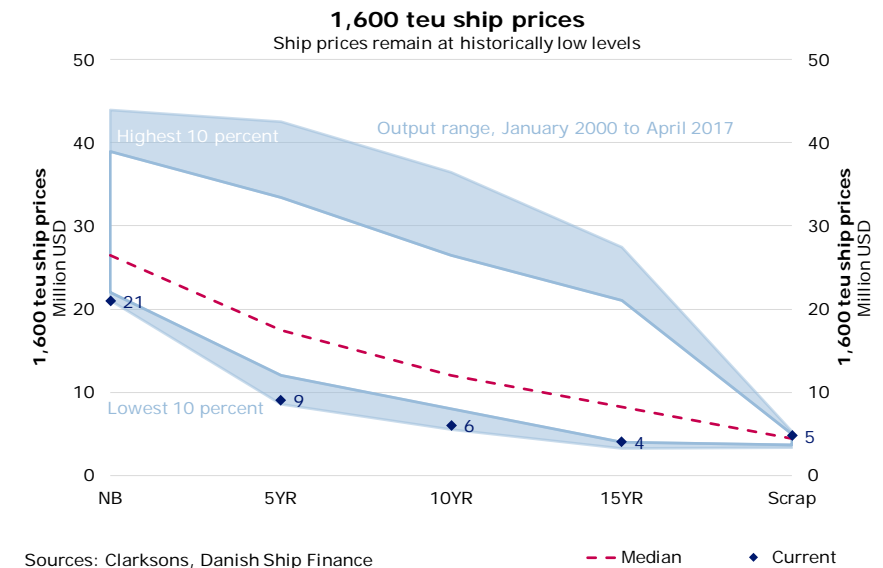
The increased sales activity reflects a firming of the market, sparked by stronger demand and not least a contraction of the

Figure C.3



Sources: Clarksons, Danish Ship Finance

Figure C.4



Sources: Clarksons, Danish Ship Finance

Figure C.5

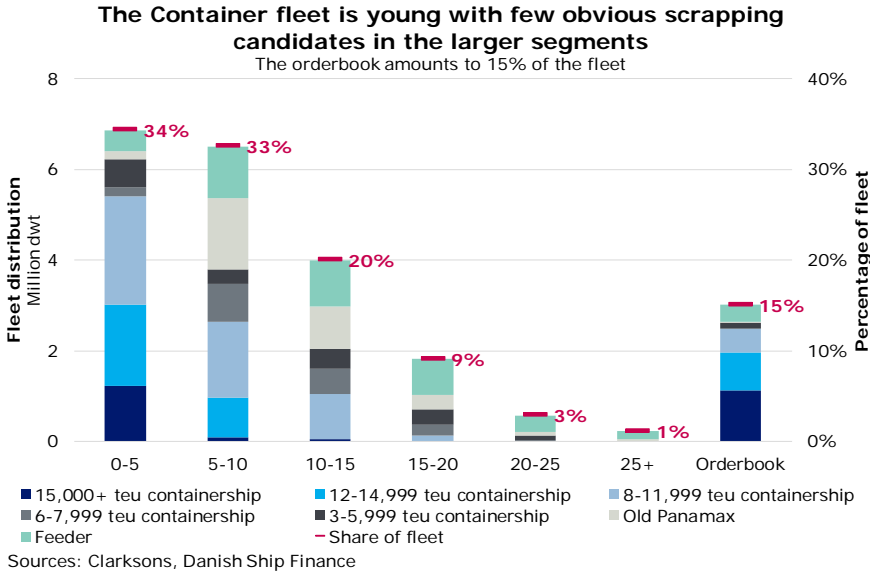
fleet of vessels below 8,000 teu. This has been achieved through extensive scrapping of vessels, primarily of vessels between 3,000 and 6,000 teu. In total, 955,000 teu was demolished in 2016, equivalent to 5% of the Container fleet. The average age of vessels scrapped remained at 20 years, but the youngest candidate was only seven years old.

ORDERS CONTINUE TO BE POSTPONED IN 2017 DESPITE HIGHER RATES

Order deferrals have also played a big role in keeping fleet growth low. Almost 30% of orders scheduled for delivery in 2016 were postponed, by an average of 240 days. In 2015, only 11% of scheduled orders were postponed. This trend continued in the first quarter of 2017, with two-thirds of orders scheduled for delivery postponed by 85 days on average.

FEW NEW SHIPS ORDERED

The oversupplied market has quashed owners' appetite for large vessels, and during 2016 and the first quarter of 2017 only 90 new orders were placed - all but five of these were for vessels smaller than 8,000 teu. The orderbook has come down to just over 400 vessels with a combined capacity of 3 million teu (15% of the fleet). Moreover, it remains heavily front-loaded, with 85% of orders scheduled to be delivered by the end of 2018 (fig. 5).



THE CONSOLIDATION PROCESS AMONG LINERS CONTINUES, WHICH IS DAMPENING THE EMPLOYMENT OUTLOOK FOR TONNAGE PROVIDERS. TIMECHARTER RATES ARE LIKELY TO STAY LOW FOR SOME YEARS TO COME. AN INCREASING SHARE OF LARGER VESSELS ARE EXPECTED TO BE SOLD OR SCRAPPED, WHICH WILL LOWER THE SECONDHAND PRICES.

Consumer spending is changing in tandem with the emergence of the fourth industrial revolution. The baby boomers (born 1945-1965) are retiring and are being replaced by Generation X (born 1965-1980) and, more importantly, the Millennials (born 1980-1995). Spending behaviour is gradually shifting towards access to rather than ownership of goods. This indicates that fewer items will be imported per dollar spent in the years to come. On the producer side, we are seeing advances in manufacturing technology working to shorten logistical supply chains, which is expected to impact Container trade networks and reduce the average distance travelled per container. In fact, we believe that part of the manufacturing industry could become increasingly regionalised within the next five to ten years.

TONNAGE PROVIDERS ARE FACING SOME DIFFICULT YEARS...

These trends are not supportive of the industry's long-term views on the geographical location of manufacturing (i.e. investments in super-large Container vessels). Today's oversupply of larger vessels could persist unless a significant part of the current fleet is taken out, since the trade patterns of today may gradually be replaced by increasing intra-regional trade. The liner companies have the upper hand over the tonnage providers, and can use this to optimise their trade networks, but some liners could be partly stuck with large inflexible vessels less suited to future needs.

...AS LINERS WORK TO UTILISE THEIR OWN VESSELS

Liner companies are consolidating their positions through mergers, acquisitions, and alliances. This strategy is aimed at increasing box rates from current levels, which is likely to be at the expense of

tonnage providers. Timecharter rates and secondhand prices for larger ships are expected to decline even though box rates increase, since container demand is increasing more slowly than the fleet and more vessels are coming off hire. All players, tonnage providers and liner companies alike, are thus subject to the expected spillover effect from lower timecharter rates: a reduction in larger vessels' secondhand prices.

SIGNIFICANT REDUCTIONS IN SECONDHAND PRICES

We believe that this value adjustment could become very significant. Many of the larger vessels are currently being valued in accordance with the newbuilding prices of similar vessels, although few would expect these vessels to be able to achieve sufficient earnings in the short to medium term to justify these prices in today's market. Some may argue, however, that the value of a five-year-old Container ship with a 13,000 teu capacity has already declined by approximately 20% over the last two years. This is very true, but we could also argue that the drop in secondhand prices simply reflects the fact that newbuilding prices have dropped 6% during the period and that the expected economic lifetime of these vessels has been reduced by five years. If this is the case, there has not been any reduction in these vessels' expected earnings. The value depreciation simply reflects lower replacement costs and a shorter cash-flow period, and thus, we believe a further reduction in secondhand prices are to be expected.

MANY YOUNG VESSELS WILL BE RETURNED TO THEIR OWNERS

Within the next 12 months, we expect to see many larger vessels returned to their owners (i.e. tonnage providers) as the liner companies and their alliance partners optimise their new trading networks. Many of the returned vessels will only be ten to 15 years old and some may even be younger. We expect that the trend of young vessels being scrapped will continue and spread to vessels above 8,000 teu. It remains to be seen how many will be scrapped and how many will be sold for further trading. Still, secondhand prices will settle below current levels to reflect the overcapacity when more of these vessels are being traded.

SMALLER VESSELS MAY BEGIN TO RECOVER

The smaller vessels (i.e. those below 8,000 teu) may begin to benefit from a shrinking fleet, since it appears that some owners are considering testing virgin territory by deploying leaner and smaller vessels, pushing some larger ships out of trades, in a reversal of the prevailing practice of reducing the marginal cost per teu moved. It may be too early to call it a trend, but even without this, the smaller vessels may begin to benefit from their shrinking fleets.

HOW TO CREATE VALUE IN AN OVERSUPPLIED MARKET?

The essential issue to consider for both liners and tonnage providers in the coming years is how to create value if surplus capacity is growing and secondhand prices are declining. Many of the liner companies seem to be working on a digitalisation strategy whereby value is created from the cargo moved rather than just from the vessel. In today's Container market, the hardware of the industry is increasingly becoming a commodity. Modern vessels offer little opportunity for differentiation, but the data they generate may prove extremely valuable. The industry is increasingly treating data as a competitive advantage. Trade data fuels the algorithms that provide insights into markets, customers and business processes. By creating a trading platform from which data is stored and analysed, various players within the ecosystem of global trade – from shipowners to suppliers, brokers, banks and insurance companies – can cultivate existing business models and create innovative new business models that tap into value far beyond the current scope. For shipowners, the trade data could turn out to be at least as valuable as their assets were in the past and could enable significant cost reductions from efficiency gains.

THE VALUE PROPOSITION MAY BE ABOUT TO CHANGE

The impact on existing business models could be profound. Within the next few years, the existing value proposition could lead the Container industry to a tipping point: either disrupt or be disrupted.

A DIGITAL PLATFORM MAY CREATE VALUE FOR SOME...

A digital trading platform would give market-makers an opportunity to perfect the connection between buyers and sellers globally. This is clearly about vertical integration, but the scope could be much broader. It is about unlocking markets by reducing transaction costs, increasing transparency and reducing information asymmetry. Taken as a whole, these forces hold the potential to blur the boundaries and definitions of industries and make more extreme outcomes part of the strategic calculus. The Container industry could potentially come up with an entirely new value proposition that trumps the one it already has. A platform such as this tends to benefit first-movers, allowing them to harness network effects, and by redefining the standards, a platform may force the rest of the industry to integrate into a new ecosystem built around the platform itself.

...BUT COULD DESTROY VALUE FOR OTHERS

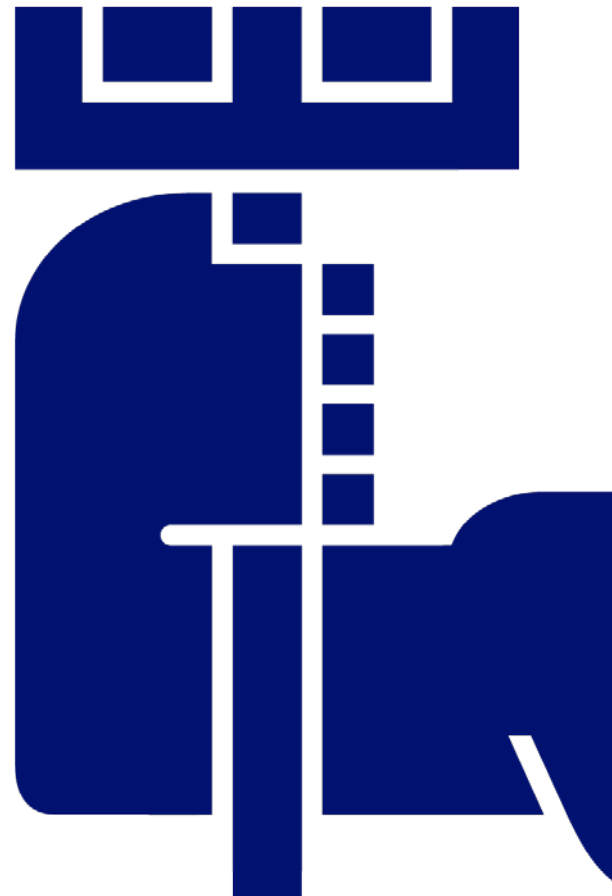
The established players are centrally positioned but could become marginalised if they fail to move into the digital space. The champions of disruption are the ones that are creating a new and significantly enhanced value proposition for customers. Such a new value chain holds the potential to redefine the ecosystem of Container trading.

THE INDUSTRY IS TRANSITIONING TOWARDS A DIGITAL FUTURE

Imagine the potential spill-over effects such changes could have. A new platform, or several platforms, could cut out a wide range of intermediate industries that are currently participating in the facilitation of world trade. The ecosystem of the maritime cluster needs to adapt to a new digitalised industry. The result could be not only the destruction of sizeable profit pools but also the emergence of new value drivers. ■

DRY BULK

SHIPPING MARKET REVIEW – MAY 2017



DANISH
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DRY BULK

THE SHORT-TERM OUTLOOK FOR THE DRY BULK INDUSTRY IS IMPROVING, AS SUPPLY AND DEMAND ARE EXPECTED TO EXPAND AT A SIMILAR PACE. THE DOWNSIDE RISK TO DEMAND PERSISTS, HOWEVER, AND WE COULD START TO SEE A SLOWDOWN ALREADY BY THE END OF THIS YEAR.

THE DRY BULK MARKET AT A GLANCE

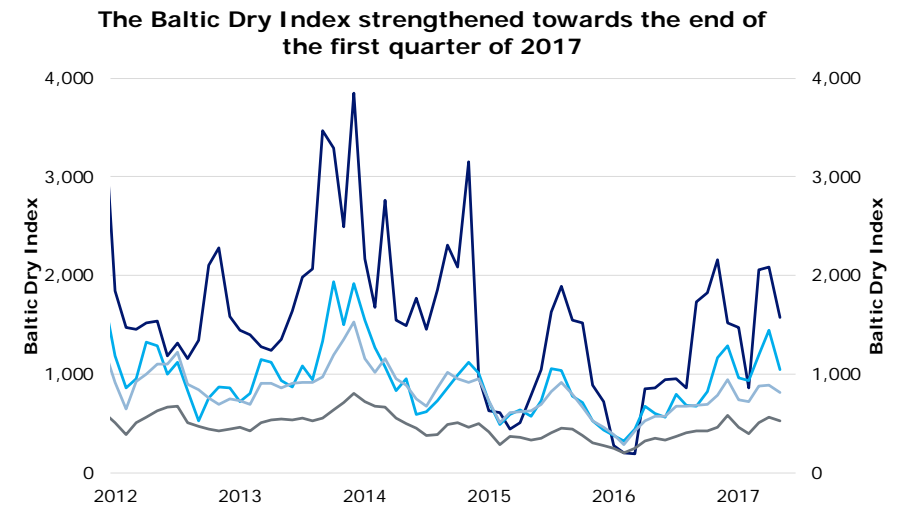
THE DRY BULK MARKET HAS IMPROVED SIGNIFICANTLY OVER THE LAST YEAR AND FREIGHT RATES HAVE RETURNED TO HIGHER LEVELS.

Market sentiment has improved significantly in the Dry Bulk industry even though market fundamentals worsened marginally in 2016. The fleet grew by a little more than 2%, while nominal demand grew by just under 1%. Temporary factors, such as vessel idling and lay-ups, longer travelling distances, partly due to weather disruptions, and Chinese fiscal stimuli, helped support freight rates and keep the oversupply in check. Hence, despite a significant improvement in freight rates and active fleet utilisation over the last six months, the underlying oversupply has not yet decreased and the downside risk to demand remains.

THE BALTIC DRY INDEX HAS STRENGTHENED

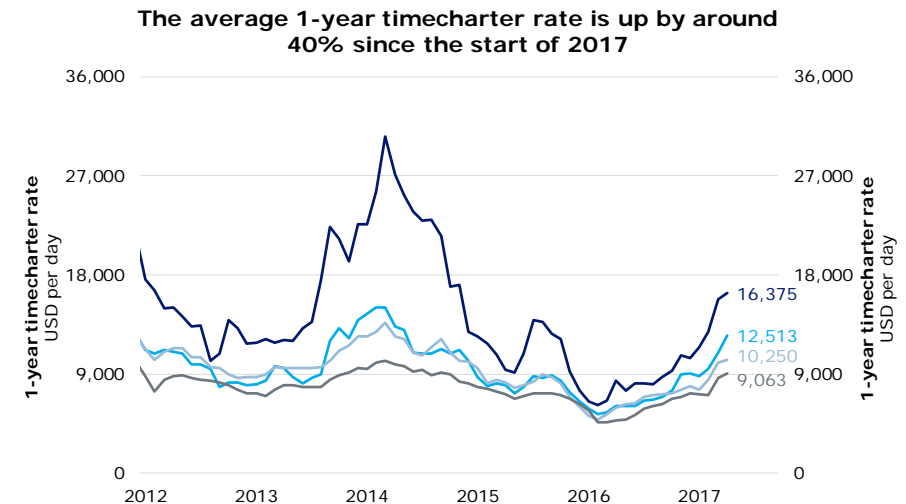
The Baltic Dry Index peaked at around index 1,070 in the fourth quarter of 2016 before embarking on its seasonal decline, which culminated in February when it dipped briefly to index 759 – markedly above the February lows of the previous two years (fig. 1). By the end of April, the index had rebounded, as Chinese demand for coal and iron ore continued to show strength and weather disruptions in Australia forced China to find more long-haul sources for its import requirements. The timecharter market also tightened and the 1-year timecharter rate for a Capesize increased from around USD 10,500 per day in December to USD 16,375 per day in April, while the rate for a Supramax rose from USD 7,900 per day to USD 10,250 per day (fig. 2).

Figure DB.1



Sources: Clarksons, Danish Ship Finance — Capesize — Panamax — Supramax — Handysize

Figure DB.2



Sources: Clarksons, Danish Ship Finance — Capesize — Panamax — Supramax — Handysize

THE SECONDHAND MARKET PICKED UP TOWARDS THE END OF 2016

The newbuilding market continued to attract very little attention in 2016, with only 13.5 million dwt of new orders placed. On the other hand, the secondhand market picked up gradually during the year as more shipowners became convinced that the market had passed the bottom. Sales activity increased by around 30% in 2016 compared with 2015, measured in dwt, bringing the turnover rate to 6% of the fleet, up from 5% in 2015. Including demolition activity, the total market turnover rate reached 10% in 2016. Handymax vessels showed a particularly marked increase. Sales activity strengthened further in the first quarter of 2017.

SECONDHAND PRICES STARTED TO TAKE OFF IN THE FIRST QUARTER

The increased activity led to price appreciation in the secondhand market in the first quarter of 2017, beyond the improvement in freight rates. Secondhand prices rose by close to 30%. The Capesize segment showed the highest jump, and a five-year-old vessel rose from around USD 25 million at the end of February to USD 33.5 million at the end of March (fig. 3 and 4).

SCRAPPING AND ORDER DEFERRALS SUPPORTED A MARKET RECOVERY

Besides the financial stimuli introduced in China in 2016, which boosted demand for Dry Bulk cargoes, the positive sentiment was attributable to the fact that the market managed to work down the orderbook while keeping fleet growth at a reasonable level. This was achieved via intensive scrapping and cancellation and postponement of orders. Close to 30 million dwt was scrapped in 2016 and only about 50% of orders scheduled for delivery last year actually entered the fleet – one-third of orders were postponed and the rest cancelled.

ORDERS CONTINUED TO BE POSTPONED IN THE FIRST QUARTER OF 2017

Scrapping activity and order cancellations started to lose pace in the second half of 2016 and going into 2017 as freight rates improved. Shipowners did, however, continue to postpone orders in the first quarter of 2017. Around half of orders scheduled for delivery in the period were postponed by 110 days on average, compared with around 300 days in 2016.

Figure DB.3

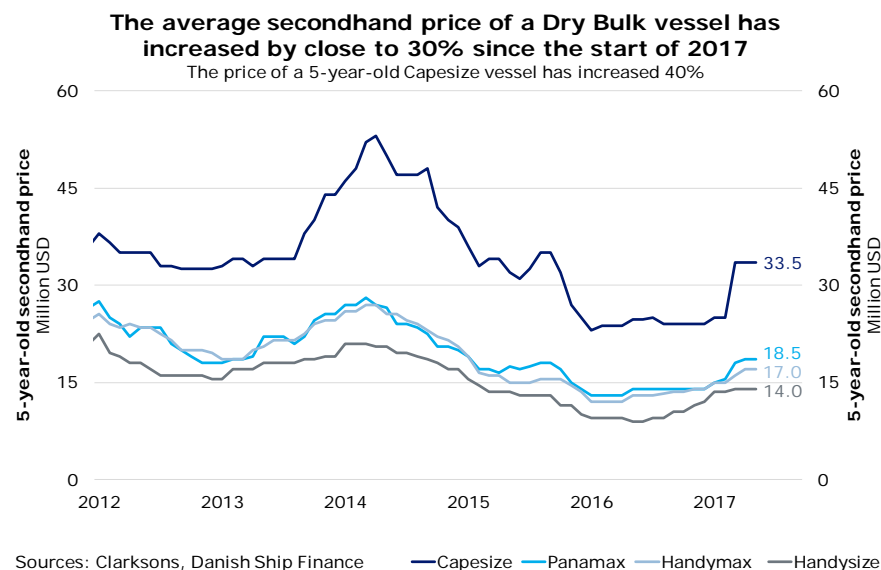
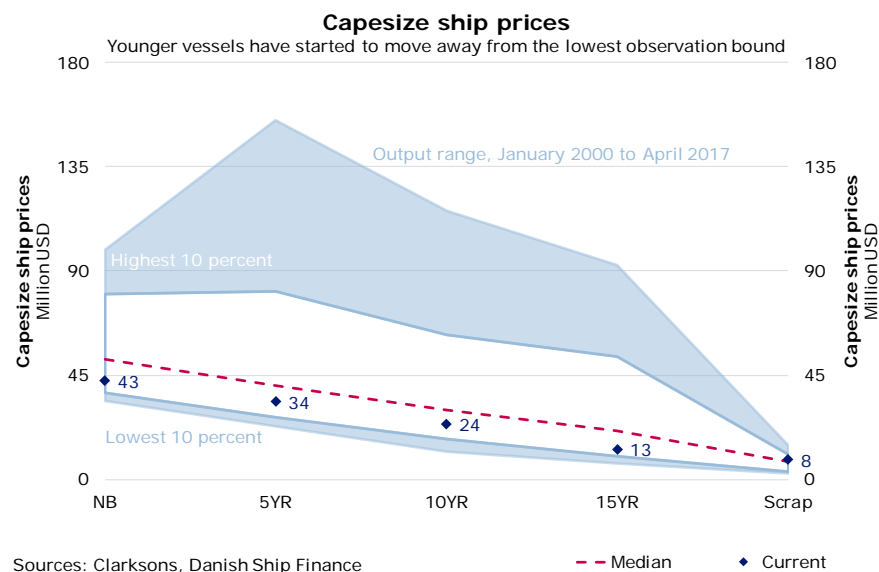


Figure DB.4



THE REST OF 2017 COULD SEE STRONGER FREIGHT RATES AND SECONDHAND PRICES, AS STRONG CHINESE DEMAND COUPLED WITH A FAVOURABLE SUPPLY DEVELOPMENT WILL SUPPORT THE MARKET. HOWEVER, THE DOWNSIDE RISK TO DEMAND REMAINS AND THE MARKET COULD BEGIN TO SEE DEMAND SLOWING DOWN WITHIN THE NEXT 12 MONTHS.

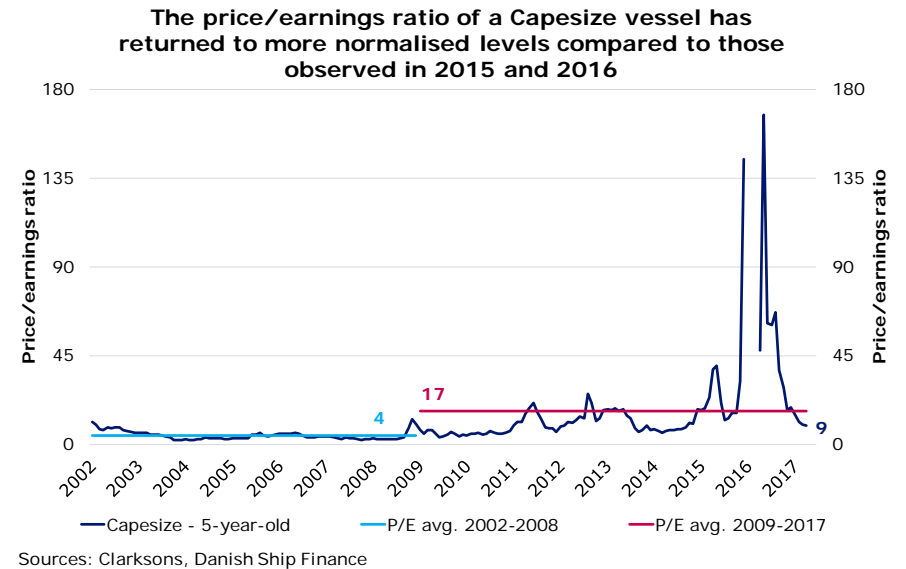
Things have lightened up for the Dry Bulk market, and when we assess the outlook for the rest of 2017, it looks set to be a relatively decent year for the industry. That said, we must not forget how we got here: in 2016, China restarted its old growth engines temporarily, boosting infrastructure development and investments, to prop up growth, which helped breathe new life into the Dry Bulk market. We expect that these engines could be switched off again within the next 12 months, causing Dry Bulk demand to slow down once again. It is therefore of great importance that the industry maintains its diligent approach to managing supply even though freight rates and secondhand prices are currently rising.

MEDIUM- TO LONG-TERM DRY BULK DEMAND IS STILL UNCERTAIN

We acknowledge that several times in our reports we have been a little too quick to rule out Chinese Dry Bulk demand, and this might be the case this time too. Nonetheless, we stand by our arguments in the last few reports that Chinese Dry Bulk demand is unsustainable by nature and that there is huge downside risk related to it. The strong rebound in China's imports of both iron ore and coal might continue for most of 2017, but it seems that there are some political shifts taking place in the country that could start to put the brakes on this going into 2018.

WHEN WILL THE CHINESE REFORMS BEGIN?

The Chinese government has temporarily put reforms on hold to ensure stable growth, but behind the scenes, President Xi is slowly strengthening his position as leader, garnering the necessary support and control to reform the country. In the fall of this year, new



members must be appointed to the powerful Politburo Standing Committee, and President Xi is expected to use this opportunity to consolidate his political power and create the conditions required to begin the difficult but necessary economic reforms (i.e. reforms related to the banking sector, industrial overcapacity, the real estate market, state-owned enterprises etc.). To avoid creating too much opposition prior to the appointments, it is likely that the Chinese government will continue to use its old growth engines to support economic growth, which will benefit the Dry Bulk market in the short term. However, when reforms get underway, these engines are expected to be switched off again and China will continue the rebalancing of its economy towards consumer and service-driven growth, which is much less Dry Bulk intensive.

SECONDHAND PRICES AND EARNINGS HAVE BECOME BETTER BALANCED

Until that happens, we are cautiously optimistic about the Dry Bulk market. The market has become more balanced, which is under-

pinned by price/earnings ratios having returned to more normalised levels. During 2015 and 2016, the price a shipowner paid for a vessel was exceptionally high relative to the low earnings that could be obtained at the time (fig. 5). However, this balance can quickly vanish if Capesize prices continue to increase at the speed they did in the first quarter of 2017.

THE ORDERBOOK HAS COME DOWN TO NO MORE THAN 8% OF THE FLEET
 The orderbook has decreased significantly and has come down to the lowest level since 2004. At the start of April it constituted only 8% of the fleet, measured in dwt, equal to 67 million dwt, or just under 750 vessels. In the period from October to the start of April, the orderbook fell by 33%, driven primarily by declines in the Handymax and Panamax orderbooks. Nevertheless, the orderbook is still large enough to keep fleet growth relatively high during the next two years. The fleet grew by 1.5% in the first quarter of 2017 and scheduled gross fleet growth is currently 4.5% for the rest of the year and 3% for 2018 (fig. 7).

FLEET GROWTH EXPECTED TO COME IN AT AROUND 2%
 It is unlikely that all orders will be delivered. Scrapping, order cancellations and postponements will bring fleet growth down, although we expect the improved market sentiment to lower shipowners' incentive to cancel orders and scrap vessels. In the remaining three quarters of 2017, 36 million dwt are scheduled to be delivered, in addition to the 17 million dwt delivered in the first quarter. Assuming that 60% of orders are delivered and scrapping activity is halved compared with the 2016 level, fleet growth will come down to just over 2% in 2017, which is in line with our demand expectations.

SHORT-TERM DEMAND WILL SHOW STRENGTH
 Short-term demand looks promising and is expected to increase by around 2% in 2017, up from just 0.9% in 2016 (fig. 8). Consequently, supply and demand could grow at the same pace in 2017. The stronger demand is expected to stem from a rebound in coal and minor bulk trade, while iron ore and grain trade are expected

Figure DB.6

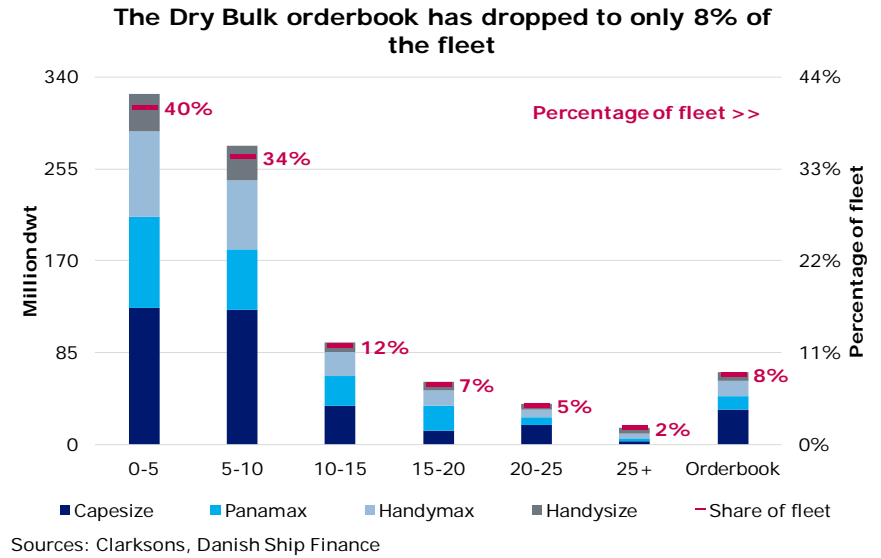
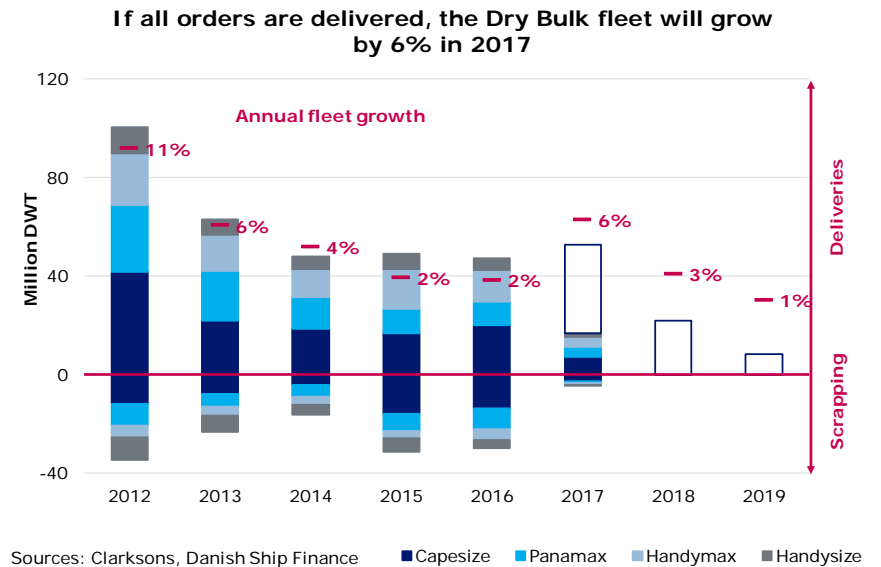


Figure DB.7



to continue to show healthy growth. This can be explained partly by the stimuli launched in China boosting infrastructure development as well as the output restrictions forced upon China's domestic coal producers. Travelling distances for the larger vessels could start to increase due to more iron ore coming out of Brazil, whereas distances could shorten somewhat for the smaller vessels, because Indonesia is expected to ease its export restrictions on bauxite and nickel ore.

NEW REGULATIONS COULD SUPPORT FREIGHT RATES OVER THE SUMMER

The market could also find temporary support from the Ballast Water Management Convention which comes into force in September 2017. After that date, all vessels must comply with the convention after undergoing their next special survey. To postpone this expense for as long as possible, shipowners might bring forward vessels' special surveys due within a year or so to before September. This could lower the active supply during the summer months and support freight rates. However, there are still around 2 million dwt in lay-up and 6 million dwt lying idle, which could re-enter the fleet in the coming months and offset some of the positive effects from more vessels undergoing special surveys.

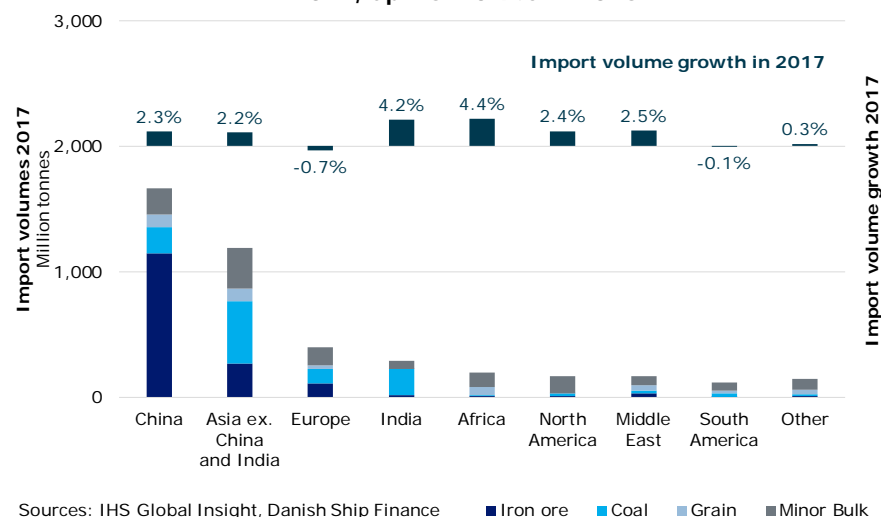
SCRAPPING IS EXPECTED TO PICK UP DUE TO THE NEW REGULATIONS

After September 2017, the new regulations, including the global sulphur cap to be implemented in 2020, are expected to increase scrapping, especially of vessels older than 15 years. This could support freight rates, but it would be at the expense of secondhand prices. A further reduction of the average scrapping age shortens the cash flow period of the vessels, and in theory, reduces secondhand prices.

2017 IS EXPECTED TO BE A DECENT YEAR FOR THE INDUSTRY

China's return to its old growth model has provided the Dry Bulk industry with a much-needed respite and 2017 looks set to be a decent year with freight rates and secondhand prices possibly returning to more sustainable levels. Consequently, owners could be

Seaborne Dry Bulk demand is expected to grow by 2.1% in 2017, up from 0.9% in 2016



encouraged to start ordering new vessels. The Shipbuilding industry continues to struggle and there is little chance of newbuilding prices increasing substantially any time soon, whereas secondhand prices could continue to rise during 2017. In our view, this constitutes a selling rather than a buying opportunity. There is no need for ordering of new vessels to be resumed – almost no matter how cheaply they are priced. The improved market balance is fragile and could easily be shattered. ■

AN INTRODUCTION TO THE GLOBAL OIL MARKET

SHIPPING MARKET REVIEW – MAY 2017



**DANISH
SHIP FINANCE**

AN INTRODUCTION TO THE GLOBAL OIL MARKET

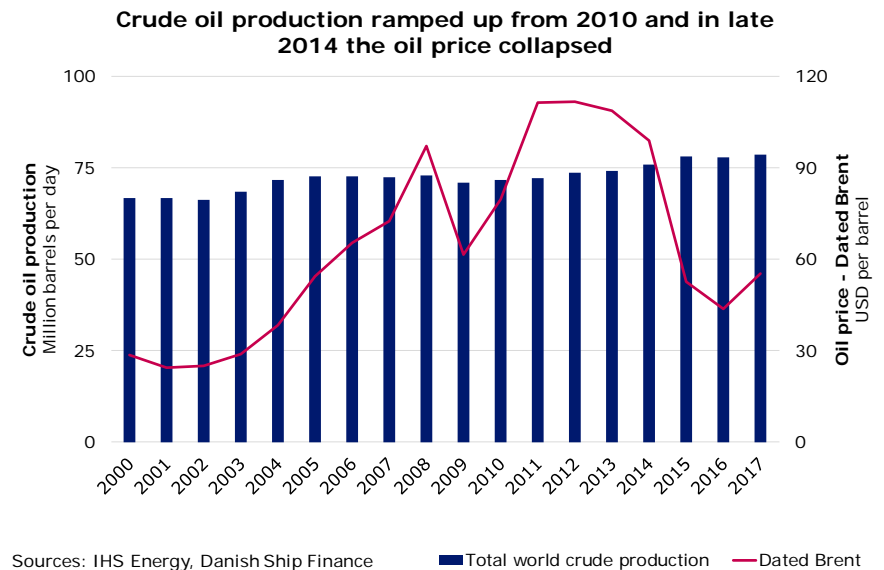
Figure O.1

THE OIL MARKET HAS UNDERGONE A TRANSFORMATION OVER THE LAST DECADE. NEW TECHNOLOGIES HAVE ENABLED THE INDUSTRY TO OPTIMISE ITS PRODUCTION METHODS AND PURSUE PROJECTS THAT SEEMED UNFEASIBLE NOT THAT LONG AGO. THESE ADVANCES HAVE LED TO THE REALISATION THAT FEARS OF PEAK OIL SUPPLY BEING REACHED ARE UNFOUNDED TODAY. RECOVERABLE RESOURCES ARE MORE THAN AMPLE TO COVER THE WORLD'S DEMAND FOR OIL. THE ISSUE TODAY IS RATHER PEAK OIL DEMAND.

The energy markets are in transition, driven by technological advances. New sources of energy are becoming cost-competitive, while moderate economic growth and increasing energy efficiency are slowing down growth in energy demand. Emerging technologies have the potential to spark significant changes to both supply and demand for different fuel types. This transition is challenging the existing structures of the energy markets and is forcing market participants to reconsider their value propositions – not least in the oil market.

OIL PRICES HAVE OFTEN REFLECTED SENTIMENT, NOT FUNDAMENTALS

Energy security has been a central element of the oil market for many years. Fears of oil shortages have led to price hikes and wars for many decades. Consequently, oil prices have often reflected market sentiment rather than fundamentals. Especially the dependence on Middle Eastern oil has added a 'fear premium' to oil prices because of the scarcity of viable alternative sources. Throughout the 2000s, demand for oil increased rapidly on the back of strong Asian demand. Combined with growing concerns over political stability in the Middle East, which resurfaced after the 9/11 terrorist attacks and the invasion of Iraq, this created the foundations for oil prices to rise to well over USD 100 per barrel. The financial crisis caused a short-lived drop, but prices quickly recovered. At the beginning of 2011, when the Arab Spring commenced and brought about supply disruptions in Libya,



concerns over widespread political instability in the region returned, sending oil prices back over USD 100 per barrel (fig. 1).

FEARS OF PEAK OIL SUPPLY SPARKED RISKY INVESTMENTS

The perception that recoverable oil resources were finite, combined with the high oil prices, led the oil industry to prioritise volume over value during the 2000s. International oil companies, which, unlike the national oil companies, were not sitting on huge reserves, started to explore very expensive and risky projects – projects that most likely would not have been considered in a lower oil price environment. Ultra-deepwater production started to emerge in this period, and these projects generally had high break-even prices. Similarly, US shale and Canadian oil sands projects pushed the cost curve upwards.

NEW TECHNOLOGIES HAVE REMOVED THE FEAR PREMIUM FROM PRICES

The high oil prices were instrumental in driving investments in

alternative energy sources and new production methods that could lower the dependence on an expensive and insecure oil supply. As the potential of the new energy sources grew and more of the new production techniques showed promise, it began to dawn on the world that it would not run out of oil; quite the opposite. New drilling and production technologies made recoverable reserves abundant and oil supply more elastic, thereby removing some of the 'fear premium' from oil prices.

THE SHALE BOOM IN THE US CHANGED THE INDUSTRY...

The breakthroughs made within US tight oil production in particular had a big impact on the oil industry. The advances made within horizontal drilling and hydraulic fracturing allowed American oil producers to extract oil from unyielding shale rocks, something that had previously been impossible. Consequently, oil producers were now capable of ramping up production capacity within a relatively short development cycle.

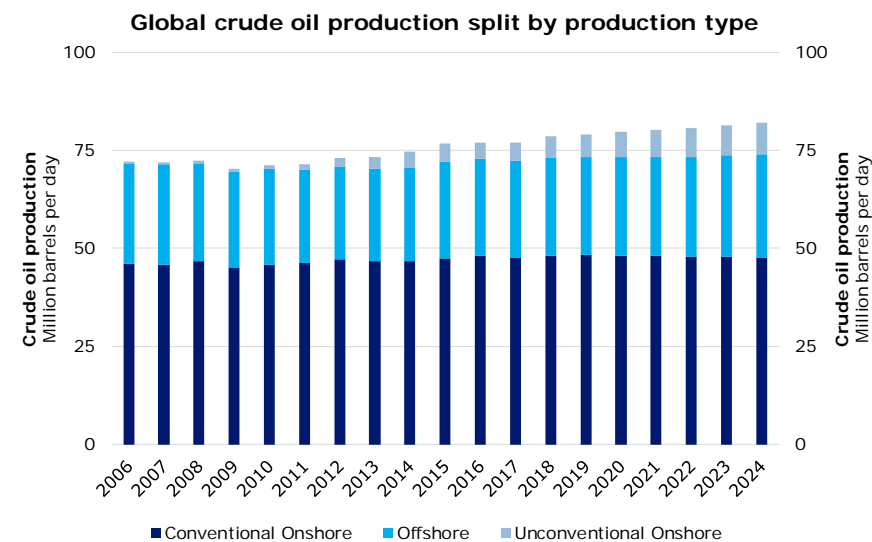
...AND LED TO THE OIL PRICE COLLAPSE OF LATE 2014

As a result, the oil price collapse in late 2014 was fundamentally different from previous drops. It reflected a structural change in the industry, rather than a temporary shock to the economy, as was the case during the 2008 financial crisis. US tight oil production ramped up quickly from 2010 onwards (fig. 2), and by 2014 the volumes added by the US, among others, more than offset the declines seen elsewhere. Oil supply was growing significantly faster than demand, and in 2014 when it became clear that OPEC would not cut production to support the market, oil prices plummeted.

THE NEW BALANCE OF POWER

The oil industry today is fundamentally different from what it was a decade ago. The emergence of US tight oil has shifted the balance of power and OPEC is no longer the industry's swing producer. OPEC's role has increasingly become to establish a floor for prices. In November 2016, OPEC announced that it would cut production in the first half of 2017 to help lower the high oil inven-

Figure O.2



Sources: IHS Energy, Danish Ship Finance

ories and support the oil price. The market reacted instantly and prices rose to around USD 55 per barrel. However, due to the responsiveness and short-cycle nature of the unconventional players in the US, this kind of intervention does not have the same impact as it previously had. US tight oil producers used the higher oil prices to ramp up production and thereby partly offset the effect of OPEC's production cut.

OIL PRODUCERS HAVE ACHIEVED SIGNIFICANT COST REDUCTIONS

The low oil prices of 2015 and 2016 forced the industry to reconsider its value proposition, and the focus has shifted from volume to value. Significant cost reductions have been made throughout the industry to bring down break-even prices, and final investment decisions for many projects have been postponed. A large share of the cost reductions have been obtained by putting pressure on suppliers to cut prices. However, significant structural cost reductions have also been achieved by streamlining processes and doing things smarter. The industry has gone from using the

best equipment and the best methods on every project to only using what is necessary. Hence, the tendency towards over-specification seems to have come to an end and deep-sea projects that had break-even rates of more than USD 80 per barrel before the price crash have been streamlined significantly.

THE FOCUS ON OIL RESERVES HAS SHIFTED

Another big change that we have seen since the price drop is the amount of reserves held by the oil majors. The size of the oil companies' reserves and how many years they could support production used to be one of the main factors affecting the value of the companies. Now, the focus is on extracting the reserves that have already been discovered. Planning for oil reserves fifteen years into the future has become less relevant with a demand picture that is increasingly difficult to forecast.

THE LOW OIL PRICE HAS LED TO REDUCED E&P SPENDING

Exploration and production (E&P) spending has been cut significantly over the last two years, because oil companies have had to retain liquidity and protect their dividend policies. E&P spending is expected to remain low in 2017, albeit at a marginal higher level than in 2016. The industry has become hesitant about making final investment decisions for expensive long-cycle projects. The arguments about peak oil demand have become more frequent and the possible time horizon shorter. Consequently, many companies have instead focused their attention on short-cycle unconventional projects, primarily in the US, with lower risk and shorter payback periods. Moreover, the few investments made in offshore have largely been in near-field developments (tie-backs), where oil companies can take advantage of the existing infrastructure of fields that have already been built, thereby lowering the required investments and break-even rates.

A SUPPLY GAP COULD EMERGE WITHIN A COUPLE OF YEARS...

The low E&P spending has created concerns about an emerging supply gap, because the depletion rate of current production is too

high relative to the new production set to come online in the coming years. However, the expected timing of the possible supply gap has been put back several times over the last few years, as production has continued to surprise on the upside. Producers have managed to improve recovery rates on existing fields. Moreover, demand has not been strong enough to absorb supply, and crude oil and refined product inventories in many parts of the world have risen to record-high levels in recent years. As long as this is the case, we do not anticipate a supply shortage.

...BUT NEW TECHNOLOGIES COULD BRIDGE THIS GAP

The supply gap is currently estimated to materialise sometime in the early 2020s. However, it is not certain if it will occur at all, since the new technologies that have emerged from US tight oil production have unlocked new opportunities. The cost-cutting efforts and the technological advances in the industry have proved that it can do more with less, and that even very complex projects can be economical in an oil price environment of around USD 50-60 per barrel.

E&P SPENDING WILL STAY LOW IN 2017

Both onshore and offshore spending has been affected by the lower oil price. Onshore spending was more than 50% lower in 2016 than in 2014, and offshore was down almost 40%. We do not expect E&P spending to return to the very high levels seen in the period from 2012 to 2014 within the next five years. However, after a minor increase in total spending in 2017, driven by investments in the US onshore industry, spending will gradually recover and be back at the 2011 level by 2021 (fig. 3). Onshore spending is expected to recover more quickly than offshore spending due to the lower risk and faster payback times.

OFFSHORE OIL WILL REMAIN RELEVANT...

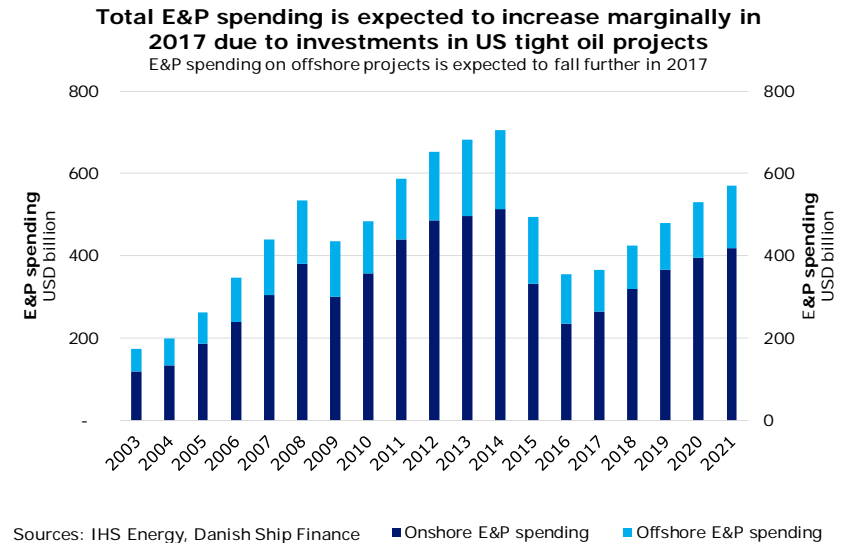
Even though offshore oil spending is expected to recover somewhat more slowly than onshore spending and the continued relevance of offshore production in a lower oil price environment has been called into question, we still expect offshore oil to play

an important role in the future oil supply. Offshore oil production has been accountable for around one-third of global oil production over the last ten years. The industry has proved that it can redesign and simplify large offshore projects and make them profitable at very low break-even rates. One of the best examples of this is the Mad Dog Phase 2 project in the Gulf of Mexico, where total costs were cut from around USD 22 billion to USD 9 billion. This gives the project a break-even rate of roughly USD 40 per barrel. The Mad Dog Phase 2 project is just one example of several where costs have been significantly reduced.

...BUT REQUIREMENTS FOR NEW OFFSHORE PROJECTS MAY INCREASE

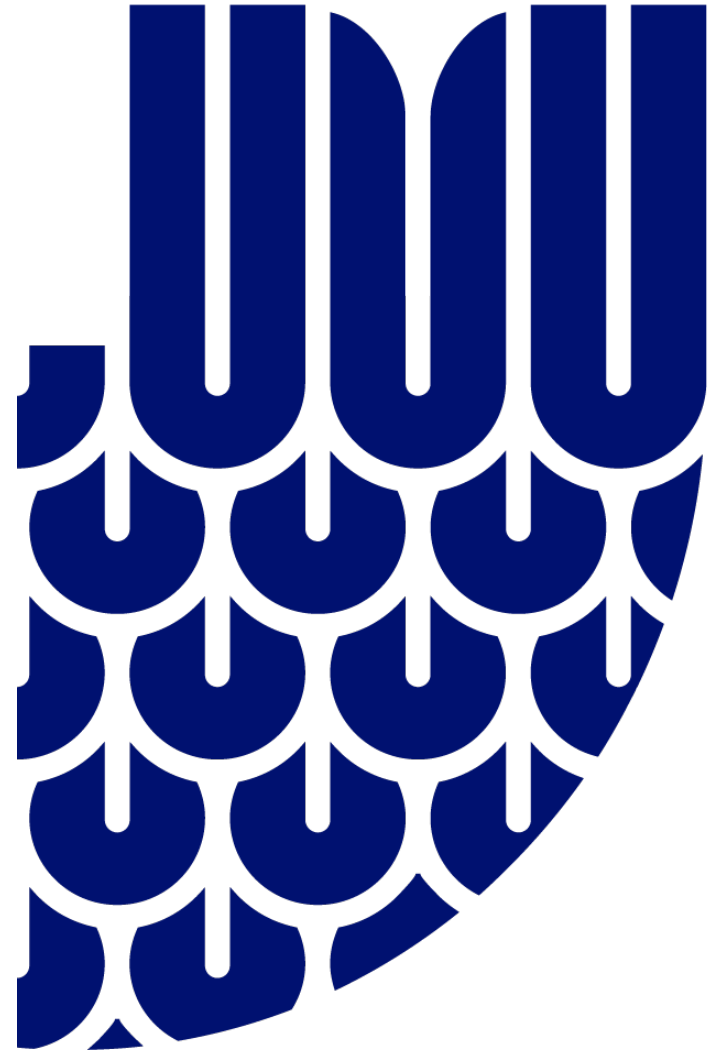
Moreover, many oil companies have specialised in offshore production and these companies are expected to remain active in the offshore space and pursue offshore projects. However, the criteria for making investments in new offshore fields have become more stringent, which means that there may be longer intervals between investments in the future. We expect that the oil companies will continue to focus on near-field developments in the short to medium term, thereby taking full advantage of the investments already made. ▀

Figure O.3



OFFSHORE SUPPLY VESSELS

SHIPPING MARKET REVIEW – MAY 2017



**DANISH
SHIP FINANCE**

OFFSHORE SUPPLY VESSELS

THE COMPETITIVENESS OF UNCONVENTIONAL OIL PRODUCTION HAS PROVED MUCH MORE HARMFUL FOR THE OFFSHORE SUPPLY MARKET THAN INITIALLY EXPECTED. OFFSHORE E&P SPENDING IS LOW AND FEWER VESSELS ARE BEING EMPLOYED. MANY VESSELS NEED TO EXIT THE MARKET BEFORE CHARTER RATES AND EVENTUALLY SECONDHAND PRICES CAN RECOVER.

THE OFFSHORE SUPPLY MARKET AT A GLANCE

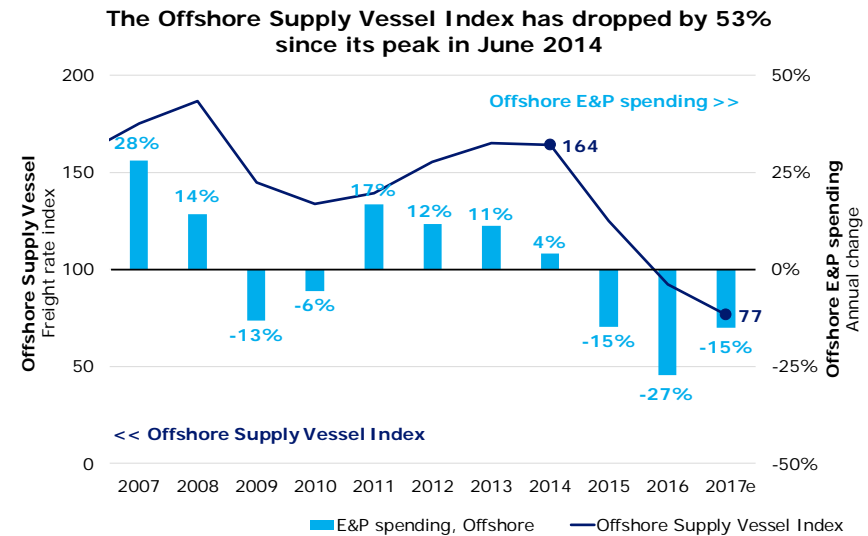
THE OFFSHORE SUPPLY MARKET IS STRUGGLING TO HANDLE AN OVERSUPPLY OF VESSELS THAT HAS GROWN MUCH BIGGER THAN MANY HAD ANTICIPATED A YEAR AGO. CHARTER RATES AND SECONDHAND PRICES ARE LOW AND DECLINING ACROSS THE BOARD.

It is the general perception that the highly specialised industrial ship segments are more balanced and hence more stable than the conventional ship segments. However, the structural changes that have reshaped the oil markets in recent years have left the offshore supply market with severe overcapacity. AHTS and PSV timecharter rates and secondhand prices peaked in 2008 and have since declined by more than 70%. This trend is quite similar to what we have seen among the more conventional ship segments. In contrast to the conventional ship segments, however, secondhand prices for offshore supply vessels (OSVs) may not have bottomed out yet. Older OSVs are more exposed to the overcapacity than their younger and often larger counterparts.

LOW DEMAND FOR OFFSHORE SUPPLY VESSELS

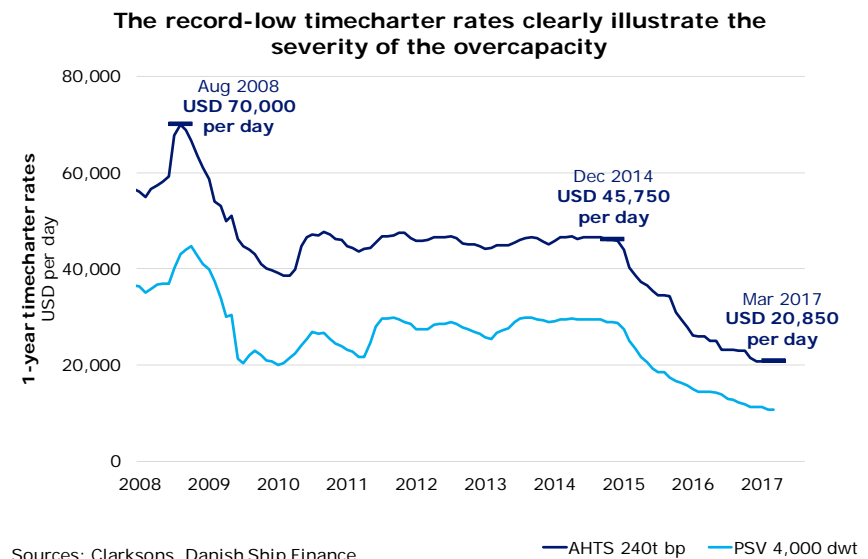
Demand for OSVs has been declining since 2014, in line with the reduction in offshore E&P spending (fig. 1). Offshore oil production accounts for approximately one-third of global oil production, and is expected to remain virtually flat with slight growth of 0.2% in 2017. However, demand for OSVs has been waning due to the reduction in exploration activity and the standardisation and increased efficiency of new projects. In 2016, the supply of vessels

Figure OSV.1



Sources: Clarksons, IHS Energy, Danish Ship Finance

Figure OSV.2



Sources: Clarksons, Danish Ship Finance

continued to increase, although the AHTS fleet declined slightly, and more vessels are on order.

Figure OSV.3

RECORD-LOW TIMECHARTER RATES

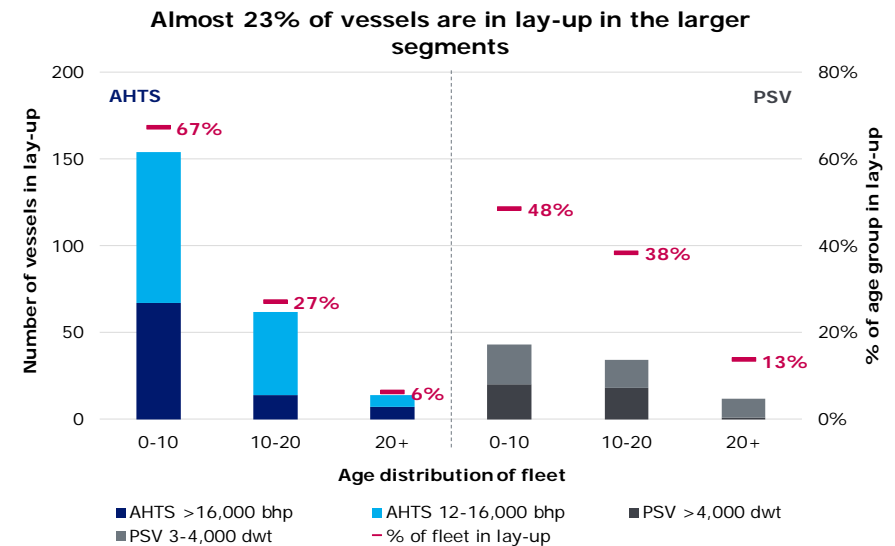
The low activity has reduced the utilisation of the offshore supply fleet to below 50%. Timecharter rates continue to decline across regions. The average timecharter rate for AHTS vessels and PSVs fell by approximately 27% in 2016 and by an additional 4% during the first quarter of 2017 and many operators are struggling to cover their operating expenses. Timecharter rates are at record-lows across the board. The subsea segments are less volatile than the supply segments, but this can partly be explained by their longer average contracts and continuous maintenance of subsea structures.

ONE-THIRD OF OFFSHORE SUPPLY VESSELS ARE IN LAY-UP

Demolition activity has been very low, since scrapping of an OSV, unlike in many other ship segments, can incur a cost for the owner, since the repositioning cost can be greater than the scrap value of the vessel. This has reduced owners' incentive to scrap, and instead many of the unemployed vessels have been placed in warm or cold lay-up. Only 49 vessels were scrapped during 2016 and 11 during the first quarter of 2017. As of April 2017, approximately 1,500 vessels, or one-third of the OSV fleet, were in lay-up globally (56% AHTS vessels and 44% PSVs), while up to 25% of the fleet was idle, awaiting the next spot employment. Vessels lying idle or in lay-up represents a cost to owners. The larger segments are doing slightly better than average (fig. 3). We would expect that many of these vessels will eventually be scrapped if owners do not get a contract in place to cover the reactivation costs.

DECLINING SHIP PRICES

Few new ships have been ordered since the beginning of 2015. Secondhand prices have been declining since 2014. Average secondhand prices for large AHTS vessels and PSVs declined by approximately 20% and 30%, respectively, in 2016 and by an additional 6% and 9% in the first quarter of 2017. Hence,

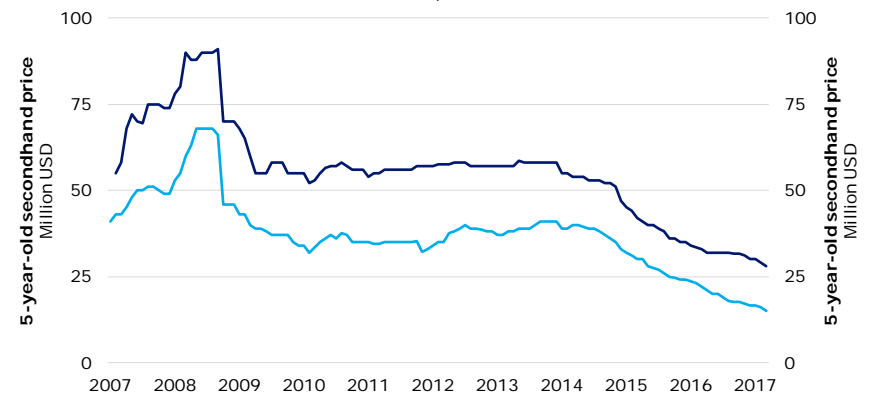


Sources: Clarksons, Danish Ship Finance

Figure OSV.4

The secondhand price of a five-year old PSV has dropped by more than 73% since 2008

The secondhand price of a five-year old AHTS vessel has declined by 65% in the same period



Sources: Clarksons, Danish Ship Finance

— AHTS 16,000 bhp — PSV 4,000 dwt

secondhand prices have only been adjusted in line with the presumed decline in newbuilding prices; the low earnings environment is yet to be factored in (fig. 4).

CONSOLIDATION PROCESS CONTINUES

A major consolidation process is under way as operators work to optimise their fleets for a future with high competition and low margins. This is being done either through mergers, acquisitions or simple selling and purchasing of low-priced (distressed) ships. Still, the S&P market remains relatively illiquid and we see only a few potential buyers for each sales candidate. Sales prices are significantly below the benchmark values indicated in figure 4, presumably due to the asymmetric relationship between sellers and buyers.

THE OUTLOOK FOR OFFSHORE SUPPLY VESSELS IS CHARACTERISED BY A MASSIVE OVERSUPPLY OF VESSELS AND A SLOWER RECOVERY IN DEMAND THAN GENERALLY EXPECTED. SECONDHAND PRICES ARE LIKELY TO DETERIORATE UNTIL A NEW EQUILIBRIUM IS RE-ESTABLISHED. CHARTER RATES COULD RECOVER MORE QUICKLY IF MORE VESSELS ARE TAKEN OUT OF SERVICE.

MASSIVE OVERCAPACITY

The outlook for offshore supply vessels is being shaped by low fleet utilisation, the large number of vessels in lay-up and modest demand. More than 1,500 vessels (30% of the fleet) are currently registered as being laid up and over 1,300 (25% of the fleet) do not have active class certificates. This basically means that these vessels are unlikely to re-enter service or become an active part of the fleet within the foreseeable future (fig. 5). The larger ship segments (i.e. AHTS >12,000 bhp and PSV >3,000 dwt) are doing better than the smaller sizes.

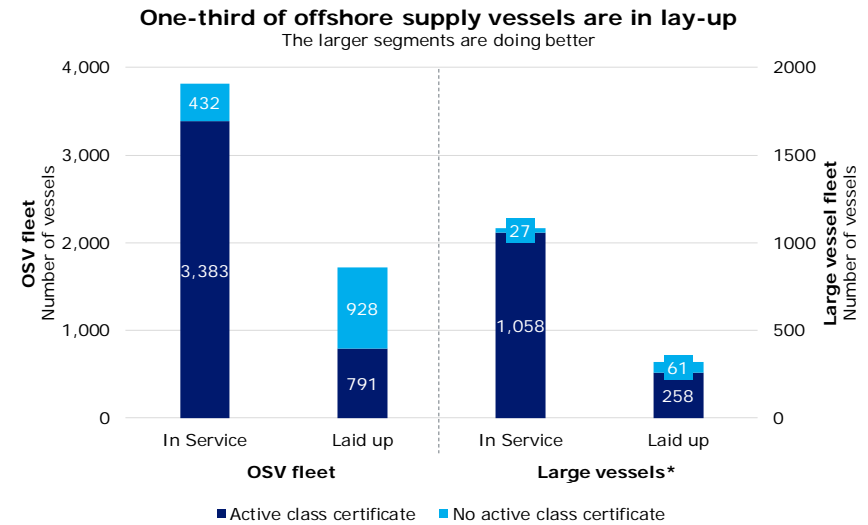
ORDERS MAY BE POSTPONED

The combined orderbook for OSVs has come down to approximately 300 vessels, or 7% of the fleet. But these are primarily larger vessels. The orderbook-to-fleet ratio for the larger vessels is 14%. The age profile of the fleet is young and there are few obvious scrapping candidates (fig. 6). Seven out of ten vessels on order are scheduled to be delivered in 2017, whereafter the orderbook quickly dries up. It remains to be seen how many of these orders are delivered according to schedule. Two-thirds of orders scheduled for delivery in 2016 were postponed for one year, on average.

UNCONVENTIONAL OIL PRODUCTION IS DRIVING OIL SUPPLY

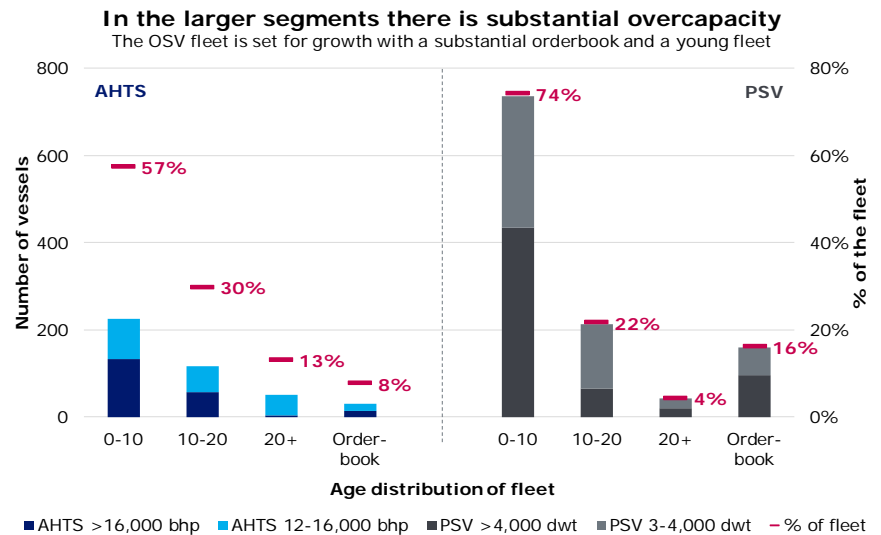
Global E&P spending and hence demand for OSVs are to some extent dictated by the oil price. The recent restructuring of the global oil market has lowered the break-even oil price across several oil-

Figure OSV.5



Sources: Clarksons, Danish Ship Finance *Large vessels: AHTS > 12,000 bhp and PSV > 3,000 dwt

Figure OSV.6



Sources: Clarksons, Danish Ship Finance

producing regions, including the North Sea. It remains the case, however, that new offshore projects have longer repayment periods and higher risk profiles than, for example, North American onshore oil production. Onshore E&P spending is expected to outpace offshore E&P spending up to 2020. This development is being driven by a strong rebound in North America, especially in unconventional onshore E&P spending (fig. 7).

OFFSHORE IS MORE STABLE THAN ONSHORE E&P SPENDING...

Notwithstanding this, offshore E&P spending has been more resilient than onshore E&P spending in recent years. Offshore spending has been maintained by ongoing projects that were initiated prior to the collapse in oil prices. This means that the longer lead times and longer contract durations have resulted in a more gradual decline in offshore rig activity than what we have seen onshore.

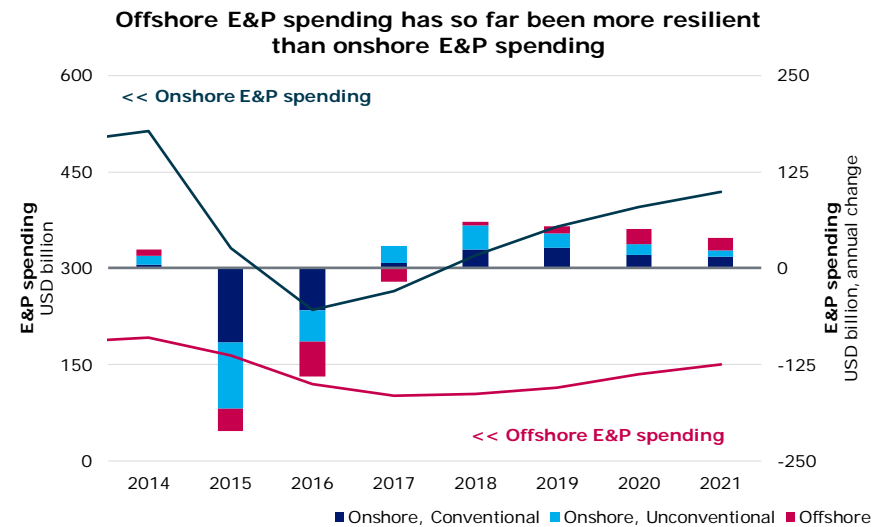
...BUT IT MAY TAKE YEARS BEFORE ACTIVITY RECOVERS

Offshore E&P spending is projected to start recovering from 2018 onwards. We predict that offshore rig counts will bottom out towards the end of 2017 or in early 2018 and start recovering thereafter. For deeper-water and ultra-deepwater rigs, demand is expected to return to the levels seen in 2014 by around 2022-23. Demand for subsea construction assets, which has dropped dramatically since its peak in late 2013, is also expected to bottom out towards the end of 2017 or in early 2018 and start recovering, but it may take until the mid-2020s before activity returns to 2013 levels.

OFFSHORE OIL PRODUCTION UP BY 750,000 BARRELS PER DAY

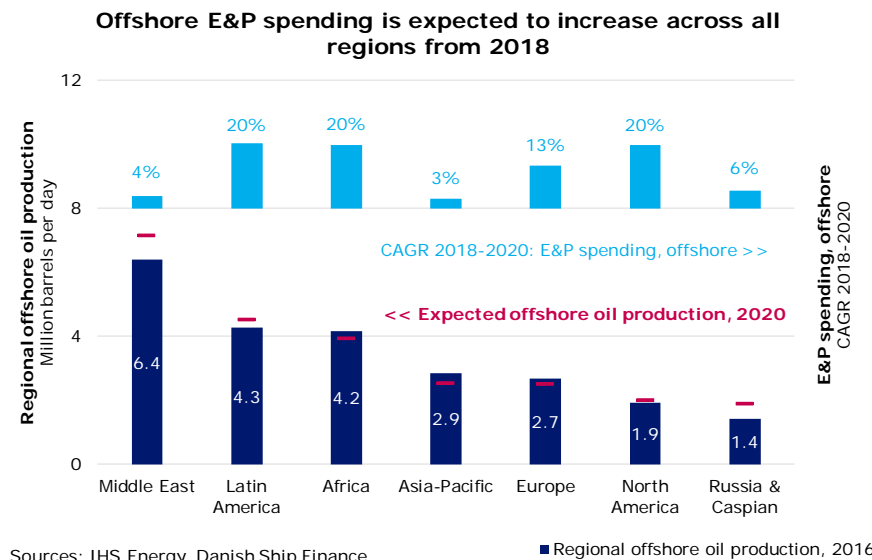
Global offshore oil production is projected to increase by approximately 750,000 barrels per day from 23.7 million barrels per day to approximately 24.4 million barrels per day towards 2020 (fig. 8). The main contributors to this increase are expected to be the Middle East, Russia and the Caspian Sea (e.g. the Kashagan Field), and Latin America (e.g. Pre-Salt Brazil); production in these regions is expected to increase by approximately 1.5 million barrels

Figure OSV.7



Sources: IHS Energy, Danish Ship Finance

Figure OSV.8



Sources: IHS Energy, Danish Ship Finance

per day. Despite rising offshore E&P spending, offshore oil production is expected to decline in Africa, Asia-Pacific and Europe by approximately 750,000 barrels per day towards 2020. North American offshore oil production is expected to remain relatively stable, increasing by 72,000 barrels per day (4%), despite 20% annual growth in offshore E&P spending (fig. 8).

DEMAND FOR OFFSHORE SUPPLY VESSELS MAY DECLINE

Demand for OSVs will increase as more rigs come into service, although the push towards standardisation and increased efficiency in new offshore oil projects may reduce the spillover effects from the increased rig activity to demand for offshore supply vessels. Also, many of the newer rigs are equipped with dynamic positioning and more internal storage capacity, reducing the demand for OSVs. Hence, we do not expect demand to return to its previous highs. Before a broader market recovery can take place, we believe that the fleet needs to adjust to lower demand.

A MARKET RECOVERY IS A LONG WAY OFF

The combination of fleet utilisation below 50% and a relatively slow recovery in demand for OSVs is clearly preventing a broader market recovery. Hence, a significant number of vessels need to exit the market. Lay-ups are reducing the fleet availability somewhat, particularly in cases where class certificates are not renewed, but these vessels will eventually have to be scrapped (fig. 9).

MANY VESSELS TO BE CLASSED WITHIN THREE YEARS

The larger vessels (i.e. AHTS >12,000 bhp and PSV >3,000 dwt) seem to be somehow better positioned for a recovery in charter rates than the smaller ones, although some of the larger vessels could turn out to be overequipped for the needs of the future, and the size of the orderbook, if it is delivered, clouds the outlook significantly. Charter rates may find some support if only a fraction of the 800 large vessels that are up for class renewal during the next three years are being classed (fig. 10).

SECONDHAND VALUES COULD CONTINUE TO DECLINE

The outlook for secondhand prices is muted. Secondhand prices

Figure OSV.9

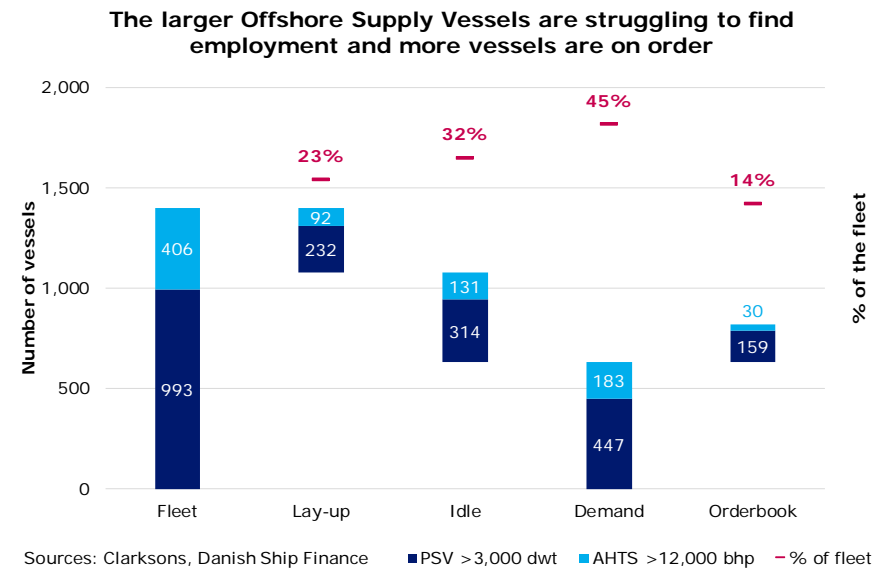
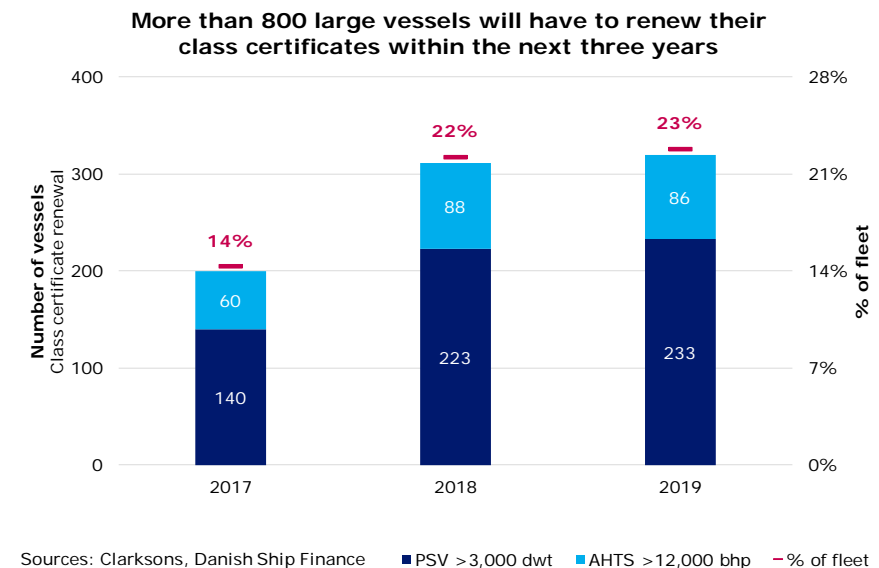


Figure OSV.10



will find little – if any – support from a theoretical increase in charter rates stemming from anything other than demolition of vessels. Current secondhand prices are being supported by some degree of illiquidity, since many vessels are put in lay-up rather than scrapped or sold. The few vessels that are being sold – at heavy discounts – are labelled as distressed sales. The challenge is that when the price mechanism for secondhand vessels begins to reflect the market's real appetite for many of these vessels, current values may be considered overstated. Current secondhand prices could be facing some significant downside risk if demand fails to employ a larger share of the fleet. The pricing of older vessels, maybe as young as ten years old, seems the most exposed.

A TWO-TIER MARKET

Many of the offshore regions have entry barriers of some kind that limit the number of operators. These barriers represent a cost that must be incurred by new entrants, but they also limit the number of competitors and hence allow charter rates to be significantly above what can be earned in the open spot market. These higher charter rates are only available for the relatively few that have access to these local markets, though. As such, we are starting to see a two-tier market, whereby some of the (global) players are able to maintain employment while others are being left behind.

SOME OWNERS WILL DO BETTER THAN THE MARKET

The low secondhand prices will impact all market participants until surplus capacity has been scrapped. When the market has reduced supply to meet demand, secondhand prices will regain some of the lost territory. ■

CRUDE TANKER

SHIPPING MARKET REVIEW – MAY 2017



**DANISH
SHIP FINANCE**

CRUDE TANKER

THE OVERCAPACITY IN THE CRUDE TANKER MARKET GREW IN 2016 AND IS EXPECTED TO INCREASE FURTHER IN 2017. FLEET GROWTH WILL STAY HIGH AND DEMAND WILL REMAIN MUTED DUE TO HIGH OIL INVENTORIES, PUTTING ADDITIONAL PRESSURE ON FREIGHT RATES AND SECONDHAND PRICES.

THE CRUDE TANKER MARKET AT A GLANCE

FOLLOWING A BRIEF UPTICK IN FREIGHT RATES IN THE FOURTH QUARTER OF 2016, THE CRUDE TANKER MARKET HAS RESUMED ITS DECLINING TREND.

Market fundamentals deteriorated significantly in the Crude Tanker segment in 2016, as the fleet expanded rapidly (+6%), outstripping otherwise strong growth in distance-adjusted Crude Tanker demand (+5%). This led to steep declines in freight rates, especially during the first three quarters of the year (fig. 1).

TEMPORARY FACTORS BOOSTED THE MARKET IN THE FOURTH QUARTER

The fourth quarter of 2016 brought about higher rates for all three of the major Crude Tanker segments. The market strengthened on the back of a combination of infrastructural bottlenecks and more long-haul US crude exports increasing the efficiency of the Crude Tanker fleet. On top of that, optimism flooded the oil market after OPEC and others agreed to cut crude oil production in the first half of 2017. This agreement pushed oil prices up and increased trading activity. This did not last long, though, since it quickly became apparent that the effects of the cut would be marginal because US tight oil production was beginning to ramp up.

EARNINGS HAVE RESUMED A DOWNWARD TRAJECTORY IN 2017

Consequently, after having reached around USD 40,000 per day in December 2016, average spot earnings started to decline, and by the end of April 2017, they were back to the low levels seen during the third quarter (fig. 1). The VLCC market experienced the steepest downturn, partly because the US replaced seaborne imports from the Middle East with domestic production and Canadian im-

Figure T.1

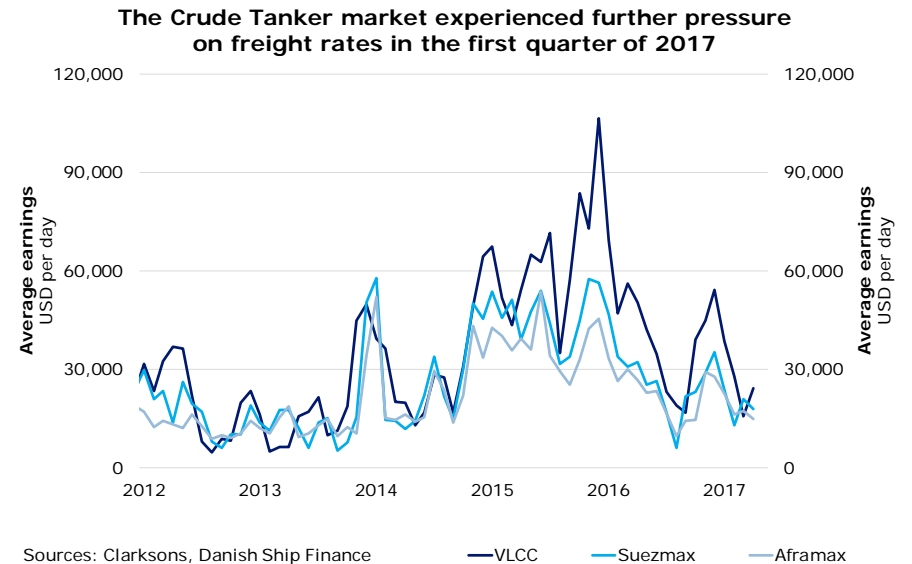
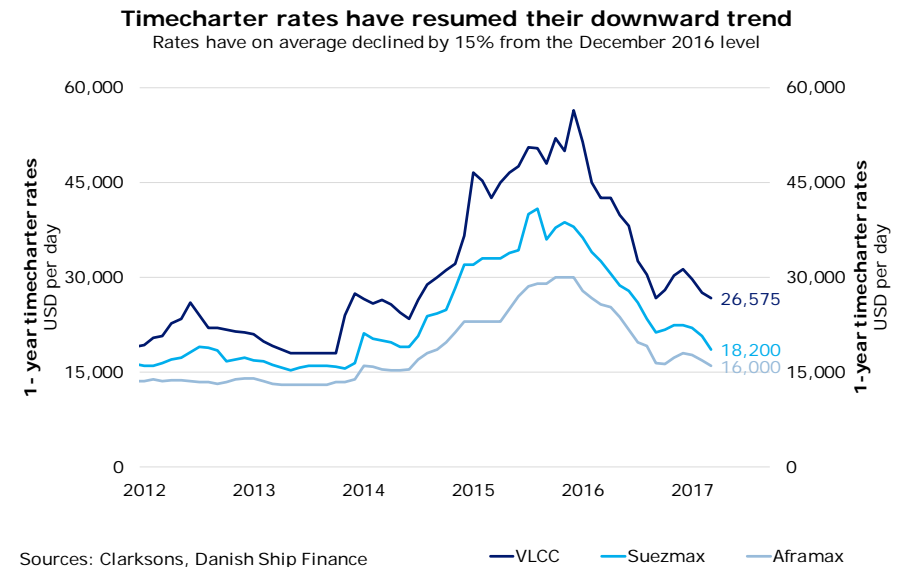


Figure T.2



ports. This was prompted by an increase in the price of heavy Middle Eastern crude following OPEC's output cut. Timecharter rates followed the same trend and started the year on a declining trend. At the end of April, the 1-year timecharter rate stood at USD 26,575 per day for a VLCC, USD 18,200 per day for a Suezmax and USD 16,000 per day for an Aframax – an average decline of around 15% from the December levels (fig. 2).

SECONDHAND PRICES STABILISED IN THE FIRST FOUR MONTHS OF 2017

The more bearish market has pushed ship prices down. The average secondhand price in 2016 was around 17% lower than in 2015. Prices began to stabilise in the first four months of 2017 due to a growing interest for buying modern vessels and few sales candidates (fig. 3). Ship prices are now at a low point in the cycle and the older vessels especially are at some of the lowest levels seen since the beginning of 2000 (fig. 4).

ACTIVITY DROPPED IN THE NEWBUILDING AND SECONDHAND MARKETS

Both the newbuilding and secondhand markets slowed down in 2016. In the newbuilding market, only around 7.7 million dwt of new orders were placed, compared with 36 million dwt in 2015, and in the secondhand market, around 13 million dwt changed hands, versus 22 million dwt in 2015. The secondhand market, however, experienced a minor uptick in the first quarter of 2017, which seemed to raise hopes that the market had bottomed out - at least for VLCCs, as the number of vessels sold in that period alone exceeded the total from 2016.

HIGH DELIVERIES AND LOW SCRAPPING LED TO HIGH FLEET GROWTH

The substantial correction in freight rates and secondhand prices does not seem to have led shipowners to take any extraordinary measures. Deliveries of new vessels continued unabated throughout 2016 and 21 million dwt was delivered, compared with 8.3 million dwt in 2015. Moreover, very few orders were cancelled or postponed and only 1.5 million dwt was scrapped. This pattern continued in the first quarter of 2017, when the fleet grew by 2.3% with 10 million dwt delivered and only 0.6 million dwt scrapped.

Figure T.3

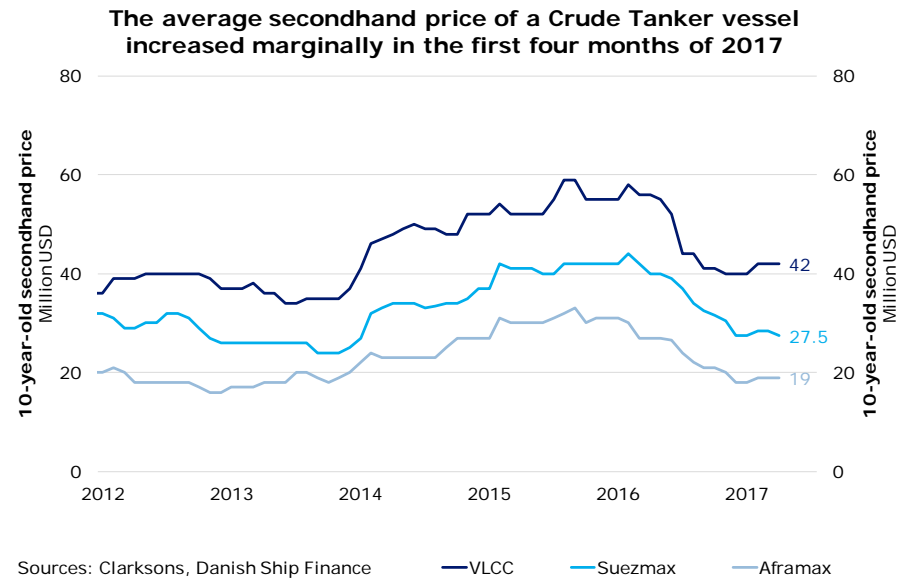
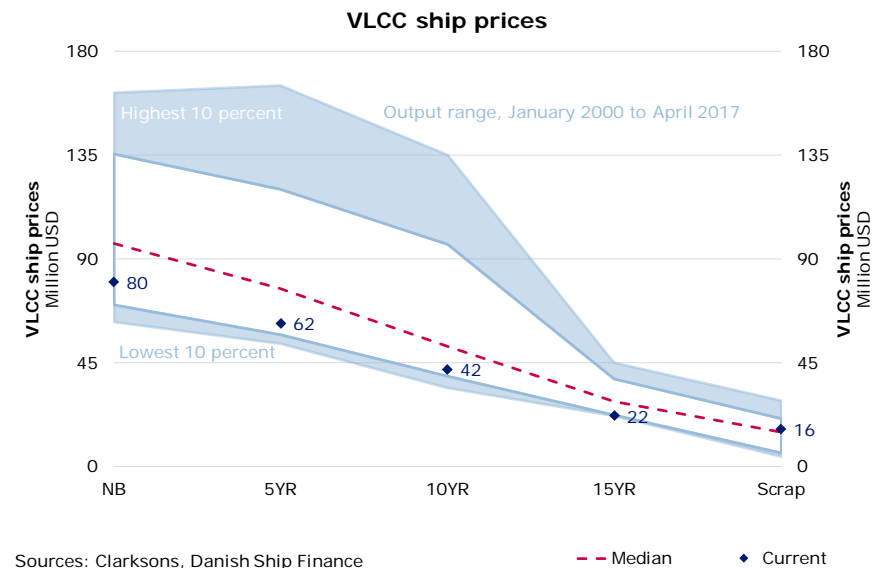


Figure T.4



EXPECTED HIGH FLEET GROWTH IS HAMPERING THE OUTLOOK FOR THE CRUDE TANKER MARKET FOR THE NEXT COUPLE OF YEARS. DEMAND IS EXPECTED TO BE MUTED OWING TO THE RE-BALANCING EFFORTS IN THE OIL MARKET. THIS COULD, HOWEVER, LEAD TO CHANGING TRADE PATTERNS, WHICH IN TURN WOULD STRENGTHEN DISTANCE-ADJUSTED DEMAND.

The Crude Tanker market is facing a difficult couple of years. The fleet expanded rapidly in 2016 and the orderbook remains large. Many new vessels will enter the fleet over the next two years, which will put pressure on freight rates and secondhand prices. Even though demand for crude oil remains healthy, the low oil prices have inflated oil inventories across the world, putting a limit on import demand.

CRUDE OIL PRODUCTION CUT WILL AFFECT CRUDE TANKER DEMAND

The declining crude oil production, as stipulated by the OPEC agreement, is expected to slow down Crude Tanker demand in 2017. The severity of the slowdown will depend on whether OPEC decides to extend the agreement to the second half of 2017. Current indications are that there will be an extension of some sort, which would harm the VLCCs in particular by keeping crude oil exports from the Middle East low. However, a secondary effect of an extension could be longer travelling distances. Asia, the largest importer of seaborne crude oil, has historically relied chiefly on Middle Eastern imports, a relatively short-haul trade. If the Middle East cuts production further, prices of Middle Eastern crude oil will most likely remain high and exports low. This would make imports from the Atlantic Basin more economical for Asian refiners, and increase distance-adjusted demand. Moreover, the tighter fuel standards being implemented in, for example, China and India are leading local refiners to look for lower-sulphur crude grades, which can be sourced from the Atlantic Basin.

HIGHER US EXPORTS COULD SUPPORT THE CRUDE TANKER MARKET

The OPEC production cut has not yet had the desired effect and inventories have so far not registered any material declines. This might begin to change as more refineries come back online after the maintenance season. However, the effect of the OPEC cut has been minimised by US tight oil making a comeback. The rise in oil prices in 2016 created the foundation for US tight oil producers to start ramping production up again. Combined with more heavy crude oil becoming available in Canada, this is expected to keep US seaborne imports low. This will affect Crude Tanker demand, but due to the lifting of the crude export ban, large amounts of light and sweet US crude oil are becoming available for export. Many of these barrels will go to Canada and Europe, but Asia is also expected to take a growing share, counterbalancing some of the negative effects from lower US seaborne imports.

CHINA WILL LEAD GROWTH IN IMPORTS OF CRUDE OIL IN 2017

Even though demand from some of the large crude oil importers, such as North America and Europe, is expected to weaken in 2017, China is expected to continue to increase imports, albeit at a slower pace than in 2016. China's domestic crude oil production is currently not competitive in the lower oil price environment, and output has begun to decline, while its import requirements are growing. However, oil inventories in China have also reached record-high levels, which is slowing down import growth. On top of this, China's oil demand growth has begun to slow as the economy matures, and the Chinese government has slowed down the process of granting new import permits to domestic independent refiners. The boost in China's seaborne imports in 2016 was to a large extent sparked by the government's decision to allow independent refiners to import crude oil and export refined products. In 2017, the government has been more reluctant to grant these import quotas and as a consequence, we expect independent refiners to be forced to lower their crude oil imports.

SEABORNE CRUDE TANKER DEMAND EXPECTED TO GROW BY 1% IN 2017

We expect nominal Crude Tanker demand to grow by around 1% in 2017. Even though changing trade patterns and longer travelling distances could help increase Crude Tanker utilisation, this is not expected to bring demand anywhere near the levels seen in 2016, and demand growth is expected to fall short of supply growth.

THE FLEET IS EXPECTED TO CONTINUE TO EXPAND AT A FAST PACE...

Fleet growth is expected to stay high for at least the next two years. The ordering spree in 2014 and 2015 filled the orderbook with vessels, the majority of which are scheduled for delivery in 2017 and 2018. Some of these vessels were probably ordered as replacements for older vessels approaching scrapping. However, given the age distribution of the fleet (fig. 6), the number of obvious scrapping candidates is limited, and we believe that the majority of orders during the last couple of years were placed in anticipation of strong demand growth.

...AND COULD GROW BY ANOTHER 5% IN 2017

Scrapping activity has been suspended for the last two years but is expected to be resumed in an attempt to keep fleet growth in check. The fleet grew by 2.3% during the first quarter of 2017 and scheduled gross fleet growth is a little over 6% for the rest of the year and 6% for 2018 (fig. 7). If scrapping picks up to the level observed in 2014 and the delivery ratio remains around 70%, the fleet will grow around 5% in 2017 before dropping to around 3% in 2018. In order for scrapping to pick up, some vessels must be scrapped prematurely and we expect this to put more pressure on ship prices in the coming years. Shortening the vessels' life expectancy by four years could lower secondhand prices by 10-15%. The new Ballast Water Management Convention could help keep scrapping relatively high in the coming years.

SHIPOWNERS REMAIN OPTIMISTIC ABOUT FUTURE EARNINGS

The risk of low freight rates and a shortening in the economic life of vessels in the coming years have yet to be priced into ship prices. Secondhand prices declined less than freight rates in 2016

Figure T.5

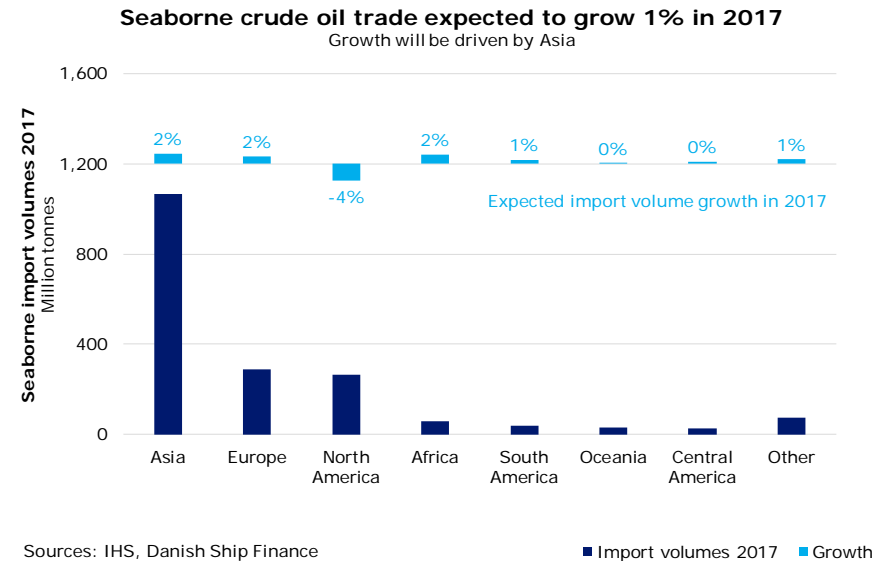
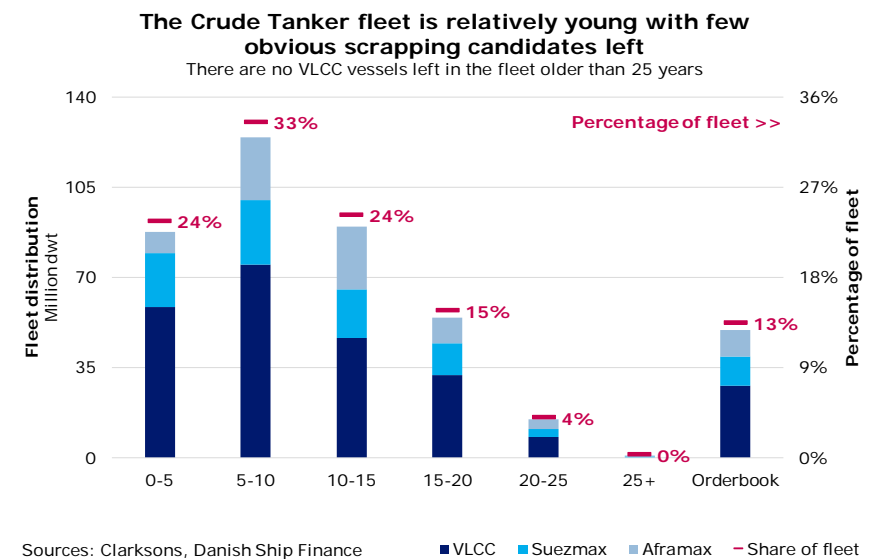


Figure T.6



and strengthened marginally in the first four months of 2017, indicating that the market remains somewhat optimistic. As a result, secondhand prices look relatively high in the light of current earnings. At the end of April, when the 1-year timecharter rate stood at USD 26,575 per day, a five-year-old VLCC was priced at USD 62 million, implying that buyers were paying close to USD 11 to access USD 1 in cash flow, up from an average of just under USD 6 in 2015 (fig. 8). The ratio for a Suezmax vessel increased even more, rising from USD 6 in 2015 to USD 13 at the end of April. That means shipowners are willing to pay more for gaining access to the market today than they were a year ago, presumably in anticipation of higher future earnings.

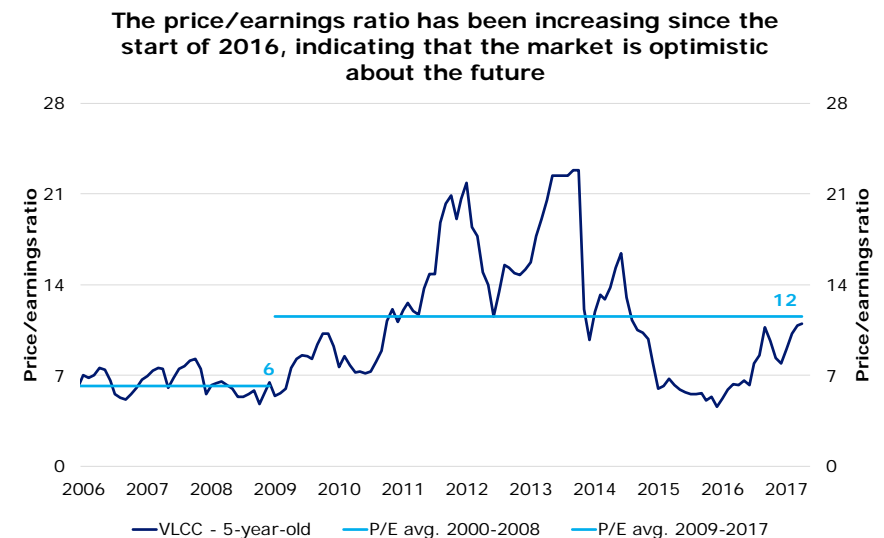
MORE DOWNSIDE BEFORE THE MARKET CAN IMPROVE

We do not think it is the right time to buy new vessels. We expect the Crude Tanker market to be weighed down by a growing oversupply in 2017, which will put pressure on freight rates and secondhand prices. We see very little that could change this, but the blow could be softened if demand surprises on the upside. There is a lot of uncertainty surrounding the oil market and it will be interesting to see whether OPEC decides to extend the production cuts to the second half of 2017. As mentioned above, this looks likely, which could put a drag on Crude Tanker demand. If the cut is not extended, oil prices could start to decline and the market contango strengthen, increasing the incentive to store oil and thereby also improving Crude Tanker utilisation. Irrespective of the outcome, we do not see any demand factors strong enough to counterbalance the high fleet growth in 2017, and we expect the Crude Tanker market to remain difficult during the next 12 months. ▀

Figure T. 7

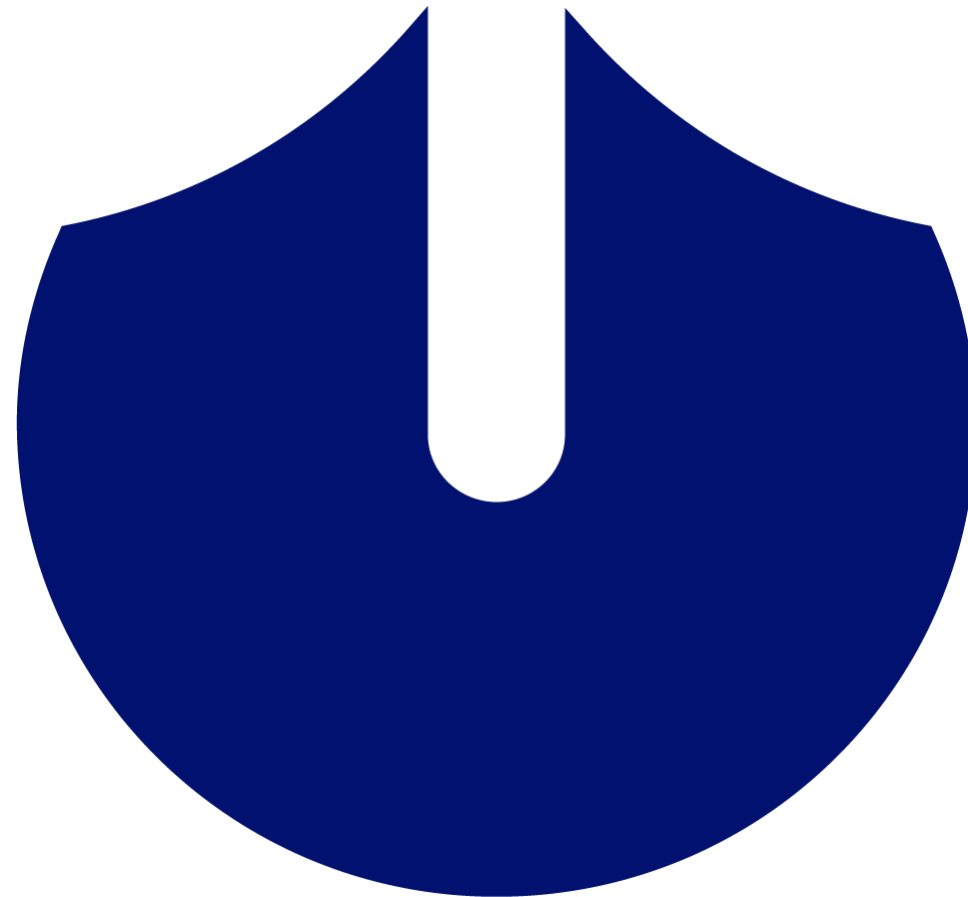


Figure T.8



PRODUCT TANKER

SHIPPING MARKET REVIEW – MAY 2017



**DANISH
SHIP FINANCE**

PRODUCT TANKER

THE PRODUCT TANKER MARKET IS CURRENTLY OVERSUPPLIED. TIMECHARTER RATES ARE LOW AND HAVE BEEN DECLINING, ALTHOUGH SECONDHAND PRICES REMAIN STABLE. THE LR SEGMENTS ARE EXPOSED TO ADDITIONAL OVERCAPACITY IN 2017 AND 2018, WHILE THE SMALLER MR SEGMENT SEEMS BETTER POSITIONED TO BALANCE SUPPLY AND DEMAND THROUGH SCRAPPING OF OLDER VESSELS.

THE PRODUCT TANKER MARKET AT A GLANCE

THE PRODUCT TANKER MARKET HAS SEEN TIMECHARTER RATES HALVE IN SIX MONTHS AND THEY ARE NOW FLIRTING WITH PREVIOUS LOWS, WHERE AS SPOT RATES HAVE BEEN INCREASING.

The fleet expanded by 6% in 2016 and has already grown another 1.4% since the start of the year. Product Tanker demand grew by 4.5% in 2016. High inventory levels, modest growth in refinery throughputs and declining utilisation rates at the world's refineries have reduced the opportunities for geographical arbitrage trading of petroleum products and hence lowered Product Tanker demand. During the first quarter of 2017, tonne-mile demand weakened and utilisation of the Product Tanker fleet declined.

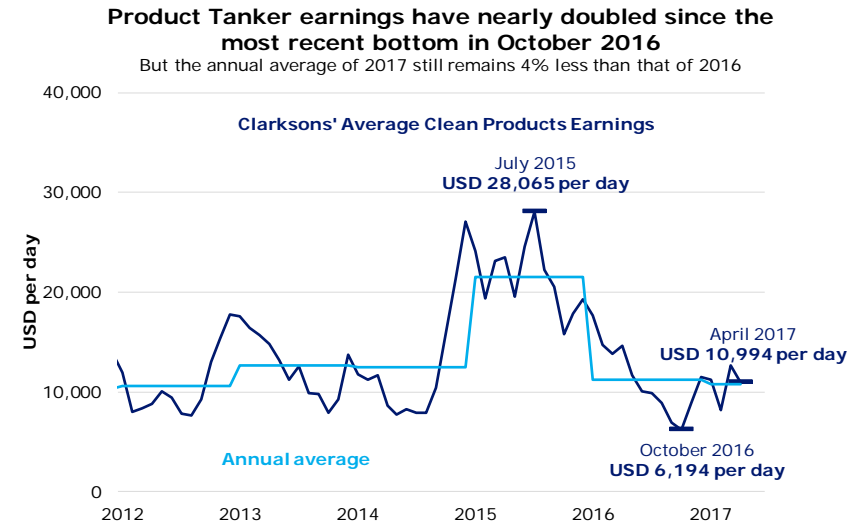
CLEAN TANKER EARNINGS HAVE STRENGTHENED IN 2017

Clarksons' Average Clean Products Earnings index for the first four months of 2017 was 4% below the 2016 level. However, by April freight rates had almost doubled from their low in October 2016. The 2016 low was less than USD 2,000 per day above the all-time low in 2009 (fig. 1).

TIMECHARTER RATES HAVE ALMOST HALVED IN THE LAST YEAR

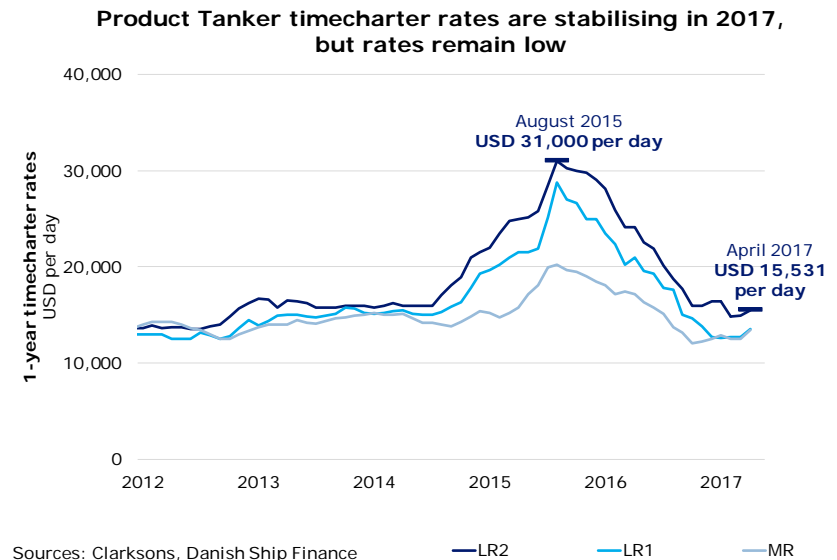
Product Tanker timecharter rates remain low, since supply continues to grow ahead of demand. The fact that the market is oversupplied is clearly visible in the low timecharter rates which are flirting with previous lows. Rates have been declining steadily since their peak in August 2015 and are now approximately 50% off their peak for LRs, while rates for MRs are down by approximately 35%.

Figure P.1



Sources: Clarksons, Danish Ship Finance

Figure P.2



Sources: Clarksons, Danish Ship Finance

LR1 and MR timecharter rates seemed to stabilise in the first months of 2017 and as per April had gained 6% and 8% respectively. LR2 timecharter rates have lost 5% in the same period (fig. 2).

ASSET PRICES ARE STABLE IN 2017

Secondhand prices have been relatively steady in 2017 showing small increases helped by timecharter rates which decline seem to have slowed (fig. 3). Sales activity seems to have picked up slightly, especially for the older MR vessels which appear low-priced (fig. 4)

LOW CONTRACTING TREND CONTINUES

Newbuilding prices have been stable since December 2016, but given the modest contracting activity, this tells us little about the market fundamentals. Only 21 vessels, with a combined capacity of 1.5 million dwt, were ordered during the first quarter of 2017. The stability in newbuilding prices is simply a reflection of the modest pricing power at the only six yards that received orders.

NO SUPPORT FROM DEMOLITIONS AND CANCELLATIONS...

Demolition activity has remained low despite the declining timecharter market, probably held back by the improved spot rates. Only four old MR vessels were scrapped in the first quarter of 2017. The lack of LR2 scrapping candidates since 2013 illustrates the trend of older vessels switching to the dirty market.

...BUT ORDER POSTPONEMENTS WILL CAP DELIVERIES IN 2017

Owners seem to be increasingly postponing delivery of their new-buildings, potentially reflecting the low market, but no contracts have been cancelled so far. Only two-thirds of scheduled orders were delivered during the first quarter of 2017, a 7 percentage point decline compared with the same period in 2016. However, this trend must intensify significantly if order deferrals alone are to ensure a balanced market in 2017.

Figure P.3

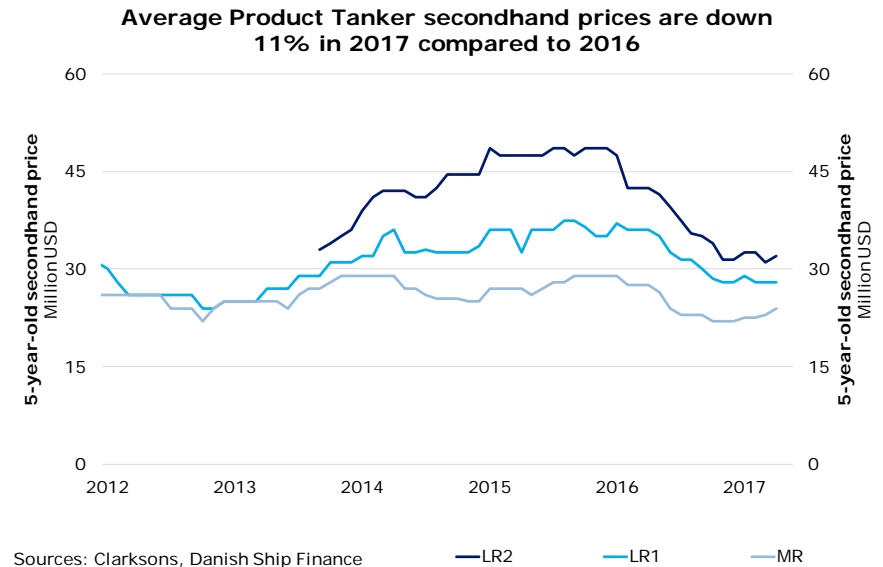
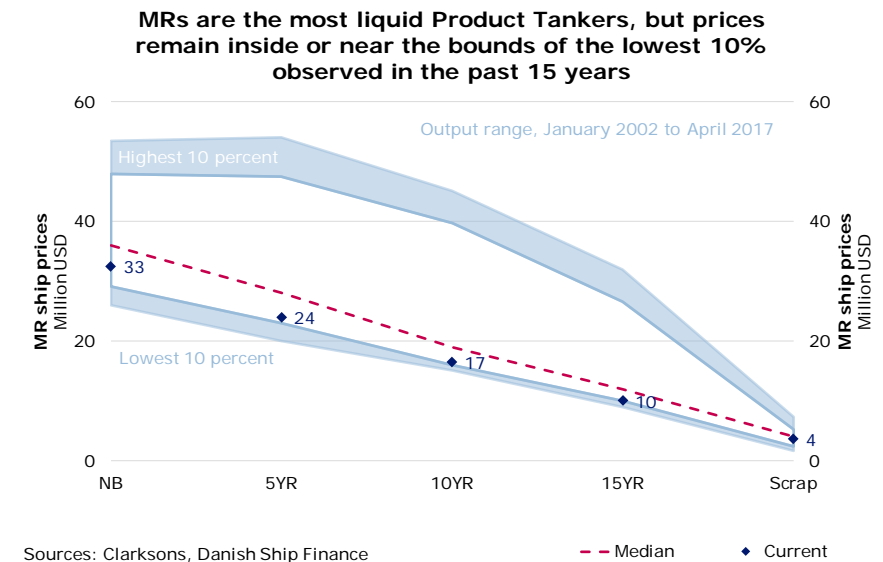


Figure P.4



OUTLOOK

THE LR FLEET IS YOUNG AND MANY NEW SHIPS ARE ON ORDER. SUPPLY IS EXPECTED TO CONTINUE TO EXPAND AHEAD OF DEMAND, AND HENCE YOUNGER VESSELS ARE EXPECTED TO BE SCRAPPED. MRs ARE BETTER POSITIONED BUT COULD BE FORCED TO SCRAP MORE OLDER VESSELS TO MAINTAIN CURRENT TIMECHARTER RATES AND SECONDHAND PRICES.

We expect the high inventories of refined oil products combined with slowing growth in refinery throughputs and limited arbitrage trading to limit demand growth for Product Tankers to about 2% in 2017. Timecharter rates and secondhand prices for LRs are expected to decline during 2017 and going into 2018, since too many vessels are scheduled to enter the fleet too quickly. MRs are better positioned to absorb the orderbook and could, in theory, see both current timecharter rates and secondhand prices maintained if vessels not being employed are scrapped.

THE PRODUCT TANKER FLEET IS SET FOR GROWTH

The Product Tanker fleet is still positioned for growth. The orderbook currently stands at 10% of the fleet. There are 250 vessels on order with a combined capacity of 15.8 million dwt, 80% of which are scheduled to be delivered by the end of 2018. The LRs are due for a gross addition equalling 11% of the current fleet before year-end 2018, while the MR fleet is set to expand by 6% in gross terms.

FEW OBVIOUS SCRAPPING CANDIDATES AMONG LR VESSELS

If demand for LRs plateaus at current levels, all vessels older than 15 years would need to be scrapped for timecharter rates to be maintained at current levels. In the event of this, secondhand prices would decline by approximately 12-15% from current levels (i.e. the value of five years' cash flow).

MR VESSELS ARE BETTER POSITIONED TO ABSORB THE ORDERBOOK

Its age distribution makes the MR fleet better positioned in a situation where demand plateaus at current levels, since the orderbook

Figure P.5

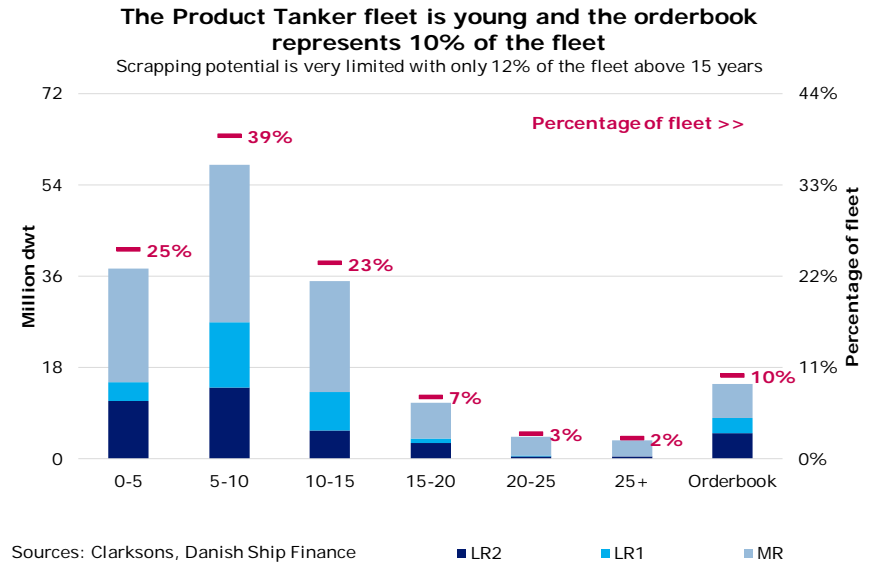
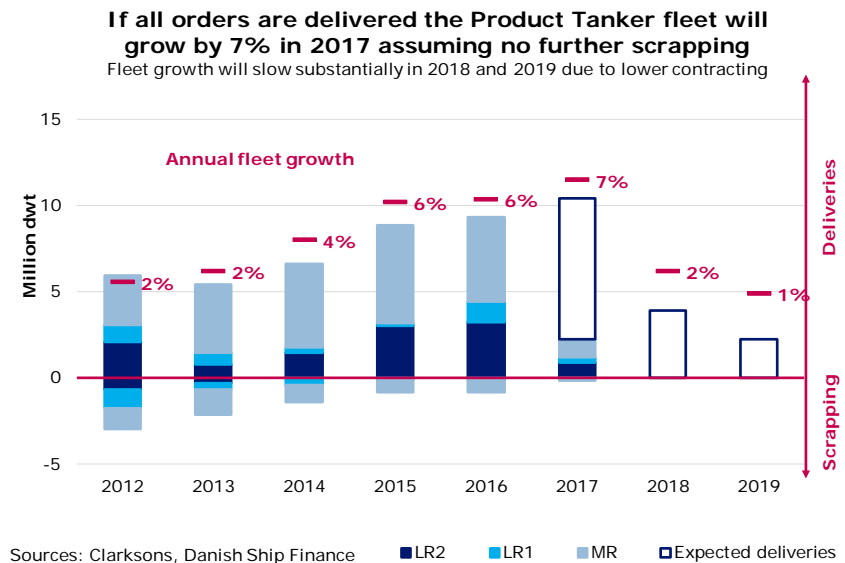


Figure P.6



could be absorbed by scrapping all vessels older than 25 years and only one-third of vessels older than 20 years. In theory, that should be enough to keep secondhand prices at current levels, since the average age of vessels scrapped would stay at or above 25 years.

BWM CONVENTION COULD ALLEVIATE SUPPLY GROWTH

Fleet availability could temporarily be reduced by the Ballast Water Management Convention which takes effect in September 2017. After that date, all vessels must be compliant after undergoing their next special survey. Some owners may choose to bring forward their vessels' surveys to before September in order to postpone the required investments. Older vessels could be scrapped if owners decide that it is not worth investing in them. In short, the new regulations could briefly improve the utilisation of the Product Tanker fleet during the summer months.

DEMAND UP BY 1.6% UP TO 2020

Global demand for refined oil products is expected to grow at a slower pace than has been the case over the past 15 years. IHS predicts that demand for refined oil products will grow by 1.3% on average up to 2020, while seaborne demand for petroleum products could average 1.6% growth per year in the same period.

IT IS ALL ABOUT DEMAND FROM EMERGING ECONOMIES

Emerging markets and developing economies have become increasingly important in the global economy in recent years. They now account for more than 75% of global growth in output and consumption, almost double their share just two decades ago. For Product Tankers, these markets will account for the lion's share of future demand growth. Still, it is important to stress that the progress we are currently seeing within autonomous vehicles, and electric vehicles, energy efficiency and car-sharing schemes suggests that the downside risk in Product Tanker demand will increase within the next three to five years.

REFINERY CAPACITY IS HEADING EAST WITH DEMAND

Growth in demand for refined oil products in emerging markets could bode well for tonne-mile Product Tanker demand. However, planned refinery capacity additions and upgrades are also overwhelmingly focused on emerging markets east of Suez. While some imbalances will persist, all else being equal this suggests that the future for oil products trade is becoming increasingly intraregional, not interregional, which may shorten travel distances and challenge the outlook for LR's.

ASIAN CONSUMERS TO DRIVE GROWTH

The Asian markets for vehicle ownership are far from mature and are projected to continue growing with their populations. The North American car markets are much more mature and will at best grow in line with their consumer bases. In Europe, the recent years' deceleration in vehicle ownership is expected to continue.

DOWNSIDE RISK TO CURRENT DEMAND FORECASTS

The North American outlook is also changing with the ongoing advances in energy efficiency and electric vehicles. The EIA projects that rising fuel efficiency will cause transportation energy demand to peak as early as 2018 in the US. In terms of light-duty electric vehicles, the EIA has continuously revised its forecasts for electric vehicle penetration in the US upwards, and its current forecast is ten times higher than in 2014. To us, this reflects the fact that the pace of both technological improvements and changes in consumer preferences has been consistently underestimated. US demand for refined oil products may peak significantly earlier than generally expected.

RISING CAR OWNERSHIP IN EMERGING MARKETS IS DRIVING GROWTH

Non-OECD countries are expected to more than double their vehicle fleets by 2040, adding approximately 700 million vehicles. In comparison, OECD countries are expected to add around 100 million vehicles. Chinese and Indian consumers in particular are

expected to drive the increase in demand for gasoline. In past years, Chinese car sales have boasted double-digit growth rates, and while the Indian fleet of 30 million vehicles is still small relative to the 150-million-strong Chinese fleet, it is expected to grow by 7% per year up to 2040 against 5% for the Chinese. Still, it remains to be seen how quickly Asian consumers will adapt to electric vehicles.

AMBITIOUS ELECTRIFICATION PLANS

Both the Chinese and Indian governments are pushing for a quick electrification of the car fleet. The Chinese government is incentivising the purchase of electric vehicles through tax exemptions in congested urban areas. The Indian government has, in the National Electric Mobility Plan, set a target of 7 million electric vehicles (5% of the current fleet) by 2020 and a complete electrification of the car fleet by 2030. The scheme is to be partly subsidised and partly financed as a pay-as-you-go system with no upfront payments.

THE INFRASTRUCTURE IS BEING PUT INTO PLACE

In 2016, China surpassed the US as the biggest producer of electric vehicles, and by 2020 it is planning to build a nationwide network of charging stations. Additionally, Chinese battery companies are increasingly buying access to the world's lithium sources, and if they deliver on their targets, they will have the capacity to produce 121 GWh of batteries by 2020 (this compares with 35 GWh for Tesla's Gigafactory when it reaches full capacity in 2018). A single GWh can power 40,000 electric vehicles for 100 km. In 2016, sales of battery, electric and plug-in hybrids reached 507,000 in China, a 50% increase on the previous year. This all indicates that widespread electric vehicle penetration in China could accelerate more quickly than many currently anticipate.

FUNDAMENTAL RISKS RESTRAIN EXPECTATIONS FOR THE FUTURE

In conclusion, the Product Tanker market is facing a period where supply is expected to grow ahead of demand. Timecharter rates and secondhand values, for LRs, are expected to decline during 2017 and into 2018, since too many vessels are scheduled to enter the fleet too quickly. If demand for LRs plateaus at current levels, all vessels older than 15 years would need to be scrapped to maintain timecharter rates at current levels. In that case, secondhand values will decline by approximately 12-15% from current levels. MRs are better positioned to absorb the orderbook and could, in theory, uphold both current timecharter rates and secondhand values if vessels not being employed are scrapped. This could be obtained only by scrapping vessels older than 25 years. ■

LPG TANKER

SHIPPING MARKET REVIEW – MAY 2017



**DANISH
SHIP FINANCE**

LPG TANKER

THE LPG MARKET REMAINS EXPOSED TO ADDITIONAL DOWNSIDE. SUPPLY GROWTH IS EXPECTED TO KEEP FREIGHT RATES AND SHIP PRICES UNDER PRESSURE THROUGHOUT THE YEAR. MARKET FUNDAMENTALS COULD IMPROVE WITHIN THE NEXT TWO YEARS IF CONTRACTING STAYS LOW.

THE LPG TANKER MARKET AT A GLANCE

THE LPG MARKET IS STILL STRUGGLING WITH A GROWING OVER-SUPPLY OF VESSELS, WHICH HAS CAUSED FREIGHT RATES TO PLUNGE TO NEAR ALL-TIME LOWS.

The LPG market took a nosedive in 2016, resembling the dramatic decline of the Dry Bulk market during the financial crisis. The fleet increased by a record 18%, while demand grew by around 5%. The rapid pace of deliveries continued in the first quarter of 2017 and the fleet expanded by an additional 3%.

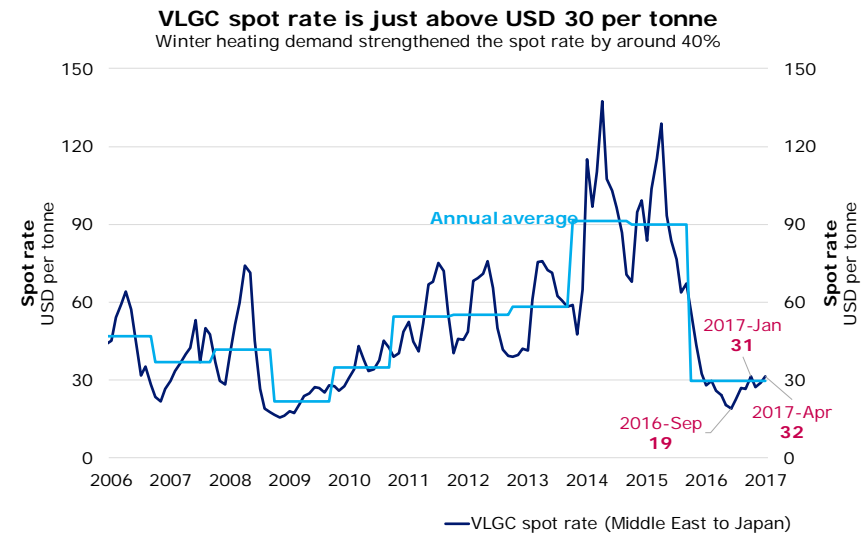
VLGC FREIGHT RATES STRENGTHENED IN THE FIRST QUARTER OF 2017

The first quarter of 2017 saw a marginal improvement in VLGC (>65k cb.m.) freight rates, as vessel demand increased on the back of a cold winter in Asia and Europe and favourable arbitrage conditions between the US and Asia. The VLGC spot rate stayed at around USD 30 per tonne in the first quarter, up from around USD 19 per tonne in September 2016 (fig. 1). In the same period, the VLGC timecharter rate ended up at around USD 18,000 per day, up from around USD 16,000 per day last September (fig. 2).

THE MGC TIMECHARTER RATE HAS HIT A NEW ALL-TIME LOW IN 2017

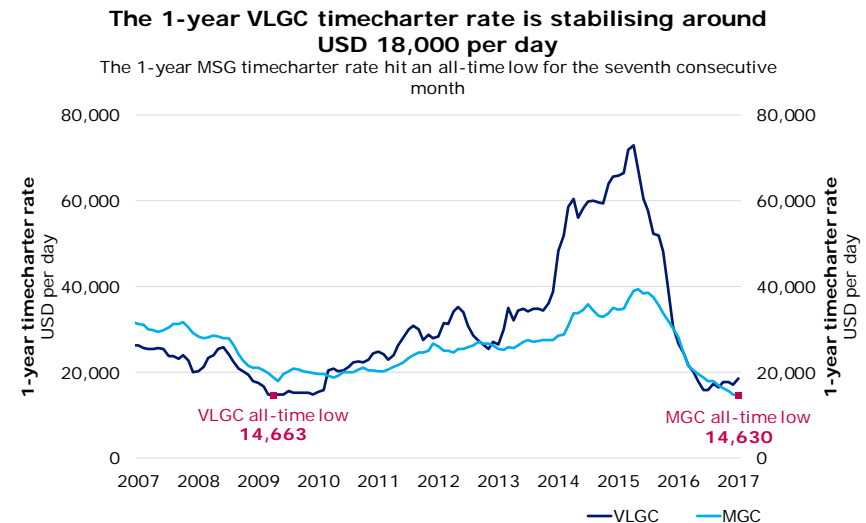
The MGC segment (20k-45k cb.m.) has not experienced the same uptick in demand, and in April freight rates hit a new all-time low for the seventh consecutive month of around USD 14,500 per day (fig. 2). An increase in domestic ammonia production in the US has resulted in a decline in ammonia trade, affecting MGC demand. MGC utilisation has further been squeezed by strong competition in the LPG market from the growing number of VLGC vessels and an increase in MGC deliveries.

Figure LPG.1



Sources: Clarksons, Danish Ship Finance

Figure LPG.2



Sources: Clarksons, Danish Ship Finance

LOW ACTIVITY IN THE NEWBUILDING AND SECONDHAND MARKETS

The deteriorating market fundamentals have lowered investors' appetite for ordering new vessels markedly. Only eight new orders were placed during 2016, compared with an annual average of 91 orders in the period from 2013 to 2015. Another two MGC orders were placed during the first quarter of 2017. Activity in the secondhand market has also slowed down, indicating that owners have become reluctant to sell at the current low prices. In the SGC segment (5k-20k cb.m.), only two vessels changed hands in the first quarter of 2017.

ASSET PRICES HAVE COME UNDER CONSTANT PRESSURE

The sharp decline in contracting is putting newbuilding prices under pressure, and both VLGC and MGC newbuilding prices declined by more than 10% in 2016. In the same period, the average secondhand prices for VLGC and MGC vessels plummeted by 30% and 25%, respectively, and MGC prices for vessels younger than ten years reached the lowest levels observed during the last 13 years (fig. 4). We believe that newbuilding prices could decrease further throughout the year if contracting remains low and that additional pressure on secondhand prices could build as the remaining deliveries scheduled for 2017 enter the market.

SCRAPPING REMAINS LOW

The sharp decline in the market has not yet led to any meaningful scrapping. In 2016, 11 vessels were scrapped and in the first quarter of 2017 four vessels, which was far from sufficient to counterbalance the 104 vessels entering the fleet during the period.

OWNERS ARE EXPECTING A QUICK MARKET RECOVERY

By keeping the number of newbuilding contracts low, owners are actively supporting a market recovery, and by not selling off young assets at current prices, they are also demonstrating a belief that the market will recover within the next couple of years.

Figure LPG.3

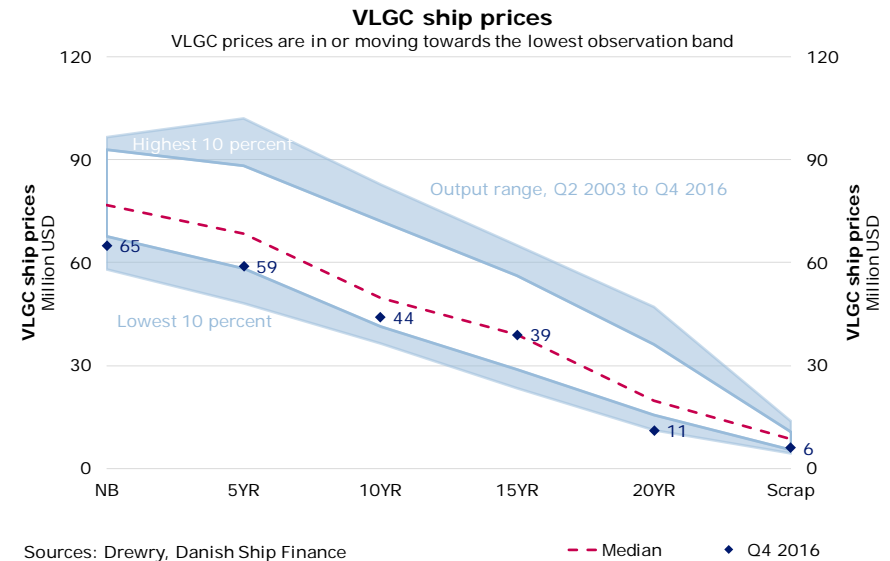


Figure LPG.4

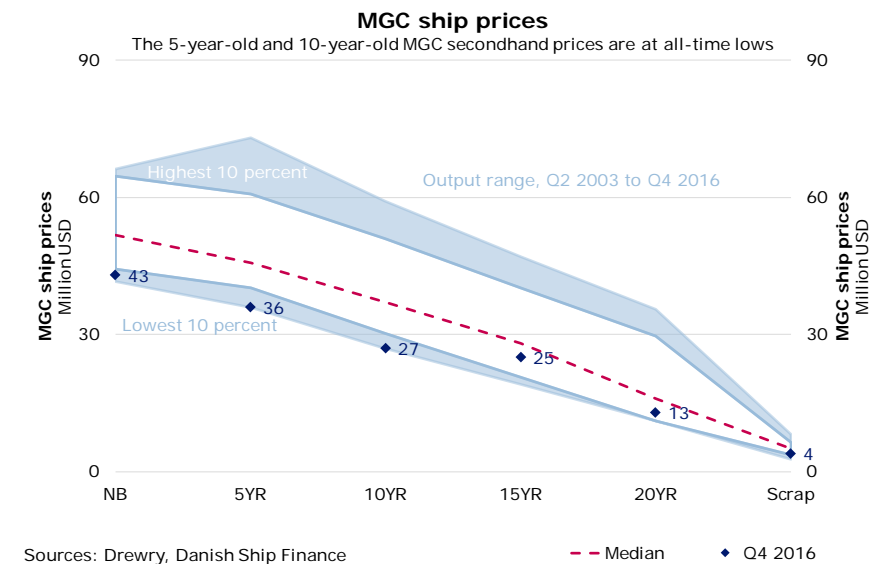


Figure LPG.5

THE MARKET IS FACING YET ANOTHER YEAR WITH A HIGH NUMBER OF DELIVERIES, WHICH IS EXPECTED TO LIFT NET FLEET GROWTH TO 10%, ALMOST THREE TIMES THE RATE OF EXPECTED DEMAND GROWTH.

THE ORDERBOOK WILL PUSH FREIGHT RATES AND ASSET VALUES DOWN

The orderbook is equivalent to 15% of the fleet, with two-thirds scheduled for delivery this year (fig. 5 and 6). Current freight rates clearly indicate that the market is already oversupplied. The fleet is expected to grow by 10% in 2017, which will increase the downward pressure on freight rates and secondhand values. Only 2% of the fleet is older than 30 years and it is therefore not possible for the incoming vessels to be absorbed without vessels being scrapped prematurely. We expect freight rates and secondhand values to decrease further throughout this year.

LOW SUPPLY GROWTH IS THE SENSIBLE WAY TO MARKET RECOVERY...

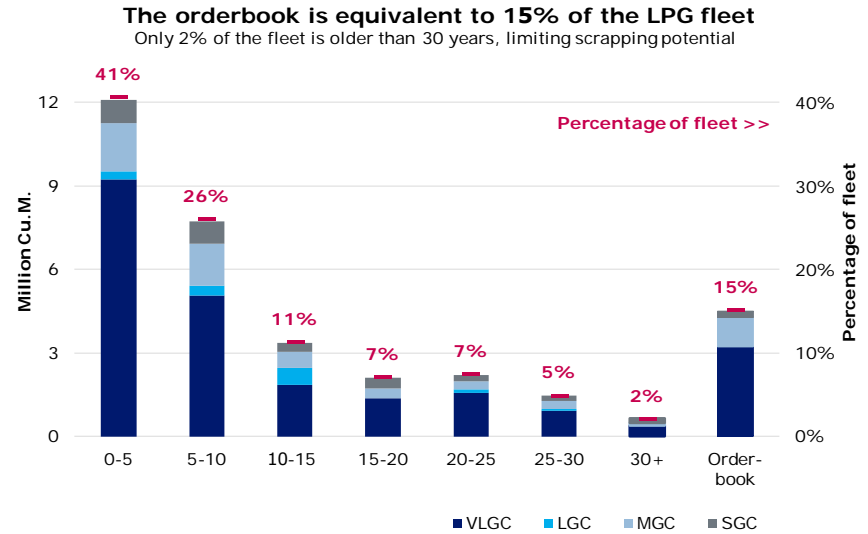
A market recovery could be within sight if contracting stays low and demand growth continues to employ a larger share of the fleet. The fleet is expected to increase by 3% in 2018 and 2% in 2019 (fig. 6). Utilisation of the fleet may begin to improve in 2018, but a significant recovery in freight rates is unlikely before 2019.

...BUT SUPPLY COULD INCREASE AHEAD OF DEMAND IN 2019

If we assume that it takes approximately two years for a new vessel to be built, orders placed during the second half of 2017 could add to fleet growth in 2019 and potentially jeopardise a recovery. Just 15 additional VLGCs would need to be delivered in 2019 for fleet growth to increase ahead of demand.

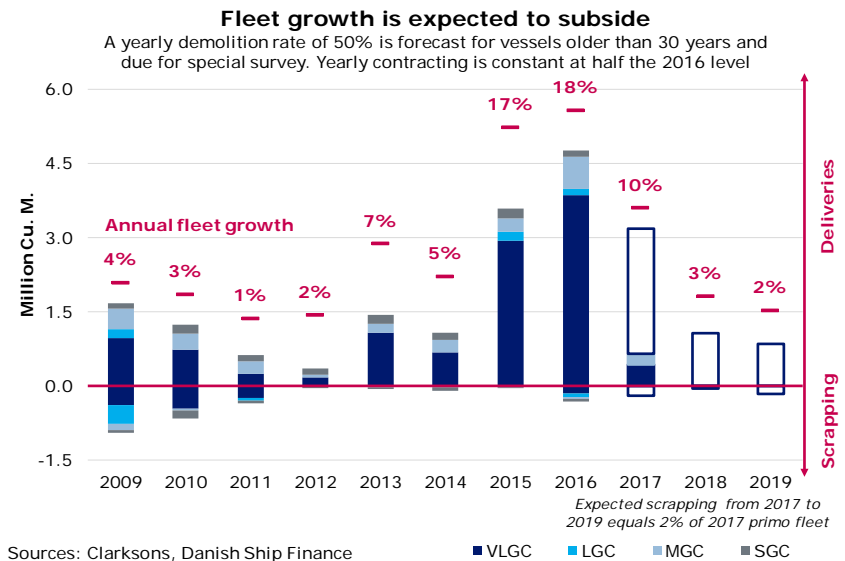
DEMAND GROWTH IS EXPECTED TO CONTINUE

Propelled by Middle Eastern and North American exports and Asian imports, seaborne LPG demand is expected to grow by 3-5% per year over the next six years (fig. 7). Demand will be driven by the



Sources: Clarksons, Danish Ship Finance

Figure LPG.6



Sources: Clarksons, Danish Ship Finance

household, petrochemical and industrial sectors, with China, Japan and India expected to remain the most important import countries. However, distance-adjusted demand will remain sensitive to changes in trading patterns – as seen with the expansion of the Panama Canal.

LPG EXPORTS FROM THE LARGEST EXPORTERS ARE INCREASING...

LPG exports from the Middle East and North America, the world’s largest and second-largest LPG exporter, continue to drive availability in global seaborne trade. In 2016, around 60% and 25% of interregional trade originated from these two regions, respectively. Both are expected to increase exports going forward. An increase in refinery productivity will drive export growth in the Middle East, while North American exports will be boosted by increasing extraction of wet gas and expansion of export facilities.

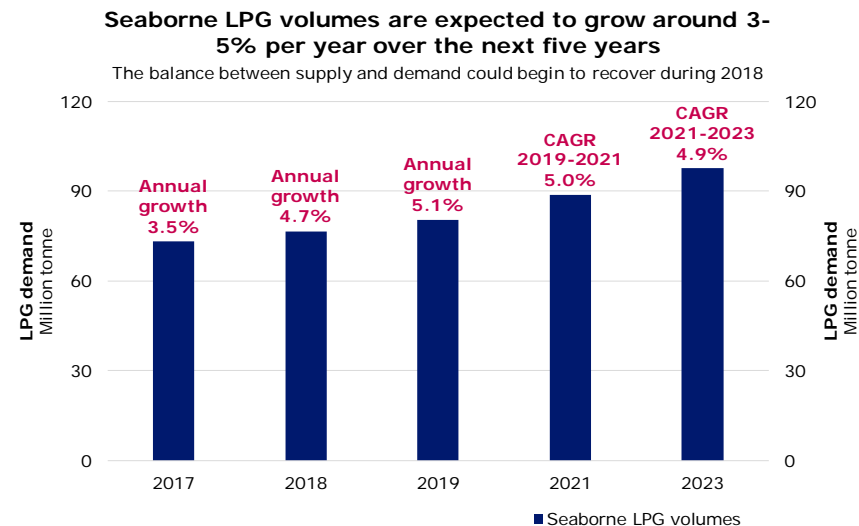
...BUT NEW EXPORTERS COULD CHANGE THE MARKET DYNAMICS

Export facilities on the west coast of North America have the potential to change the market dynamics by increasing the effective supply of vessels on the arbitrage route from North America to Asia. Canada is planning to build an LPG export facility on the Pacific coast of British Columbia. The facility is expected to come online in 2019 and could potentially reduce the travel distance to the Asian market by up to 60% compared with exports from the US Gulf. The planned opening of the Canadian plant could coincide with the expected delivery of orders placed in 2017. If the cargo-carrying capacity of the fleet is increased by a shortening of the average travel distance vessels ordered in the second half of 2017 could end up adding further to the oversupply. This underlines the importance of keeping orders to a minimum until the market starts recovering.

HOUSEHOLD SECTOR DEMAND GROWTH

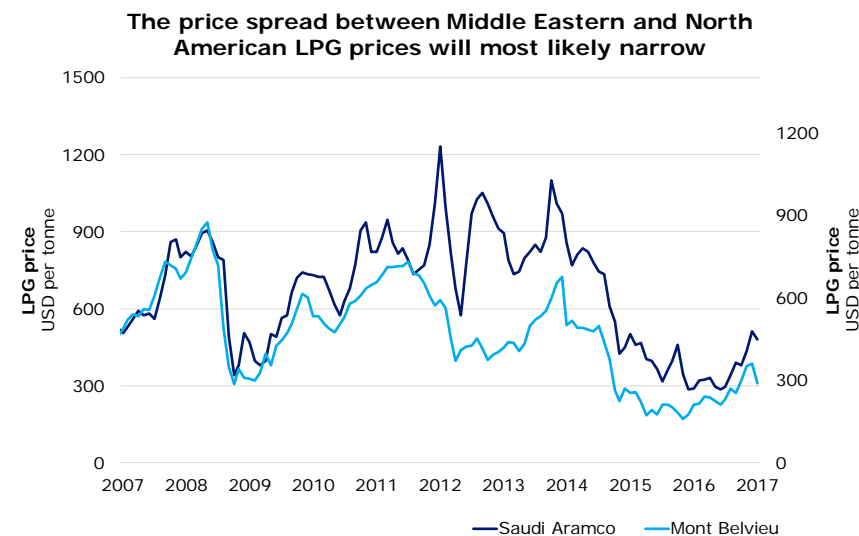
In 2016, the household sector constituted 44% of global LPG demand and the sector holds the greatest potential for future de-

Figure LPG.7



Sources: IHS Global Insight, Danish Ship Finance

Figure LPG.8



Sources: EIA and Bloomberg, Danish Ship Finance

mand growth. Since 2010, India's LPG imports have grown on average by around 20% per year and the country has become the third-largest LPG importer. Import growth has been powered almost entirely by the household sector following fuel substitution reforms and large government investments to improve local LPG supply. Household sectors in other Asian countries are undergoing similar transformations and LPG consumption is increasing on the back of these fuel substitution reforms and improvements in local supply. Future growth in the global household sector's LPG demand is expected to originate primarily from Asian countries.

PETROCHEMICAL INDUSTRY DEMAND GROWTH

The petrochemical industry is the second-largest consumer of LPG. The sector constituted 26% of global demand in 2016 and is expected to be a major source of future LPG demand growth. LPG is used both as a feedstock and as fuel in steam crackers and propane dehydrogenation plants (PDH plants). The two main products from LPG steam cracking are ethylene and propylene and the product spread is roughly two units of ethylene for each unit of propylene. Increasing use of ethane gas in steam crackers has caused the product spread to widen further, as no propylene is produced from ethane steam cracking. Propylene is the second most important product, after ethylene, in the petrochemical industry and even though propylene supply is currently ample, especially in Asian, supply is expected to tighten as the product spread widens. This will increase the incentive to produce propylene via catalytic cracking of naphtha whereby the product ratio can be changed to roughly two units of propylene for each unit of ethylene or at PDH plants where only propylene is produced. Of these two alternatives – catalytic cracking of naphtha or dehydrogenation of propane – the low-cost environment created by North American LPG could make the latter more economical. This could accelerate LPG demand growth from the petrochemical industry.

INDUSTRIAL SECTOR DEMAND GROWTH

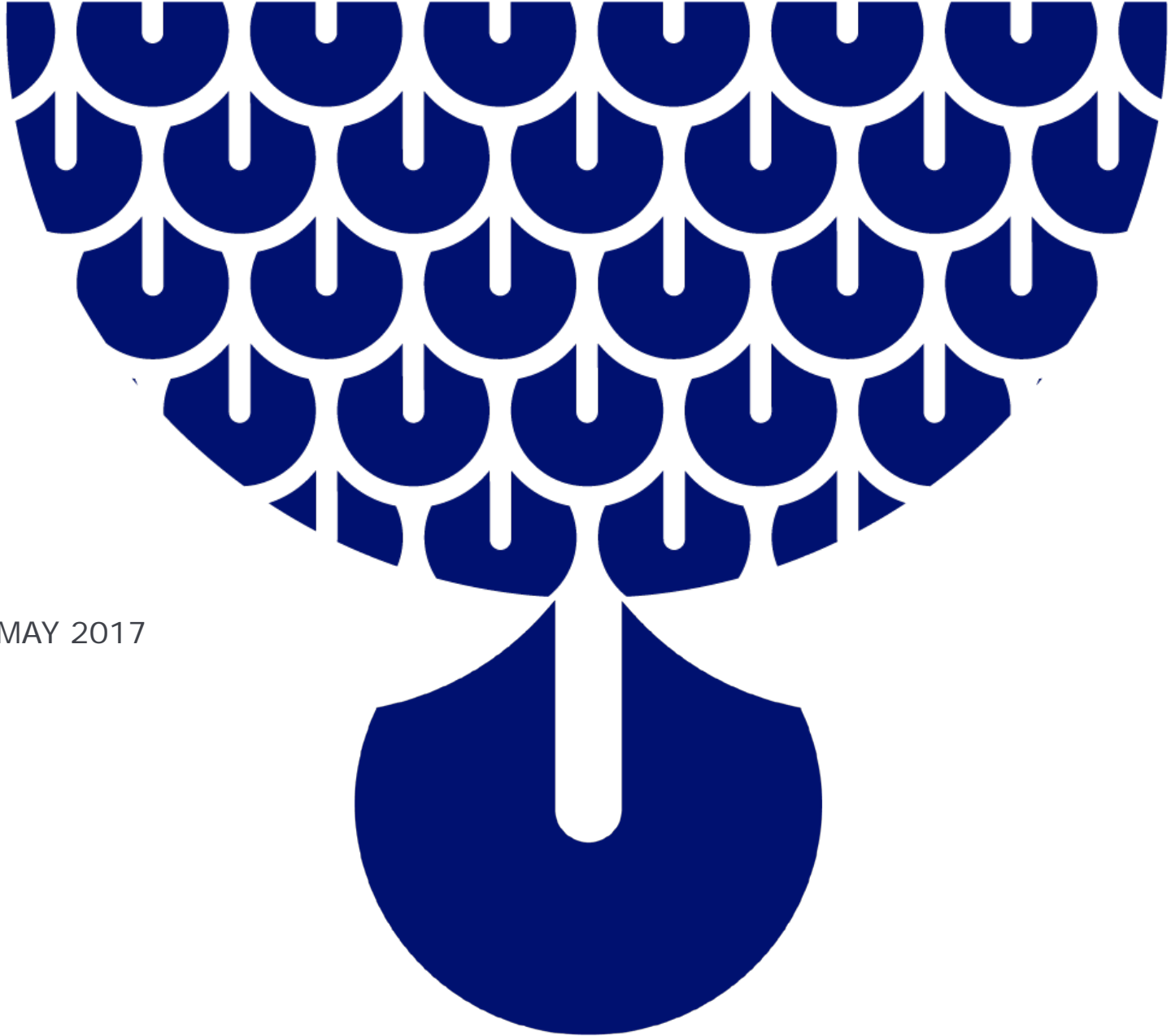
The industrial sector is the third-largest consumer of LPG and constituted 12% of global demand in 2016. The main usage of gas in the industrial sector is as fuel for heat creation. Unlike in the petrochemical industry, the chemical properties of the fuel are of little concern; price and availability are the main drivers of substitution between different fuel types. This makes the substitution mechanism simple and substitution happens relatively quickly. If LPG prices remain cheap relative to other fuels such as oil and natural gas, LPG demand from the industrial sector could increase.

SUMMARY OF THE OUTLOOK FOR THE LPG MARKET

The next 12 months will be challenging for the LPG market. Freight rates and secondhand prices are likely to decline further, as supply growth is expected to exceed demand growth throughout 2017. However, if the number of newbuilding contracts is kept low, market fundamentals could improve in the second half of 2018 or in 2019. Demand is expected to remain strong, propelled by the Asian household sector and the petrochemical sector. ■

GLOSSARY

SHIPPING MARKET REVIEW – MAY 2017



**DANISH
SHIP FINANCE**

GLOSSARY

<i>Aframax:</i>	Crude oil tanker or product tanker too large to pass through the old locks of the Panama Canal and with a capacity of 80,000 to 120,000 dwt.	<i>Call on OPEC:</i>	carbon atoms. Butane is a gas at room temperature and atmospheric pressure. Defined as total global petroleum demand less non-OPEC supply less OPEC natural gas liquid supply.
<i>AHT:</i>	Anchor Handling Tug. Towing and positioning of rigs.	<i>Capesize:</i>	Dry bulk carrier of more than approximately 100,000 dwt; too large to pass through the Panama Canal.
<i>AHTS:</i>	Anchor Handling Tug Supply vessel. Mainly built to support offshore drilling activities in towing and positioning of rigs.	<i>Cascading:</i>	The process of bigger vessels replacing smaller vessels across all ship sizes.
<i>Average Crude Tanker Earnings:</i>	‘Average Crude Tanker Earnings’ is an average of Clarksons Long Rung Historical VLCC, Suezmax and Aframax Earnings	<i>CEU:</i>	Car equivalent unit. Unit of measure indicating the car-carrying capacity of a vessel.
<i>Back-haul:</i>	The leg of a trade route that has the lowest container volumes is often called ‘back-haul, whereas the return leg is often referred to as ‘head-haul’.	<i>CGT:</i>	Compensated Gross Tonnage. International unit of measure that facilitates a comparison of different shipyards’ production regardless of the types of vessel produced.
<i>Barrel:</i>	A volumetric unit measure for crude oil and petroleum products equivalent to 42 U.S. gallons, or approximately 159 litres.	<i>Chemical Tanker:</i>	DSF’s definition: IMO I or IMO II tanker with stainless steel, zinc, epoxy or Marineline coated tanks.
<i>BP:</i>	Bollard pull. A key feature of AHT and AHTS vessels indicating how much a vessel can tow, defined as the static force exerted by a ship on a fixed tow line at zero speed.	<i>China 5 fuel standard:</i>	The China 5 fuel standard is equivalent to the Euro 5 fuel standard, which stipulates a maximum sulphur content of 10 parts per million.
<i>BHP:</i>	Break Horse Power. The amount of engine horsepower.	<i>China 6 fuel standard:</i>	The China 6 fuel standard is not expected to stipulate a lower sulphur content than the China 5 fuel standard, but is instead intended to strip particulates from diesel while tightening the olefin and aromatic limits in gasoline.
<i>Brent:</i>	Term used for crude oil from the North Sea. Brent oil is traded on the International Petroleum Exchange in London, and the price of Brent is used as a benchmark for several other types of European oil.	<i>Clarksons:</i>	British ship brokering and research company. www.clarksons.net
<i>Bulk vessel:</i>	Description of vessels transporting large cargo quantities, including coal, iron ore, steel, corn, gravel, oil, gas, etc.	<i>Class certificate:</i>	Ships involved in international trade must conform with the international regulations on safety and environmental protection set by IMO and ILO (International Labour Organization). Ship classification provides
<i>Bunker:</i>	Fuel for vessels.		
<i>Butane:</i>	Butane is an organic compound with the formula C ₄ H ₁₀ that is an alkane with four		

	a point of reference for ship safety and reliability. Vessels without class certification typically cannot obtain insurance.		
<i>Clean products:</i>	Refers to light, refined oil products such as jet fuel, gasoline and naphtha.	<i>Cb.m:</i>	in the U.S. and Dubai influential in the Asian market. Cubic Meter.
<i>CoA:</i>	Contract of Affreightment. Contract between a shipping company and a shipper concerning the freight of a predetermined volume of goods within a given period of time and/or at given intervals.	<i>Deep sea:</i>	Refers to trading routes longer than 3,000 nautical miles.
<i>Coating:</i>	The internal coatings applied to the tanks of a product or chemical tanker. Coated tanks enable the ship to transport corrosive refined oil or chemical products and it facilitates extensive cleaning of the tanks, which may be required in the transportation of certain product types.	<i>Deep Sea, chemical:</i>	A chemical tanker larger than or equal to 20,000 dwt.
<i>Contango:</i>	Contango is a situation where the forward price of a commodity is higher than the current price. In a contango situation it may be profitable to store a commodity depending on storage availability and storage costs.	<i>Dirty products:</i>	Refers to heavy oils such as crude oil or refined oil products such as fuel oil, diesel oil or bunker oil.
<i>Conventional onshore oil production:</i>	Oil production from a reservoir in which buoyant forces keep hydrocarbons in place below a sealing caprock. Reservoir and fluid characteristics of conventional reservoirs typically permit oil or natural gas to flow readily into wellbores.	<i>Deepwater rigs:</i>	Production or drilling rigs capable of drilling at water depths deeper than 350 meters.
<i>Crude oil benchmark:</i>	A benchmark crude is a crude oil that serves as a reference price for buyers and sellers of crude oil. There are three primary benchmarks, West Texas Intermediate (WTI), Brent, and Dubai Crude. Benchmarks are used because there are many different varieties and grades of crude oil. Brent is the reference for about two-thirds of the oil traded around the world, with WTI the dominant benchmark	<i>Distance-adjusted demand:</i>	The amount of cargo shipped multiplied by the average distance over which it is transported in order to determine actual ship demand .
		<i>Drewry:</i>	Drewry Shipping Consultants Ltd. British shipping and transport research company. www.drewry.co.uk
		<i>Dwt:</i>	Dead Weight Tonnes. Indication of a vessel's cargo carrying capacity (including bunkers, ballast, water and food supplies, crew and passengers).
		<i>Dynamic Positioning:</i>	Special instruments on board that in conjunction with bow thrusters and main propellers enable a ship to position itself in a fixed position in relation to the seabed.
		<i>EIA:</i>	Energy Information Administration. A subsidiary of the US Department of Energy. www.eia.doe.gov
		<i>E&P:</i>	Exploration and Production.
		<i>Feeders:</i>	Small container carrier with a capacity of less than 3,000 teu.
		<i>Fleet productivity:</i>	The productivity of a fleet depends upon four main factors: speed, port time, capacity utilization and loaded days at sea.
		<i>Ethylene:</i>	Ethylene is the key raw material for manufacturing many day-to-day items – two-

thirds of global production is used to manufacture plastics and automobile parts and the remainder is used to produce antifreeze and various artificial fibers.

FPSO: Floating Production Storage Off-loading unit. Vessel used in the offshore industry to process and store oil from an underwater (sub-sea) installation.

Front-haul: The leg of a trade route that has the highest cargo volumes is often called 'front-haul' whereas the return leg is often referred to as 'back-haul'.

Geared: Indicates that a vessel is equipped with a crane or other lifting device.

Gearless: Indicates that a vessel is not equipped with a crane or other lifting device.

Global order cover: Global order is the global orderbook divided by annual yard capacity.

Gt: Gross Tonnes. Unit of 100 cubic feet or 2,831 cubic meters, used in arriving at the calculation of gross tonnage.

Handy, container: Container vessel of between 1,000-1,999 teu.

Handymax, dry cargo: Dry bulk carrier of between approximately 40,000 and 65,000 dwt.

Handysize, dry cargo: Dry bulk carrier of between approximately 10,000 and 40,000 dwt.

Head-haul: The leg of a trade route that has the highest container volumes is often called 'head-haul, whereas the return leg is often referred to as 'back-haul'. On routes where there is a great trading volume mismatch between head-haul and back-haul, the head-haul demand will most often determine the freight rate level.

Heavy distillates: This oil type includes fuel oils and lubes.

IEA: International Energy Agency. A subsidiary of the OECD. www.iea.org

IHS Global Insight: American economic consulting company. www.globalinsight.com

IMO: International Maritime Organization. An organisation under the UN.

IMO I-III: Quality grades for tankers for the permission to transport different chemical and oil products. IMO I are the most hazardous products, IMO III the least hazardous.

Inorganic chemicals: A combination of chemical elements not containing carbon. The three most common inorganic chemicals are phosphoric acid, sulphuric acid and caustic soda. Phosphoric acid and sulphuric acid are used in the fertilizer industry, whilst caustic soda is used in the aluminium industry. As these chemicals are corrosive to many metals, they are transported in stainless steel tanks.

Intermediate: Medium-sized chemical carrier with a capacity of between 10,000 and 20,000 dwt.

LGC: Large Gas Carrier. LPG ship with a capacity of between 40,000 and 60,000 Cu.M.

Light distillates: This oil type includes gasoline, naphtha and solvents.

LPG vessels: Liquefied Petroleum Gas. Vessels used to transport ammonia and liquid gases (ethane, ethylene, propane, propylene, butane, butylenes, isobutene and isobutylene). The gases are transported under pressure and/or refrigerated.

LR1, Product tanker: Long Range 1. Product tanker too large to pass through the old locks of the Panama Canal prior to its expansion of approximately 60,000-79,999 dwt.

LR2, Product tanker: Long Range 2. Product tanker capable of passing through the Panama Canal, but too large prior to its expansion, with a capacity of 80,000 to 120,000 dwt.

MR, Product tanker: Medium Range. Product tanker of between 10,000 and 60,000 dwt.

<i>MGC:</i>	Medium Gas Carrier. LPG ship with a capacity of between 20,000 and 40,000 Cu.M.	<i>PDH plants:</i>	Propane dehydrogenation plants
<i>Middle distillates:</i>	This oil type includes diesel, kerosene and gasoil.	<i>Post-Panamax:</i>	Container vessel of approximately 3,000+ teu that is too large to pass through the old locks of the Panama Canal.
<i>Multi-Purpose:</i>	Dry bulk carrier with multiple applications, mainly as a feeder vessel or for special cargo.	<i>Product tanker:</i>	Tanker vessel with coated tanks used to transport refined oil products.
<i>Nautical Mile:</i>	Distance unit measure of 1,852 meters, or 6,076.12 ft.	<i>Propane:</i>	Propane is a three-carbon alkane with the molecular formula C ₃ H ₈ , a gas at standard temperature and pressure, but compressible to a transportable liquid.
<i>NGL:</i>	Natural Gas Liquids – which, put simply, consists of all gaseous products except methane which is also known as LNG.	<i>Propylene:</i>	Propylene is used to manufacture polyurethane foam, fibers and moulded plastics for use in manufacturing items such as car parts, plastic pipes and household articles.
<i>OSV:</i>	Offshore Supply Vessel. AHTS vessels and PSVs.	<i>PSV:</i>	Platform Supply Vessel. Offshore vessel serving offshore oil installations.
<i>Offshore Supply Vessel Index:</i>	An index of average dayrate levels across all of the major deployment regions, weighted by deployment of each vessel class by region.	<i>Pyrolysis gasoline:</i>	A by-product of high temperature naphtha cracking during ethylene and propylene production. High aromatics content.
<i>OPEC:</i>	Organisation of Petroleum Exporting Countries.	<i>Refinery margin:</i>	The refinery margin is the difference between the wholesale value of the petroleum products a refinery produces and the value of the crude oil from which they were refined.
<i>Organic chemicals:</i>	Contain carbon and are also referred to as petrochemicals. Are used to produce virtually all products made from plastics or artificial fibres.	<i>Refinery turnarounds:</i>	A planned, periodic shut down (total or partial) of a refinery process unit or plant to perform maintenance, overhaul and repair operations and to inspect, test and replace process materials and equipment.
<i>Panamax, container:</i>	Container carrier with the maximum dimensions for passing through the Panama Canal (width of 32.21 metres, length of 291 metres) of approximately 3,000—5,100 teu.	<i>ROV:</i>	Remotely operated vehicles. Used for installation, and maintenance of subsea structures. Remotely operated and fitted with cameras and other optional equipment.
<i>Panamax, tanker:</i>	Crude oil tanker or Product tanker too large to pass through the old locks of the Panama Canal (width of 32.21 metres and length of 289.5 metres) of approximately 60,000—79,999 dwt.	<i>Rig count:</i>	The count of active rigs, typically refers to the count of active onshore rigs in North America.
<i>Panamax, dry cargo:</i>	Dry bulk vessel too large to pass through the old locks of the Panama Canal (width of 32.21 metres and length of 289.5 metres) of around 65,000—100,000 dwt.		

<i>Ro-Ro:</i>	Roll On – Roll Off. Common description of vessels on which the cargo is rolled on board and ashore.	<i>Teu-nautical mile:</i>	Unit of measure indicating the volume of cargo, measured in teu, and how far it has been transported, measured in nautical miles.
<i>Short sea:</i>	Refers to trading routes shorter than 3,000 nautical miles.	<i>Tight oil:</i>	Tight oil (also known as light tight oil) is a petroleum play that consists of light crude oil contained in petroleum-bearing formations of relatively low porosity and permeability.
<i>Short Sea, chemical:</i>	Chemical tanker smaller than 10,000 dwt.	<i>Tonne-mile:</i>	Unit of measure indicating the volume of cargo, measured in tonne, and how far it has been transported, measured in nautical miles.
<i>Small gas carrier:</i>	LPG ship smaller than 20,000 Cu.M.	<i>Tonnage:</i>	Synonymous with "vessel".
<i>Speed-adjusted fleet growth:</i>	The amount of tonnage multiplied by the average speed at which it sails in order to determine real fleet growth.	<i>Triangulation:</i>	Minimise ballast time by identifying cargoes in the area. This tends to improve earnings.
<i>SSY:</i>	Simpson Spence & Young, British ship brokering and research company. www.ssyonline.com	<i>Town gas:</i>	A mixture of gases produced by the distillation of bituminous coal and used for heating and lighting: consists mainly of hydrogen, methane, and carbon monoxide.
<i>Sub-Panamax:</i>	Container vessel of approximately 2,000-2,999 teu.	<i>ULCC:</i>	Ultra Large Crude Carrier. Crude oil tanker of more than 320,000 dwt.
<i>Subsea equipment:</i>	Fully submerged ocean equipment, operations or applications, for deep ocean waters, or on the seabed.	<i>Unconventional onshore oil production:</i>	Oil production from reserves that cannot be feasibly accessed using conventional drilling techniques. E.g. tight oil, oil shale, oil sands, and bitumen.
<i>Subsea segment:</i>	Refers to the part of the oil and gas industry taking place on the seabed. This includes flexible and fix-lay vessels, diving, and multi-support vessels. A highly specialized and varied segment, whereas Subsea is a collective term used to cover all the offshore related segments.	<i>Ultra-deepwater rigs:</i>	Production or drilling rigs capable of drilling at ultra-deep water. This is water depths deeper than 1500 meters.
<i>Suezmax:</i>	Crude oil tanker with the maximum dimensions for passing through the Suez Canal (approximately 120,000—199,999 dwt.).	<i>Vegetable oils:</i>	Oils derived from seeds of plants and used for both edible and industrial purposes.
<i>Super Post-Panamax:</i>	Newest type of container vessel of approximately +15,000 teu.	<i>VLCC:</i>	Very Large Crude Carrier. Crude oil tanker of between approximately 200,000 and 320,000 dwt.
<i>TCE:</i>	Time Charter Equivalent.	<i>VLGC:</i>	Very Large Gas Carrier. LPG ship with a capacity of more than 60,000 Cu.M.
<i>Teu:</i>	Twenty Foot Equivalent Unit. Container with a length of 20 feet (about 6 metres) which forms the basis of describing the capacity of a container vessel.		
<i>Teu-knots:</i>	Unit of measure that takes account of the speed of ships when estimating the actual supply of ships within a segment.		

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