SHIPPING MARKET REVIEW

MAY 2016

DANISH
SHIP FINANCE

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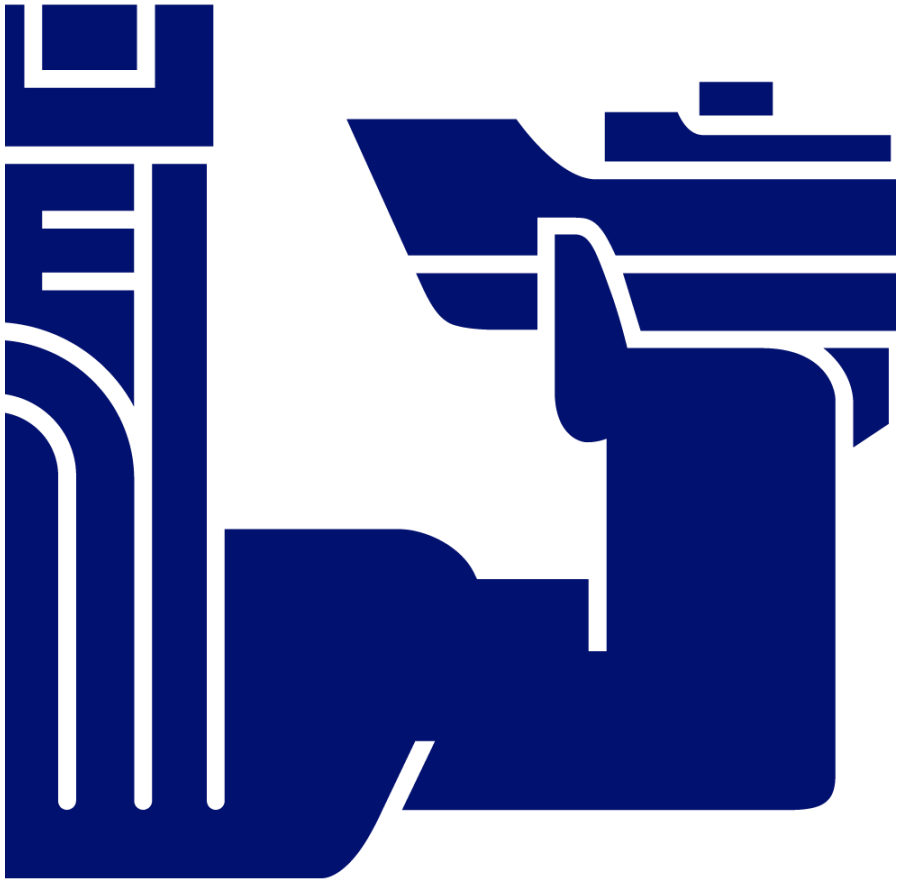

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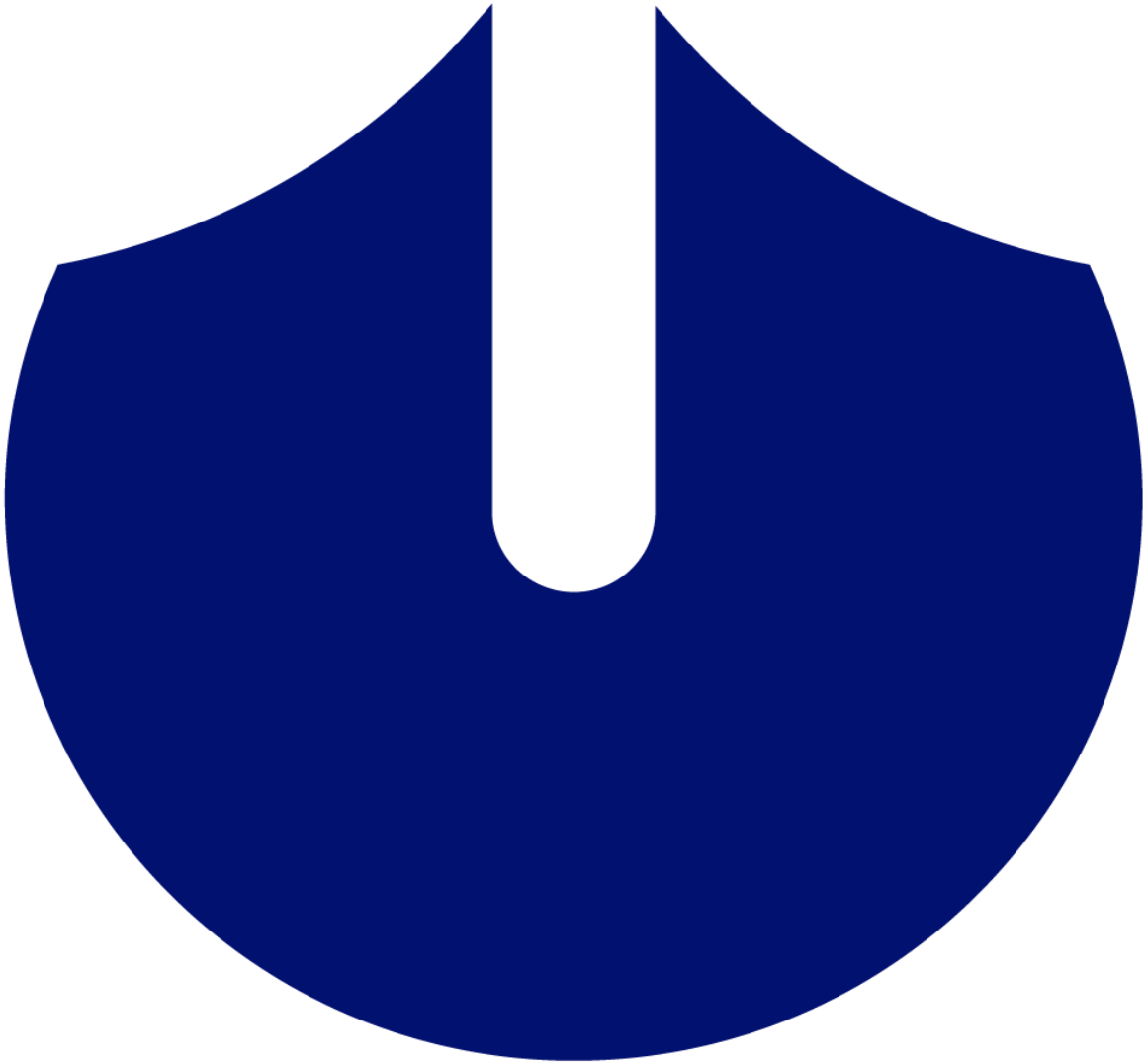

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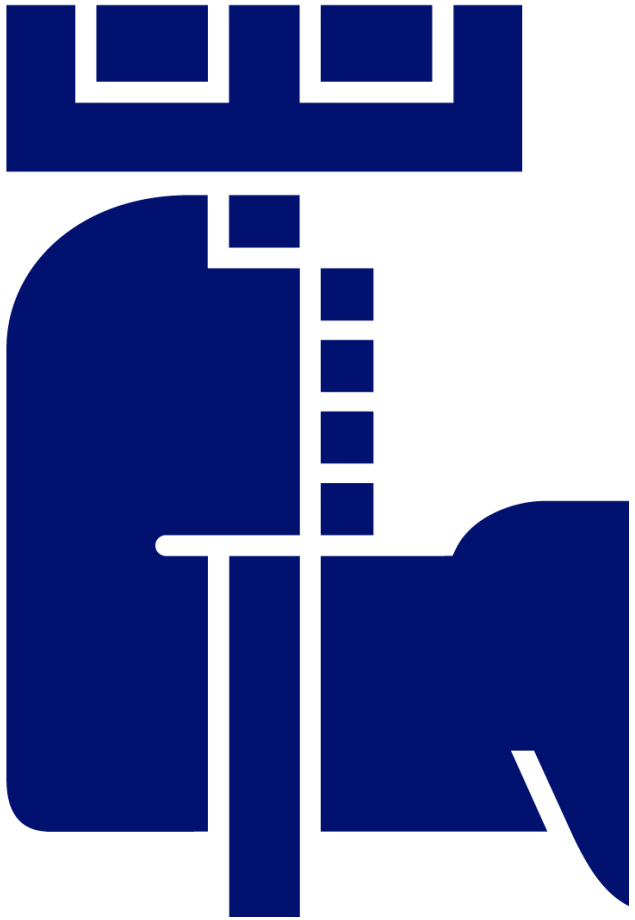

DANISH SHIP FINANCE

EXECUTIVE SUMMARY

Please read the disclaimer at the beginning of this report carefully. The report reviews key developments in shipping markets and the main shipping segments during the period November 2015 to May 2016 and indicates possible future market directions.

The first section of this report – our General Review and Outlook – is intended to promote discussion of the medium to long-term drivers of the shipping industry. Some investors seem to believe that past dynamics remain intact and that the shipping industry will be on its way out of the doldrums in a year or two. We certainly hope that these expectations come true. But we urge our readers to consider some of the structural challenges that we believe are transforming the long-term outlook for many parts of the shipping industry. We highlight some global perspectives that might serve as an outlook: from energy to manufacturing to construction. The fourth industrial revolution is disrupting some very basic mechanisms that have been facilitating massive growth in seaborne trade volumes over the past decades. These mechanisms could become outdated sooner than many people expect.

We present a discussion of the potential issues that may or may not come into play within the lifetime of vessels recently ordered. Throughout this section we apply a macroeconomic perspective to the shipping industry. This methodology allows us to analyse the main long-term trends, rather than to focus on the short-term industrial outlook. Accordingly, our approach is not intended to identify all short-term opportunities for sudden market improvements. Rather, we present prospective trends that may or may not have a major impact on the shipping industry: some of these will play out, while others will be overtaken by alternative scenarios or the status quo will prevail.

We strive to provide a clear-eyed perspective on how to navigate the changing demand landscape. 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 may become sufficiently powerful to raise freight rates and secondhand values over several months, sometimes even longer. We urge our readers not to interpret short-term spikes as signs of a more lasting recovery and refrain from ordering new vessels.

In the Tanker segments the low growth in underlying demand is being overshadowed by the ongoing and scheduled capacity expansions of production facilities ranging from refineries to steam crackers to propane dehydrogenation plants (PDH). These expansions have ensured high freight rates and increasing secondhand values over a period.

The lesson to be learned from the current and previous shipping cycles is that occasional spikes in freight rates do occur, even in downward trending markets. There is little to indicate that these spikes will be sustained for years, but that is not always necessary – they only need to last long enough for owners, investors or their banks to be able to rearrange their positions. These occasional spikes in freight rates will continue to occur in the years to come despite our expectation that several shipping segments will face low freight rates, persistently low secondhand values and a short- to medium-term outlook where the risk of escalating overcapacity cannot be ignored.

For those investors considering entering the shipping markets in the years to come, we have a single message to deliver: freight rates are the only indicator of the state of a market. Newbuilding prices reflect the bargaining power among the yards that attract new orders but tell us nothing about the yards that are struggling to survive. And forget about the assumption that newbuilding prices reveal the market's long-term earnings expectations – that simply does not apply in markets where there is overcapacity. Secondhand values are driven by hopes, fears and expectations. In today's markets, where vessels are being scrapped prematurely, secondhand prices may stay at the current low levels for quite some time even if freight rates improve. The explanation is simple: increased earnings

are likely to be absorbed by a shortening of the economic life of the vessel. The mean-reverting nature of the shipping industry will only return when the balance between supply and demand has been restored.

We urge you to read the General Review and Outlook section and apply the long-term trends discussed to the various shipping segments to determine your own view on the impact they could or will have.

GENERAL REVIEW AND OUTLOOK

Our Shipping Market Review – May 2016 is devoted to the fourth industrial revolution. To understand the truly disruptive nature of the fourth industrial revolution, we cannot simply look at the disruptive technologies in isolation. We need to see the new dynamics from the right perspective. It is important to understand that two major tectonic plates underneath the global economy are shifting.

WEALTHY CONSUMERS ARE ABOUT TO RETIRE

The first tectonic plate that is moving is the number of consumers powering the global economy and seaborne trade. The global population continues to rise, but major demographic shifts are changing the underlying forces of the global economy. Wealthy consumers in developed economies and China are about to retire and are being replaced by plentiful but relatively poor emerging consumers elsewhere. This transformation is expected to have a major impact on trade flows and trade dynamics. Still, many argue that this replacement will pave the way for continued improvements in seaborne trade volumes.

THE FOURTH INDUSTRIAL REVOLUTION IS CREATING FEWER JOBS

From a structural perspective, we tend to agree, but we see little to indicate that this potential will materialise within the next decade or two. There are many countries that have vast and unfulfilled demographic potential, but it seems that the fourth industrial revolution is hampering their ability to create the millions of jobs needed for them to become global consumers. We argue that China may be among the last emerging economies to be able to ride the wave of industrialisation to middle-income status through job creation in the manufacturing sector.

URBANISATION MAY BECOME LESS TRADE-INTENSIVE

The second tectonic plate in motion is the supercharger of the global economy and seaborne trade: urbanisation. Clearly, the urbanisation process is continuing, but it is diverging from past trends and is tending to follow new routes that give individual consumers access to more goods using fewer resources (including energy) and requiring less seaborne transportation.

WE NEED TO RESET OUR INTERNAL NAVIGATION SYSTEMS

Global value chains are expected to shorten: from raw materials to intermediate goods to finished goods. Trade dynamics and trade patterns are expected to be redefined. Seaborne trade volumes may stagnate or begin to decline. We need to realise that much of what we think we know about how the world works is about to become outdated. 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 innovations are bringing about unparalleled changes to the global economy.

EMERGING ECONOMIES NEED TO LEAPFROG INDUSTRIALISATION

We need to understand that for developing economies that are not yet an integrated part of the world economy, it is not possible to industrialise by technology leapfrogging, as China did. The challenge for the next generation of emerging economies is that they will have to leapfrog industrialisation itself, since large pools of cheap labour no longer represent an entry ticket to the world economy through job creation in the manufacturing sector. Models of economic development will need to feature more investment in education, faster implementation of new technologies and — most importantly — higher rates of local innovation.

LONG-TERM GAINS IN EFFICIENCY AND PRODUCTIVITY

Put another way, the fourth industrial revolution is opening the gates for long-term gains in efficiency and productivity. Transportation costs are expected to remain low, logistics and global supply chains will become more efficient, and the cost of trade will diminish. In essence, travel distances will shorten, trade

volumes will stagnate or drop, and fleet efficiency could improve considerably.

NEW BUSINESS MODELS WILL HAVE TO BE DEVELOPED

This outlines the first drawings of a new architecture for the shipping industry. Other industries have already seen new patterns of consumer behaviour that force companies 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 redesign parts of the shipping industry within a decade or two.

NEW DYNAMICS ARE SHAPING THE GLOBAL ECONOMY

This development is playing havoc with forecasts for future seaborne trade volumes that were made simply by extrapolating recent experience into the near and distant future. Many of the assumptions, tendencies and habits that have long proved so reliable have suddenly lost much of their resonance. Our intuition has been formed by a set of experiences and ideas about how things worked during a time when changes were incremental and somewhat predictable. But that is not how things are working now — and it is not how they are likely to work in the future either. If we look at the world through a rear-view mirror and make decisions on the basis of intuition built on our experience, we could very well be wrong. In the new world, we need to scrutinise our intuition from first principles and boldly reset it if necessary.

HOW TO NAVIGATE THE CHANGING LANDSCAPE

The shipping industry is to some extent navigating in uncharted waters. What actions should be taken? Obviously, surplus capacity needs to be scrapped, but then what? For all of the upheaval facing the shipping industry, a number of powerful megatrends will create unprecedented opportunities for shipping investors to enter new markets and redefine existing business models.

SHIPBUILDING

Overcapacity issues and low freight rates in many of the major shipping segments are burdening the Shipbuilding industry. Contracting declined significantly in many shipping segments during 2015 and the first quarter of 2016, and a large number of existing orders were either being cancelled or postponed, causing some yards in the already troubled industry to suffer severe financial difficulties.

Consolidation of the industry is well underway and there are now even fewer yards capable of attracting new orders. In 2015, around 240 different yards received new orders, a significant decline from previous years. It is primarily small and medium-sized yards, many of them in China, that are struggling to secure new orders. Consequently, the number of active yards and total active capacity is falling. We estimate that the number of active yards declined by approximately 70 yards with a combined capacity of 10% of global capacity in 2015. This helped push global yard utilisation up from 68% in 2014 to 78% in 2015.

The next couple of years are expected to be extremely difficult for shipyards, as the potential for new orders is expected to remain low. The depressed market conditions, especially in the Bulk, Container and Offshore segments, increase the probability of lower order intake in the short to medium term, as well as more order cancellations and postponements. By year-end 2017, we expect the number of active players to have been drastically reduced.

CONTAINER

The Container industry is continuing to struggle as freight rates stay on their downward trend and ever larger vessels enter the fleet. In 2015, the oversupply accelerated, as the fleet grew by a massive 8% while demand growth weakened to just 1%. Lower European demand in particular was behind the slowdown in overall seaborne Container demand growth, which could be the first sign of more imports being sourced regionally.

Despite the weakening demand and low freight rates, contracting in the Container industry continued apace, with a high number of very large vessels ordered. We argue that invest-

ments in very large vessels are long-term bets on the geographical location of manufacturing. However, manufacturing and consumer preferences are gradually changing and we do not expect the demand patterns of previous decades to be repeated. As the fourth industrial revolution evolves, manufacturing could become increasingly regionalised, which could redefine trading routes and shorten travelling distances. Moreover, the emergence of a new, younger generation of consumers is changing the patterns of consumption, which, enabled by new technologies, could reduce the need for physical goods to be transported in the medium term – at least, we argue, on long-haul overseas trades.

It seems that the world is undergoing a transformation that could end up redefining the Container industry. The trade patterns of today will persist to some extent, but we expect intra-regional trades to grow in importance at the expense of the main east-west trades. This could leave some shipowners with large inflexible fleets unsuited to the future needs of customers, but liners still have the upper hand over tonnage providers.

DRY BULK

The Dry Bulk industry continues to be weighed down by the escalating influx of vessels seen over the last five to ten years. The fact that the industry has relied on China as the primary source of demand for so long has left it vulnerable at a time when China is rebalancing its growth model towards consumption and services and away from construction and manufacturing.

In 2015, freight rates reached several low points and in February 2016 the Baltic Dry Index dropped below 300. Despite attempts to shrink the massive orderbook and stem the inflow of new vessels through order cancellations, postponements and extensive scrapping, fleet growth continued to outpace demand growth and the oversupply worsened. The rebalancing efforts in China left clear marks on the industry and resulted in lower Chinese demand for seaborne Dry Bulk cargoes, primarily due to lower coal imports.

The outlook for the industry remains gloomy. The orderbook remains large and there is uncertainty over future Chinese demand. Moreover, the global agenda to lower CO2 emissions is expected to put a lid on demand for coal. Urbanisation will continue to drive a large share of demand (i.e. building materials), especially in China, but it seems that the Chinese urbanisation process has been too rapid and that a slower growth period is about to materialise. Several of the steel-intensive industries are struggling with surplus capacity and the Chinese construction sector and real estate market are in the midst of a transition period.

The weak demand outlook coupled with a large orderbook will delay the market recovery, putting it back some years. Going forward, scrapping and order cancellations will continue to play important roles in bringing the market more into balance. There will be temporary freight rate spikes on the way to a recovery, but these are expected to be just that: temporary. Previous shipping cycles have shown that occasional spikes in freight rates do occur, even in downward trending markets.

CRUDE TANKER

Crude Tanker freight rates have declined recently in response to lower seasonal demand and higher vessel availability. Nonetheless, freight rates are still at high levels. It could be argued that Crude Tankers are currently thriving because of the overcapacity in the oil and oil refining industries.

The combination of few new vessels being added to the fleet and artificially strong demand for crude oil has lifted freight rates out of the doldrums. Excess production of crude oil has caused crude oil prices to halve, which in turn has stimulated refineries to increase their crude oil intake and the industry to build up reserves. These dynamics, amplified by the addition of new refinery capacity, have been inflating seaborne crude oil volumes above global end-user oil demand, which has resulted in infrastructural bottlenecks. In turn, the infrastructural bottlenecks have lowered the productivity of the fleet and contributed to the perception that supply is inadequate.

A very large amount of tonnage was contracted during 2015, causing a massive inflow of new vessels in 2016 and 2017. The market is expected to be in balance for most of 2016, but it is important to keep in mind that underlying oil demand grew by

less than 2% in 2015 and is only expected to grow modestly in the coming years.

The large influx of new vessels due in 2017 is expected to tip the effective balance between supply and demand. The nominal overcapacity that has been building up in the shadows of the low crude oil price and high refinery intake is expected to come to the fore. Freight rates and secondhand values may begin to decrease as early as during the first half of the year. While it is the case that additional refinery capacity is expected to open, we are sceptical about how much more demand can be generated by increased industrial overcapacity.

The global climate agenda, which aims to reduce the dependence on fossil fuels and to lower CO2 emissions, frames the outlook for Crude Tankers. This, in combination with the recent success of renewable energy and energy storage, including electric and hybrid cars, provides little indication that global end-user oil demand will spike unexpectedly in the medium to long term.

PRODUCT TANKER

Product Tanker freight rates have recently halved since their peak in the summer months in 2015, but average earnings remain fairly high. We argue that Product Tankers have been riding a wave created by temporary demand factors rather than end-user demand.

Fleet growth has been high, while end-user demand for petroleum products has been fairly lacklustre. Freight rates have been supported by remarkably high trading activity reflecting regional refinery imbalances, surplus production of refined petroleum products, and significant arbitrage trading. In addition, infrastructural bottlenecks have forced Product Tankers into floating storage. This has lowered Product Tanker productivity and kept fleet employment artificially high.

The influx of new vessels is expected to remain high during the next two years, while the young age profile of the fleet leaves few scrapping candidates available. The fleet is expected to grow by 5-6% in 2016 and 2017. Seaborne demand is expected to absorb fleet growth of up to 4% in 2016, which will leave a larger part of the fleet unemployed and put downward pressure on freight rates unless scrapping picks up accordingly. Strong seasonal winter demand could provide temporary respite, however, and potentially postpone the pressure on freight rates into 2017. Moreover, new refineries are set to come online, although their impact on freight rates is expected to be limited, given the continued high inflow of new vessels. Increased production capacity is not necessarily a sign of high underlying demand.

From a longer-term perspective, we see fundamental risks building up brought about by more widespread decarbonisation in most sectors and sustained high fleet growth. The petrochemical sector may be a bright spot and demand is increasing rapidly. But risks are building up in this sector too, with increased focus on recycling and material design.

LPG TANKER

VLGC freight rates have plunged almost 80% in nine months, from a peak of USD 129 per tonne in July 2015 to USD 27 per tonne in April 2016. The strong demand growth was simply swamped by the massive inflow of new vessels. Seaborne demand grew by 10% in 2015, while the LPG fleet expanded by 17%.

In a flashback to the Dry Bulk market in 2008, we recall how the Baltic Dry Index plummeted by more than 90% in seven months, from index 10,844 in May 2008 to index 743 in December 2008. How could something similar happen to VLGCs?

The large increase in supply was clearly the main factor tipping the balance, but the sudden increase in fleet availability and fleet productivity, driven by relatively mild weather, low naphtha prices and the unexpected closure of the arbitrage window between the US and Asia, intensified the pain.

Now, the segment is faced with an uphill battle. In the years ahead, demand is expected to grow strongly, but the massive inflow of new vessels is set to continue. The fleet is relatively young, with more than 60% of vessels younger than ten years, but there are still scrapping candidates available.

Freight rates and secondhand values may come under pressure if fleet productivity is not reduced. A large-scale return of arbi-

trage trading between the US and Asia, enabled by higher oil prices, could lower fleet productivity and reinforce the balance between supply and demand.

Still, we expect freight rates to remain at relatively low levels for the next two years. Secondhand values will clearly be impacted if the market continues to be low over a sustained period. However, we take some comfort in the fact that the secondhand value of a five-year-old VLGC is currently 20% below its peak in 2006, although earnings have recently been record-high. The lowest value recorded for a five-year-old VLGC is USD 48 million, only 40% below the current level. The point is that we foresee less short-term downside risk in secondhand values than for other segments.

GENERAL REVIEW AND OUTLOOK

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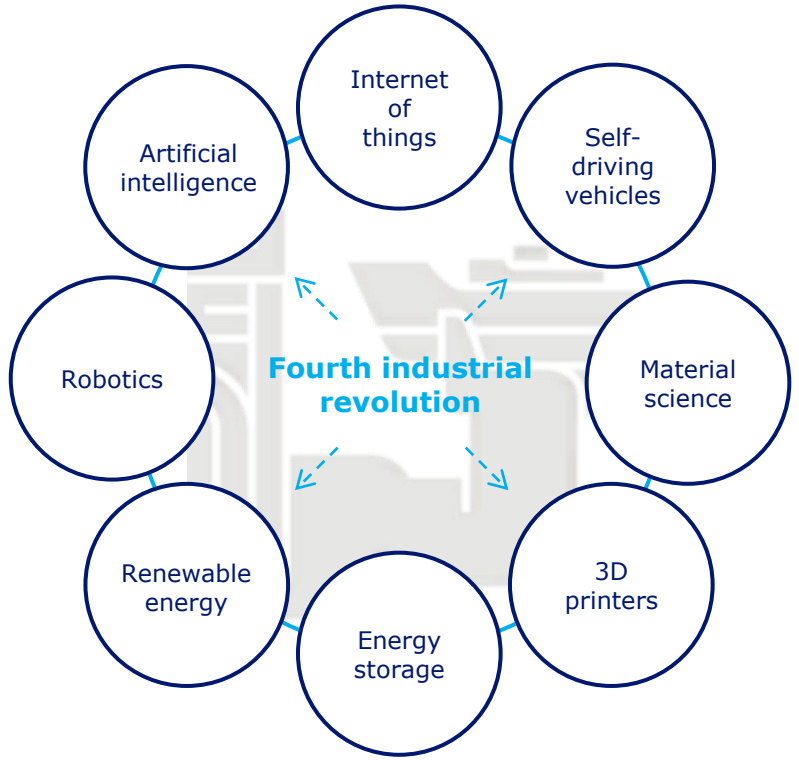


DANISH SHIP FINANCE

GENERAL REVIEW AND OUTLOOK

SEVERAL SHIP SEGMENTS ARE CURRENTLY STRUGGLING WITH SURPLUS CAPACITY, LARGE ORDERBOOKS AND YOUNG FLEETS. MOST LONG-TERM OUTLOOKS ARE ANCHORED IN THE HISTORICAL RELATIONSHIP BETWEEN POPULATION GROWTH, URBANISATION AND INCREASING SEABORNE DEMAND. THE EMERGENCE OF THE FOURTH INDUSTRIAL REVOLUTION REDEFINES THE RECIPE FOR ECONOMIC GROWTH BY OPENING THE GATES FOR LONG-TERM GAINS IN EFFICIENCY AND PRODUCTIVITY. THE OUTLOOK FOR THE SHIPPING INDUSTRY IS DETERIORATING ACCORDINGLY.

In our November 2015 issue of Shipping Market Review, we argued that the current model of global economic growth is neither very efficient nor sustainable in terms of resource consumption but it does create a lot of seaborne trade. We introduced and evaluated some of the new trends and technologies that we believe are about to transform the global economy.

We looked into the sharing and the circular economy, both relatively new concepts that are working to enhance the utilisation and productivity of the resources and assets already part of the global economy. Next, we looked at energy efficiency improvements and the potential of renewable energy. Last but not least, we looked into robotics, 3D printers and material science. We ended up concluding that within a decade large parts of the shipping industry could be on the brink of a transition towards lower seaborne trade volumes or at best low long-term demand growth.

In this edition of Shipping Market Review – May 2016, we start by analysing some more fundamental drivers of global growth: from population growth to energy demand to urbanisation. These dynamics remain extremely relevant for seaborne demand growth, but the technologies outlined in our previous report will over time reduce their importance. Today, the combined effects of the described technologies are commonly labelled "the fourth industrial revolution".

The fourth industrial revolution is opening the gates for long-term gains in efficiency and productivity for the global economy. In more and more domains, cost-efficient, intelligent and flexible machines are substituting low-wage human labour in developing economies. Transportation costs are expected to remain low, logistics and global supply chains are expected to become more effective, and the cost of trade is likely to diminish. Travel distances are predicted to shorten, seaborne trade volumes could stagnate or decline and fleet efficiency could improve considerably.

The fourth industrial revolution is expected to accelerate the trade impact of the challenges already being faced by the global economy. Far-reaching demographic changes are causing a major rebalancing of the engines powering the global economy. In developed economies and China, ageing consumers are pulling their economies towards a more service-driven model that is likely to produce less seaborne trade. Developing economies, on the other hand, are still in the midst of an urbanisation process. The urbanisation process is traditionally expected to power domestic economic growth. But if the fourth industrial revolution causes jobless growth or a relocation of growth to developed economies, much of the prosperity being dreamed about may not materialise. In addition, technological innovation has resulted in major improvements in renewable energy. The outlook for fossil fuel demand, and for the countries exporting fossil fuels, is therefore deteriorating.

The shipping industry seems to be in the eye of the storm, since the dynamics governing global trade are shifting in tandem with the fourth industrial revolution.

The message we have for the shipping industry is that the current turmoil is more fundamental than simply a reflection of the growing overcapacity created in the wake of the global financial crisis in 2008. This is neither about cyclicality nor volatility but about a transformation in demand that over time has the potential to redefine the forces at play. There could be no broad market recovery if shipping investors continue to expect the forces at play to return to normal within a year or two. Based

on past experience, some seem to view low secondhand prices as a good investment opportunity. In some segments, however, we argue that the low secondhand prices are just as likely to represent an industry in transition in which overcapacity needs to be addressed and value creation needs to be rethought.

DEMOGRAPHIC CHANGES

Until the turn of the century, more than half of global consumption growth came from an expanding number of consumers in the world. Global trade growth was further reinforced by the effects of trade agreements, outsourced production and the ensuing build-up of emerging economies such as the Chinese. Together, these dynamics generated strong growth in global trade volumes. From 1970 to 2015 seaborne trade volumes increased by an average of approximately 3-4% per annum.

TRADE HAS BEEN DRIVEN BY A DEMOGRAPHIC SWEET SPOT

We argue that much of the progress in world trade volumes has been enabled by a demographic "sweet spot" that started to emerge around 1970. The world's population expanded fast, at nearly 2% per year, until about 1990, but since then has slowed down to about 1.25% per annum because of falling birth and fertility rates. The working age population increased sharply between 1970 and 1990, but subsequently the effective size of the global labour force more than doubled when first Eastern Europe and then China joined the world economy within a relatively short timeframe of two decades (i.e. the 1990s and 2000s). These events, and their impact on global average wages, have been essential underlying factors enabling the expansion of world trade volumes during the last two or three decades.

THE WORLD'S POPULATION COULD PLATEAU DUE TO AGEING

Today, we are, once again, at a point of inflection. In the period from 2015 to 2030, population growth will slow significantly and is therefore only expected to account for a quarter of global consumption growth. In essence, the world's population is ageing dramatically and fertility is falling. While ageing has been evident in developed economies for some time — Japan and Russia have seen their populations decline over the past few years — the demographic deficit is now spreading to Europe and China and soon it will reach Latin America. Growth in seaborne trade volumes is expected to slow accordingly.

TRADE DYNAMICS WILL BE REDEFINED

There is likely to be a clear dividing line between economies that are facing slower population growth (developed economies and China) and those whose growth could continue to rise (in particular India, Indonesia, Mexico and Africa). In addition to this demographic dividing line, emerging economies should have the ability to catch up with developed economies, given their lower starting point. But this depends on the usual set of factors from the ability to create jobs to their administrative abilities and policies.

ECONOMIC PROGRESS THANKS TO JOB CREATION

China's rapid progress has essentially only been possible because US and European consumers have played an important part in driving up demand for Chinese goods. It is the very combination of consumer demand and job creation that has enabled the take-off of Chinese growth and the corresponding increase in trade volumes. Looking ahead, we do not see any countries that could lift any new major emerging economies onto the world stage by importing their manufactured goods. We expect quite the opposite in fact, and therefore do not expect to see another 'China' for a long time, even though there are large populations in Asia, Latin America, the Middle East and Africa.

TWO GROUPS ARE EXPECTED TO DRIVE GLOBAL DEMAND

According to a recent study by the McKinsey Global Institute, two groups in particular will drive future growth in consumer spending. Together, the 60-plus age group in developed economies and China and those of working age in North America and China are expected to generate 60% of urban consumption growth up to 2030. The group of retiring and elderly (60-plus years) in developed regions will grow by more than one-third, from 164 million in 2015 to 222 million in 2030. They will generate 51% of urban consumption growth in developed countries, and 19% of global urban consumption growth. China's working-age consumers (15 to 59 years) will expand by 20% — an additional 100 million people. Their per capita consumption

is expected to more than double between 2015 and 2030.

THE 60-PLUS AGE GROUP IN DEVELOPED ECONOMIES AND CHINA

The disposable income of people in the 60-plus age group (in developed economies and China) is expected to decline when they retire. Their consumption is likely to decrease accordingly and be redirected towards services, most notably towards healthcare and tourism. Likewise, it seems that public spending is being redirected towards services in general and healthcare in particular. But paying for pensions and health care will be challenging: neither private savings nor public finances are sufficiently well funded to meet future costs. The effect on the long-term outlook for seaborne demand is expected to be profound. Elderly people are expected to commute less, purchase fewer items and demand less construction activity (e.g. build fewer houses). In short, they will turn into low trade-intensive consumers who generate very little seaborne demand but contribute to GDP creation through their demand for services.

WORKING AGE CONSUMERS IN CHINA AND NORTH AMERICA

Working age consumers in China are predicted to be the most powerful urban consumer segment between now and 2030. These consumers are so numerous and their incomes are expected to rise so rapidly that they have the potential to reshape global consumption, as the western baby-boomer generation did in the past. Reflecting their growing incomes, consumption by those of working age in China will be fuelled by higher per capita spending. Their average per capita consumption is expected to more than double from USD 4,800 per person annually to USD 10,700. A significant share of the spending increase is likely to be directed towards low seaborne-intensive consumption such as education, healthcare and tourism. China's young people are staying in school longer than their parents did and many are travelling much more than past generations. Between 2015 and 2030, China is expected to spend 12.5% of overall consumption growth on education alone. Still, the predicted increase in consumer spending is expected to impact seaborne import volumes positively. But it remains to be seen whether the net effect of all the changes that China is expected to embrace over the next 15 years will require more seaborne import volumes or fewer: clearly, increased consumer spending will add to seaborne import volumes but other factors are working in the opposite direction.

URBANISATION

Urbanisation has been one of the most important driving forces for global GDP growth in recent years, reflecting the powerful economies of scale of densely populated centres. Cities are the world's economic engine, consuming the majority of global power and resources, while generating 80% of GDP. Urbanisation often accompanies and facilitates economic transition from agriculture to manufacturing, industrial production and services. These activities tend to demand clusters of labour and capital, and supercharge demand for seaborne trade. Urbanisation is often considered a key process in ending extreme poverty and boosting shared prosperity. In turn, millions of rural residents flock to urban regions, and will continue to do so, in search of the living standards that new production and service jobs can provide. However, this process is not preordained: there are no wealthy countries that are not urbanised, but there are plenty of urbanised countries that are not wealthy. Urbanisation and rapid demographic change can exacerbate already pressing problems. For example, in the past several countries in Africa have experienced rapid urbanisation without economic growth.

FROM FARMERS TO CONSUMERS

However, cities are expected to continue to be the engines of the world economy and global consumption. Most of the world's population growth from 2015 to 2030 is projected to occur in cities, according to a recent study by the McKinsey Global Institute. By 2030, people living in large cities alone will account for 50% of the global population and more than 80% of global consumption. They will be responsible for most of the growth in global consumption between 2015 and 2030. However, the demographic profiles and therefore growth prospects of cities are now diverging. More than one in twenty large cities is already experiencing declining populations, most of them in developed economies where urbanisation and ageing started earlier than in emerging economies. Others, particularly in emerging economies, continue to grow, and will be home to rising

numbers of people. It remains to be seen whether the majority of people moving into cities will become consumers driving future economic growth. The ability to create jobs for the rapidly expanding number of people that are projected to move into cities is the most important issue to address in the years to come.

LOPSIDED URBANISATION

Much of this urbanisation is expected to unfold in Asia (and later in Africa), bringing huge social, economic and environmental transformations. Urbanisation has the potential to usher in an era of resource efficiency and economic growth. But cities are also home to high concentrations of poverty. Nowhere is the rise of inequality clearer than in urban areas, where wealthy communities coexist alongside, and separate from, slums and informal settlements.

SUSTAINABLE GROWTH WITHOUT CONSUMERS?

In less developed regions of China, it almost seems as if the authorities have been creating economic growth through the construction of cities. There is no doubt that this strategy has been effective in generating economic growth (and seaborne demand), but it remains to be seen whether these cities are able to transform farmers into long-term consumers through sustainable job creation, even after construction activity has normalised.

HOPES VERSUS EXPECTATIONS

Most demand outlooks for the shipping industry hinge on the assumption that farmers will continue to be transformed into consumers, in China and elsewhere. Many of the current demand forecasts for Dry Bulk, Tankers and Gas Carriers buy into the expectation that cities will continue to expand. The assumption is that this expansion will be powered by fossil fuels and that more people joining the world economy will become trade-intensive global consumers. We certainly hope that these expectations will be met but we urge our readers to consider a scenario where the urbanisation process may turn out to be less powerful or simply less trade-intensive. Let us ask ourselves which factors are currently available to enable the ongoing urbanisation that did not exist in the past? The world economy has never been short of people who dream of a better life.

To our understanding, what is really changing, besides the fact that consumers are ageing, is that we are seeing technological progress that offers new solutions to old problems: from energy efficiency to energy supply to manufacturing processes. Not to mention job creation. We are talking about the fourth industrial revolution.

THE FOURTH INDUSTRIAL REVOLUTION

The fourth industrial revolution is about combining all the great technological achievements that have been made since the middle of the last century. It is characterised by a fusion of technologies that is blurring the lines between the physical and digital spheres. Consumers are increasingly gaining access to products through sharing services rather than physical ownership.

ACCELERATING CHANGES THROUGH TECHNOLOGY

The fourth industrial revolution has the potential to redefine the way we live our lives, run our businesses and understand the world. We do not yet know exactly how it will unfold, but one thing is clear: it is developing at an exponential rather than a linear pace. It has the potential to disrupt almost every industry in every country. The shipping industry seems to be vulnerable, since the tectonic plates underneath global trade are shifting in tandem with the fourth industrial revolution.

INTELLIGENT MACHINES ARE REPLACING HUMAN LABOUR

Today, machines are substituting human labour profitably in more industries than ever before. As intelligent machines become cheaper and ever more capable, they will increasingly replace human labour. The growing capabilities of automation threaten one of the most reliable strategies that poor countries have used to attract outside investment in the past: offering low wages to compensate for low productivity and skill levels. In more and more domains, the most cost-effective source of "labour" is intelligent and flexible machines, as opposed to low-wage humans in other countries. In a world where businesses stop chasing cheap labour, production will gravitate towards wherever the end-market is, because that will add value by shortening delivery times, reducing inventory costs and the like.

HOW DO WE ENTER THE WORLD ECONOMY WITHOUT JOBS?

The replacement of labour by machines seems to be approaching a tipping point, after which large undereducated populations will change from being a potential entry ticket to the world economy into a liability to feed. Over the past decade, large pools of low-cost workers have fertilised the global economy. In essence, low-skilled workers in Asia and elsewhere have powered the growth of many developed economies. This integration of emerging economies into the world economy has facilitated continued growth in seaborne trade volumes. Take China as an example. When it gained membership to the WTO in November 2001, this in particular caused growth in seaborne trade volumes to accelerate for more than a decade. But imagine how the Chinese economy would have looked today without the country's initial ability to create millions of jobs in the manufacturing sector. Would we have seen the Chinese construction boom, which has driven the Chinese urbanisation process, if the economy had not taken the first step by creating millions of manufacturing jobs that once again enabled domestic demand and improved living standards? Probably not – or at least not to the same extent as we have seen over the past ten to 15 years.

STIMULI CANNOT COME FROM NOWHERE

The positive spill-over effects from initial job creation to continued economic development are hard to overestimate. Labour-intensive growth (i.e. as opposed to machine/robot-driven growth) creates broader domestic demand that ripples out to various sectors of the economy. Each new round of spill-over effects creates new ripples that further intensify and lift the economy's growth potential. But the initial job creation is crucial: stimuli cannot come out of thin air. An economy cannot decide to be service-driven in the absence of a strong manufacturing sector or another initial demand-generating sector. India is the exception that proves the rule. But India had an initial advantage that few other countries can replicate: millions of people that spoke English at a time when western corporates were looking for low-cost call centres and their like. But the Indian population continues to grow. The country still has plenty of potential workers. What India needs is jobs, and lots of them. The country's labour pool is currently growing by more than 1 million workers each month. Automated manufacturing provides few new jobs and creates little additional demand in related industries. It remains to be seen whether India will manage to board the train or whether China will have been among the last economies to be able to ride industrialisation to middle-income status through job creation in the manufacturing sector.

SIGNIFICANT INCREASES IN UTILISATION AND PRODUCTIVITY

But the fourth industrial revolution will not stop here. At its heart is the productivity of materials and resources (i.e. the circular economy). New technologies will lead to significant increases in the utilisation and productivity of materials and resources. In a circular economy, the goal for durable components, including metals and most plastics, is to enable them to be reused or upgraded for other productive applications through as many cycles as possible. The benefits for the environment and global consumers seem obvious. But the potential negative impact on global trade volumes could be significant, not least when combined with the prospect of robotics, artificial intelligence, the Internet of Things, autonomous vehicles, additive manufacturing (i.e. 3D printers), nanotechnology, biotechnology, material science, renewable energy and energy storage (i.e. batteries).

ENERGY OUTLOOK

The outlook for global energy demand is driven by many factors, but the three most important are population-, urbanisation- and economic growth. It is therefore closely intertwined with the aspects of future growth discussed above.

RENEWABLE ENERGY ON THE RISE...

As the global population grows and more people is expected to join energy-intensive lifestyles in urban areas, demand for reliable supplies of energy will increase. Rising to this challenge, governments around the world are investing in infrastructure to help deliver electricity not only to large cities but also to poorly-connected rural areas. In today's energy market, it is as relevant to consider the type of energy needed as the growth in energy demand. In 2016, wind and solar photovoltaic systems (ranging from rooftop-integrated systems to large utility-scale

power stations of hundreds of megawatts) are expected to be able to produce electricity at a cost in line with new coal and gas plants. And the cost projections for wind and solar PV indicate further cost reductions during the next decade or two. The development is moving quickly. To us it came as a surprise that in 2015, renewable energy accounted for the lion's share of new electricity-generating capacity on a global scale.

...ESPECIALLY AMONG DEVELOPING ECONOMIES

The attractiveness of renewable energy sources such as wind and solar is not isolated to the cost per kilowatt hour but also to the scalability of the systems. New technological innovation has enabled a very high level of wind and solar power penetration, from mature markets to isolated diesel-powered grids. In essence, consumers are able to achieve grid quality power, supported by battery-based grid stabilising systems, without the need for burning tonnes of fossil fuel. Within fossil fuels, coal demand is expected to see the largest absolute decline, but oil and gas demand is also exposed to the emergence of renewable energy and new technologies. The global economy is predicted to be less dependent on fossil fuels in the future.

ELECTRIC VEHICLES ARE THE FUTURE IN CITIES

The progress made within electricity generation and energy storage has spilled over to the transportation sector. The market for electric vehicles or hybrid electric vehicles is growing in particular. While electric vehicles represent less than 1% of the global stock of passenger cars, their share of new cars sold is expected to accelerate exponentially in the years to come, especially in large cities where distances tend to be shorter and access to electricity more widespread.

RAPID IMPROVEMENTS IN ENERGY INTENSITY

We do not argue against existing technologies: we expect fossil fuels to remain the dominant source of energy powering the global economy over the next 15-20 years. Our point is that renewable energy has reached a tipping point where it is beginning to play a major role in supplying new demand for electricity and as a fuel for electric vehicles. In combination with the rapid improvements in energy efficiency, this means that fossil fuel demand is expected to grow less quickly than global GDP.

ENERGY DEMAND COULD DECLINE DESPITE ECONOMIC GROWTH

In order for fossil fuel demand not to grow at all until 2030, energy intensity would need to decline on average by 3.5% per annum. Alternatively, the structure of the world economy would need to shift further towards the low energy-intensive service sector. In the case of China, the extent of the current measures to rebalance the economy has a major bearing on China's future energy needs. If the rebalancing exercise fails, China's energy demand will most likely be stronger in 2030 than it is today. But if the economy turns into a consumer-driven economy, like the US economy, by 2030 Chinese energy demand might actual decline from today's levels.

TRADE OUTLOOK

There is unanimous agreement that demographic headwinds will likely slow down global economic growth over the next two to three decades. There is far less consensus, however, on how lower economic growth will impact seaborne trade volumes. Most long-term forecasts tend to present an outlook that somehow mirrors the market fundamentals of the past. Accordingly, many predict that seaborne trade volumes will grow between 3% and 4% per annum for the next two to three decades. However, as we argue on the following pages, we see little indication of this happening.

FEWER JOBS TRANSLATES INTO LESS DEMAND FOR TRANSPORTATION

Put simply, highly productive robots, 3D printers and their like will do little to employ the millions of low-skilled workers that are about to enter the global labour pool in the period up to 2030. Still, the transformation of these workers from farmers to future consumers is a necessity if the global urbanisation process is to generate sustainable global economic growth and seaborne demand. This transformation is a vital component of most long-term demand forecasts related to fossil fuel, steel, building materials, petrochemicals and containerised goods. In its absence, the long-term demand outlook for large parts of the shipping industry could be at risk.

SEABORNE TRADE IS BECOMING LESS RELEVANT FOR FUTURE GROWTH

The fourth industrial revolution has the potential to be a game changer for the shipping industry. It seems clear that one of

the first parts of the shipping industry to be affected will be the Container industry. Not only will the myriad component trades, which drive large parts of intraregional trade and much of the back-haul volumes, be impacted, but the very backbone of the industry, the head-haul routes, appear to be at risk if production moves closer to consumers. A relocation of manufacturing from developing to developed economies will reduce the developing economies' ability to create the millions of jobs needed. How will it impact their GDP creation if they lose their ability to create millions of jobs? Will urbanisation progress without any major setbacks? And what will happen to demand for fossil fuels in a scenario of lower growth that is increasingly built on services rather than industrial production? Industrial production tends to be shipping- and fossil fuel-intensive and often produces spill-over effects that also benefit shipping and fossil fuel demand. Services tend to be less dependent on fossil fuels and create fewer spill-overs to the shipping industry. Put another way, the fourth industrial revolution is opening the gates for long-term gains in efficiency and productivity. Transportation costs seem likely to drop, logistics and global supply chains may become more efficient, and the cost of trade will diminish. In essence, travel distances may shorten, seaborne trade volumes could drop and fleet efficiency could improve considerably.

THE FIRST DRAWINGS OF A NEW ARCHITECTURE

These are the first drawings of a new architecture for the shipping industry. In other industries we are already seeing new patterns of consumer behaviour that are forcing companies 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, which is disrupting existing industry structures. Similar trends could easily find their way to the shipping industry, meaning that entire new business models may have to be developed to serve the industry. To us, it seems clear that the fourth industrial revolution could redesign parts of the shipping industry within a decade or two. Still, it should be borne in mind that the impact of exponential technologies tends to be underestimated. The transition towards a more efficient and productive global economy could take place much more quickly than we currently envisage.

LOW FUTURE GROWTH IN SEABORNE DEMAND

But what should we actually expect in terms of seaborne demand growth for the next two decades? Let us look at the micro aspects of seaborne import volumes before we turn to the issue that may answer the question. For domestic import volumes to remain constant one year to the next, construction activity, for example, needs to be maintained at the same level as the year before. But if construction activity comes down for some reason, import volumes will decline accordingly. Some may view this as trivial, but it is not. Consider all the industries in which units are imported to support production of a certain product or to construct a certain facility. If similar projects do not recur each subsequent year, import volumes will decline. And the negative spiral does not stop there. All the industries that have been supporting the primary activity may also face lower demand and hence lower import requirements (e.g. electricity or diesel demand). This does not necessarily reflect an economy in recession; it may just as well mean that an emerging (or ageing) economy is reaching a new level of maturity. It is well known that it takes a lot of fossil fuel, steel and construction material to build up an emerging economy like, for example, the Chinese. But when the economy has reached a new phase of normality, in which it is rebalancing towards a less import-intensive version, seaborne import volumes may decline. This applies not only to iron ore, steel, cement and diesel but also to containerised goods, electricity demand (i.e. coal and LNG imports) and to a certain extent also to petrochemical demand (naphtha and LPG).

ABNORMALLY HIGH GROWTH IN PAST CHINESE IMPORTS

Consider import activity between 2000 and 2015. Global seaborne import volumes increased by 3.5% per annum in the period. Chinese imports grew by 14.4% per annum, delivering 51% of the growth in seaborne trade volumes in the period. Asia (ex. Japan) delivered 83% of the growth in seaborne trade volumes. However, what happened after the financial crisis in 2008 may come as more of a surprise. Between 2008 and 2015, the combined seaborne import volumes of North America, Europe and Japan dropped by almost 14% (i.e. an annual decline of 2.1%), while China increased its seaborne import volumes, with 80% of the Chinese increase in volumes carried

by Dry Bulk vessels. A large part of this increase was a result of issues related to the fiscal stimuli provided by the Chinese government in the years after the financial crisis. Much of the activity was focused on the construction sector, as new cities and infrastructure were built. The growth in Chinese seaborne import volumes is especially noteworthy because it took place during a period of below-trend economic growth and reduced external demand for Chinese goods.

TRADE VOLUMES MAY DECLINE EVEN IF THE ECONOMY EXPANDS

The single most important lesson to be learned from these figures is that trade volumes may decline even if the economy expands (as demonstrated by North America, Europe and Japan). True, almost two-thirds of the decline in import volumes was attributable to Tankers, which is highly dependent on US shale production, and these numbers were also impacted by the high trading activity for oil-related commodities in the wake of the low oil price. However, extraordinary trading activity such as this should not be confused with actual demand. The low oil price and surplus production of crude oil and refined petroleum products have in many cases created an environment of significant arbitrage trading and storage build-ups that have facilitated exceptional movements of goods. Inefficiencies related to these dynamics have contributed significantly to the idea that it is strong underlying demand that is employing the Tanker fleet.

DECLINING TREND IN SEABORNE IMPORT VOLUME GROWTH

In fact, seaborne import volume growth rates have been on a declining trend over the past decade. Seaborne import volumes increased by 4.4% per annum between 2000 and 2008 and have come down to 2% between 2014 and 2015. According to IHS Global Insight, seaborne import volumes declined by 1-2% in both 2014 and 2015 in countries with an ageing population (i.e. Europe, Japan and China). North American seaborne imports have remained relatively flat, growing by 0-1% in both 2014 and 2015.

A DEMOGRAPHIC PERSPECTIVE INDICATES LOWER IMPORT VOLUMES

Between 2015 and 2030, we believe that the emerging economies that are still supported by the demographic dividend will have the ability to play catch-up with developed economies and China. We expect that these economies (in particular India, Indonesia, Mexico and Africa) will grow their seaborne import volumes by approximately 3% per annum between 2015 and 2030. Meanwhile, as consumers in North America, Europe, Japan and China age, the combined workforces of these economies are set to shrink by approximately 100 million people (i.e. 6%) within the next 15 years, which we expect to structurally reduce their potential for seaborne imports. Consequently, from a demographic perspective these economies are expected to witness a decline in seaborne import volumes of about 12% in the period from 2015 to 2030. On average, we expect their seaborne import volumes to decline by almost 1% per annum. As such, the decline in seaborne volumes is predicted to be slower between 2015 and 2030 than seen in North America, Europe and Japan between 2008 and 2015.

SEABORNE TRADE UP BY 1% PER ANNUM UNTIL 2030

The demographic headwinds faced by the previous powerhouses of global trade are a defining structural change lowering the potential for future growth in seaborne import volumes. We expect total seaborne import volumes to increase by little more than 1% per annum between 2015 and 2030. A world with fewer fast-growing working-age populations will experience fewer economic miracles, and clearly not on a scale that can counterbalance the expected declines in countries such as China, Japan and Europe. From a demographic perspective, India and Nigeria are basically the only large-scale candidates available. By the end of this century, about two-thirds of all countries are expected to have declining populations. The emergence of the fourth industrial revolution in the world economy will do little but increase the downside risk to long-term growth forecasts for seaborne trade volumes.

THE SHIPPING MARKETS ARE EXPECTED TO CONTINUE STRUGGLING WITH SURPLUS CAPACITY FOR SOME TIME. STILL, ANNUAL FLEET ADDITIONS ARE EXPECTED TO FALL SHORT OF SCHEDULED ORDERS AND DEMOLITION OF VESSELS MAY INCREASE SIGNIFICANTLY. OUR HOPE IS THAT FEW NEW ORDERS WILL BE PLACED AND THAT DEMAND WILL CONTINUE TO GROW. FREIGHT RATES AND SECONDHAND VALUES COULD REMAIN LOW FOR THE NEXT TWO YEARS.

The global economy is still struggling to produce the growth rates seen before the financial crisis. Recent assessments of global economic growth from the IMF once again point to lower than expected economic growth and increased downside risk to forecasts. It estimates that the global economy will grow by 3.2% in 2016 and 3.5% in 2017, up from 3.1% in 2015.

SEABORNE IMPORT VOLUMES UP BY 3% BETWEEN 2015 AND 2030

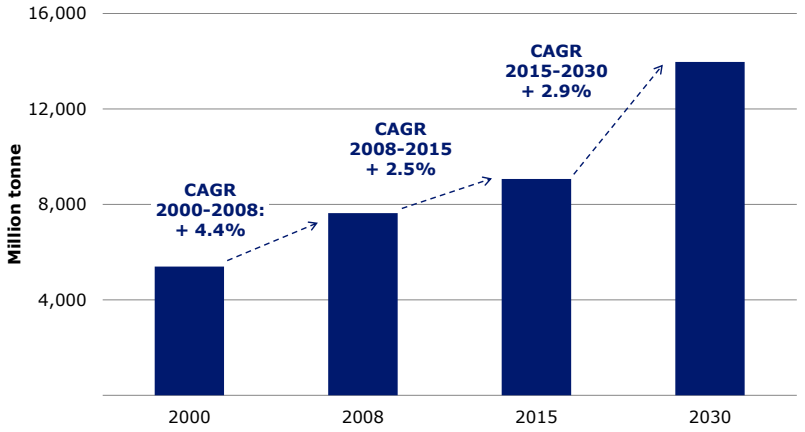
The long-term forecast for seaborne import volumes from IHS Global Insight indicates an increase of 2.9% per annum between 2015 and 2030 (fig. 1). For all the reasons discussed above, we cannot resist asking ourselves whether it is reasonable to expect global economic growth to return to pre-crisis levels and continue to support seaborne demand growth of approximately 3-4% per annum?

SLOW ECONOMIC GROWTH AHEAD IN ADVANCED ECONOMIES...

There seems to be consensus among economists that economic growth in Europe and Japan and to some extent also in North America will remain modest in the years to come. Many factors are mentioned as potential explanations for this but by far the most important are unfavourable demographics and legacies from the global financial crisis. Put simply, this means that future economic growth will be driven by fewer working-age consumers and that these consumers will spend less because they will be repaying the government debt raised to stimulate growth in the aftermath of the financial crisis.

Figure GRO.1

Seaborne import volumes are predicted to grow by 2.9% per annum betewen 2015 and 2030



Sources: IHS Global Insight, Danish Ship Finance

■ Seaborne import volumes

... AND LOWER GROWTH IN DEVELOPING ECONOMIES

Among developing countries, all eyes are on China. China is now the world's largest economy on a purchasing-power-parity basis but is navigating a momentous but complex transition toward more sustainable growth based on consumption and services. In the past decade, China has delivered the largest increase in import volumes across a broad range of assets including raw materials. However, the transition towards a more consumption and service-driven economy is reducing the country's appetite for imports. Today, China is playing the first violin in a symphony being orchestrated by the fourth industrial revolution.

CHANGES TO THE GROWTH MODEL

The Chinese transition has come to symbolise the forces that are fundamentally disrupting the growth models of many developing economies. The combination of large, undereducated populations and exports of raw materials has in many cases been

the primary asset of developing economies. In a world that is increasingly being powered by renewable energy and where the advantages delivered by the fourth industrial revolution reduce the need for labour, the long-term potential for many developing economies seems structurally reduced. The long-term challenge for the developing economies is to reinvent their model of growth.

SLOW GROWTH IN TRADE VOLUMES UNTIL 2030

Ultimately, these adjustments are expected to make the global economy more sustainable. But their impact on seaborne import volumes could be significant. For all the reasons stated above, we predict that seaborne trade volumes will increase by considerably less than 3% per annum between 2015 and 2030. In some scenarios, seaborne trade volumes could even decline from today's levels. Our best-case scenario indicates growth in seaborne import volumes of a little more than 1% annually between 2015 and 2030 (fig. 2).

THERE ARE DIFFERENCES BETWEEN SEGMENTS

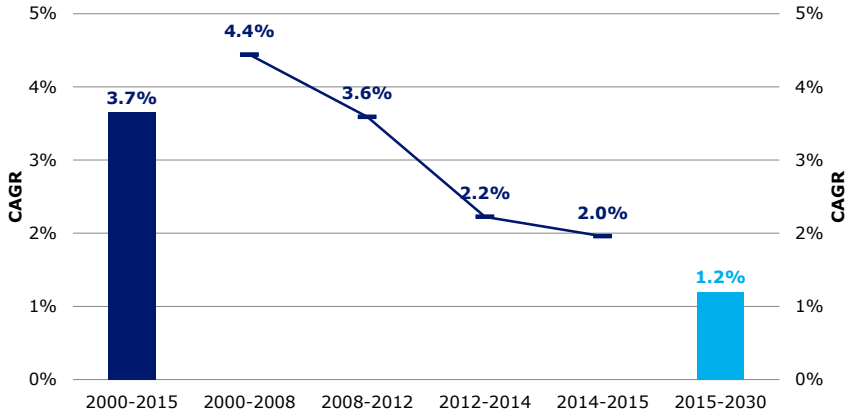
Turning to the individual ship segments, there seems to be more of a consensus among Dry Bulk and Container investors that future seaborne trade growth will be low, while the underlying fundamentals seem to be misinterpreted by some investors placing their money in Crude-, Product- and LPG Carriers.

EXPANDING PRODUCTION CAPACITY DOES NOT MEAN HIGHER DEMAND

In the Tanker segments the low growth in underlying demand is being overshadowed by the ongoing and scheduled capacity expansions of production facilities ranging from refineries to steam crackers to propane dehydrogenation plants (PDH). While it is true that in the short term (i.e. one to two years) tanker trading activity may continue to be higher than underlying demand if the opening of these new facilities causes global production to increase, industrial overcapacity does not, per se, guarantee high demand for Tanker vessels. It is equally likely that the average utilisation of these facilities will simply come down until the global capacity adjusts to lower demand. We saw a similar misinterpretation by many stakeholders in the Dry Bulk market when mining facilities were expanded.

Figure GRO.2

Seaborne import volumes increased by an annual average of 3.7% between 2000 and 2015 but we only expect seaborne trade to increase by 1.2% per year between 2015 and 2030



Sources: Clarksons, Danish Ship Finance

WE MAY NOT YET HAVE REACHED THE TIPPING POINT

The long-term outlook for offshore-related vessels is more complex. Some argue that the low exploration activity will reverse in due course and that demand for offshore-related vessels will increase if the oil price rises due to insufficient supply of oil. The logic is straightforward but partly relies on the assumption that oil demand will continue to increase in tandem with global GDP. But as discussed above, the energy that is required to produce a unit of GDP is falling in most countries around the world. Consumption of fossil fuel generally peaks at the high point of heavy industry's contribution to GDP creation but declines when services (in combination with the fourth industrial revolution, including renewable energy) begin to replace construction activity and manufacturing. This is expected to coincide with gains in energy efficiency. Still, it remains to be seen whether we have reached the tipping point for a change in demand dynamics in short to medium term. It is therefore likely that offshore-related vessels will experience a period of higher demand but with less

intensity than in previous cycles and lasting for a relatively short time. Now let us turn to the shipping markets.

FREIGHT RATES REFLECT SURPLUS CAPACITY

The ClarkSea Index clearly shows that most shipping segments are suffering from surplus capacity. The index came down to approximately USD 10,000 per day at the end of the first quarter of 2016, implying a decline of almost 30% (USD 4,000 per day) compared with the average level of 2015. This reflects a deteriorating market balance across the major segments (i.e. Container, Dry Bulk, Crude, Product and LPG Carriers). The ClarkSea Index has fallen by approximately 80% from its peak in 2008 (fig. 3).

THE STRENGTH IN TANKER EARNINGS IS ABOUT TO DISAPPEAR

The Tanker segments continue to perform better than the Container, Dry Bulk and Offshore segments. However, the recent decline in the Tanker markets illustrates that the increasing inflow of vessels is becoming difficult to absorb. The factors lifting trading activity beyond underlying demand seem to have reached their limit. The balance between supply and demand is widening and freight rates have started to decline accordingly.

LOW BUNKER PRICES ARE SUPPORTING PROFITABILITY

The bunker price more or less halved between 2014 and 2015 and again between 2015 and first quarter 2016. The bunker price (380 cst bunker oil out of Rotterdam) has as of April 2016 come down to USD 160 per tonne, which is a drop of almost 80% since its peak in 2012 (fig. 4).

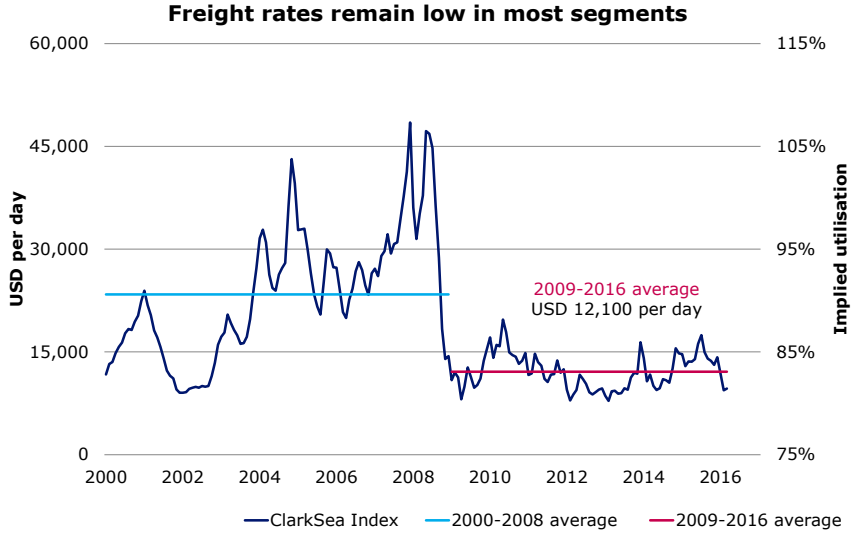
SECONDHAND VALUES REMAIN STABLE

The average secondhand price has remained fairly stable since 2012 but has lost approximately 45% since its peak in 2008. The stable nature of the index during the last five years reflects the benefits from a diversified index portfolio rather than the actual price development of individual segments. Secondhand prices tend to be closely correlated with short-term timecharter rates.

CONTRACTING ACTIVITY FINALLY SEEMS TO BE SLOWING

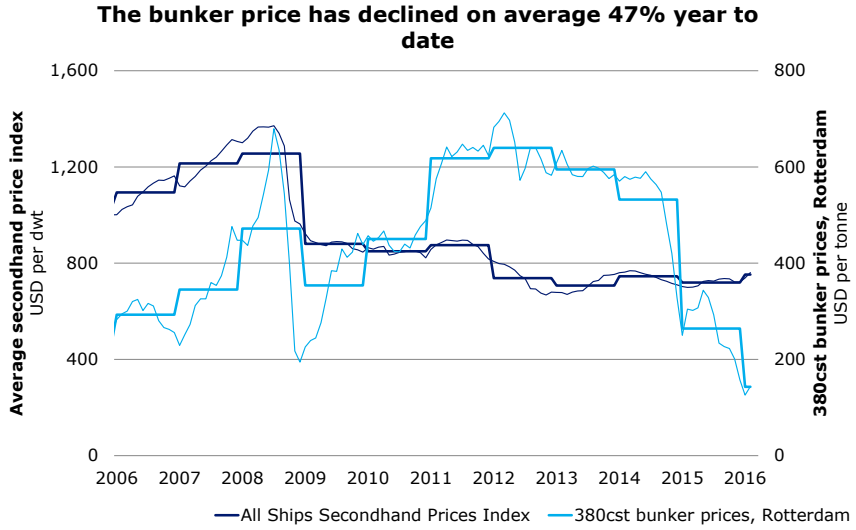
The low freight rate environment did little to dampen shipping

Figure GRO.3



Sources: Clarksons, Danish Ship Finance

Figure GRO.4



Sources: Clarksons, Danish Ship Finance

investors' appetite for large new vessels in 2015. Contracting activity remained high relative to the low market, and the vessels ordered during 2015 were on average 30% larger than vessels contracted in 2014. Contracting activity seemed to slow down during the first quarter of 2016, with only 77 orders placed compared with 347 in the same period the year before.

THE MAJORITY OF THE ORDERBOOK IS DUE TO BE DELIVERED IN 2016

Currently, there are approximately 4,400 vessels with capacity corresponding to 16% of the world fleet on order (fig. 5). The orderbook is heavily frontloaded and more than half is scheduled for delivery before the end of 2016 (fig. 6). The intensive schedule relates in particular to Dry Bulk vessels and Offshore-related vessels. Few segments, if any, are in a position where the scheduled orderbook can be absorbed without impacting the freight rate environment. While scrapping will counter some of the inflow, only 9% of the fleet is older than 20 years and can be considered eligible for scrapping (fig. 5). It seems indisputable that the inflow of scheduled orders, if delivered, will require the demolition of younger vessels to be accelerated and test the current freight rate and secondhand value levels.

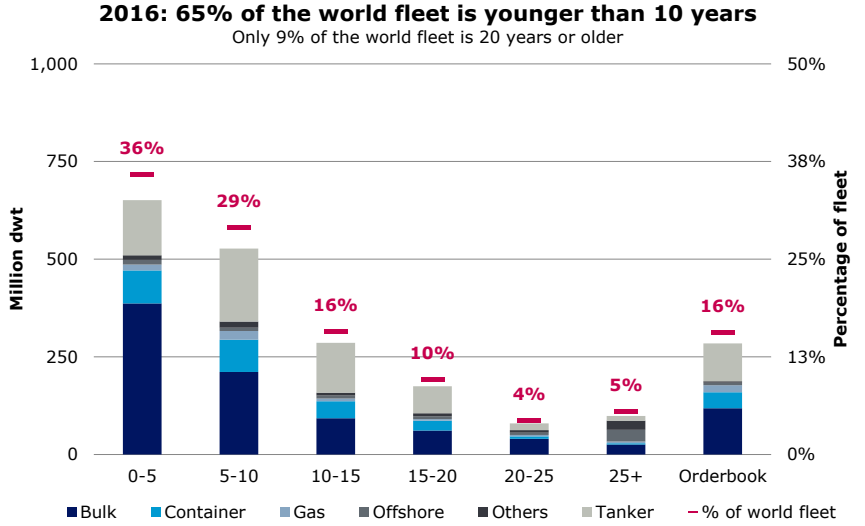
NOT ALL SEGMENTS ARE EQUALLY EXPOSED TO THE HUGE ORDERBOOK

The segments are not all equally exposed to the massive size of the orderbook, and we should be careful when looking at the segments from the perspective of the orderbook-to-fleet ratio. For example, with an orderbook-to-fleet ratio of 15%, the Dry Bulk segment appears to be one of the least exposed to additional pressure on freight rates. And with a replacement ratio of approximately 2 (indicating that the orderbook is twice as large as the capacity of vessels older than 20 years), the segment should be able to re-establish a balance between supply and demand within a relatively short time (fig. 7).

BUT ALL SEGMENTS SEEM WELL SUPPLIED FOR THE FUTURE

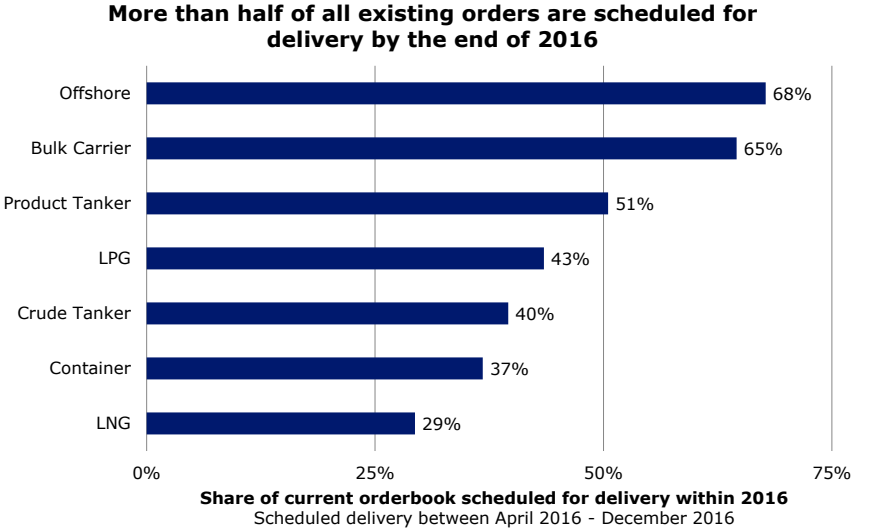
In today's market, every third vessel on order is a Dry Bulk vessel. The Dry Bulk orderbook contains more than 1,300 vessels, of which 65% are scheduled to be delivered by the end of 2016. In the LPG segment, the orderbook-to-fleet ratio is in excess of 30% but the orderbook only contains 184 vessels. Our point is

Figure GRO.5



Sources: Clarksons, Danish Ship Finance

Figure GRO.6



Sources: Clarksons, Danish Ship Finance

that all major segments are well represented at shipyards relative to the size and age profile of their fleets and their demand outlook. Still, Crude Tankers seem to be most exposed to overcapacity if demand fails short of investors' expectations, since the scrapping potential here is very limited (fig. 7). We hope that few segments will experience any notable contracting activity in the coming years.

NOT ALL ORDERS ARE DELIVERED

Over the past five years or more, it has become the norm that approximately one-third of orders are not delivered according to schedule. In 2015, 64% of scheduled orders was delivered on time, 27% was postponed to the next year, while the remaining 10% was cancelled outright (fig. 8). The share of cancellations is expected to increase in the coming years. Many yards seem to be struggling with unsustainably high levels of debt, short order covers and tight liquidity, and some of them are likely to close within the next few years. The exact number of orders likely to leave the orderbook is difficult to estimate, but nevertheless this is expected to reduce the inflow of vessels significantly.

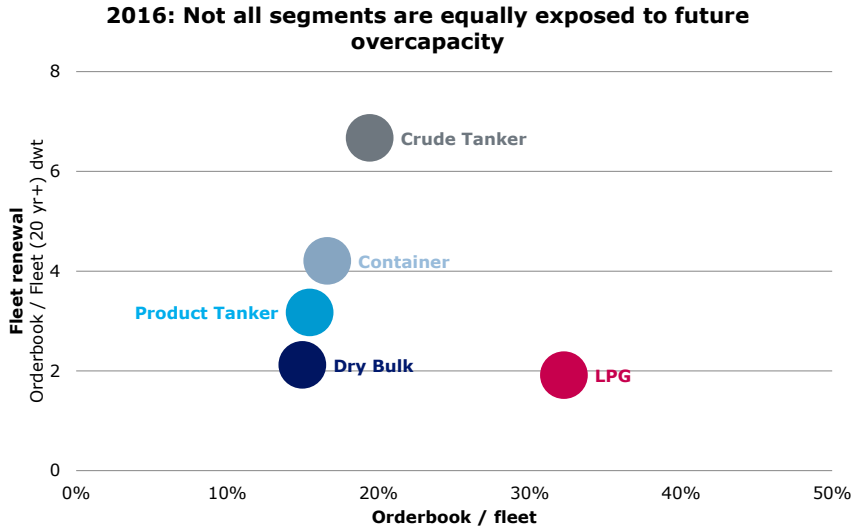
THE LOW DRY BULK MARKET DRAGGED DOWN THE DELIVERY RATIO

Last year, Dry Bulk orders scheduled for delivery in 2015 accounted for 64% of the total orderbook. The low freight rate environment and the difficulties at many of the yards due to build these orders resulted in a record-low delivery ratio of 56%. At the other end of the spectrum, 90% of scheduled orders were delivered in the LPG segment. The most surprising development was seen in the Crude and Product Tanker segments. Both segments experienced high earnings during 2015 but almost one-third of orders were postponed or cancelled. Still, this should be put into perspective: the small size of the orderbooks in the Tanker segments means it takes significantly fewer postponements to lower the delivery ratio than in the Dry Bulk segment (fig. 9).

2016 COULD BE A RECORD YEAR FOR SCRAPPING

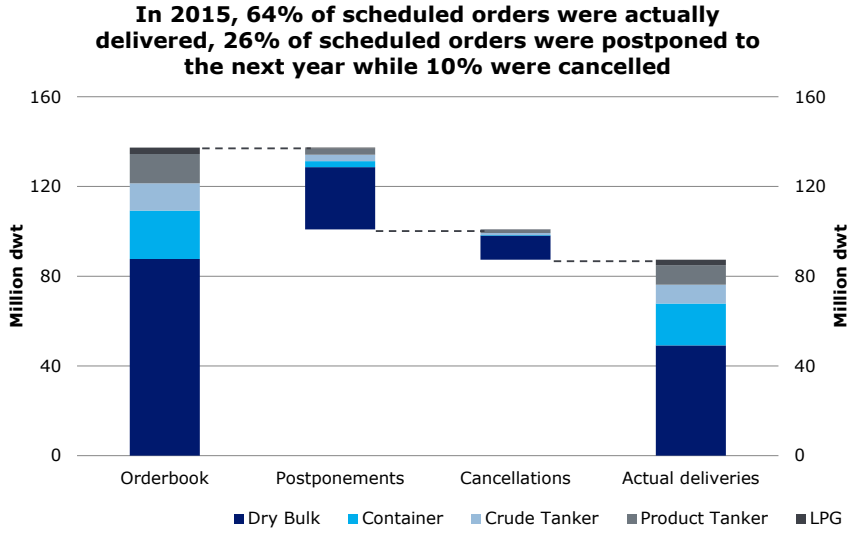
We are only a few months into 2016 and already scrapping activity looks set to reach a record-high level this year. Dry Bulk vessels will account for the lion's share. So far this year, the av-

Figure GRO.7



Sources: Clarksons, Danish Ship Finance

Figure GRO.8



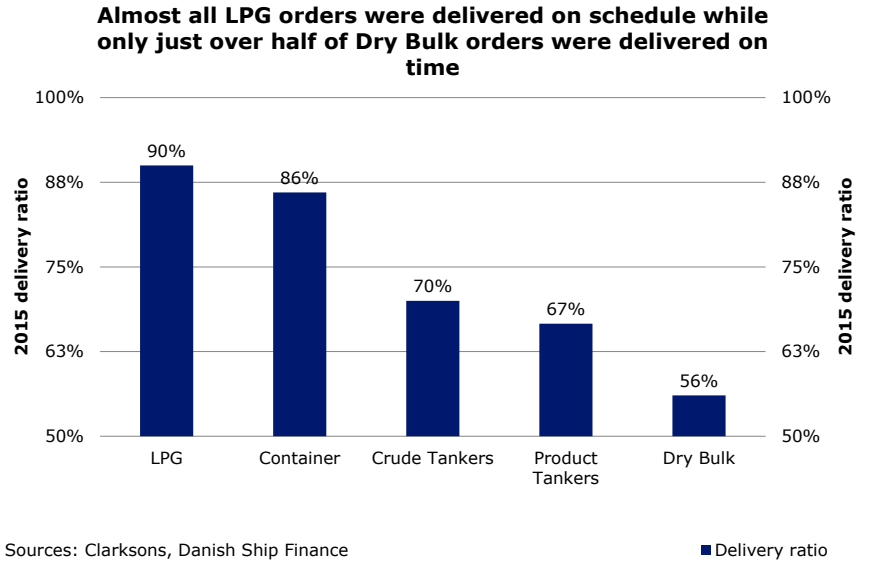
Sources: Clarksons, Danish Ship Finance

erage age of vessels scrapped has declined by three years to 25 years (fig. 10). Maybe most notably, almost half the vessels scrapped during the first quarter were less than 20 years old. The average age was kept high by the demolition of some very old coastal trading vessels. In some of the Container segments, the average age of vessels scrapped was as low as 16 years, effectively reducing the economic lifetime of the vessels by more than 30% (i.e. from 25 years).

CHALLENGES AHEAD

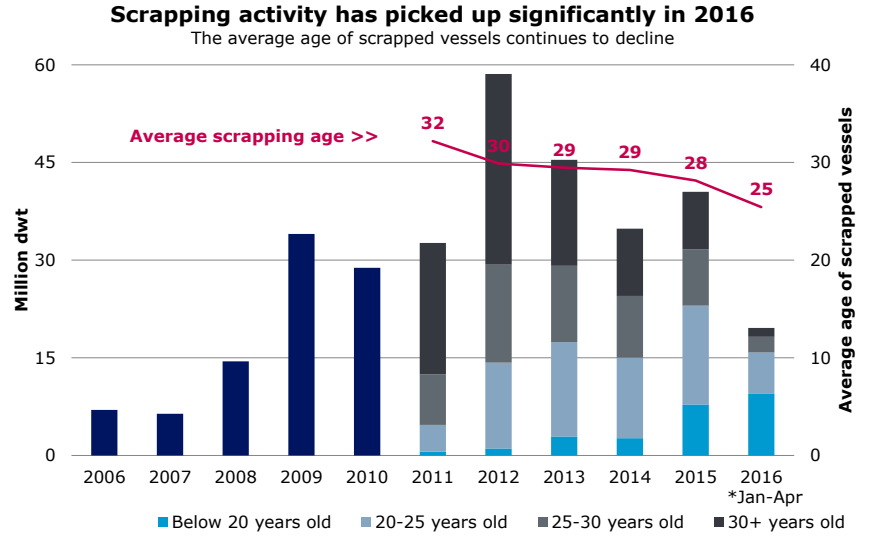
For freight rates to increase, scrapping activity needs to remain high in the years ahead, since the inflow of new vessels is still expected to be high while the demand outlook is weak. The average age of vessels scrapped is predicted to decline during 2016 and 2017. Fleet utilisation is expected to remain low for the next two to three years but there are hopes that it will start recovering somewhat in 2018. Still, much depends on the share of the orderbook that is delivered and the number of vessels scrapped. Demand is not expected to be strong enough to absorb all the vessels entering the fleet.

Figure GRO.9



Sources: Clarksons, Danish Ship Finance

Figure GRO.10



Sources: Clarksons, Danish Ship Finance

SHIPBUILDING

SHIPPING MARKET REVIEW – MAY 2016

DANISH SHIP FINANCE

SHIPBUILDING

THE OVERSUPPLY IN SHIPPING IS TIGHTENING ITS GRIP ON THE SHIPBUILDING INDUSTRY. IN THE SHIPPING SEGMENTS WHERE OVERSUPPLY IS MOST SEVERE, SHIPOWNERS ARE LOWERING CONTRACTING ACTIVITY, POSTPONING AND CANCELLING A LARGER SHARE OF ORDERS, WHICH IS DAMAGING SHIPYARD LIQUIDITY.

NEWBUILDING PRICES

NEWBUILDING PRICES TRENDED DOWNWARDS IN 2015 AS CONTRACTING LEVELS FELL. MEANWHILE, GLOBAL ORDER COVER KEPT STABLE AS ACTIVE YARD CAPACITY DECLINED.

The Shipbuilding industry is suffering from overcapacity and low freight rates in many of the larger shipping segments, which is reducing shipowners' appetite for ordering new vessels. Tension is building, since many yards are running out of orders while others are financially stressed by significant postponement and cancellation activity. Yards are closing at an unprecedented speed.

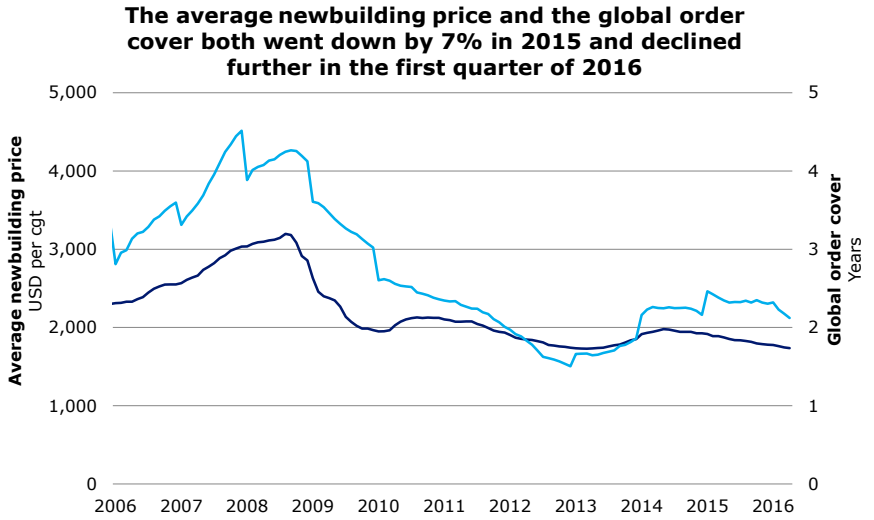
NEWBUILDING PRICES FELL BY 7% IN 2015

The oversupply continues to put downward pressure on new-building prices and prices have now been declining for almost two years. The average newbuilding price fell by 7% in 2015 on the back of lower contracting activity (fig. 1). By the start of 2016, it was back at the level seen towards the end of 2012, a year when contracting was significantly lower than in 2015. Off-shore vessel prices dropped the most during 2015 (≈-20%), followed by Bulk (≈-11%) and smaller Container vessels (≈-7%). Looking at the development in prices, it is apparent that the Chinese yard industry must be struggling the most. More than two-thirds of the Chinese orderbook is scheduled to build Bulk, Container or Offshore vessels. South Korean yards focus primarily on Tankers and Gas Carriers, which have seen much more modest price declines of around -3% and -2%, respectively.

GLOBAL ORDER COVER BOOSTED BY YARD CLOSURES

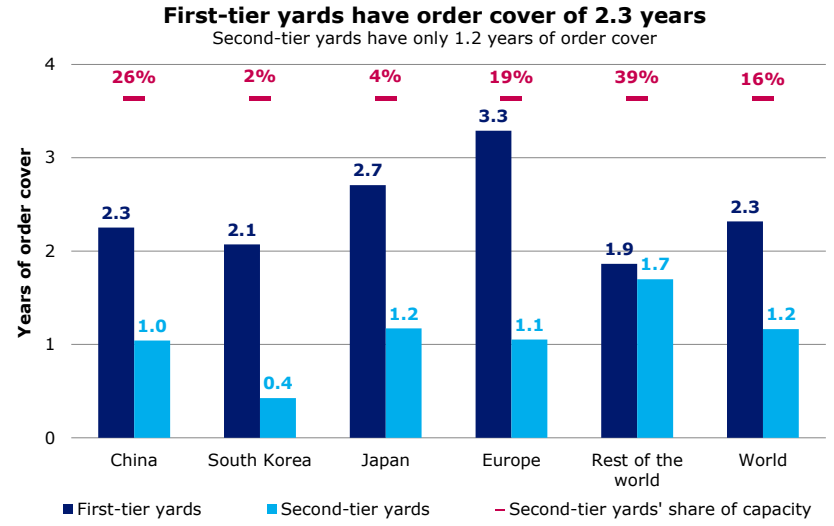
Active yard capacity declined in 2015, which, despite a declining orderbook, resulted in an improvement in the global order cover. Hence, the fact that the order cover increased from 2 years in our report from November to 2.1 years does not reflect an increase in the orderbook, but rather a decline in active capacity (fig. 1).

Figure SB.1



Sources: Clarksons, Danish Ship Finance

Figure SB.2



Sources: Clarksons, Danish Ship Finance

CONTRACTING ACTIVITY DECLINED IN 2015 AS CONDITIONS DETERIORATED IN SOME OF THE MAJOR SHIPPING SEGMENTS, THEREBY ACCELERATING THE CONSOLIDATION PROCESS.

ONLY 240 DIFFERENT YARDS ATTRACTED NEW ORDERS IN 2015

Contracting activity has begun to slow down, and hence competition among yards is intensifying. In our report from November, we touched upon the fact that the yard industry is consolidating and, as a consequence of this, fewer and fewer yards are attracting new orders. In 2015, 35 million cgt was contracted at only 240 different yards, a significant decline compared with previous years (fig. 3 and 4). In the first quarter of 2016, 2.3 million cgt was ordered, equal to one-third of the amount contracted in the same period in 2015.

LARGE YARDS ATTRACTED THE MAJORITY OF ORDERS

The majority of orders (48%) were placed at 20 of the industry's large yards (i.e. yards with an annual maximum capacity of more than 500,000 cgt), while only 7% of orders were placed among 130 small yards (i.e. yards with an annual maximum capacity of less than 80,000 cgt). We estimate that there are currently around 730 active newbuilding yards globally; hence, a very small share of the total number of active newbuilding yards attract the majority of orders. It should be noted that these figures are likely to be updated as 2016 goes on because there might be some orders placed in 2015 that have not been registered yet - especially those placed at small yards.

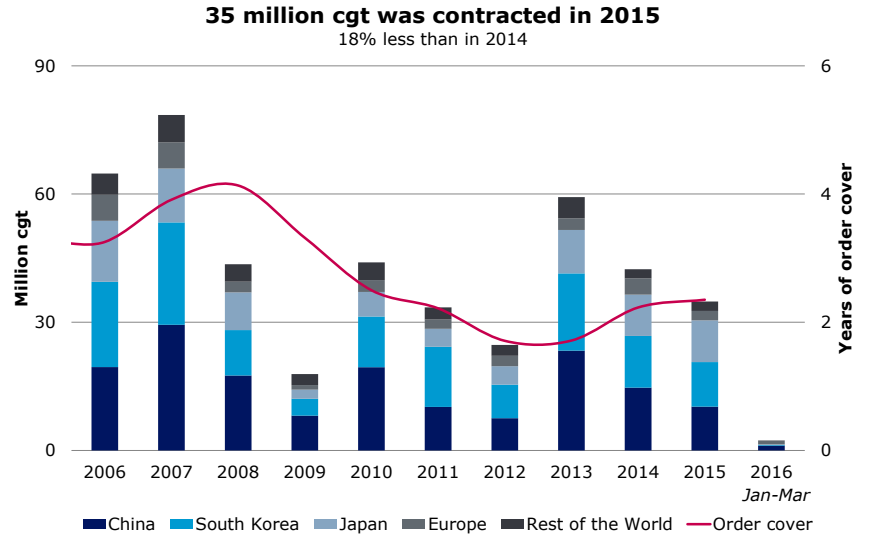
CHINA RESTOCKED 53% OF ACTIVE CAPACITY

China attracted new contracts of just above 10 million cgt, two-thirds of the orders it received in 2014, and thereby restocked only 53% of active capacity. The decline in contracting was primarily caused by a dramatic reduction in demand for new Bulk vessels, which meant that Bulk contracting at Chinese yards dropped by 85% from 2014. Orders were placed at 75 of the 200 active newbuilding yards in China. Of these, 25 were small yards, 40 medium yards and ten large yards. Medium and large yards each attracted around 47% of contracting in China (fig. 4).

SOUTH KOREA RESTOCKED 77% OF ACTIVE CAPACITY

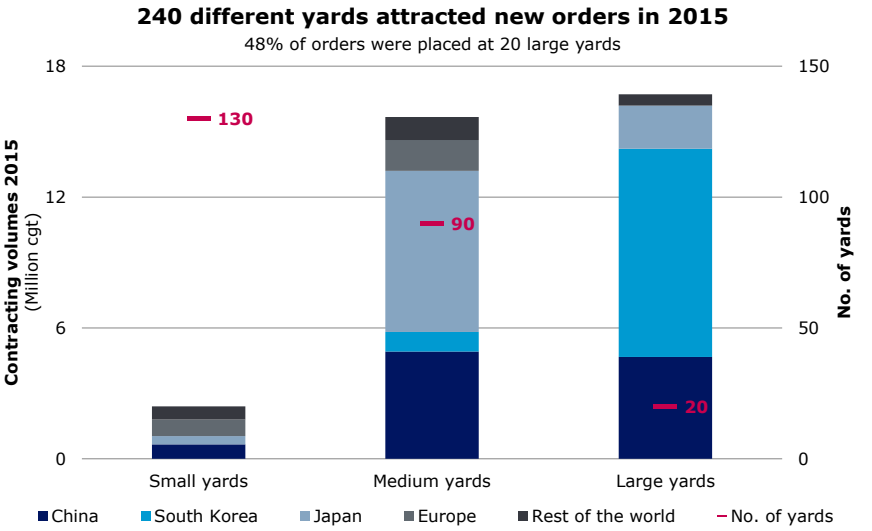
South Korea attracted 10.5 million cgt, down 14% on 2014, restocking 77% of active capacity. Order intake was dragged

Figure SB.3



Sources: Clarksons, Danish Ship Finance

Figure SB.4



Sources: Clarksons, Danish Ship Finance

down primarily by fewer Gas Carrier orders, but the increase in Container and Tanker orders offset some of the decline. There are 30 active newbuilding yards in South Korea and only 13 of them attracted new orders – five medium yards and eight large. Measured in cgt, 91% of orders went to the large yards (fig. 4).

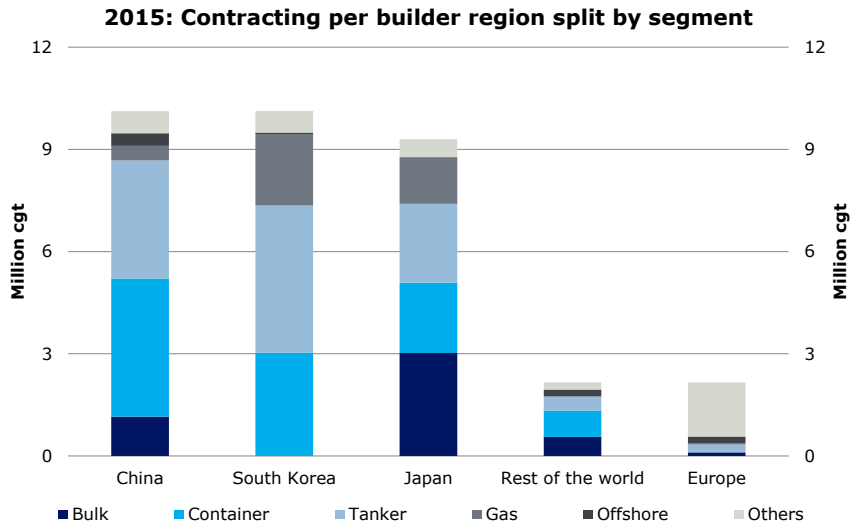
JAPAN RESTOCKED 120% OF ACTIVE CAPACITY

Japan attracted orders of 9.7 million cgt in 2015 – a 1% increase from 2014. Of the 70 active Japanese yards, 55 attracted new orders, with almost 80% of orders going to 35 medium yards and 20% to three large yards. For some years, Japanese shipyards have been losing market shares. In the mid-noughties, Japan began to attract a smaller share of contracting, primarily on account of China. However, the Japanese yards started to slowly turn this trend around in 2012, and in 2015, Japan attracted only 0.6 million cgt less than China and South Korea. Japanese shipbuilders have been supported by currency fluctuations, which have provided them with an advantage over their competitors. Traditionally, Japanese yards have been dependent on Bulk orders. In 2014, 75% of contracting at Japanese yards was Bulk orders, but in 2015, that share declined to 32%. Instead, Tanker and Container orders increased their share of contracting.

THE LARGE YARDS CONSTITUTE THE CORE OF THE INDUSTRY

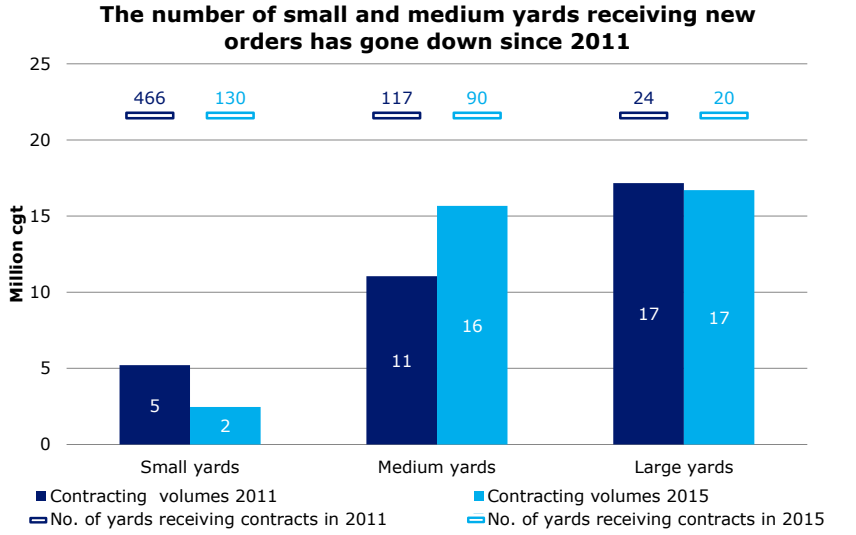
As addressed above, the number of different yards attracting new orders has declined significantly over the last five years, falling from over 600 yards in 2011 to around 240 yards in 2015 (fig. 6). However, the decline has not been uniform among yard sizes and builder nations. The number of large yards has remained more or less constant, ranging from 20 to 24 yards, on average attracting 46% of annual contracting over the five-year period, and 20 of the current large yards also existed back in 2011. The reason for the drop in the number of large yards receiving orders is that some of the former big players have entered into restructuring processes (e.g. Rongsheng HI and STX Dalian in China). The number of medium yards attracting new orders has decreased, but their share of total contracting has risen, especially in Japan, where it increased from just over half of orders in 2011 to close to 80% in 2015. The number of small yards attracting new orders has experienced the biggest decline, falling to around one-quarter of the yards in 2011. China has seen a big reduction in small yards, both in number and volumes.

Figure SB.5



Sources: Clarksons, Danish Ship Finance

Figure SB.6



Sources: Clarksons, Danish Ship Finance

THE DELIVERY PERFORMANCE IN 2015 WAS DRAGGED DOWN BY AN INCREASING SHARE OF ORDERS BEING POSTPONED OR CANCELLED. THE NUMBER OF YARDS MAKING NEW DELIVERIES CONTINUED TO DECREASE.

The delivery performance in 2015 left much to be desired. This was due to the combined effect of shipowners not wanting to take delivery of orders and shipbuilders struggling to complete orders amid the difficult market conditions caused by the sluggish Bulk and Offshore markets. As a consequence, only 64% of the orders scheduled to be delivered during 2015 actually were, down from 75% in 2014.

38 MILLION CGT WAS DELIVERED IN 2015

The low delivery ratio meant that only 38 million cgt of the initial orderbook for 2015 of 60 million cgt was delivered. The deliveries were split between approximately 550 different yards - a decline of 100 yards compared with 2014, despite the fact that total yard output increased by 4% (fig. 7). The decline was due to a drop in the number of small yards making deliveries, notably small Chinese yards which accounted for one-third of this decline.

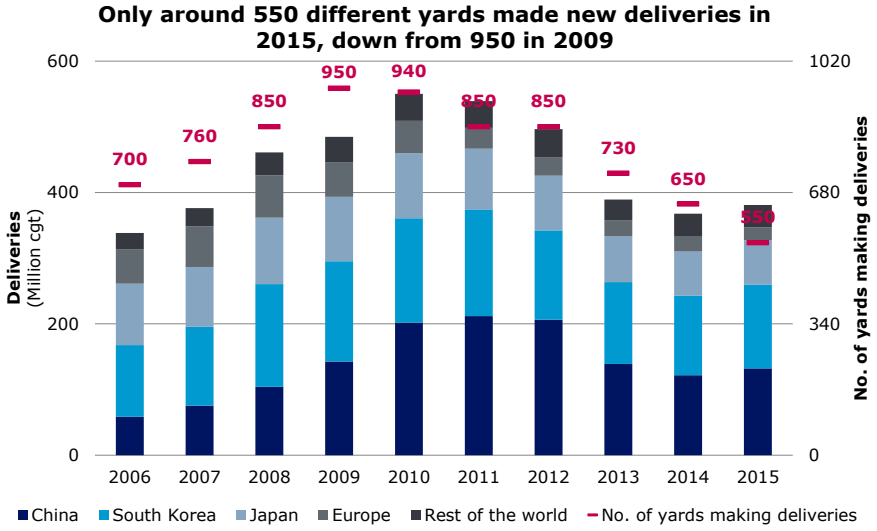
AVERAGE OUTPUT PER YARD INCREASED BY 21% IN 2015

The consolidation process is therefore not only visible in contracting patterns but also in deliveries. The average output per yard increased by 21% in 2015. In China, the average output per yard grew by 9%, as 151 yards delivered 13.2 million cgt, down from 183 yards in 2014. In South Korea, output increased by 6% and 23 yards delivered 12.8 million cgt (24 yards in 2014). Japanese output remained almost the same at 6.7 million cgt, divided between 67 yards (72 in 2014).

ALL BUILDER REGIONS EXPERIENCED LOWER DELIVERY RATIOS

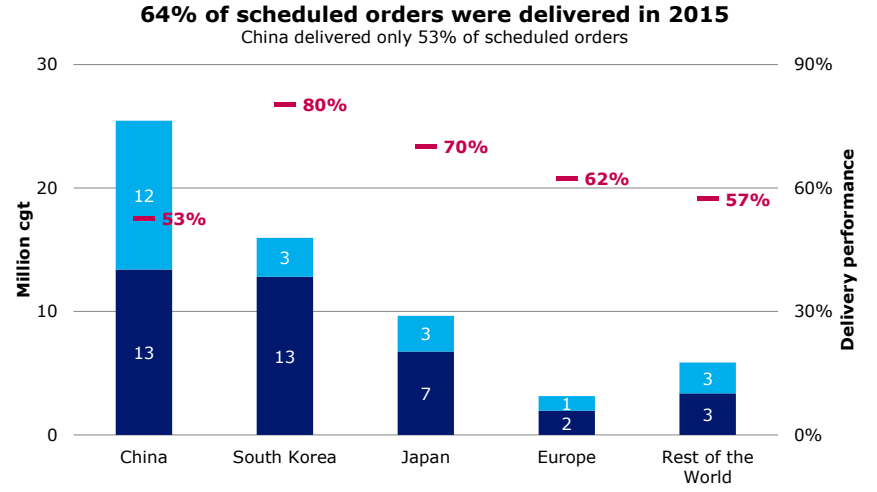
For some time, China has been lagging behind South Korea and Japan in terms of delivery performance. Last year was no exception: Chinese yards delivered only 53% of scheduled orders (fig. 8). South Korean and Japanese yards also experienced a tangible deterioration in performance, however, delivering only 80% and 70% of scheduled orders, respectively – both down by around 10 percentage points from 2014.

Figure SB.7



Sources: Clarksons, Danish Ship Finance

Figure SB.8



Sources: Clarksons, Danish Ship Finance

THE NEGATIVE MARKET SENTIMENT IN SHIPPING PROMPTED OWNERS TO CANCEL AND POSTPONE MORE ORDERS IN 2015, WHICH, COMBINED WITH THE LOW CONTRACTING ACTIVITY, CAUSED THE GLOBAL ORDERBOOK TO DECLINE.

The main reason for the poor delivery performance in 2015 was the higher number of orders being either postponed or cancelled in response to the strained market conditions in many shipping segments. Not only were 36% of orders scheduled for delivery in 2015 postponed or cancelled, so were a number of orders scheduled for delivery in 2016 and beyond. Rising cancellations, combined with the fact that total deliveries exceeded total contracting, led to an 8% drop in the global orderbook. Consequently, the orderbook-to-fleet ratio fell from 15% at the beginning of 2015 to 14% by the end of the year, measured in cgt.

THE GLOBAL ORDERBOOK DECLINED BY 8% IN 2015

Not all builder countries were equally exposed to declining orderbooks. The biggest decline occurred in China where the orderbook dropped by 15%, followed by South Korea (-11%), while Japan's orderbook increased by 11%. This basically means that deliveries and cancelled orders in China and South Korea exceeded new contracting, while the opposite was the case in Japan.

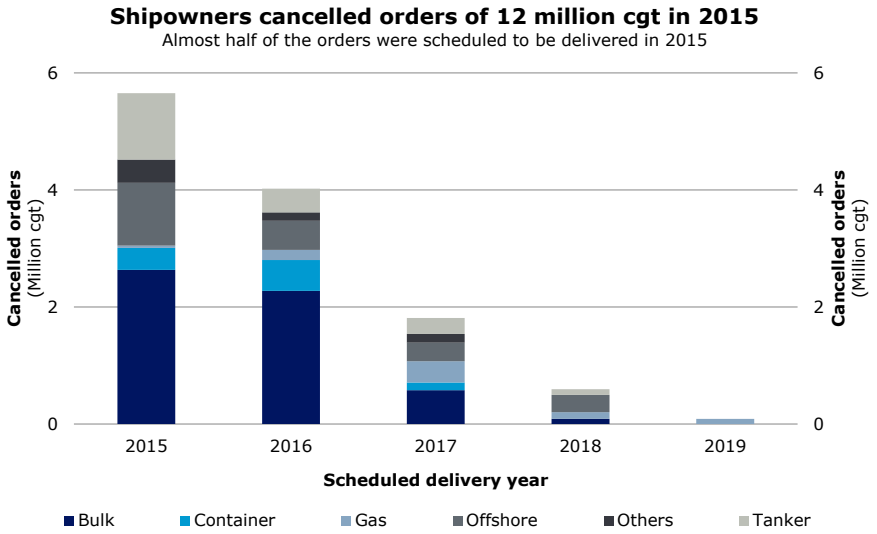
12 MILLION CGT WAS CANCELLED IN 2015

Conditions in the Bulk and Offshore markets prompted many shipowners to cancel orders that they had already placed, and 9% of scheduled deliveries for 2015 were cancelled. However, a large proportion of the orders cancelled were due for delivery at some point over the next four years (fig. 9). Combined, all orders cancelled in 2015 equaled 12 million cgt and constituted 10% of the total orderbook as of the beginning of 2015. 55% of the orders cancelled were from Chinese yards, and 48% of cancelled orders were for Bulk vessels and another 18% for Offshore vessels. Around 25% of the cancelled orders were contracted before 2012 and were therefore postponed at least once prior to being cancelled.

20 MILLION CGT WAS POSTPONED FOR LATER DELIVERY

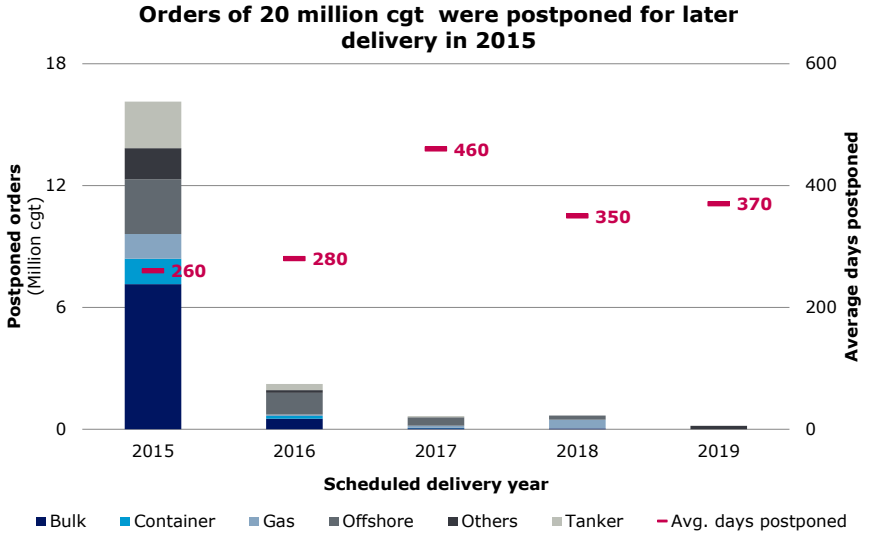
In order to limit some of the exposure to the adverse market, shipowners that were not able to cancel orders opted to post-

Figure SB.9



Sources: Clarksons, Danish Ship Finance

Figure SB.10



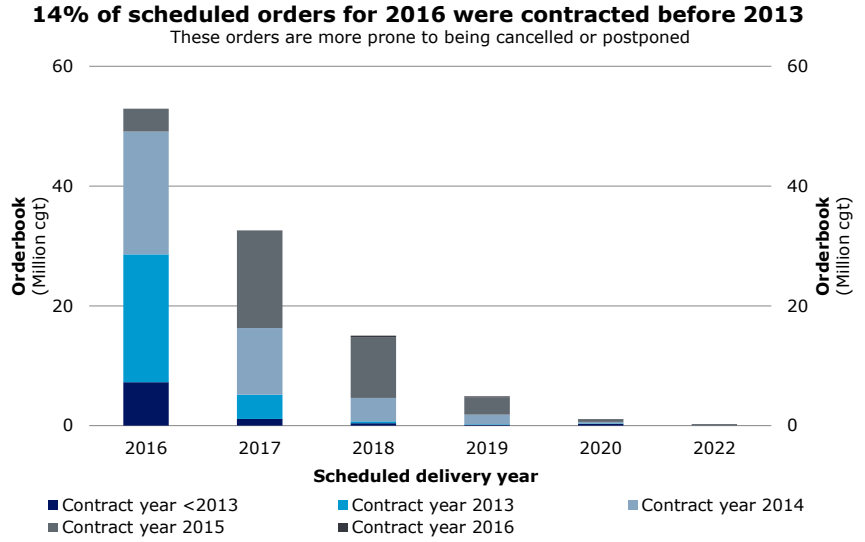
Sources: Clarksons, Danish Ship Finance

pone deliveries instead. As a consequence, 27% of scheduled deliveries for 2015 were postponed. In total, 20 million cgt was postponed for later delivery during 2015, amounting to 17% of the total orderbook as of the start of 2015 (fig. 10). One-third were Chinese Bulk orders. Orders were, on average, postponed 8-9 months in 2015. This number was inflated by Offshore orders which, on average, were postponed almost a year.

CANCELLATIONS AND POSTPONEMENTS PUT PRESSURE ON LIQUIDITY

Cancelling or postponing orders for later delivery allows shipowners to ease some of their short-term financial pressure. For shipyards, it often has the opposite effect. Regardless of whether an order is postponed at the request of the shipowner or the shipyard, it delays the final payment of the order and puts pressure on the yard's ability to pay its short-term debt obligations. Consequently, the escalation of postponements and cancellations that the industry experienced in 2015 bears a lot of the responsibility for the financial challenges that many shipyards are saddled with.

Figure SB.11



Sources: Clarksons, Danish Ship Finance

ACTIVE YARD CAPACITY CONTINUED TO DECLINE IN 2015 AS MORE SECOND-TIER YARDS RAN OUT OF ORDERS AND CLOSED DOWN. FIRST-TIER CAPACITY REMAINED STABLE. CONSEQUENTLY, YARD UTILISATION GREW TO 78% IN 2015, UP FROM 68% IN 2014.

In line with lower contracting activity, fewer yards attracting new orders and the orderbook shrinking, active newbuilding capacity also continued to decline in 2015. Announcements that yards are experiencing financial difficulties are surfacing on a more regular basis and it seems that the consolidation process is accelerating.

ACTIVE YARD CAPACITY DOWN BY AROUND 10% IN 2015

Due to the growing number of yard closures, we estimate that the number of active newbuilding yards globally fell by approximately 70 yards to around 730 by the end of 2015 (fig. 12). It should be noted that this number comprises all yards that had an orderbook by the beginning of 2016 or that completed deliveries during 2015. As a consequence, active capacity was reduced by around 10%, measured in cgt.

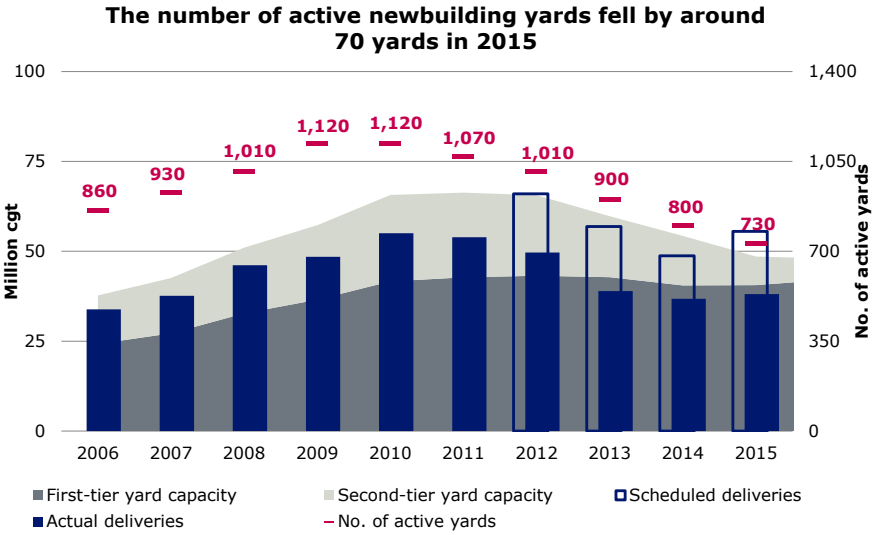
THE OVERSUPPLY IS STILL HUGE, BUT IT IS IMPROVING

The downward adjustment in active yard capacity meant that overcapacity declined in 2015, improving from 33% of active capacity in 2014 to 22% by year-end 2015 (fig. 13). Hence, global yard utilisation ended up at 78% in 2015, up from 68% in 2014. Capacity at first-tier yards, the yards that have received orders within the last 18 months, maintained the status quo, while capacity at second-tier yards, the yards that have not, declined by 42%.

CHINA UTILISED 68% OF ITS ACTIVE YARD CAPACITY IN 2015

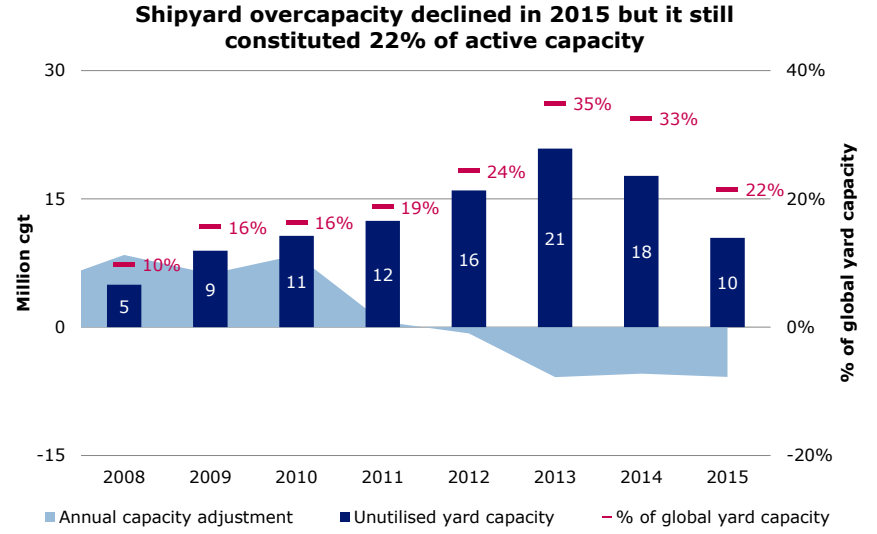
China struggled the most in 2015, utilising only 68% of its active yard capacity. Its first-tier yards, accounting for 80% of active domestic capacity, achieved utilisation of 74%, whereas the second-tier yards utilised only 50% (fig. 14). Since 2008, capacity at the first-tier yards in China has increased by 140% in cgt terms and by around 30 yards, whereas second-tier capacity has declined by 10% divided between around 80 yards (fig. 15).

Figure SB.12



Sources: Clarksons, Danish Ship Finance

Figure SB.13



Sources: Clarksons, Danish Ship Finance

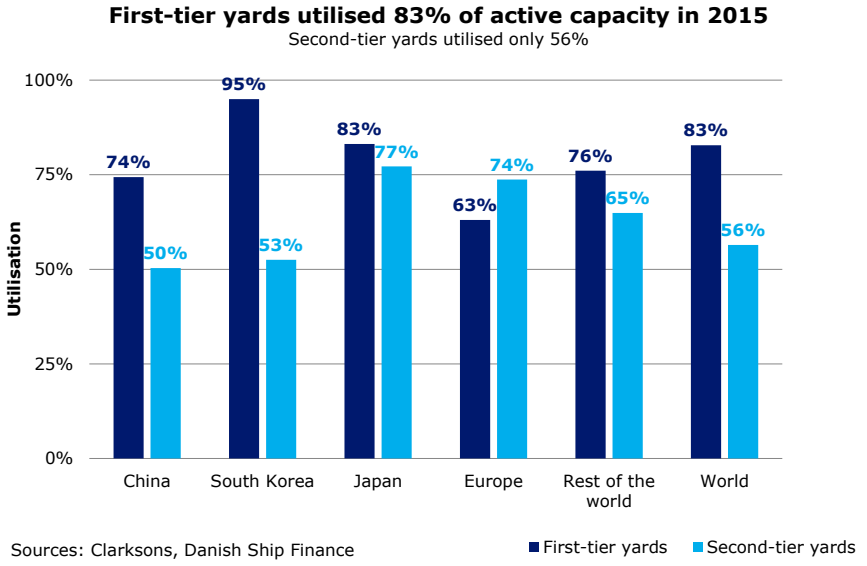
SOUTH KOREA UTILISED 94% OF ACTIVE YARD CAPACITY

Active capacity in South Korea is almost entirely at the first-tier yards (98%), and these yards had a utilisation rate of 95% in 2015. There are 26 active yards in the country: 13 first-tier and 13 second-tier yards. However, nine of the second-tier yards emptied their orderbooks over the course of 2015 and received no new order during the first quarter of 2016 and are therefore candidates for closure or consolidation in 2016, if they have not already closed down. In South Korea, first-tier yards have reduced their capacity by 6%, but the number of yards has gone up by a couple of yards since 2008 and second-tier yard capacity has been reduced by 80% and around five yards.

JAPAN UTILISED 83% OF ACTIVE YARD CAPACITY

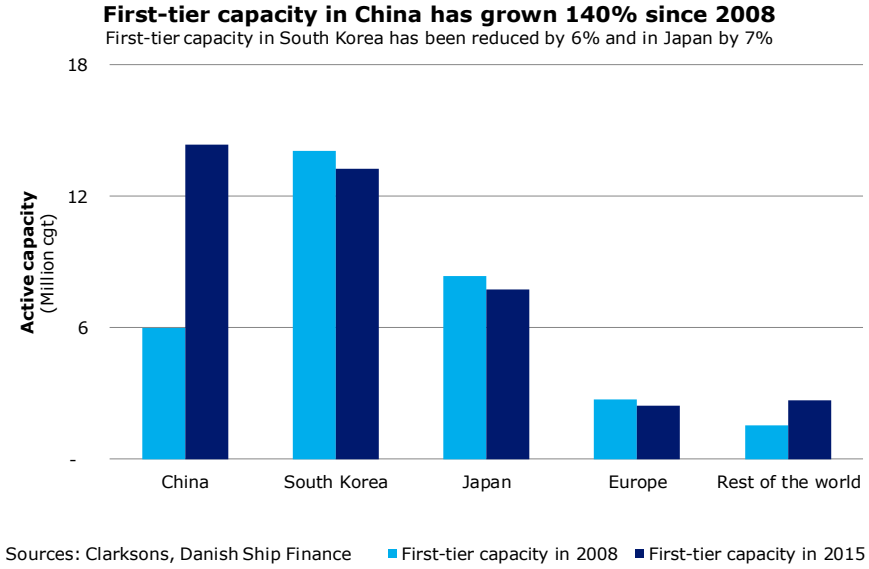
In Japan, first-tier capacity constitutes 95% of active domestic capacity, and in 2015 these yards utilised 83% of active capacity, while the country's second-tier yards utilised 77%. Japanese first-tier yards reduced their active capacity by 7% in the period from 2008 to 2015 and capacity at second-tier yards went down by almost 90%. The number of first-tier yards rose by ten yards, whereas the number of second-tier yards went down by 50 yards.

Figure SB.14



Sources: Clarksons, Danish Ship Finance

Figure SB.15



Sources: Clarksons, Danish Ship Finance

THE OUTLOOK FOR THE SHIPBUILDING INDUSTRY IS BLEAK. YARDS ARE GENERALLY STRUGGLING WITH HIGH DEBT LEVELS, FEW NEW ORDERS, LARGE-SCALE POSTPONEMENT OF ORDERS AND LOWER NEWBUILDING PRICES. THE CONSOLIDATION PROCESS IS PROVING BRUTAL AND WE EXPECT MORE THAN 200 YARDS WITH A COMBINED CAPACITY OF 2 MILLION CGT TO CLOSE DOWN WITHIN THE NEXT YEAR OR TWO.

The Shipbuilding industry has been struggling with overcapacity for a long time, and since 2011, active yard capacity has been gradually adjusted downwards. The capacity build-up in the period leading up to the financial crisis left the industry vulnerable when contracting activity began to slow down from 2009 onwards. In an attempt to attract orders and employ as much capacity as possible, shipyards lowered newbuilding prices and offered back-loaded payment terms that allowed shipowners to pay the majority of the cost upon delivery. This helped some yards keep order covers high, but given the capital intensiveness of the industry it also caused debt levels to rise to very high levels. By the end of 2012, the Shipbuilding industry was on the verge of collapse, because contracting levels had remained low for five years and order covers were declining rapidly. However, contrary to expectations, contracting boomed in 2013 and 2014 and the industry was able to breathe a sigh of relief – for a short while.

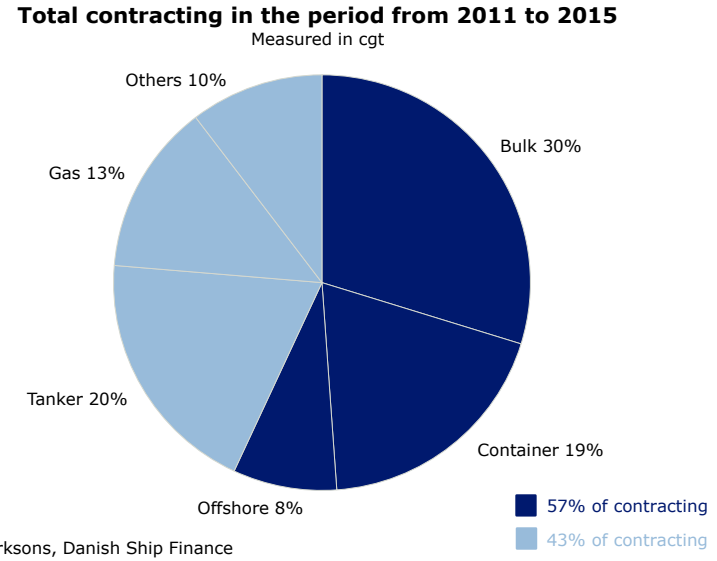
SLUGGISH MARKET CONDITIONS IN MANY SHIPPING SEGMENTS...

Today, the effects of this contracting boom are beginning to wear off. The severe problems in Bulk, Container and Offshore and worries that the upswing in the Tanker segments is only transitory have brought contracting of new vessels down to very low levels at the beginning of 2016. Moreover, ripple effects from the problems in these segments are being felt by the smaller ship types servicing the bigger ships in ports and at sea. All in all, this is putting a lid on contracting activity and resulting in huge problems for the Shipbuilding industry which, already struggling with overcapacity, is facing a declining orderbook and a growing number of cancelled and postponed orders.

...ARE LIMITING THE CONTRACTING POTENTIAL FOR NEW VESSELS

We believe that the orderbook could continue to decline. Over the last five years, Bulk, Container and Offshore have accounted for almost 60% of total contracting measured in cgt (fig. 16). Given the massive oversupply, weak demand and extremely low freight rates that all these segments are facing, we do not see them contributing to any significant contracting activity over the next few years – or at least we do not hold out any hope that they will. Moreover, the decline in secondhand prices in many segments is also limiting the amount of speculative orders being placed. If we turn out to be right, and contracting stays low, the yards that have already built debt up to high levels will come under even more financial pressure. According to the OECD, debt levels have been increasing since the financial crisis. Debt as a proportion of total assets for selected publicly traded shipyards in South Korea increased from 10% in 2008 to 30% in 2012, and in China it rose from around 20% to 34% over the same period. Since 2012, the situation has deteriorated further. The heavy debt burdens at many yards, especially in China and South Korea, could become even heavier if order intake declines further and more orders are cancelled and/or postponed. We expect these forces to spark a long-awaited, large-scale correction in active capacity and thereby accelerate the consolidation process.

Figure SB.16



Sources: Clarksons, Danish Ship Finance

MANY YARDS COULD BE LEFT WITHOUT ORDERS BY 2017

The orderbook is rapidly approaching the low levels seen at the start of 2013, but 2016 looks to be a reasonable year for Shipbuilding based solely on the amount of scheduled orders for the year. The issue is, though, that 45% of the current orderbook is scheduled to be delivered during the last three quarters of 2016, and it is essential that new orders are placed within the next three to six months for the yard industry to fill up its orderbooks for 2017 (fig. 17). As of April 2016, scheduled orders for 2017 are only capable of employing 69% of current active newbuilding capacity, and if we assume that the usual number of orders are either postponed or cancelled, global yard utilisation could fall below 50% in 2017. If the orderbook for 2017 is not filled, China will see the biggest impact, because 57% of the Chinese orderbook is scheduled to be delivered during the last three quarters of 2016. Orders for 2017 are currently only capable of employing around 52% of Chinese active yard capacity.

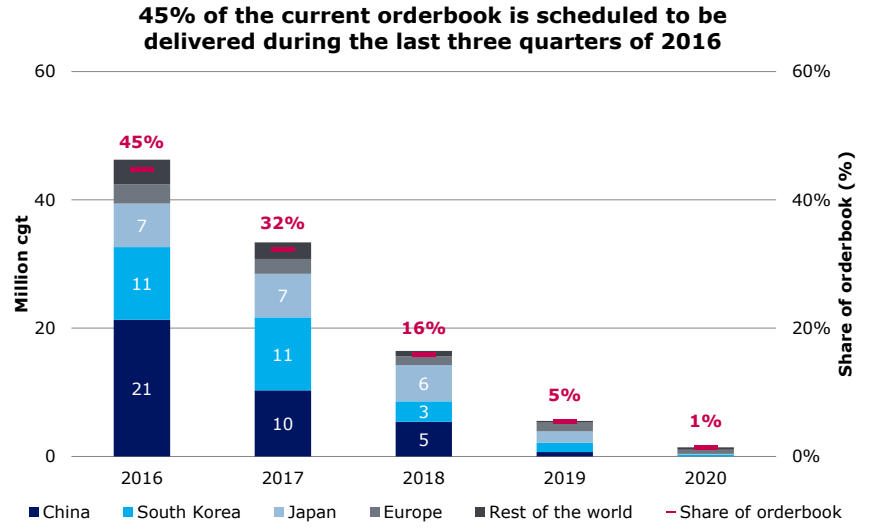
THE ORDERBOOK FOR 2017 COULD BE FILLED UP BY POSTPONEMENTS

Bulk, Container and Offshore orders currently constitute 51% of the total orderbook. 17% of the total orderbook is Bulk orders that are scheduled to be delivered during the last three quarters of 2016. Due to the current market conditions in these segments, more orders could continue to be postponed and the orderbook for 2017 could be "filled up" solely by postponed orders. In 2015, 95% of the orders that were postponed for later delivery were pushed into 2016. Hence, in a scenario where we assume that the same percentage of orders will be postponed from 2016 to 2017, the orderbook for 2017 could actually increase by 17 million cgt to just above 50 million cgt. Moreover, if we adjust for the new orders that will most likely be placed during 2016 for delivery in 2017, scheduled orders for delivery in 2017 could end up at a similar level as in 2015 and 2016, which would support yard utilisation.

POSTPONEMENTS DO NOT IMPROVE SHIPYARDS' LIQUIDITY

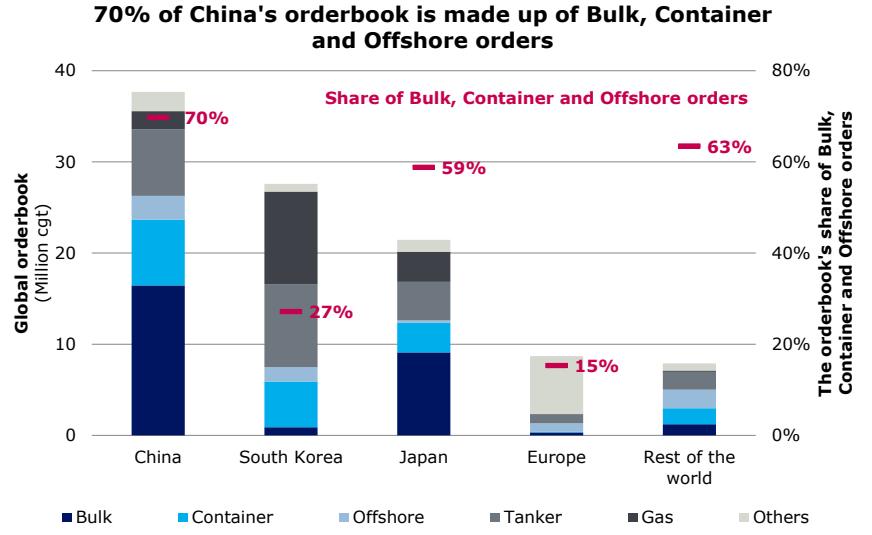
The problem is that if the orderbook is filled up with postponed orders, the shipyards do not receive any new capital or liquidity. It merely means that final payments are delayed. As long as the shipping markets are suffering a slump, there is a reasonable risk that orders will continue to be postponed, and consequently the already financially troubled yards will remain under pres-

Figure SB.17



Sources: Clarksons, Danish Ship Finance

Figure SB.18



Sources: Clarksons, Danish Ship Finance

sure. The orders placed in 2014 at high prices will be particularly prone to postponements because it might not be economical for shipowners to take delivery of these vessels in the current market.

70% OF CHINA'S ORDERBOOK IS AT RISK OF POSTPONEMENTS

China is not only dependent on new orders being placed, it is also very vulnerable to cancellations, postponements and shipowner defaults during 2016 and 2017, as 70% of the country's total orderbook is composed of orders to the troubled Bulk, Container and Offshore segments – the vast majority Bulk (fig. 18). Of the 200 active newbuilding yards in China, 53 only have Bulk, Container and/or Offshore vessels on order. Of these, 16 are first-tier yards and on paper not obvious candidates for closing down, but due to their exposure to Bulk, Container and Offshore, they could be vulnerable if the crisis in these segments continues.

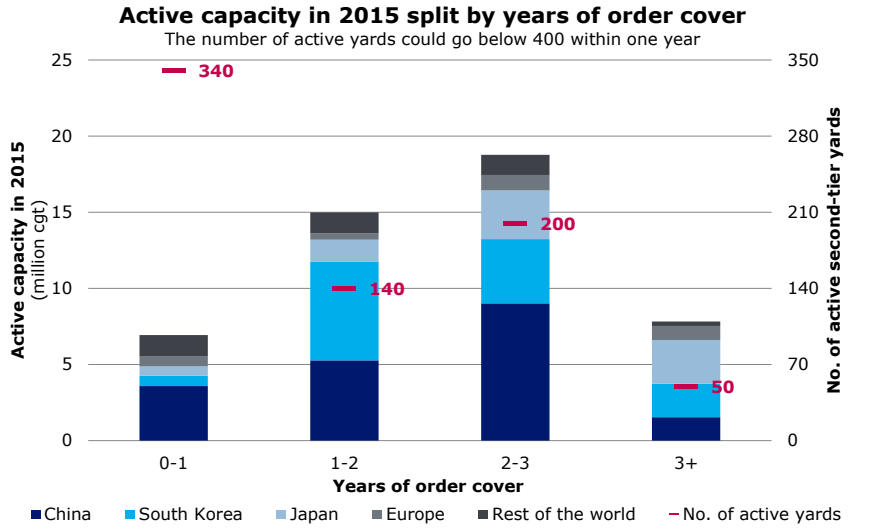
JAPAN AND SOUTH KOREA ARE BETTER POSITIONED

Japan is also exposed to cancellations and postponements, since 59% of its orderbook relates to Bulk, Container and Offshore. However, it seems that debt levels have not increased to the same extent in Japan as in China and South Korea, and the Japanese yard industry might therefore be in better shape to withstand an extended period of order disruptions. South Korea has its primary exposure in Tankers and Gas Carriers, and only 27% of its orderbook is exposed to the three segments currently struggling. However, South Korean debt levels are already high, as mentioned above, and the country has also exposure to Offshore through rigs and the like.

340 YARDS HAVE LESS THAN ONE YEAR OF ORDER COVER

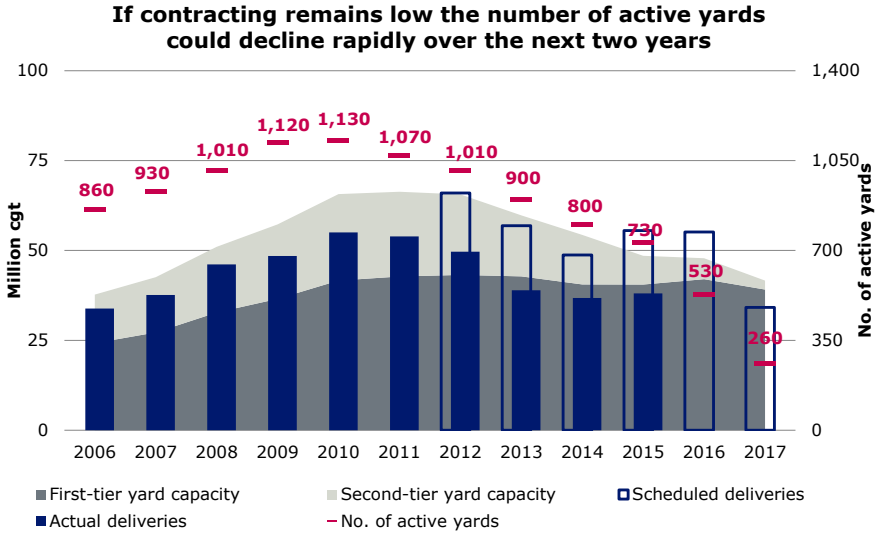
Considering the issues that we have addressed above, we expect 2016 to be another tough year for Shipbuilding, and that a lot of yards will run out of orders and be forced out of business during the year. Currently, there are around 340 yards that have less than one year of order cover (fig. 19). After having entered into the second quarter of 2016, three-quarters of these yards have already emptied their orderbooks and we expect them to close in 2016. Of the remaining 100 yards, 25 have orderbooks solely focused on Bulk, Container and/or Offshore.

Figure SB.19



Sources: Clarksons, Danish Ship Finance

Figure SB.20



Sources: Clarksons, Danish Ship Finance

THE NUMBER OF ACTIVE YARDS COULD DROP TO 530 IN 2016

By the end of 2016, we expect that the number of active yards could drop to around 530 – and that is only counting those that are currently running out of orders (fig. 20). We estimate that around ten first-tier yards will close down in 2016 and 190 second-tier yards. Some of the first-tier yards that are exposed to closing down are primarily occupied with repairs and therefore will probably not close down entirely but will put their newbuilding operations on hold. If yards also start to close as a result of financial problems, the amount of yard capacity closing down could go even lower.

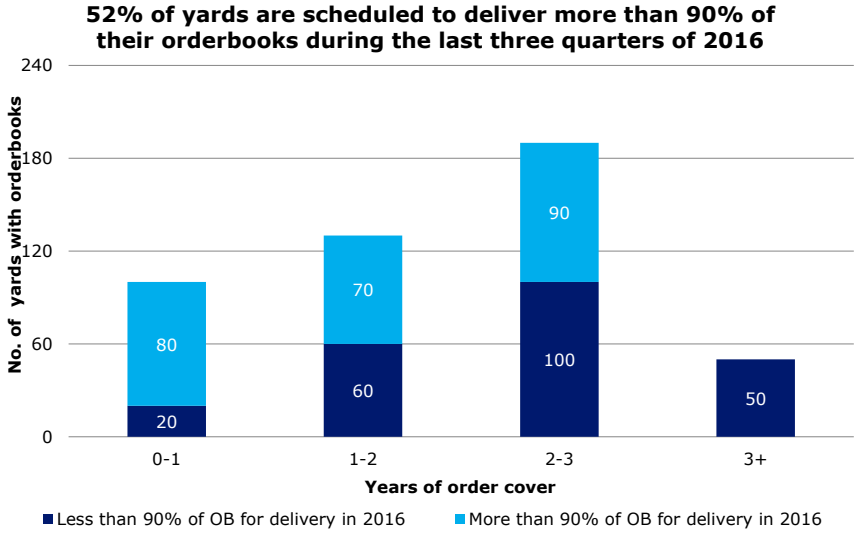
HIGH ORDER COVER IS NO GUARANTEE OF SURVIVAL...

It is not only the yards with low order cover that are at risk of closing down. Order cover can be an illusory concept because it does not provide any information on the distribution of the orderbook. For example, the order cover might indicate that a yard has sufficient orders to employ its capacity for a couple of years, masking the fact that the orderbook is heavily skewed towards orders that are scheduled to be delivered within one year. Of the yards that currently have orderbooks, 52% are scheduled to deliver more than 90% of their total orderbooks over the course of 2016 (fig. 21). Of those that have more than two years of order cover, 38% will have delivered more than 90% by the end of 2016.

...AND CAN DISGUISE POOR FINANCIAL PERFORMANCE

Moreover, due to the financial situation at many yards, it is no longer possible to look at order cover and the orderbook to determine whether a yard is running a sustainable operation or not. The failed Chinese shipyard Rongsheng is a case in point. It was considered by many to be too big to fail and was the biggest private shipbuilder in China around 2011. It had more than three years of order cover when it began to crumble, and in 2016 it is scheduled to deliver its last orders that all were contracted back in 2010 and 2011. Hence, some of the yards that have previously been deemed some of the top-performing yards with high order backlogs are not necessarily financially strong. Therefore, we might begin to see some yard closures that we would not have expected to see a couple of years ago.

Figure SB.21



Sources: Clarksons, Danish Ship Finance

A NEW INDUSTRY STANDARD

Liquidity is a rare thing in shipping these days. As long as shipping market sentiment continues to be weak and contracting remains low, shipowners will maintain the upper hand in their dealings with shipyards. Consequently, many yards could feel obliged to continue to offer the same accommodative payment terms that have been so costly for them over the last five years. If they do not, there is a chance that shipowners will turn to other yards for their orders. In the event of this, yards with limited access to refund guarantees, export credit guarantees and the like might find themselves challenged. That is why scale and state affiliation are often considered prerequisites for surviving in the current Shipbuilding market, as these attributes usually imply better financing options. Governments have begun to waver, however, and have become more inclined to let big state-owned shipyards fail - at least in China, where news of the state-owned Wuzhou Shipyard going bankrupt surfaced at the beginning of 2016.

PREMATURE SCRAPPING COULD LOWER REPAIR YARD UTILISATION

In an attempt to limit their exposure to the poor newbuilding market, some yards are starting to venture into repairs to try and employ a larger share of capacity - thereby cannibalising on the market for pure repair yards. In line with the rapid expansion of the fleet, demand for ship repairs has grown significantly. Since 2008, the world fleet has grown by 22%. However, due to the massive oversupply and very young age of the fleets in many segments, vessels have begun to be scrapped earlier. In 2011 the average scrapping age was 32 years, and as of April 2016 it has fallen to 25 years. It can be assumed that when vessels are scrapped earlier, it affects activity at repair yards because of fewer dockings and repairs. We believe that the average scrapping age could remain low, or fall even lower, over the next couple of years. Hence, even though some newbuilding yards will benefit from diversifying into repairs, this industry is possibly also facing lower future demand. It should be noted that not all newbuilding yards have the necessary staff or equipment to carry out repairs, and therefore such diversification might not be as straightforward as it seems.

AN INDUSTRY IN DECLINE

We see no easy solution for the Shipbuilding industry. The coming years will be extremely difficult and a lot of yards will have to close down. However, in some ways the demise of the Shipbuilding industry is a necessary evil in order for shipping to return to a more normalised state. As long as there is overcapacity in the Shipbuilding industry, there will be downward pressure on newbuilding prices and an incentive to buy new cheap vessels, increasing the oversupply in shipping. Consequently, the industry needs to adjust active yard capacity for lower future demand in order to balance the declining orderbook, increase newbuilding prices and avert the growing liquidity crisis.

CONTAINER

SHIPPING MARKET REVIEW – MAY 2016

DANISH
SHIP FINANCE

CONTAINER

TRADE PATTERNS ARE SHIFTING BUT SHIPOWNERS CONTINUE TO INVEST IN EVER LARGER VESSELS. THE OVERSUPPLY HAS REACHED VERY HIGH LEVELS AND FREIGHT RATES ARE UNDER MASSIVE PRESSURE. THIS DIFFICULT SITUATION IS EXPECTED TO LAST FOR ANOTHER COUPLE OF YEARS.

FREIGHT RATES

BOX RATES HAVE CONTINUED THEIR DOWNWARD TRAJECTORY AND BY THE END OF APRIL WERE FAR BELOW THE LOW LEVELS OF 2009.

The extremely tough competition on many trade lanes has led carriers to offer some of the lowest freight rates ever recorded. Weak demand and high fleet growth have pushed down fleet utilisation and intensified the deflationary pressure on freight rates.

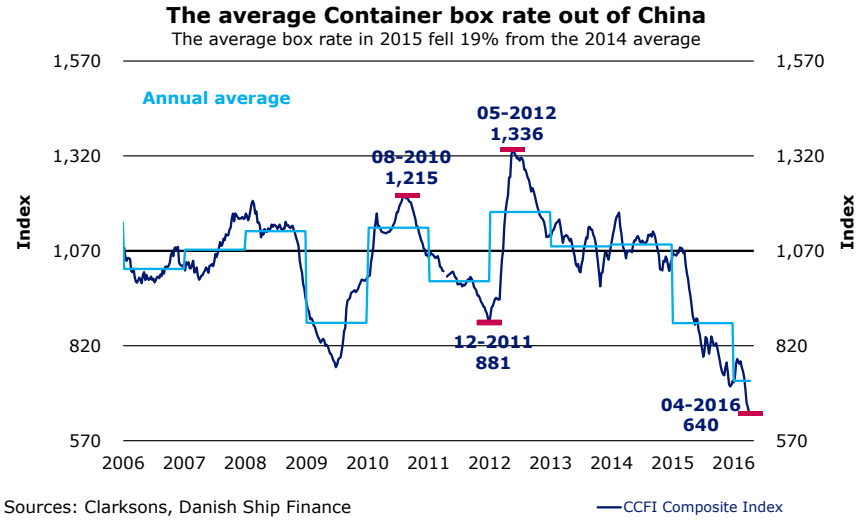
THE AVERAGE BOX RATE OUT OF CHINA WENT DOWN BY 19% IN 2015

Developments in box rates looked poor when we last assessed them back in November. Since then, they have dropped an additional 15%. From the beginning of 2015 until the end of March 2016, the average box rate out of China plummeted by 40% (fig. 1). Clarksons reported that on April 15, spot rates from Shanghai to Northern Europe were no more than USD 271 per teu. All trade lanes were affected, some more than others, and even those experiencing strong demand growth struggled with very low freight rates. In the period from start 2014 to April 2016 the bunker price declined by more than 70%, which temporarily cushioned some of the blow from the decline in freight rates.

TIMECHARTER RATES HAVE DESCENDED BELOW OPERATING COSTS

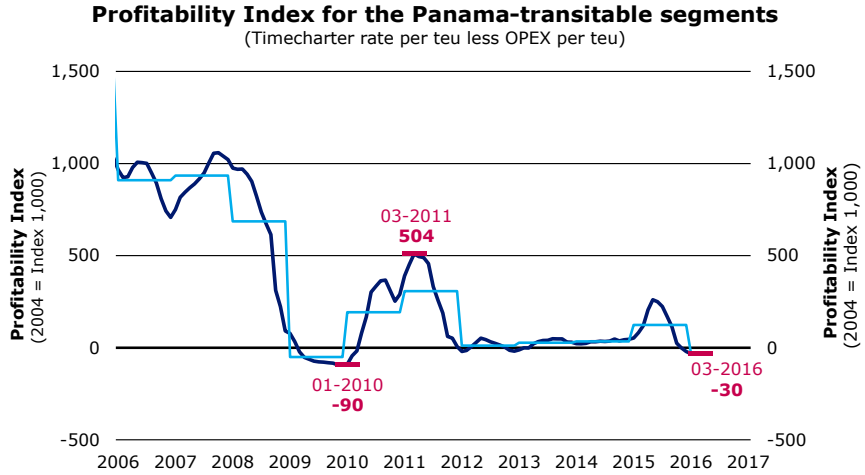
The upswing in the timecharter market, which peaked in May last year, has quickly reversed, and in the first quarter of 2016, timecharter rates descended to some of the lowest levels of the last five years – only marginally above those seen during the 2009 downturn (fig. 2). The largest timecharter segments, Panamax and Sub-Panamax, have been hit particularly badly, falling by more than 50% from May 2015. The 1-year Panamax timecharter rate has fallen so low that even a Feedermax vessel is earning a higher rate. In March 2016, a Panamax vessel could be fixed for USD 5,400 per day, while a Feedermax was fetching USD 5,600 per day. The best-performing vessel type was a Handy vessel, which was able to attain around USD 7,000 per day.

Figure C.1



Sources: Clarksons, Danish Ship Finance

Figure C.2

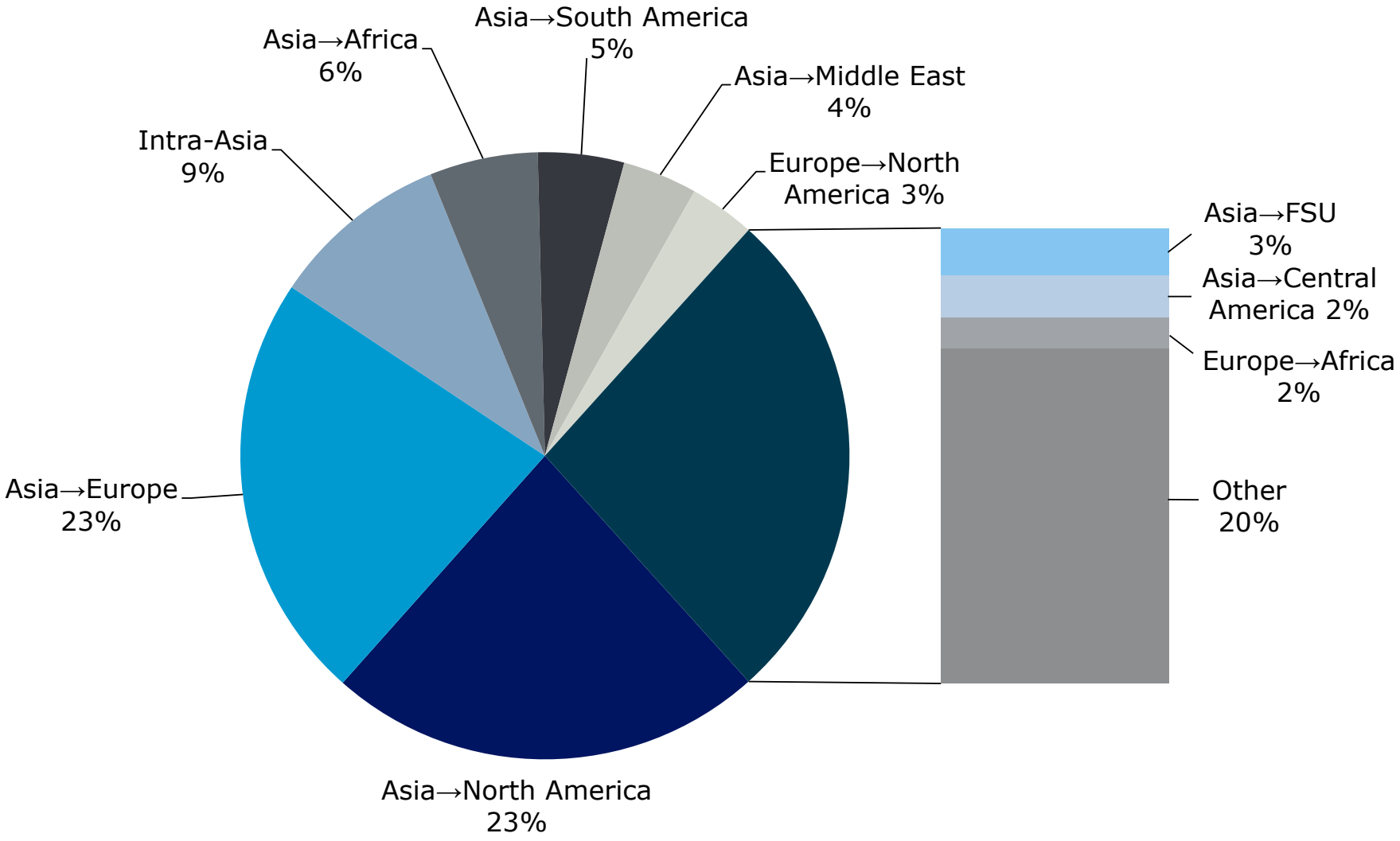


Sources: Clarksons, Drewry, Danish Ship Finance

Figure C.3

Top-ten head-haul Container trades 2015

Measured in teu miles



Sources: IHS Global Insight, Danish Ship Finance

WEAK DEMAND DID NOT DETER THE INFLOW OF NEW VESSELS IN 2015. DELIVERIES BROKE NEW RECORDS WHILE SCRAPPING STAYED LOW, PUSHING FLEET GROWTH UP TO HIGH LEVELS. CONSEQUENTLY, THE OVERSUPPLY CONTINUED TO WORSEN.

The traditional market mechanisms for balancing supply and demand do not seem to be functioning in the Container industry. Or at least, the industry seems to have overruled them temporarily in the battle to lower marginal costs and retain market shares.

THE CONTAINER FLEET GREW BY 8% LAST YEAR

The Container fleet expanded by 8% in 2015, the highest fleet growth since 2010. The Post-Panamax fleet continued its rapid expansion, while the Panama-transitable segments continued to contract. In 2015, the Panamax fleet shrank by another 2% and is now 11% below its 2012 peak. The only Panama-transitable segment still growing is the Handy fleet, which increased by 1%. During the first quarter of 2016, the total fleet grew by another 1% (fig. 4).

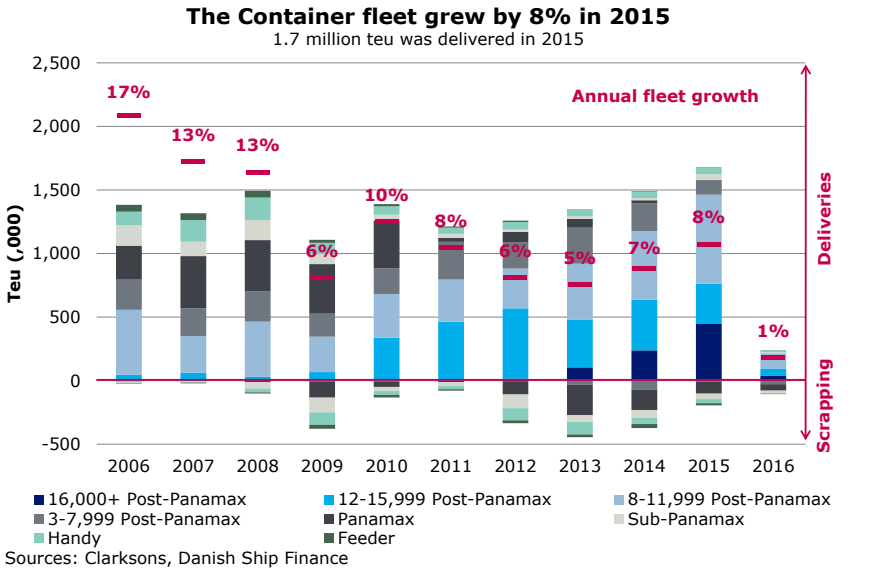
A RECORD OF 1.7 MILLION TEU WAS DELIVERED IN 2015

Contrary to expectations, the low freight rates did not incentivise shipowners to cut back on their delivery schedules. A record of 1.7 million teu was delivered in 2015, divided between 212 vessels (fig. 4). That corresponds to an average size per delivered vessel of 7,900 teu, which is an 8% increase from 2014. The Post-Panamax segment accounted for 94% of all deliveries and 27% were for vessels of more than 16,000 teu. Of the orders scheduled for delivery in 2015, 86% were delivered. Only 3% of orders were cancelled, while 11% were postponed for later delivery (fig. 5). In the first quarter of 2016, 240,000 teu was delivered.

SCRAPPING ACTIVITY STAYED LOW IN 2015

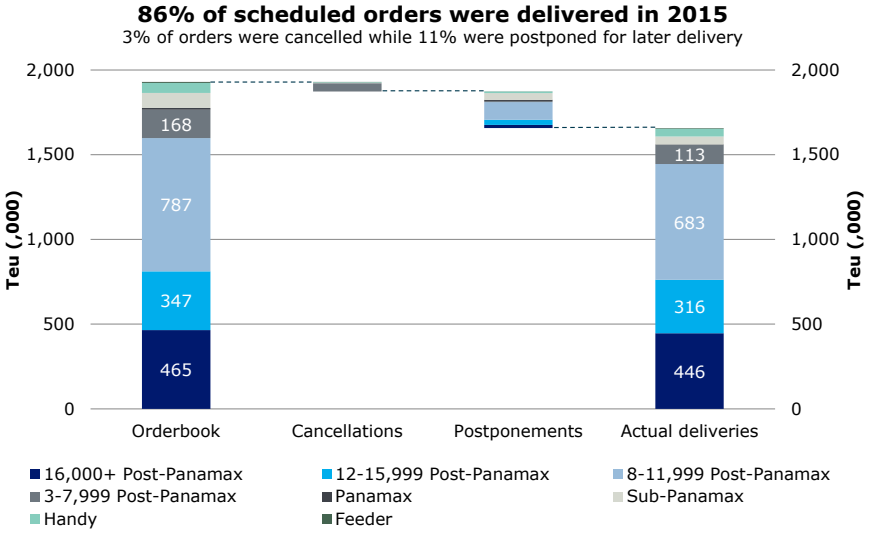
As mentioned in previous reports, scrapping of Container vessels is taking place primarily in the Panama-transitable segments, because these are the only segments with older fleets. As the short-lived upswing in the timecharter market evaporated during the third quarter, scrapping started to pick up pace. Total scrapping for 2015 remained low, however, and only 194,000 teu was demolished during the year (fig. 4) – almost half the amount scrapped in 2014.

Figure C.4



Sources: Clarksons, Danish Ship Finance

Figure C.5



Sources: Clarksons, Danish Ship Finance

SCRAPPING AGES ARE DECLINING

The average scrapping age has remained stable during the last three years at just below 23 years, but in the first quarter of 2016 it fell to 20 years. For Panamax and small Post-Panamax vessels, the average scrapping ages fell to 17 and 16 years, respectively. We are convinced that scrapping ages will continue to be low throughout 2016, possibly falling as low as 15 years. The largest vessel scrapped was a 15-year-old Post-Panamax vessel of 6,500 teu, indicating that the bigger vessel sizes are still being sheltered from premature scrapping.

THE NUMBER OF IDLED VESSELS HIT A HIGH

To mitigate some of the effect of the high fleet growth, the number of idled vessels increased significantly during the last quarter of 2015 and in the first quarter of 2016. By the end of March 2016, the idle fleet had grown to 8% of the total fleet, according to Clarksons, equal to around 1.6 million teu and up from 2% in August 2015.

SEABORNE CONTAINER DEMAND GREW BY 1% IN 2015

Demand continued to disappoint. In autumn 2014, IHS Global Insight forecast seaborne Container demand to grow by 5.3% in 2015. By April 2015, this estimate was downgraded to 4.4% and by October it was down to 2.2%. By February 2016, the estimate for 2015 had come down to just 1%. Distance-adjusted demand grew 0.8 percentage points slower than nominal demand, indicating that commodities were sourced from locations closer to end-markets in 2015.

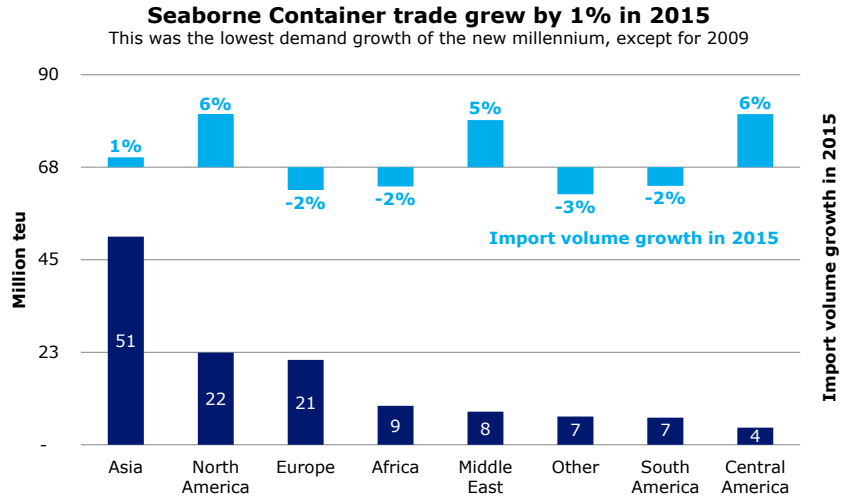
EUROPE AND COMMODITY EXPORTERS DRAGGED DOWN DEMAND

The overall growth rate was dragged down primarily by lower European, African and South American demand (fig. 6). The African and South American economies are big commodity exporters and both suffered from low commodity prices, which reduced their purchasing power. On top of that, the unrest in many of the North African countries lowered demand for Container imports. Brazil entered into a deep recession in 2015 and was accountable for the biggest drop in imports, down 11% on the 2014 level.

EUROPE IS DEALING WITH A LOT OF ISSUES THAT DRAG DOWN DEMAND

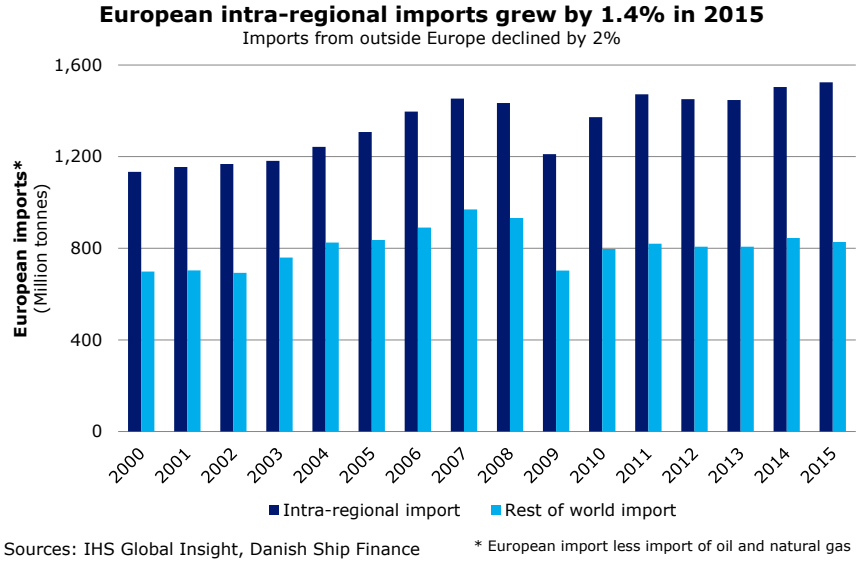
The main reason for the decline in European Container demand remains a little unclear. According to the IMF, the Eurozone, in particular, is suffering from chronic weak demand due to what it

Figure C.6



Sources: IHS Global Insight, Danish Ship Finance

Figure C.7



Sources: IHS Global Insight, Danish Ship Finance

* European import less import of oil and natural gas

calls "unaddressed crisis legacies" such as corporate debt overhang, non-performing loans and disappointing productivity growth. In addition, the region has been struggling with the concerns relating to the refugee crisis, migration, terror threats, the possibility of Brexit and the Greek debt crisis.

EUROPEAN CONSUMER SPENDING GREW IN 2015

Combined, the above-mentioned factors clearly had a negative impact on European demand; however, we are not convinced that they bear all of the responsibility. Most statistics suggest that consumer spending in Europe grew in 2015 and that consumer confidence reached one of the highest levels since the financial crisis. This indicates that demand for consumer goods remained relatively firm in Europe in 2015.

MORE INTRA-REGIONAL TRADE IN EUROPE?

Another explanation for the decline in demand could be that Europe has begun to import more regionally produced goods. In previous reports, we have presented an outlook for Container demand whereby we expect a larger share of trade to be sourced regionally instead of from the Far East. Currently, there is no hard evidence confirming this theory, but data for total European imports, irrespective of means of transport, suggests that the growth rate for intra-European trade has been higher than for trade with the rest of the world. In 2015, intra-regional imports grew by 1.4%, while imports from the rest of the world remained flat. Subtracting the trade volumes related to oil and gas, intra-regional imports still grew by 1.4%, whereas imports from the rest of the world declined by 2% (fig. 7). Moreover, the intra-regional imports' share of total European imports increased from 60% in 2007 to 65% in 2015.

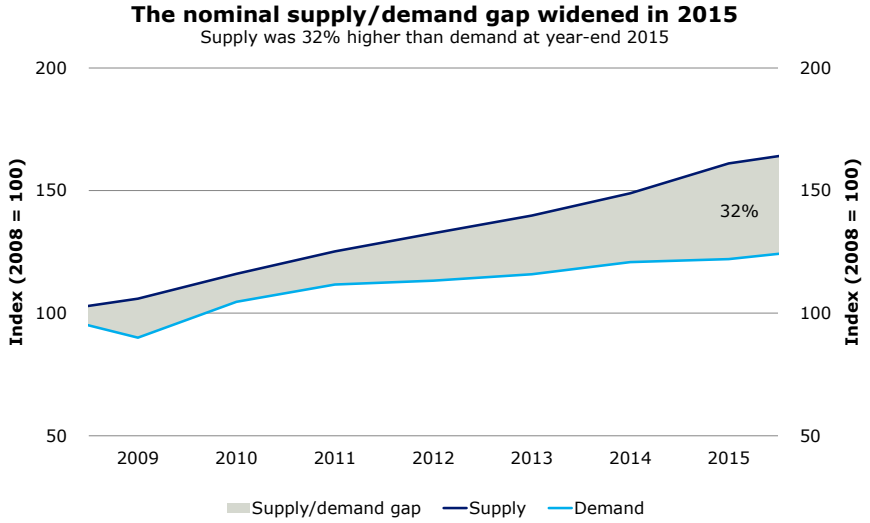
THE UNITED STATES DROVE CONTAINER DEMAND GROWTH IN 2015

Had it not been for the strong US dollar, total seaborne containerised trade could have contracted in 2015. US imports grew by 6%, primarily due to higher imports of Chinese products, which increased by 5%, but German and Vietnamese products also showed strong demand growth of 11% each.

LOWER DEMAND GROWTH IN CHINA AND EMERGING MARKETS

Intra-Asian trade continued to grow in 2015, albeit at only 1.7%, a much slower rate than previously. China, Japan and Indonesia saw Asian imports decline significantly, whereas Vietnam, the

Figure C.8



Sources: Clarksons, IHS Global Insight, Danish Ship Finance

Philippines and South Korea saw strong growth in Asian imports. China's overall demand declined by 2%, especially due to lower imports from its Asian neighbours but also as a result of fewer imports from North America.

THE OVERSUPPLY EXPANDED RAPIDLY IN 2015

Not surprisingly, the oversupply grew in 2015, and at a faster pace than previously. By year-end 2015, supply was 32% greater than demand (fig. 8). This was 2 percentage points higher than we forecast in our November report. The low bunker price covered some of the losses incurred during 2015 by reducing operating costs, but the benefits from this have now been reaped and passed on to the shippers. Consequently, low bunker prices are not expected to shelter operators from further losses in 2016. Tonnage providers especially are having a tough time. As long as the oversupply worsens and liner alliances become more capable of supporting their own services, the tonnage providers are stuck with very low freight rates on very short charters or unemployed ships.

THE URGE FOR BIGGER VESSELS LED CONTRACTING TO RISE TO VERY HIGH LEVELS IN 2015. NEWBUILDING PRICES WERE KEPT RELATIVELY STABLE, WHEREAS SECONDHAND PRICES CAME UNDER PRESSURE, ESPECIALLY TOWARDS THE END OF THE YEAR. THE FIRST QUARTER OF 2016 BROUGHT ABOUT FURTHER DECLINES.

2.1 MILLION TEU WAS CONTRACTED IN 2015

Contracting of new Container vessels took off in 2015, with high order activity in the third quarter especially. In the fourth quarter, contracting activity began to slow down as market fundamentals worsened and the window closed for ordering vessels exempt from the new NOX Tier III regulations. Orders for vessels of more than 16,000 teu reached new levels equivalent to the total capacity ordered in the whole of 2014 (fig. 9). This pushed the average size of a contracted vessel up by 33%, from 6,700 teu in 2014 to 8,900 teu in 2015. Fortunately, contracting came to a standstill in the first quarter of 2016, with no new orders placed.

THE AVERAGE NEWBUILDING PRICE DECLINED BY 2% IN 2015

The high contracting activity in 2015 did not stop newbuilding prices from falling. The struggles in the Shipbuilding market spilled over to the Container segment, putting downward pressure on prices, and the average newbuilding price declined by 2% from the levels seen at the beginning of 2015 (fig. 10). The smaller segments experienced the biggest declines.

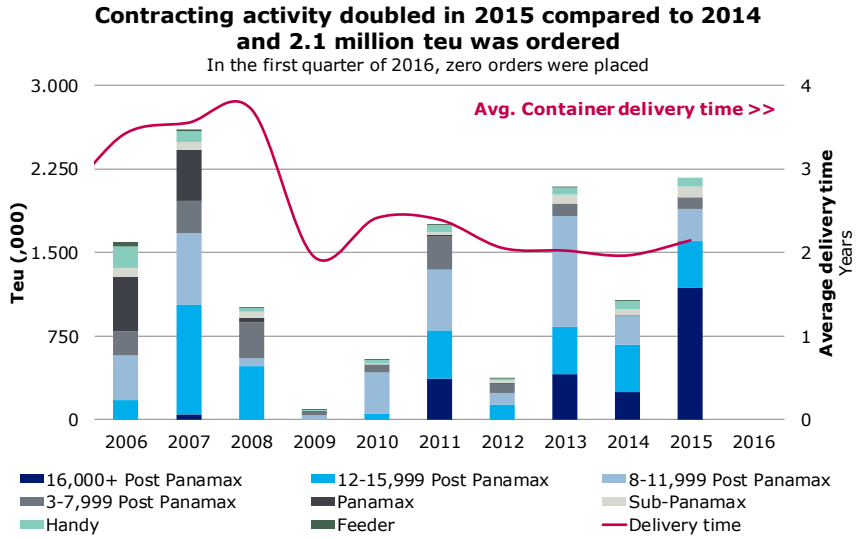
SECONDHAND PRICES HAVE DROPPED 29% FROM THE AUGUST PEAK

Secondhand prices for the Panama-transitable segments lost momentum during the third quarter of 2015 and embarked on a significant decline during the fourth quarter, which continued into the first quarter of 2016 (fig. 10). In August, the price of a five-year-old Panamax vessel was around USD 20 million and by April it had dropped to USD 12 million. The price of a five-year-old 6,600 teu Post-Panamax vessel declined from USD 40 million to USD 26 million during the same period, while the price of an 8,800 teu vessel dropped from USD 60 million to USD 48 million.

LOWER SECONDHAND PRICES INCREASED SALES ACTIVITY

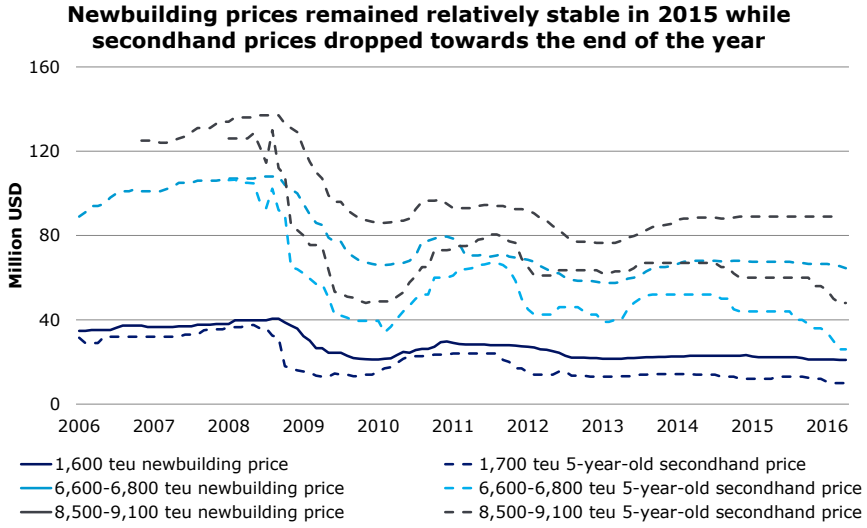
The lower secondhand prices boosted activity in the sales and purchase market, where 0.64 million teu or 222 vessels changed hands during the year. The majority was vessels below 3,000 teu. That is the highest annual level of sales activity since 2000.

Figure C.9



Sources: Clarksons, Danish Ship Finance

Figure C.10



Sources: Clarksons, Danish Ship Finance

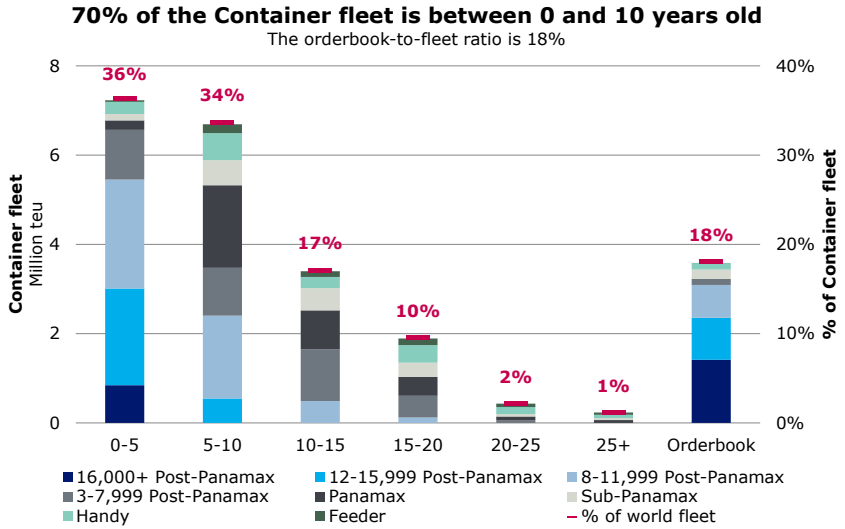
THE CONTAINER INDUSTRY HAS INVESTED HEAVILY IN VERY LARGE VESSELS. HOWEVER, WE EXPECT FUTURE CONTAINER DEMAND TO FAVOUR SMALLER VESSELS AND MORE FLEXIBLE SERVICE PROVIDERS, SINCE MANUFACTURING AND CONSUMER PREFERENCES ARE CHANGING.

Investing in a large Container vessel is essentially a long-term bet on the geographical location of manufacturing. For at least the past decade, ever larger Container vessels have been a sensible investment, since more and more goods have been produced a long way away from the main consumers in the west. Optimism about future demand has been great and surplus capacity has been building up during the last three to five years. Liner companies have formed large alliances, pooling their fleets in order to optimise operations. It seems that they have shifted their focus towards providing standardised low-cost infrastructural solutions rather than tailoring their services to the preferences of customers. The overcapacity in the industry has reached a level where alliances are to a large extent able to optimise capacity with minimal help from chartered vessels, and the role of tonnage providers seems to have been reduced.

TO INVEST OR NOT TO INVEST IN LARGE VESSELS

A small group of liner companies have refrained from investing in the largest ships. These owners will have to make a decision within the next year of whether to follow the rest and order very large vessels or to work towards making their existing fleets of smaller Post-Panamax vessels profitable. However, the investment decision is complex, since the tectonic plates underneath global trade are shifting. The fourth industrial revolution and the emergence of a new generation of consumers are transforming the manufacturing sector, consumer preferences and trade patterns. Manufacturing is expected to be gradually re-shored closer to consumers and trading routes to be redefined. We predict that the Container market of the future will become more oriented towards regional trades and less focused on long-haul overseas trades. However, these transformations are still at a very early stage. At present, they could easily be lost in the trade statistics or simply misinterpreted as noise or irrelevant fluctuations. Still, we believe the slowdown in seaborne Container demand in 2015 marks the beginning of a structural rather than a cyclical change.

Figure C.11



Sources: Clarksons, Danish Ship Finance

LARGE VESSELS CONSTITUTE A LARGE SHARE OF THE ORDERBOOK

Judging by the orderbook, which is heavily loaded with super-sized vessels to be delivered in the next two to three years, few investors seem to expect these transformations to gain traction in the next five to ten years. But the outlook for large vessels is bleak. There are simply too many vessels on order to an already oversupplied market. In April 2015, the orderbook contained 3.6 million teu, implying an orderbook-to-fleet ratio of 18% (fig. 11). Of this, 40% was for vessels of more than 16,000 teu. Hence, more than 70 very large vessels are expected to enter the fleet in the next couple of years. The aim with these ships is to reduce the marginal cost per moved teu by putting them on long-haul trades with few port calls. Alliances are reshuffling capacity to optimise operations at the lowest possible cost, but this is disturbing the market balance at all levels. Adding fuel to the fire by ordering more large vessels hardly seems a good investment strategy, either for the individual owner or the market. However, that does not necessarily mean it will not happen.

DELIVERIES IN 2016 EXPECTED TO DROP TO 1.1 MILLION TEU

There is of course a chance that part of the orderbook will not be delivered and that the inflow of large vessels will not be as massive as expected. However, so far, the industry has not made any significant use of order cancellations and postponements, and we do not think that it will necessarily do so going forward either. When new Container vessels are ordered, they are most often intended to go into a specific service loop. If an order is cancelled or postponed, a spot becomes empty in that loop, which could be costly for the liner operator. Consequently, we do not see order cancellations contributing significantly to reducing the size of the orderbook. Scheduled orders for 2016 amount to 1.1 million teu, in addition to the 0.24 million teu already delivered. 86% of scheduled orders were delivered in 2015 and we expect a similar trend in 2016. Assuming that 80% of scheduled orders are delivered, total deliveries for 2016 will reach 1.1 million teu – two-thirds of the amount delivered in 2015 (fig. 12).

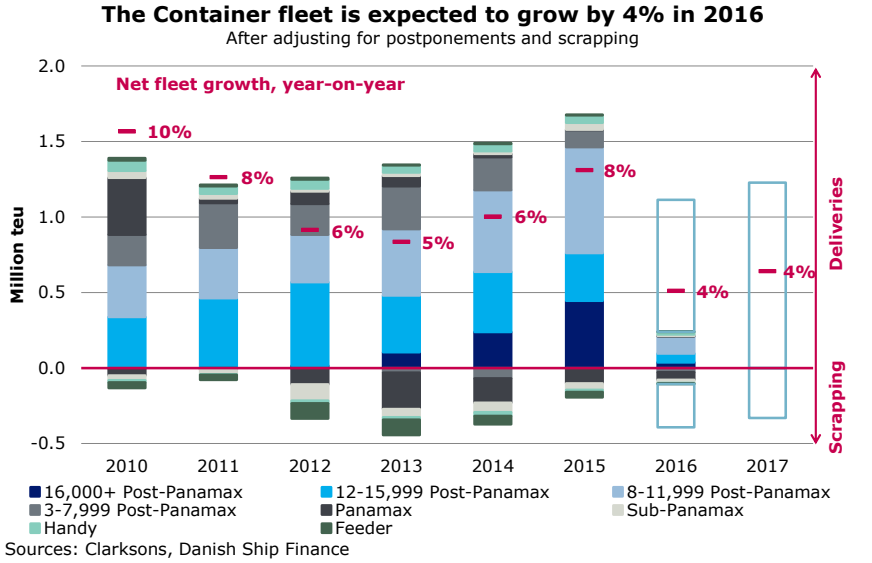
DELIVERIES OF VERY LARGE VESSELS SET TO PICK UP IN 2017 AND 2018

Despite the expected decline in deliveries in 2016, the number of very large Container vessels scheduled for delivery in 2017 and 2018 is significantly higher: 23 vessels of more than 16,000 teu are scheduled to enter the fleet in 2017 and another 30 in 2018. However, many shipyards are struggling and some of them might not be able to deliver on their commitments, which could bring down scheduled orders somewhat.

ALL VESSELS ABOVE 20 YEARS SCRAPPED BEFORE 2018?

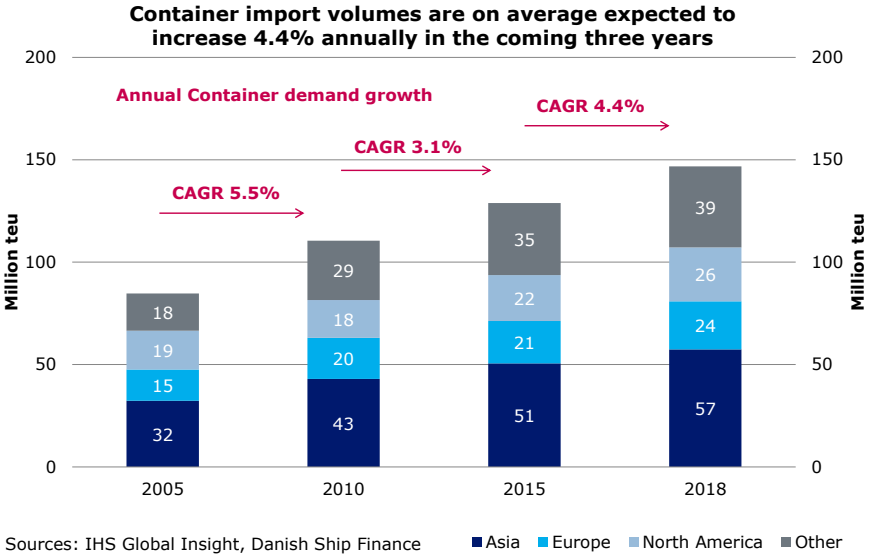
To cushion the blow from deliveries and ensure that the oversupply does not increase any further, scrapping must pick up over the next couple of years. As a minimum, we believe it would need to reach the levels seen in the period from 2012 to 2014. For this to be the case, at least 0.3 million teu would have to be demolished in both 2016 and 2017, which would bring fleet growth down to around 4% in both years (fig. 12). That would in theory mean all vessels currently older than 20 years being scrapped by year-end 2017, equal to 3% of the current fleet. If this were to happen, the Feeder fleet would decline by 20% from current levels, the Handy segment by 13%, the Sub-Panamax by 6%, the Panamax fleet by 4% and the 3-7,999 teu Post-Panamax fleet by 1%, while the larger Post-Panamax segments would continue to grow. Hence,

Figure C.12



Sources: Clarksons, Danish Ship Finance

Figure C.13



Sources: IHS Global Insight, Danish Ship Finance

this scenario is not likely to play out.

FEW OBVIOUS SCRAPPING CANDIDATES REMAIN

Scrapping all vessels older than 20 years will not relieve the industry's woes, because the small segments are not the problem. The problem is to be found in the bigger segments, but these vessels are still too young to be scrapped, at least from an investor's point of view. The Panamax segment could end up being the scapegoat once again. Even though the fleet has already contracted significantly, it is still the third-largest segment in terms of number of vessels. There are currently around 830 Panamax vessels, of which half are between five and ten years old. Considering the very low freight rates currently being offered to Panamax owners and that the Panama Canal is due to open the new set of locks soon, these vessels could become even more vulnerable to scrapping. In the end, though, no matter which vessel size becomes the preferred scrapping candidate, the average scrapping age will come down substantially, approaching 18 years and even 15 years in some segments. The knock-on effects for secondhand values will be significant, as the cash flow period of the vessels will be reduced by around one-third of their technical operating life (i.e. 25 years).

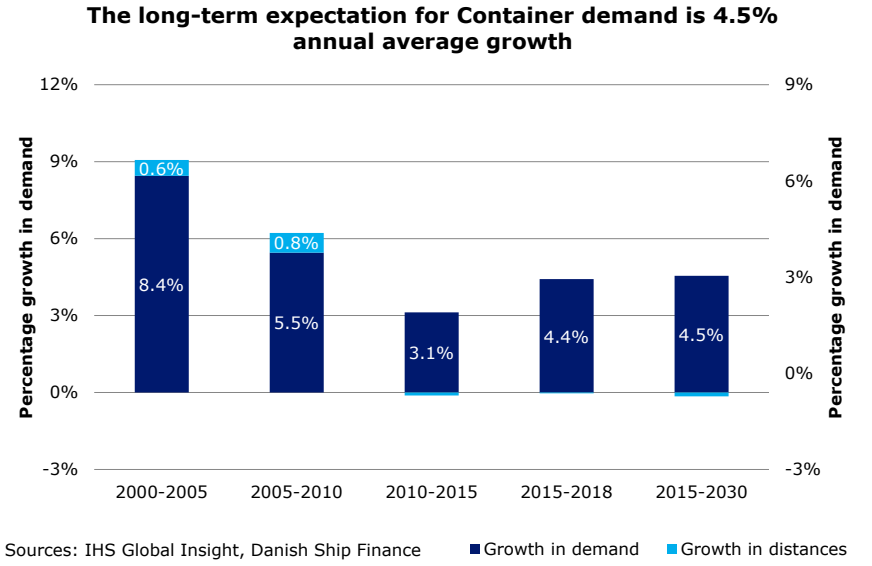
THE CONTAINER INDUSTRY IS AT THE MERCY OF DEMAND

The situation looks difficult from a supply perspective. More vessels can be idled, more sailings can be cancelled and alliances can be formed to better manage capacity. Other methods can also be adopted to optimise fleet utilisation. As long as bunker prices stay low, going around the Cape of Good Hope on the East-West trades, or taking similar detours on the backhaul legs instead of via the canals, can help increase fleet utilisation. But whichever way we look at it, these measures will only provide temporary relief. Ultimately, they will not lower supply – the industry seems to be at the mercy of demand.

THE DEMAND OUTLOOK REMAINS UNCERTAIN

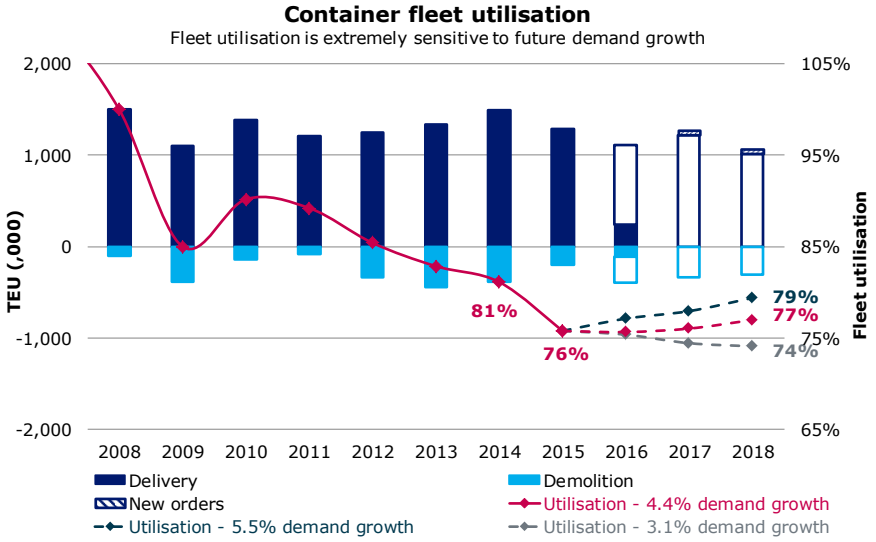
Based solely on past patterns and the premise that Container demand will continue to be strongly correlated with GDP growth, the future demand scenario looks promising. IHS Global Insight forecasts annual average growth of 4.5% over the next 15 years and distances to stay largely the same (fig. 14). According to its data,

Figure C.14



Sources: IHS Global Insight, Danish Ship Finance

Figure C.15



Sources: Clarksons, IHS Global Insight and Danish Ship Finance

Container demand growth from the last five years has been the exception to the rule, and demand is expected to pick up the pace going forward. However, we do not consider the first ten years of the millennium to be representative of the development in this segment. As mentioned in previous reports, China's inception to the WTO sparked an extraordinary trade hike and the developments in the following years cannot be taken as being the norm, especially not if the trend of offshoring production to Asia is reversing.

DEMAND GROWTH EXPECTED TO RESEMBLE THAT OF THE LAST FIVE YEARS

If demand were to grow by an annual average rate of 4.4% over the next three years, as IHS Global Insight forecasts, we would see a marginal improvement in fleet utilisation over the period assuming that scrapping activity stayed high and new contracting was minimal. Should demand instead grow in line with the rate seen over the last five years (3.1% annually), the balance would instead deteriorate slightly from the current low levels (fig. 15). These scenarios do not account for potentially shorter distances which would affect utilisation negatively. Hence, it would take a substantial increase in demand to alleviate the current oversupply.

NEW TECHNOLOGIES LOWER THE NEED FOR PHYSICAL TRADE

We expect demand to grow by around 3.1% annually but with significantly shorter distances. The trends that we see forming today do not favour high trade growth in the medium to long term, in our view. The important aspect of the fourth industrial revolution in relation to Container demand is that it is making labour costs more and more irrelevant, because manual labour is being replaced by highly advanced robotics in many industries. This is allowing companies to move production facilities closer to consumers and shorten supply chains. But new technologies are not only shortening supply chains, they are also lowering Container volumes. For example, 3D printers are allowing production to take place on location. The printers might not suitable for large-scale production, at least not in their current form, but they could disrupt spare part and component trades. Blueprints can be sent virtually to anywhere in the world where a 3D printer can print the necessary parts. Furthermore, as technologies evolve, manufactured goods in general get smaller. Just think of how many televisions can fit into a container today compared with ten years ago.

In some cases, product types even become obsolete, because products are increasingly software-based rather than hardware-based. All these technologies are reducing the need for physical trade as well as shortening time to market for products.

MILLENNIALS ARE SHAPING FUTURE CONSUMPTION PATTERNS

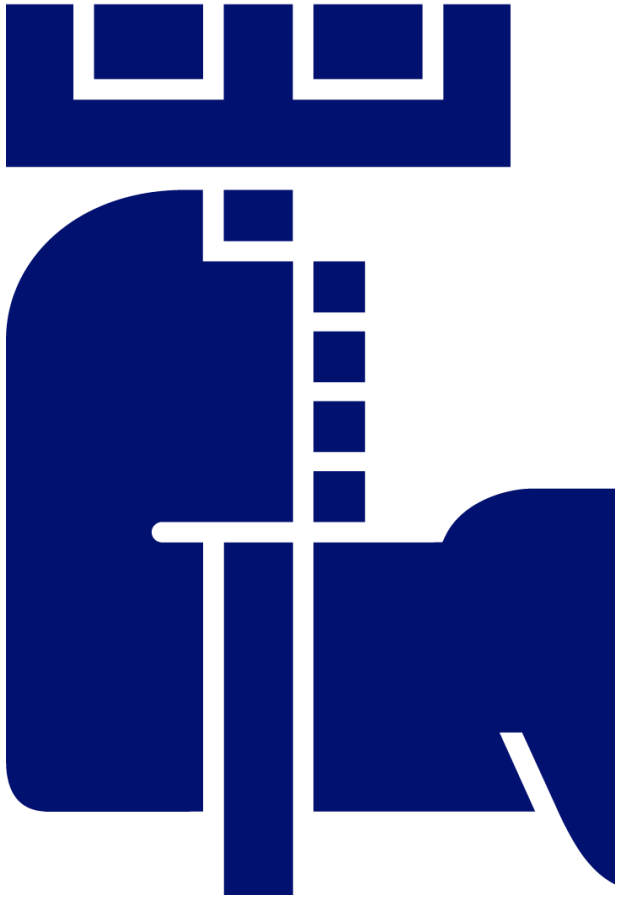
Consumption patterns are also changing as technologies evolve and introduce new ways of doing old things. The younger generations especially are quick to incorporate new technologies into their everyday lives. We expect these forces to spark a significant shift in consumption patterns in the short to medium term. The generation that has driven the majority of consumption over the last 15 years is becoming older and less numerous, and going forward a younger generation is expected to shape consumption: the millennials. Millennials are the largest generation in history and are entering their prime spending years. This generation covers the group of people born between 1980 and 2000. They have grown up in a connected world and are extremely technologically savvy. According to a Goldman Sachs study, millennials are expected to increase their spending by 15% over the next five years, whereas baby boomers will decrease their spending by 10%. And following in the footsteps of millennials is generation Z, a generation that is expected to be even more digital by nature. This is bound to change consumer behaviour going forward and thereby also have an impact on physical trade patterns.

FUTURE DEMAND EXPECTED TO CATER TO SMALLER VESSEL SIZES

The world is currently undergoing a transformation and it has the potential to redefine the Container industry. From our perspective, future vessel demand may not favour the very large vessels but more likely the smaller sizes. The large vessels are inflexible in a short-sea environment of regionalised manufacturing and might become difficult to utilise to a sufficient extent.

DRY BULK

SHIPPING MARKET REVIEW – MAY 2016



DANISH SHIP FINANCE

DRY BULK

THE DRY BULK MARKET HAS HIT A NEW LOW, AND WITH DEMAND EXPECTED TO REMAIN WEAK, A MARKET RECOVERY SEEMS A LONG WAY OFF. THE ONLY LIKELY WAY OUT OF THE SLUMP IN THE YEARS AHEAD WILL BE IF SCRAPPING, ORDER CANCELLATIONS AND A HALT TO NEW ORDERING OCCUR SIMULTANEOUSLY.

FREIGHT RATES

FREIGHT RATES BOTTOMED OUT IN FEBRUARY 2016 AND HAVE BEEN HOVERING AROUND OPEX FOR A LONG PERIOD OF TIME.

We have been sceptical about the prospects of Dry Bulk for the last decade, but it was not until 2015 that our concerns were fully realised. The fact that the industry has relied so heavily on China as the primary source of demand has built an unsustainable market structure.

THE FREIGHT MARKET COLLAPSED IN THE FOURTH QUARTER OF 2015

The Dry Bulk market ended the year with a bust and the fourth quarter of 2015 turned out to be even worse than the first. After having peaked at 1,066 in August, the Baltic Dry Index (BDI) plunged and by the middle of December, it had dropped below the all-time low from February 2015 of 509 (fig. 1). But it did not stop there and by February 2016, a new all-time low of 290 was recorded. The long-term average for the BDI since 2000 has been 2,590, underlining the severity of the current crisis. At the end of April, freight rates began to recover a little and the BDI ended just above 700.

ALL SEGMENTS HIT ROCK BOTTOM IN FEBRUARY 2016

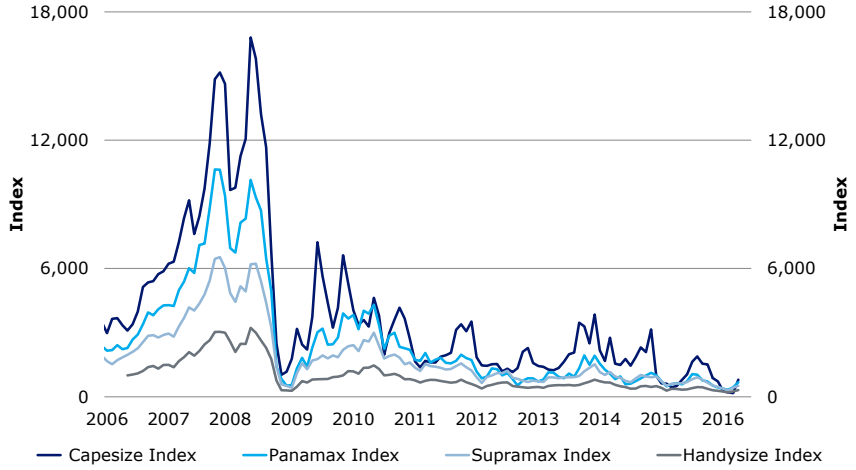
The Capesize segment took the biggest plunge, falling by 91% in the period from August 2015 to February 2016 (fig. 1). The other segments also declined by around 60% each over the period, and average Dry Bulk earnings dropped to USD 4,153 per day in March, down from USD 9,437 per day in August. Towards the end of March and into April, freight rates began to improve somewhat.

TIMECHARTER RATES DROPPED BELOW OPERATING COSTS

Timecharter rates also hit new historical lows in February 2016. In March, the 1-year timecharter rate for a Capesize vessel was USD 6,563 per day, according to Clarksons. Panamax rates were USD 5,113 per day, Supramax USD 5,375 per day and Handysize USD 4,625 per day – all below the vessels' daily operating costs (fig. 2).

Figure DB.1

The Baltic Dry Index reached new record lows in the first quarter of 2016

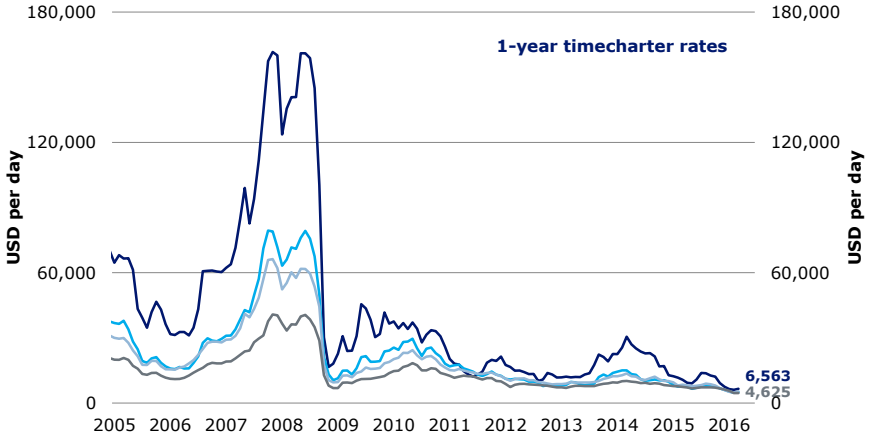


Sources: Clarksons, Danish Ship Finance

Figure DB.2

Timecharter rates came down 39% on average in 2015

In the first quarter of 2016, rates declined even further

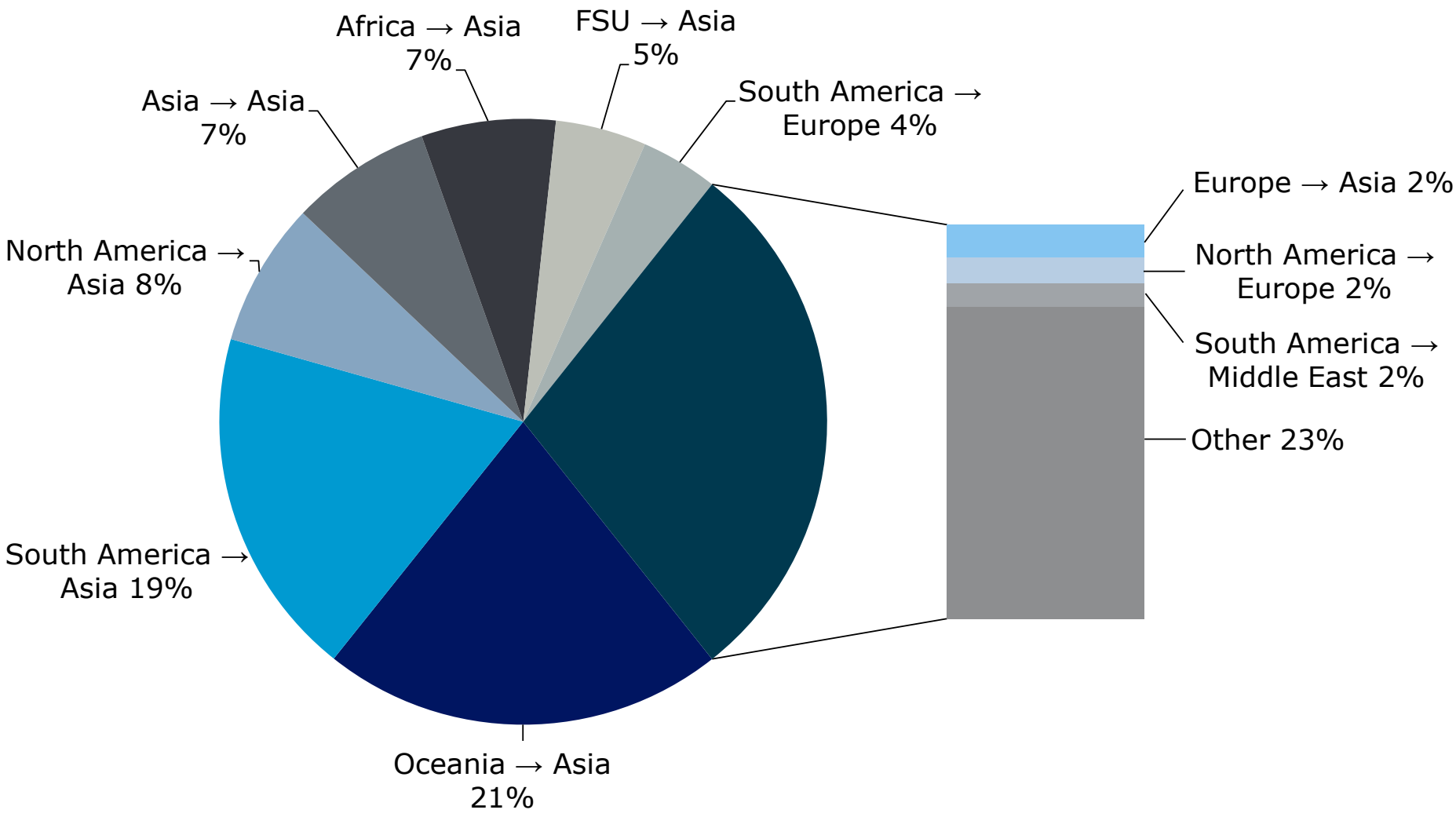


Sources: Clarksons, Danish Ship Finance

Figure DB.3

Major Dry Bulk trades in 2015

Measured in tonne-miles



Source: IHS Global Insight, Danish Ship Finance

IN 2015 SUPPLY GROWTH WAS HELD DOWN AT THE LOWEST LEVEL SO FAR THIS MILLENNIUM, BUT SEABORNE DEMAND STAGNATED, EXACERBATING THE OVERSUPPLY IN THE INDUSTRY.

2015 was very challenging for Dry Bulk, and for the most of the year, freight rates were at unsustainable levels. Some attempts were made to restore the long-lost market balance by limiting supply growth, but seaborne Dry Bulk demand stagnated, and a year that started out on a bad note ended up being even worse for the industry.

49 MILLION DWT WAS DELIVERED IN 2015

One of the measures used in the attempt to improve market fundamentals was curbing deliveries. At the start of 2015, close to 90 million dwt was scheduled to be delivered, but total deliveries for the year ended up at around 49 million dwt, divided between around 660 vessels (fig. 4). That corresponded to a delivery ratio of only 56%. However, even though the market managed to keep the delivery ratio low, there was still a lot of new capacity added to the fleet – one million dwt more than in 2014. This was especially due to a surge in Handymax deliveries. In the first quarter of 2016, 17 million dwt was delivered, equal to around half of scheduled orders for the period.

SHIPOWNERS CANCELLED AND POSTPONED A LARGE SHARE OF ORDERS

The delivery ratio was held down by extensive cancellations and postponements. The low freight rate environment has taken its toll on most Dry Bulk owners. Many are burning liquidity to keep operations going and have been doing so for quite some time. These market conditions have made it unattractive to take delivery of new vessels, and many shipowners have tried to scale back or delay their newbuilding commitments. In 2015, this led to around 11 million dwt that was scheduled to be delivered being cancelled and another 28 million dwt postponed for later delivery (fig. 5).

15% OF THE DRY BULK ORDERBOOK WAS CANCELLED DURING 2015

Compared with 2014, the amount of orders cancelled actually dropped by one-third in 2015, whereas the amount of orders postponed increased by three-quarters. However, what really

Figure DB.4

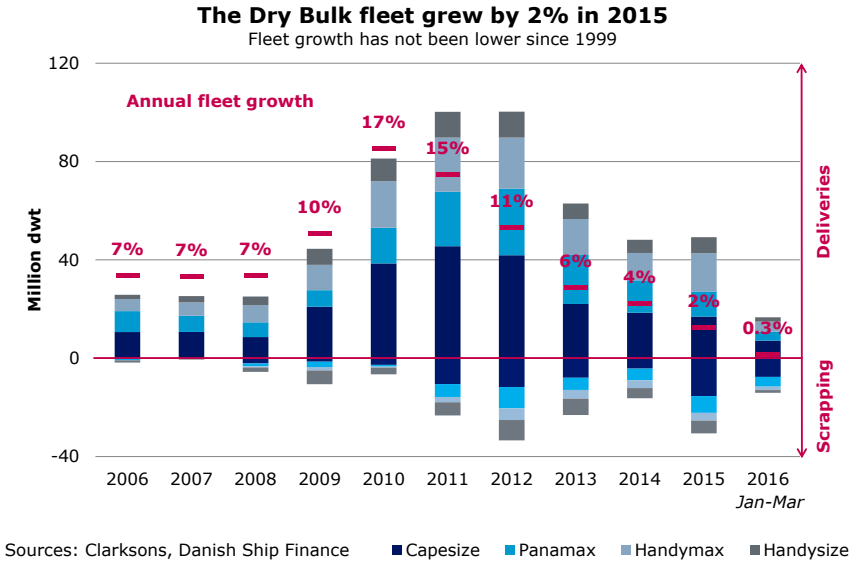
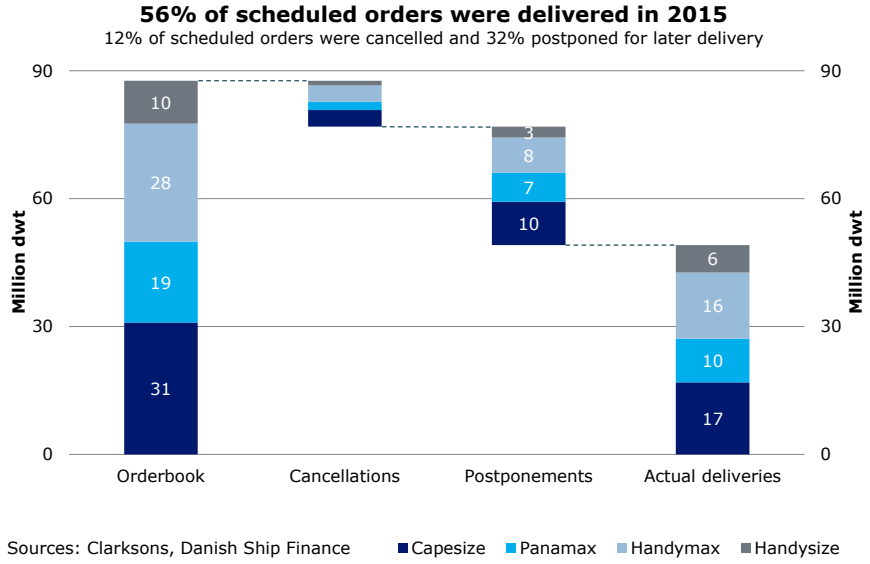


Figure DB.5



made 2015 stand out from 2014 was the amount of orders cancelled that were scheduled to be delivered in 2016 and beyond. Besides the cancellation of 11 million dwt, scheduled for 2015 delivery, another 15 million dwt was cancelled. These orders should have been delivered between 2016 and 2018. In 2014, this number was only 1.2 million dwt. Consequently, 15% of the total orderbook as of the beginning of 2015 was cancelled during 2015, compared with 10% in 2014.

CAPESIZE DEMOLITION REACHED A HISTORICALLY HIGH LEVEL

In addition to cancelling and postponing orders, shipowners attempted to limit fleet growth by sending a lot of vessels to the scrapyards. 30 million dwt was demolished in 2015 and another 14 million in the first quarter of 2016. Capesize vessels accounted for half of the amount scrapped. Due to the young age profile of the Dry Bulk fleet, the substantial scrapping activity led to a sizeable decline in the average scrapping age, from 27 years in 2014 to 25 in 2015. The average scrapping age for Capesize vessels came down to 21 years and for Panamaxes it dropped from 24 in 2014 to 22 in 2015. For Handymax vessels, the average scrapping age dipped below 27 years in 2015. During the first quarter of 2016, scrapping ages declined even further (fig. 6).

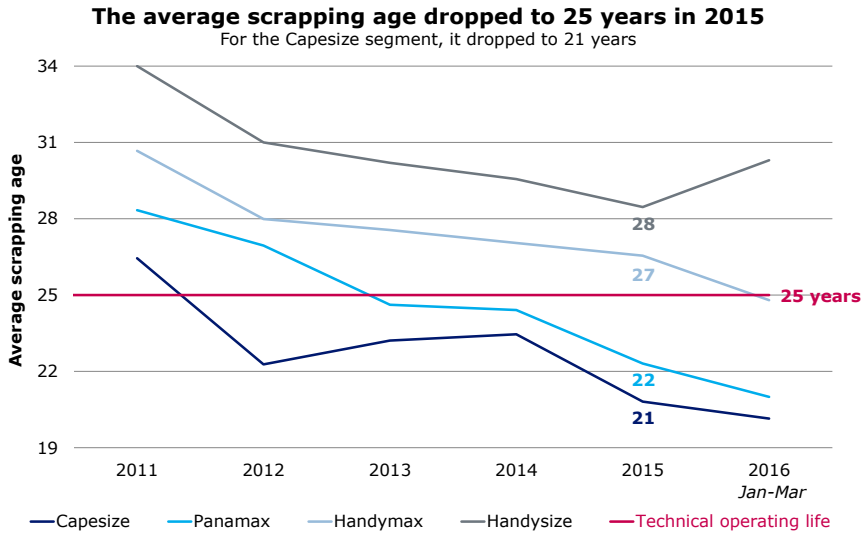
THE FLEET GREW BY 2.4%

The efforts of the industry ensured that the Dry Bulk fleet grew by only 2.4% in 2015 - the lowest growth rate seen so far this millennium. However, total fleet growth was primarily held down by the Capesize segment, which only grew by 0.4%. Measured by number of vessels, the Capesize fleet declined, with 88 vessels delivered and 93 demolished. The Panamax segment grew by 1% and the Handysize fleet by 2%. Total fleet growth was primarily attributable to the Handymax fleet which grew by just over 8% in 2015.

LAY-UP OF VESSELS HAS INCREASED BUT IS STILL TOO INSIGNIFICANT

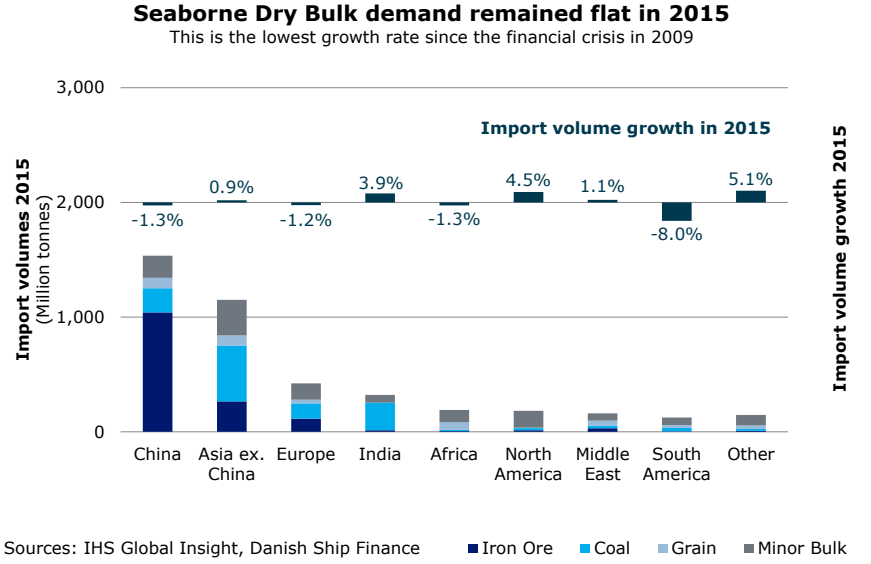
Owners also began to consider the option of laying up vessels in 2015, a tool that has not been used that much in Dry Bulk since the crisis in the 1980s. The economics of laying up a Dry Bulk vessel made the decision to do so difficult, as the cost of a cold lay-up more or less have equalled the losses incurred by operating a vessel. Moreover, by laying up a vessel the shipowner

Figure DB.6



Sources: Clarksons, Danish Ship Finance

Figure DB.7



Sources: IHS Global Insight, Danish Ship Finance

eliminates the possibility of any upside. Consequently, we did not see any meaningful effects from lay-ups last year. In March, Clarksons recorded around 4 million dwt or just over 80 vessels being laid up cold. This only constituted around 1% of the fleet, measured by number of vessels. Almost 60% of those were Handysize vessels. There was also some 5 million dwt lying idle, but in the event of even the smallest upswing, these vessels can quickly re-enter the active fleet.

DRY BULK DEMAND REMAINED FLAT IN 2015

All the market's efforts to limit supply were not enough. The effect of the lower fleet growth was superseded by seaborne Dry Bulk demand which stagnated in 2015 and ended the year at a 0% growth rate - one percentage point lower than had we expected in our November report (fig. 7). The same was true for distance-adjusted demand.

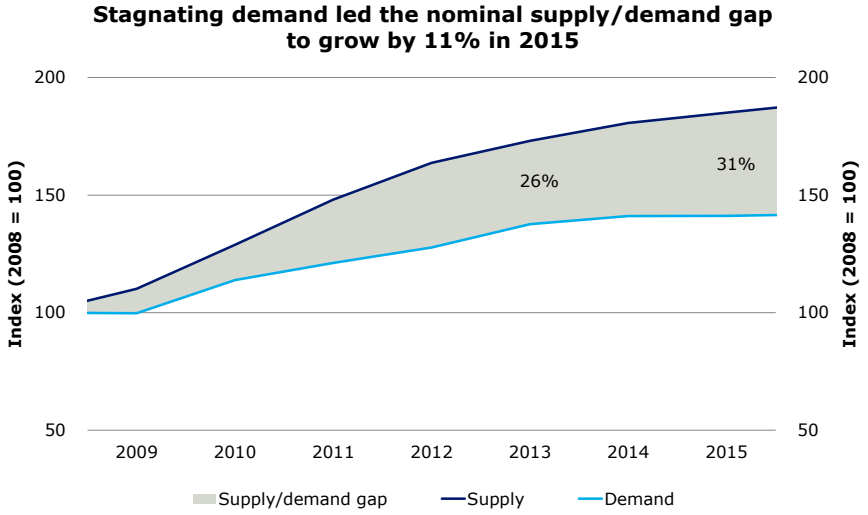
COAL DRAGGED DOWN DRY BULK DEMAND

Coal demand was the main culprit behind the drop in overall Dry Bulk demand. In our opinion, coal demand has embarked on a structural decline and we believe that demand peaked back in 2013. In 2015, seaborne coal demand fell by another 3%, led by a decline in Asian and European demand. China was accountable for the majority of the decline and its seaborne coal imports fell by 18%. Steam and coking coal imports were affected by lower steel and manufacturing output as well as the oversupply in the domestic coal industry, which pushed down domestic coal prices. India was the bright spot in the coal trade, as expected, increasing its demand by 5%. However, this was a significantly lower growth rate than in the last couple of years and the added import volumes were only able to cover one-quarter of the decline in Chinese demand.

IRON ORE STILL THE BIGGEST DRIVER OF SEABORNE DEMAND

Growth in seaborne iron ore demand slowed significantly in 2015 and grew by only 3%. China accounted for almost 70% of iron ore imports and Australia supported just over half of all seaborne demand. The lower growth rate was partly a result of lower steel production and partly due to depletion of stocks. Global steel production fell by 2% in 2015 and continued at a slower pace in the first quarter of 2016. Distances shortened on iron ore trades in 2015, primarily because a larger share of

Figure DB.8



Sources: Clarksons, IHS Global Insight, Danish Ship Finance

Chinese imports were sourced from Australia. This did not aid the Capesize market in its struggle against oversupply.

A MARKET BALANCE REMAINED OUT OF SIGHT

The fact that supply continued to expand at a time when demand stagnated only worsened the market balance (fig. 8). The low bunker price only exacerbated the situation as it incentivised owners to speed up. All segments were hit by the slowdown and the market has not been in such a dire situation since the 1980s.

THE DRY BULK INDUSTRY FINALLY STOPPED ORDERING NEW VESSELS IN 2015. STILL, THE MASSIVE OVERSUPPLY CAUSED SECONDHAND VALUES TO DROP TO LOWER AND LOWER LEVELS.

As mentioned, the Dry Bulk industry's main focus was on limiting supply growth in 2015, which affected contracting activity significantly. 18 million cgt was contracted in the Dry Bulk segment during the year, which was the lowest level since 2001 (fig. 10). 92% of orders were placed during the first three quarters, but during the fourth quarter, market conditions worsened to the extent that contracting activity more or less ground to a halt. The first quarter of 2016 was even slower, and except for the massive Chinese Valemax order of 20 new vessels at the end of March, only 260,000 dwt was contracted divided between four vessels.

THE AVERAGE NEWBUILDING PRICE WENT DOWN BY 11% IN 2015

Newbuilding prices are declining steadily and are approaching the low levels seen at the start of the new millennium. Waning demand for new vessels, declining steel prices and a Shipbuilding industry suffering from overcapacity are all putting downward pressure on newbuilding prices. By April 2016, the price of a new Capesize vessel had come down to around USD 45 million, while a Panamax was priced at USD 25 million, a Handymax at USD 24 million and a Handysize at USD 20 million.

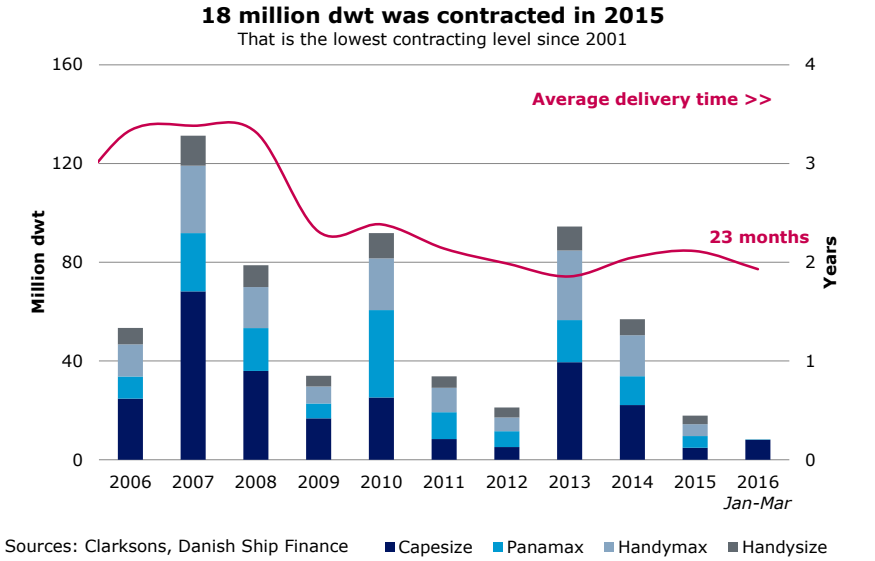
SECONDHAND PRICES DROPPED 39% IN 2015

Secondhand prices went into freefall in 2015, dropping 39% in the period from January 2015 to April 2016 (fig. 11). In our report published in May 2015, we presented an outlook of secondhand prices falling by at least 20% from the March 2015 level over the following 12-18 months – but in fact the situation proved even worse than we expected.

VALUES STABILISED TOWARDS THE END OF THE FIRST QUARTER

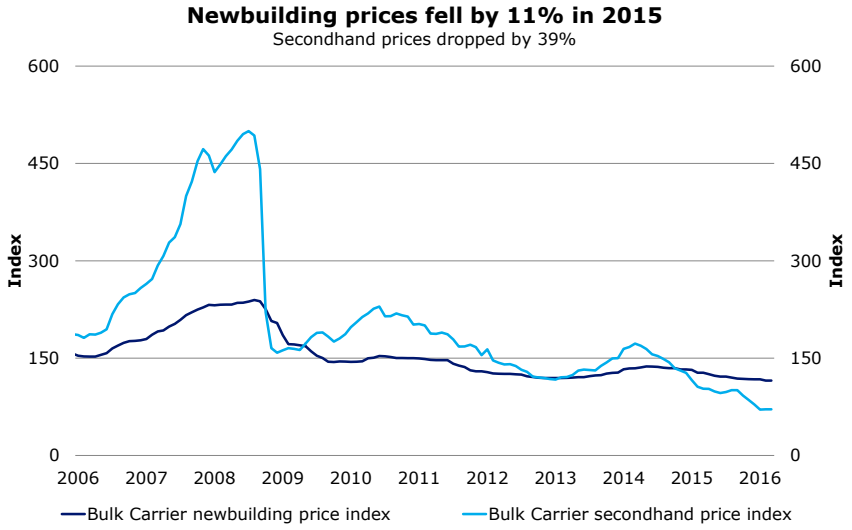
Towards the end of the first quarter of 2016, prices began to stabilise somewhat and by March, a five-year-old Capesize vessel could be bought for USD 23.75 million, while a five-year-old

Figure DB.10



Sources: Clarksons, Danish Ship Finance

Figure DB.11



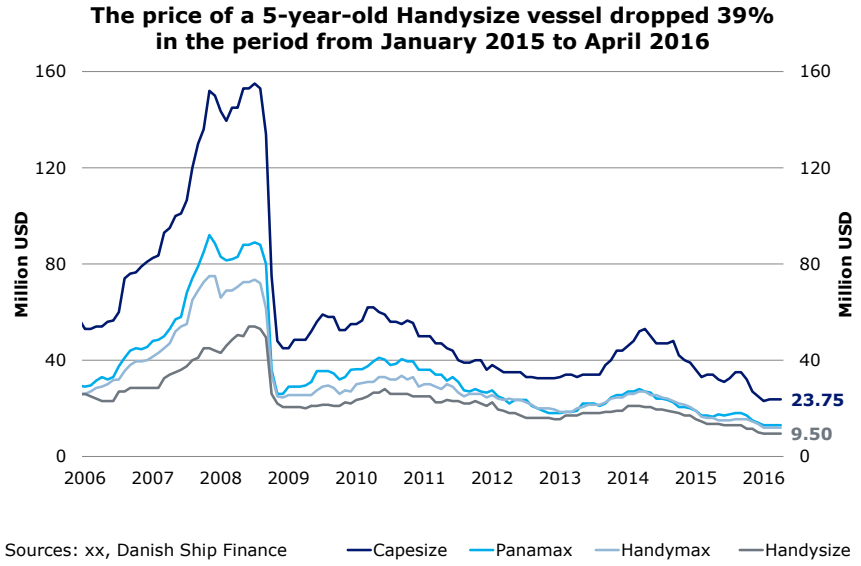
Sources: Clarksons, Danish Ship Finance

Handymax went for around USD 12 million (fig. 12). The massive decline in secondhand prices incentivised several cash-rich shipowners to buy low-priced vessels, which led to activity in the sales and purchase (S&P) market picking up. Vessels amounting to 35.6 million dwt were traded during 2015, equal to around 5% of the total Dry Bulk fleet and up from 4% in 2014. There was, however, a great deal of uncertainty surrounding the S&P market in 2015, as it was difficult to determine vessel values in a market where there were few willing sellers.

SHIPOWNERS HAD AN INCENTIVE TO BUY OLD VESSELS

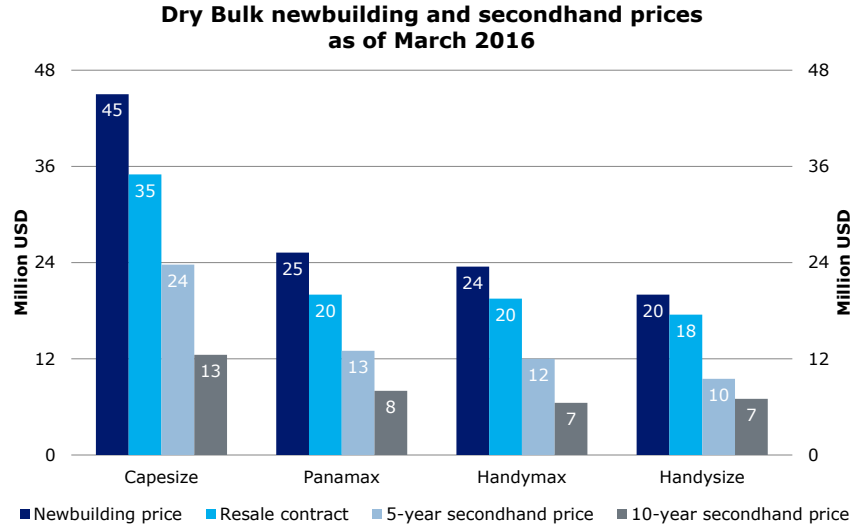
Secondhand values dropped so much during 2015 that it began to make more sense to buy secondhand vessels than to place new orders. According to Clarksons, up until December 2014 a buyer had to pay a premium for purchasing a Capesize resale contract instead of placing a new order. In 2015, this changed and the resale value of a Capesize contract fell below the newbuilding price. By March 2016, the resale price was around USD 10 million lower than the newbuilding price (fig 13). The same trend occurred in the other vessel sizes; however, in these segments the shift happened at a slower pace. This is in many ways what the market has been waiting for – an incentive for buying old instead of new vessels – and we expect it to affect the market positively and limit new contracting activity.

Figure DB.12



Sources: xx, Danish Ship Finance

Figure DB.13



Sources: Clarksons, Danish Ship Finance

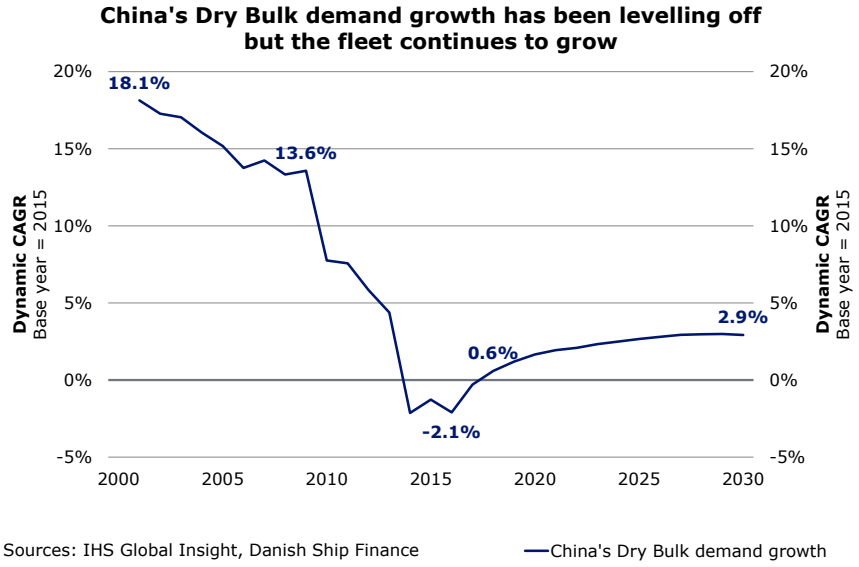
THE INDUSTRY IS WORKING TO RESTORE BALANCE BETWEEN SUPPLY AND DEMAND. HOWEVER, THE SIZE OF THE OVERSUPPLY AND THE ORDERBOOK AS WELL AS THE WEAK DEMAND PROSPECTS MAY PUSH BACK THE RECOVERY SEVERAL YEARS. SECONDHAND VALUES AND FREIGHT RATES ARE EXPECTED TO REMAIN LOW IN THE YEARS TO COME.

The Dry Bulk segments are struggling with massive overcapacity in a market where the short- to medium-term demand outlook is projected to remain weak or even negative while the fleet is expected to continue to grow. Readers of our previous reports will recognise that we have been very cautious in our analysis of the Dry Bulk market for most of the past decade. Throughout the period, we have been concerned about the fact that the segment relies heavily on Chinese demand.

THE SITUATION CALLS FOR A MASSIVE SUPPLY REDUCTION

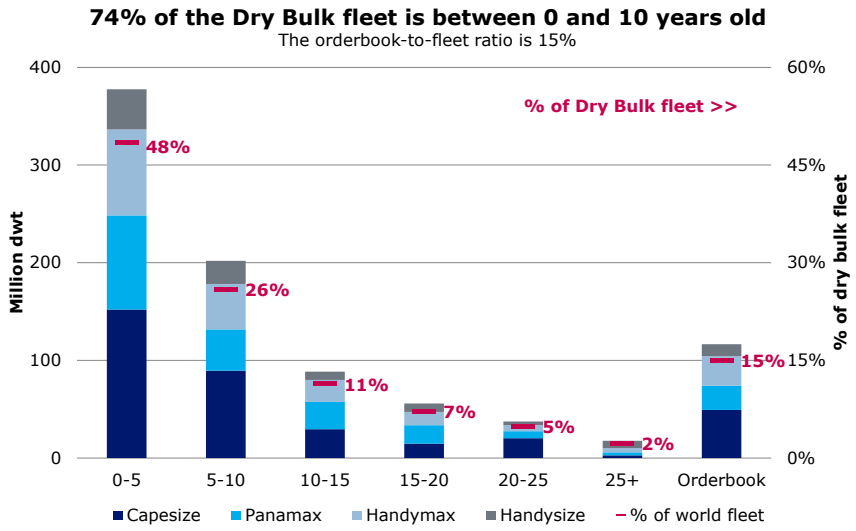
Today, China imports almost 40% of all goods transported on Dry Bulk vessels but has been accountable for almost 75% of the growth in transport volumes since the start of the financial crisis in 2008. However, Chinese Dry Bulk demand growth has been slowing during the last couple of years (fig. 14). In the last couple of reports, we touched upon a series of factors that we expect will cause future Dry Bulk demand to decline, or at least cause it to increase only marginally. In particular, we focused on China's rebalancing efforts, the risk of a new round of non-performing loans in the Chinese banking sector, the impact of higher energy efficiency and more renewable energy in the energy mix, and the introduction of circular-economy principles. These trends are still in play and we are convinced that they will continue to slowly dampen Dry Bulk demand going forward. But in today's market, it is all about supply adjustments. Better market fundamentals can only be achieved in the short to medium term through methodical supply reductions. The focus in this report is therefore – perhaps slightly optimistically – on the potential effects of a massive fleet reduction over the next two years. True, adjustments may occur at a slower pace than illustrated, but the message is clear: while we are waiting to see if Chinese and to a lesser extent world demand will strengthen – despite all the headwinds mentioned above – supply needs to be reduced.

Figure DB.14



Sources: IHS Global Insight, Danish Ship Finance

Figure DB.15



Sources: Clarksons, Danish Ship Finance

CAN CHINESE URBANISATION CONTINUE TO DRIVE DRY BULK DEMAND?

Some readers may disagree with the ideas presented, arguing that the Chinese urbanisation process will continue to support the Dry Bulk market. We are not arguing against the Chinese urbanisation process, but it seems clear to us that we are currently ahead of the curve. Several of the steel-intensive industries are struggling to handle surplus capacity and the Chinese construction sector and real estate market are in the midst of a transition period. Moreover, the Chinese population is stagnating while the working age population is expected to decline by 5% towards 2030. Chinese GDP growth is levelling off and growth is stemming from services rather than steel-intensive activities. Market participants are adapting to a new normal with lower demand growth. The risk of an extraordinary drop in domestic demand for commodities carried on Dry Bulk vessels cannot be neglected. Still, for the time being, the main concern for the Dry Bulk market is how to reduce the size of the fleet to a level that allows freight rates and secondhand values to recover from today's very low levels.

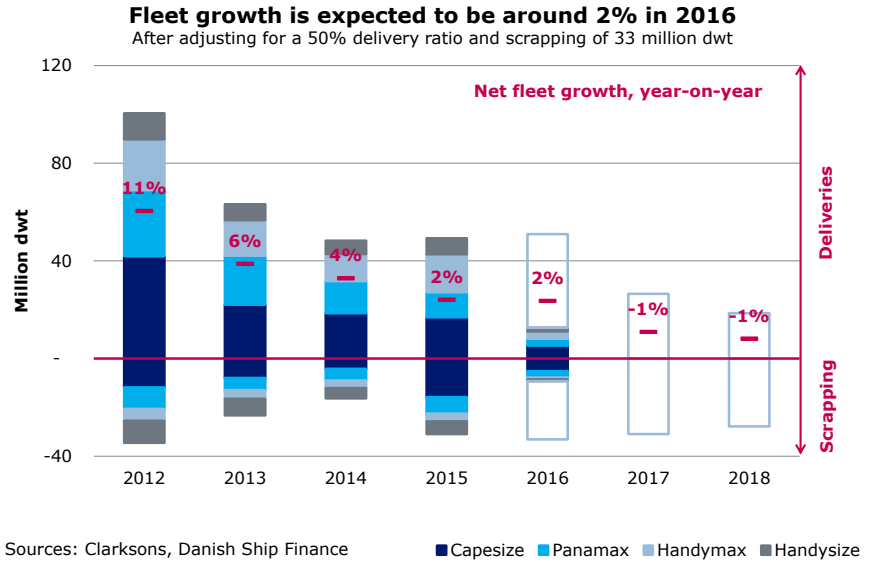
THE ORDERBOOK WAS REDUCED BY 28% IN 2015

In 2015, deliveries remained high, contracting low and orders equal to 15% of orderbook were cancelled. Combined, that resulted in a 28% decline in the orderbook over the year, and during the first quarter of 2016, it dropped by a further 11%. Consequently, the orderbook-to-fleet ratio came down to 15% (fig. 15). By the start of April, the orderbook held 117 million dwt, of which 61% was scheduled to be delivered during 2016. If everything is delivered, 90 million dwt will enter the fleet in 2016, but under the current conditions this is an unlikely scenario. We expect the extensive cancellation and postponement activity to continue in 2016 and deliveries to end up at around 50 million dwt. Moreover, we expect scrapping to reach new highs and possibly exceed the level recorded in 2012 of 33 million dwt.

THE DRY BULK FLEET IS EXPECTED TO GROW BY AROUND 2% IN 2016

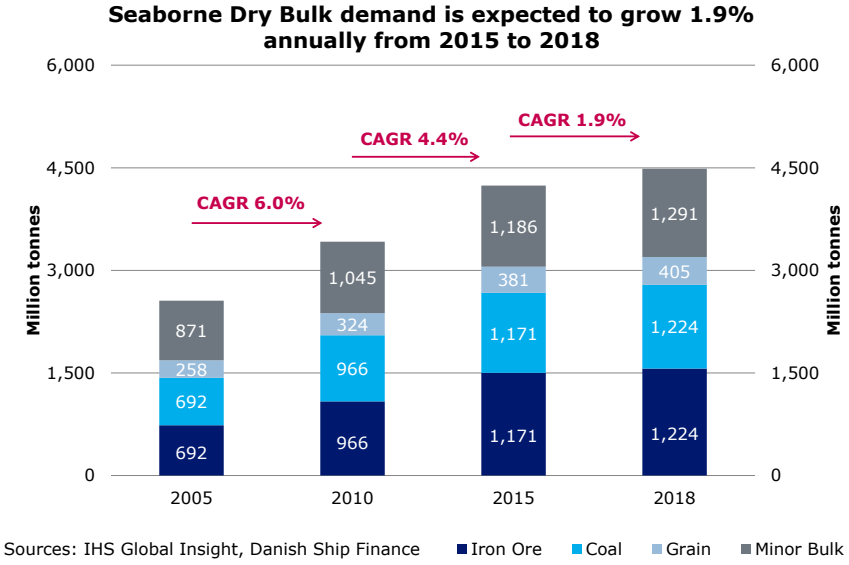
The optimal goal for the industry in 2016 is to achieve negative fleet growth and thereby hopefully create a floor for freight rates. However, this is a mammoth task considering the amount of orders scheduled for delivery in 2016 and beyond. Even if the delivery ratio for 2016 goes no higher than 50% and scrapping

Figure DB.16



Sources: Clarksons, Danish Ship Finance

Figure DB.17



Sources: IHS Global Insight, Danish Ship Finance

reaches the 2012 level, the Dry Bulk fleet will still grow by around 2% (fig. 16). Therefore, it will be highly challenging to achieve negative fleet growth in 2016. The odds of this happening in 2017 are only slightly better: even a marginal contraction in the fleet (≈-0.2%) would require no new orders being placed, a 50% delivery ratio, and a minimum of 30 million dwt being demolished. Hence, no matter how we look at it, extraordinary market discipline is needed if supply is to be lowered before 2018.

SUPPLY IS TOO FAR AHEAD OF DEMAND

Even if the market succeeds in getting the fleet to contract as soon as in 2017, the Dry Bulk market will not be rebalanced overnight. For many years, supply has been growing much faster than demand, and in order for demand to catch up, it needs to grow significantly faster than supply. For example, if the fleet grows by 2% in 2016, demand will have to grow by at least 7% for fleet utilisation to reach 80%, compared with 76% in 2015 (fig. 19).

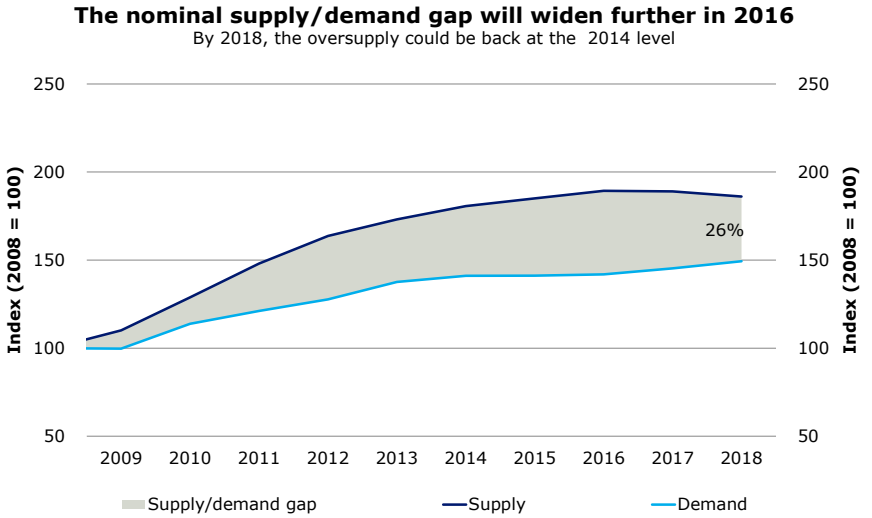
IHS GLOBAL INSIGHT FORECASTS DEMAND GROWTH OF 0.5% IN 2016

Demand expectations for the next couple of years are moderate at best. IHS Global Insight forecasts seaborne Dry Bulk demand to remain low in 2016, growing by 0.5% before rising to 2.4% in 2017 and 2.8% in 2018, which equates to an annual average growth rate of 1.9% over the period (fig. 17). This is a significant downward adjustment from its forecast from autumn 2015 of annual average growth of 3%. Hence, we expect fleet utilisation to bottom out in 2016 at 75% before it begins to improve (fig. 19). In a scenario where the fleet contracts in 2017 and 2018 and demand grows by an annual average rate of 1.9%, the oversupply could return to the 2013 level by year-end 2018, which would raise fleet utilisation to 80% (figs. 18 and 19).

ZERO FLEET GROWTH WILL PUT PRESSURE ON SCRAPPING AGES

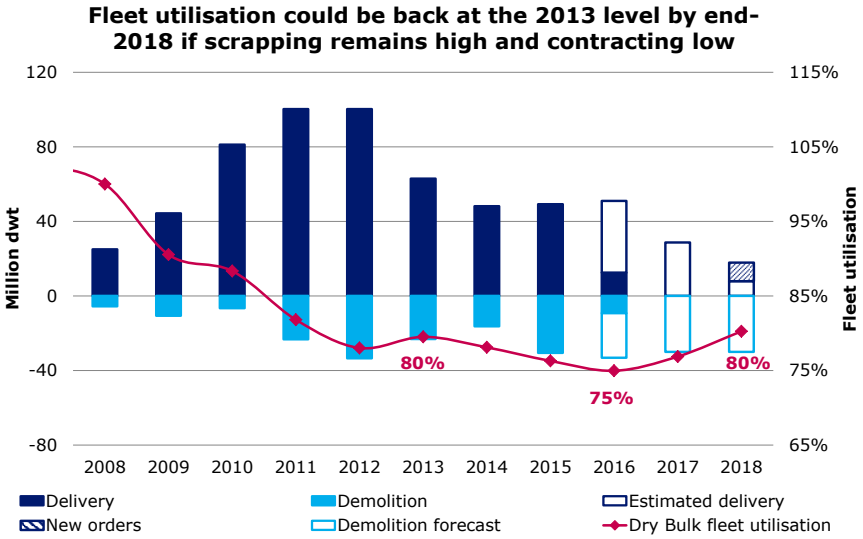
There are very few positives in the outlook, especially for the larger segments: demand is expected to remain weak, and in order for market fundamentals to improve, scrapping needs to reach new levels over the coming years. Due to the age distribution of the Dry Bulk fleet, a lot of vessels will have to exit the market prematurely, lowering scrapping ages even further. For the expected deliveries in 2016 and 2017 to be counterbal-

Figure DB.18



Sources: Clarksons, IHS Global Insight, Danish Ship Finance

Figure DB.19



Sources: Clarksons, IHS Global Insight and Danish Ship Finance

anced, around 79 million dwt will have to be scrapped, which will require a significant reduction in the scrapping ages in all segments. In both the Capesize and Panamax segments, all vessels of more than 18 years will have to be scrapped, but the most drastic reduction will have to occur in the Handymax segment, where the orderbook is still large. All Handymax vessels older than 17 years will have to be scrapped, a substantial drop from the 2015 level of 27 years. The Handysize segment is better positioned, since it still has many old vessels. If all vessels older than 24 years are scrapped during 2016 and 2017, this will absorb the expected deliveries. Thereby, the fleet will remain stable and current freight rates may be sustained even if demand stagnates at current levels. However, many of the older vessels are currently trading in niche markets where the flag or ownership is more important than age (e.g. cabotage trading). Consequently, if the niche market vessels continue to trade, scrapping candidates will have to be found among younger vessels and the average age of vessels scrapped could fall well below 24 years (fig. 20).

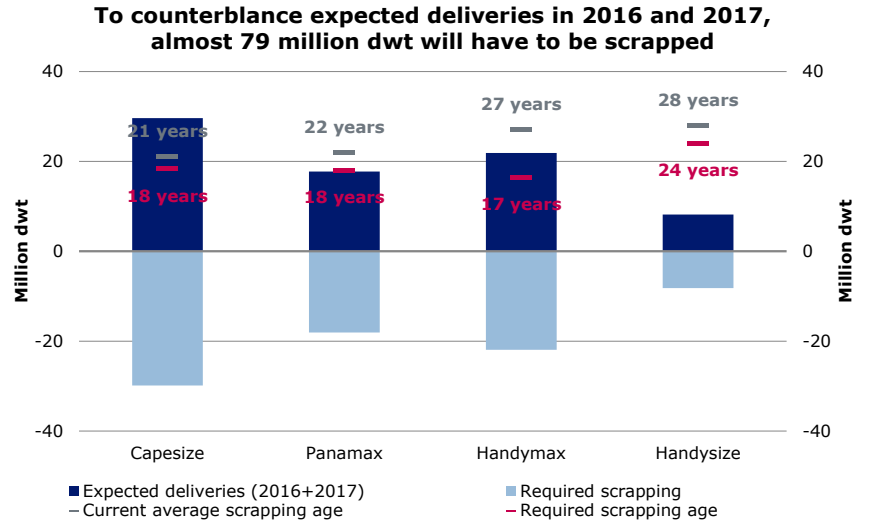
THE EFFECT OF LOWER SCRAPPING AGES ON SHIP VALUES

Irrespective of whether or not such an extraordinary scrapping scenario materialises, the average scrapping age will remain under pressure in the coming years, as will ship values. In our view, secondhand values should reflect a combination of short-term earnings, long-term earnings potential and the expected lifetime of the vessels. Scrapping vessels before the technical operating life of 25 years shortens the cash flow period and thereby reduces the net present value of future cash flows. Scrapping ages in the larger segments have already fallen well below 25 years, and should they fall to 18 years (as suggested in fig. 20), it would put further downward pressure on values. Taking the example of a five-year-old Capesize vessel, lowering the scrapping age to 18 years, from the current level of 21 years, would reduce the current value by 9% or USD 2.2 million.

THE EFFECT OF LOWER FUTURE EARNINGS

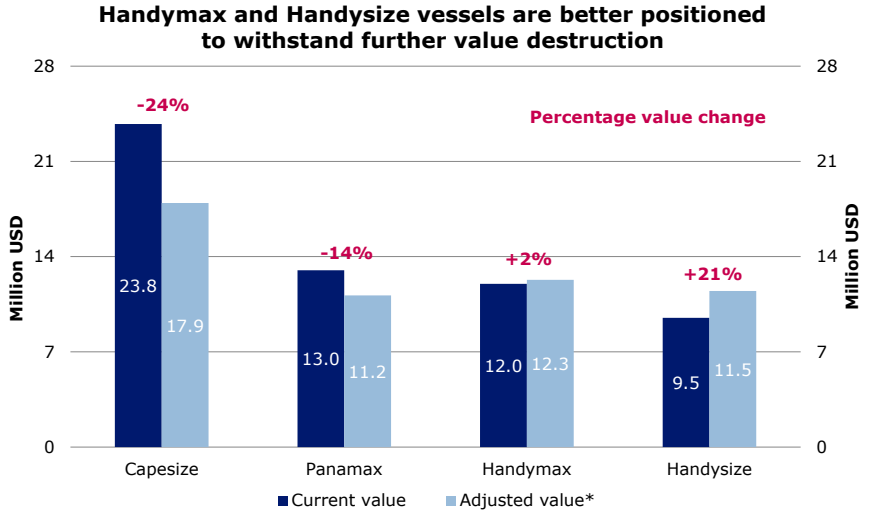
Values are not only susceptible to lower scrapping ages but also to lower future earnings. Buying a five-year-old Capesize vessel for USD 23.75 million today implies committing to an average timecharter rate of USD 15,200 per day in order to break even

Figure DB.20



Sources: Clarksons, Danish Ship Finance

Figure DB.21



Sources: Clarksons, Danish Ship Finance

*After adjusting for lower scrapping ages and setting future earnings to the median timecharter rate from 2011-16

on the investment at the current scrapping age of 21 years. Factoring in the currently negative cash flow, the break-even rate is even higher. In today's market, the 1-year timecharter rate of a Capesize vessel is approximately USD 6,600 per day, while the median rate since 2011 has been USD 13,900 per day. The market is expected to be heavily oversupplied until at least 2018. We therefore do not expect a significant upturn in freight rates until the market returns to a more balanced state. If a five-year-old Capesize vessel is priced to earn USD 13,900 per day for the remaining lifetime, the calculated secondhand price drops by another 15% or USD 3.6 million.

THE LARGER SEGMENTS ESPECIALLY ARE EXPOSED TO VALUE DECLINES

Combined, lower scrapping ages and lower future earnings could result in five-year-old Capesize values declining 24% from April 2016 levels within the next 12 months, from USD 23.75 million to USD 17.9 million (fig. 21). This is still 30% higher than the all-time low recorded back in 1986. Panamax values face similar pressure and could potentially fall 14% from current levels if both lower scrapping ages and lower future earnings are priced into the equation.

HANDYSIZE VALUES COULD RISE DUE TO HIGHER FUTURE EARNINGS

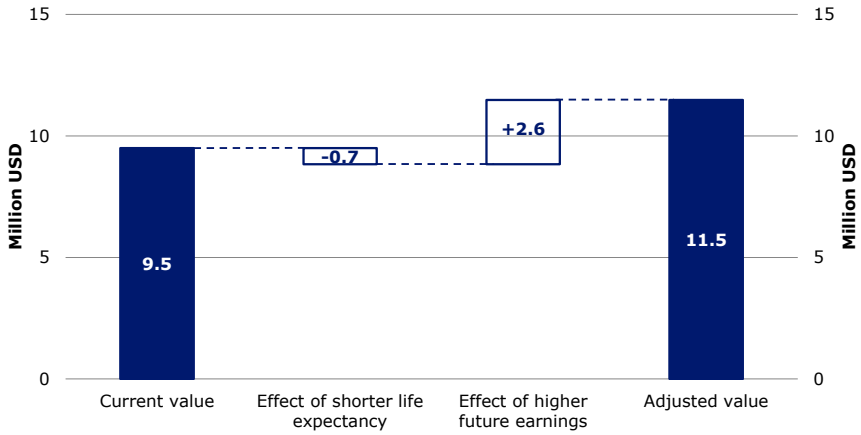
The Handymax and Handysize segments are better positioned, however (fig. 21). Even though both segments are experiencing downward pressure from lower scrapping ages, they are more likely to achieve higher earnings in the future. In both cases, the median timecharter rates from the last five years are higher than the levels currently priced into valuations. The Handysize segment in particular could see value increases. The timecharter rate required by current vessel values is USD 7,600 per day, which is lower than the median rate since 2011 of USD 8,400 per day. Consequently, in theory, the downward pressure on values from lower scrapping ages (-USD 0.7 million) is more than offset by the potential upside from higher future earnings (+USD 2.6 million) (fig. 22).

RETURNING TO THE NORM

The declining scrapping age does not reflect a structural change in the market mechanism; it simply reflects the cyclical nature of the industry. The current cycle has been prolonged because the low newbuilding prices have persuaded investors to continue

Figure DB.22

The Handysize segment could experience value increases, despite a lower scrapping age, due to the potential for higher future earnings



Sources: Clarksons, Drewry, Danish Ship Finance

ordering low-priced vessels to an already oversupplied market. The mean-reverting nature of the industry is working to restore the balance between supply and demand. But it will take longer than in previous cycles, since few obvious scrapping candidates remain and demand is projected to expand slowly. The long duration of the current crisis has already been costly for shipowners, and further value drops could force more shipowners to sell or scrap vessels. The point is, though, that secondhand prices and timecharter rates will remain low until the balance between supply and demand has been restored. In segments where there are few scrapping candidates, secondhand prices may drop below their previous low levels, reflecting an extraordinarily short cash flow period during the transition process. When balance has been restored and vessels are once again trading in accordance with their expected technical life, secondhand values will begin to see structural tailwind. Providing that shipyards do not lower newbuilding prices to the extent where it incentivises owners to restart ordering.

THE CRISIS IS EXPECTED TO DRAG ON

To sum up, the prospects for the Dry Bulk market look dim and the weak demand expectations mean that shipowners are faced with some tough decisions of whether to lay-up, scrap, sell or continue to trade vessels. We expect the market recovery to come about slowly and gradually, and the only way forward is to scrap vessels and refrain from adding fuel to the fire by ordering new ones. Fortunately, secondhand prices have finally come down to a level where the business case for placing new orders is undermined. There will be temporary freight rate spikes on the way to a recovery, but these are expected to be just that: temporary. Previous shipping cycles have shown that occasional spikes in freight rates do occur, even in downward trending markets.

CRUDE TANKER

SHIPPING MARKET REVIEW – MAY 2016

DANISH SHIP FINANCE

CRUDE TANKER

THE MARKET IS CURRENTLY BALANCED. EVEN SO, WE ARGUE THAT TEMPORARY FACTORS HAVE BEEN LIFTING CRUDE TANKER DEMAND BEYOND UNDERLYING DEMAND. FUTURE DEMAND GROWTH IS EXPECTED TO BE FIRM BUT GIVEN THE SIZE AND TIMING OF THE ORDERBOOK, DELIVERIES ARE EXPECTED TO OUTPACE DEMAND WITHIN THE NEXT TWO YEARS.

FREIGHT RATES

FREIGHT RATES HAVE CONTINUED TO GAIN SUPPORT FROM EXCESS CRUDE OIL. HOWEVER, LOWER DEMAND FROM CHINA HAS PULLED FREIGHT RATES DOWN AT THE BEGINNING OF 2016.

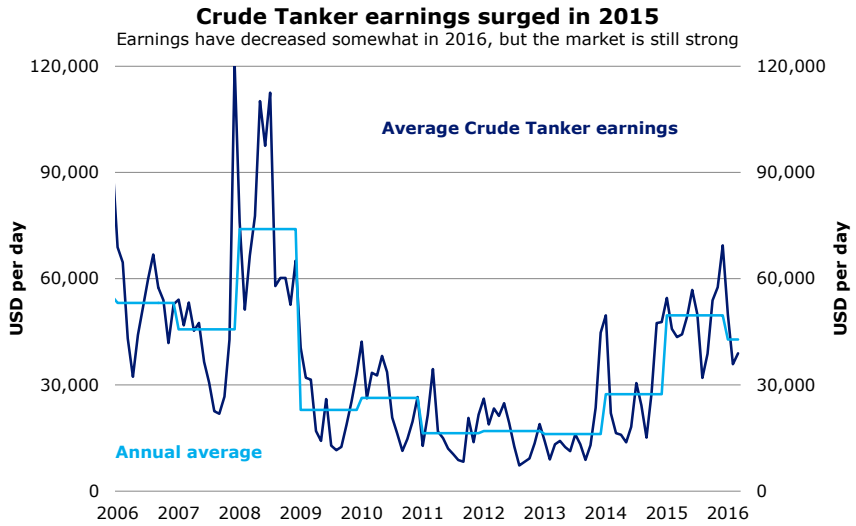
CRUDE TANKER EARNINGS ARE STILL RELATIVELY HIGH

Crude Tanker earnings underwent a renaissance after crude oil prices started their decline in the second half of 2014, and in 2015, earnings reached their highest levels since the financial crisis in 2008. Since December, though, average Crude Tanker earnings have almost halved, falling to around USD 39,000 per day in March 2016 (fig. 1). Seasonal maintenance at refineries and a very mild winter are partly to blame, but a smaller than expected Middle Eastern loading programme and China hitting the brakes on crude oil import volumes also exacerbated the drop in freight rates at the beginning of 2016. Even though earnings dropped to a lower level in the first quarter of 2016, they are still at historical highs, disregarding the peaks in the middle of the decade.

TIMECHARTER RATES HAVE BEEN SLOWLY DECREASING

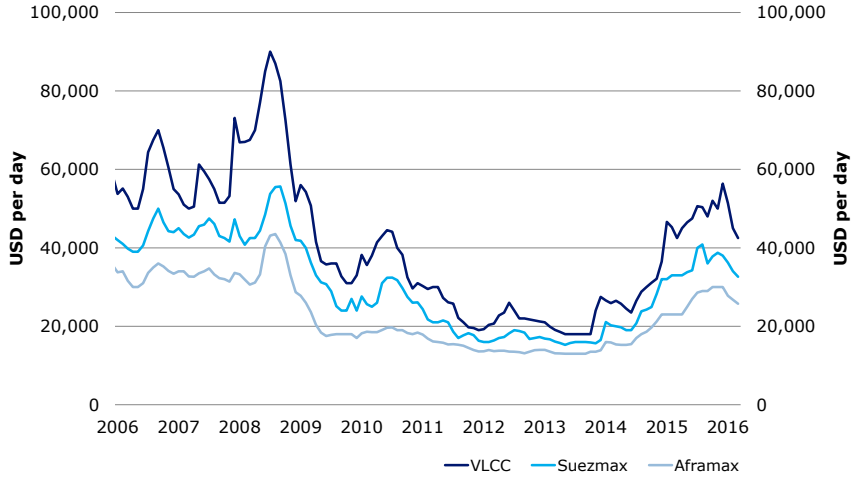
In December 2015, timecharter rates reached their highest levels since the financial crisis, but since then they have been declining. The decline has been most pronounced in the VLCC segment, where the 1-year VLCC timecharter rate decreased by close to 25%, equivalent to almost USD 14,000 per day, from USD 56,400 to around USD 42,000 per day in March 2016. Timecharter rates in the Suez- and Aframax segments, in comparison, declined by 14% (fig. 2).

Figure T.1



Sources: Clarksons, Danish Ship Finance

Figure T.2

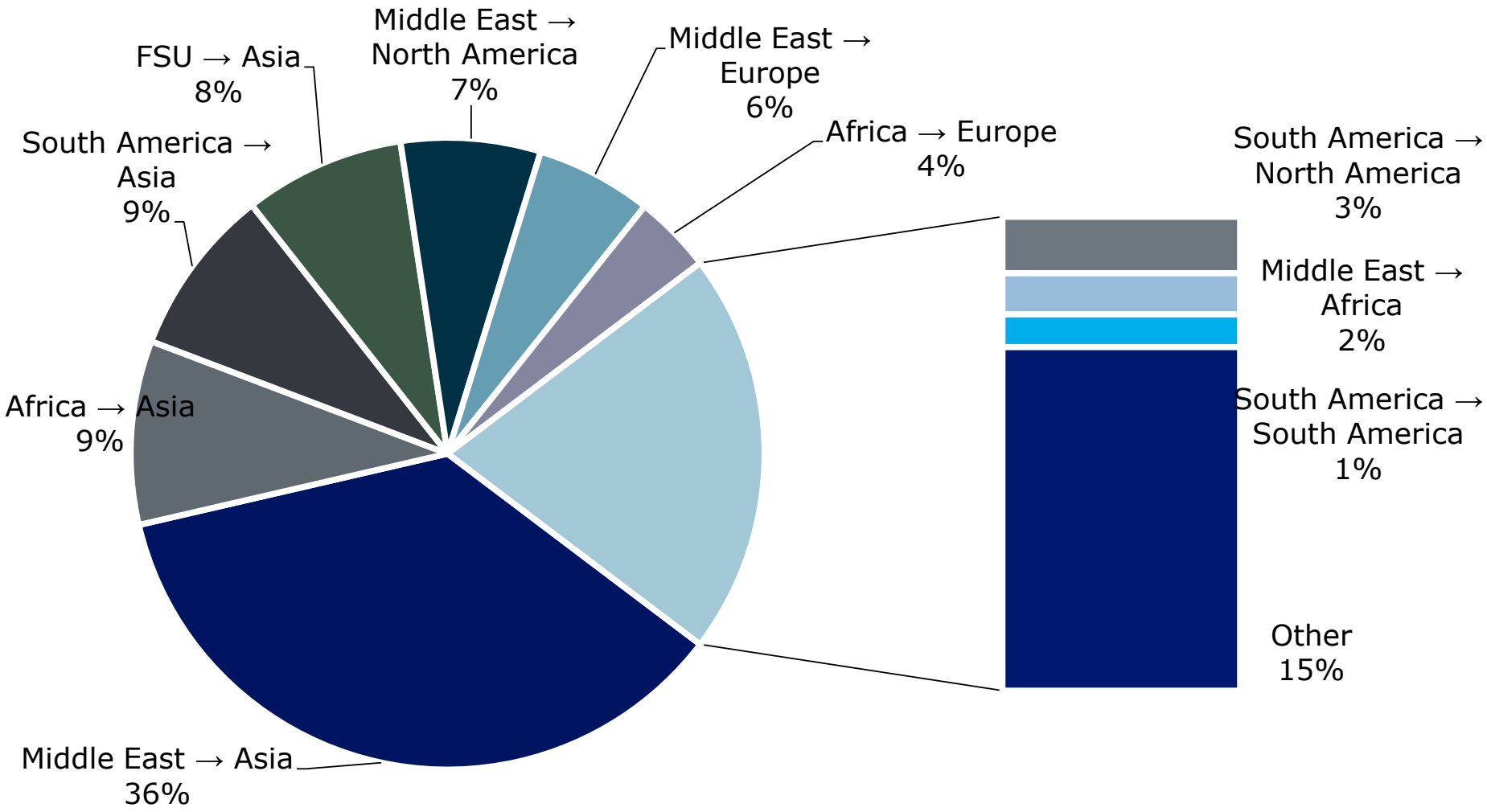


Sources: Clarksons, Danish Ship Finance

Figure T.3

Major Crude Tanker trades

(Measured in billion tonne-miles, 2015)



Sources: IHS Global Insight, Danish Ship Finance

THE CRUDE TANKER MARKET HAS BENEFITTED FROM A COMBINATION OF LOW SUPPLY GROWTH AND EXCEPTIONALLY HIGH DEMAND GROWTH BROUGHT ABOUT BY EXCESS OIL.

STRONG DEMAND AND FEW NEW VESSELS

The strong freight rate environment was created by the combination of a low inflow of new vessels and factors – such as the drop in crude oil prices – brought about by the emergence of a surplus of crude oil. The low crude oil prices caused refinery margins to soar and prompted refineries to increase their intake of crude oil. New refinery capacity, with a combined capacity of around 1.5 million barrels per day, opened in 2015. This raised Crude Tanker demand beyond underlying demand for refined petroleum products. In addition, the low crude oil prices resulted in a build-up of inventories, boosting Crude Tanker demand further. Crude Tanker productivity declined throughout the year, since accelerated imports resulted in logistical bottlenecks, including port congestion.

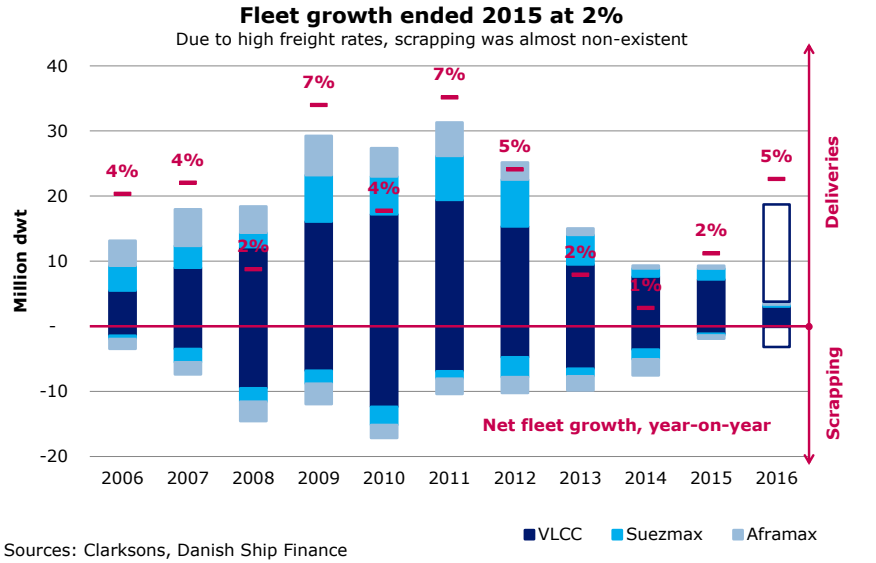
THE CRUDE TANKER FLEET GREW BY 2% IN 2015

Orders scheduled for delivery in 2015 were few and far between, and even though high freight rates incentivised owners to take delivery of their vessels on time, only about two-thirds of scheduled orders were actually delivered (fig. 5). Altogether, 9.3 million dwt was delivered to the fleet in 2015 (fig. 4). Very few vessels were demolished during the year: two VLCCs and three Aframaxes. The fleet increased by 2% during the year.

POSTPONEMENTS AND CANCELLATIONS MAINLY OCCURRED IN CHINA

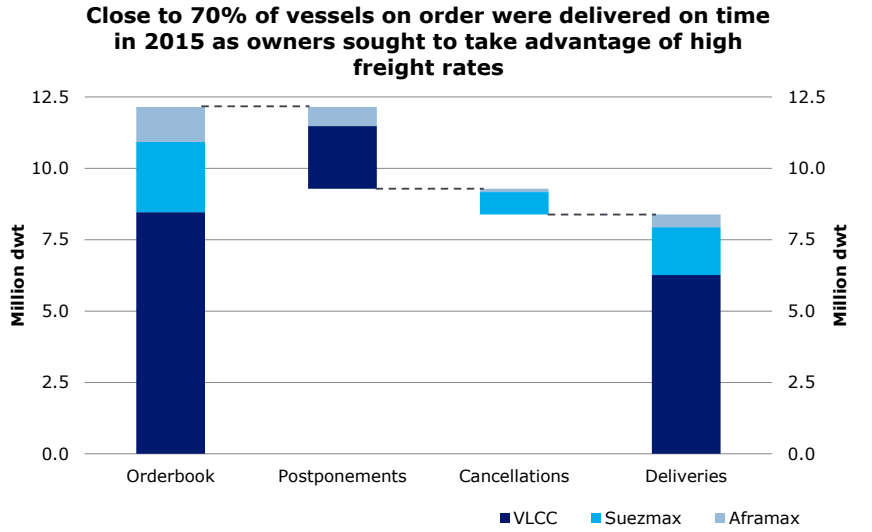
Nearly one-third of orders scheduled for delivery in 2015 were not delivered. Of these, it seems that 24% were postponed, while 7% were cancelled. Postponements took place primarily in the VLCC segment, and three-quarters of them were orders placed at Jinhai Heavy Industries, a Chinese yard. Cancellations, on the order hand, occurred almost exclusively in the Suezmax segment, where 0.8 million dwt, equivalent to five vessels, was cancelled due to the ongoing restructuring process at Jiangsu Rongsheng, a Chinese yard (fig. 5). There are still two Suezmax Tankers on order at Jiangsu Rongsheng for delivery in 2016. It remains to be seen whether or not these will be delivered.

Figure T.4



Sources: Clarksons, Danish Ship Finance

Figure T.5



Sources: Clarksons, Danish Ship Finance

SURPLUS CAPACITY CONTINUES TO BUILD

The nominal gap between supply and demand remains wide (fig. 6), although the fleet has been kept employed by factors that may easily lose strength if for example, fleet inefficiencies lessen or the glut in the crude oil market disappears, causing crude oil prices to increase. In the past few years, lower vessel speeds have reduced the productivity of the Crude Tanker fleet and hence improved the actual balance between supply and demand. Although the low bunker prices since the beginning of 2015 have incentivised some owners to increase speeds, this has so far not become a widespread market practice.

DEMAND FOR CRUDE TANKERS WAS FUELLED BY EXCESS CRUDE OIL

Seaborne crude oil volumes grew by 4% in 2015, while global oil demand increased by 1.7%. The fact that seaborne crude oil volumes grew twice as fast as underlying oil demand illustrates the significant contribution to Crude Tanker demand from inventory build-ups, refinery capacity expansions and changes in regional regulations in 2015 and at the beginning of 2016.

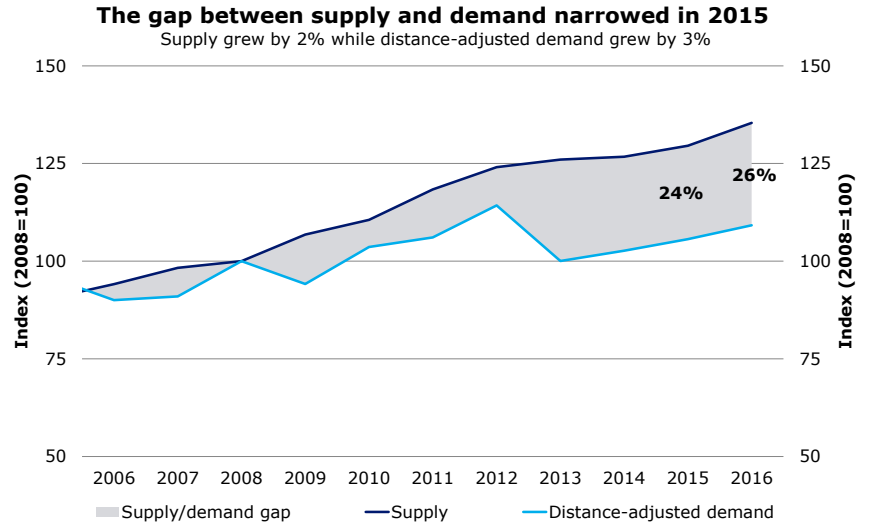
FLEET INEFFICIENCIES ARE INCREASING CAPACITY EMPLOYMENT

Port congestion and floating storage have strengthened demand for Crude Tankers for more than a year now. But these temporary factors have emerged as a result of excess crude oil and its impact on crude oil prices. Port congestion, in particular, has absorbed several Crude Tankers, as waiting times have increased – in some cases, Crude Tankers have had to queue for several weeks or more, simply to discharge their cargoes. Numerous Crude Tankers have also been taken out of the market as unsold crude oil cargoes have been kept on board. When the balance in the crude oil market begins to be restored, these vessels will return to the market and seek new employment.

FLOATING STORAGE ACTED AS A CUSHION FOR FREIGHT RATE DECLINES

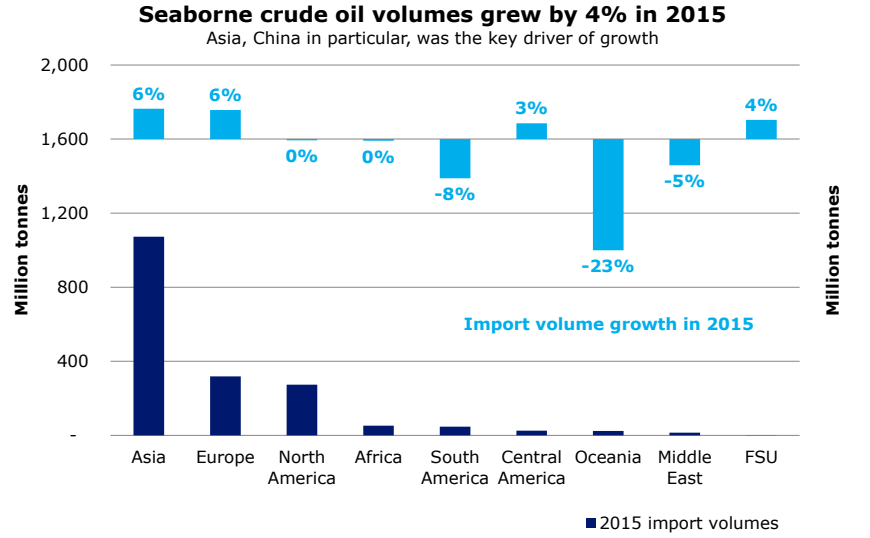
The high freight rate market made the economics of floating storage more challenging in 2015, even though the crude oil price was in contango. Still, in periods of softening freight rates, particularly in August 2015, floating storage provided a cushion for freight rate declines by temporarily increasing demand for Crude Tankers.

Figure T.6



Sources: IHS Global Insight, Clarksons, Danish Ship Finance

Figure T.7



Sources: IHS Global Insight, Clarksons, Danish Ship Finance

ASIA FUELLED DEMAND FOR SEABORNE CRUDE OIL VOLUMES

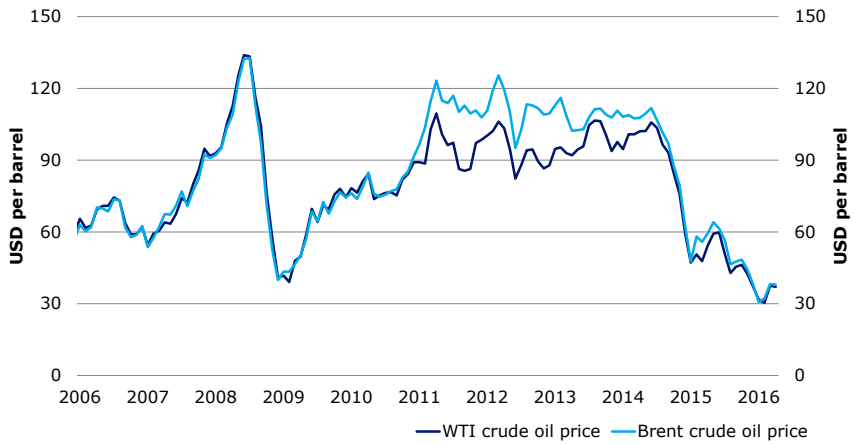
Asia in general and China in particular fuelled demand for seaborne crude oil volumes in 2015. In total, Asia's seaborne import volumes increased by 6%. This was powered by refinery capacity expansions, above-average utilisation rates at refineries and extensive storage build-ups at both commercial and strategic petroleum reserves (fig. 7). In the second half of 2015, China also allowed several independent refineries – the so-called teapot refineries – to either import crude oil or refine imported volumes (see Shipping Market Review - November 2015 for further details). As a result, Chinese crude oil imports hit a record high in December 2015 and again in February 2016, with more than eight million barrels per day imported in those two months. Crude oil in transit rose and so did port congestion, absorbing more Crude Tankers than initially expected. The Crude Tanker market is becoming increasingly dependent on China, and in January 2016, when China lowered its import requirements, freight rates declined instantly (fig. 1).

US LIFTED THE BAN ON CRUDE OIL EXPORT

The US lifted its ban on crude oil exports in December 2015. The ban had been in place for 40 years, and consequently export facilities are out of date and few are capable of handling VLCC vessels, which has prompted demand for Aframax and Suezmax Tankers instead. So far, several US crude oil cargoes have been exported even though the spread between WTI and Brent – the world's two main crude oil benchmarks – has been insufficient to justify such shipments (fig. 8). Energy security and diversification seem to have been the main reasons for purchases of US crude oil. A narrower spread between WTI and Brent has not only affected exports, but also imports, as it has made it more profitable for several coastal US refineries to import seaborne crude oil volumes rather than buy landlocked domestic crude oil volumes transported by rail, trucks or on-board Jones Act vessels. This has triggered a steady rise in US imports of West African crude oil volumes in particular, a crude oil that had previously been crowded out by domestic production of shale oil. In 2015, US crude oil imports were also temporarily inflated by available onshore storage capacity drawing in several additional cargoes.

Figure T.8

A narrower spread between WTI and Brent has fuelled demand for Crude Tankers as the US has increased both imports and exports of crude oil volumes



Sources: EIA, Danish Ship Finance

SANCTIONS ON IRAN WERE LIFTED AT THE BEGINNING OF 2016

In our last Shipping Market Review, we expressed concerns about the potential impact the lifting of sanctions on Iran could have on the Crude Tanker market. On the one hand, we thought the return of Iranian crude oil exports would put pressure on crude oil prices and potentially increase employment of Crude Tankers. But, on the other hand, we were worried that the return of the Iranian fleet to the market would increase vessel availability. The issue to consider is whether these forces support freight rates or not. The lifting of sanctions has, so far, had a minimal impact on the Crude Tanker market, since Iran still faces insurance, financing and legal obstacles. Iran did, however, increase its exports of crude oil in the first quarter of 2016, though export volumes were lower than expected. Whether this increase came from new production, floating storage, or was previously exported unofficially remains uncertain. Still, floating storage outside Iran remains very relevant and only a few Iranian Tankers have actually unloaded their cargoes and returned to the market. It is still uncertain whether some of the volatile freight rate environment experienced during the first quarter of 2016 can be explained by the return of Iran to the market.

CONTRACTING SEEMS TO HAVE COME TO A HALT IN 2016 AFTER HITTING ITS SECOND-HIGHEST LEVEL EVER IN 2015. SECONDHAND PRICES AND EARNINGS APPEAR TO BE BALANCED, BUT THE RECENT DECLINE IN TIMECHARTER RATES MAY SIGNAL DOWNWARD PRESSURE ON SECONDHAND VALUES.

CONTRACTING REACHED ITS SECOND-HIGHEST LEVEL EVER IN 2015

Contracting reached its second-highest level ever in 2015 as high freight rates and new NOx regulations induced owners to rush orders through. In total, 35.8 million dwt was contracted. In the first quarter of 2016, Crude Tanker contracting was minuscule. If this continues, there is a glimmer of hope for a reduction in the nominal supply surplus. This could alleviate potential downward pressure on freight rates (fig. 9).

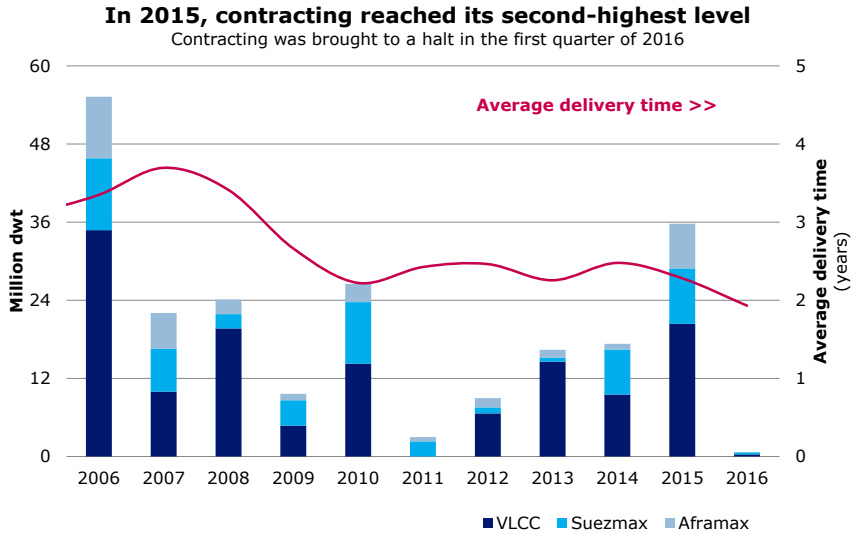
SECONDHAND VALUES PEAKED IN THE SUMMER MONTHS

After a brief rally at the beginning of 2014, triggered by the sudden spike in freight rates and the contracting spree in 2013, newbuilding prices slowly decreased, settling at around USD 92 million for a VLCC in March 2016. Secondhand values, on the other hand, peaked during the summer months in 2015, before the sudden and unexpected drop in freight rates exposed the fragility of the market balance, causing secondhand values to drop by USD 6-8 million (fig. 10).

PRICES AND EARNINGS SEEM TO BE BACK IN BALANCE

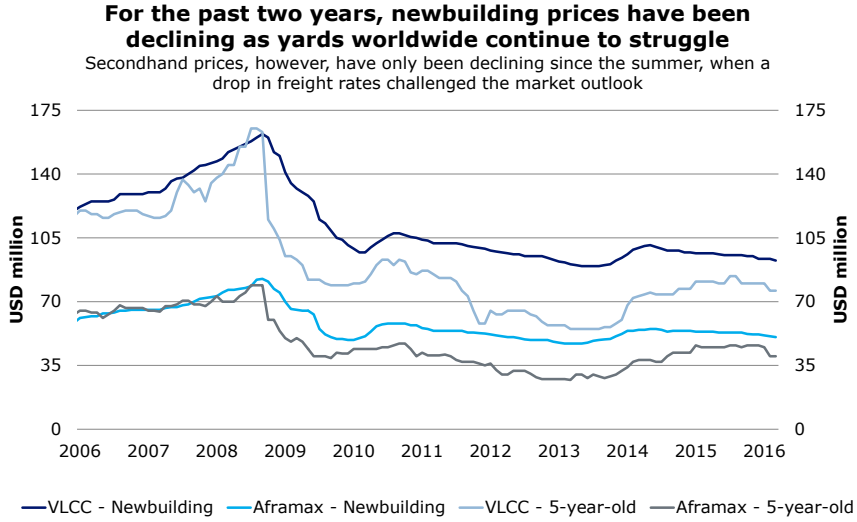
The dollar paid for a dollar in cash flow seems to be in balance, with a current price-to-earnings ratio of less than 6 for a five-year-old VLCC. However, the recent drop in timecharter rates has not been fully offset by a decrease in secondhand values, which may indicate potential downward pressure on secondhand prices.

Figure T.9



Sources: Clarksons, Danish Ship Finance

Figure T.10



Sources: Clarksons, Danish Ship Finance

THE INFLOW OF CRUDE TANKERS IS SET TO DOUBLE IN 2016, WHICH COULD JEOPARDISE THE CURRENTLY STRONG MARKET. STILL, THE MARKET MAY GAIN ENOUGH SUPPORT FROM FACTORS BEYOND UNDERLYING DEMAND THAT SEABORNE CRUDE OIL VOLUMES ARE ABLE TO EMPLOY THE FLEET. IN 2017, THE INFLOW OF NEW VESSELS IS EXPECTED TO EXCEED THE INCREASE IN DEMAND FOR SEABORNE TRADE, WHICH SUGGESTS THAT SCRAPPING NEEDS TO BE STEPPED UP AGAIN.

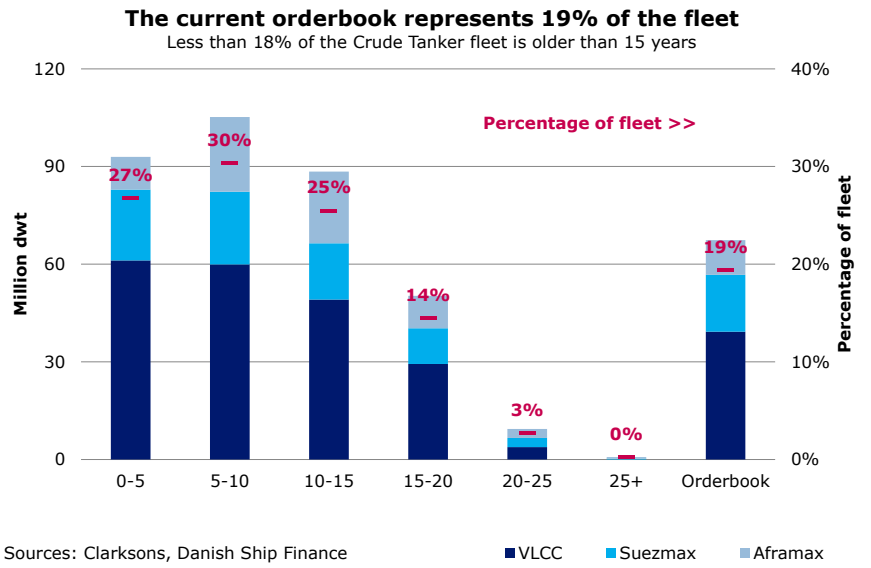
SCRAPPING ALONE IS UNLIKELY TO ABSORB THE ORDERBOOK

Based on the current orderbook, the fleet could expand by 19% during the next three years (fig. 11). Although scrapping is expected to intensify, fleet growth is still expected to double in 2016 and 2017 compared with 2015 (fig. 12). Consequently, the orderbook may prove difficult to absorb unless Crude Tanker demand strengthens, as few scrapping candidates remain. In fact, less than 18% of the fleet is older than 15 years and more than 80% of those vessels are aged between 15 and 20 years. For scrapping to pick up, younger vessels will have to be demolished. This will put pressure not only on the individual owners but also on the entire market, since the economic life of older secondhand vessels may be shortened.

FLEET GROWTH IS EXPECTED TO REACH 5% IN 2017

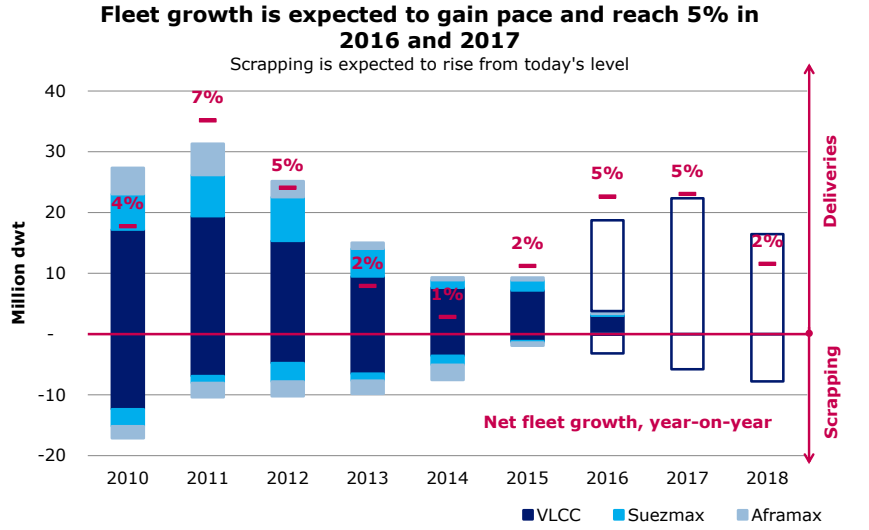
The inflow of new vessels is expected to double from around 9 million dwt in 2015 to more than 18 million dwt in 2016 and 2017 (fig. 12), resulting in fleet growth of 5% in both years. It is important to note that Crude Tanker fleet growth has seldom been above 5% and when it has been, it has been difficult for the market to absorb the inflow. In the past, a surplus of vessels has partly been counterbalanced by increased scrapping activity, but this mechanism is hardly an option in today's market given the young age profile of the fleet. The consequences of substantial overcapacity are therefore more pronounced than in the past, since there is a little prospect of demand being sufficient to offset this and the scrapping potential is meagre. We fear that an oversupply of vessels may begin to materialise within a year or two and that it may take some time for market balance to be restored.

Figure T.11



Sources: Clarksons, Danish Ship Finance

Figure T.12



Sources: Clarksons, Danish Ship Finance

SEABORNE CRUDE OIL VOLUMES TO GROW BY 2.1% PER ANNUM

Seaborne crude oil volumes are still expected to outstrip global oil demand in 2016, with an increase of 3% compared with demand growth of 1.3% (fig. 13). After 2016, demand growth is expected to subside, as crude oil prices are likely to rise. Factors brought on by excess crude oil such as port congestion and floating storage are still expected to be present in 2016, but may not necessarily be able to absorb additional capacity. As the crude oil market begins to balance, these factors may start to disappear.

WILL REFINERY ADDITIONS INCREASE DEMAND FOR CRUDE TANKERS?

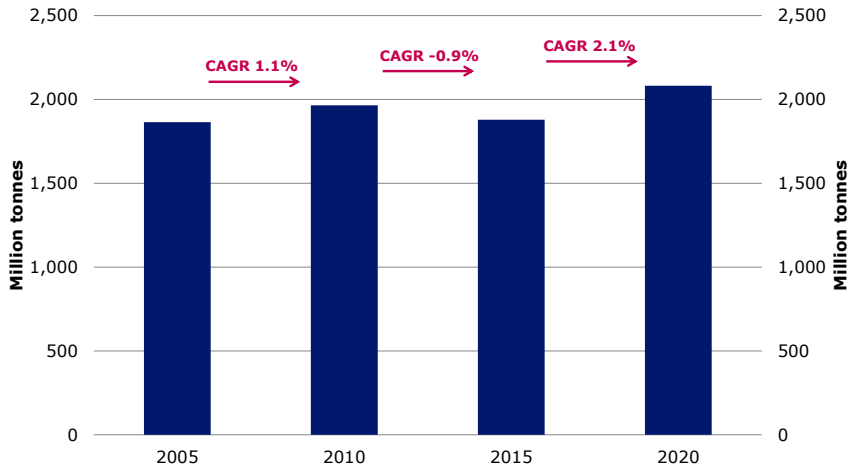
Additional refinery capacity projected to come online in the coming years is expected to be the main driver of growth in seaborne crude oil volumes. But without sufficient underlying demand, additional new refinery capacity may only result in surplus capacity. This is certainly a risk to consider, as growth in the medium to long term is expected to be less fossil fuel-intensive. Refineries across the board may have to lower utilisation rates or shut down capacity if demand proves insufficient to employ additional capacity. The expected increases in seaborne crude oil volumes may thus not materialise. In recent years, several refinery projects have already been postponed due to insufficient demand growth.

UNUSUALLY HIGH UTILISATION RATES MAY BE A PASSING EFFECT

For more than a decade, the main driver of growth in oil demand has been industrial production (generating primarily diesel demand). The new and large refineries coming online in the Middle East and Asia are largely configured to maximise diesel production. Nonetheless, in an increasing number of economies the service sector is driving economic growth (generating gasoline demand in particular). This transformation is clearly reflected in the demand data, which shows growth in gasoline demand (i.e. private consumption-driven) outpacing growth in diesel demand. The discrepancy between refinery configuration and demand for refined petroleum products is providing an additional boost to seaborne crude oil volumes in the short to medium term, since refineries are being forced to run at high utilisation rates in order to satisfy global gasoline demand.

Figure T.13

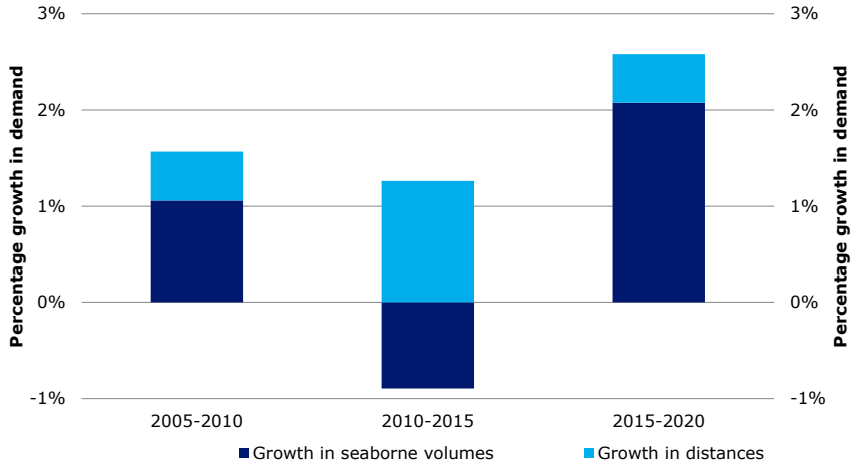
Seaborne crude oil volumes are expected to grow more strongly in the coming years



Sources: IHS Global Insight, Clarksons, Danish Ship Finance

Figure T.14

Average travelling distances will continue to contribute positively to demand for Crude Tankers



Sources: IHS Global Insight, Clarksons, Danish Ship Finance

A THREE-YEAR WINDOW FOR HIGH SEABORNE CRUDE OIL VOLUMES

New refinery capacity additions are mainly located in Asia – a region without any significant crude oil production – and are therefore dependent on long-haul imports of crude oil volumes (i.e. crude tanker demand). From 2019, however, refinery additions will mainly be in the Middle East, jeopardising export volumes. This is expected to lower seaborne crude oil volumes, primarily impacting VLCCs. However, the average travelling distance for the remaining seaborne crude oil volumes could increase as importers seek replacement volumes (fig. 14).

FREIGHT RATES AND SECONDHAND VALUES MAY DECLINE IN 2017

While growth in seaborne crude oil volumes may be relatively high for the next two to three years, we argue that an overcapacity of Crude Tankers has been building up in the background, masked by temporary factors brought on by excess crude oil supply. Excess fleet capacity may come into play as early as at the end of 2016 or at the beginning of 2017. Accordingly, we expect freight rates and secondhand values to decline within the next 12-18 months. For a five-year old VLCC, we estimate that the secondhand value could drop from today's level of USD 76 million to around USD 60-65 million. The effect on older vessels may be further exacerbated by the expected reduction in their economic life as a result of premature scrapping.

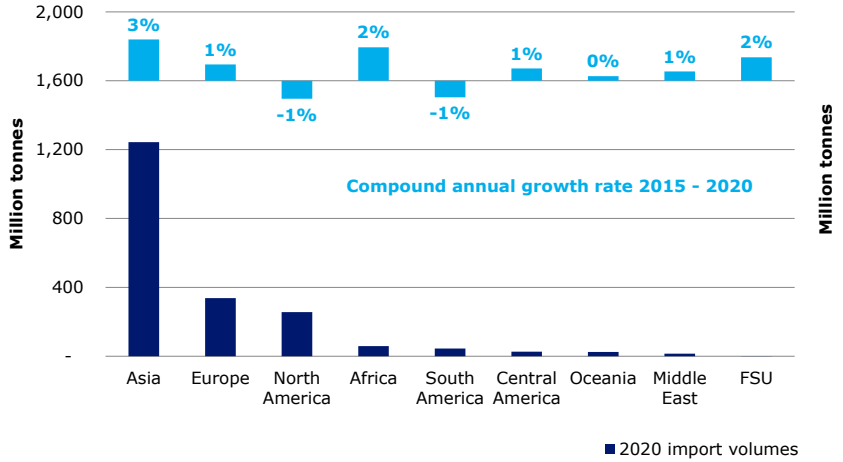
COP21 – GLOBAL AVERAGE TEMPERATURE RISE OF WELL BELOW 2°C

Above, we argue that Crude Tankers might have another year or two of acceptable freight rates and secondhand values. But as we all know, vessels and refineries are being built to last several decades. Let us look ahead to the next decade or two. From the recent meeting in Paris – the COP21 – it seems clear that the global climate agenda targets a cut in greenhouse gas emissions that will cap the global average temperature rises at "well below" 2 degrees Celsius. Fulfilment of this ambition will require major investments in energy efficiency, clean technology and renewable energy.

Figure P.15

Seaborne crude oil volumes are expected to grow by around 2% per annum until 2020

Increasing Asian import volumes continue to be the main driver of growth



Sources: IHS Global Insight, Clarksons, Danish Ship Finance

FOCUS ON TRANSPORT IS ESSENTIAL IF EMISSIONS ARE TO BE CUT

Energy efficiency and decarbonisation are not confined to the transport sector; the industrial, residential, petrochemical, agricultural and commercial sectors of the economy are also pushing strongly for cleaner energy. However, the transport sector accounts for more than half of global oil demand, making it central to the discussions on how to lower carbon emissions.

ELECTRIFIED VEHICLES MAY GAIN MARKET SHARE

Through continuous improvements in technology and lower costs, electrified vehicles are expected to gain market share from conventional vehicles in the coming years. Electrified vehicles are expected to achieve cost competitiveness with conventional vehicles in tandem with lower battery costs and higher battery performance. In short, the penetration of technologies that can contribute to decarbonising the vehicle fleet in the medium term seems to be moving towards a tipping point.

IS IT THE BEGINNING OF THE END OF THE FOSSIL FUEL ERA?

Still, fossil fuels will continue to play an important role in the energy mix, but cleaner energy sources and energy efficiency improvements are expected to gain ground. Coal may be affected first, but in time oil demand will be lowered too. Clearly, the speed at which changes will occur is highly uncertain. However, no matter how long the transition period is, the world could begin to see a more widespread decoupling between economic growth and oil demand.

PRODUCT TANKER

SHIPPING MARKET REVIEW – MAY 2016

DANISH SHIP FINANCE

PRODUCT TANKER

THE PRODUCT TANKER MARKET HAS BEEN BENEFITTING FROM STRONG TRADING ACTIVITY AND HIGH FREIGHT RATES BUT OVERCAPACITY HAS BEEN BUILDING UP IN THE BACKGROUND. WE EXPECT THAT THE STRONG MARKET MAY COME TO AN END SOONER THAN GENERALLY EXPECTED. OVERCAPACITY COULD START TO WEIGH ON THE MARKET IN THE NEXT 12 MONTHS.

FREIGHT RATES

FREIGHT RATES HAVE BEEN ON A DOWNWARD TRAJECTORY SINCE THEIR PEAK IN THE SUMMER MONTHS. REFINERY MAINTENANCE, A MILD WINTER AND AN EXCESS OF REFINED PETROLEUM PRODUCTS BEAR SOME OF THE BLAME FOR THE SHARP DROP.

CLEAN TANKER EARNINGS HAVE DECLINED SIGNIFICANTLY

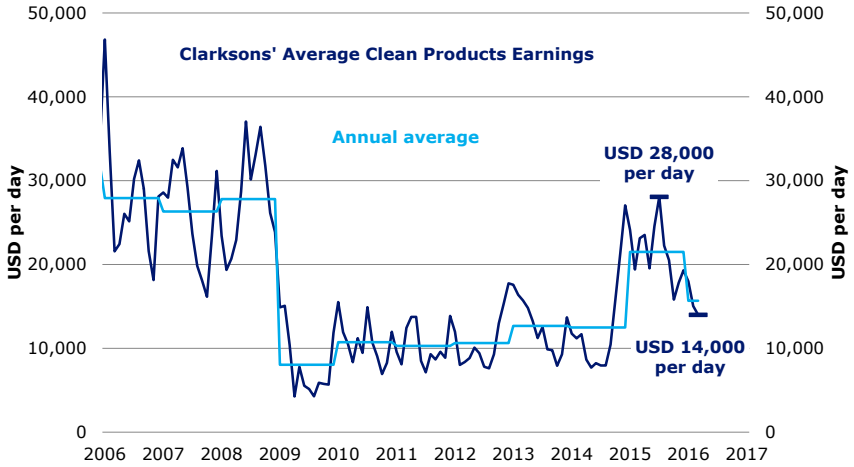
Clarksons' 'Average Clean Products Earnings' has declined significantly since its peak in July 2015, from more than USD 28,000 per day to around USD 14,000 per day in March 2016 (fig. 1). Earnings usually decline in the third quarter of each year when seasonal maintenance at refineries sets in, but this time, the decline in earnings has been exacerbated by a very mild winter in the northern hemisphere brought on by the return of the weather phenomenon El Niño. Also, the oversupply of refined petroleum products has blocked numerous arbitrage flows, lowering trading activity and thus demand for Product Tankers.

TIMECHARTER RATES HAVE ALSO COME DOWN TO A LOWER LEVEL

Timecharter rates have also declined markedly since their peak in the summer months. In particular, LR2 and LR1 timecharter rates have dropped significantly. On average, 1-year LR2 and LR1 timecharter rates have decreased more than 25% in the last seven months. In comparison, MR timecharter rates have declined by less than 10%, but they also increased much less than LR2 and LR1 timecharter rates did in the first half of 2015 (fig. 2).

Figure P.1

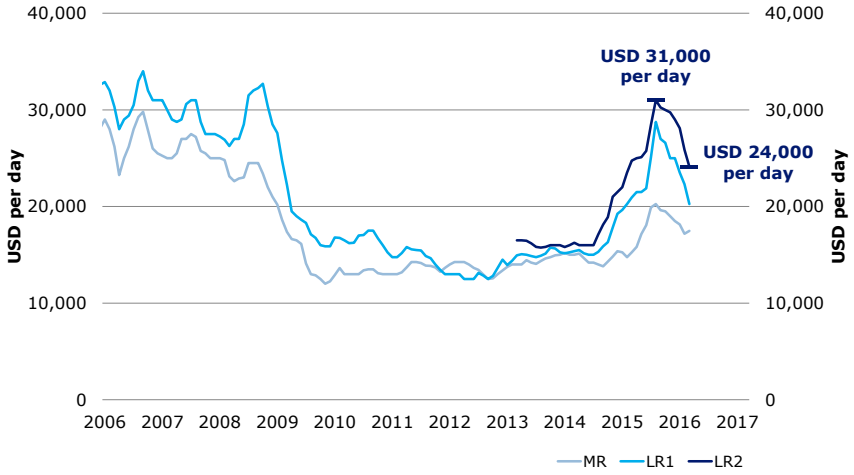
Product Tanker earnings have halved since their peak in 2015



Sources: Clarksons, Danish Ship Finance

Figure P.2

On average, timecharter rates dropped close to 20% during the first three months of 2016

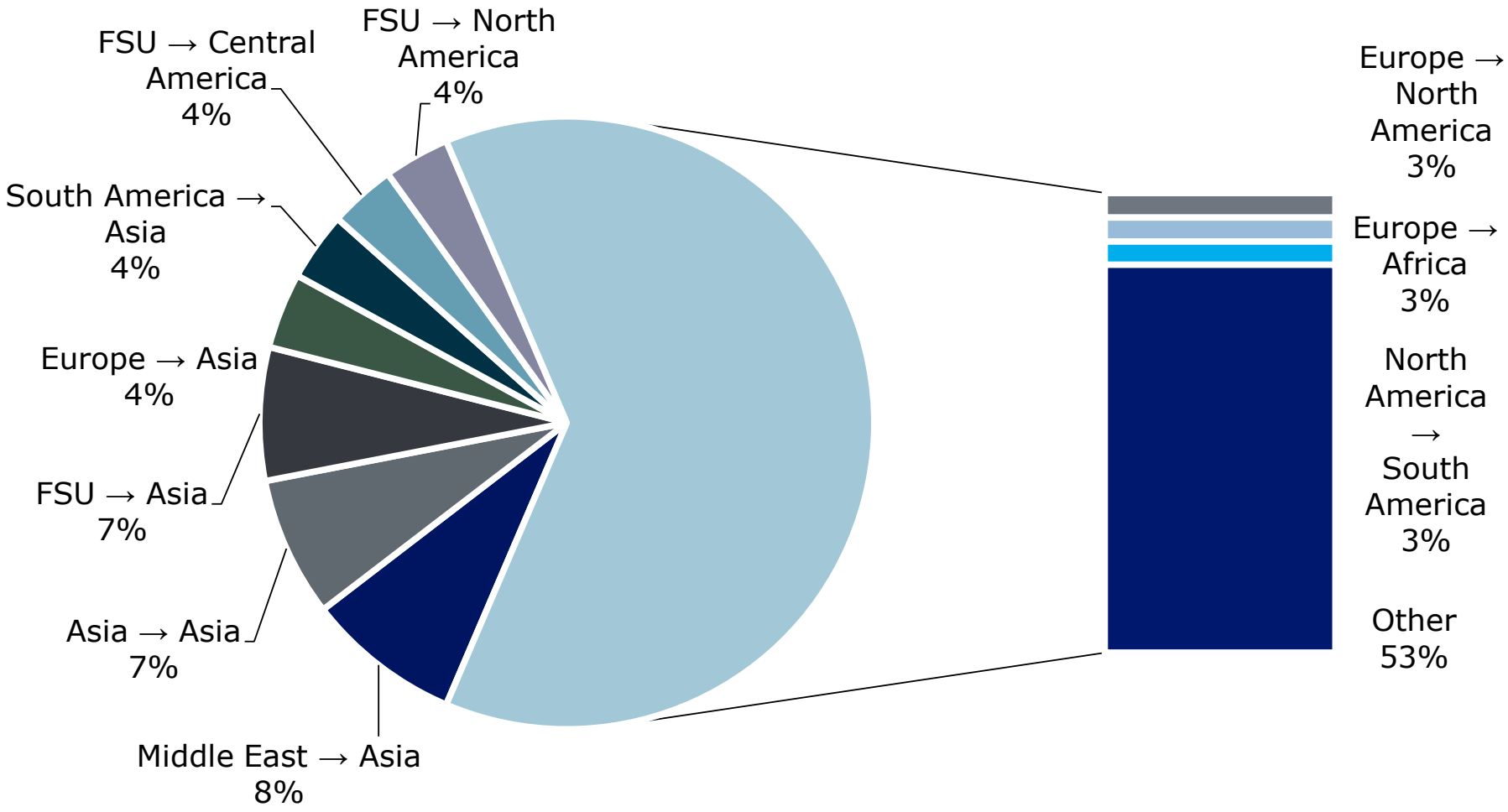


Sources: Clarksons, Danish Ship Finance

Figure P.3

Major Product Tanker trades

(Measured in billion tonne-miles, 2015)



Sources: IHS Global Insight, Danish Ship Finance

TEMPORARY FACTORS CONTINUED TO BENEFIT THE PRODUCT TANKER MARKET IN 2015, AS THEY ENABLED THE MARKET TO ABSORB 6% FLEET GROWTH BROUGHT ABOUT BY AN INCREASE IN DELIVERIES AND RECORD-LOW SCRAPPING.

TEMPORARY FACTORS CONTINUE TO BENEFIT PRODUCT TANKERS

The Product Tanker market continues to benefit from a variety of temporary factors caused by, for instance, regional refinery imbalances. These factors have generated unusually high trading activity for more than a year now. Still, we maintain a cautious view of the sustainability of the strong freight rate environment, as we believe that the high trading activity is masking the fact that a fundamental oversupply of vessels is building up. When refineries have been upgraded, trading activity is likely to return to more normal and lower levels reflecting underlying demand.

THE PRODUCT TANKER FLEET GREW BY 6% IN 2015

The influx of Product Tankers continued to increase in 2015, pushing annual net fleet growth to around 6%. A total of 145 Product Tankers were delivered during the year. Eight out of ten vessels were MR Tankers, while LR2s dominated the residual (fig. 4).

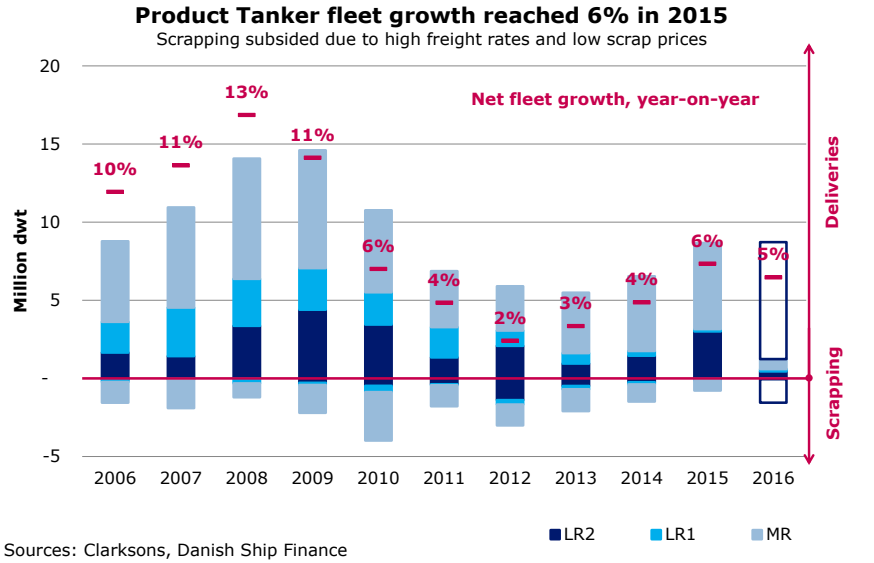
PRODUCT TANKERS CONTINUED TO BE CANCELLED OR POSTPONED

Despite the high freight rate environment, owners only took delivery of around two-thirds of the orderbook, equivalent to almost 9 million dwt, apparently postponing more than 22% and cancelling the remaining 12% of orders scheduled for delivery in 2015. The majority of orders cancelled, 52%, were MR Tankers, primarily from STX Dalian in China (fig. 5).

SCRAPPING DECREASED TO AN HISTORICALLY LOW LEVEL

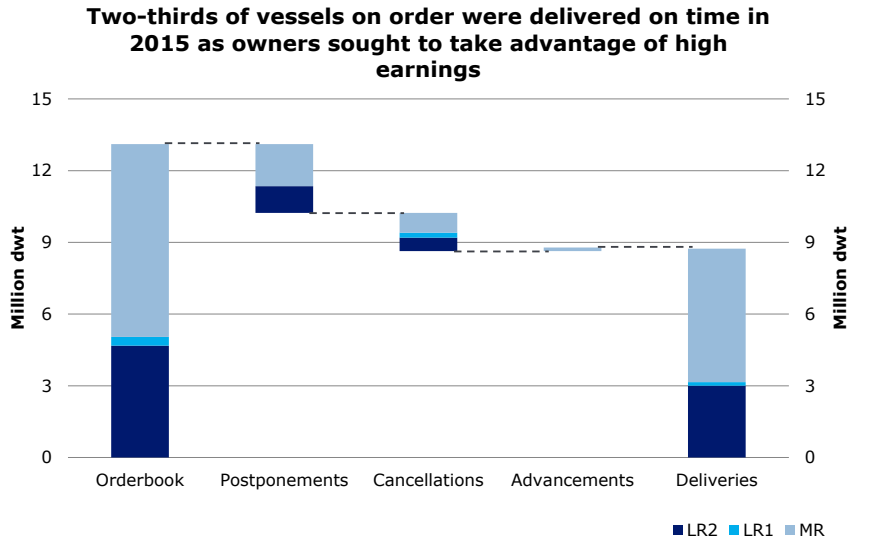
Scrapping remained low, as high freight rates and a young age profile of the Product Tanker fleet encouraged owners to continue operating their vessels. Only 24 vessels with a combined capacity of 0.8 million dwt were scrapped during 2015 (fig. 4). This is among the lowest levels of scrapping activity seen during the last decade.

Figure P.4



Sources: Clarksons, Danish Ship Finance

Figure P.5



Sources: Clarksons, Danish Ship Finance

THE NOMINAL GAP BETWEEN SUPPLY AND DEMAND WIDENED IN 2015

The high freight rate environment clearly illustrates that the Product Tanker fleet is being employed despite the high inflow of new vessels. Nonetheless, the nominal gap between supply and demand seems to have widened last year. It appears that fundamental demand for seaborne petroleum products contracted by 1% in 2015 compared with net fleet growth of nearly 6%. We estimate that the fundamental gap between supply and demand widened by 7-8% to 27% during 2015 and it is expected to widen further to 33% in 2016.

HIGH REFINING MARGINS AND VOLATILE PRICES HAVE BOOSTED TRADE

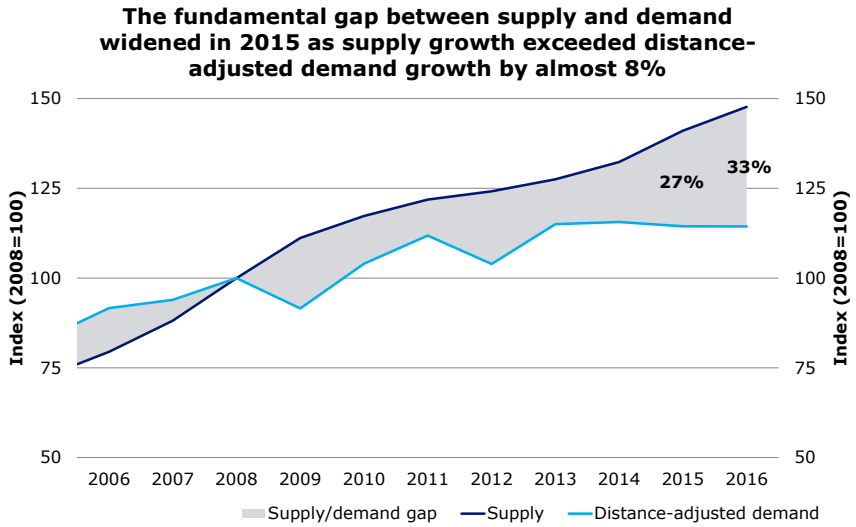
The high trading activity has been propelled by factors related to volatile and declining crude oil prices; two factors in particular. First, high refinery margins have incentivised refineries to increase production, which in turn has increased demand for Product Tankers (fig. 7). Second, price volatility in petroleum products has generated significant arbitrage opportunities, whereby Product Tanker cargoes have been sold more than once, thus increasing average voyage time. These effects are not accurately reflected in the nominal gap between supply and demand, which explains some of the discrepancy between it and the high Product Tanker freight rates.

LOWER PRODUCT TANKER PRODUCTIVITY

Surplus production of both crude oil and refined petroleum products has dominated the oil markets for more than a year. Inefficiencies related to this oversupply have supported Product Tanker demand for a similar period. However, this is hardly a sustainable source of future demand.

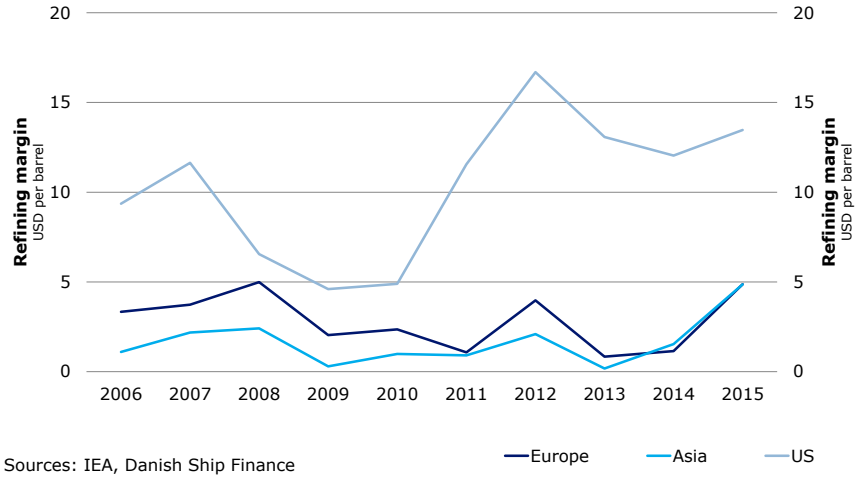
One inefficiency supporting trading activity emerges if refinery configurations – over a period – do not reflect underlying demand. If this is the case, production of all petroleum products has to be increased to meet the demand for one, for example gasoline, thus creating a surplus of the other petroleum products. This has been the situation for more than a year. Consequently, Product Tanker demand has been supported not only by strong gasoline demand but also by the need for transportation and storage of surplus petroleum products, diesel in particular.

Figure P.6



Sources: IHS Global Insight, Clarksons, Danish Ship Finance

Figure P.7



Sources: IEA, Danish Ship Finance

Much of this oversupply has been shipped to Europe – the world's largest consumer of diesel – bringing storage facilities to record highs and creating problems with ullage (i.e. free space above the liquid contained in storage to accommodate expansion of the liquid). The problems have been further exacerbated by low water levels on the Rhine, hindering access to additional storage capacity. As a consequence, Product Tankers have been forced into floating storage while waiting to discharge – even though the level of contango has been insufficient to make this profitable. Some have also extended their voyages by sailing longer routes to Europe. A few cargoes have even been shipped back to Asia, as it has not been possible for them to be discharged as intended. In combination with arbitrage-driven trade and weather-related disruptions, these forces have lowered the productivity of the Product Tanker fleet and hence supported the strong freight rate environment beyond the fundamental balance between supply and demand.

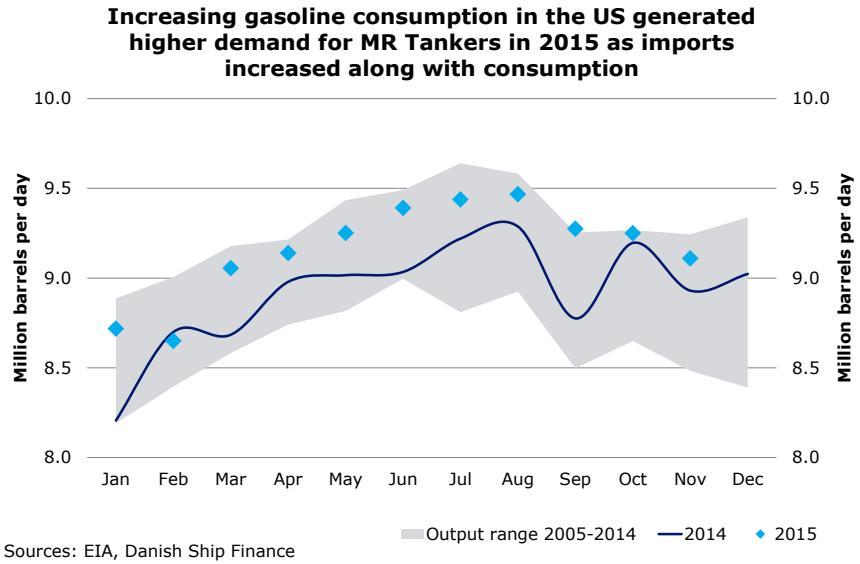
LOWER RETAIL PRICES HAVE FUELLED PRIVATE CONSUMPTION

The lower prices of petroleum products have had a positive effect on consumer demand, in particular US gasoline consumption. In 2015, US gasoline consumption grew to its highest levels since the financial crisis in 2008 (fig. 8). This has prompted refineries to operate at even higher utilisation rates and retailers to increase gasoline imports from Europe in particular, absorbing several MR Tankers in the process.

ASIA HAS ALSO SEEN SIGNIFICANT GROWTH IN GASOLINE DEMAND

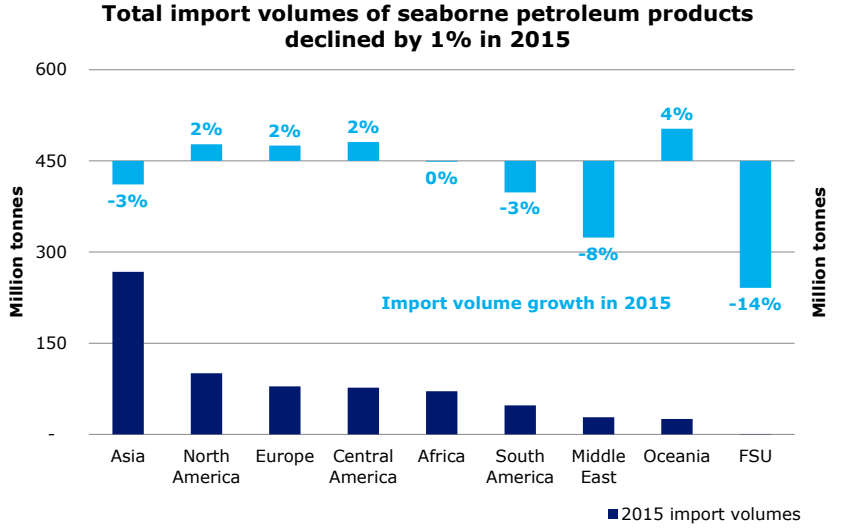
A similar situation occurred in Asia last year, where gasoline consumption in some of the major countries, such as China and India, increased by double digits. As a result, their refineries have also maximised gasoline production by increasing utilisation rates and adjusting production in favour of gasoline. At the same time, refineries have lowered their naphtha production, prompting higher Asian naphtha imports from Europe and the Middle East, and thereby fuelling demand for LR2 Tankers, in particular.

Figure P.8



Sources: EIA, Danish Ship Finance

Figure P.9



Sources: IHS Global Insight, Danish Ship Finance

AFTER REACHING ITS FOURTH-HIGHEST LEVEL IN 2015, CONTRACTING SEEMS TO HAVE COME TO A HALT IN 2016 AS MARKET EXPECTATIONS HAVE WEAKENED, PULLING DOWN ASSET PRICES IN THE PROCESS. THE BALANCE BETWEEN SECONDHAND PRICES AND EARNINGS HAS WORSENED.

CONTRACTING SEEMS TO HAVE COME TO A HALT IN 2016

Sustained high freight rates and a new regulation aimed at reducing NOx emissions encouraged owners to step up contracting activity in 2015. In total, more than 11 million dwt, equivalent to 162 vessels, was contracted in 2015, the fourth-highest level ever recorded. Contracting, however, appears to have come to a halt in 2016, with only 0.15 million dwt contracted in the MR segment during the first quarter. This could provide some necessary respite to the Product Tanker market and ease any downward pressure on freight rates brought about by the high 2015 contracting.

NEWBUILDING PRICES ARE WEAKENING AS CONTRACTING STAYS LOW

Even though Product Tanker freight rates and contracting were strong in 2015, newbuilding prices have been decreasing slightly, by around 2-3%, since the middle of 2015, as significantly lower contracting activity across most shipping segments has put pressure on global yard capacity.

SECONDHAND PRICES HAVE DROPPED IN RECENT MONTHS

Contrary to newbuilding prices, secondhand prices remained high during 2015. But a sharp drop in freight rates in the first quarter of 2016 challenged the outlook for Product Tanker earnings and caused a decline in secondhand prices. LR2 prices, in particular, declined significantly, with the price of a 5-year old LR2 Tanker down USD 6 million to USD 42.5 million from December 2015 to March 2016 (fig. 11).

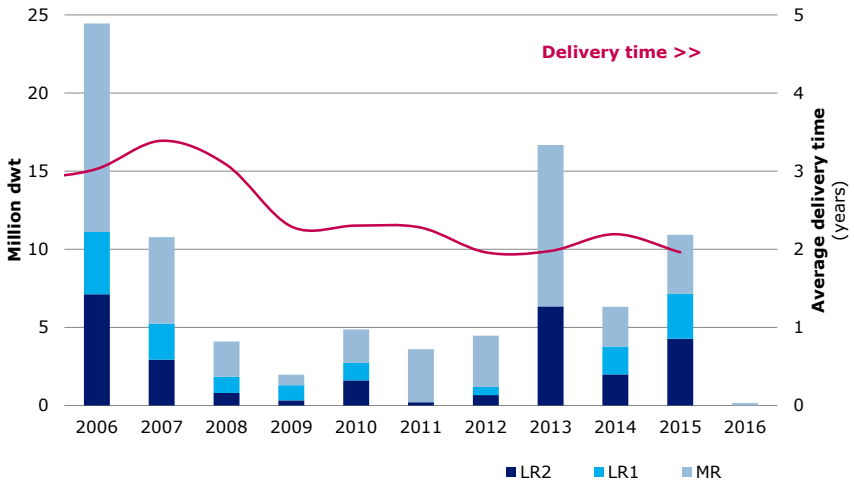
PRICE/EARNINGS RATIOS HAVE BEEN RISING RECENTLY

Price/earnings ratios have been rising since the start of 2016, as the sharp drop in earnings has not been offset by a similar decrease in secondhand values. Ratios are still among the lowest levels since 2009, but are rising quite fast, indicating an imminent risk of a drop in secondhand prices.

Figure P.10

More than 11 million dwt was contracted in 2015

Contracting seems to have almost come to a halt in 2016

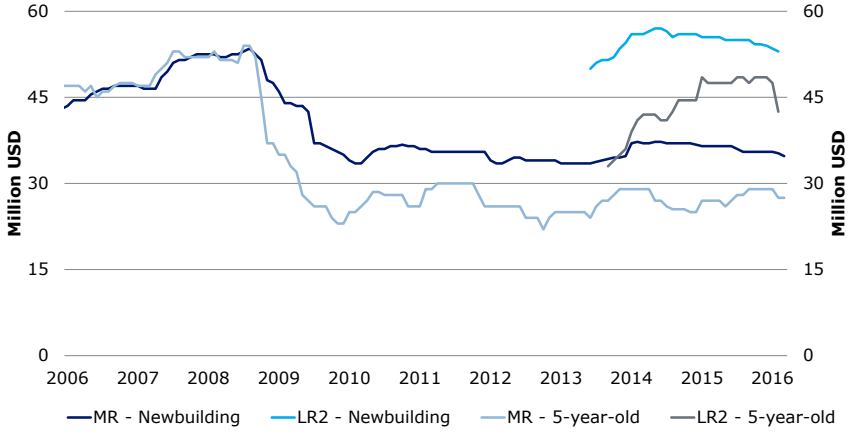


Sources: Clarksons, Danish Ship Finance

Figure P.11

Newbuilding prices have been on a downward trajectory since the middle of 2015

Secondhand prices have only recently begun their decline. However, the drop has been quite severe in the LR2 segment in particular



Sources: Clarksons, Danish Ship Finance

THE STRONG PRODUCT TANKER MARKET MAY FALTER DURING THE NEXT 12 MONTHS, WITH TRADING ACTIVITY NORMALISING IN TANDEM WITH A HIGH INFLOW OF NEW VESSELS. THE LOW SCRAPPING POTENTIAL IN THE LR2 SEGMENT AND A HIGH NOMINAL GAP BETWEEN SUPPLY AND DEMAND ARE LIKELY TO LOWER FREIGHT RATES AND SECONDHAND PRICES.

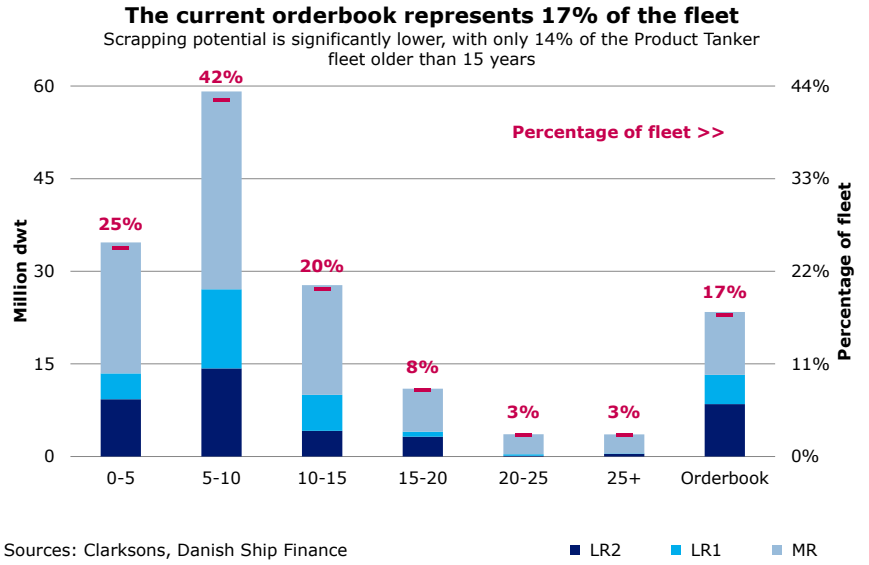
ORDERBOOK-TO-FLEET AT 17%

The high contracting activity during 2015 has kept the Product Tanker orderbook roughly unchanged. It currently equals 17% of the fleet and contains more than 23 million dwt, which is expected to be delivered within the next three years (fig. 12). The orderbook may prove difficult to absorb if trading activity fails to meet expectations, since only 14% of the fleet is older than 15 years. This applies particularly to the LR1 and LR2 segments, where the orderbook-to-fleet ratios are 20% and 27%, respectively. We believe that the economic life of LR2 Tankers, in particular, may come under pressure if demand fails to employ the new vessels, which in turn may lower secondhand values. Some of the LR2s may choose to trade crude on a par with Aframax Crude Tankers, but options such as this are unlikely to have enough of an impact to change the outlook.

FLEET GROWTH IS EXPECTED TO REMAIN HIGH AT AROUND 5%

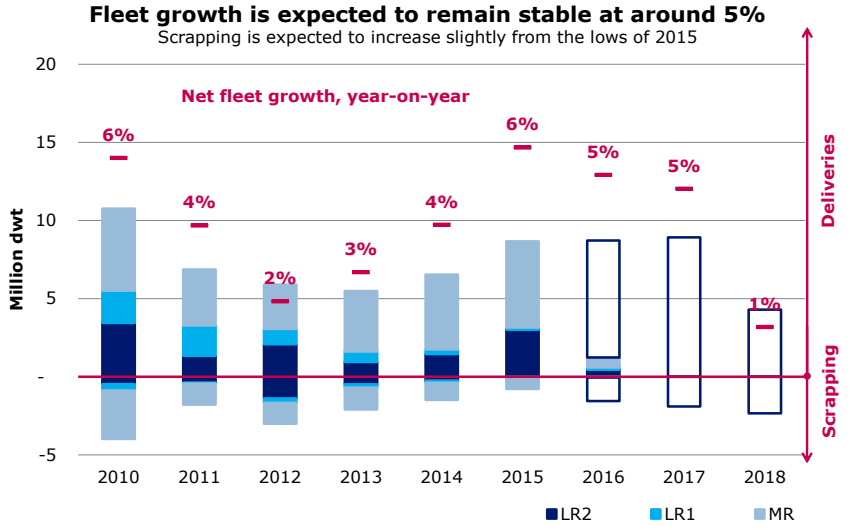
An annual inflow of vessels amounting to 9 million dwt is expected in both 2016 and 2017, increasing the Product Tanker fleet by a gross rate of 6% in both years. Meanwhile, scrapping activity is expected to remain low as long as freight rates remain high (fig. 13). We expect to see lower freight rates during the last few months of 2016 or the beginning of 2017, although a cold winter could help maintain freight rate levels for longer. In fact, we believe the Product Tanker market is approaching a point where trading activity will not be sufficient to absorb the incoming vessels and the oversupply of vessels may start to make itself felt. We go through the reasons for this below.

Figure P.12



Sources: Clarksons, Danish Ship Finance

Figure P.13



Sources: Clarksons, Danish Ship Finance

THERE IS MORE TO PRODUCT TANKER DEMAND THAN SEABORNE OIL

Demand for seaborne petroleum products is expected to increase by around 1.6% per annum in the coming five years (fig. 14). But demand for Product Tankers is defined by much more than just end-user demand for petroleum products. A volatile oil price is often a source of additional trading activity, and the high activity seen during the last 12-18 months indicates that additional sources such as arbitrage-driven trades, storage-related activity and trades resulting from differences in the specifications of the refined products produced have been contributing. For the rest of 2016, we expect that these factors will still be present but that they will only boost trading activity to a limited extent. If prices of petroleum products stabilise or increase, trading activity could easily decline (i.e. arbitrage windows would occur less frequently and current credit limits would allow for less trading).

ADDITIONAL REFINERY CAPACITY IMPACTS TRADE PATTERNS

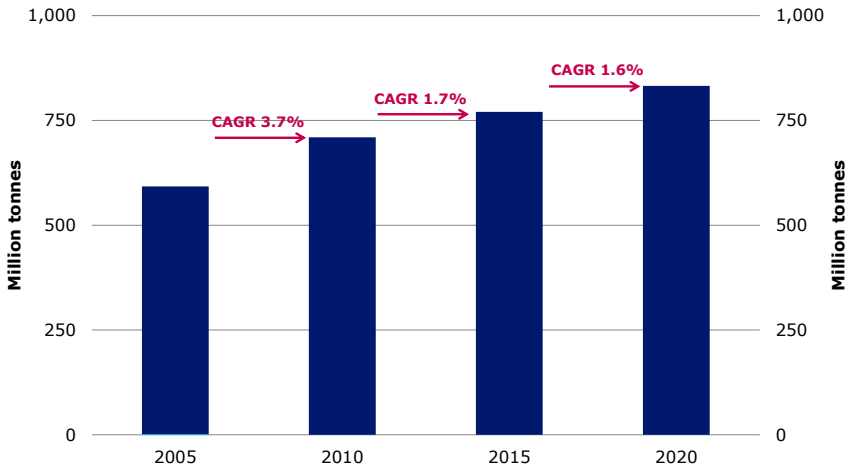
The opening of new refineries or shutdowns of existing facilities impact Product Tanker trading activity and trade patterns significantly. In 2015, global refinery capacity grew by 1.3 million barrels per day. The majority came online in the Middle East and Asia (i.e. the two largest contributors to both refinery capacity additions and growth in demand for petroleum products), while some capacity was shut down in Oceania. In 2016, refinery capacity is expected to grow by 0.5 million barrels per day, as significantly less capacity is expected to come online in Asia and the Middle East. True, refinery capacity is expected to increase by 1.4 million barrels per day in 2017, but that will not support freight rates in 2016. Besides, increased refining capacity is no guarantee of higher demand for petroleum products. How much more demand can additional refinery capacity generate?

THE SHARE OF PETROLEUM PRODUCTS TRANSPORTED BY SEA IS RISING

Today, less than 20% of petroleum products consumed are seaborne. Assuming that all new refinery capacity in 2016 is exported by sea, demand for Product Tankers could grow by up to 3% this year. While this might seem unlikely given that only 20% of total petroleum products are seaborne, the location of refinery additions and expected shutdowns could generate addi-

Figure P.14

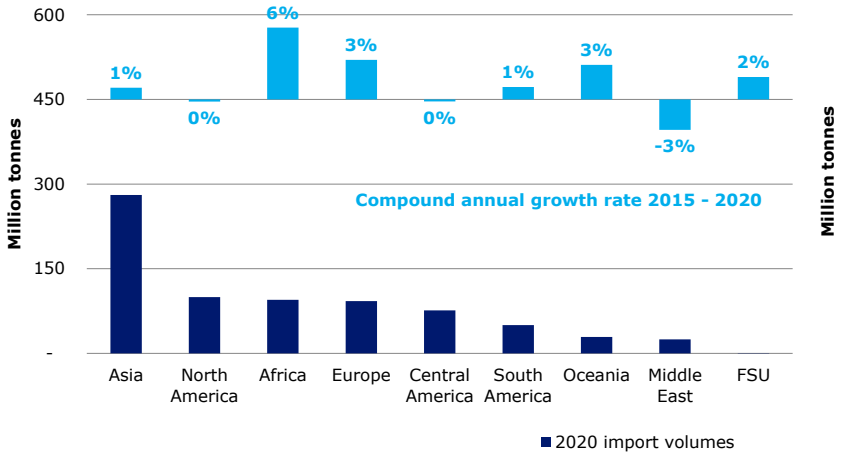
Volumes of seaborne petroleum products are expected to grow at roughly the same rate as in the last five years



Sources: IHS Global Insight, Danish Ship Finance

Figure P.15

An expected increase in trading activity is set to lift total import volumes of seaborne petroleum products in most regions



Sources: IHS Global Insight, Danish Ship Finance

tional Product Tanker demand – based on the assumption that utilisation rates at remaining refineries are kept unchanged. First, it seems that refinery capacity in Oceania is continuing to be shut down, even though demand is fairly stable. Second, US refinery additions are coming online in an area where the production of petroleum products is already at a surplus. Third, while Middle Eastern refinery capacity additions could crowd out some seaborne import volumes, differing specification requirements continue to make it more profitable to export petroleum products produced at new complex refineries and import low-quality petroleum products for regional consumption (see Shipping Market review – May 2015 for further details). Asian refinery additions, however, could hinder growth in imported volumes of seaborne petroleum products somewhat, but discrepancies between refinery configurations and demand may continue to grow in 2016, which will offset this.

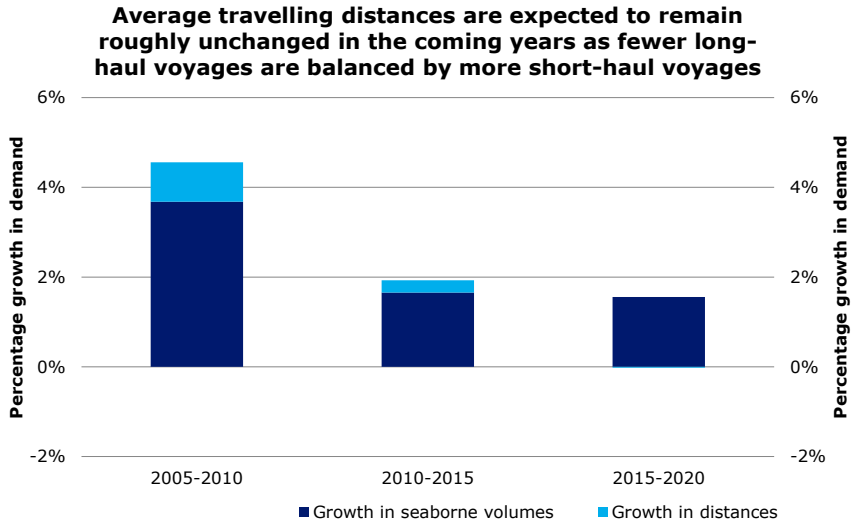
TRADING ACTIVITY COULD ABSORB UP TO 4% NET FLEET GROWTH

According to our estimates, trading activity might be able to absorb fleet growth of up to 4% in 2016, which would leave parts of the fleet unoccupied if the remaining capacity is not absorbed by scrapping. For freight rates to remain stable, almost 3 million dwt needs to be scrapped. We expect that approximately 1.5 million dwt will actually be scrapped during 2016 and we therefore expect to see downward pressure on freight rates and secondhand prices during the last few months of 2016 or first few months of 2017.

FREIGHT RATES AND SECONDHAND VALUES MAY FALL IN 2017

We expect that the overcapacity of vessels that has been building up in the background of the high trading activity will start to become more visible during 2017, as we believe that the temporary factors that have been powering the Product Tanker market since 2014 will begin to wane. The effect on secondhand values from declining freight rates is expected to be significant, in particular for the LR2 segment which has very few scrapping candidates.

Figure P.16



Sources: IHS Global Insight, Danish Ship Finance

THE WAR ON POLLUTION CONTINUES

In the long run, the global war on pollution may begin to impact the Product Tanker market as well (see the Crude Tanker section for further details). Gasoline and diesel are the key components of the Product Tanker market, and even though demand for these products may slowly fade as energy efficiency and technological advancements within renewable energy gain pace, we expect them to remain very relevant going forward. Kerosene, which is estimated to be used by between 250 and 500 million households in rural areas for heating and lighting – and accounts for a much smaller part of the Product Tanker market – could, however, soon be hit hard by the war on pollution. The environmental impacts of kerosene have long been underestimated, but recent studies show that 7-9% of kerosene consumed is converted to pure black carbon, which besides having a major impact on global warming also affects human health.

Kerosene could easily be replaced by other fuel sources in rural areas, especially given the rapid technological advancements seen within energy and energy storage. Some households may opt to use solar power in combination with energy storage, while others may choose to switch to LPG. The switch to LPG is currently taking place in several Asian countries. As a result, we anticipate a gradual decline in the amount of kerosene used by rural households.

THE PETROCHEMICAL SECTOR MAY BE A BRIGHT SPOT

There may be at least one bright spot though: demand for naphtha, a blending component in gasoline and the key element in the petrochemical sector, is increasing. The petrochemical sector is growing, plastics in particular, as their unrivalled properties and low costs make them essential in the modern economy. Plastics are used for everything from limiting food waste to reducing fuel consumption. Their use has increased twenty-fold in the past half century and is expected to continue to grow rapidly.

MASSIVE FUNDAMENTAL RISKS ARE BUILDING UP IN THE LONG TERM

Currently, the Product Tanker market is being supported by several discrete temporary factors which, in combination, are having a potent effect on Product Tanker freight rates. Although the short-term demand outlook is boosted by some positive, albeit largely temporary, factors, we fear that additional Product Tanker capacity will prove difficult for the market to absorb. As a result, we fear that freight rates may decline by the end of this year or the beginning of next year. Moreover, the longer-term prospects look rather bleak, as increasing focus on energy efficiency and decarbonisation could result in lower growth in demand for petroleum products and hence Product Tankers. Naphtha may prove to be a saving grace, as its use in the petrochemical sector adds significantly more benefits than disadvantages.

LPG TANKER

SHIPPING MARKET REVIEW – MAY 2016

DANISH SHIP FINANCE

LPG TANKER

THE MASSIVE INFLOW OF NEW VESSELS IS TAKING ITS TOLL ON FREIGHT RATES, AND ALTHOUGH DEMAND IS EXPECTED TO BE RELATIVELY STRONG, WE BELIEVE IT WILL BE INSUFFICIENT TO ABSORB THE NEW LPG TANKERS THAT ARE POURING INTO THE FLEET.

FREIGHT RATES

FREIGHT RATES HAVE DROPPED SIGNIFICANTLY SINCE THEIR PEAK LAST SUMMER. DOUBLE-DIGIT SUPPLY GROWTH AND SLOWER GROWTH IN DEMAND HAVE CHANGED THE MARKET SITUATION IN LESS THAN NINE MONTHS FROM RECORD-HIGH FREIGHT RATES TO THE LOWEST LEVEL SINCE 2010.

Some drop in freight rates was expected due to seasonality, but the speed and extent at which it has materialised has caught us by surprise. From their highs in July 2015, VLGC spot rates have dropped 75%, similar to what was seen in the Dry Bulk market in 2008. We can only hope that owners will hit the brakes on new contracting in time to make the path towards a new market balance smoother than it has been for the Dry Bulk market.

SPOT RATES HAVE DROPPED TO THEIR LOWEST LEVEL SINCE 2010

Spot rates were exceptionally strong in 2015, but in the second half of the year, they came under severe pressure as a massive inflow of new LPG Tankers hit the market. At the same time, growth in demand for LPG faded as petrochemical plants went into maintenance and propane dehydrogenation plants lowered utilisation rates. Recently, spot rates have continued to drop sharply, reaching their lowest levels since 2010, as demand has been insufficient to keep up with the rapidly expanding LPG fleet (fig. 1).

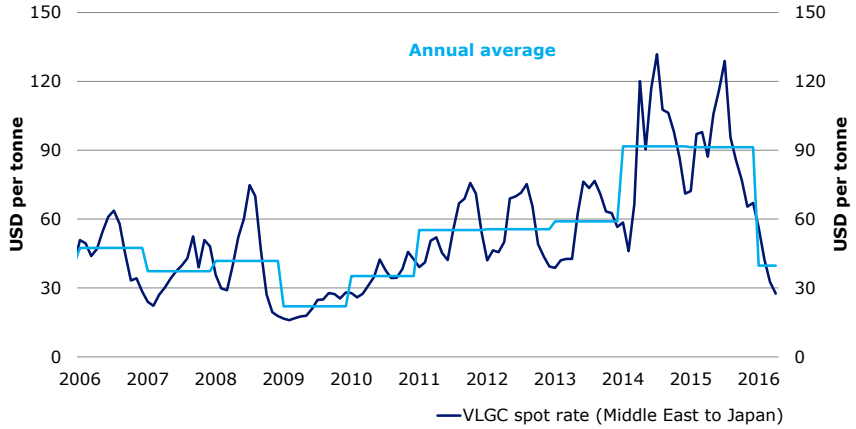
VLGC TIMECHARTER RATES HAVE ALSO DROPPED SIGNIFICANTLY

Timecharter rates have experienced a severe decline since their peak in July 2015. Continued high fleet growth has become a major cause for concern. The 1-year VLGC timecharter rate dropped more than USD 1 million per month since July 2015 to less than USD 1 million per month in March 2016 (fig. 2). The drop has not been as steep in other LPG segments, but likewise, their previous increases have also been less pronounced.

Figure LPG.1

VLGC spot rates have dropped 75% since their highs in July 2015

Recond-high fleet growth in combination with slower demand growth exacerbated the seasonal freight rate decline

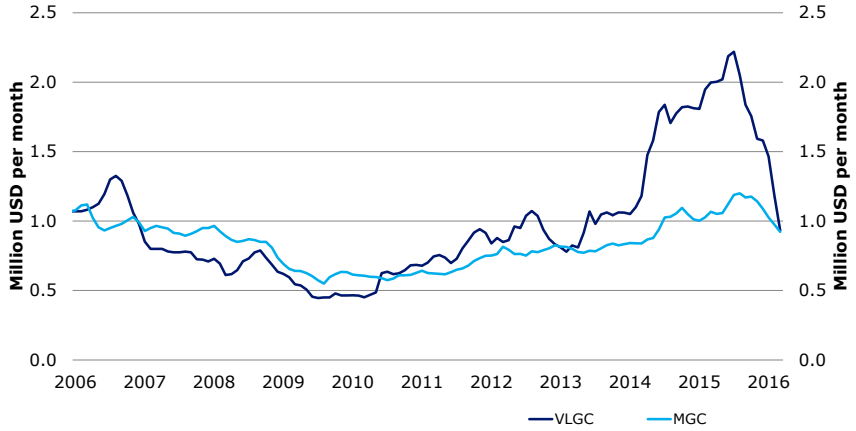


Sources: Clarksons, Danish Ship Finance

Figure LPG.2

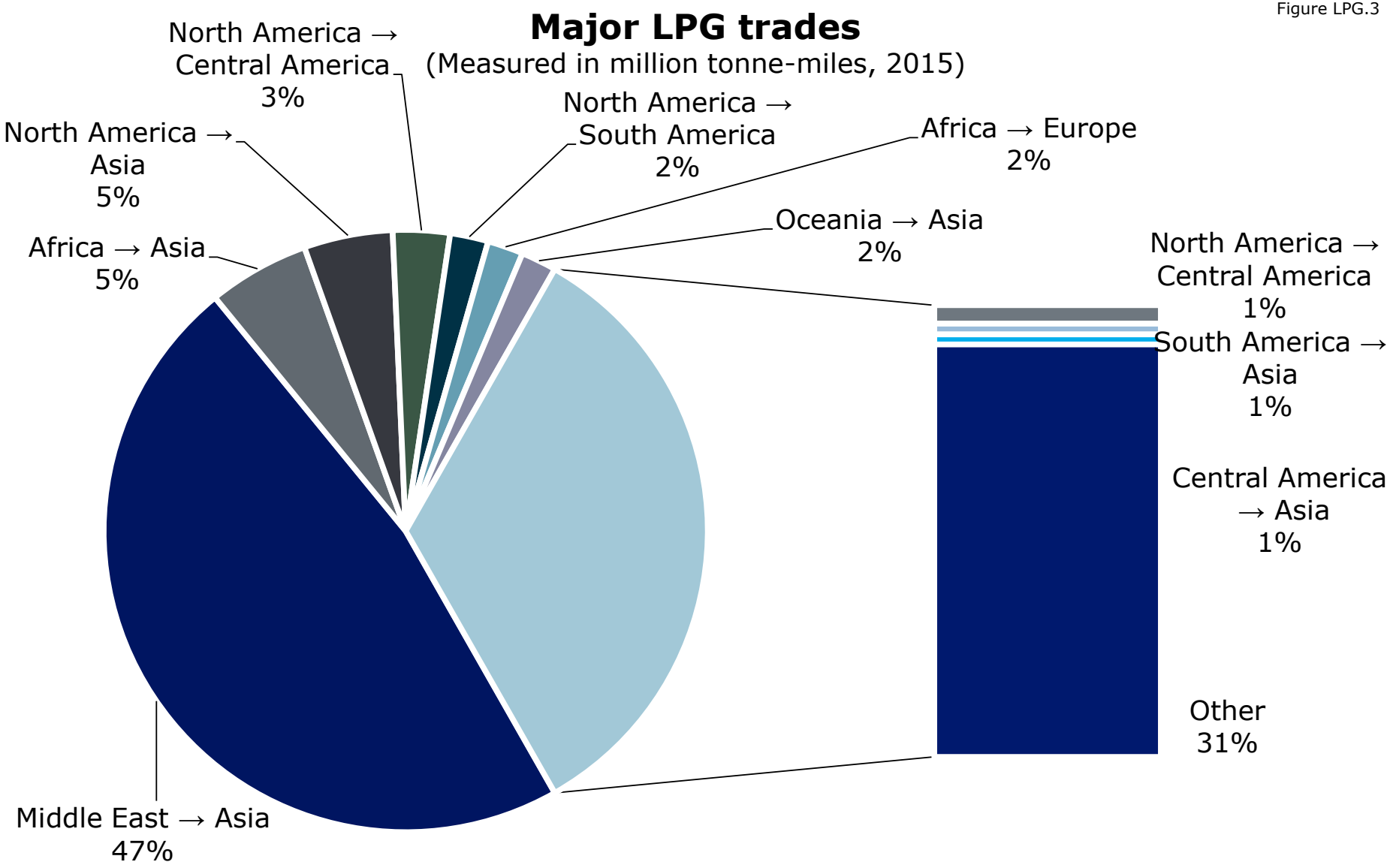
Recently, 1-year timecharter rates have decreased significantly

The 1-year VLGC timecharter rate is now below USD 1 million per month ~ USD 30.000 per day



Sources: Clarksons, Danish Ship Finance

Figure LPG.3



Sources: IHS Global Insight, Danish Ship Finance

AS ILLUSTRATED BY THE SHARP DROP IN FREIGHT RATES, THE GAP BETWEEN SUPPLY AND DEMAND REOPENED IN 2015. DEMAND WAS STRONG, GROWING BY AROUND 10%, BUT FLEET GROWTH OF 17% PROVED DIFFICULT FOR THE MARKET TO ABSORB WITHOUT JEOPARDISING RECORD-HIGH FREIGHT RATES.

FLEET GROWTH REACHED A NEW RECORD HIGH IN 2015

The LPG fleet expanded by a massive 17% in 2015. This record-high level was brought about by a 22% expansion of the VLGC fleet (fig. 4). Fleet growth was also relatively high in the remaining LPG segments, but together they accounted for less than 20% of total net deliveries in 2015. VLGC vessels accounted for the rest. Fleet growth gained pace in the second half of 2015, with more than twice the amount of Cu.M. delivered to the fleet. In 2016, fleet growth may set a new record, as LPG Tankers are continuing to pour in.

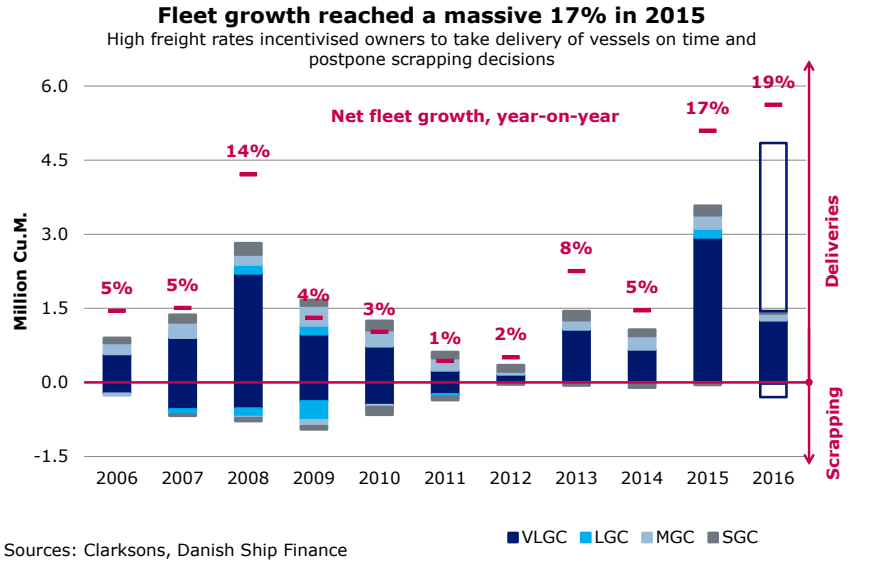
CLOSE TO 90% OF SCHEDULED ORDERS WERE DELIVERED ON TIME

Almost 90% of scheduled orders were delivered on time in 2015 as owners sought to take advantage of high freight rates while they could. Delivery of one VLGC Tanker was even brought forward from 2016 into 2015, but at the same time four VLGC Tankers were also postponed into 2016. Cancellations only occurred in the SGC segment, where demand remains more challenging (fig. 5). In total, 3.6 Cu.M. was delivered to the fleet in 2015.

HIGH FREIGHT RATES KEEP SCRAPPING AT A MINIMUM

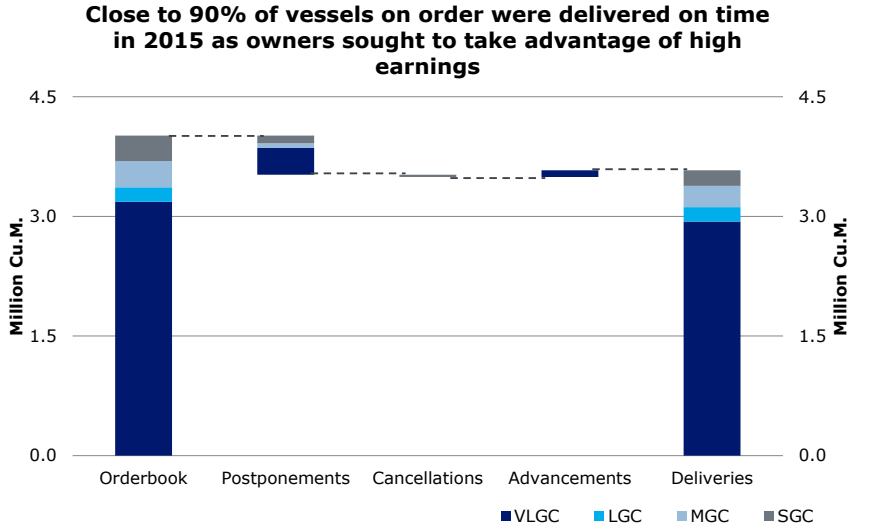
Scrapping was kept at a minimum. Less than 0.05 Cu.M. was scrapped in 2015, the second-lowest level ever (fig. 4). Scrapping was confined to the MGC and SGC segments. Premature scrapping in the SGC segment lowered the average scrapping age in the LPG market to 28 years in 2015. In comparison, the average scrapping age in the MGC segment was 32 years. It should be mentioned that only one MGC Tanker was scrapped in 2015.

Figure LPG.4



Sources: Clarksons, Danish Ship Finance

Figure LPG.5



Sources: Clarksons, Danish Ship Finance

THE GAP BETWEEN SUPPLY AND DEMAND REOPENED IN 2015

The severe drop in freight rates, especially towards the end of 2015, reflected that a clear gap between supply and demand opened up in 2015. Supply grew by a massive 17%, while distance-adjusted demand grew by around 10% in 2015. At the start of 2016, the fundamental gap between supply and demand was approximately 6%, and it is expected to widen to 23% by the end of the year (fig. 6).

LOWER DEMAND ALSO AFFECTED FREIGHT RATES IN 2015

Rising supply was the main cause of the severe drop in freight rates, but the decline was also exacerbated by three factors which lowered demand for LPG Tankers. First, the arbitrage window between the US and Asia closed. Second, naphtha prices reached parity with LPG prices. Third, the winter was relatively mild. But still, demand for seaborne LPG volumes grew by 10% in 2015, fuelled by new propane dehydrogenation plants in China in particular and household consumption in Asia in general.

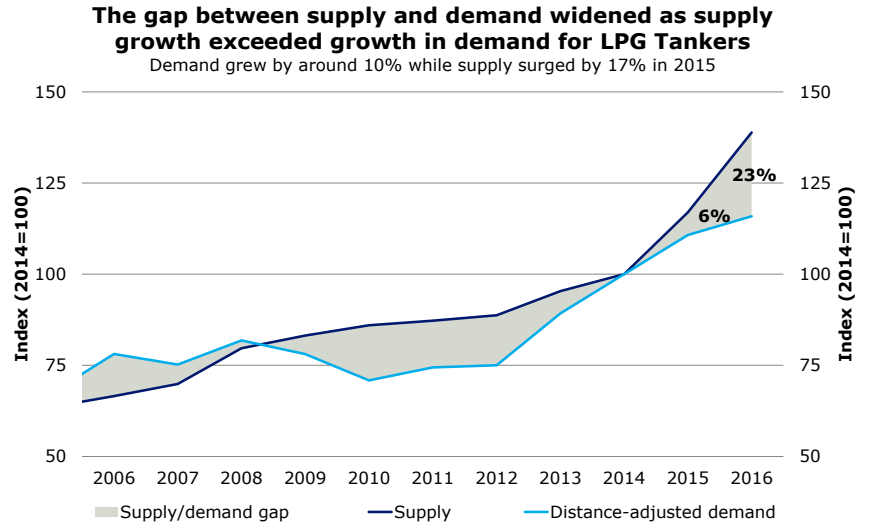
THE ARBITRAGE WINDOW BETWEEN THE US AND ASIA CLOSED

In just two years, the US has claimed a major share of the Asian market, which has increased average travelling distances and demand for VLGC Tankers significantly. But in the second half of 2015, the arbitrage window between the US and Asia closed, as relatively high LPG prices in the US made it unprofitable to import US LPG volumes. This led to lower trade between the two regions and intensified the seasonal drop in freight rates during the second half of 2015. In the latter part of March 2016, the arbitrage window slowly started to reopen and a few spot cargoes were fixed.

LOWER LPG IMPORTS AS THE NAPHTHA/LPG SPREAD NARROWED

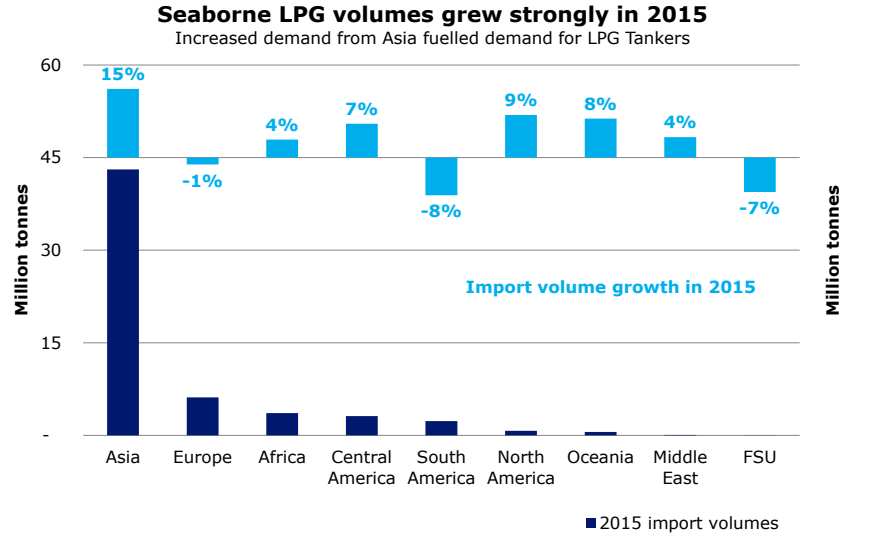
The narrower spread between naphtha and LPG also exacerbated the drop in freight rates. The spread narrowed as lower prices of refined petroleum products meant that naphtha prices essentially reached parity with propane prices. When naphtha is relatively cheap, it is favoured by the petrochemical industry over propane and butane, because it produces a better yield. Consequently, petrochemical plants switched feedstock, lower-

Figure P.6



Sources: Clarksons, IHS Global Insight, Danish Ship Finance

Figure LPG.7



Sources: IHS Global Insight, Clarksons, Danish Ship Finance

ing demand for seaborne LPG and thus LPG Tankers.

A RELATIVELY MILD WINTER REDUCED THE NEED FOR HEATING

Also, a warmer than usual winter in both the northern hemisphere and Asia kept heating demand low and stock levels high across the board. At the end of January, around the same time as crude oil prices started to increase, temperatures dropped in China and the LPG market experienced a slight upturn in demand which until then had been fairly lacklustre.

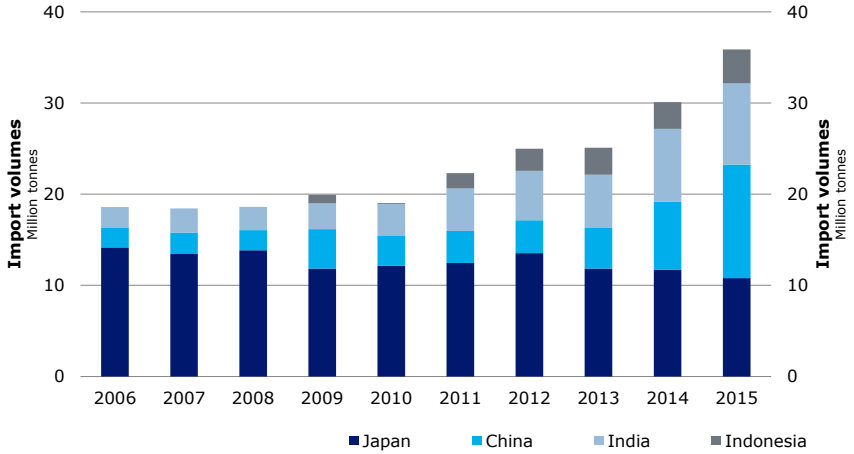
NEW PETROCHEMICAL PLANTS BOOSTED DEMAND FOR PROPANE

In 2015, the LPG market continued to be propelled by strong Asian import requirements originating from both the petrochemical industry and the household sector. In China, it was mainly the petrochemical industry that fuelled demand for seaborne LPG imports as new propane dehydrogenation plants came online, but household demand and an increasing need for gasoline blending components also contributed to making China the world's largest importer of LPG in 2015 (fig. 8). LPG, mainly butane, is used as a blending component in gasoline to increase its volatility during winter months. In India and Indonesia, seaborne LPG import volumes were mainly powered by the household sector, where LPG is increasingly being used as a substitute for kerosene and solid biofuels in order to curb pollution. Also, much lower LPG prices have boosted demand for LPG and thus seaborne import volumes.

Figure P.8

China, India and Indonesia in particular fuelled demand for seaborne LPG imports in 2015

China has now overtaken Japan as the world's largest importer of LPG



Sources: Joint Organisations Data Initiative (JODI), Danish Ship Finance

CONTRACTING GAINED PACE IN THE SECOND HALF OF 2015 AND REACHED ITS THIRD-HIGHEST LEVEL EVER. ALTHOUGH HIGH FLEET GROWTH HAS PUT PRESSURE ON FREIGHT RATES, SECONDHAND PRICES AND EARNINGS REMAIN IN BALANCE.

CONTRACTING REACHED ITS THIRD-HIGHEST LEVEL EVER IN 2015

Contracting reached its third-highest level ever in 2015. In total, 3.7 million Cu.M. was contracted, adding to an already massive orderbook (fig. 9). Despite significant decreases in freight rates, contracting gained pace in the second half of 2015, possibly because owners brought forward orders to avoid new NOx regulations imposed on vessels contracted after 1 January 2016. Minimal contracting in the first quarter of 2016 supports this theory, although contracting may also have been brought to a halt by the sharp drop in freight rates.

NEWBUILDING PRICES SLID AS YARDS FACED GREATER STRUGGLES

Newbuilding prices decreased during 2015 as yards struggled with overcapacity. The decline was largest in the MGC segment, where newbuilding prices slid by USD 5 million during 2015 to less than USD 50 million for an MGC Tanker. In comparison, a VLGC Tanker decreased by USD 3 million to USD 77 million (fig. 10).

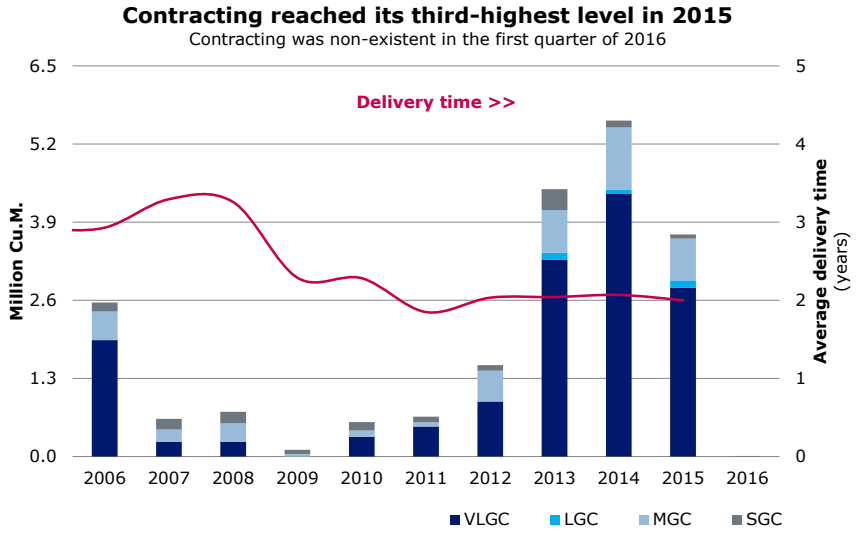
LESS VOLATILITY IN A NICHE MARKET

The LPG market is a niche market with less volatility in both freight rates and secondhand values compared with other segments. The value of a five-year-old VLGC is currently 20% below its peak in 2006, although earnings have recently been record-high. The lowest value recorded for a five-year-old VLGC is USD 48 million, only 40% below the current level. The point is that we foresee less downside risk in secondhand values than for other segments.

SECONDHAND PRICES DECREASED ALONG WITH FREIGHT RATES

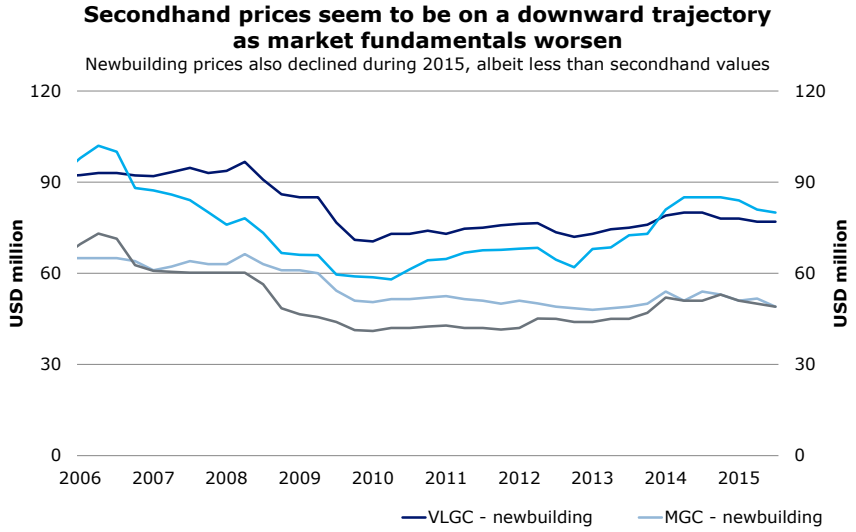
Secondhand prices for five-year-old vessels decreased on average by 6% in 2015 (fig. 10). In some segments, secondhand prices are still above newbuilding prices. This situation is expected to be reversed during 2016 as market fundamentals worsen.

Figure LPG.9



Sources: Clarksons, Danish Ship Finance

Figure LPG.10



Sources: Drewry, Danish Ship Finance

FLEET GROWTH IS SET TO REACH DOUBLE DIGITS IN THE NEXT TWO YEARS AND EVEN THOUGH DEMAND IS EXPECTED TO REMAIN RELATIVELY STRONG, IT IS UNLIKELY TO BE SUFFICIENT TO ABSORB NEW VESSELS. FREIGHT RATES AND SECONDHAND VALUES MAY DECREASE.

THE ORDERBOOK MAY PROVE DIFFICULT TO ABSORB

According to the current orderbook, the fleet could expand by a massive 34% over the coming three years, with around 8.9 million Cu.M. scheduled to be delivered (fig. 12). Around 3% of the LPG fleet is older than 30 years and even though the robust demand will limit scrapping requirements, premature scrapping will be necessary to counterbalance expected deliveries. We expect scrapping to increase slightly in the coming years, but not enough to align fleet growth with growth in demand. As a result, freight rates and secondhand values may continue to decline. The VLGC and MGC segments, in particular, are very exposed given their orderbook-to-fleet ratios of 36% and 52%, respectively.

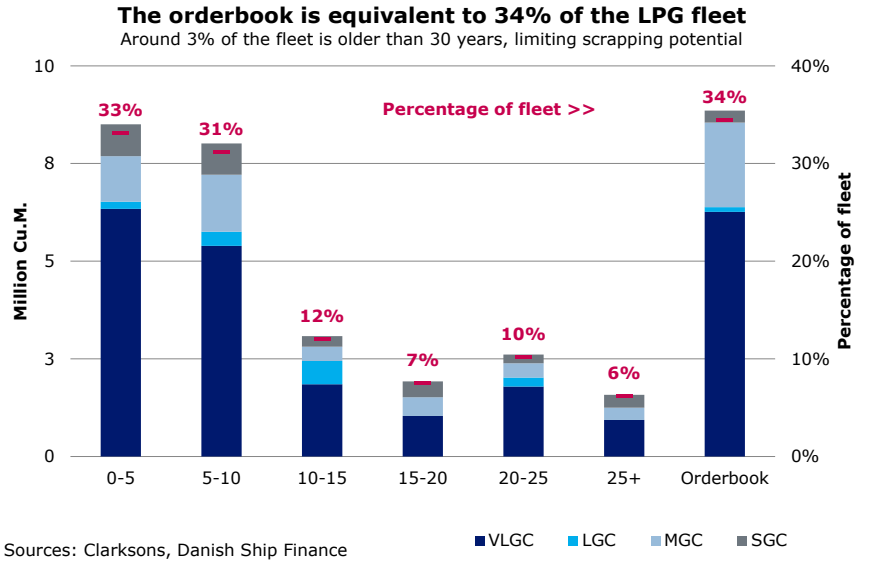
FLEET GROWTH IS SET FOR A NEW RECORD HIGH IN 2016

Fleet growth is set to peak at 19% in 2016. From a minimal level in 2015, we expect scrapping to increase in the coming two years as the large influx of new vessels puts additional pressure on freight rates and secondhand values (fig. 13). According to our calculations, VLGC fleet growth is expected to peak this year, while fleet growth in the MGC segment is expected to peak in 2017. This could potentially prolong the agony in the MGC segment significantly. If contracting is kept to a minimum in 2016 and onwards, total fleet growth may be capped at less than 5% in 2018. This provides a glimmer of hope that the market balance could begin to improve sometime after 2018. However, this would require contracting to remain low and demand to remain relatively firm beyond 2016.

FREIGHT RATES AND SECONDHAND VALUES MAY DECREASE FURTHER

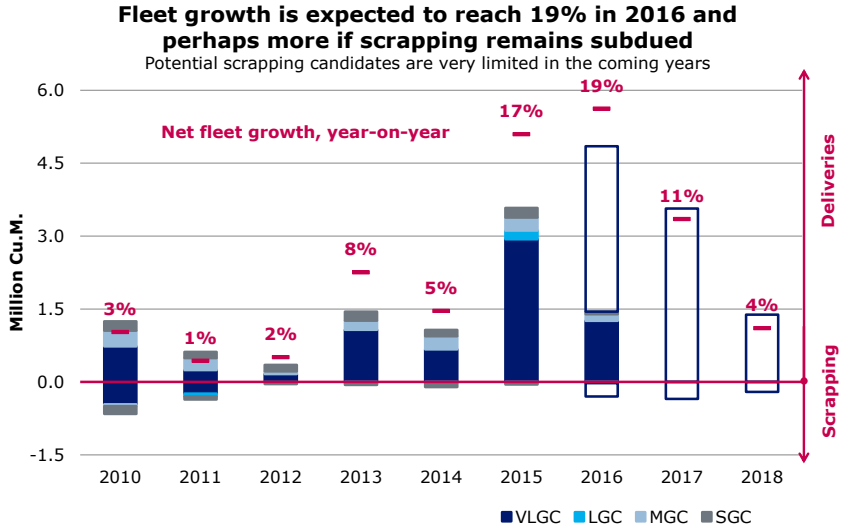
The LPG market has reached a point where it is unable to absorb the expected inflow of new vessels. Since their peak in the summer, freight rates have already dropped significantly.

Figure LPG.11



Sources: Clarksons, Danish Ship Finance

Figure LPG.12



Sources: Clarksons, Danish Ship Finance

Secondhand values, however, remain at relatively high levels. In the coming years, the gap between supply and demand is expected to continue to widen (fig. 13). As a result, freight rates are expected to remain low, while secondhand values are expected to decrease from their current levels.

ARBITRAGE WINDOWS COULD OPEN MORE FREQUENTLY

If freight rates stay low, transportation costs will decrease and, as a result, arbitrage windows could open more frequently around the world. This could create more trading opportunities and provide employment for a larger part of the LPG fleet. The arbitrage window between the US and the Asian market is especially important, as this route employs several VLGC Tankers with long travelling distances and low fleet productivity. Besides lower freight rates, the upcoming expansion of the Panama Canal could improve the economics of US exports to Asia. Although additional trading activity could absorb more LPG Tankers, we believe this will provide limited support to freight rates; rather, it is more likely to soften the freight rate declines in the coming two years.

CONTINUED LOW OIL PRICES POSE A THREAT TO LPG DEMAND...

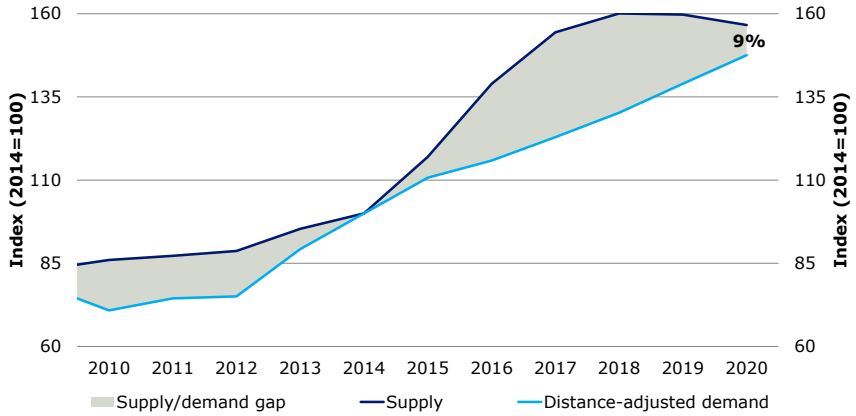
Prices of refined petroleum products have declined in tandem with crude oil prices. One refined petroleum product, naphtha, can be a substitute for LPG in the petrochemical industry. It produces a better yield than LPG and hence, if naphtha is not sold at a significant premium to LPG, it is the preferred option for the petrochemical industry. Lower oil prices have reduced naphtha's premium and consequently lowered demand for LPG.

...AND ALSO MAKE US LPG PRICES LESS COMPETITIVE

In general, LPG prices have a close correlation with crude oil prices, but US LPG prices are set at the Mont Belvieu hub in Texas. This has the advantage of ensuring more stable US LPG prices but the disadvantage of lowering their international competitiveness when crude oil prices are low. As a result, when crude oil prices are low, the arbitrage window between the US and Asia has a higher risk of closing. When this happens, fewer LPG Tankers, VLGC Tankers in particular, are required on this route, putting downward pressure on freight rates.

Figure LPG.13

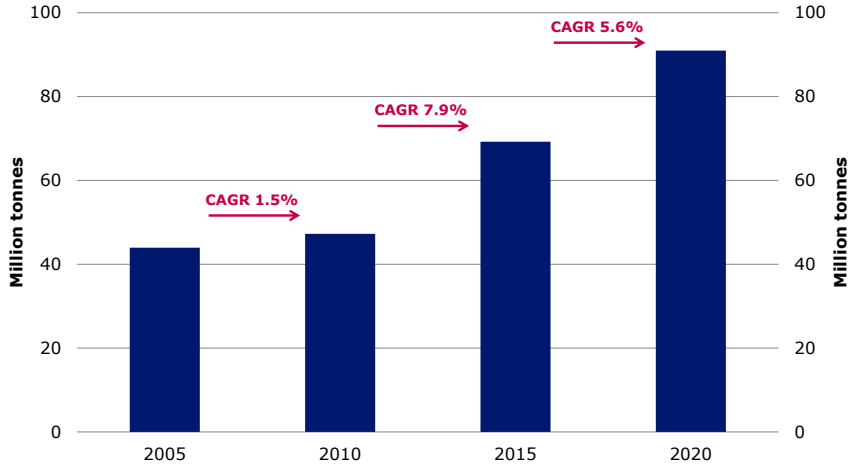
The gap between supply and demand is expected to widen considerably in the coming two years. It could, however, begin to narrow as early as from 2018 if contracting is kept at a minimum



Sources: Clarksons, IHS Global Insight, Danish Ship Finance

Figure LPG.14

Seaborne LPG volumes are expected to grow by 5.6% per annum in the coming five years



Sources: IHS Global Insight, Clarksons, Danish Ship Finance

... AND JEOPARDISE LPG SUPPLY

Global crude oil production, US shale oil in particular, is suffering severely, as low crude oil prices have lowered profitability to an unfeasible level. US shale oil production is already in decline, jeopardising LPG production in the process. So far, US LPG exports have not been affected, as the reason for the bottleneck has been limited export capacity. If US shale oil production continues to decline, US LPG exports may not be able to increase in accordance with expansion in export capacity. As a result, US LPG exports may absorb fewer VLGC Tankers than initially expected, adding to the pressure on freight rates.

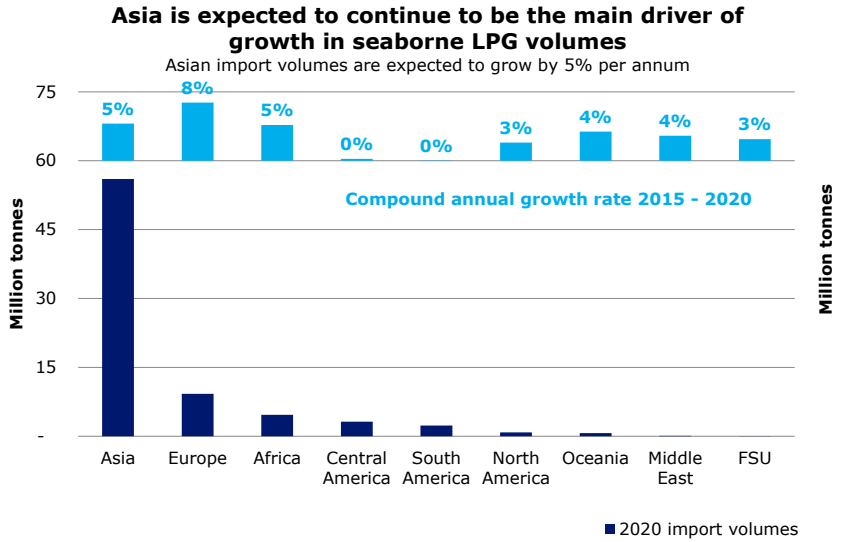
PETROCHEMICAL CAPACITY IS STILL GROWING, ALBEIT MORE SLOWLY

Propane dehydrogenation capacity (PDH) in China in particular is still expected to increase significantly in the coming years. However, several producers have already pushed back new projects amid concerns of oversupply. Oversupply has to some extent already materialised, and for some of 2015 several producers lowered utilisation rates because of low propylene margins (propylene is the main yield of PDH plants). Consequently, without sufficient underlying demand, additional capacity will only result in a surplus. This is certainly a risk to consider: new projects could be in jeopardy, utilisation rates could be lowered and capacity could be shut down. Altogether, this would lower growth in demand for seaborne LPG volumes.

DECARBONISATION MAY PROVIDE AN OPPORTUNITY FOR LPG DEMAND

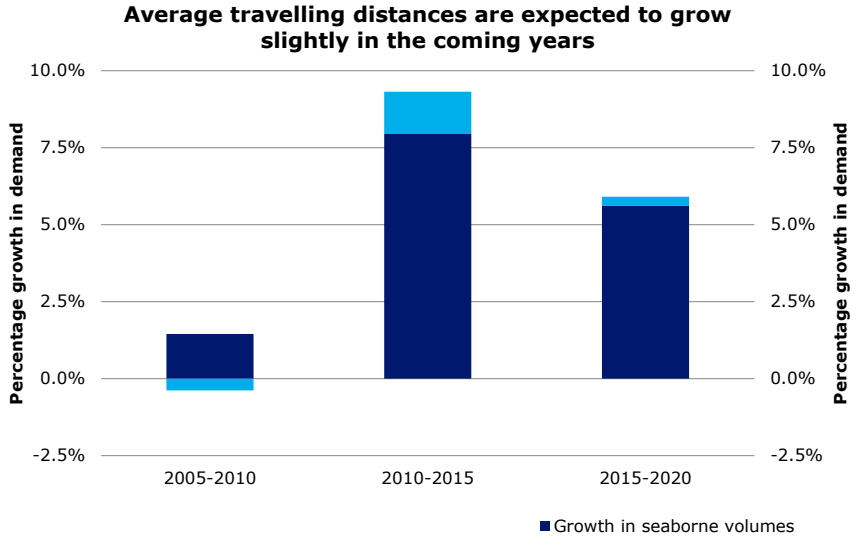
In the past couple of years, focus on energy efficiency and decarbonisation has increased massively. LPG could play a key role in tackling climate change. Beyond limiting the use of kerosene and solid biofuel in rural areas, LPG could also replace regular transportation fuels such as gasoline and diesel. Overall, this could help limit carbon emissions. If LPG gains a foothold in the market for transportation fuels and is recognised for its cleaner properties, demand could skyrocket. However, it seems that technology has advanced even beyond this, and focus is primarily on electric vehicles and hydrogen fuel cell vehicles (see the Crude Tanker section for further details), which hampers the future prospects for LPG demand within the transportation sector.

Figure LPG.15



Sources: IHS Global Insight, Clarksons, Danish Ship Finance

Figure LPG.16



Sources: IHS Global Insight, Clarksons, Danish Ship Finance

LPG MAY INCREASE ON THE BACK OF PETROCHEMICAL DEMAND

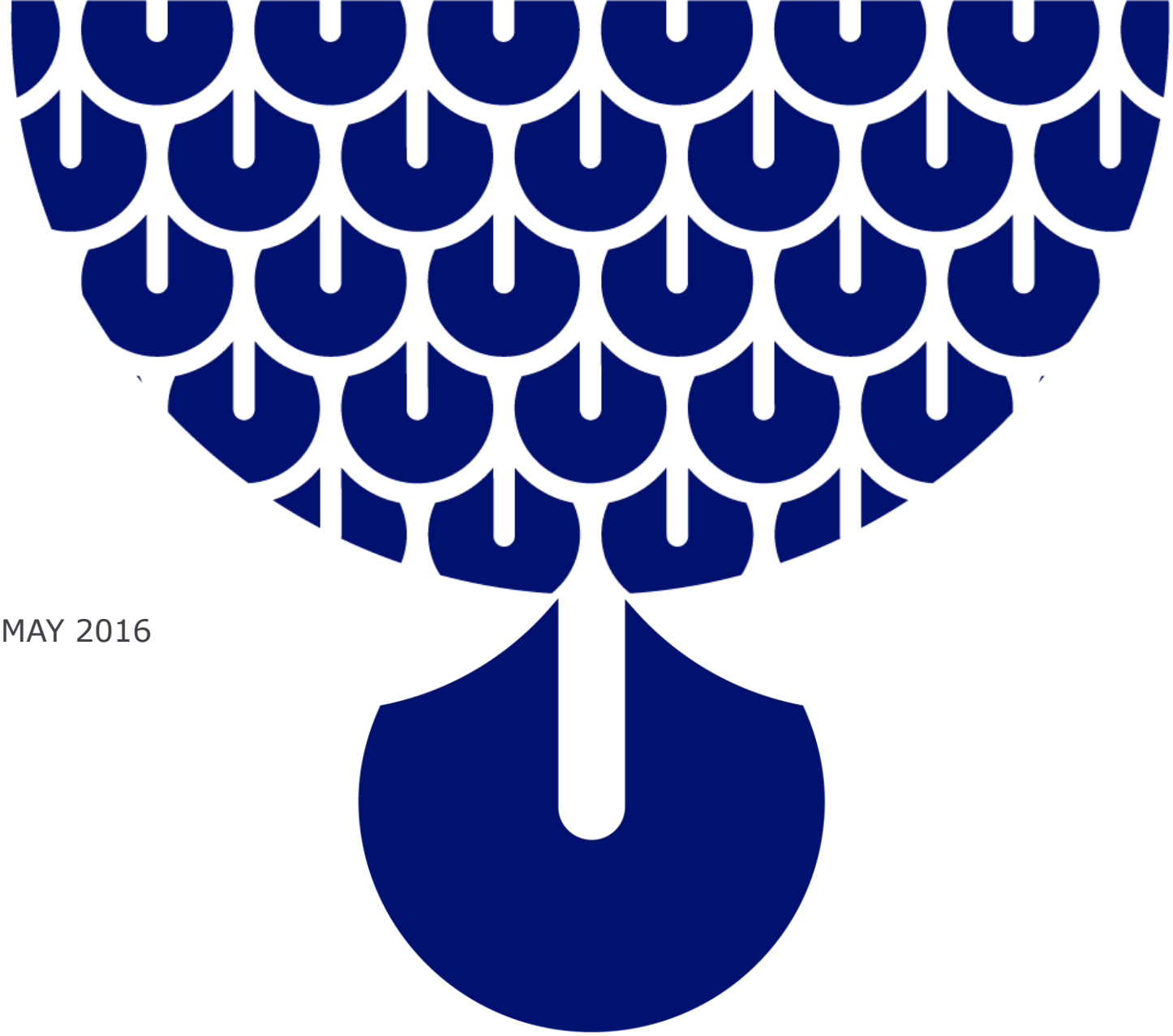
Petrochemical demand, plastics in particular, could also help keep demand for LPG growing. Demand for plastics is expected to continue to grow rapidly in the coming years, as they have significantly more benefits than disadvantages (see the Product Tanker section for further details). LPG, along with naphtha, is the most important feedstock in the petrochemical sector. Even though the potential for plastics is enormous, the potential for recycling and reuse is extensive too. Thus, new technologies and the emergence of a more circular economy could curb future demand for plastics.

THE LPG MARKET MAY REMAIN UNDER PRESSURE

Freight rates are currently under pressure from the massive inflow of new LPG Tankers, and although demand is expected to remain relatively strong, we do not expect it to be able to absorb the current orderbook. Freight rates and secondhand values may thus continue to decrease. In the long term, decarbonisation, together with petrochemical demand, could represent an opportunity for the LPG market. New technologies and the implementation of a more circular economy could, however, limit the potential from this.

GLOSSARY

SHIPPING MARKET REVIEW – MAY 2016



DANISH SHIP FINANCE

GLOSSARY

Aframax: Crude oil tanker or product tanker too large to pass through the Panama Canal and with a capacity of 80,000 to 120,000 dwt.

Average Crude Tanker Earnings: 'Average Crude Tanker Earnings' is an average of Clarksons Long Rung Historical VLCC, Suezmax and Aframax Earnings

Back-haul: 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'.

Barrel: A volumetric unit measure for crude oil and petroleum products equivalent to 42 U.S. gallons, or approximately 159 litres.

BHP: Break Horse Power. The amount of engine horsepower.

Brent: 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.

Bulk vessel: Description of vessels transporting large cargo quantities, including coal, iron ore, steel, corn, gravel, oil, gas, etc.

Bunker: Fuel for vessels.

Butane: Butane is an organic compound with the formula C_4H_{10} that is an alkane with four carbon atoms. Butane is a gas at room temperature and atmospheric pressure.

Call on OPEC: Defined as total global petroleum demand less non-OPEC supply less OPEC natural gas liquid supply.

Capesize: Dry bulk carrier of more than approximately 100,000 dwt; too large to pass through the Panama Canal.

Cascading: The process of bigger vessels replacing smaller vessels across all ship sizes.

CEU: Car equivalent unit. Unit of measure indicating the car-carrying capacity of a vessel.

CGT: Compensated Gross Tonnage. International unit of measure that facilitates a comparison of different shipyards' production regardless of the types of vessel produced.

Chemical Tanker: DSF's definition: IMO I or IMO II tanker with stainless steel, zinc, epoxy or Marineline coated tanks.

China 5 fuel standard: The China 5 fuel standard is equivalent to the Euro 5 fuel standard, which stipulates a maximum sulphur content of 10 parts per million.

China 6 fuel standard: 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.

Clarksons: British ship brokering and research company. www.clarksons.net

Clean products: Refers to light, refined oil products such as jet fuel, gasoline and naphtha.

CoA: 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.

Coating: 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.

Contango: 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.

Crude oil benchmark: 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 in the U.S. and Dubai influential in the Asian market.

Cu.M: Cubic Meter.

Deep sea: Refers to trading routes longer than 3,000 nautical miles.

Deep Sea, chemical: A chemical tanker larger than or equal to 20,000 dwt.

Dirty products: Refers to heavy oils such as crude oil or refined oil products such as fuel oil, diesel oil or bunker oil.

Distance-adjusted demand: The amount of cargo shipped multiplied by the average distance over which it is transported in order to determine actual ship demand .

Drewry: Drewry Shipping Consultants Ltd. British shipping and transport research company. www.drewry.co.uk

Dwt: Dead Weight Tonnes. Indication of a vessel's cargo carrying capacity (including bunkers, ballast, water and food supplies, crew and passengers).

Dynamic Positioning: 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.

EIA: Energy Information Administration. A subsidiary of the US Department of Energy. www.eia.doe.gov

E&P: Exploration and Production.

Feeders: Small container carrier with a capacity of less than 1,000 teu.

Fleet productivity: The productivity of a fleet depends opon four main factors: speed, port time, capacity utilization and loaded days at sea.

Ethylene: 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 producer 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 approximate-

	ly 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 phosporic 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 with the maximum dimensions for passing through the Panama Canal (width of 32.21 metres and length of 289.5 metres) of approximately 60,000-79,999 dwt.
LR2, product tanker:	Long Range 2. Product tanker too large to pass through the Panama Canal and with a capacity of 80,000 to 120,000 dwt.
Medium, tanker (MR):	Medium Range. Product tanker of between 10,000 and 60,000 dwt.
MGC:	Medium Gas Carrier. LPG ship with a capacity of between 20,000 and 40,000 Cu.M.
Middle distillates:	This oil type includes diesel, kerosene and gasoil.
Multi-Purpose:	Dry bulk carrier with multiple applications, mainly as a feeder vessel or for special cargo.
Nautical Mile:	Distance unit measure of 1,852 meters, or 6,076.12 ft.
NGL:	Natural Gas Liquids – which, put simply, consists of all gaseous products except methane which is also known as LNG.
Offshore vessel:	Vessel serving the offshore oil industry.
OPEC:	Organisation of Petroleum Exporting Countries.
Organic chemicals:	Contain carbon and are also referred to as petrochemicals. Are used to produce virtually all products made from plastics or artificial fibres.
Panamax, container:	Container carrier with the maximum dimensions for passing through the Pana-

	ma Canal (width of 32.21 metres, length of 291 metres) of approximately 3,000—5,100 teu.
Panamax, tanker:	Crude oil tanker or product tanker with the maximum dimensions for passing through the Panama Canal (width of 32.21 metres and length of 289.5 metres) of approximately 60,000—79,999 dwt.
Panamax, dry cargo:	Dry bulk vessel with the maximum dimensions for passing through the Panama Canal (width of 32.21 metres and length of 289.5 metres) of approximately 65,000—100,000 dwt.
PDH plants:	Propane dehydrogenation plants
Post-Panamax:	Container vessel of approximately 3,000+ teu that is too large to pass through the Panama Canal.
Product tanker:	Tanker vessel with coated tanks used to transport refined oil products.
Propane:	Propane is a three-carbon alkane with the molecular formula C_3H_8, a gas at standard temperature and pressure, but compressible to a transportable liquid.
Propylene:	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.
PSV:	Platform Supply Vessel. Offshore vessel serving the offshore oil installations.
Refinery margin:	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.
Refinery turnarounds:	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.
Ro-Ro:	Roll On – Roll Off. Common description of vessels on which the cargo is rolled on board and ashore.
Short sea:	Refers to trading routes shorter than 3,000 nautical miles.
Short Sea, chemical:	Chemical tanker smaller than 10,000 dwt.
Small gas carrier:	LPG ship smaller than 20,000 Cu.M.
Speed-adjusted fleet growth:	The amount of tonnage multiplied by the average speed at which is sails in order to determine real fleet growth.
SSY:	Simpson Spence & Young, British ship brokering and research company. www.ssy.co.uk
Sub-Panamax:	Container vessel of approximately 2,000-2,999 teu.
Suezmax:	Crude oil tanker with the maximum dimensions for passing through the Suez Canal (approximately 120,000—199,999 dwt.).
Super Post-Panamax:	Newest type of container vessel of approximately +12,000 teu.
TCE:	Time Charter Equivalent.
Teu:	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.
Teu-knots:	Unit of measure that takes account of the speed of ships when estimating the actual supply of ships within a segment.
Teu-nautical mile:	Unit of measure indicating the volume of cargo, measured in teu, and how far it has been transported, measured in nautical miles.
Tight oil:	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.
Tonne-mile:	Unit of measure indicating the volume of cargo, measured in tonne, and how far it has been transported, measured in nautical miles.
Tonnage:	Synonymous with "vessel".
Triangulation:	Minimise ballast time by identifying cargoes in the area. This tends to improve earnings.
Town gas:	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.
ULCC:	Ultra Large Crude Carrier. Crude oil tanker of more than 320,000 dwt.
Vegetable oils:	Oils derived from seeds of plants and used for both edible and industrial purposes.
VLCC:	Very Large Crude Carrier. Crude oil tanker of between approximately 200,000 and 320,000 dwt.
VLGC:	Very Large Gas Carrier. LPG ship with a capacity of more than 60,000 Cu.M.

FOR FURTHER INFORMATION

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