SHIPPING MARKET REVIEW

DECEMBER 2016

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SHIP FINANCE

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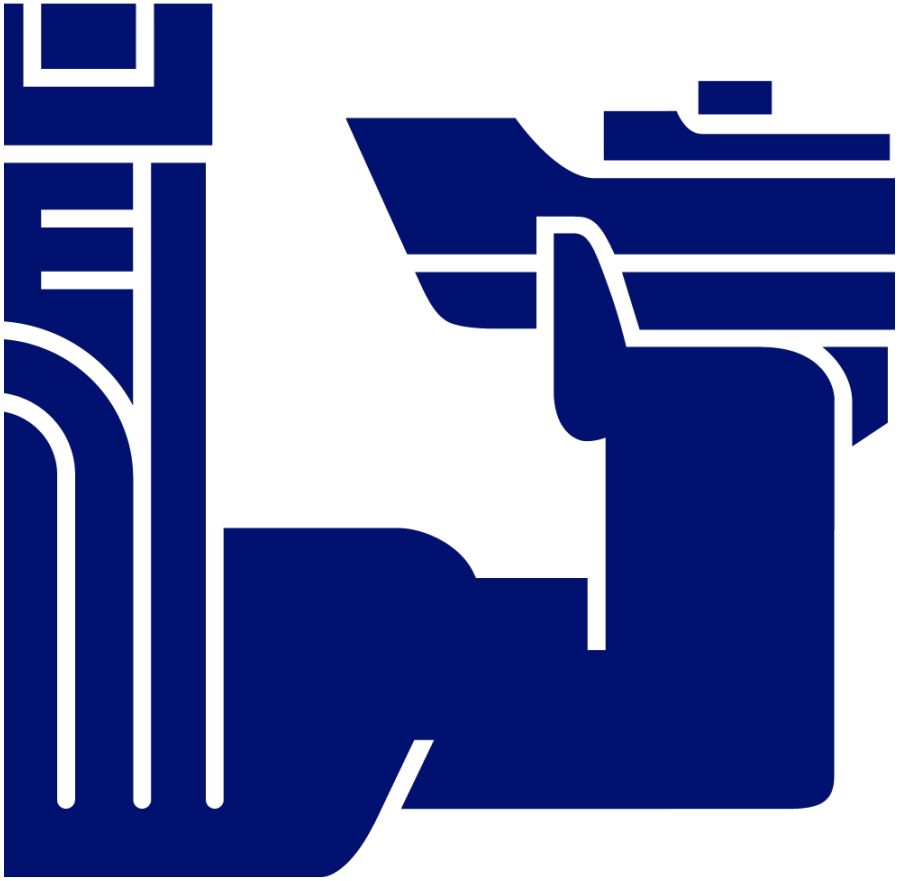

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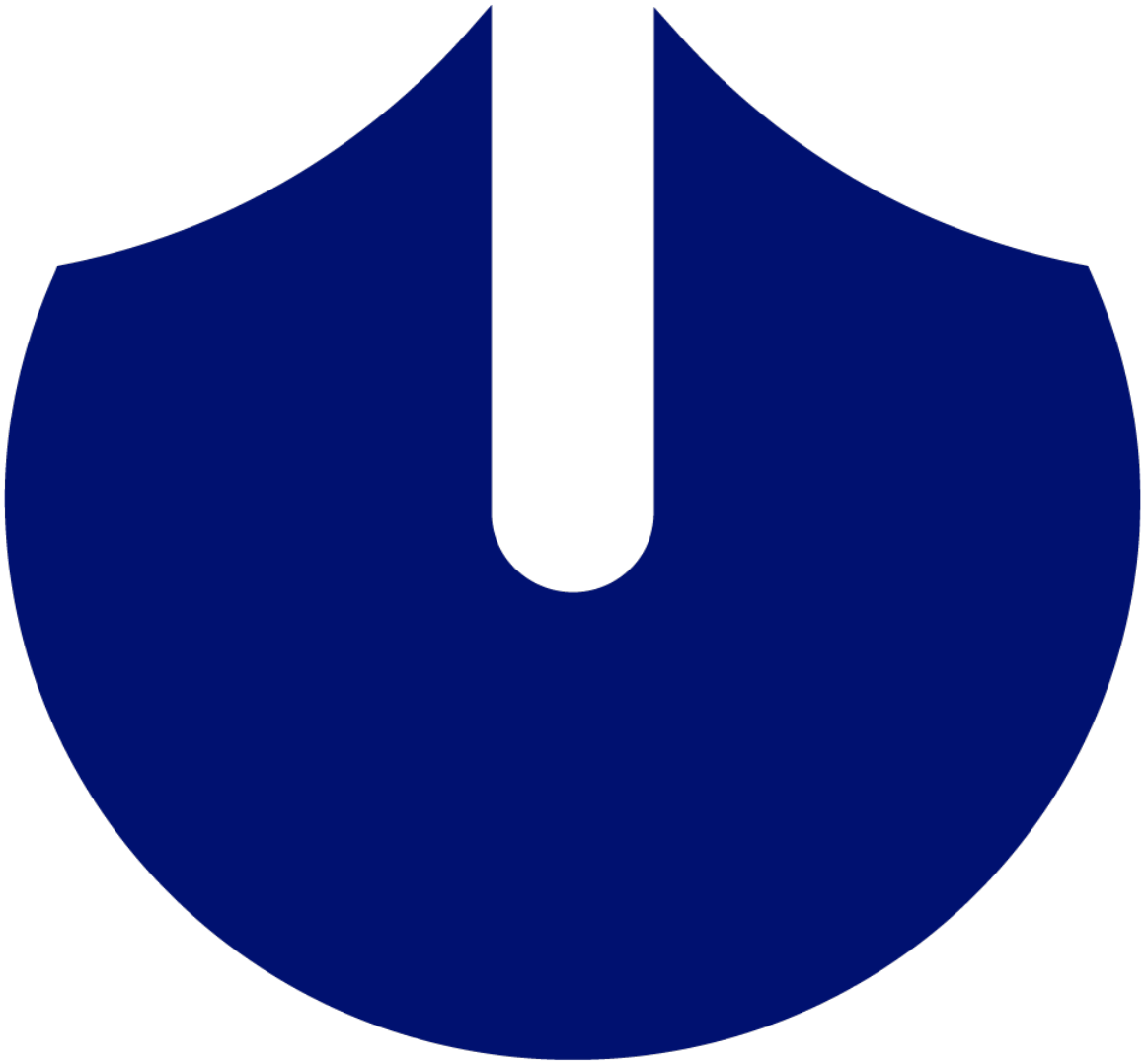

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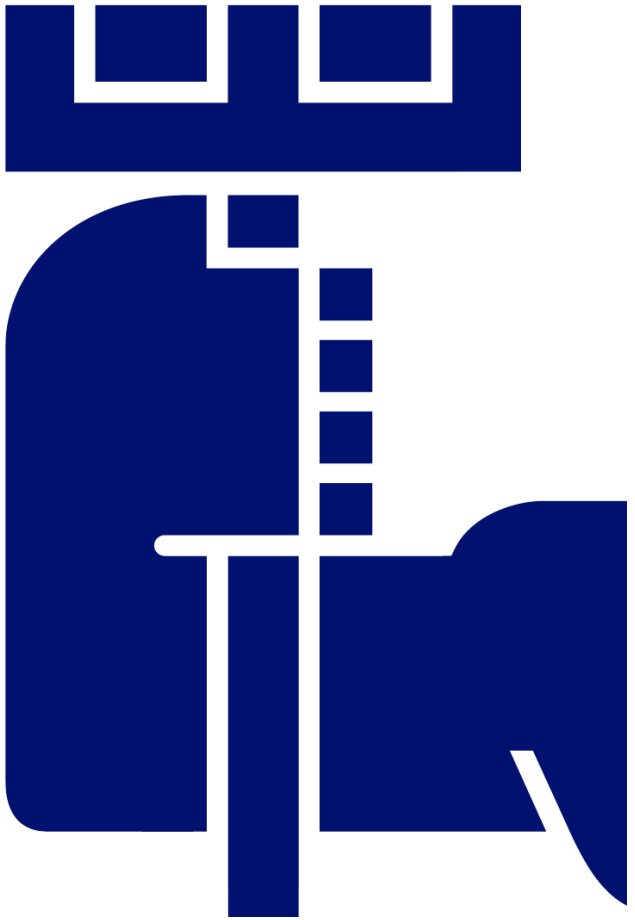

DANISH SHIP FINANCE

EXECUTIVE SUMMARY

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

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 few years. We certainly hope that these expectations come true. But we urge our readers to consider some of the structural challenges that we, among others, 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 These mechanisms could become outdated sooner than many people expect.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 developments 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, although the latter is less likely.

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 in general not to interpret short-term spikes as signs of a more lasting recovery and to continue to show restraint with regard to ordering new vessels.

GENERAL REVIEW AND OUTLOOK

In the past, technological innovation was able to create more new jobs than it destroyed and combined with the advances in globalisation millions of people was lifted out of poverty. Today, the world economy struggles with low global economic growth and the number of jobseekers, mainly in emerging and developing countries, is increasing. The employment outlook for many of the countries in Latin America, Asia (especially China), Africa and the Middle East has worsened in recent years. The world economic outlook is shrouded in uncertainty since the combined effects of the fourth industrial revolution (e.g. artificial intelligence, robotics, the internet of things, 3D printing and digitalisation) seem able to disrupt everything we know about economic growth, from labour markets to trade relations.

The only certainty as we leave the global financial crisis further behind is that the factors affecting global economic growth are becoming more complex. They reflect a combination of global forces — demographic trends, politics, technology — and a variety of local issues that may prove strong enough to become regional or international topics.

The relationship between labour market dynamics and economic growth in the age of the fourth industrial revolution is complex but may hold the key to better understanding the future. It cannot have escaped many that economic growth in recent years has fallen short of expectations in both advanced and emerging economies. China's growth stability owes a great deal to macroeconomic stimulus measures which are holding back much-needed adjustments in both its real economy and its financial sector. Commodity exporters are still struggling with past investment overhangs, as well as the challenges of fiscal adjustment and longer-term economic diversification.

Many are concerned that we are heading towards a future where the number of both white- and blue-collar jobs — everything from taxi and bus drivers to X-ray specialists and market analysts — will shrink. The question going forward is how to create jobs and economic growth for the millions of people that are ready to enter the global workforce and become consumers in emerging markets. How will they integrate if future demand for a large pool of unskilled workers and/or for raw materials diminishes with the advent of the fourth industrial revolution? This is an important issue to consider since the integration of these workers into the world economy forms the basis of many growth outlooks, including the most optimistic for seaborne trade volumes. We do not have all the answers but we hope to spark a discussion of the possible outcomes.

Technological innovation will continue to accelerate globalisation, but the impact on international trade volumes might diminish. We strive to take these issues into account when we continue to argue that seaborne trade volumes in 2030 will be little higher than today, growing by an annual average of just 1%.

The composition of the world fleet is ill-suited to the expected transformation of trade volumes and patterns. The world fleet is young, the average vessel is larger than in the past, and more vessels are on order. The general outlook for the shipping industry is therefore bleak. Freight rates and secondhand values are low across the board, and shipyards are closing, or reducing capacity, due to overcapacity. The shipping industry is simply positioned for growth in seaborne trade volumes and is very vulnerable to forces – ranging from ageing consumers to technological innovation and anti-trade politics – that may reduce growth in trade volumes. The industry continues to struggle with overcapacity which is stubbornly infecting most segments; from Container and Dry Bulk vessels to Crude and Product Tankers, Gas Carriers and Offshore-related vessels.

In short, the shipping industry is in the midst of a process whereby supply continues to expand while medium to long-term seaborne trade volumes seem to be on the brink of stagnation or are facing very low demand growth. This apparent decoupling is expected to introduce massive changes to the competitive landscape of the shipping industry within the next five years. We believe that the forces currently in play will introduce far-reaching changes that redefine or augment the established value propositions within the shipping industry. Some players are already adapting successfully, while others are lacking behind.

SHIPBUILDING

Very little has changed for the better over the course of 2016 in the challenged Shipbuilding industry. The overcapacity issues and low freight rate environment in many of the major shipping segments have lowered secondhand values significantly and limited shipowners' incentive to buy new vessels. Consequently, contracting of new vessels has been brought more or less to a complete halt and the Shipbuilding industry is heading towards the lowest annual order intake for 20 years.

For an industry characterised by large oversupply in terms of shipbuilding capacity, this is a devastating blow, and large parts of the yard industry are struggling with dwindling order cover and poor financials. The consolidation of the industry has sped up and even though some yards are more successful at attracting new

orders than others, it is an industry-wide struggle affecting all shipbuilding regions. Europe has performed better than most in 2016 as ordering in niche segments such as Ro-Ro and Cruise has been strong compared with previous years.

We anticipate more of the same in the coming years, with low ordering activity and continuous pressure on newbuilding prices. Over the next couple of years, we expect the number of active newbuilding yards to be drastically reduced and capacity at continuing yards to be mothballed. The only things that could soften the blow and prolong the life of some yards are the possible effects of the newly ratified ballast water management convention and the new sulphur limits, which could create a need for some of the older vessels in the fleet to be replaced and scrapped prematurely or for some to be retrofitted.

CONTAINER

The Container industry has entered a decisive phase. In 2016, freight rates have been very low, ship values have plummeted and competition on the various trade lanes has intensified. The large alliances have been reshuffled several times and merger and acquisition activity has increased. Hanjin Shipping became the first big liner casualty when it went bankrupt, underlining that not all big liners are assured of making it through the current crisis unscathed. Nonetheless, our biggest concerns for the future are centred around the tonnage providers, particularly the smaller players, which could become increasingly marginalised as the liner alliances become capable of servicing their trades with less chartered tonnage.

The situation has gradually worsened for tonnage providers, as a growing share of larger vessels (6,000-10,000 teu) have started to come off long-term contracts. Given the severity of the current crisis, it is difficult for new employment to be found for these vessels, and if new employment is secured, it is at much lower rates.

As the industry attempts to curb the overcapacity, Container contracting has come to a halt, more orders have been postponed, the number of idled vessels has increased and a lot of vessels have been scrapped. Well before the year is over, the industry has set a new annual demolition record. Consequently, the average scrapping age for the industry has fallen to just 19 years, and even lower for Old Panamaxes, shortening the economic life of vessels significantly and implying additional pressure on secondhand values in the coming years.

DRY BULK

2016 has been a very difficult year for the Dry Bulk industry. The year started with historically low freight rates and secondhand values in free fall as demand slowed and the inflow of new vessels continued. Fortunately, the Chinese government launched a new round of financial stimuli in order to boost economic growth, which in turn boosted Dry Bulk demand, especially iron ore. Meanwhile, a dedicated effort from the industry to increase scrapping and reduce and postpone the inflow of vessels has kept fleet growth low during 2016. Combined, this has supported freight rates in the second half of the year, and the Baltic Dry Index increased by more than 200% in the period from February to November – albeit from extremely low levels.

It looks as though 2016 will end on a better note than it started. However, even though the last quarter especially has been good compared with the first quarter, it is too early to say that the trough is behind us. Freight rates are still low and there are still a number of factors that could drag the Dry Bulk industry back down. Once again, we would highlight the industry's dependence on Chinese demand and the challenges that the rebalancing of China's economy could represent for Dry Bulk shipping.

On the supply side, the challenges relate to the size of the fleet and the orderbook. Even though the orderbook has been reduced markedly during 2016 via deliveries, very low contracting activity and order cancellations, it is still too large in the light of the current

oversupply and future demand expectations. The newly ratified ballast water management convention could be a blessing in disguise, as it could speed up the process of scrapping older tonnage and ensure a faster return to better-balanced market fundamentals.

CRUDE TANKER

The combination of rising oil prices, limited expansion in refinery capacity, high oil inventories and sluggish economic growth has held back Crude Tanker demand during 2016. Distance-adjusted demand is expected to increase by approximately 3% this year, while supply is expected to expand by 6%.

Timecharter rates dropped by approximately 40% during the first eleven months of 2016 while the value of a 10-year-old vessel dropped by approximately 30%.

The outlook for secondhand values is grim, as the orderbook is large and few obvious scrapping candidates remain. We do not expect that future demand will be sufficient to absorb the entering vessels, and we therefore expect premature scrapping to be necessary. The impact on secondhand values is likely to be significant, since the age profile of the fleet indicates that the average age of the vessels to be scrapped could be as little as 17-18 years. If this is the case, older vessels could see their value reduced by up to seven years' worth of expected future earnings.

The short- to medium-term outlook for Crude Tankers is characterised by relatively strong supply growth, modest expectations for future demand growth and a substantial risk of freight rates declining further, since the age profile of the fleet limits the likelihood of a quick balancing of supply and demand.

PRODUCT TANKER

Product Tanker trading activity has remained artificially high during 2016, as high refinery margins have ensured that refinery output is significantly ahead of oil demand. It is somewhat surprising that the combination of overproduction and increasing oil prices has had such a negligible impact on refining margins. The excess production of refined oil products has resulted in a huge build-up in local oil product stocks in all key importing areas during large parts of 2016.

Freight rates have plummeted during 2016 as market fundamentals have deteriorated. By year-end, Product Tanker demand is expected to have grown by 4% while the fleet is expected to have increased by 6%. The 1-year timecharter rate dropped by almost 40% during the first eleven months of the year, while the average value of a 10-year-old MR vessel fell by more than 20%.

The outlook for secondhand values in the LR segments is grim, as the orderbook is large and few obvious scrapping candidates are left. Our expectation is that future demand will not be sufficient to absorb the entering vessels, and we therefore believe that premature scrapping will be necessary. We expect the impact on secondhand values to be significant, as the age profile of the fleet indicates that scrapping candidates could be as young as 17-18 years on average. In the event of this, the value of older vessels could be reduced by the net-present-value of five to seven years of expected future earnings. The MR segment is more balanced, but it is by no means assured that enough vessels will be scrapped for current freight rates to be sustained.

The planned expansion of global refining capacity indicates that some investors continue to have great expectations for future oil demand. This expansion has the potential to employ a larger number of Product Tankers, but it remains to be seen whether industrial overcapacity will prove a sustainable demand driver.

The short- to medium-term outlook for Product Tankers is for relatively strong supply growth, modest expectations for future demand growth and a significant risk of freight rates declining further, since the age profile of the fleet limits the likelihood of supply and demand being balanced imminently. The only mitigating factor could be increased arbitrage trade.

LPG

An influx of LPG vessels, primarily VLGC and MGC, has pushed supply ahead of demand. Freight rates have been declining accordingly. VLGC spot rates more than halved during the second half of 2015 and have halved again during 2016.

Global seaborne demand for LPG is expected to grow strongly by approximately 9% in 2016. Import volumes have primarily been lifted by a strong Asian appetite for LPG. However, the strong growth in demand has not been able to offset the massive inflow of new vessels into the VLGC and MGC segments. By the end of the year, the VLGC fleet is expected to have expanded by 20%, while the MGC fleet will have grown by 12%.

Growth in seaborne demand has been stronger than underlying demand, with the result that a global glut of LPG has built up during the year. This could be the first sign of a changed market mechanism. In the past, seaborne demand has been defined by available export volumes, but it appears that the main exporters (i.e. North America and the Middle East) have increased availability beyond demand.

The outlook for 2017 and 2018 is subject to a large orderbook, a reduced economic growth outlook for Asia and the risk of shorter travel distances. The orderbook currently equals 22% of the fleet, indicating significant expansion potential. At the same time, scrapping potential is limited, as only 5% of the fleet is older than 25 years. We consider it unlikely that freight rates for VLGCs and MGCs will remain stable without significant scrapping – which could include younger vessels.

Premature scrapping of vessels could impact the secondhand value of older vessels, through a reduced economic life, as we have seen in other segments.

Looking beyond 2018, demand expectations remain strong and the orderbook is currently thinning out. This could indicate a potential recovery in freight rates.

GENERAL REVIEW AND OUTLOOK

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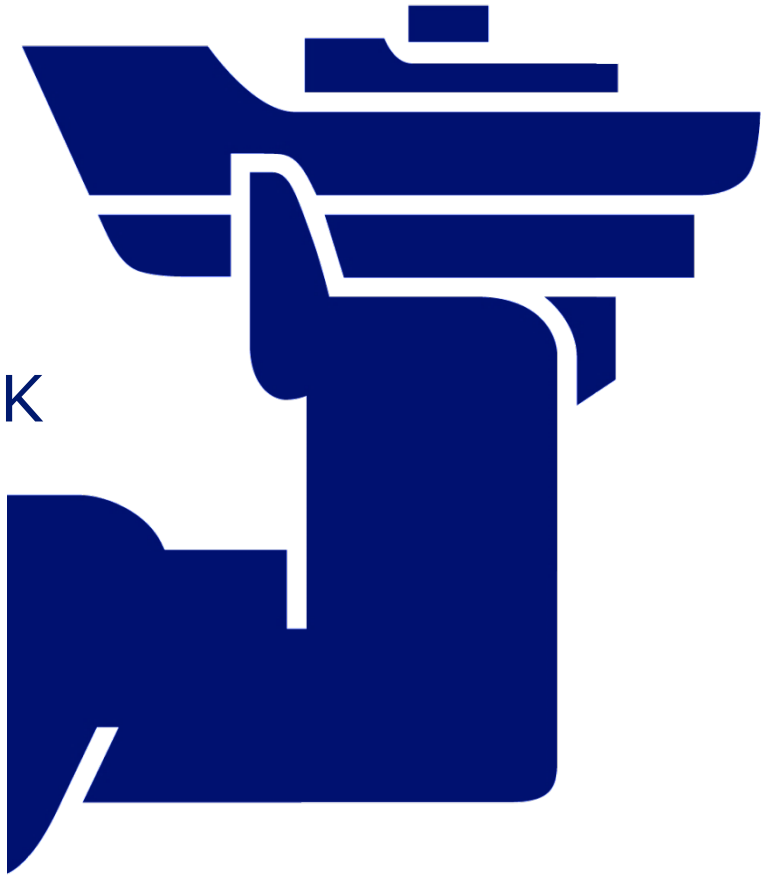

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GENERAL REVIEW AND OUTLOOK

SEVERAL SHIP SEGMENTS ARE CURRENTLY STRUGGLING WITH SURPLUS CAPACITY, LARGE ORDERBOOKS AND YOUNG FLEETS. THE OUTLOOK FOR SEABORNE IMPORT VOLUMES REMAINS SHROUDED IN UNCERTAINTY, AS THE ADVENT OF THE FOURTH INDUSTRIAL REVOLUTION WILL INTRODUCE SEISMIC CHANGES TO CONSUMER DEMAND GLOBALLY OVER THE COMING DECADES. THESE CHANGES WILL REDRAW MAJOR PARTS OF THE WORLD ECONOMY'S ARCHITECTURE AND BRING SIGNIFICANT CHANGES TO THE INFRASTRUCTURE THAT SERVES IT.

THE CHANGING POLITICAL LANDSCAPE

The international political landscape has changed a lot since our May report. Anti-trade rhetoric in the US presidential election, the UK's vote to leave the European Union, massive migration challenges, the rise of nationalism in various countries and stark divides among WTO members have challenged much of the progress of globalisation. Political tensions have been building for some years now but became truly visible in 2016 when public opinion was formally voiced in various elections, and have triggered some public backlash against globalisation. To our understanding, part of the explanation can be found in the low economic growth that has crystallised since the financial crisis. Larger groups of people, particularly in the advanced economies, feel that they have been left behind by their governments. Some low and middle-skilled workers have lost their jobs either due to trade and offshoring or equally likely because routine tasks have become increasingly automated (e.g. technological innovation). In many cases, workers have found it difficult to find reemployment and if they have, they have often had to accept lower wages. If these trends gain further ground, they may represent a significant risk, not just to the shipping industry but to the global economy, since they have the potential to hold back economic growth and global trade in the years to come.

GROWING ANTI-TRADE MOVEMENTS

It is beyond question that trade has the potential to create economic gains for all, but there is no guarantee that this potential will be realised without decisive government action to facilitate the development. Millions of people have been lifted out of poverty since the early 1990s, but this development could easily stop or even be reversed if we turn back the clock on trade.

A DIGITAL SHIPPING INDUSTRY

In this report, we analyse the current value proposition of the shipping industry, but also look ahead and hope to spark a discussion of how additional value can be created. One source of enormous untapped potential is digitalisation. We expect to see the rise of new services, perhaps provided by a new group of competitors — mostly, but not exclusively, spilling over from the digital world. These new players are likely to enter the industry with an ambition to play first violin in an effort to digitalise the industry and harvest the benefits. Digitalisation will give both new players and traditional shipowners the power to disrupt existing value chains, enter new sectors and create innovative business models.

NEW PLAYERS ARE LIKELY TO CHANGE THE GAME

The new players, that are expected to enter the shipping industry, are likely to be unburdened by the potential debt legacies of past shipping cycles and can be far more efficient and agile than many of the traditional shipping companies. To survive and thrive among new players, traditional shipping companies must adapt and leverage their key competitive edge, namely their domain knowledge and the information they have harvested about their customers for generations. We expect the industry to advance towards a new ecosystem oriented towards transparency and gradually become free of many of the fragmented clusters of

intermediates that currently connect and control several parts of the industry.

FEWER TRADE VOLUMES IN THE FUTURE?

Transitions are always difficult, but the one facing the shipping industry within the next five to ten years looks set to be very challenging. The shipping industry is positioned for growth in seaborne trade volumes and is very vulnerable to forces – ranging from ageing consumers to technological innovation and anti-trade politics – that may reduce growth in trade volumes. The industry continues to struggle with overcapacity which is stubbornly infecting most segments; from Container and Dry Bulk vessels to Crude and Product Tankers, Gas Carriers and Offshore-related vessels. The cure is simple but difficult to achieve: limit supply to an extent that the market balance is restored. This can only be done if owners stop ordering new vessels, younger vessels are scrapped extensively or if a new market mechanism bars some (older) vessels from gaining access to cargo. Some would argue that demand also plays a role. And it does. However, the short to medium-term demand outlook is shrouded in uncertainty. Still, there is little to indicate that global demand in any seaborne commodity class will spike for a sustained period within the foreseeable future. While short-term fiscal stimuli may provide some tailwind, as we have recently seen in the Dry Bulk market, these effects tend to be short-lived. The problem is, and has been for some years, that the dynamics we are facing do not solely reflect the cyclical nature of the industry. A structural shift is also taking place; the global economy is in the midst of a transition. Yet many players in the shipping industry are behaving as if the economy will return to familiar territory within a year or two. We continue to argue that the world economy is not about to recover from a shock; it is about to transit towards a digital future in which artificial intelligence, robotics, 3D printers and renewable energy will gradually emerge as driving forces.

CONSUMER DEMAND IS CHANGING

The point we strive to make is that the advent of the fourth industrial revolution, over the next decades, will introduce seismic changes to consumer demand globally. These changes will redraw major parts of the world economy's architecture and bring significant changes to the infrastructure that serves it. These new dynamics were the subject of our last two reports. We explained how historically growth in seaborne trade volumes has been driven by population growth and urbanisation which has translated into the rise in seaborne demand; from oil and energy demand to dry bulk demand, containerised goods and petrochemicals. We continue to argue that the forces currently in play are about to disrupt, or at least significantly streamline, large parts of the underlying industries that shipping currently serves. Some of these industries (e.g. the automotive industry, mining and oil and gas companies) are already in transition and are seeing their market outlook changing rapidly, while other industries (e.g. the petrochemical industry and manufacturing) seem to be approaching the tipping point, whereafter the potential consequences of new technologies could change their market dynamics completely.

THE INFRASTRUCTURE NEEDS TO CHANGE

We argue that the long-term outlook (i.e. 2030) for many industries is subject to new market dynamics (e.g. the sharing economy), new solutions to old problems (e.g. artificial intelligence, robotics, renewable energy, the circular economy and material science), and a retiring consumer base in many of the major economies. In previous decades, the growing consumer base has been among the most stable drivers of trade growth. Together, these forces are changing the composition of global GDP and rebalancing the global economy towards the service sector. This transformation is multi-faceted and there is great variety between regions, economies and commodity classes. Still, it

seems clear that the consequences for the shipping industry will be profound. We therefore argue that the changing architecture of the global economy requires a major transformation of the infrastructure behind it.

NEW DYNAMICS IN NEW ECOSYSTEMS

The transformative nature of the new architecture is creating a new ecosystem for global consumers. The consequences for many of the industries that the shipping industry is currently serving have started to become visible to the extent that they cannot be ignored. People are beginning to recognise that the pace of development is exponential. Technology is shifting the boundaries of production and distribution, not only within industries but also between industries. Take electric cars as an example. Most people seem to agree that electric cars will play a vital role in the future, even though they currently represent a small share of the global car fleet. It remains to be seen how quickly the new technology can penetrate the market. We expect that electric cars will gain significant market share within the next five years. But to us, there is more to the electric car story than the vehicles themselves. It is about building a new economic model where electric cars play an important role, not only in providing mobility on demand but also as a storage facility for (renewable) energy, where electricity can be stored and potentially distributed. Electric cars will become part of a new ecosystem in a new economic model where, for example, parts will be recycled, reused and remanufactured (i.e. reduce future demand for plastics and other materials) when the cars are replaced. The full potential of the individual components (e.g. electric cars) will not be visible until larger parts of the ecosystem are in place.

MASSIVE CHANGES WITHIN THE NEXT FIVE YEARS

These changes are not confined to the car industry. In many industries, demand is currently disappointing, because fewer volumes are being sold than previously expected. Overcapacity is burdening various heavy industries (e.g. steel, aluminium, cement, chemicals, refining and shipbuilding) globally. In some areas, we have seen seaborne transport volumes become supply-pushed rather than demand-driven. The most recent example is in the oil and gas industry where vessels have been built in response to the increase in industrial capacity (e.g. refinery capacity), but consumer demand has not been able to keep up with the capacity expansion. In short, the shipping industry is in the midst of a process whereby supply continues to expand while medium to long-term seaborne trade volumes seem to be on the brink of stagnation or are facing very low demand growth. This apparent decoupling is expected to introduce massive changes to the competitive landscape of the shipping industry within the next five years. We believe that the forces currently in play will introduce far-reaching changes that redefine or augment the established value propositions within the shipping industry.

THE CHALLENGE AHEAD

The composition of the world fleet is ill-suited to the expected transformation of trade volumes and patterns. The world fleet is young, the average vessel is larger than in the past, and more vessels are on order. The general outlook for the shipping industry is bleak. Freight rates and secondhand values are low across the board, and shipyards are closing, or reducing capacity, due to overcapacity.

THE SHIPPING INDUSTRY IN TRANSITION

What will the transition towards an improved market balance look like? It is a very delicate situation. For owners to sit back and do nothing while arguing that the markets are bad and things will only recover when the tide turns does not seem a feasible strategy. Some owners are locking in their (larger) vessels on long-term contracts at low rates. This strategy does not seem likely to create much value, but at least it means the cash-flow issues can be parked for a while. Few players have the capital, not to mention the liquidity, to continue down the current track for longer. Clearly, cost savings and operational excellence have been pursued for

years now, but in a capital-intensive industry where most, if not all, players are price takers – in an environment where the overcapacity seems only to have worsened over the years – the downward pressure on freight rates and secondhand values has consumed most of the savings.

PINNING ONE'S HOPES ON A RECOVERY IN SECONDHAND PRICES

The race towards the lowest possible level of costs cannot continue for much longer. Players are leaving the market: some are closing down, while others are working to consolidate their capacity through mergers, acquisitions or other capacity-pooling arrangements. Some shipowners argue that the time has come to buy low-priced ships. The logic behind this stems from the mean-reverting nature of the shipping industry during past cycles and it has been a solid strategy for many cash-rich investors in the past. However, the nature of the shipping industry is changing in tandem with the architecture of the world economy. We expect that it will take a lot of premature scrapping to restore the mean-reverting nature of the industry.

WHAT NEEDS TO BE DONE?

For things to improve, the shipping industry needs a better balance between supply and demand. Scrapping of younger vessels will entail major value depreciations to large parts of the world fleet (through a reduced economic lifetime), but it seems to be the most feasible strategy available. This strategy may allow a gradual recovery in freight rates at the expense of owners who deplete the value of their investments (and the entire world fleet) by prematurely scrapping younger vessels. If this strategy is pursued, and vessels are priced in accordance with their earnings potential, we could see secondhand values continuing to decline for some years even though freight rates may begin to recover.

YESTERDAY'S STRATEGY IS NO LONGER FEASIBLE

The challenge is that many shipping investors seem to be adhering to their traditional strategy: buy low and sell high; be close to the customers and have access to cargo. The opposite clearly seems unwise, but will the traditional strategy be sufficient to break the current cyclical trend and return the industry to profitability? We doubt it. It might have worked, as it has done in several other cycles, if the underlying businesses that the shipping industry is serving were largely unchanged. But in today's market, we believe that yesterday's strategy is incapable of solving tomorrow's problems.

SEABORNE TRADE VOLUMES COULD DROP

As mentioned above, many of the underlying industries that the shipping industry is serving have undergone or are expected to undergo massive transformations which are likely to shift the gravity towards different vessel types or sizes or simply reduce the amount of cargoes shipped. True, we do expect to see long-term growth in seaborne trade volumes averaging about 1% per annum until 2030. But this forecast may contain many surprises in terms of commodity classes, trading routes and distances and could mask a temporary drop in some seaborne trade volumes that might leave trade volumes depressed for quite some years. How do we plan for the future in such environment? What will the path to recovery look like?

THE RECOVERY MAY NOT BE FOR EVERYONE

The essential issue to consider for the years ahead is how to create value if surplus capacity is growing? How can the market be structured in a way that enables some owners to obtain decent utilisation of their fleets? Consolidation of capacity among fewer players seems to be one of the strategies that is currently in play. Economic theory teaches us that prices settled between many small players tend to approach marginal costs, while prices settled between few players allow more room for profitability. In some parts of the shipping industry, we are seeing owners consolidate their market shares through mergers or acquisitions of secondhand vessels, while other parts of the industry are cooperating in larger pools or alliances. Still no segment seems to be approaching a point where significant premiums to current freight rates can be obtained. The access to cargo simply needs to

be available to a smaller share of the shipowners for freight rates to increase significantly.

OBSOLETE ASSETS WILL NOT CREATE GREAT SYNERGIES

Despite all the efforts being made in various segments, we see little to indicate that the industry is approaching a market position from which further value will or can be created. To illustrate our concern: consider a situation where two market-leading shipowners decide to merge. They are competitors and operate similar vessels. Both may be burdened by high levels of debt in vessels that are no longer optimal for the trades they were built to serve. What will they gain from merging? The merged fleets may create cost savings and pave the way for improved fleet utilisation. These are clearly important steps to take but will it be enough to reverse the tide?

A NEW VALUE PROPOSITION IS NEEDED

An additional value proposition could be part of the solution, but we see little indication of this in the shipping industry as a whole. In our opinion, this is the crux of the problem. Many owners are still chasing the value propositions of the past by continuing to play the asset game (and some will be successful), but the underlying markets have changed or are about to change. The strategies of the past seem no longer able to deliver a proper return on invested capital. Outdated assets seem unlikely to deliver strong profits almost no matter how cheaply they are bought. The industry needs to create an additional value proposition to supplement value creation in the existing business model.

RISK POWERS PERFORMANCE

We believe digitalisation could be the way forward for the industry. In the past few years, we have seen digitalisation bring its first benefits to parts of the shipping industry, yet enormous untapped potential remains. In time, digitalisation will transform the way the shipping industry functions and has the potential to unleash global opportunities for value creation. Promising pockets of excellence already exist across the industry, demonstrating that the potential is real. But digitalisation is not only a means of optimising a company's existing operations; it also gives both disrupters and traditional shipowners the power to disrupt existing value chains, enter new sectors and create innovative business models.

TRADE DATA REPRESENTS HUGE VALUE

In today's market, the hardware of the industry is increasingly becoming a commodity. Modern vessels offer little opportunity for differentiation. However, the data they generate may prove extremely valuable. The shipping industry should increasingly treat data as a competitive advantage. Trade data fuels the algorithms that provide insights into markets, customers and business processes. By creating a trading platform from which data is stored and analysed, various players within the ecosystem of global trade – from shipowners to suppliers, brokers, banks and insurance companies – are able to cultivate existing business models and create innovative new business models that tap into value far beyond the current scope. For shipowners, the trade data could turn out to be at least as valuable as their assets were in the past and may enable significant cost reductions from efficiency gains. The impact on existing business models could be profound. Within the next few years, the existing value proposition could lead the shipping industry to a tipping point: either disrupt or be disrupted.

THE SHIPPING INDUSTRY IN A DIGITAL FUTURE

We all need to recognise and overcome the patterns of defensive responses to the emerging trends. Many appear to see the digital revolution primarily as a threat to their business model, but we continue to argue that massive opportunities await those willing to move ahead of the curve. The shipping industry is still at an early stage of digital disruption. New market mechanisms are likely to be developed in the years to come. Some may disrupt large parts of the existing markets and change entire value chains, but we believe it is better for the industry to disrupt itself than be disrupted by others. We hope to develop a view of the deeper

forces behind digital disruption in the shipping industry. It is our ambition to spark a discussion that encourages our readers to imagine the shipping industry in a digital future.

TRADITIONAL SHIPOWNERS ARE CENTRALLY POSITIONED

The point we strive to make is that traditional shipowners need not become victims of digital disruption if they recognise the crucial thresholds in their lifecycle and be proactive. This clearly requires a degree of foresight and a willingness to respond boldly before it is too late, which usually means acting before it is absolutely necessary.

TRANSPORTATION AS A SERVICE

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

THE SHIPPING INDUSTRY AT A CROSSROADS

The shipping industry is centrally positioned but could likewise be marginalised if it fails to move into the digital space. The champions of disruption are the ones that are creating a new and significantly enhanced value proposition for customers. Such a new value chain holds the potential to redefine the ecosystem of world trade.

THE EMERGENCE OF NEW VALUE DRIVERS

Imagine the potential spill-over effects such changes could have. If a new platform or several platforms were to be built on technologies that included block chain technology (i.e. distributed ledgers), a wide range of intermediate industries (e.g. ship brokers, insurance companies, spare part suppliers, banks and several others) that are currently participating in the facilitation of world trade could likewise be at risk of losing major parts of their current business. The ecosystem of the maritime cluster needs to adapt to a new digitalised industry. The result could be not only the destruction of sizeable profit pools but also the emergence of new value drivers.

Some observers seem to be neglecting the emerging trends described above, arguing that despite all the hype surrounding the fourth industrial revolution, millions or maybe a billion people are still set to be lifted out of poverty and into the world economy within the next 20 years. They present arguments that support further growth in seaborne trade volumes, reasoning that if these people become integrated into the world economy, they will need access to electricity, basic sanitation and safe drinking water, and will presumably be living in urban areas. The integration of China into the world economy is used to illustrate the point, since it required massive investments and generated large growth in seaborne trade volumes. While this is true, one of the key messages we hope to impart is that the future integration of many emerging economies will be very different from what we have seen in the past and will potentially generate less growth in seaborne trade volumes.

A RENEWABLE ENERGY REVOLUTION

Let us begin by looking at the energy side. The progress currently being seen within renewable energy has led us to sharply reduce our expectations for the growth potential in seaborne trade volumes of fossil fuels. Many argue that renewable energy contributes little on a global scale. That is completely true but none the less not the important issue to consider. The important issue to consider is that renewable energy has reached the point where it is beginning to play a major role in supplying new demand for electricity and as a fuel for electric vehicles. In 2016, unsubsidised solar energy has become as competitive and affordable as coal or gas-fired power plants in some locations. In May, the Dubai Electricity and Water Authority received five bids for generating solar energy at under three dollar cents per kilowatt-hour, Mexico received bids of about four dollar cents per kilowatt-hour, and Chile is giving away energy for free at certain times of the year.

A GREENER AND CHEAPER ENERGY INFRASTRUCTURE

These examples are likely to be early indicators of a new energy infrastructure that may become mainstream. It is important to note the fundamental differences between fossil fuels and technologies. Technologies tend to become better performing and cheaper when more people are using them, while fossil fuels simply become more expensive. It seems to be widely expected that natural gas will be among the winners of tomorrow, while coal could be gradually carved out. The long-term outlook for oil, however, is more uncertain. Many oil experts seem to expect that oil prices could begin to increase due to the risk of inadequate future supply. But imagine what will happen to the attractiveness of renewable energy in a scenario with high future oil prices (and hence gas prices). Within the next five to ten years, we expect to see great advancements in green decentralised energy systems.

REDUCED BARRIERS TO GROWTH IN DEVELOPING ECONOMIES

In other words, we are starting to see the benefits of exponentially growing energy technologies that are also reaching the developing world and enabling a decentralised and reliable supply of low-cost energy. Given that a reliable energy supply is essential for healthcare, education, food, water, shelter, sanitation and more, we should expect to see a huge leap in the potential for economic development in the developing world in the next decade. However, it seems unlikely that the integration of emerging economies into the world economy will be as trade-intensive as in the past.

LESS TRADE-INTENSIVE GROWTH

Let us be a little more precise here. We remain very confident about the long-term growth potential in import volumes for many of the emerging economies. In particular, we expect to see strong growth in energy demand (primarily driven by non-fossil fuels) and commodities related to food production (e.g. fertilisers, grains), building materials, healthcare (i.e. non-trade-intensive) and electronics. Our concerns over the growth potential for

seaborne trade volumes relate to fossil fuels, containerised goods, including various industrial intermediate materials, and plastics (relevant to demand for LPG and Chemical Tankers). We believe that these areas will be impacted strongly by factors related to the fourth industrial revolution. This is highly relevant for the shipping industry's outlook, since fossil fuels represent approximately 45% of annual seaborne import volumes, while Dry Bulk volumes (excluding coal) account for 34%.

ANYTHING BUT BUSINESS AS USUAL

It is important to bear in mind that we do not present a business-as-usual scenario. We anticipate significant disruptions to the production and use of energy and major changes in consumer spending behaviour. While we do believe that global energy demand will continue to grow, we forecast only 1% annual growth in trade volumes up to 2030 (compared with 4.1% between 2000 and 2015), due to the combined effects of renewable energy, the ongoing penetration of sharing economic principles into more and more industries, and the gradual adoption of the circular economic principles that allow more people to gain access to goods and services (using fewer natural resources). In various emerging markets, seaborne trade may continue to increase but much more slowly than generally expected and potentially for very different reasons. We expect Asian import volumes (excluding Japan and China) to increase by an annual average of 1.2% per year up to 2030 (versus 4% between 2000 and 2015). Total seaborne import volumes into Europe, North America, Japan and China are expected to be near their peak and will begin to decline towards 2030 by a figure that corresponds to an annual average of 0.25%.

CONSUMER SPENDING IS BECOMING LESS TRADE-INTENSIVE

Not everyone agrees with our view: many argue that several major emerging economies have great growth potential or point out that many elderly people continue to spend after retirement. These observations cannot be denied, but they only give a partial view of a complex global economy. What they do not take into account is that not all spending creates seaborne trade volumes. Spending behaviour by both the elderly and the young is, for different reasons, shifting towards non-trade-intensive spending: the older the consumers, the more they tend to spend on non-trade-intensive activities such as domestic services, healthcare and tourism. The younger generation, meanwhile, is less focused on trade-intensive ownership of goods (e.g. cars) and is increasingly spending on access to goods (e.g. mobility on demand) – a trend that appears to be accelerating on a global scale, especially in larger cities. As an illustration, fewer young people are gaining a driver's licence: as mobility on demand becomes more widespread, owning a car becomes less important. Young people that live in urban centres would rather have the latest smartphone (that can give them access to the sharing economy) rather than spend their money on car ownership. These dynamics are not confined to the auto industry. Spending behaviour is changing in various areas as technological innovation provides new solutions to old problems.

GLOBAL ENERGY INTENSITY CONTINUES TO DECLINE

The predicted decline in the rate of growth in seaborne trade volumes is due to digitisation (i.e. the fourth industrial revolution), slower population and economic growth, greater efficiency and productivity, and the global economic shift toward services. It is well-known that the consumption of fossil fuel peaks at the point where industry and construction (as opposed to services) contribute the most to GDP creation. For many of the developed economies and China, we are past this point, which explains why the energy required to produce one unit of GDP is falling in many regions. From 1990 to 2015, global energy intensity improved by almost a third, and it is reasonable to expect the rate of progress will continue to accelerate. By 2050, McKinsey research suggests that global energy intensity will be half what it was in 2013. That may sound optimistic, but seems to be based on recent history. By 2035, McKinsey expects that it will take almost 40% less fuel to propel a fossil-fuelled car a mile than it does now. It is probable

that few new cars will be fossil-fuelled by 2035, but the example serves to illustrate the power of improved energy efficiency.

* * *

We acknowledge that we may not have envisioned the future as it will eventually play out. But that is beside the point. The message we strive to get across is that the shipping industry's ability to influence or define large parts of its value creation could be at risk if it fails to recognise the changes that are about to transform the global economy. The landscape of business is changing more quickly today than in the past. Let us hope that the conservatism of the shipping industry will not block a transition to a digital reality.

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

FREIGHT RATES CONTINUE TO DETERIORATE

Over the last six months, the ClarkSea Index has continued its downward trajectory, since oversupply issues are now also affecting the Tanker segments and Gas Carriers, both of which have seen steep freight rate declines. Hence, we have reached a point where most shipping segments are suffering from surplus capacity and sluggish demand simultaneously. The ClarkSea Index manged to climb to USD 10,500 per day in November 2016, which was still 10% lower than the January levels but a significant improvement from the very low levels experienced in the third quarter (fig. 1).

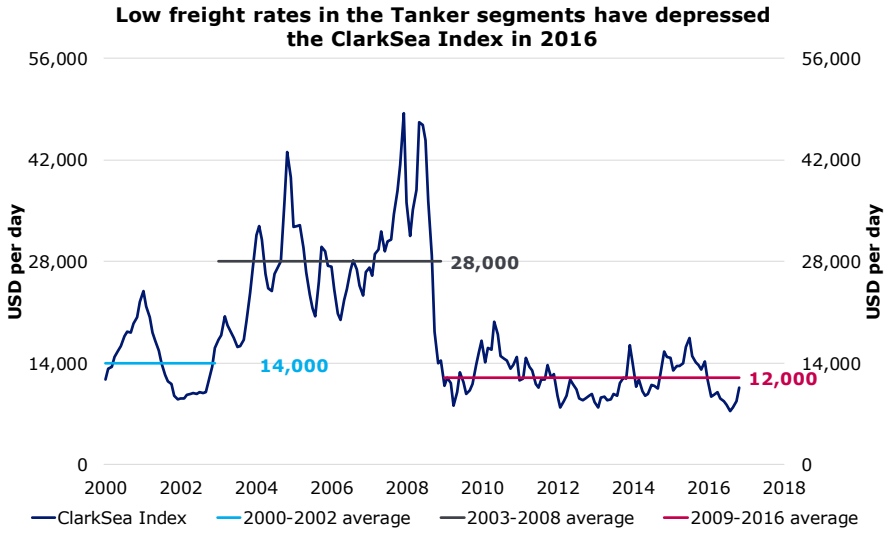
BUNKER PRICES ARE SLOWLY INCREASING

The massive decline in bunker prices that commenced at the end of 2014 and continued throughout 2015 provided some welcome relief, as it helped cushion the blow from falling freight rates in some segments. This year, however, bunker prices have started to increase and have almost doubled since the start of the year, albeit from a low base. In the period from January to October, the bunker price increased from around USD 125 per tonne to some USD 240 per tonne (fig. 2). Consequently, falling bunker costs are no longer able to offset the effect of falling freight rates to the extent we saw in 2015.

THE AVERAGE SECONDHAND PRICE HAS REACHED A NEW LOW

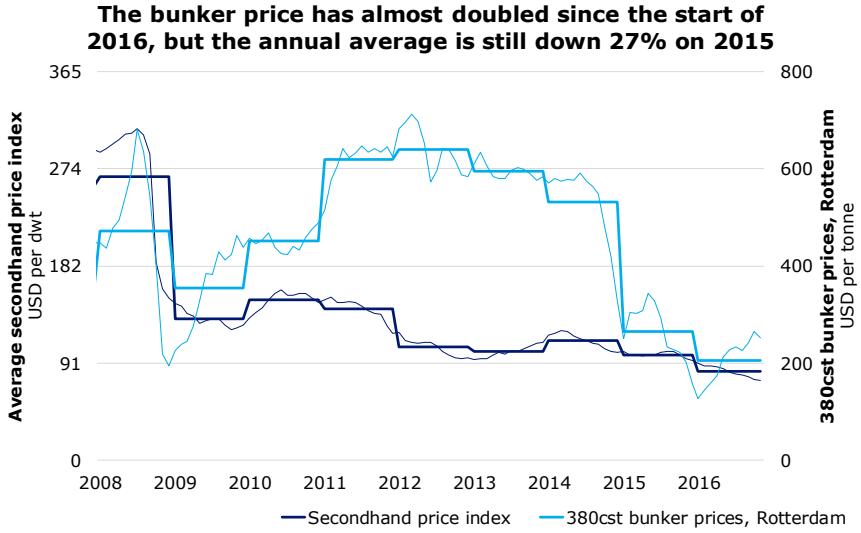
The crash in freight rates in especially the Offshore, Container, LPG, Product Tanker and Crude Tanker segments in 2016, as well as in the Dry Bulk segment in the first half of the year, has not surprisingly put pressure on secondhand prices. The average

Figure GRO.1



Sources: Clarksons, Danish Ship Finance

Figure GRO.2



Sources: Clarksons, Danish Ship Finance

secondhand price declined by 14% in the period from January to October 2016 (fig. 2 and 3). The Dry Bulk segment has however experienced increases in secondhand values during the second half of the year. We expect that older vessels' secondhand prices could continue to decline. The young fleets, large orderbooks and meagre demand growth in many segments are forcing more vessels to the scrapyards at a young age, which is destroying value as the economic life of vessels is shortened.

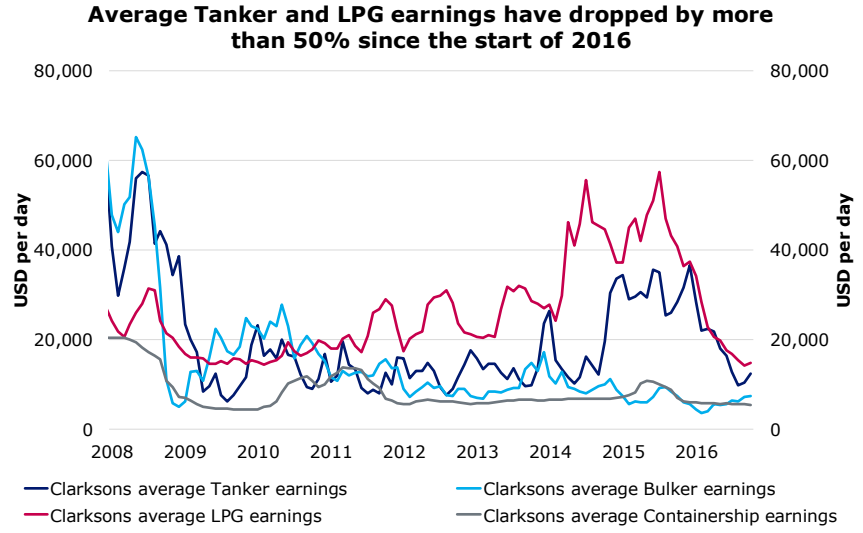
CONTRACTING ACTIVITY FINALLY SEEMS TO BE SLOWING

Fortunately, it looks currently as though shipowners are holding back from ordering new vessels, which is a step in the right direction towards alleviating some of the pressure from the growing oversupply in many segments. Only 25 million dwt was contracted in the first ten months of 2016, which means that the industry is heading towards the lowest annual contracting level since 1996. The low contracting activity, combined with order cancellations and postponements, has left the Shipbuilding industry in a major predicament, with shipyards' financials under enormous strain. The average newbuilding price has fallen 5% in 2016 and we expect to see further declines as shipyards fight for the few orders coming in.

THE ORDERBOOK IS SLOWLY RUNNING OUT OF ORDERS

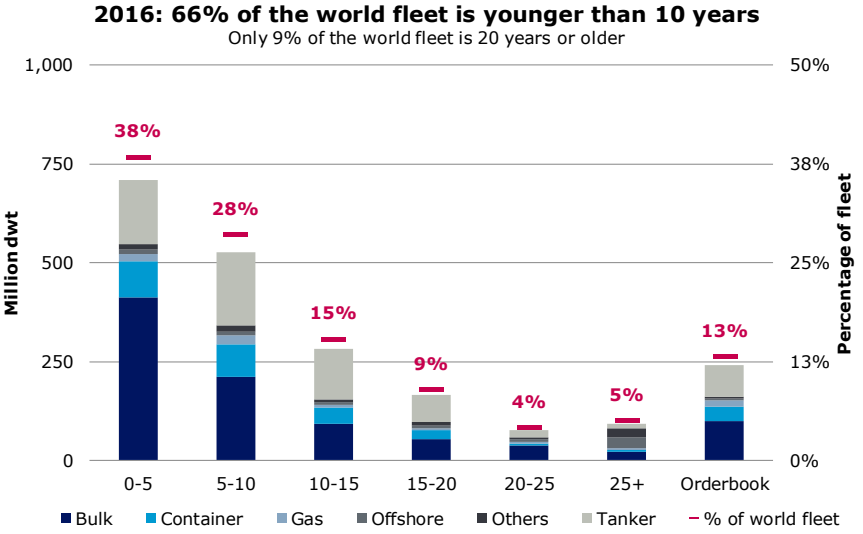
This low contracting activity has pushed the orderbook-to-fleet ratio down by 3 percentage points since April 2016 to 13%, and the orderbook now amounts to 242 million dwt, or more than 4,000 vessels (fig. 4). Despite this decline, all major shipping segments are still geared towards further growth in trade volumes and few segments are capable of handling any negative surprises in demand, not to mention an uptick in ordering (fig. 5). We acknowledge that the downturn in the Shipbuilding industry could have severe social consequences due to the large number of people employed by it, however, seen solely from a shipping perspec-

Figure GRO.3



Sources: Clarksons, Danish Ship Finance

Figure GRO.4



Sources: Clarksons, Danish Ship Finance

tive, we hope that desperation at some shipyards and lower newbuilding prices will not spark a new round of ordering any time soon.

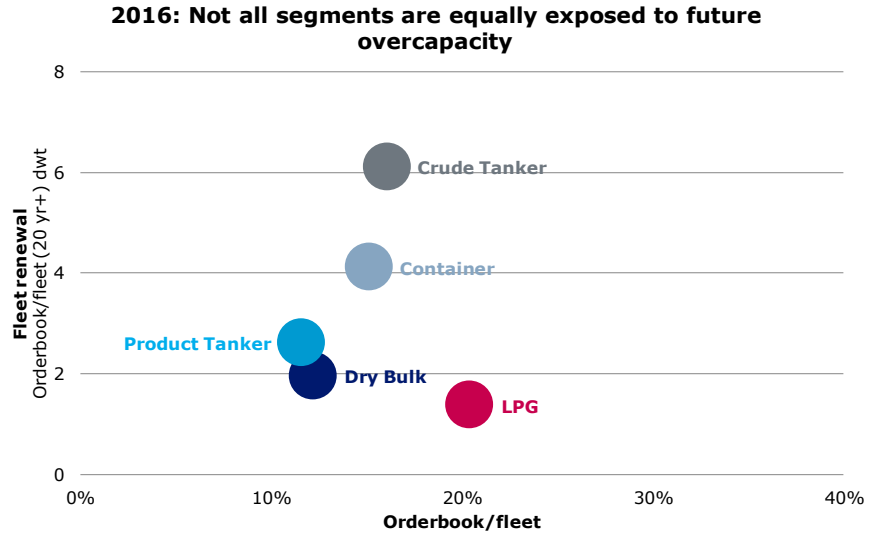
SCALE IS COMPLICATING MATTERS

Even though it is positive that the orderbook is declining, it is still large in absolute terms. Back in 2002, the orderbook-to-fleet ratio was 14%, but the orderbook only amounted to 114 million dwt, or 2,000 vessels, and 26% of the fleet was older than 20 years. Hence, a supply surplus was easily able to be absorbed by a combination of ordinary scrapping and annual demand growth, since the age distribution of the fleet was much better balanced. Today, very few subsegments have enough older vessels that can be scrapped in order to absorb the oversupply, and premature demolition of vessels seems to be the only strategy available to balance the markets.

2016 COULD BE A RECORD YEAR FOR SCRAPPING...IN SOME SEGMENTS

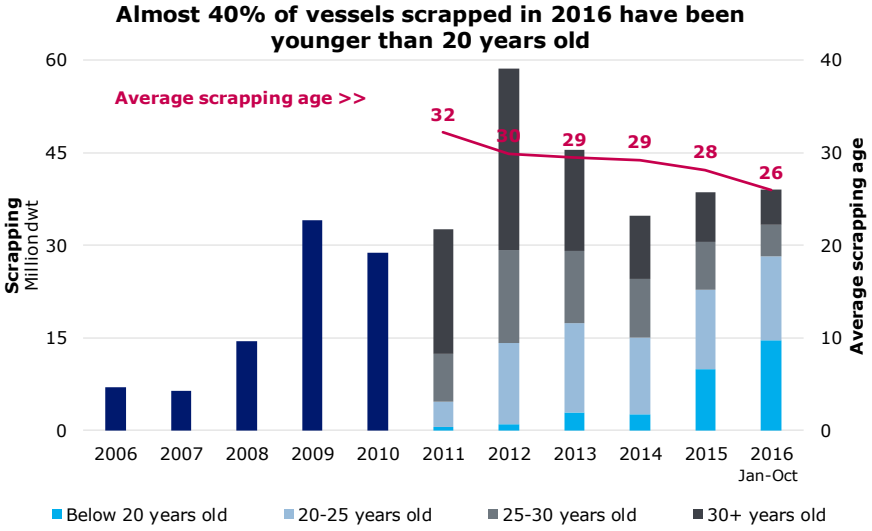
The weak market in 2016 has already led to more scrapping. In particular, Dry Bulk and Container demolition has picked up as market fundamentals in both segments have worsened. The Gas Carrier and Tanker segments, on the other hand, are still holding back in terms of scrapping, which suggests that shipowners are still somewhat optimistic about the future. During the first ten months of 2016, around 39 million dwt was scrapped across all segments – the Dry Bulk segment accounted for more than 70% of this. Both the Dry Bulk and Container segments have had to resort to scrapping very young vessels, which has put downward pressure on the average age of vessels scrapped (i.e. their economic lifetime). The average age of vessels scrapped has dropped from around 28 years in 2015 to 26 years in 2016, measured on a world fleet basis. However, if we look at individual subsegments, some have an average scrapping age of below 20 years (fig. 6). In the exposed Old Panamax Container segment, we have seen vessels younger than 10 years old being scrapped.

Figure GRO.5



Sources: Clarksons, Danish Ship Finance

Figure GRO.6



Sources: Clarksons, Danish Ship Finance

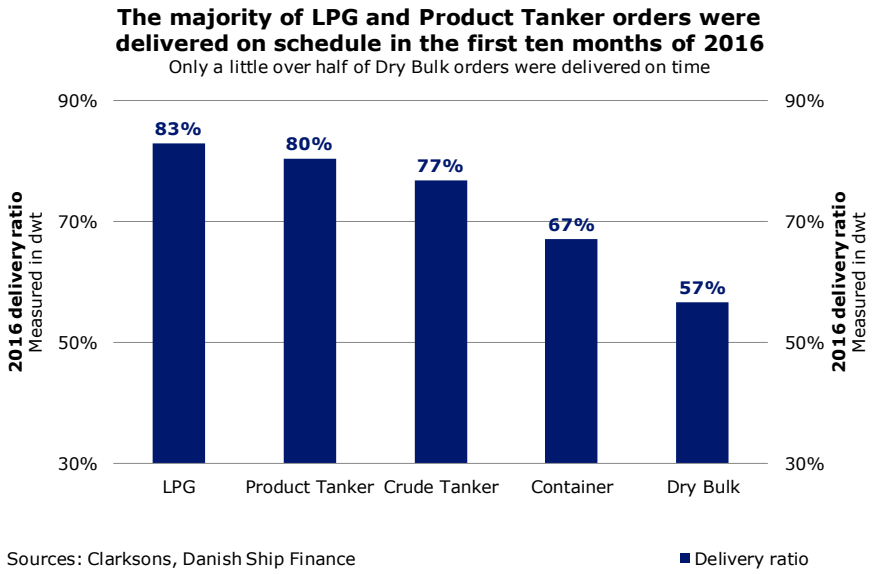
THE TANKER SEGMENTS CONTINUE TO TAKE DELIVERY OF ORDERS

The vague optimism in the Gas Carrier and Tanker segments is also visible when comparing the delivery performance of the different segments. The LPG and Tanker segments maintained high delivery ratios during the first ten months of 2016. In contrast, the Container segment took delivery of only 67% of scheduled orders and the Dry Bulk segment no more than 57%, measured in dwt (fig. 7).

THE CURRENT MARKET REQUIRES A CAUTIOUS APPROACH

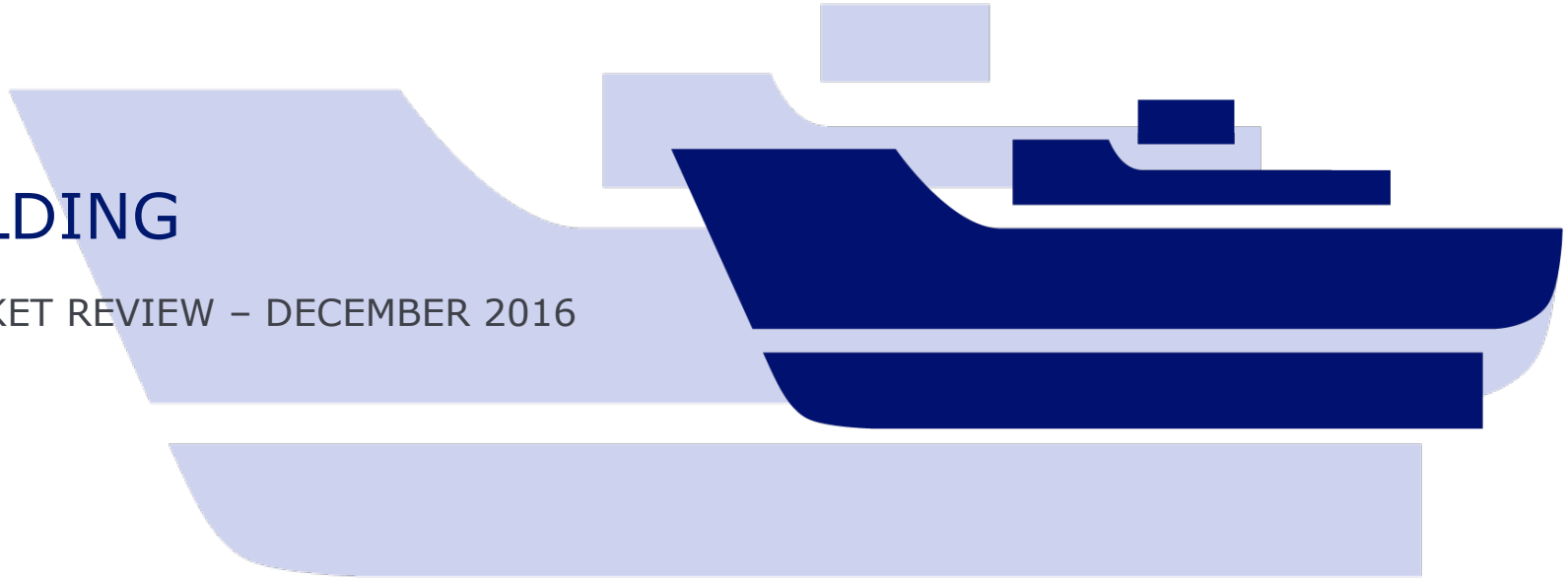
Given our expectations for future seaborne demand, which we elaborate on in the section 'General Review and Outlook', we expect premature scrapping to become a necessary evil to balance supply and demand. This is expected to create continuous downward pressure on ship values in many segments in the coming years. This also means that we would perceive any spikes in rates – and consequently secondhand prices - over the coming years as selling opportunities rather than buying opportunities. For Dry Bulk, Container and Offshore, the worst of the value declines could be behind them, but for Tankers and Gas Carriers, there could be more to come. We are somewhat concerned about the optimism still characterising especially parts of the Product Tanker market, because we believe the recent weakening in freight rates could be just the tip of the iceberg. The struggles facing the Dry Bulk and Container segments have taught us how costly it can be to underestimate the possible consequences of a growing oversupply. Consequently, we believe that the dynamics characterising the current shipping market, across all segments, require a cautious approach.

Figure GRO.7



SHIPBUILDING

SHIPPING MARKET REVIEW – DECEMBER 2016



DANISH SHIP FINANCE

SHIPBUILDING

THE SHIPBUILDING INDUSTRY CONTINUES TO FACE BIG PROBLEMS. WE EXPECT MORE YARDS TO CLOSE, AS WE DEEM THE FUTURE ORDERING POTENTIAL INSUFFICIENT.

NEWBUILDING PRICES

OVERCAPACITY IN MANY SHIPPING SEGMENTS HAS PUSHED FREIGHT RATES AND SECONDHAND PRICES DOWN AND THEREBY MINIMISED THE INCENTIVE FOR BUYING NEW VESSELS.

The Shipbuilding industry continues down a rocky path, which is becoming rougher as the months go by. Shipowners' appetite for new vessels continues to dwindle and the liquidity crunch is becoming increasingly severe for many shipyards. In the following section, we focus on the developments in the Shipbuilding industry during the first ten months of 2016, which we also refer to as 'the period'.

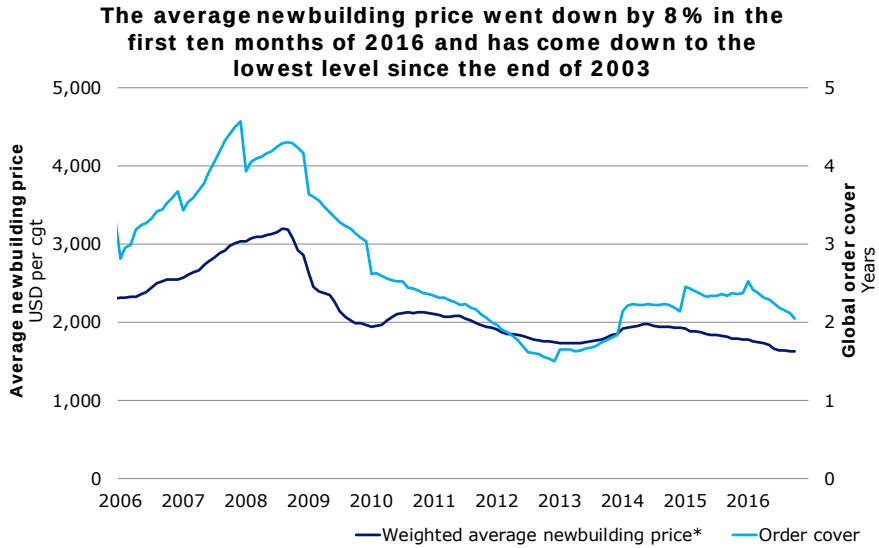
NEWBUILDING PRICES FELL BY 8% IN THE FIRST TEN MONTHS OF 2016

The severity of the current crisis is becoming more apparent each day. The average newbuilding price has been trending downwards for 29 consecutive months and has come down by 8% in 2016 (fig. 1). In 2015, the biggest drops in newbuilding prices occurred in the Bulk and Container segments. However, during the first ten months of 2016, the drop in Tanker prices began to speed up and by October, the average Tanker newbuilding price was down by 10%. All the major segments have endured significant declines in newbuilding prices. The only refuge now is in the niche segments such as Ro-Ro, Car Carriers, Cruise vessels etc., which on average have experienced a small rise in prices during 2016.

GLOBAL ORDER COVER ON THE WAY DOWN IN MOST BUILDER REGIONS

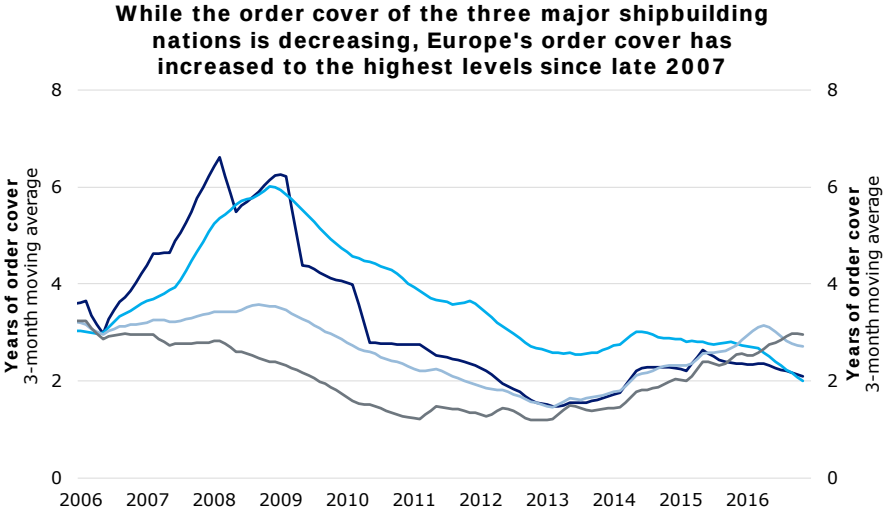
While the overall order cover has been gradually declining since the beginning of 2016, there have been variations between the different shipbuilding regions. In all regions outside Europe, the order cover has decreased, especially in South Korea, whereas it has been slowly but steadily rising in Europe (fig. 2).

Figure SB.1



Sources: Clarksons, Danish Ship Finance *Excluding Offshore newbuilding prices

Figure SB.2



Sources: Clarksons, Danish Ship Finance

CONTRACTING ACTIVITY CONTINUES TO DISAPPOINT FOR THE SHIPBUILDING INDUSTRY AND THE NUMBER OF YARDS THAT ARE ABLE TO ATTRACT NEW ORDERS IS DECLINING.

Contracting activity continues to remain low, as the overcapacity issues and the accompanying decline in secondhand prices in several of the major shipping segments are limiting shipowners' incentive to buy new vessels. During the first ten months of 2016, only 9.6 million cgt was contracted (fig. 3), or around 400 vessels. That is one-third of the amount contracted in the same period in 2015. The industry has therefore only restocked 25% of active yard capacity in annualised terms. Order volumes for the period dropped by more than 80% in South Korea, Japan and the rest of the world, respectively. In China, ordering came down by around 60%, whereas it increased by more than 40% in Europe, primarily due to growing interest in new Cruise vessels. With very little left of 2016, contracting is expected to end up at the lowest level seen in the last 20 years.

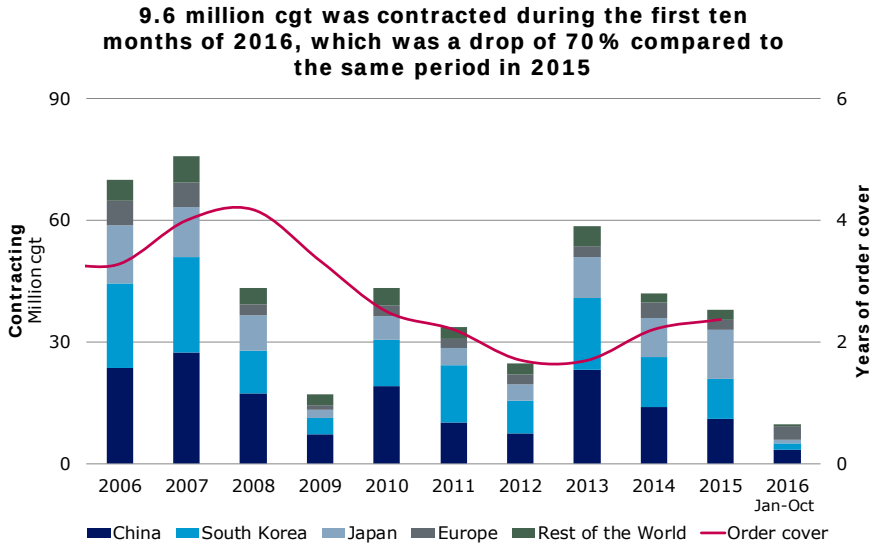
110 DIFFERENT YARDS RECEIVED NEW ORDERS DURING THE PERIOD

Only about 110 of the 630 or so yards currently building new vessels received new orders during the first ten months (fig. 4), and the majority of the contracting continued to be limited to very few yards: during the period, 12 yards attracted half of all new orders, measured in cgt, six of them European.

CRUISE ORDERS AMOUNTED TO A QUARTER OF TOTAL CONTRACTING

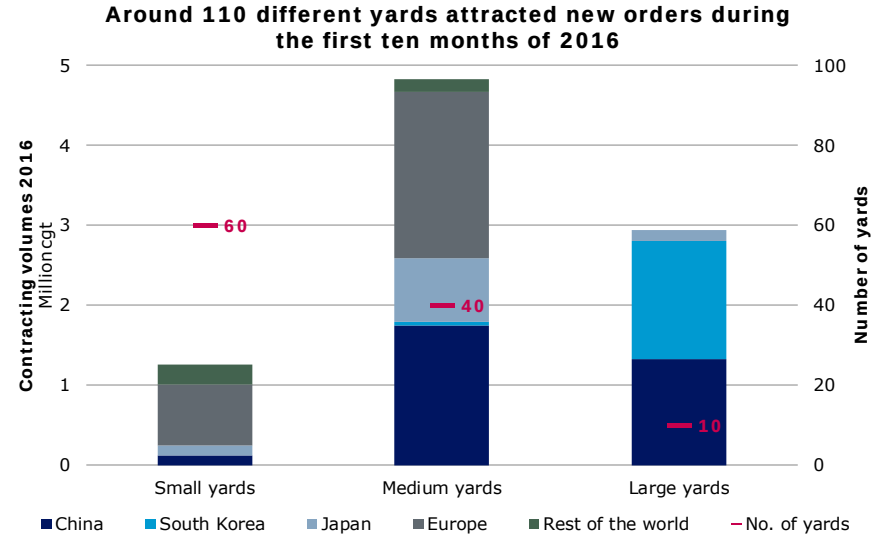
In 2016, contracting behaviour has reflected a lot of the issues that are troubling the major shipping segments, and the conventional ship types have been accountable for very few orders. Instead, Cruise orders alone accounted for a little more than one-quarter of total contracting in the period, measured in cgt, which has never been seen before. However, a Cruise vessel generally has a high cgt measure, and in terms of the number of vessels, the segment accounted for only 7% of total contracting. Just as in 2015, the low freight rate environment in both Bulk and Offshore

Figure SB.3



Sources: Clarksons, Danish Ship Finance

Figure SB.4



Sources: Clarksons, Danish Ship Finance

continued to keep contracting activity in these segments at very low levels. In contrast to 2015, though, the Container and Tanker segments are now also seeing contracting levels come down dramatically, having declined 87% and 79%, respectively, compared with the same period in 2015.

SOUTH KOREAN YARDS ARE FALLING BEHIND

The dearth of new ordering has hit especially hard in South Korea. This shipbuilding nation has for a long time been a preferred partner for many shipowners, especially for Container, Gas and Tanker orders. During the first ten months of 2016, the country attracted only 16% of total contracting, and therefore managed to restock a mere 14% of its active domestic capacity in annualised terms – the worst performance of all the major shipbuilding regions. Japan also saw a sharp drop in its order intake, restocking only 16% of active domestic capacity whereas China performed relatively better and restocked 24%. In 2016, annual active yard capacity in South Korea is estimated at around 13 million cgt, in China at around 17 million cgt and in Japan at around 8 million cgt.

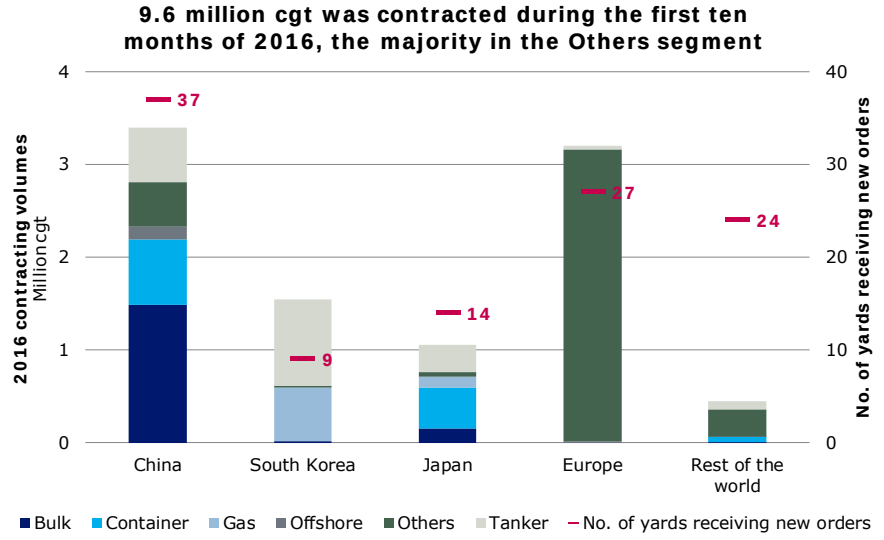
EUROPE RESTOCKED ALMOST 125% OF ACTIVE REGIONAL CAPACITY

Europe, on the other hand, has attracted annualised ordering of close to 125% of active regional capacity, which is estimated at around 3 million cgt. Since the financial crisis, Europe has become known primarily for building niche ship types. This might end up providing some cover for the region given the headwinds that the more conventional vessel types are facing.

CHINESE OWNERS ARE LOOKING OUT FOR CHINESE SHIPYARDS

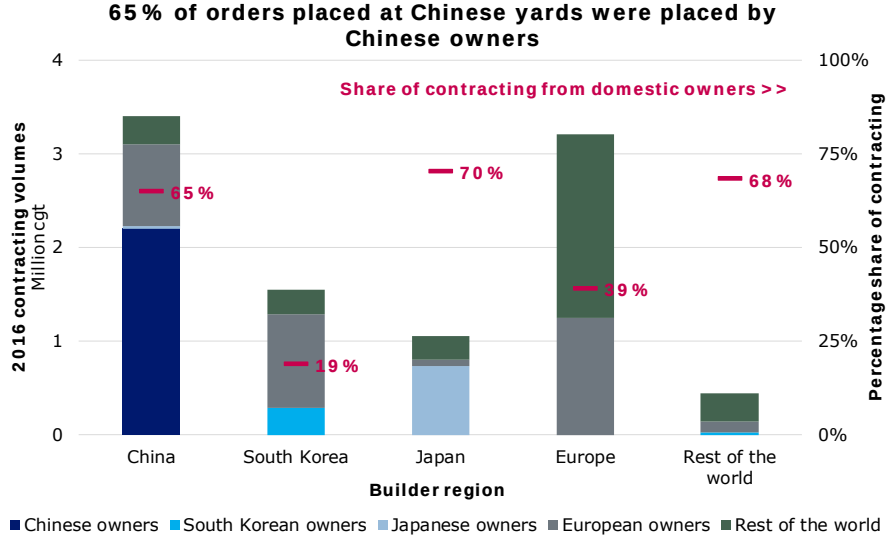
The Chinese yard industry has seen a smaller drop in contracting in 2016 compared with its South Korean and Japanese competitors. The situation in China would have been worse were it not for the big order for 30 VLOC Bulk vessels placed by Chinese interests at four different yards. This order accounted for more than 40% of total contracting at Chinese yards in the period, measured in cgt. The Japanese yards are equally very dependent on orders from Japanese shipowners (fig. 6).

Figure SB.5



Sources: Clarksons, Danish Ship Finance

Figure SB.6



Sources: Clarksons, Danish Ship Finance

THE DELIVERY PERFORMANCE OF THE INDUSTRY REMAINS LOW, AND CHINESE YARDS IN PARTICULAR ARE FAILING TO DELIVER SCHEDULED ORDERS.

The delivery performance of the Shipbuilding industry is still being very much affected by production delays, cancellations and postponements of orders, and a growing number of orders are not being delivered on schedule. Moreover, a number of yards are undergoing financial restructuring, which in some instances is also affecting production.

YARDS DELIVERED ONLY 63% OF SCHEDULED ORDERS

48 million cgt was scheduled to be delivered during the period, but only 30 million cgt of this materialised, equal to a delivery ratio of 63% (fig. 7).

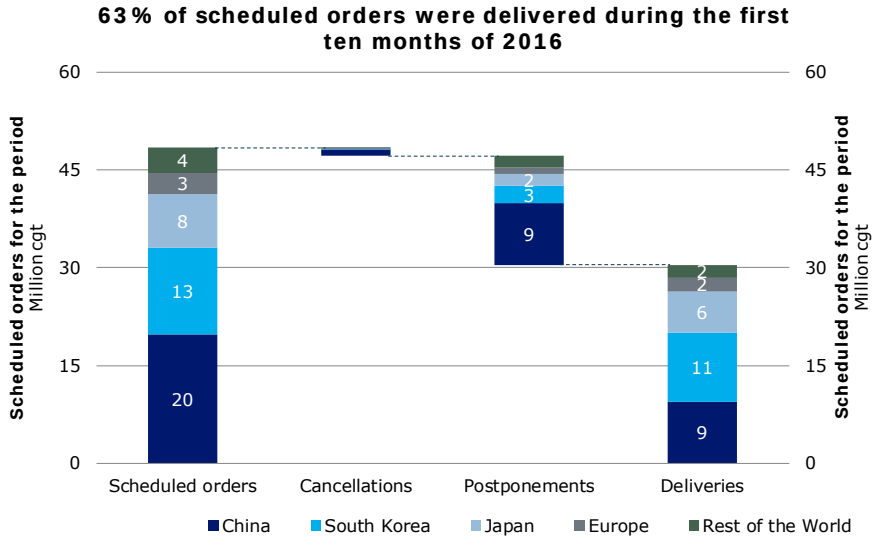
CHINA IS STRUGGLING WITH ORDER DISRUPTIONS

Scheduled deliveries for the first ten months were divided between around 570 yards, but only 440 yards actually completed orders. China delivered just 48% of scheduled orders, measured in cgt, and it looks like the Chinese yard industry is struggling the most with orderbook disruptions. China's heavy reliance on the Bulk segment, which has suffered from low freight rates for a long time, has only made the situation worse. South Korea managed to deliver 80% of scheduled orders and Japan 76% (fig. 8).

CLOSE TO 350 YARDS ARE DEPLETING THEIR ORDERBOOKS

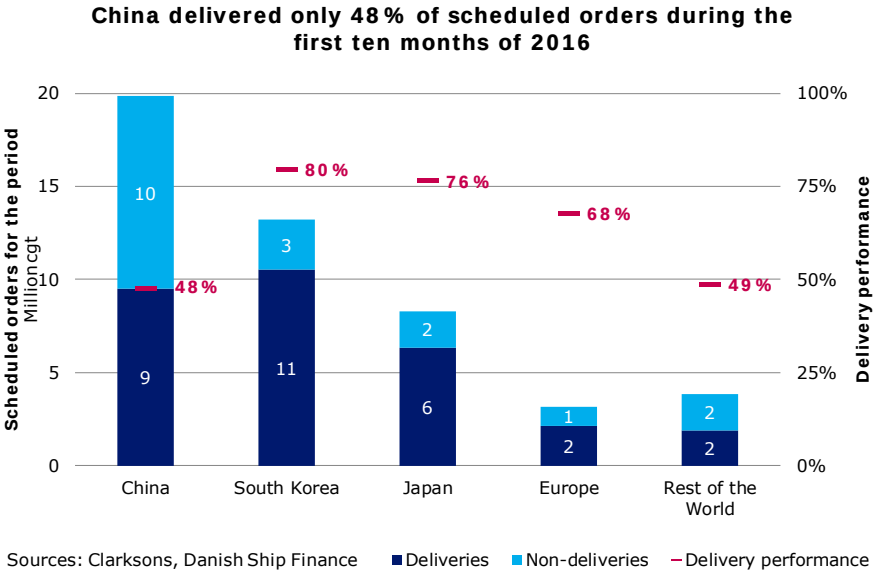
It is becoming increasingly apparent that many yards are moving closer to possible default, since a lot of them are continuing to build but failing to restock new orders. Around 350 yards have made deliveries in 2016 without attracting new contracts, representing 45% of current active yard capacity. More than half of them, representing 10% of current active capacity, have less than one year of order cover left. Hence, almost half of the yards that have delivered new vessels so far in 2016 are at imminent risk of running out of orders.

Figure SB.7



Sources: Clarksons, Danish Ship Finance

Figure SB.8



Sources: Clarksons, Danish Ship Finance

THE SHARE OF ORDERS BEING CANCELLED HAS DECLINED, BUT POSTPONEMENTS STILL CONSTITUTE A LARGE SHARE OF NON-DELIVERIES.

The challenging market conditions in the major shipping segments are prompting a lot of movements within the orderbook. Many orders are being cancelled or postponed, primarily on the initiative of the shipowners in an attempt to retain liquidity and limit market exposure. Moreover, orders are increasingly being abandoned because some owners for various reasons are refusing to take delivery of vessels, even though they have already been partially or fully built. This raises questions about the actual size of the orderbook, as it might contain a large number of orders that technically no longer have owners (besides the shipyards). Consequently, the true size of the orderbook is hard to determine and some of the orders that continue to be postponed might never be delivered. The total orderbook came down by 20% in the period to around 92 million cgt, divided between 4,200 vessels – the lowest level since the start of 2005 (fig. 9).

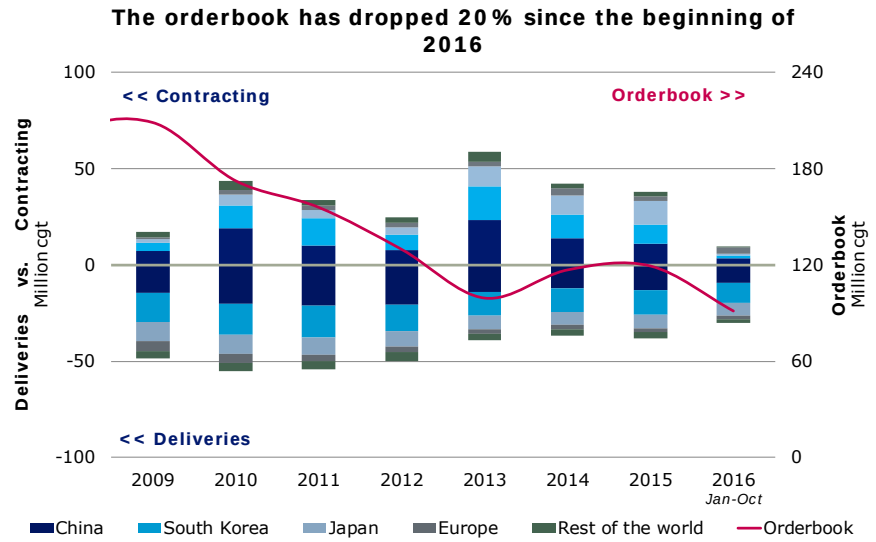
THE SHARE OF CANCELLATIONS IS DECLINING

Cancellations continue to play a role in the rapid decline in the size of the orderbook, but the pace at which orders are being cancelled is slowing. Only 2%, equal to around 1.1 million cgt, of the orders that were scheduled to be delivered during the period were cancelled. However, the share of orders being postponed continues to represent a significant share of non-deliveries (fig. 7).

BULK AND OFFSHORE ACCOUNT FOR THE MAJORITY OF POSTPONEMENTS

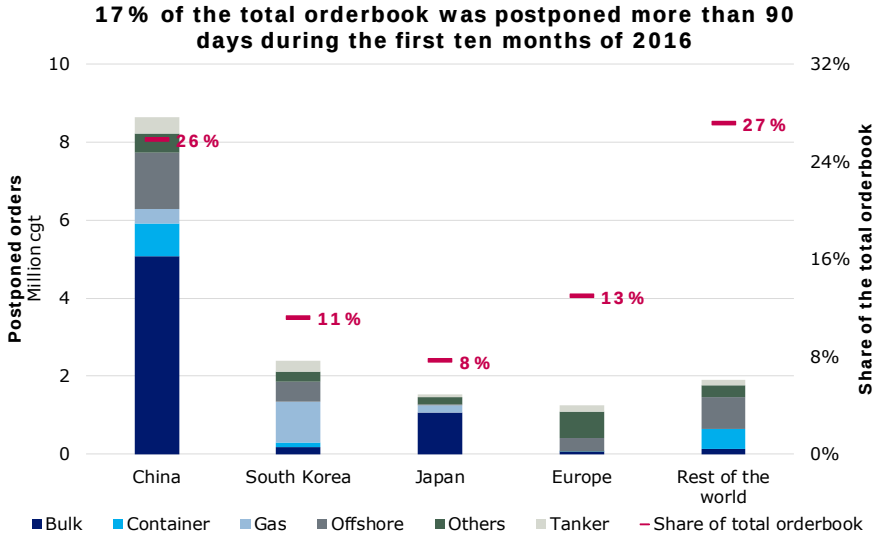
Order postponements have primarily been a problem in China and in the rest of the world. During the first ten months of 2016, orders equal to 26% of China's total orderbook were postponed for more than 90 days. In South Korea, this figure was only 11% (fig. 10). Bulk and Offshore orders were heavily represented among the postponed orders. Orders were on average postponed for 225 days: Offshore orders for around 300 days and Tanker orders for 110 days.

Figure SB.9



Sources: Clarksons, Danish Ship Finance

Figure SB.10



Sources: Clarksons, Danish Ship Finance

ACTIVE YARD CAPACITY IS STEADILY DECLINING AND OVERCAPACITY CONTINUES TO SHRINK. GLOBAL YARD UTILISATION SO FAR IN 2016 HAS CLIMBED TO 82%.

As we approach the end of 2016, data for 2015 has become more accurate. The updated data shows that 2015 was worse for the industry than we estimated back in May. Over the last six months, the number of active newbuilding yards in 2015 has been adjusted from around 730 yards to 680 – a drop of 130 yards compared with 2014 rather than 70. The current estimate for 2016 shows that the number is expected to drop even further to 630 yards with active capacity of around 45 million cgt (fig. 11).

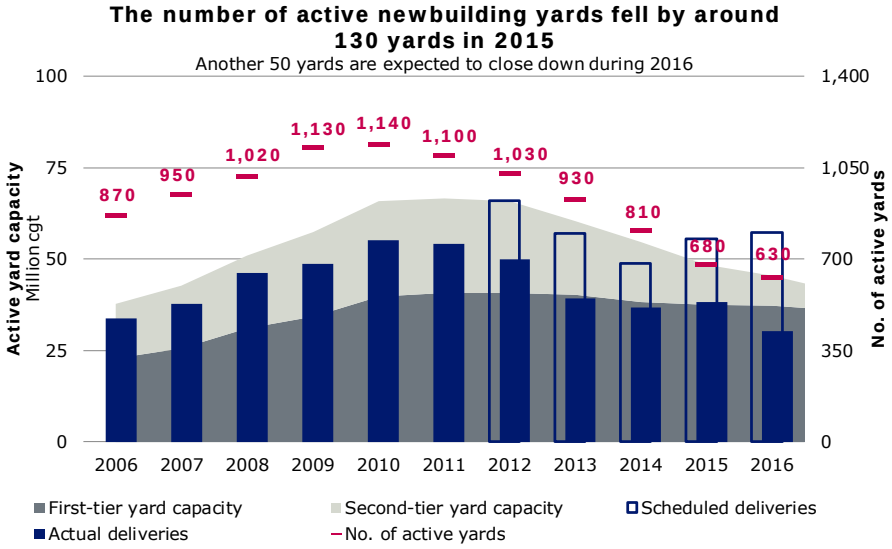
FIRST-TIER CAPACITY IS STABLE, SECOND-TIER CAPACITY IS FALLING

As explained in previous reports, we divide the yard industry into two groups when assessing yard capacity: the first-tier yards are those that have received new orders within the previous 18 months and the second-tier yards are those that have not. Around 90% of active newbuilding capacity is currently placed at the first-tier yards, which is an increase of 6 percentage point since our last report, implying that a lot of second-tier yards have run out of orders. Our estimates show that active global yard capacity in 2016 has experienced a decline of around 6% compared with 2015, whereas we expect the number of yards to have declined by 7% to around 630 yards this year (fig. 11).

ANNUALISED UTILISATION FOR THE PERIOD UP ON 2015

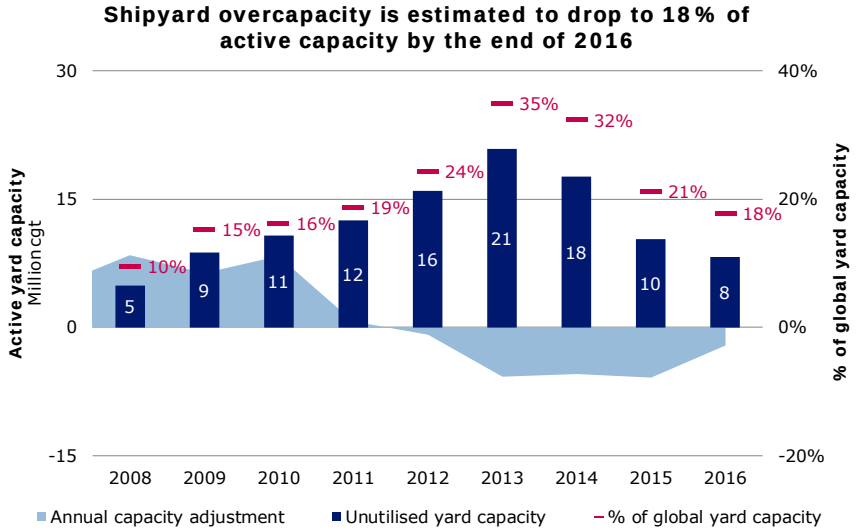
The decline in active yard capacity has contributed positively to yard utilisation for the period, which in annualised terms was up by 3 percentage points to 82% versus 2015. This indicates that the oversupply is declining (fig. 12), as more yards run out of orders and close down. However, the utilisation rate does not tell us anything about order cover, the amount of idle capacity or the order disruptions that many of the yards are dealing with, which are the main issues currently challenging the Shipbuilding industry.

Figure SB.11



Sources: Clarksons, Danish Ship Finance

Figure SB.12



Sources: Clarksons, Danish Ship Finance

WE ARE STILL BEARISH ON THE PROSPECTS FOR THE SHIPBUILDING INDUSTRY. VERY LITTLE HAS CHANGED FOR THE BETTER SINCE OUR LAST REPORT AND A LOT OF PRODUCTION CAPACITY AND YARDS ARE EXPECTED TO CLOSE DOWN AS THE SUPERCYCLE ENDS AND THE INDUSTRY RETURNS TO NORMAL.

In our report from May, we painted a picture of a Shipbuilding industry on the verge of a major transition. Few new investors are entering the Shipping industry, which is putting a lid on ordering and making it difficult for large parts of the Shipbuilding industry to run profitable operations. Even the shipyards with large orderbooks are being affected. Since May, the situation has in many ways worsened, because ordering of new vessels has remained at extremely low levels and many shipowners are attempting to downsize their newbuilding programmes.

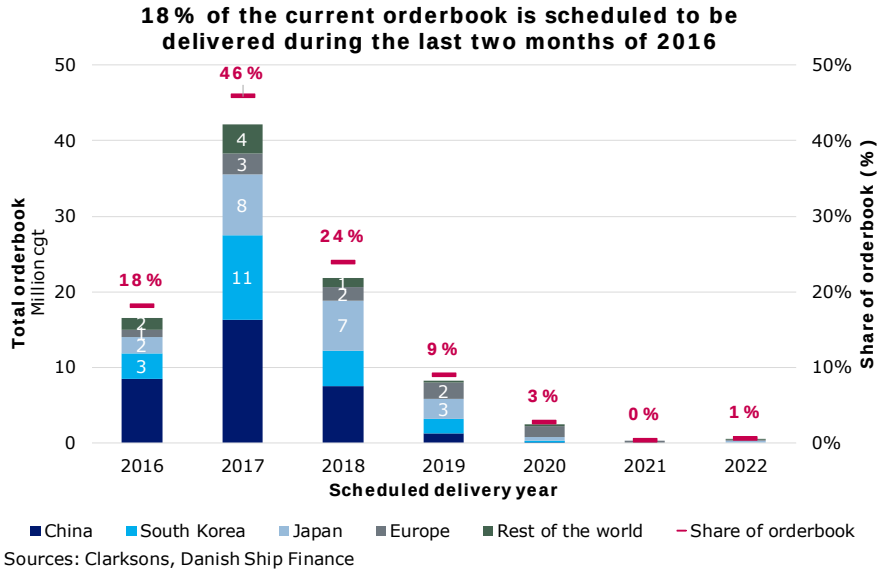
THE END OF THE SHIPPING SUPERCYCLE

Even though we have said that the industry is on the verge of a transition, its current issues can in broad terms be described as a consequence of the process of returning to normal. A couple of years into the new millennium, the shipping industry embarked on what can be labelled a form of supercycle. China's entry into the WTO boosted demand for seaborne trade to an unprecedented level, and it rapidly became clear that the fleet at the time was insufficient to service that demand. In response to the extraordinarily high demand, new yards and capacity emerged, especially in China. It did not take long before the orderbook had grown to record-high levels, amounting to more than 50% of the fleet in 2009.

THE CHINA EFFECT IS NOT EXPECTED TO BE REPEATED

China's influence on the world economy over the last couple of decades has been a by-product of the country's journey towards a higher level of economic development. The journey required an immense amount of natural resources, which to a large extent needed to be transported by sea. Now that the country has

Figure SB.13



Sources: Clarksons, Danish Ship Finance

reached a higher level of economic development, it seems to have entered a new phase that is not expected to be as trade-intensive. Hence, it looks as though the shipping supercycle has come to an end, and that the world fleet and the shipyard capacity that were built up to support China's expansion will no longer be needed to the same extent.

THE SHIPBUILDING INDUSTRY IS DIFFICULT TO ASSESS

To adjust for expected lower demand going forward, it seems evident that the number of active players in the industry must come down significantly. However, it is difficult to come up with accurate predictions of which shipyards will survive, because the Shipbuilding industry is anything but transparent. Few yards are publicly listed, many have strong governmental ties and yard capacity cannot be accurately estimated, since a ship in principle can be built on a beach. Consequently, there is a lot of uncertainty around the

capacity and the financial situation at many yards. Some South Korean and Chinese yards in particular have been known to be supported by national interests.

THE POTENTIAL FOR NEW ORDERING REMAINS LOW

In our last report, we said that we expected contracting activity to remain low during the next couple of years and that the order-book could continue to decline. The primary reason being the massive oversupply in Bulk, Container and Offshore, which has minimised the potential for new ordering in these segments. The fact that these segments accounted for 57% of total contracting between 2011 and 2015 constitutes a problem for an already oversupplied Shipbuilding industry – at least for the yards building these types of vessels. We still expect contracting to remain low, especially since more segments are beginning to see freight rate declines (e.g. the Tanker and Gas segments).

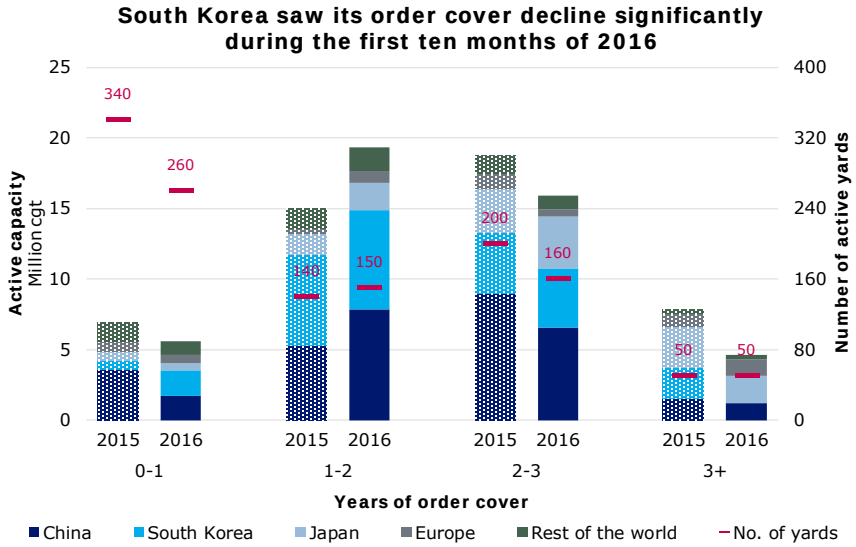
RULES AND REGULATIONS COULD GIVE THE INDUSTRY A HELPING HAND

However, there are some forces at play that could trigger a new round of ordering. The newly ratified ballast water management convention could possibly be one of these forces. In broad terms, the regulations will take effect in September 2017; thereafter, all newbuildings will have to fulfil the requirements and all existing vessels will have to become compliant by their next scheduled special survey. The new ballast water management systems could cost around USD 0.5-2 million to install. Since freight rates and secondhand values are low in many segments, a lot of shipowners might choose to scrap vessels approaching their third special survey or higher instead of investing money in making them compliant. The new sulphur limits that will come into force by 2020 in all areas outside the ECAs (emission control areas) could also increase the incentive to scrap younger, non-compliant vessels and create a need for new replacement vessels to be built.

ORDER COVER IS SETTING YARDS APART

These regulations are clearly positive for the Shipbuilding industry, and may keep some yards active for longer, but they are not

Figure SB.14



Sources: Clarksons, Danish Ship Finance

expected to create enough demand to employ the oversupplied market in its current form. Consequently, in order to better understand which yards are more likely to succumb to the pressure, we analyse the industry by applying a bottom-up approach. There are a couple of characteristics that can help narrow down these yards and order cover is one of them. Even though we have argued, and still argue, that order cover can be an illusory concept, it still provides useful insight into a yard's attractiveness.

LESS THAN 50 YARDS HAVE MORE THAN THREE YEARS OF ORDER COVER

Since our previous report in May, the drop in order cover has been pronounced. There is, however, a group of around 50 yards, representing 18% of current active yard capacity, that have managed to maintain a stable order cover of more than three years despite the massive drop in demand (fig. 14). We surmise that these yards must to some degree be preferred by shipowners and therefore have a better chance of survival – although they do not necessarily

have strong financials. Only 20 of these yards have received new orders in 2016, but their orderbooks are scheduled to be delivered gradually over the next couple of years, indicating they might be better prepared for a period without new orders.

A LARGE SHARE OF SOUTH KOREAN YARDS ARE LOSING ORDER COVER

Aside from this group, there are a lot of yards that are seeing order cover drop significantly – especially in South Korea. At year-end 2015, eight South Korean yards, accountable for 47% of active capacity in the country, had more than two years of order cover. By October, this number had fallen to 18% of active capacity, split between only four yards (fig. 14). Overall, the number of active yards in South Korea has declined by more than 20%. The South Korean yard industry is highly consolidated compared with China and Japan, with relatively large yards, which is why the closure of one South Korean yard generally leaves a bigger mark on the industry. The other shipbuilding regions have not experienced the same decline in order cover as South Korea.

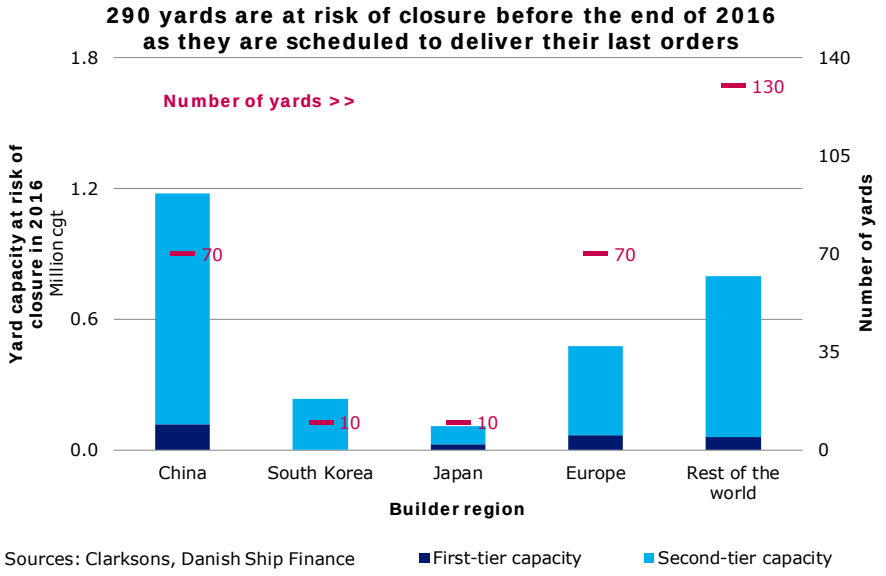
290 YARDS AT RISK OF CLOSURE BY THE END OF THE YEAR

According to our methodology, a yard is considered active when it has an orderbook or has delivered newbuildings within the current year. Based on this methodology, 290 yards are at risk of closure by the end of 2016, representing 9% of active yard capacity (fig. 15). Of these yards, 100 have already delivered their last recorded orders and are only considered active because they have completed deliveries in 2016. These are highly likely to have closed down by the time we publish our next market update. The fate of the 190 remaining yards is more uncertain. Orders could be postponed or new orders be placed, which could prolong their active status.

OLD ORDERS ARE DISTORTING THE PICTURE

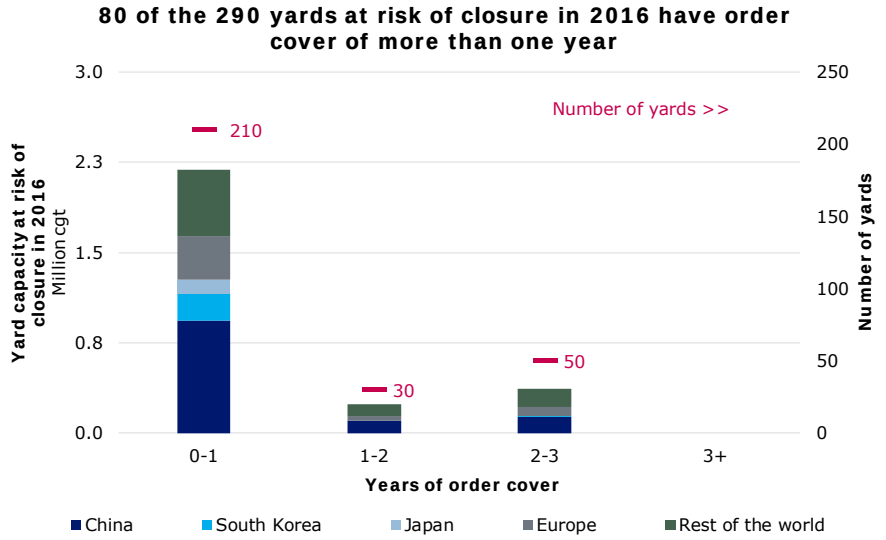
When we look more closely at the 290 yards that are expected to deliver their last orders during 2016, it becomes clear that order cover is an illusory concept. Some yards have scheduled too many orders for delivery in 2016 relative to their active annual capacity.

Figure SB.15



Sources: Clarksons, Danish Ship Finance

Figure SB.16



Sources: Clarksons, Danish Ship Finance

Only 210 of the 290 yards have order cover of less than one year, while 80 yards have order cover of more than one year (fig. 16). It seems unlikely that the yards with more than one year of order cover will be able to deliver all orders within such a short period of time. The question is, though, if the reason for the high order cover at these yards is that their orderbooks include a lot of orders that have been discarded by owners, making their order covers artificially high. Almost 50% of the orderbook at the 80 yards with more than one year of order cover was contracted before 2013, and around 30% before 2009. Hence, a significant part of the orders have been postponed several times already and it is questionable if they will ever be delivered. The majority of the yards with a large share of old orders are in China and the rest of the world.

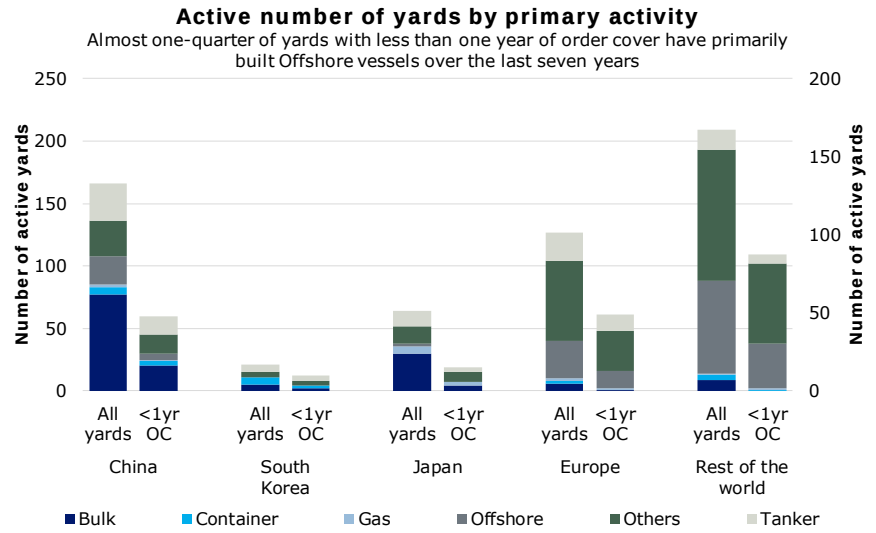
A YARD'S PRIMARY ACTIVITY INDICATES ITS FUTURE ORDER POTENTIAL

The low future ordering potential in some of the major shipping segments, such as Bulk, Container and Offshore, but increasingly also Tankers and Gas Carriers, puts pressure on some of the yards that have specialised in building these vessel types. If we look at the primary activity of all 260 yards that have less than one year of order cover (i.e. which vessel types the yards have primarily been building since 2010), around 120 yards have focused on building vessels in the niche segments (fig. 17). Close to 90% of these yards' deliveries in the period have been in the Others segment. Another 55 yards have primarily been occupied by building Offshore vessels (around 90% of total deliveries since 2010). In the light of the severity of the current Offshore crisis, the short-term potential for new Offshore orders is low and these yards could be more exposed to low order intake going forward. On the contrary, yards specialised in building niche ship types could possibly be better positioned to receive new orders.

THE NUMBER OF ACTIVE YARDS COULD DROP BELOW 400 IN 2017

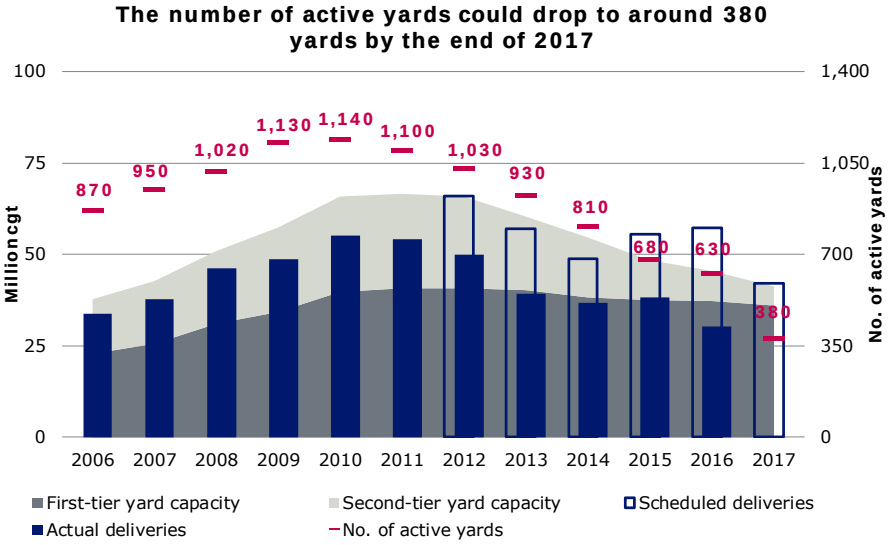
Although it is difficult to estimate which yards will continue to operate and which will not, we are able to get a good indication by looking at order cover, delivery schedule and primary activity. On

Figure SB.17



Sources: Clarksons, Danish Ship Finance <1yr OC = yards with less than one year of order cover

Figure SB.18



Sources: Clarksons, Danish Ship Finance

this basis, we expect that the number of active yards could fall from the current level of 630 to around 380 by the end of 2017 if the low contracting environment persists. That would result in a 10% decrease in active capacity (fig. 18). We expect the majority of the closures to be Chinese or located in the Rest of the world.

SHIPOWNER DEFAULTS COULD TRIGGER MORE ORDER CANCELLATIONS

On top of the issues that the industry is already struggling with, things could get worse if shipowners continue to cancel and abandone orders, which could result in a large part of the orderbook getting wiped out. The low freight rate environment has dragged on for a long time in many shipping segments, and it could continue the next couple of years. Hence, we might only have seen the tip of the iceberg at this point. The downward pressure on the already declining orderbook could become even more intense and thereby also the pressure on newbuilding prices and yard capacity.

CONTAINER

SHIPPING MARKET REVIEW – DECEMBER 2016

DANISH SHIP FINANCE

CONTAINER

CONTAINER SHIPPING IS AT A CROSSROADS. THE SITUATION IS INTENSIFYING AS FREIGHT RATES REMAIN AT UNSUSTAINABLY LOW LEVELS, LOSSES MOUNT AND MORE AND MORE TIMECHARTER CONTRACTS START TO RUN OUT. AN INCREASING NUMBER OF VESSELS ARE BEING LEFT WITHOUT EMPLOYMENT AND PARTICULARLY TONNAGE PROVIDERS ARE EXPECTED TO SUFFER.

FREIGHT RATES

BOX RATES HAVE INCREASED SINCE OUR LAST REPORT IN MAY, BUT REMAIN AT HISTORICALLY LOW LEVELS. THE OLD PANAMAX SEGMENT IN PARTICULAR IS FACING TOUGH COMPETITION.

Despite a reported improvement in seaborne Container demand, freight rates continue to be at very low levels. Liner companies are struggling with the constant trade-off between higher volumes and higher freight rates, as it seems they can only have one or the other in the current market.

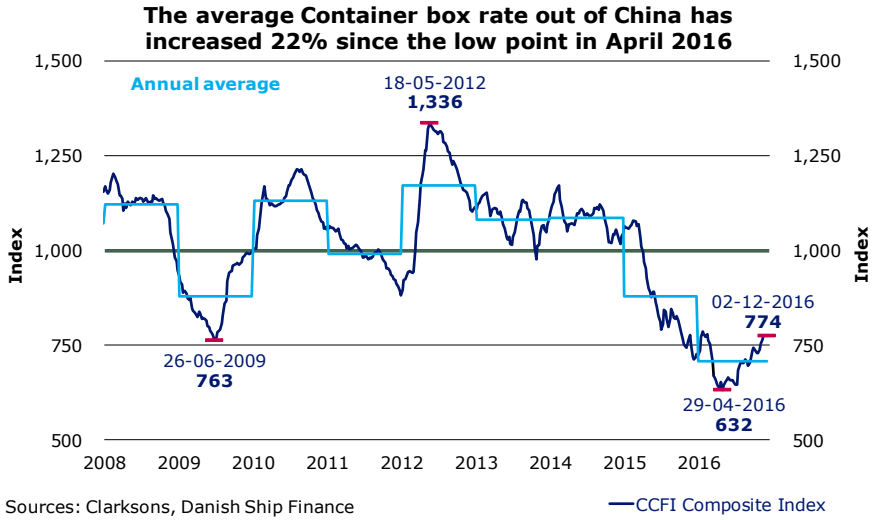
THE BOX RATE OUT OF CHINA HAS INCREASED 22% SINCE THE APRIL LOW

The average box rate out of China bottomed out at the end of April at index 632 and then climbed to index 774 at the start of December – slightly above the lowest level observed in 2009 (fig. 1). Temporary factors such as the bankruptcy of Hanjin Shipping gave a boost to box rates, although this effect is expected to be short-lived.

TIMECHARTER RATES REMAIN AT UNSUSTAINABLY LOW LEVELS

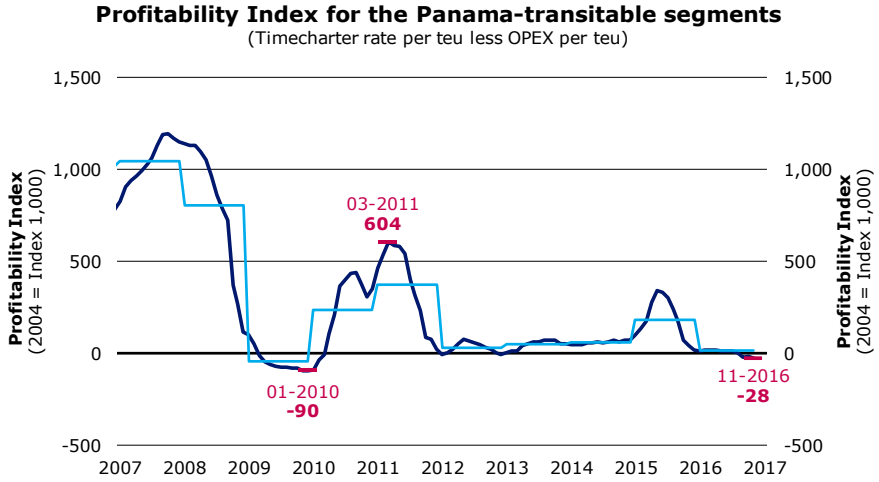
The average timecharter rate has dropped another 12% since the start of the year. The Old Panamax segment in particular has seen timecharter rates drop to record-low levels, whereas the Feeder segment continues to be somewhat sheltered, holding up timecharter rates with greater success than their larger counterparts of +3,000 teu. Vessels below 2,000 teu are still seeing rates 30% above the recorded low from 2009. Larger vessels of more than 6,000 teu are coming off long-term contracts and will have to compete for the same employment as the vessels in the 3,000-6,000 teu size range, which could keep timecharter rates under continuous pressure.

Figure C.1



Sources: Clarksons, Danish Ship Finance

Figure C.2

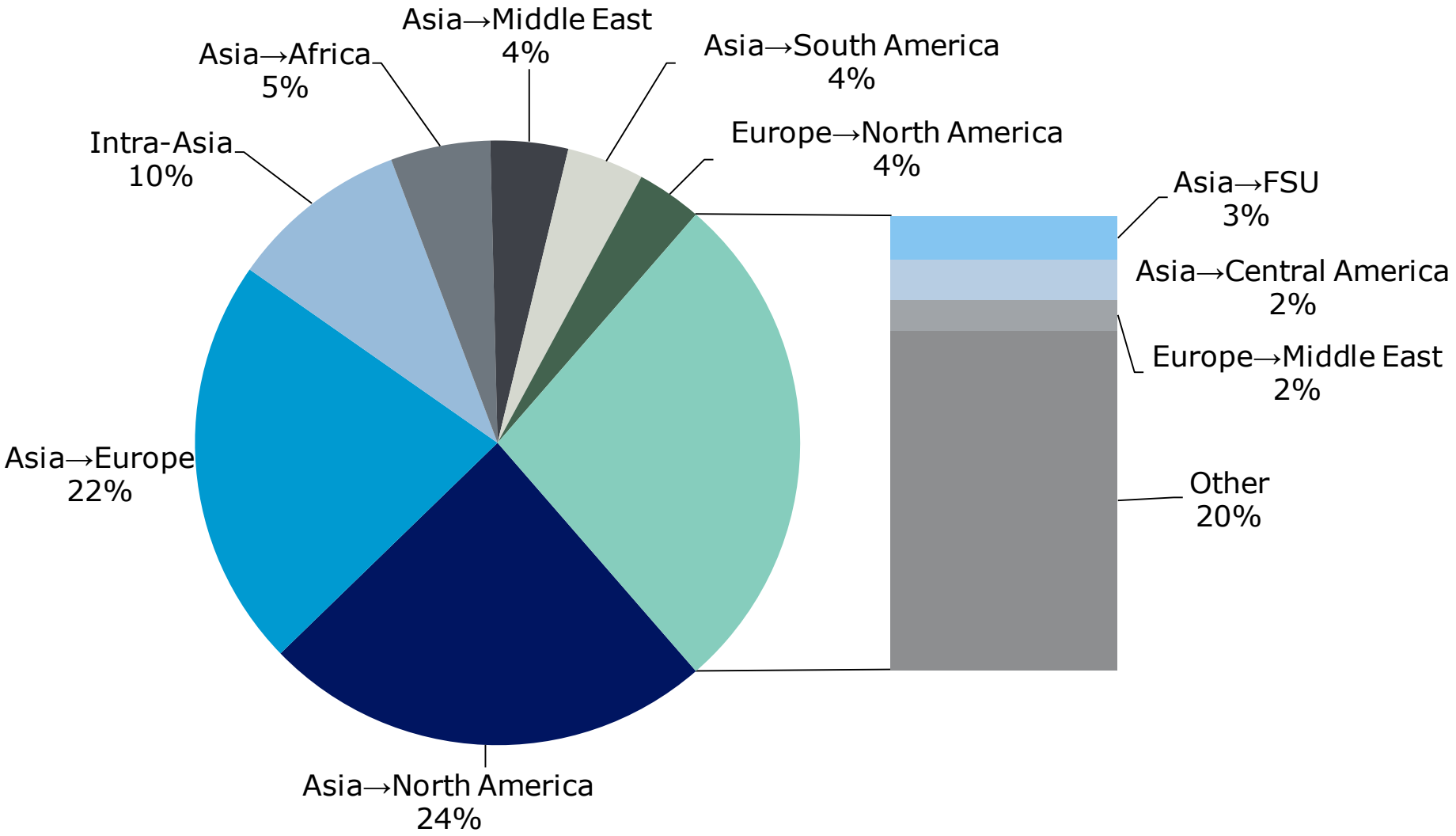


Sources: Clarksons, Drewry, Danish Ship Finance

Figure C.3

Top-ten head-haul Container trades 2016

Measured in teu miles



Sources: IHS Global Insight, Danish Ship Finance

A SMALL BOUNCE BACK IN SEABORNE CONTAINER DEMAND FROM THE VERY LOW LEVEL IN 2015 COMBINED WITH LOW FLEET GROWTH IS EXPECTED TO PREVENT THE OVERSUPPLY FROM INCREASING ANY FURTHER IN 2016.

The expansion of the Panama Canal has made the old Container segmentation inaccurate. For a description of our new segmentation, please refer to the textbox at the end of this chapter.

THE SUPPLY-DEMAND BALANCE COULD REMAIN UNCHANGED IN 2016

The surprising slowdown in demand growth in 2015 hit the Container industry like a sledgehammer, exacerbating the effect of the massive oversupply and making freight rates drop at an unprecedented speed. During the first ten months of 2016, however, demand strengthened somewhat and fleet growth was held down to just 1.3%, which is significantly lower than in the same period in 2015 (fig. 4). The share of idled capacity decreased somewhat over the summer months but had returned to around 8% of the fleet by October 2016.

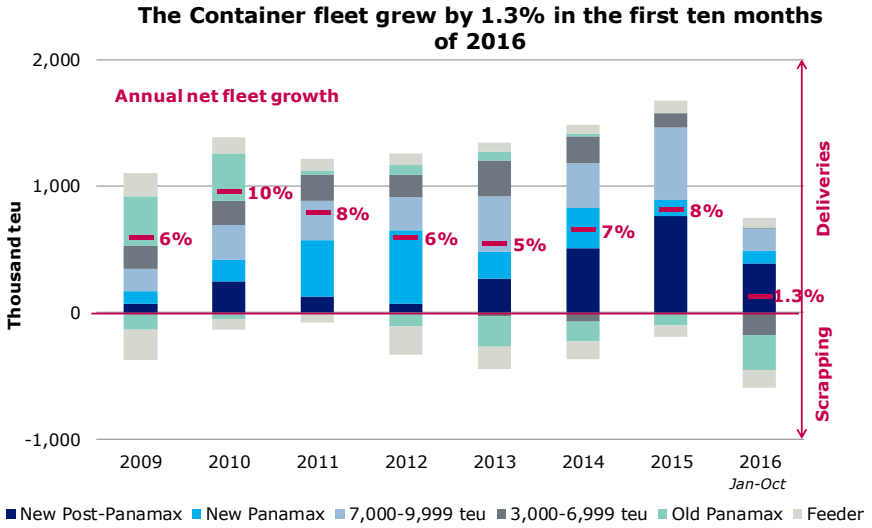
POSTPONEMENTS ARE PICKING UP IN THE CONTAINER INDUSTRY

Cancellations and postponements do not usually play a significant role in the Container industry, but it seems that the number of orders being postponed for later delivery has increased in 2016. There were around 1.1 million teu of orders scheduled to be delivered during the first ten months of 2016, but only around 0.75 million teu was actually delivered (fig. 5). Thus, around 0.35 million teu of orders scheduled for delivery during the period have yet to materialise, and have on average been postponed 4.5 months. These postponements could lie within the time frame allowed by the newbuilding contracts, but could also reflect that shipowners are trying to defer additional market exposure or that some shipyards are failing to deliver on time.

SCRAPPING ACTIVITY SETS NEW RECORD IN 2016

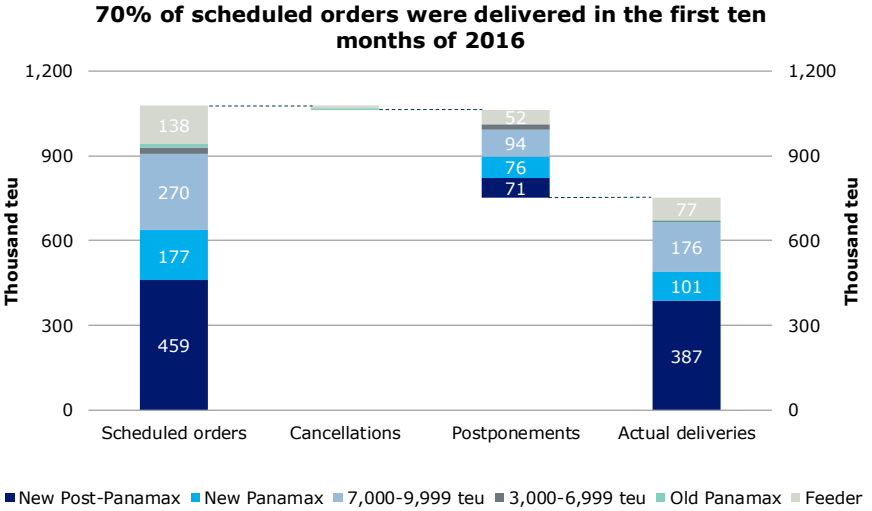
The low scrapping activity seen in 2015 has reversed significantly in 2016, and by the end of October, a new annual record had already been set in terms of scrapped vessels. Vessels amounting to

Figure C.4



Sources: Clarksons, Danish Ship Finance

Figure C.5



Sources: Clarksons, Danish Ship Finance

0.55 million teu were scrapped during the first ten months, triple the amount scrapped in the same period in 2015. Up until 2016, scrapping occurred solely in the segments below 6,000 teu, but during the first ten months of this year, ten vessels in the 6,000-6,600 teu category with an average age of 15.5 years were scrapped. The average scrapping age for the industry has come down to 19 years in 2016 from close to 23 years in 2015 (fig. 6), pulled down primarily by the Old Panamax segment and the 3,000-6,999 teu wide beam vessels. Four Old Panamaxes of just below ten years have been sold for scrap during 2016.

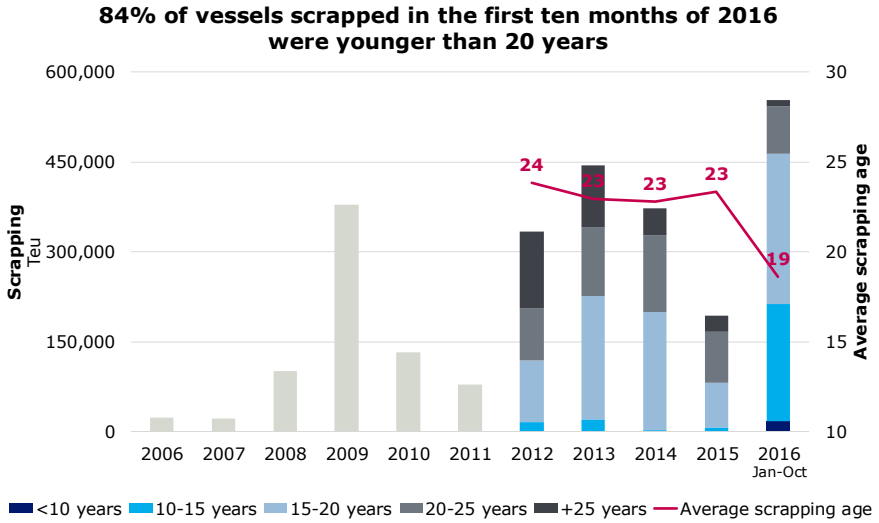
SEABORNE CONTAINER DEMAND COULD SEE MARGINAL IMPROVEMENT

2015 was a disappointing year for seaborne Container trade, as demand slowed down and only grew by 1.3%. Factors such as low Chinese activity, low commodity prices, the Russian trade sanctions and low investment in many of the major consumer economies all played a role in the slowdown. So far, 2016 looks set to show higher demand growth, though not much. Seaborne Container demand is currently expected to grow by around 2.6% this year with no added contribution from longer distances (fig. 7). From a historical perspective, this is still very low, and in our view, there is still some downside risk related to this measure.

US DEMAND FOR SEABORNE CONTAINERISED GOODS HAS SLOWED

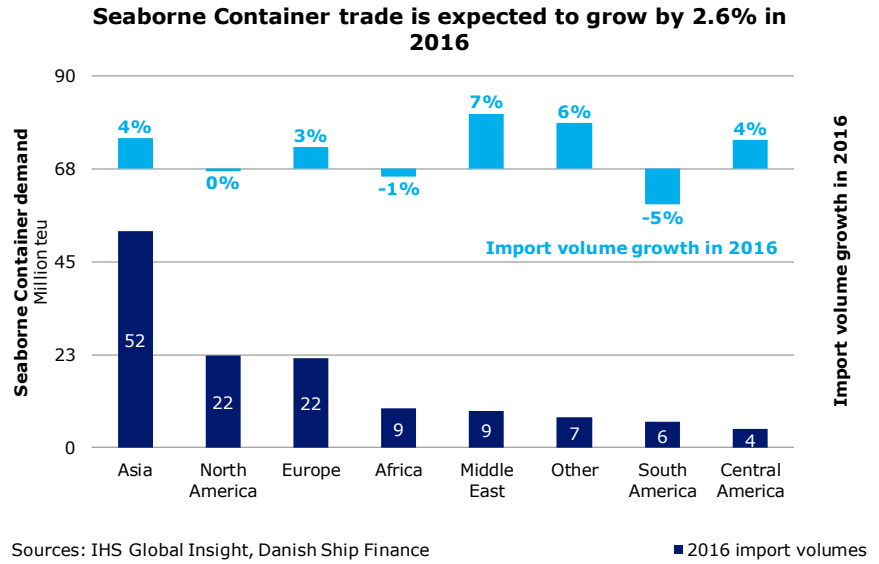
One of these risks relates to the US. In 2015, the US was the main driver of growth in Container demand, supported by a strong dollar, which created an incentive for importing foreign goods. The US alone accounted for around 60% of volume growth last year. News about the strength of the US economy continues to air, highlighting strong consumer spending and declining unemployment as the main strongholds of the economy. However, when we look beyond the headlines, the low unemployment rate masks the fact that a growing share of the American population is outside the workforce. Moreover, high consumer spending seems less healthy when viewed in the light of rapidly growing consumer debt. On top of that, businesses are investing less and the election of Donald Trump

Figure C.6



Sources: Clarksons, Danish Ship Finance

Figure C.7



Sources: IHS Global Insight, Danish Ship Finance

as the next President of the United States has cast doubt throughout the world about the US's future role in the global economy. All of this is putting downward pressure on demand for containerised goods, and US seaborne Container demand is expected by IHS Global Insight to drop by -0.3% in 2016. According to the US Census Bureau, imports of containerised goods declined by 1.7% in the first ten months of 2016, measured by volume, compared with the same period in 2015 (fig. 8), but are expected to pick up somewhat in the last quarter.

DEMAND IN SOUTH AMERICA AND AFRICA REMAINS DEPRESSED

South America is still being dragged down by the economic recession in Brazil, and despite increases in prices of some commodities, Africa has not yet recuperated. Both regions are expected to show negative demand growth in 2016. In contrast, Asia and Europe are expected to rebound after a slow year in 2015, growing by around 4% and 3%, respectively (fig. 7).

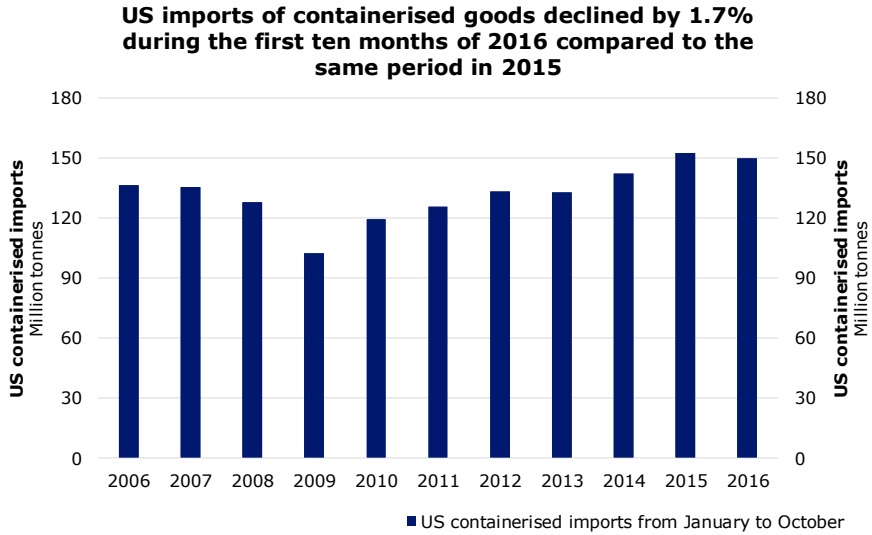
MIDDLE EAST CONSTITUTES THE SOLE PROVIDER OF STABLE GROWTH

Despite the problems afflicting some parts of the Middle East, the region has continued to be a stable source of growth in terms of seaborne Container demand. In 2016, imports are expected to grow by another 7% and the region will thereby account for one-quarter of volume growth (fig. 7). In particular, exports from China and Europe to the United Arab Emirates and Saudi Arabia have taken off during the last couple of years.

DOWNSIDE RISK AND NEW DELIVERIES COULD LIMIT A MARKET RECOVERY

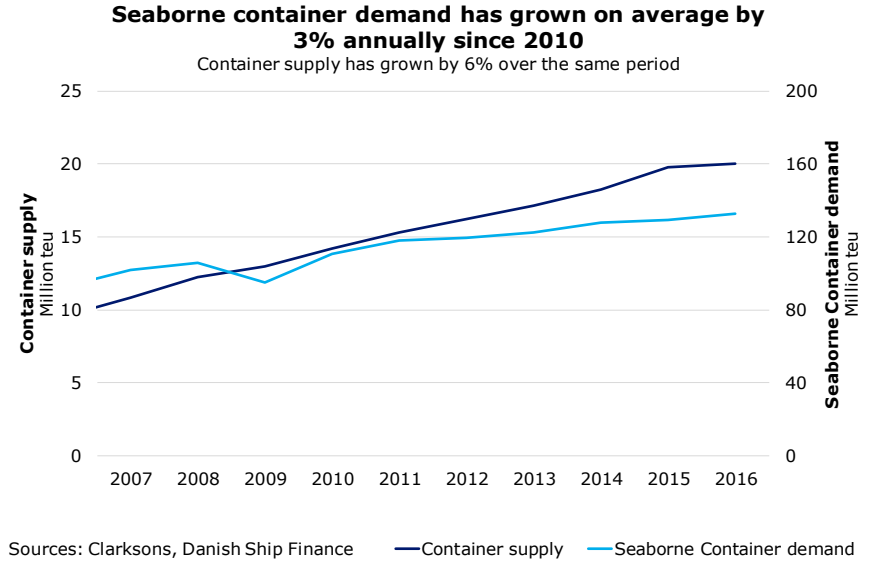
If seaborne Container demand does not weaken any further and supply growth is held at the current low level of around 1%, the supply-demand gap could improve marginally in 2016 (fig. 9). However, as mentioned above, there is still some downside risk related to demand and, moreover, many orders are scheduled to be delivered in the remainder of the year. Hence, if scrapping does not continue at the current pace and demand weakens, supply growth could equal or once again outpace demand growth.

Figure C.8



Sources: US Census Bureau, Danish Ship Finance

Figure C.9



Sources: Clarksons, Danish Ship Finance

CONTRACTING ACTIVITY INCREASED ONLY SLIGHTLY IN THE SECOND AND THIRD QUARTERS OF 2016. SHIP VALUES ARE DECLINING, ESPECIALLY FOR VESSELS BETWEEN 3,000 AND 10,000 TEU.

177,000 TEU WAS CONTRACTED IN THE FIRST TEN MONTHS OF 2016

After the first quarter of 2016 when zero new orders were placed, contracting picked up slightly in the second and third quarters of 2016. 177,000 teu was contracted during the period, split between 63 vessels, which was the lowest level since 2009. 54 of the contracted vessels were Feeder vessels (fig. 10).

NEWBUILDING PRICES DOWN BY 9% SINCE THE START OF THE YEAR

As contracting drops lower, newbuilding prices follow suit because shipyards struggle to utilise capacity sufficiently. During the first ten months of 2016, the average Container newbuilding price fell by 9%, primarily dragged down by the smaller vessel sizes which dropped around 10%.

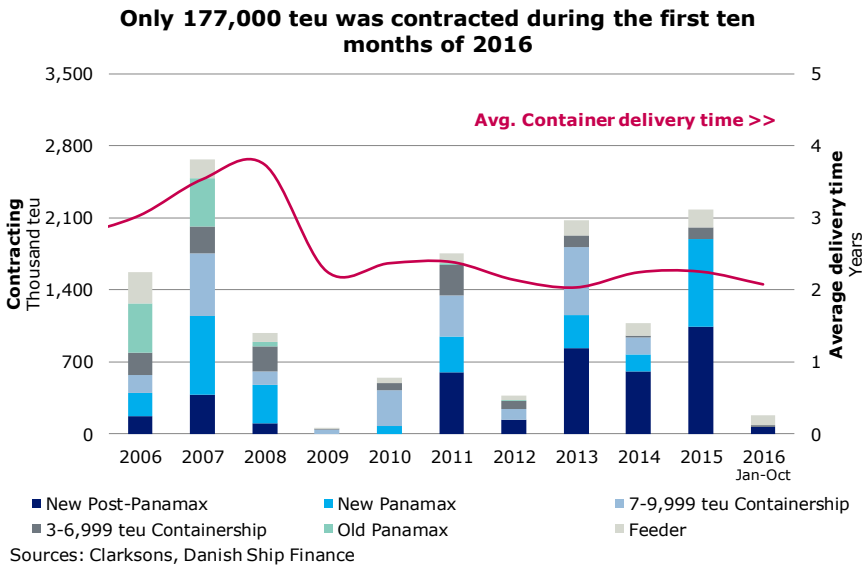
SECONDHAND PRICES CONTINUE TO DROP

The average secondhand price declined by around 20% during the first ten months of 2016, but clearly some vessel sizes have been more affected than others, most notably those between 3,000 and 10,000 teu. A 5-year-old vessel of around 6,500 teu saw its price drop by 55%, from around USD 36 million at the start of January to USD 16 million in November. In the same period, the price of a 9,000 teu vessel fell 54% from USD 56 million to USD 26 million (fig. 11).

SALES ACTIVITY HAS DECLINED SIGNIFICANTLY

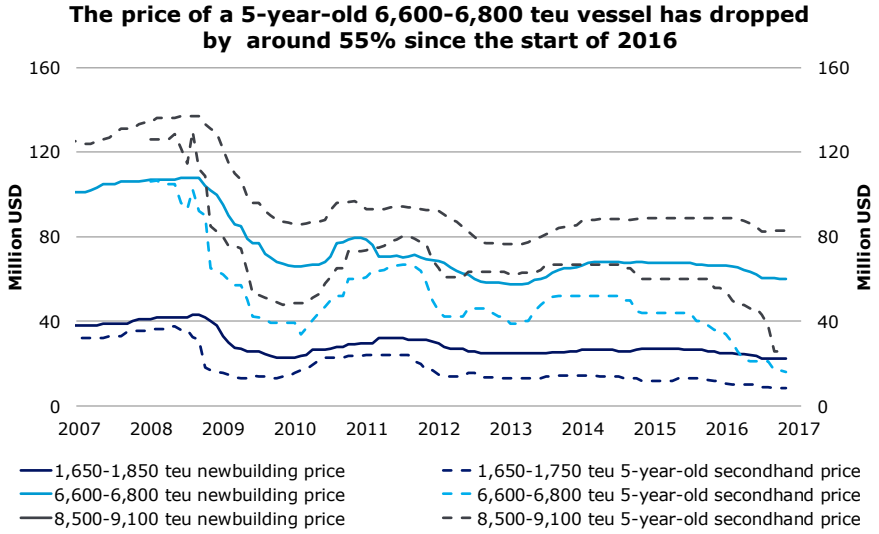
Despite the dramatic drop in freight rates and ship values in 2015, sales activity still reached the highest level for 20 years. In 2016, this trend has reversed and sales activity was down by almost 50% during the first eleven months of 2016 compared with the same period in 2015. In annualised terms, 1.7% of the fleet has changed hands in 2016 compared with 3.1% in 2015. This could indicate that it is becoming increasingly difficult for sellers and buyers to agree on a vessel's worth under the current market conditions.

Figure C.10



Sources: Clarksons, Danish Ship Finance

Figure C.11



Sources: Clarksons, Danish Ship Finance

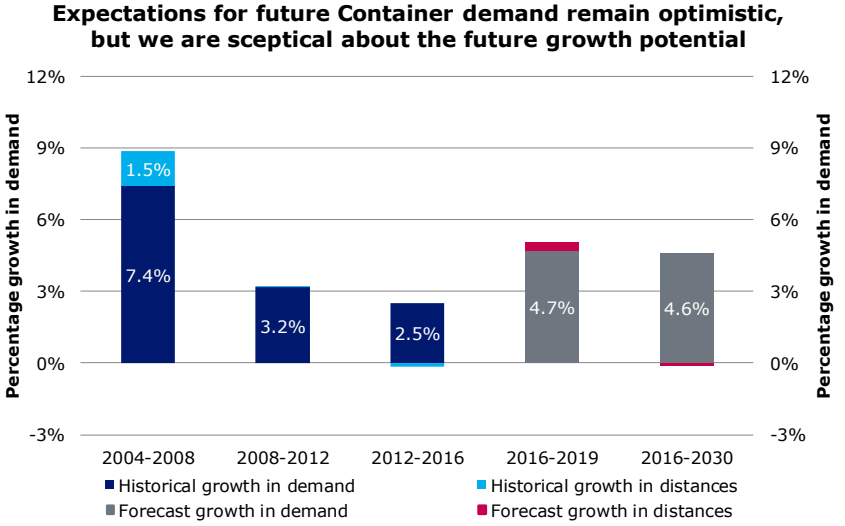
THE CONTAINER SEGMENT HAS TAKEN THE FIRST STEPS IN A LONG PROCESS TOWARDS A REBALANCING OF THE INDUSTRY. THE PROCESS IS EXPECTED TO BE BRUTAL.

The outlook for the Container industry is challenging. On the supply side, we see liner companies engaging in larger alliances in an attempt to optimise their fleets and reduce the need for chartered-in vessels. This clearly represents a cost-saving opportunity for the liner companies but raises the probability of defaults among the tonnage providers as new employment becomes difficult to find. Furthermore, tensions are building up in the market, as many vessels have become obsolete following the expansion of the Panama Canal. In essence, the Container market is currently struggling with an unprecedented number of vessels that have become scrapping candidates at a very young age. This number is only expected to rise next year when the new networks come into operation and the vessels on order are delivered. The impact on timecharter rates and ship prices is expected to be severe. Not only do we anticipate lower timecharter rates but also a decline in values as premature scrapping reduces the economic lifetime of vessels.

SEABORNE CONTAINER DEMAND IS IN TRANSITION

The demand side is also in transition and we expect smaller ship sizes travelling shorter distances to be favoured in the future rather than large vessels better suited to long overseas trades. In our view, the long-term outlook for Container vessels is all about manufacturing location, retraction of supply chains and, last but not least, consumer spending. In previous editions of this report, we have argued that new technologies associated with the fourth industrial revolution (e.g. robotics, 3D printers, artificial intelligence, etc.) are enabling near-shoring of production closer to consumers. We envisage a future where manufacturing becomes regionalised rather than centralised. A natural consequence of these changes seems to be a retraction of the logistical supply chains that support the current manufacturing network. All these forces seem to be working towards fewer units being shipped shorter distances. But the transition of the demand side does not end there. Low investment, protectionist measures, slowing momentum for trade liberalisation and ageing populations in large parts of the OECD are also reducing the growth potential for Container import volumes in many of these economies.

Figure C.12



Sources: IHS Global Insight, Danish Ship Finance

THE CONTAINER INDUSTRY HAS EMBARKED ON A LENGTHY PROCESS

So here is the real long-term challenge. The current consolidation of the market, whereby capacity is being operated primarily through a small number of large alliances, may be only the first step in a long process towards a more balanced industry. In time, we believe that this process will lead the industry to a point where smaller vessels increasingly service regional trades, while large vessels, which were ordered at a time when manufacturing was to a large extent centred around the Chinese economy, are slowly phased out.

A BATTLE FOR MARKET SHARES IS PLAYING OUT

Seen from a supply perspective, the beginning of the demand transition could not have come at a worse time. The Container industry is struggling with growing oversupply and has engaged in a battle for market shares by driving down costs and freight rates. Hanjin Shipping became the first big liner casualty when it filed for bankruptcy in September. More defaults are to be expected, particularly centred around small tonnage providers, since oversupply will continue to characterise the industry over the next couple of years. The orderbook remains huge at 16% of the current fleet (fig. 13) and net fleet growth is estimated to stay above 3% per annum (fig. 14). Meanwhile, demand could easily grow by less than 3% per annum.

ALLIANCES COULD REDUCE THE NEED FOR CHARTERED VESSELS

In an attempt to cut costs, many of the large liner companies have entered into alliances. Used optimally, these alliances can be game changers for the members, since they allow them to cover a larger network while reducing the need for chartered vessels. This could bring down costs significantly, a necessity for an industry that stands to lose around USD 6 billion in 2016, according to Drewry.

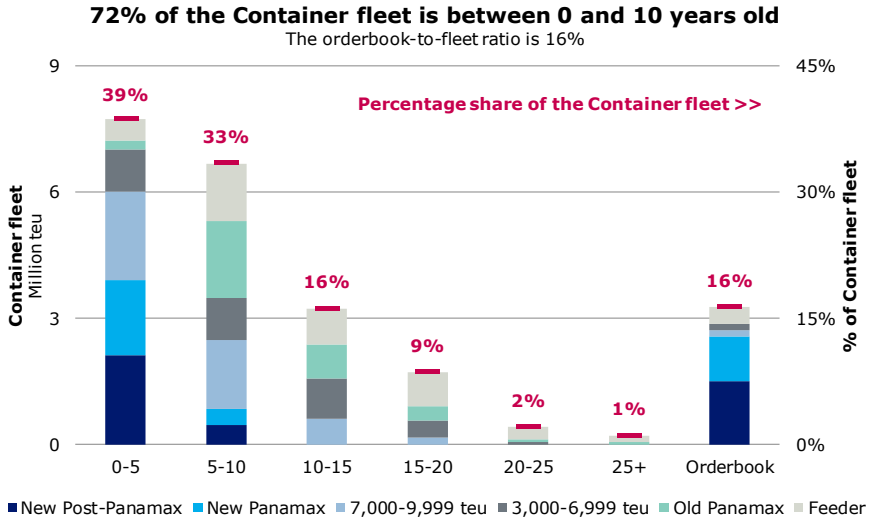
TONNAGE PROVIDERS DEPENDENT ON THE THREE MAJOR ALLIANCES

The number of large liner alliances has gone down from four to three, and over the last year there has been a continuous adjustment in the alliance compositions, primarily due to merger and acquisition activity. As the three new alliances get settled and their new networks go into operation, tonnage providers could start to find it increasingly difficult to secure new employment for all vessels that come off-hire. The three major alliances are accountable for transporting the large majority of seaborne Container trade and combined they own just over 40% of the world fleet and orderbook put together. Around 70% of the tonnage provider fleet is currently on charter to a member of one of the three alliances.

TONNAGE PROVIDERS COULD BE FORCED TO SCRAP SHIPS PREMATURELY

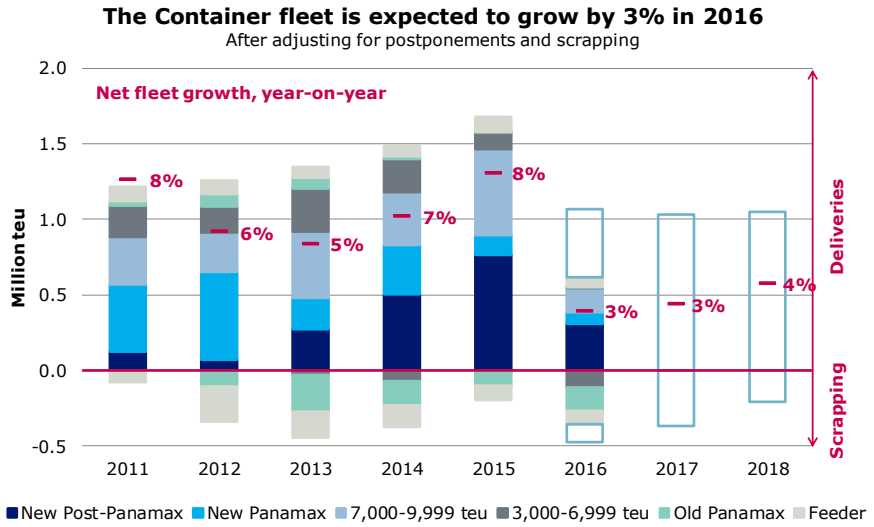
Tonnage providers own 48% of the current fleet and 39% of the

Figure C.13



Sources: Clarksons, Danish Ship Finance

Figure C.14



Sources: Clarksons, Danish Ship Finance

orderbook, measured in teu. Hence, it would leave a noticeable mark if the alliances started to lower their share of chartered vessels (fig. 15). More or less all New Panamax vessels and New Post-Panamax vessels owned by tonnage providers are employed by one of the alliances, whereas the corresponding figure for 7,000-9,999 teu vessels is around 90% (fig. 16). Looking at the age profile of these vessels, 80% are less than ten years old. If shipowners cannot find new employment for the vessels, they could be forced to write off much of the vessels' expected residual value, since they are all too young to be obvious scrapping candidates. A mitigating factor is that a large part of the tonnage provider fleet is still on long-term contracts. The Feeder and Old Panamax segments are less dependent on the alliances. However, the Old Panamax segment in particular is being challenged for other reasons, since the expansion of the Panama Canal has made the segment's competitive advantage – the vessels' size – redundant. Owners of these vessels is therefore also facing the risk of value depreciations.

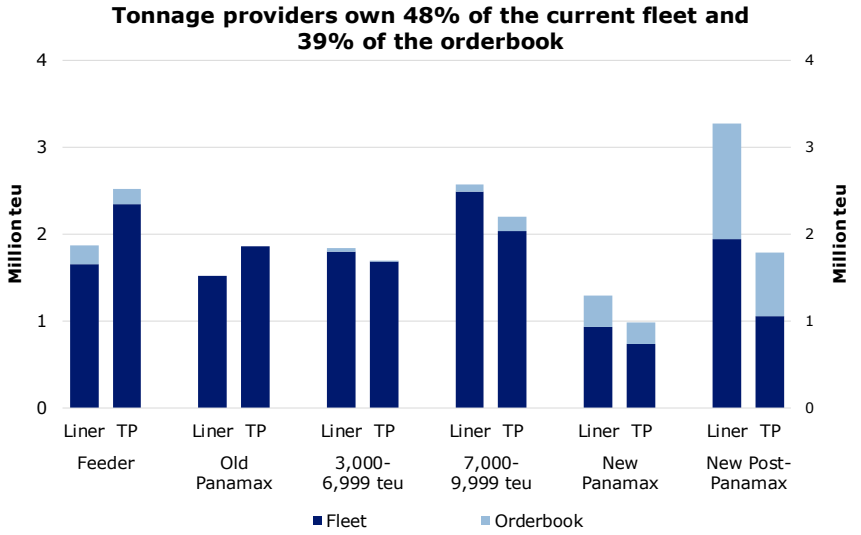
EXPIRY OF CONTRACTS COULD IMPROVE LINER FINANCIALS

Hanjin Shipping may not be the last liner company or shipowner to default, as the process towards a more balanced industry is set to intensify over the next couple of years. On the other hand, some liners' financials could begin to improve gradually as the expensive timecharter contracts concluded before freight rates plummeted in early 2015 start to expire. When they do, it will allow liners to enter into new contracts at today's low rates or remove the vessels from their books entirely, thereby easing their financial obligations and reducing counterparty risk. Many tonnage providers are already struggling with low timecharter rates and have been for a number of years, but they could see revenues decline even further if a large share of their contracts are renegotiated or discontinued.

SHIP VALUES COULD GO LOWER, ESPECIALLY FOR LARGER VESSELS

If more vessels start to come off contract and fail to find new employment, it could have a significant impact on ship values. Ship values are already at all-time lows in many segments, but that does

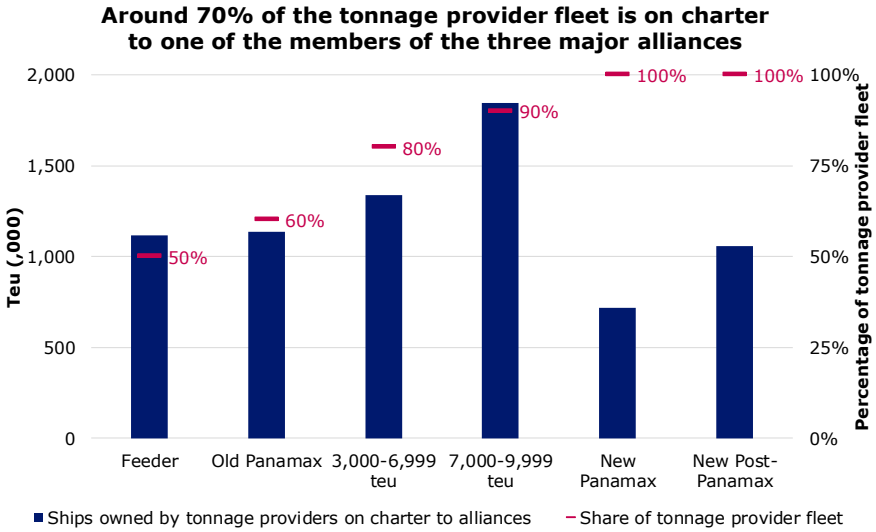
Figure C.15



Sources: Clarksons, Danish Ship Finance

Liner = liner operator, TP = tonnage provider

Figure C.16



Sources: Clarksons, Danish Ship Finance

not necessarily mean they cannot fall any further, especially since the economic life of vessels, and thereby the cash flow period, is expected to shorten significantly over the coming years. The larger vessel types, which have all been built within the last ten years could see the largest declines. So far, prices of vessels above 10,000 teu – the New Panamax and the New Post-Panamax segments – have been sheltered from large value declines, since most have been on long-term contracts and very few have been up for sale. Up to now, valuations of these vessels have been largely based on the newbuilding price and the vessels' expected economic life, not their actual earnings potential. We believe this is about to change, as some shipowners could be forced to sell or scrap vessels prematurely when contracts run out or more liners default.

LOWER SERVICE LEVELS AND HIGHER SUPPLY CHAIN RISK FOR SHIPPERS

From a liner company's perspective, the bankruptcy of Hanjin Shipping was a welcome development in many ways, as it has boosted freight rates and sped up the consolidation process. The industry's customers have not been as fortunate, though, and many cargo owners have faced severe problems in the wake of the bankruptcy. The search for ever-lower marginal costs has meant that the industry's customers have seen service levels go down and risks go up over the last couple of years. Costs have been cut, void sailings introduced, slow-steaming adopted and several services cancelled. If the risk of liner or shipowner defaults is added to the equation, the decision to shorten supply chains and move production closer to the end-markets could become much more straightforward for some businesses.

SHIPPERS WILLING TO PAY A PREMIUM TO LIMIT COUNTERPARTY RISK

To lower the risk, shippers might begin to gravitate towards the liner companies with the strongest financials and reputation. Consequently, shippers could increasingly be willing to pay a premium to use the most reliable operators, which could help reduce the deflationary freight rate pressure. However, so far it has not been easy to establish which liners are the most reliable. The alliances have teamed up liners with very different reputations and financials, so even though a shipper signs a contract with one liner, the cargo could easily be shipped by another. Hence, an important aspect to consider for the industry in the coming years is how to survive the current crisis without losing its customers' trust. Too much uncertainty could prompt them to find new ways of setting up supply chains that minimise their exposure to Container shipping.

THE NEW CONTAINER SEGMENTS

The expansion of the Panama Canal has made our segmentation of the Container fleet inaccurate. Therefore, we will divide the Container fleet into the following segments going forward:

Feeder: All vessels below 3,000 teu.

Old Panamax: Vessels of more than 3,000 teu able to transit the old locks of the Panama Canal.

3,000-6,999 teu: Vessels of 3,000-6,999 teu unable to transit the old locks of the Panama Canal.

7,000-9,999 teu: Vessels of 7,000-9,999 teu.

New Panamax: Vessels of more than 10,000 teu able to transit the new locks of the Panama Canal.

New Post-Panamax: Vessels of more than 10,000 teu unable to transit the new locks of the Panama Canal.

DIGITAL PLATFORM SOLUTIONS COULD THROW A CURVEBALL

There is, however, a chance that many of the things we thought we knew about Container shipping and logistics could become outdated within a couple of years. Different takes on digital trading platforms have begun to pop up more frequently, the common denominator being to increase transparency in the industry and cut out the middlemen. Such solutions would be in the interests of the customers, since they would make it easier for them to compare the services offered by different liner companies and to

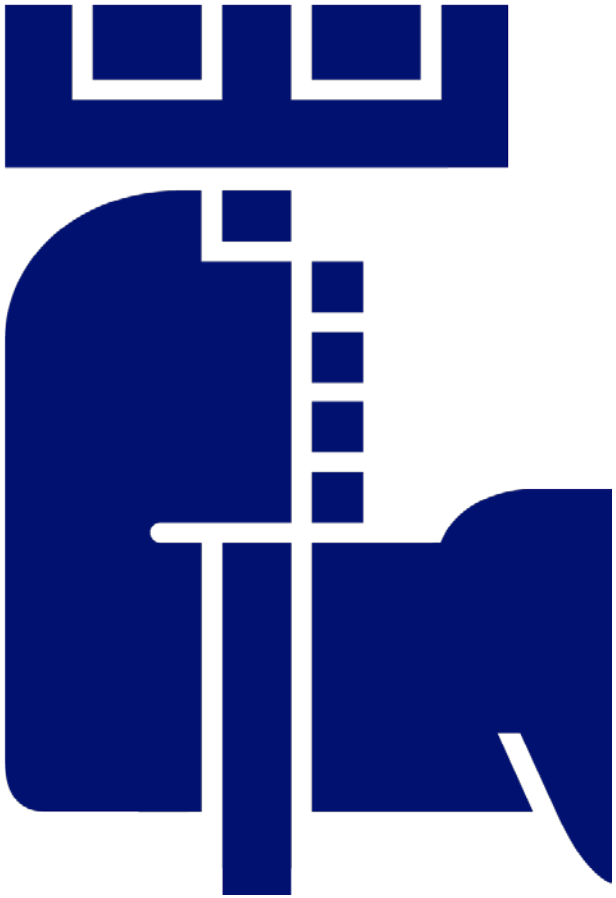
review their reputation. Moreover, third-party players are expanding their presence within freight-forwarding, which could transform the way we think about logistics and possibly become a game changer for the Container industry.

THE FLEET AND ORDERBOOK ARE GEARED FOR GROWTH, DEMAND IS NOT

Even though we have begun to see fleet growth come down to lower levels, there are still some challenging years ahead of the Container industry. The orderbook is expected to be markedly reduced over the coming years and scrapping to remain relatively high, which is definitely a step in the right direction. However, it does not change the fact that both the fleet and the orderbook are geared towards further growth in demand; growth that we do not expect to materialise. Hence, a smaller orderbook alone will not solve the problems of the Container industry. The existing fleet is already large, and it is young and expensive. In order for the industry to reach a more balanced state in the future and for freight rates to increase and stabilise, operators need to regain bargaining power and cargoes need to be split between fewer players. Most importantly, the industry needs to think proactively about developing the business model of tomorrow.

DRY BULK

SHIPPING MARKET REVIEW – DECEMBER 2016



DANISH SHIP FINANCE

DRY BULK

THE DRY BULK MARKET IS CRAWLING OUT FROM UNDER THE RUBBLE AND FUNDAMENTALS ARE VERY SLOWLY IMPROVING AS SUPPLY GROWTH IS BEING KEPT AT LOW LEVELS. THE FUTURE COULD BE BRIGHTER BUT A LOT DEPENDS ON DEMAND AND IF THE INDUSTRY CAN REFRAIN FROM ORDERING NEW VESSELS.

FREIGHT RATES

FREIGHT RATES HIT ROCK BOTTOM IN THE FIRST QUARTER OF 2016 BUT HAVE SINCE IMPROVED, ALTHOUGH THEY REMAIN AT LOW LEVELS.

After reaching the bottom in the first quarter of 2016, the Dry Bulk market strengthened somewhat and freight rates came up to higher levels. In start December, the Baltic Dry Index reached index 1,197, an increase of around 210% from February 2016, albeit from an extremely low base (fig. 1). Capesize rates showed a particularly strong improvement, but all segments have enjoyed higher freight rates in the third and fourth quarters.

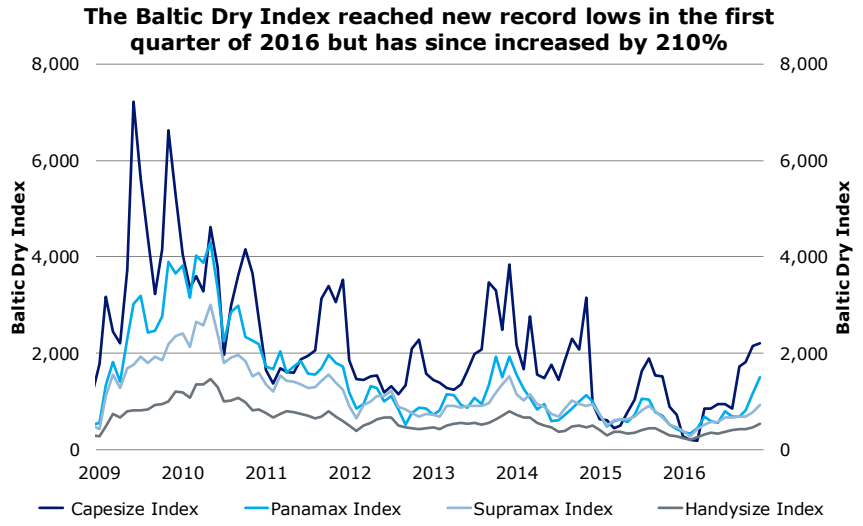
DRY BULK EARNINGS HAVE ALMOST DOUBLED SINCE FEBRUARY

By October, average Dry Bulk earnings had increased to around USD 7,500 per day, up from USD 3,670 per day in February. Earnings were around USD 12,500 per day in October for Capesize, USD 7,620 per day for Panamax, USD 6,400 per day for Handymax and USD 5,890 per day for Handysize vessels – however, still not enough for full debt service for the majority of owners.

TIMECHARTER RATES ARE UP SINCE THE START OF THE YEAR

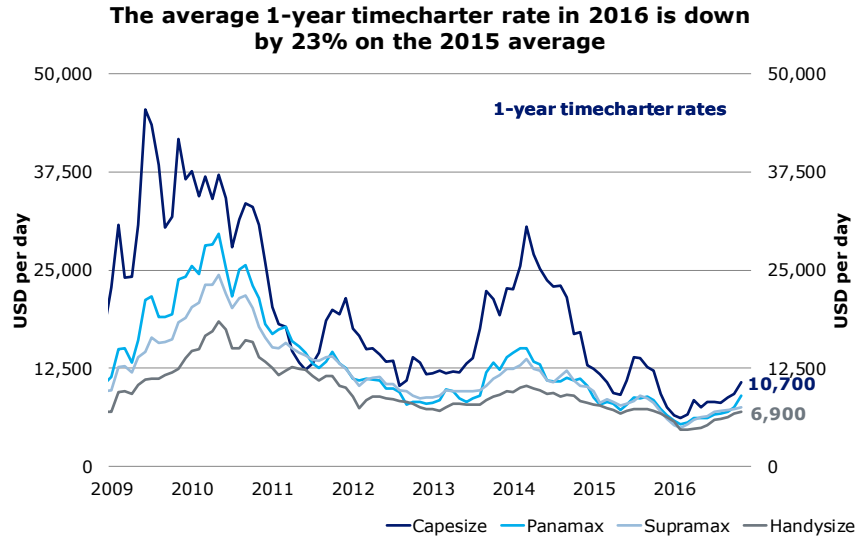
Timecharter rates have also increased since the February low. By October, the 1-year timecharter rate had returned to the levels observed towards the end of 2015, which meant they were once again higher than OPEX on average. Overall, the average 1-year timecharter rate in 2016 is still down by 23% from the corresponding level in 2015 (fig. 2).

Figure DB.1



Sources: Clarksons, Danish Ship Finance

Figure DB.2

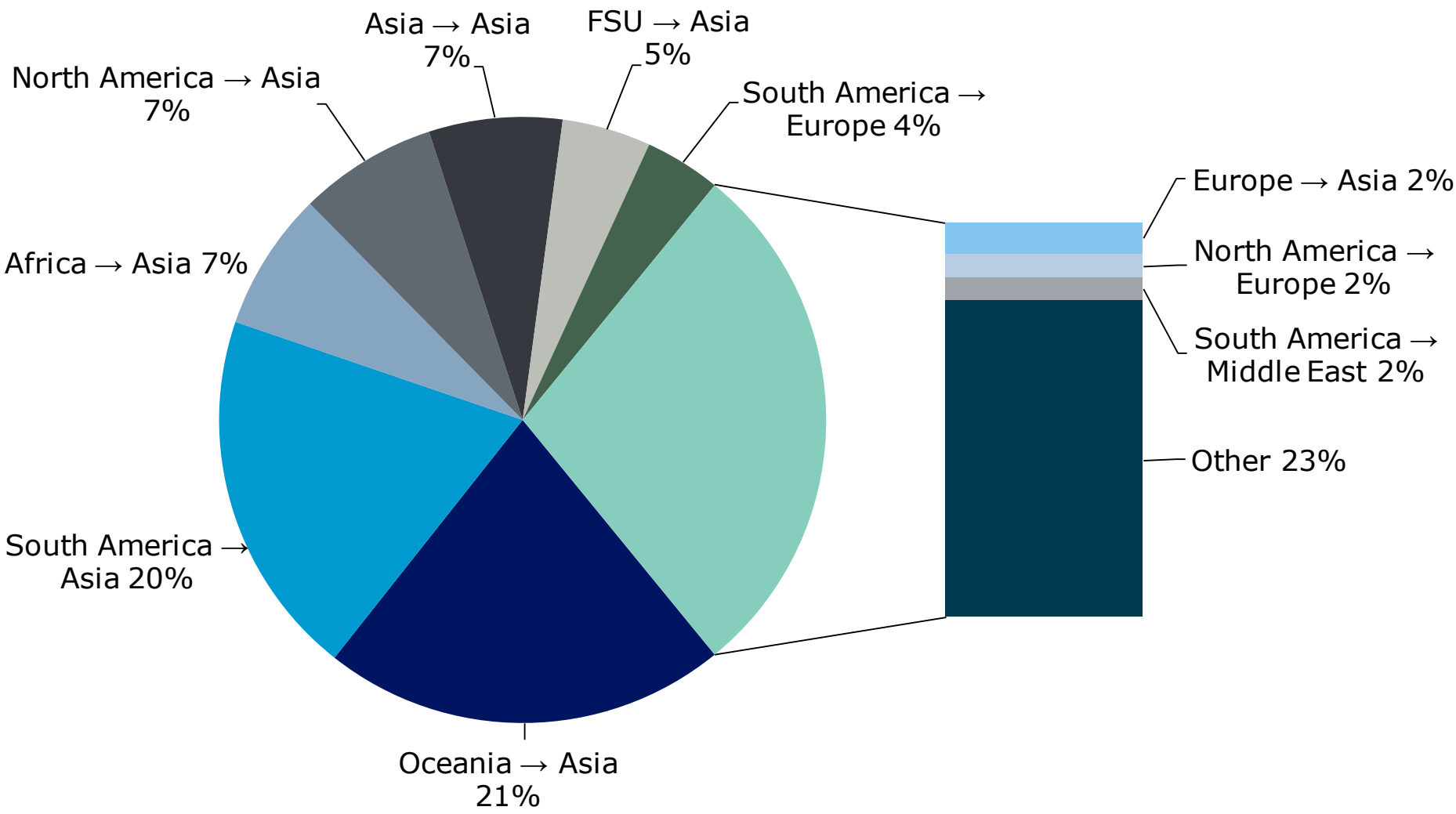


Sources: Clarksons, Danish Ship Finance

Figure DB.3

Major Dry Bulk trades in 2016

Measured in tonne-miles



Sources: IHS Global Insight, Danish Ship Finance

THE INDUSTRY CONTINUES TO WORK TOWARDS REDUCING AND POSTPONING THE INFLOW OF NEW VESSELS, AND FLEET GROWTH WAS HELD DOWN AT LOW LEVELS IN THE FIRST TEN MONTHS OF 2016. UNFORTUNATELY, DEMAND CONTINUED TO LANGUISH DESPITE A STRENGTHENING IN CHINESE DEMAND.

Despite the low supply growth, freight rates have still not strengthened meaningfully because demand continues to disappoint. Consequently, there is still some way to go before a balance between supply and demand is reached. For this to happen, scrapping must return to higher levels than in the third quarter.

43 MILLION DWT WAS DELIVERED DURING THE FIRST TEN MONTHS

New vessels continue to enter the Dry Bulk fleet and during the first ten months of 2016, another 43 million dwt was delivered (fig. 4), on a par with the volumes delivered in the same period in 2015. Capesize deliveries increased compared with the same period last year, while the other segments saw a slight decline.

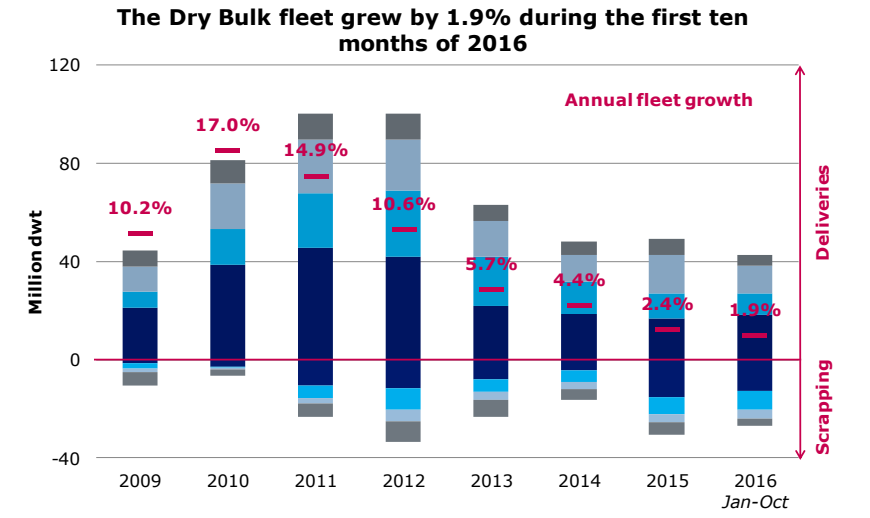
ONLY 57% OF SCHEDULED ORDERS WERE DELIVERED

During the first ten months, 75 million dwt was scheduled to be delivered, but only 57% of this materialised. While the proportion of orders being cancelled has gone down in 2016, the share of postponements has increased, with 40% of the orders scheduled to be delivered during the first ten months postponed for later delivery (fig. 5). More than half of Capesize orders were postponed. The postponed orders were pushed back by 6.9 months on average – Panamax orders by 8.1 months and Handysize orders by 6.2 months.

CANCELLATIONS AMOUNTED TO 3% OF SCHEDULED ORDERS

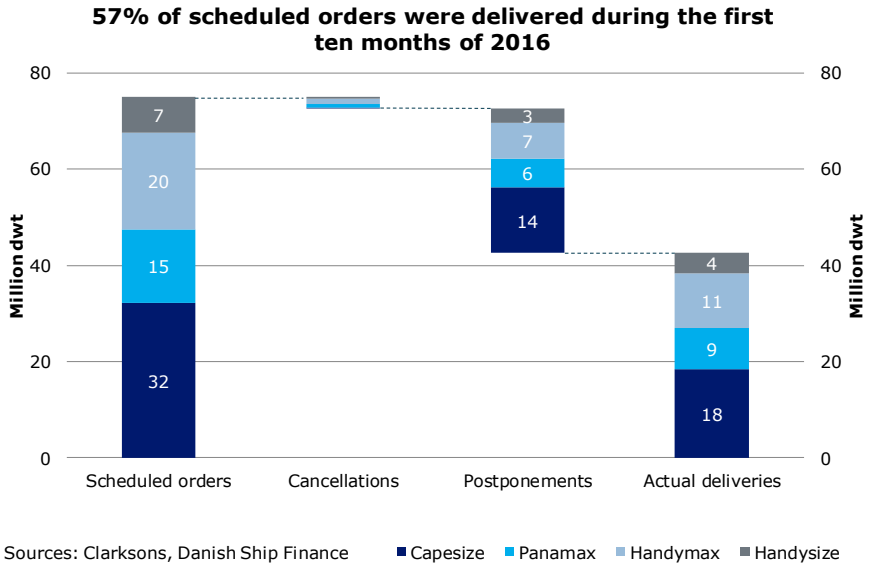
Only 3% of orders, or 2.5 million dwt, originally scheduled for delivery within the period were cancelled (fig. 5). There was, however, an additional 8 million dwt of orders cancelled that were scheduled to be delivered either in the last two months of 2016 or later. Combined this corresponded to just above 4% of the total

Figure DB.4



Sources: Clarksons, Danish Ship Finance

Figure DB.5



Sources: Clarksons, Danish Ship Finance

orderbook at the beginning of 2016. The majority of the cancellations were Handymax orders, possibly reflecting the fact that the orderbook for Handymax vessels grew to very high levels during 2013 and 2014, peaking at around 900 vessels in late 2014. For comparison, in the same period the Handysize orderbook reached 550 vessels, the Panamax orderbook 380 vessels and the Capesize orderbook 470 vessels.

DEMOLITION ACTIVITY SLOWED IN THE SECOND AND THIRD QUARTERS

Demolition soared to record-high levels during the first quarter of 2016, but has since lost pace. During the first ten months combined, 27 million dwt was scrapped, a little more than half of that was scrapped between January and March. Only 2.8 million dwt was scrapped in the third quarter. The share of scrapped vessels younger than 25 years has been increasing significantly over the last couple of years, and in 2016 it has constituted 80% of the total, measured in dwt (fig. 6). In 2015, two-thirds of scrapped vessels were younger than 25 years. The average scrapping age for Dry Bulk vessels has fallen to 23.3 years, down from 25 years in 2015. For Capesize vessels, it has dropped to 19.7 and for Panamax vessels to 21 years.

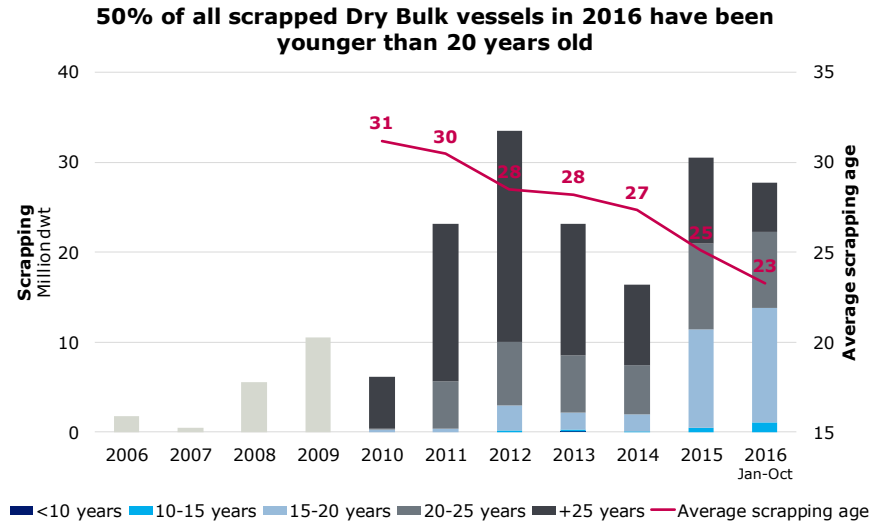
THE DRY BULK FLEET EXPANDED BY 1.9% OVER THE PERIOD

The high scrapping activity capped fleet growth at 1.9% in the first ten months of 2016 (fig. 4), which was 0.4 percentage points lower than in the same period in 2015. The Handymax fleet grew by 4.4%, while the Panamax fleet remained almost flat. The Capesize fleet expanded by 1.7% and the Handysize fleet by 1.2%.

DRY BULK DEMAND EXPECTED TO GROW BY 1.5% IN 2016

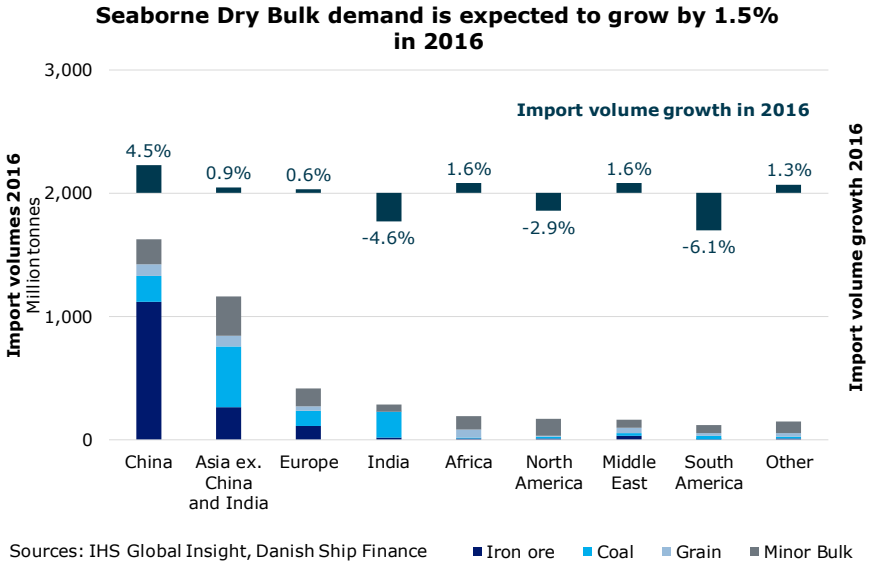
Despite low fleet growth, demand continues to trail behind and is not expected to grow by more than 1.5% in 2016. Demand is forecast to be relatively weak in more or less all regions, with China being the primary source of growth with overall demand expected to increase by 4.5%. Both South America, North America and India are expected to see a significant contraction in import volumes (fig. 7).

Figure DB.6



Sources: Clarksons, Danish Ship Finance

Figure DB.7



Sources: IHS Global Insight, Danish Ship Finance

IRON ORE DEMAND BOOSTED BY CHINESE STIMULI

Of the four major commodity groups, iron ore trade has once again shown the strongest growth. Iron ore demand is expected to grow by 5% in 2016, driven by a 7% increase in Chinese demand. The Chinese government has launched a new round of financial stimuli, which has boosted construction activity and infrastructure development in China, and thereby also Dry Bulk demand. Meanwhile, demand for iron ore from the other big importers in Asia, such as Japan, South Korea and Taiwan, is expected to see a contraction. This should also be the case for South America and North America.

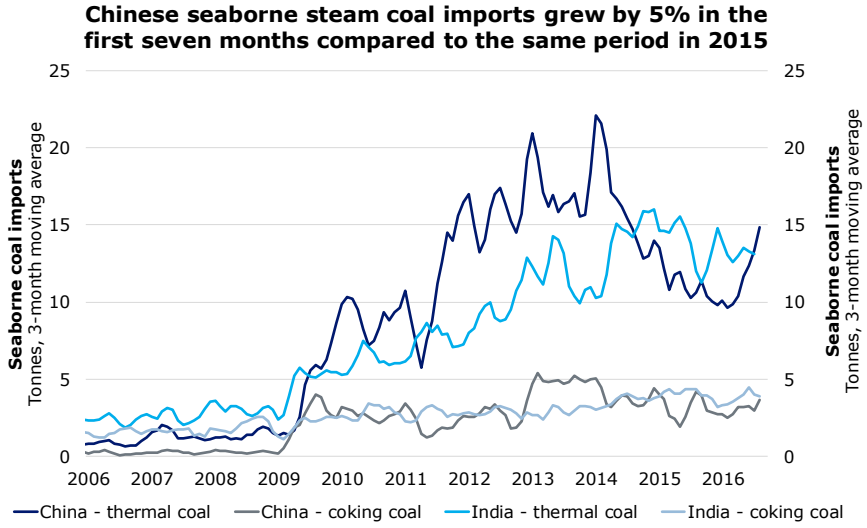
COAL TRADE DOWN AGAIN THIS YEAR

China's financial stimuli have also supported demand for coal somewhat, which, combined with a cut in domestic coal production, resulted in higher imports in the first part of the year (fig. 8). Nonetheless, Chinese seaborne import of coal is expected to drop by 3% in 2016 and global seaborne coal demand is expected to drop by 2%. India, which has overtaken China as the world's largest coal importer, has also lowered demand for imported seaborne coal by 5% in 2016, as the main domestic producer, Coal India, has managed to increase production, creating a surplus of coal in the country. The EU has also cut imports significantly as part of its green agenda, especially the UK, which this year, for the first time in a hundred years, managed to power the whole country without the use of coal for more than half a day.

THE MINOR BULK TRADE REMAINS STABLE GROWING BY 0.5%

The minor bulk trade is expected to remain constant with a marginal increase of only 0.5%, as trade in commodities such as bauxite and nickel ore has been hampered by a bauxite mining ban in Malaysia and nickel ore mine closures in the Philippines. Hence, even though we have seen strong growth in trade with commodities like cement, petroleum coke and sugar. For example, sugar exports out of Brazil have been boosted by the economic recession in the country which has lowered domestic sugar

Figure DB.8



Sources: Clarksons, Danish Ship Finance

demand and allowed more sugar to be exported. However, this has not been enough to lift minor bulk volumes higher than in 2015.

GRAIN TRADE EXPECTED TO GROW BY AROUND 2.3% IN 2016

Grain trade was strong in the crop year 2015-16, growing by a healthy 7%, but is expected to slow somewhat in 2016-17 and possibly contract by 4%. Trade with wheat and corn was especially robust in the first half of 2016, up by 8% and 9%, respectively, while soybean trade increased by 5%. EU imports grew strongly due to a disappointing harvest in Germany, while Chinese imports went down, as the government, having previously bought up large stocks of local grain in order to support local farmers, has begun to sell out of the stocks, pushing down domestic prices. The US saw imports decline due to a strong domestic harvest, but US exports were held down somewhat by strong Brazilian corn and soybean exports in the first half of 2016.

THE DRY BULK MARKET HAS CUT BACK SIGNIFICANTLY ON CONTRACTING, WHICH HAS PUT CONTINUOUS PRESSURE ON NEWBUILDING PRICES. SECONDHAND PRICES ON THE OTHER HAND HAVE INCREASED SLIGHTLY SINCE THE FIRST QUARTER.

Contracting remained at very low levels throughout the first ten months of 2016 and only 12.6 million dwt was ordered, split between around 45 vessels (fig. 9). The vast majority were 30 VLOCs ordered by Chinese interests.

NEWBUILDING PRICES DOWN BY 6% SINCE THE START OF THE YEAR

The slowdown in Dry Bulk contracting is hitting large parts of the Shipbuilding industry very hard, as many yards have focused primarily on building Bulk vessels. Consequently, newbuilding prices have continued to go down. Since the start of the year, the average newbuilding price has declined by 6%, and since the start of 2015 by 17%. In November, the price of a new Capesize was down to around USD 42 million, from USD 46 million in January.

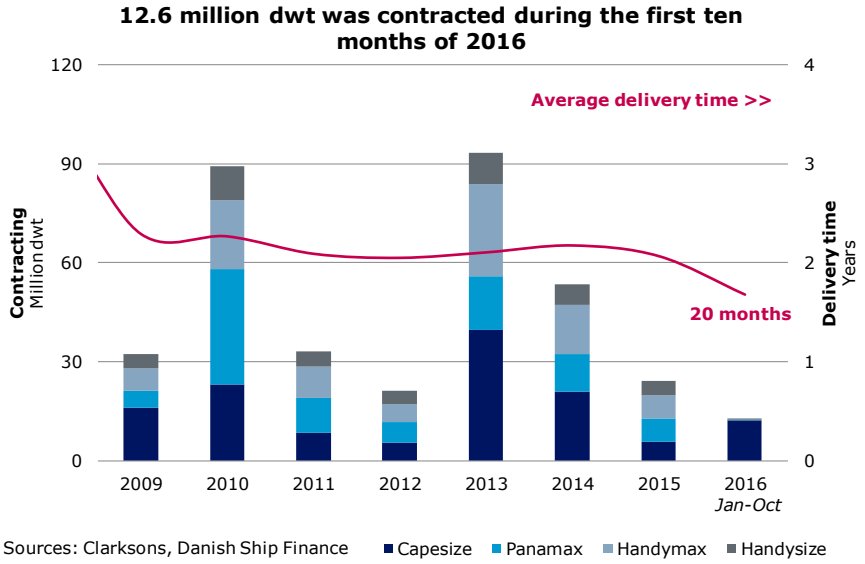
SECONDHAND PRICES HAVE STABILISED

Since the start of 2014, secondhand prices have been trending downwards, but they appeared to reach a floor in the first quarter of 2016 – at least temporarily. Since then, prices have stabilised and trended up slightly, increasing by 10% from the bottom. In November, a 5-year-old Capesize was changing hands for USD 24 million, a Panamax for USD 14 million, a Handymax for USD 14 million and a Handysize for USD 11.5 million (fig. 10).

SALES ACTIVITY HAS PICKED UP IN 2016

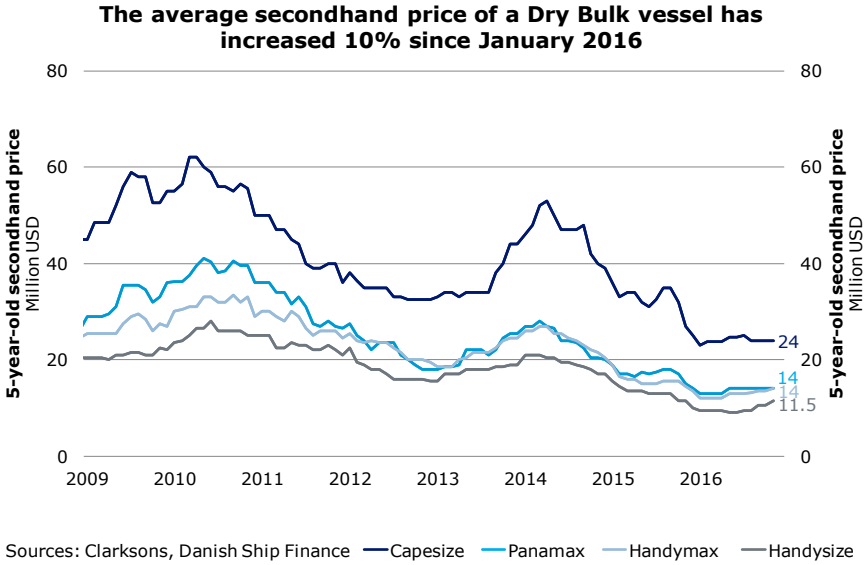
With Dry Bulk ship values reaching new lows, more owners have been encouraged to buy secondhand vessels. Compared with the first eleven months of 2015, sales activity in the same period this year was 29% higher, measured in dwt. Handymax vessels were the most traded, and the segment saw a 49% increase in sales activity. The Capesize segment saw the lowest increase of 11% versus the same period in 2015. In annualised terms, the turnover rate in 2016 is 5.6% of the fleet compared with 4.4% in 2015.

Figure DB.9



Sources: Clarksons, Danish Ship Finance

Figure DB.10



Sources: Clarksons, Danish Ship Finance

EVEN THOUGH THE PROSPECTS OF THE FLEET REACHING A PEAK WITHIN THE NEXT COUPLE OF YEARS ARE GOOD, THE DRY BULK MARKET REMAINS CHALLENGED BY THE WEAK DEMAND GROWTH THAT COULD PERSIST IN THE YEARS TO COME.

The Dry Bulk industry is still in a slump, but market fundamentals are very slowly improving and freight rates have returned to higher levels – although they are still low in a historical context. Contracting has been brought to a halt and the orderbook has been whittled down to the lowest level since 2006. Nevertheless, the industry still faces some major challenges: the orderbook is still large and demand growth remains meagre. Moreover, prospects of higher demand growth in the coming years are slim and heavily dependent on China. Hence, the industry is still in a fragile state and is not expected to be able to handle an uptick in new ordering.

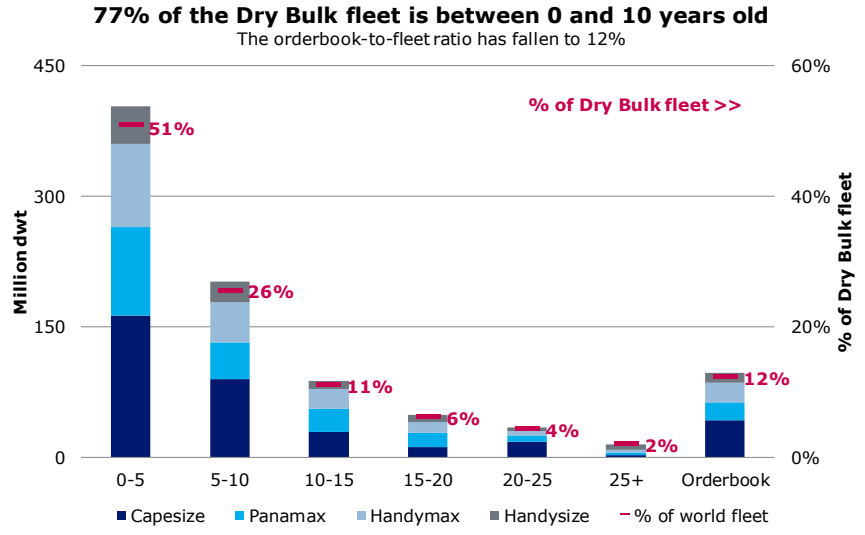
THE ORDERBOOK-TO-FLEET RATIO HAS COME DOWN TO 12%

Since the start of the year, the orderbook has fallen by around 23%, and the orderbook-to-fleet ratio has come down to 12%, or around 97 million dwt, from 15% in April (fig. 11). The largest decline has been observed in the Handymax orderbook which fell by 37% during the first ten months, while the Capesize orderbook declined by only 13% – primarily due to the large Chinese order for VLOC vessels. For the orderbook to be absorbed into the fleet without capacity increasing any further, all vessels above 15 years old would need to be scrapped. Hence, we anticipate increasing pressure on scrapping ages, which could potentially depress ship values further. As of October, a little more than half of the fleet was younger than 5 years old (fig. 11).

FLEET GROWTH COULD FALL TO 0.5% BY 2017

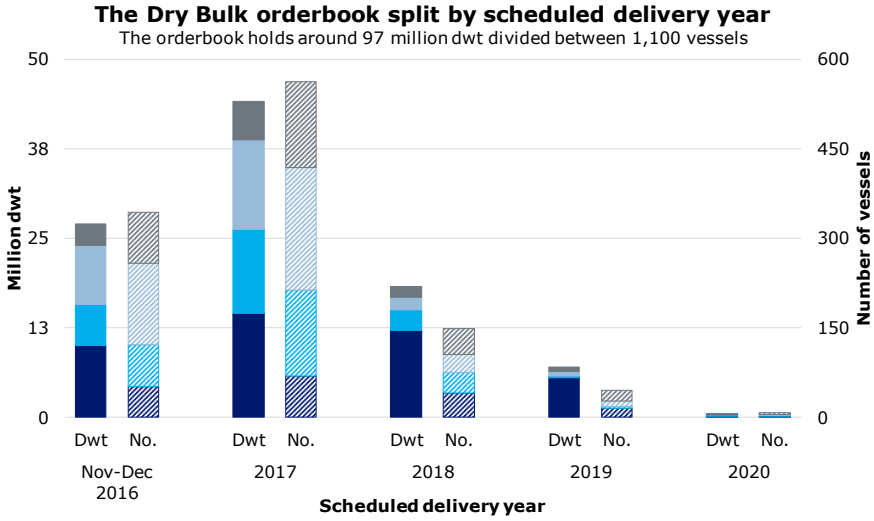
Assuming that all orders currently in the orderbook are delivered and scrapping remains around the same level as last year in both 2016 and 2017 (≈30 million dwt), fleet growth will reach almost 6% in 2016 and drop to around 1% in 2017. The delivery ratio for

Figure DB.11



Sources: Clarksons, Danish Ship Finance

Figure DB.12



Sources: Clarksons, Danish Ship Finance Capesize Panamax Handymax Handysize

the fourth quarter is usually lower than for the rest of the year, as a lot of orders are pushed into the following year. We only expect around one-third of orders currently scheduled for the remainder of the fourth quarter to be delivered and around half in 2017 and 2018. Adjusting for cancellations and postponements, fleet growth could therefore be capped at around 2.5% in 2016 before falling to 0.5% in 2017 and possibly turning slightly negative in 2018 (fig. 13).

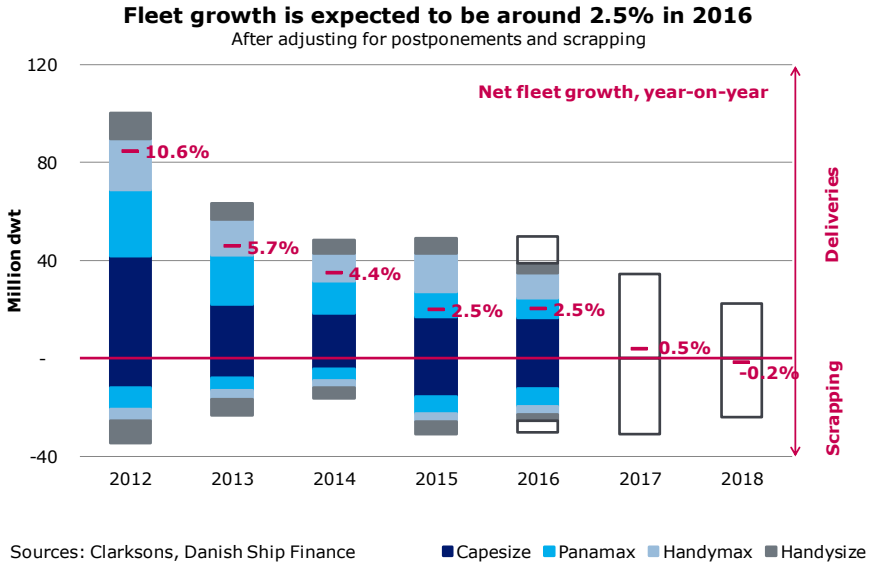
BALLAST WATER REGULATIONS COULD SPEED UP SCRAPPING

Scrapping activity could surpass expectations owing to the newly ratified ballast water management convention, which comes into force in September 2017. For existing vessels to become compliant, an extra cost will be added to the price of the vessels' next special survey – an extra cost that for many older vessels will be a nonsensical investment under the current market conditions. Consequently, we expect a large proportion of the vessels reaching their third special survey or higher within the next few years to be scrapped, potentially pushing fleet growth down further than the above estimates indicate (fig. 14).

WILL THE ORDERBOOK BE DELIVERED?

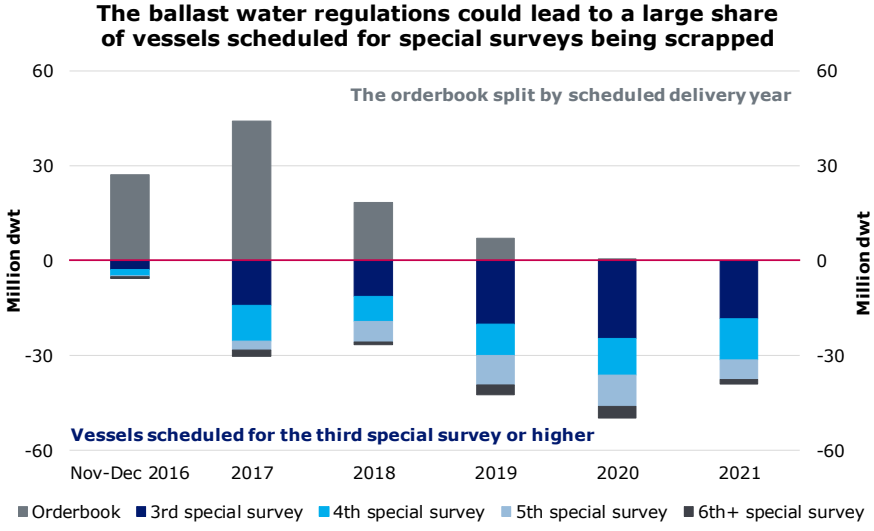
However, it is questionable if all the Dry Bulk orders currently in the orderbook will be delivered. First of all, the problems at many shipyards could cause the number of cancelled orders to go up, as the risk of production delays or shipyard defaults is increasing. Secondly, the crisis in the Dry Bulk market has dragged on for a long time and not only are more orders being cancelled or postponed, some shipowners have also started to back out of existing contracts to avoid more market exposure. The back-loaded payment terms offered by shipyards over the last five years have allowed shipowners to back out of contracts at low cost, which has left shipyards with partially or fully built vessels without any owners. This could mean that firm orders in the orderbook amount to less than the reported 97 million dwt, and therefore fleet growth could be lower than we currently estimate. The ves-

Figure DB.13



Sources: Clarksons, Danish Ship Finance

Figure DB.14



Sources: Clarksons, Danish Ship Finance

sels in the orderbook that have been cancelled or that have no owners could still enter the fleet at some point, as shipyards may be willing to sell them at very low prices to get rid of them.

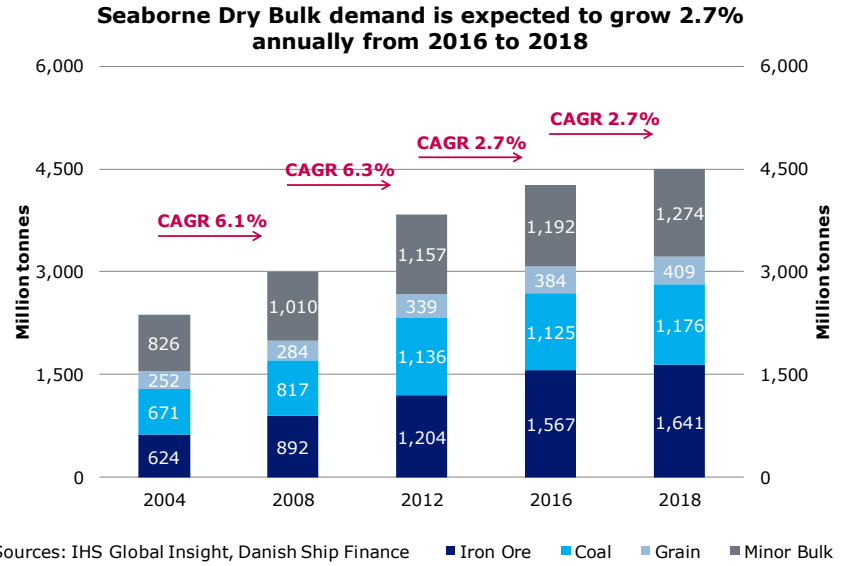
AROUND 50% OF THE ORDERBOOK WAS CONTRACTED AT HIGH PRICES

Some orders are more exposed to being cancelled or abandoned than others because they were contracted at high prices. The ordering boom in 2013 and 2014 pushed newbuilding prices upwards, and orders placed in the period from the fourth quarter of 2013 and to the end of 2014 were particularly expensive in the light of the current market. Around 50% of the current orderbook was contracted during that period, both measured in dwt and by number of vessels. Since the second quarter of 2014, the average newbuilding price has come down by 20% and the secondhand price by 50%. Hence, the value of such an order would be significantly lower if delivered today and in many cases the drop in value surpasses the down payment of the order. Such a vessel would have a much higher breakeven rate than many comparable vessels in the fleet. As an example, the newbuilding price of a Handymax vessel has dropped from around USD 28 million to USD 22 million over the period, while the resale price has come down from around USD 32 million to USD 22 million. This means that the value of a Handymax order has declined by more than 20% since contracting.

THE DRY BULK INDUSTRY REMAINS AT THE MERCY OF CHINESE DEMAND

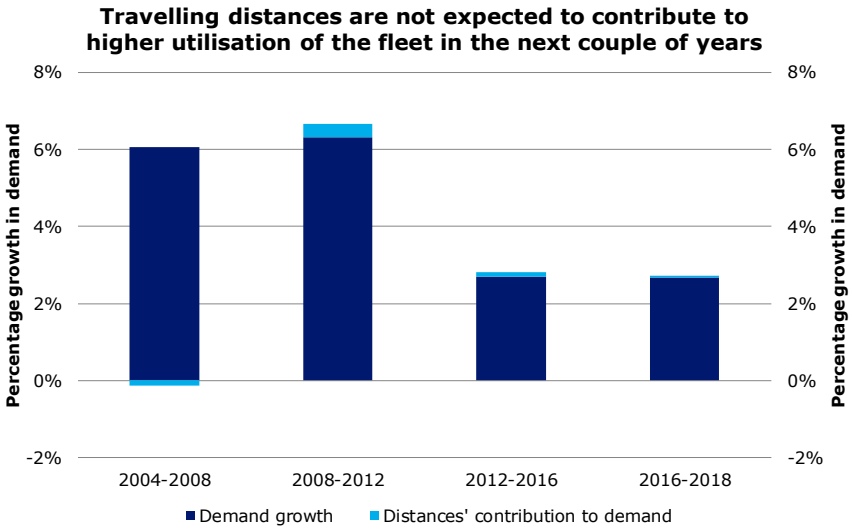
A contraction of the fleet would be a big step in the right direction towards securing higher freight rates, but demand must also contribute for the market to become more balanced. The demand developments in 2015 and 2016 have been very representative of the challenges that the Dry Bulk market faces, namely its heavy dependence on China. The world economy is struggling with low growth and investment, resulting in meagre or even negative demand growth in many regions. This leaves the Dry Bulk market at the mercy of China which time and again has shown its willingness to boost waning economic growth through financial

Figure DB.15



Sources: IHS Global Insight, Danish Ship Finance

Figure DB.16



Sources: IHS Global Insight, Danish Ship Finance

stimuli that increase industrial activity. However, as we have discussed in previous reports, China is in the process of rebalancing its economy towards the service sector while cleaning up its energy industry, which is putting downward pressure on its economic growth and industrial activity.

CHINA'S OLD GROWTH MODEL IS BECOMING TOO EXPENSIVE

Some of the effects of the rebalancing exercise started to become visible in 2015, and in 2016 the Chinese economy started the year much more slowly than anticipated. In response to this, the Chinese government launched initiatives directed at increasing economic activity and investment, mainly by loosening credit requirements and getting state-owned enterprises to invest more. This helped boost the property market and demand for Dry Bulk cargoes. However, it is becoming increasingly expensive for China to kick-start the economy in this manner and debt levels are building up. According to the Economist, it now takes four yuan of borrowing to generate one yuan of additional GDP, up from just over one yuan before the financial crisis. Consequently, we believe that such initiatives are not China's preferred way of achieving economic growth, but rather are a means to an end in the process towards a more sustainable growth model.

CHINA WILL CONTINUE TO DETERMINE HOW DEMAND DEVELOPS

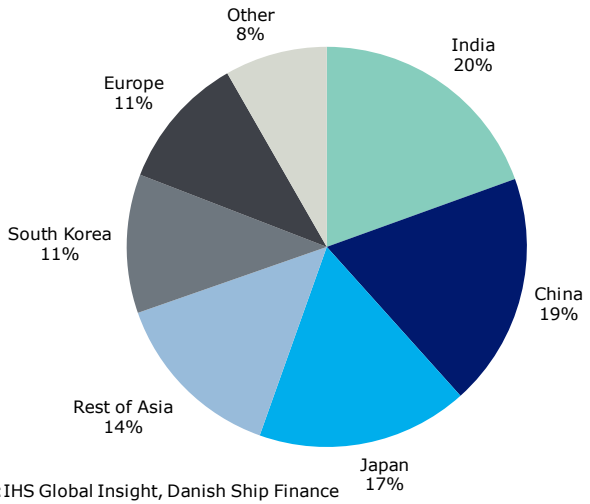
China's path towards a more sustainable growth model is expected to be long and bumpy, and the government might again step in to increase activity artificially. Hence, in the short to medium term China is expected to continue to determine how overall Dry Bulk demand develops, since activity in the rest of the world is expected to remain moderate. In the long term, however, we expect that Chinese Dry Bulk demand could decline. That is not to say that China will lose its status as one of the biggest Dry Bulk importers, but rather that import volumes could decline before stabilising at more modest growth levels.

COAL POWER IS UNDER SIEGE

The projected slowdown in Chinese Dry Bulk demand is expected

Figure DB.17

Major seaborne coal importers in 2015



Sources: IHS Global Insight, Danish Ship Finance

to be most visible in its imports of coal. Coal is already facing strong headwinds due to the world's green agenda, which has become more concrete in the wake of the historic agreement reached in Paris at the COP21 in late 2015. The possible consequences of the agreement became tangible when China and the US, the world's two largest emitters of greenhouse gases, signed the agreement in April this year. The future use of coal is therefore under threat. Many developed countries will seek to limit coal use, which will have a noticeable impact on the coal industry. China, North America (the US and Canada) and Europe alone account for around one-third of seaborne coal demand. Hence, if these regions decide to cut coal out of the energy mix, it will leave a clear mark on the Dry Bulk market (fig. 17).

INDIAN COAL CONSUMPTION MIGHT INCREASE WHILE IMPORTS DECLINE

Many other countries, including India, have also signed the agreement. Indian coal consumption is however still expected to in-

crease in the coming years, as a larger share of the population will be connected to the power grid, but the extent to which India needs to import coal in the future is uncertain. Its import requirements are expected to decrease as its domestic coal production improves, as has been seen in 2016. We are seeing a few countries like Japan and South Korea, two of the world's largest coal importers, going against the flow and continuing to invest in coal-fired power plants and coal-related technologies. This could possibly cushion some of the blow from lower demand in China, India and the EU.

WILL COAL CONSUMPTION INCREASE IN TANDEM WITH GAS PRICES?

Many of the COP21 signees seem sincere in their commitment to lower carbon emissions, and in many cases that means they will try to minimise the role of coal in the power mix. We have seen how fast a transition away from coal can be achieved; the UK, for example, managed to cut coal power to a minimum over a very short period. However, one could argue that it has been an easy commitment to make so far, because the low oil and gas prices have made these fuel types economically viable alternatives to cheap coal. The real test will be whether coal consumption continues to decline if oil and gas prices go up.

RENEWABLE ENERGIES ARE EXPECTED TO OVERTAKE COAL IN TIME

If coal consumption increases as a result of higher oil and gas prices, the coal industry could get a couple of years of respite, but we do not expect any increase to be permanent. The cost of renewable energies continues to decrease and a large share of new capacity additions going forward are expected to come from renewables, with coal gradually phased out. In order for renewable energies to really take off, better storage technologies need to be developed, and we do not expect it to be long before these materialise.

CHINA'S HOUSING BUBBLE ADDS RISK TO BUILDING MATERIALS TRADE

Demand for the other Dry Bulk commodities is not facing the same headwinds as coal. The various building materials transported on Dry Bulk vessels are still expected to grow, albeit at lower levels, as the urbanisation process continues. There are, however, some short-term and long-term downside risks related to demand for building materials. The housing market in China, which is the primary source of demand for building materials, has begun to heat up and prices have jumped 16% during the last year – much more in the larger cities. Some are calling this a bubble about to burst, while others are arguing that the situation is manageable. The Chinese government has already stepped in and tightened lending requirements, which should put a lid on prices. But if it is a bubble and it bursts, it can be expected to have far-reaching consequences for the Dry Bulk market, affecting demand for all four of the major Dry Bulk commodities. In the long term, the downside risks relate to the circular economic principles that we have addressed in our previous reports, which are expected to slowly but gradually gain ground and reduce demand for raw materials.

READJUSTING TO LOWER FUTURE DEMAND

The conclusion that we reached in our last report has not changed much. We are still concerned about the size of the fleet and the prospects for demand. Even though there has been positive momentum in Chinese Dry Bulk demand in 2016, this could change in an instant, because the underlying demand fundamentals remain the same. The Chinese economy is rebalancing and large parts of the world are committed to cutting carbon emissions. That does not mean the end of Dry Bulk shipping, but rather it signals a need for the fleet to be readjusted for stagnating or maybe declining trade volumes. This adjustment is well underway and the new ballast water management convention is likely to speed it up and ensure that the size of the fleet peaks within the next couple of years. Due to the skewed age distribution of the fleet, this could lead to more scrapping of increasingly young vessels, which could keep ship values under pressure during the next couple of years as the economic life of the vessels is shortened. As the fleet starts to shrink, we could see freight rates increasing (unless demand starts to decline). We hope that will not encourage new ordering.

CRUDE TANKER

SHIPPING MARKET REVIEW – DECEMBER 2016

DANISH SHIP FINANCE

CRUDE TANKER

GROWTH IN TRADE VOLUMES IS EXPECTED TO BE MODERATE WHILE THE FLEET IS SET TO EXPAND BY MORE THAN 4% IN THE NEXT TWO YEARS. HENCE WE ANTICIPATE OVERCAPACITY, LOWER FREIGHT RATES AND LOWER SECONDHAND PRICES.

FREIGHT RATES

DURING 2015, CRUDE TANKER DEMAND WAS REINFORCED BY THE LOW OIL PRICE AND INVENTORY BUILDUPS, BUT THE RISE IN THE OIL PRICE IN 2016 HAS CAUSED THIS MOMENTUM TO WANE.

VLCC TIMECHARTER RATES HAVE DROPPED BY MORE THAN 40% IN 2016

The VLCC segment witnessed a 4% growth in demand in 2016. In particular, Chinese and Indian demand grew more strongly than expected and should in principle have been robust enough to employ the new vessels entering the fleet. However, rising speeds and shorter waiting times in ports, due to new port facilities, quietly increased VLCC availability, and the 1-year timecharter rate dropped 40% from USD 51,400 per day in January to USD 30,250 per day in November (fig. 2).

SUEZMAX TIMECHARTER RATES ARE DOWN 38% IN 2016

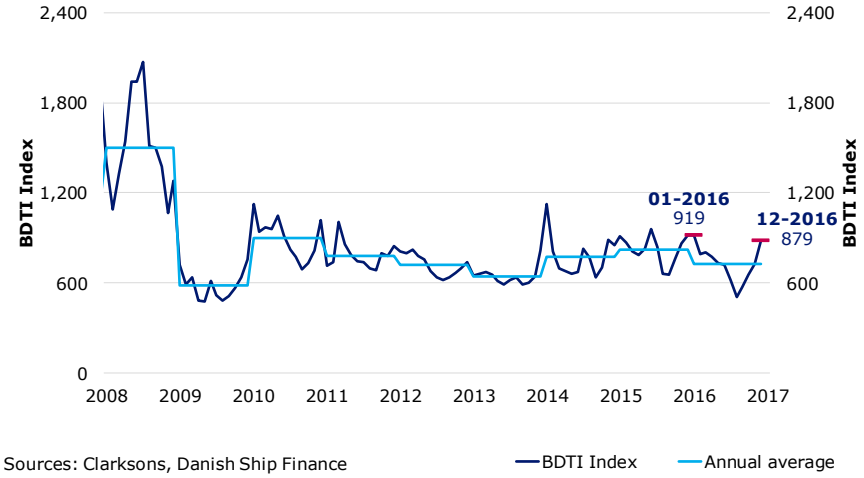
The Suezmax segment has softened in 2016 following the sabotage of Nigeria's oil infrastructure. Nigerian crude oil exports could end up being 30-40% lower in 2016 than in 2015. Overall demand for Suezmax tankers is expected to increase by approximately 1.5% in 2016. The 1-year timecharter rate dropped from USD 36,250 per day in January to USD 22,500 per day in November, a decline of 38%.

AFRAMAX TIMECHARTER RATES HAVE ALSO DECLINED BY 38% IN 2016

Several Aframax trades have been captured by Suezmaxes this year. Demand for Aframax tankers is expected to increase by approximately 2% in 2016, with the largest contributor expected to be Chinese imports of Russian crude oil. The 1-year timecharter rate dropped 38% from USD 27,800 per day in January to USD 17,250 per day in November.

Figure T.1

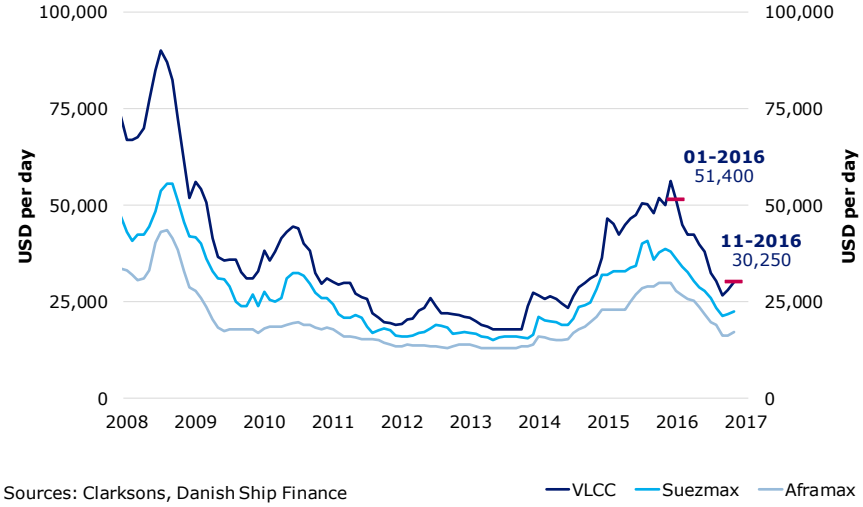
The Baltic Crude Tanker Index dropped significantly during the first eight months of 2016 but has since recovered almost to start of year value



Sources: Clarksons, Danish Ship Finance

Figure T.2

The 1-year timecharter rates have dropped by more than 40% during the first eleven months of 2016



Sources: Clarksons, Danish Ship Finance

THE BALANCE BETWEEN SUPPLY AND DEMAND HAS DETERIORATED DURING 2016 SINCE THE CRUDE TANKER FLEET HAS EXPANDED BY APPROXIMATELY 5% WHEREAS DISTANCE-ADJUSTED DEMAND HAS GROWN BY 3%.

In our May 2016 edition of this report, we emphasised that the outlook for Crude Tankers was deteriorating. Demand for Crude Tankers was artificially elevated during 2015 and going into 2016, since the low oil price boosted crude oil shipments and refinery throughputs, and spurred stock-building. The surge in trade led to greater waiting times in ports, while demand for tankers for oil storage also increased. We argued that industrial overcapacity had built up, masking the reduced growth potential in long-term oil consumption. Still, many ships were ordered and these vessels are now being delivered to a young fleet and a market that is hardly benefitting from the low oil price. Today, excessive volumes of oil are still being imported, and global oil inventories continue to build for both crude oil and refined oil products. Record-high storage levels are a clear sign of short-term oversupply, but many have predicted that the supply of oil will begin to decline due to underinvestment in new oil fields. So far this year, there seems to be little to indicate that the supply of oil is insufficient.

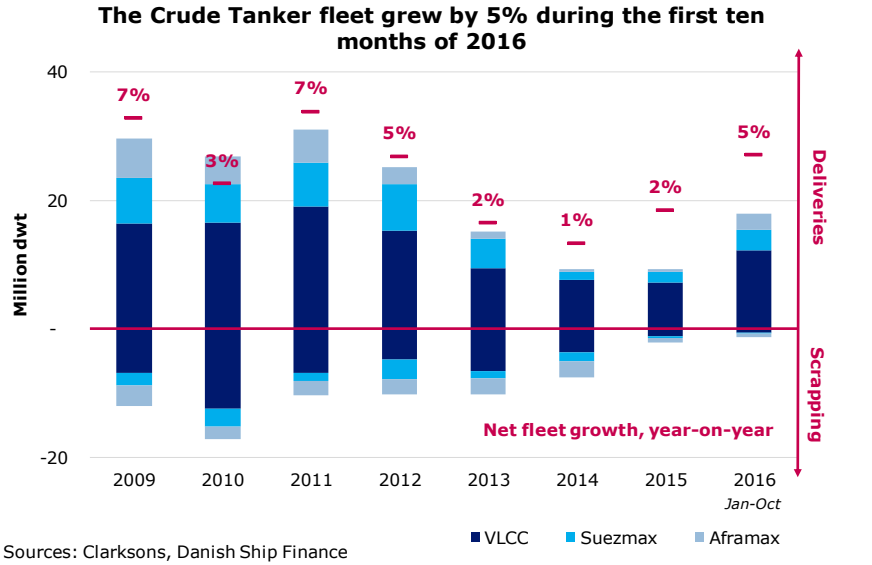
17 MILLION DWT WAS DELIVERED THE FIRST TEN MONTHS OF 2016

The Crude Tanker fleet has expanded slowly during the past three years, but last year's rising freight rates increased owners' appetite for new vessels. Most of these contracts are expected to be delivered between 2016 and 2018. The intake of vessels so far in 2016 has been around 17 million dwt (80 vessels) compared to around 9 million dwt (35 vessels) in all of 2015 (fig. 3).

75% OF ORDERS HAVE BEEN DELIVERED ON SCHEDULE

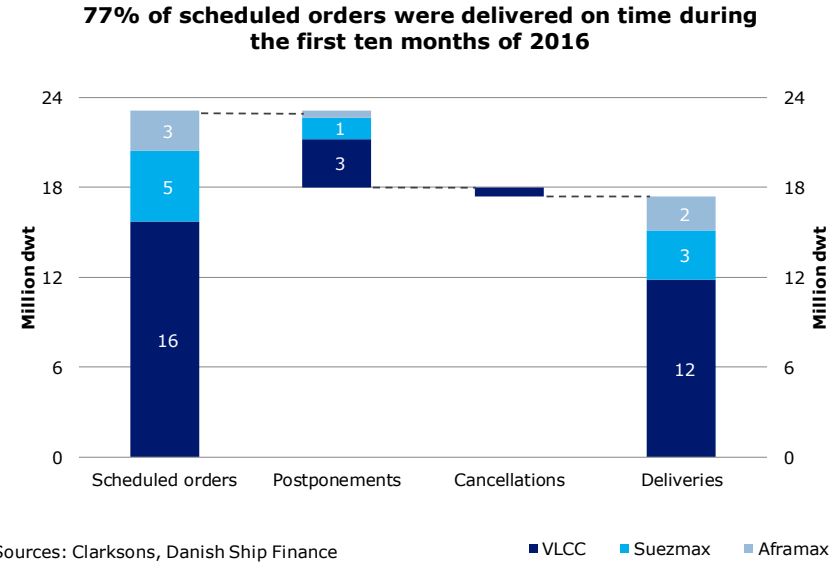
Orders scheduled for delivery during the first ten months of 2016 amounted to 23 million dwt, of which 77% was delivered according to schedule (fig. 4). Approximately 2% of the scheduled orders (1 vessel) seem to have been cancelled, while the remaining 26% (28 vessels) have been postponed for later delivery.

Figure T.3



Sources: Clarksons, Danish Ship Finance

Figure T.4



Sources: Clarksons, Danish Ship Finance

FEW VESSELS SCRAPPED

Only seven vessels were scrapped during the first ten months of 2016: one 38-year-old Suezmax, one 26-year-old VLCC and five Aframax tankers, two of which were scrapped prematurely (i.e. younger than 25 years).

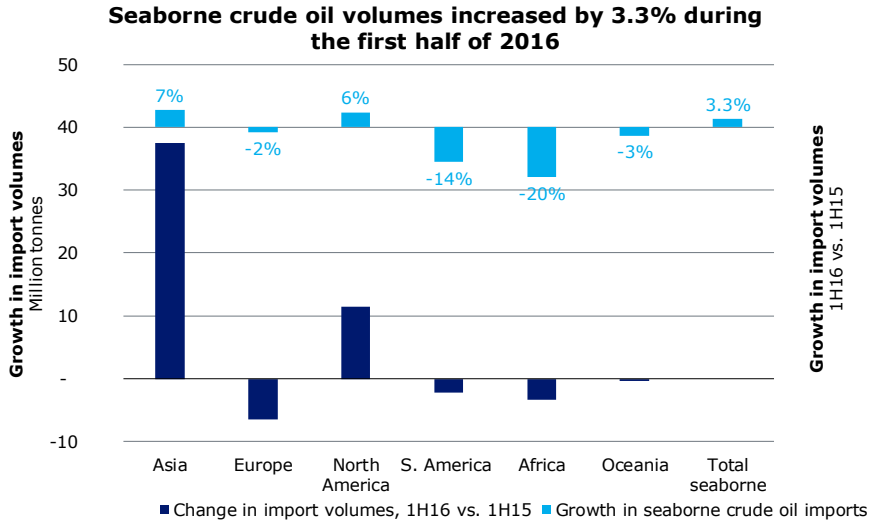
DEMAND FOR CRUDE TANKERS HAS BEEN FUELLED BY EXCESS CRUDE OIL

The need for transportation and storage of crude oil has continued to grow in 2016, since global oil markets have remained excessively supplied. Seaborne crude oil import volumes grew by 3.3% during the first half of 2016 compared with the same period last year (fig. 5). While this situation sounds quite robust on an aggregated level, closer scrutiny reveals that only Asia (and North America) saw an increase in import volumes during the period, while all other regions saw reduced imports. The North American increase reflects a reduction in domestic production (due to the low oil price) rather than a fundamental weakening in demand.

WE ARE BEGINNING TO SEE FURTHER SIGNS OF WEAKNESS

Asia (excluding Japan) continues to account for the majority of the growth outside the OECD, but signs of weakness are emerging. For example, China continues to add refinery capacity, which is driving up import volumes, but domestic demand does not seem strong enough to absorb the produced volumes, with the result that downstream stock-building continues to increase. China's crude supply – production plus net imports – exceeded demand from refineries by 1.2 million barrels per day in August 2016, indicating that the high import volumes are unsustainable. The main contributors to this development have been the Chinese teapot refineries, as they have been taking advantage of the relatively low-priced crude oil to build up stocks. Outside China, Russia and some South American economies that are largely dependent on the oil price, reduced oil consumption during the period.

Figure T.5



Sources: IHS Global Insight, Danish Ship Finance

LITTLE SIGN OF GLOBAL CRUDE OIL SUPPLY WEAKENING YET

It has been widely predicted that the global oil supply should begin to decline during the second half of 2016, due to the unprecedented investment cuts in the upstream oil and gas industry. However, as yet, there seems to be little to indicate any significant weakening in the global oil supply.

DECLINE IN NON-OPEC CRUDE OIL SUPPLY

It is the case that non-OPEC supply has been weakening, but higher OPEC production has compensated for most of the decline. US and Asian oil output fell by approximately 1.4 million barrels per day during the first eight months of 2016, although rising output from new field start-ups in Brazil and Norway slowed the rate of decline. A further eight projects with a combined capacity of around 1 million barrels per day are expected to come on stream before the end of this year.

STRONG OPEC PRODUCTION

OPEC crude output continued to set new records, reaching a higher level of approximately 1 million barrels per day during January to August than in the same period last year. The battle for market share between Saudi Arabia and Iran has been particularly instrumental in this. The three largest Gulf producers – Saudi Arabia, Iran and Iraq – now account for almost 24% of global oil production. Nigerian crude oil production is down by approximately 400,000 barrels per day, due to attacks against oil and gas facilities by the rebel group the Niger Delta Avengers. In early December, both OPEC and Non-OPEC members agreed, for the first time since 2001, to curb output. OPEC intends to cut production by more than 1 million barrels and non-OPEC by 558,000 barrels per day. This agreement has clearly been positive for oil prices, but does little to favour Crude Tanker demand.

IT IS STILL ALL ABOUT ASIAN DEMAND

Global oil demand is expected to rise by 1.6% in 2016, broadly in line with the 2015 figure. Demand increased by 2.1% during the first two quarters of 2016, but is expected to halve during the second half of the year. OECD oil demand increased by a modest 0.9% during the first half of the year, while non-OECD oil demand rose by 3.3%. Japanese oil consumption declined by almost 2% during the period.

CONTRACTING SEEMS TO HAVE COME TO A HALT IN 2016 AFTER HITTING ITS SECOND-HIGHEST LEVEL EVER IN 2015. SECONDHAND PRICES ARE DECLINING IN TANDEM WITH LOWER TIMECHARTER RATES.

VERY LOW CONTRACTING AFTER LAST YEAR'S HIGHS

Declining freight rates and a high orderbook induced owners to almost stop ordering during the first ten months of 2016. Accordingly, contracting reached its lowest level for two decades. Only 30 vessels, with a combined capacity of 6.6 million dwt, were contracted.

LOWER EARNINGS ARE REDUCING VESSEL PRICES

The three sub-segments showed fairly similar price developments during the period. One-year time charter rates almost halved during the first ten months of 2016, while the second-hand values of ships aged between 5 and 15 years old dropped by between 25% and 35%. Newbuilding prices declined approximately 10%.

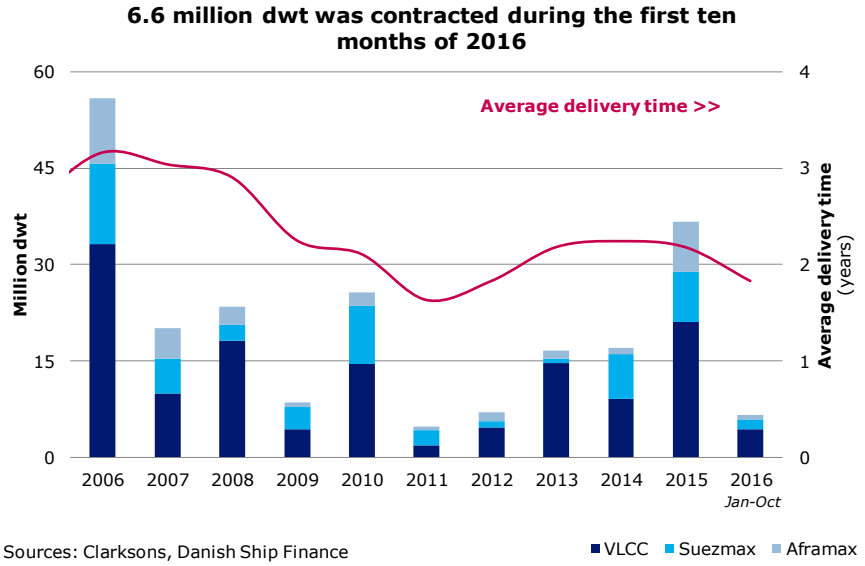
DOWNSIDE RISK TO CURRENT PRICES

Since 2013, asset prices have been structurally supported by the extended economic life of vessels, because the average age of vessels scrapped has increased from approximately 20 years in 2013 to around 25 years in 2016. It should equally be noted that there are virtually no obvious scrapping candidates left in the fleets, which means that a severe depreciation in asset prices is likely to be seen when scrapping of younger vessels pick up.

FEW VESSELS SOLD

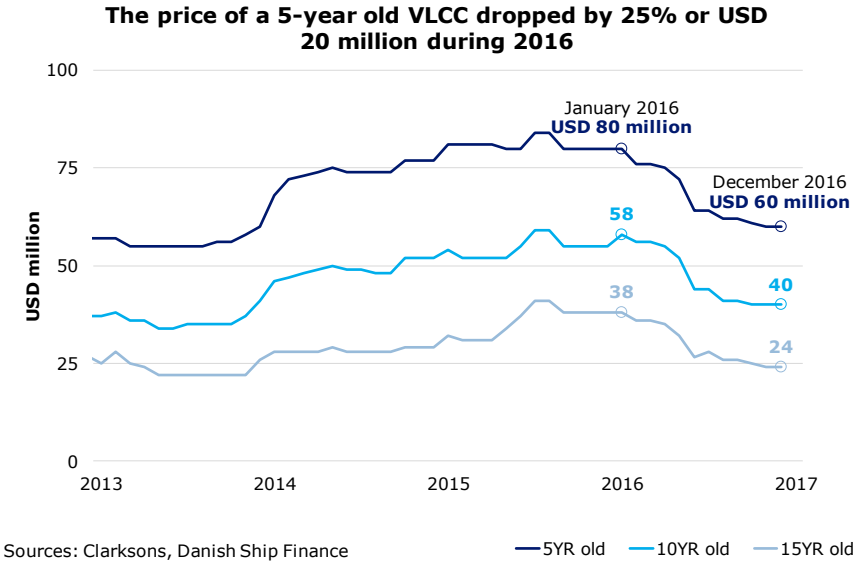
Selling and purchase activity has been low, with approximately 2% of the Crude Tanker fleet changing hands during the first ten months of 2016. To put this into context, turnover in the Crude Tanker segment during the past ten years has averaged 5% annually.

Figure T.6



Sources: Clarksons, Danish Ship Finance

Figure T.7



Sources: Clarksons, Danish Ship Finance

THE OIL INTENSITY OF THE GLOBAL ECONOMY IS EXPECTED TO DECLINE IN TANDEM WITH INCREASING EFFICIENCY AND SUBSTITUTION BY OTHER ENERGY SOURCES. IN THE MEDIUM TERM, OIL DEMAND IS EXPECTED TO GROW BY AN AVERAGE OF JUST 1% PER ANNUM. AS THE CRUDE TANKER FLEET IS GEARED FOR STRONGER GROWTH THAN THIS, OVERCAPACITY LOOKS LIKELY, AND FREIGHT RATES AND SECONDHAND PRICES COULD DECLINE BY AS MUCH AS 10% WITHIN THE NEXT YEAR.

SUBDUED DEMAND OUTLOOK

The global economy remains fragile and there is additional downside risk to current long-term forecasts. Global GDP is expected to increase by close to 3% in the short to medium term, but most long-term forecasts indicate lower long-term growth potential. In the short to medium term, the Asian economies offer the greatest potential for economic growth. If they manage to realise this potential, millions of people could be lifted out of poverty and hence become consumers in the world economy.

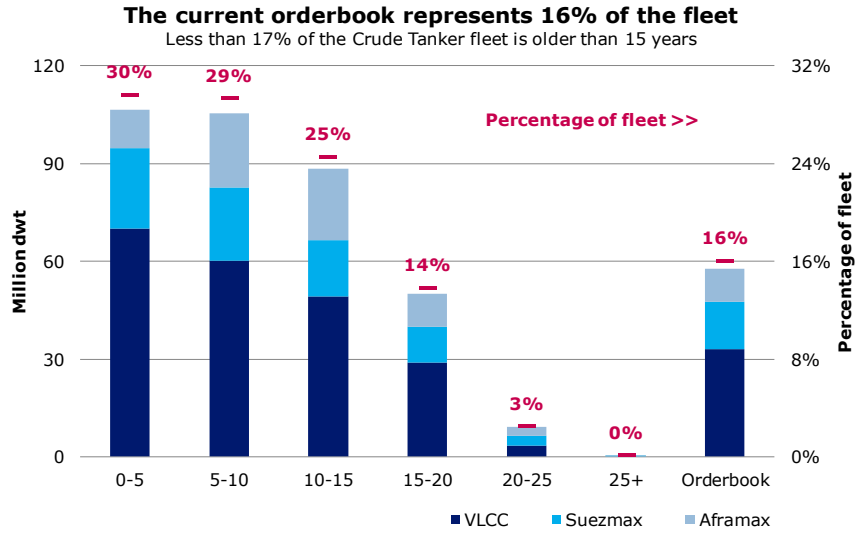
HARDER TO CREATE THE MILLIONS OF JOBS NEEDED

The demographic distribution is very favourable in most Asian economies, except for China and Japan. Millions of people stand ready to join the workforce if there are jobs for them. However, the route from poverty to middle income has become significantly more challenging with the introduction of many of the technologies associated with the fourth industrial revolution (e.g. robotics, 3D printers and renewable energy). In the past, many emerging economies have climbed the ladder to middle income through the millions of jobs created in industries related to manufacturing or mining. These jobs are expected to dwindle as the fourth industrial revolution gathers pace.

JOB CREATION BEFORE OIL CONSUMPTION

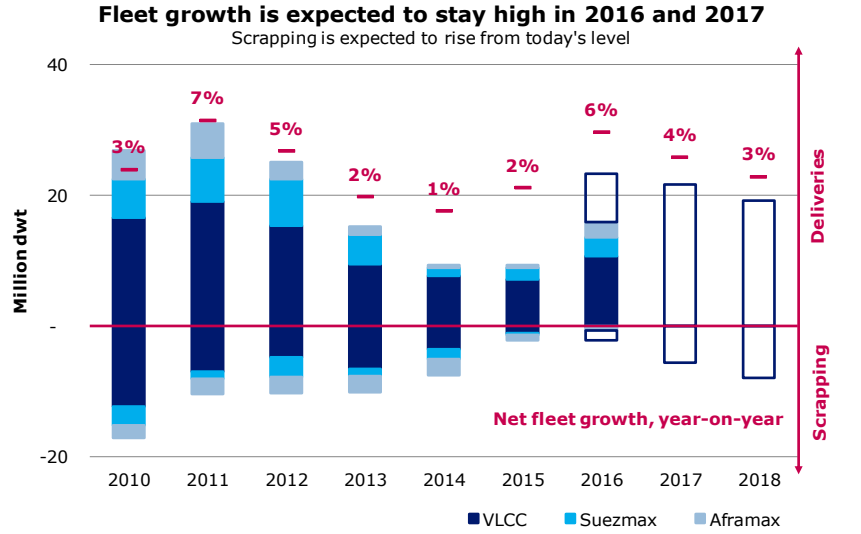
The point we strive to make is that GDP growth without job creation (or with fewer jobs created than in the past) will significantly

Figure T.8



Sources: Clarksons, Danish Ship Finance

Figure T.9



Sources: Clarksons, Danish Ship Finance

reduce the likely spillover to, say, oil consumption per capita or whatever measure we traditionally apply to assess the maturity of the underlying economy. For oil demand, the composition of GDP growth and its footprint on consumers is as important as the actual growth in GDP.

DECLINING OIL INTENSITY

In general, domestic consumption of fossil fuels usually peaks at the point where the industry sector (as opposed to the service sector) contributes the most to domestic GDP creation. In all major economies, we are seeing an increased contribution from the service sector to GDP creation. This implies that the oil intensity of GDP is declining, although the 2015 figure was abnormally high due to the low oil price. We expect the oil intensity of global growth to continue to decline and the underlying efficiency gains to return to more normal levels, averaging approximately 4% per annum in the period to 2021.

CHINA'S REBALANCING LOWERS DOMESTIC OIL DEMAND

There is both a structural and a technological argument for the predicted decline in global oil intensity. The structural argument is largely related to the macroeconomic consequences of an ageing consumer base in the OECD and China (please refer to General Review and Outlook in the May 2016 edition of this report for a more detailed analysis). The rebalancing of the Chinese economy and the likely spillover to its trading partners are also expected to reduce the oil intensity of global growth. The key point here is that it takes much more energy, diesel and steel to build up an emerging economy than it takes to run it.

EFFICIENCY GAINS LOWER THE LONG-TERM OUTLOOK

The technological argument is multifaceted but can somehow be summarised by the fact that the increasing efficiency of use and substitution by other energy sources (e.g. renewable energy) continue to reduce the oil intensity of global GDP. These efficiency gains from technological innovation are not confined to the transport sector, although this sector accounts for a large share of global oil demand. There is also considerable potential in the industrial, residential, petrochemical, agricultural and commercial sectors of the economy.

GLOBAL OIL DEMAND UP BY 1% UNTIL 2021

Together, these forces are reducing the long-term growth potential for oil demand. We expect global oil demand to increase by close to 1% per annum until 2021, at which point we foresee a slowdown to just 0.7% per annum until 2030.

GLOBAL REFINERY CAPACITY SET TO BE UP BY 8% IN FIVE YEARS...

Still, many seem to have high expectations for Crude Tanker demand, since global refinery capacity is scheduled to expand by nearly 8% (i.e. 8 million barrels per day) over the next five years. However, we do not take much comfort from this, as additional industrial capacity, per se, only provides the infrastructure, and not the underlying demand. It is true that new refinery capacity could boost short-term crude oil imports, but we believe the medium- to long-term effect will be minuscule without corresponding growth in underlying oil demand.

...MAINLY AFTER 2016

The expansion of refinery capacity in 2016 is limited to 0.5 million barrels per day, less than half of projected demand growth, but thereafter the pace will pick up to an annual average of 1.5 million barrels per day over the next five years. These figures imply that global refinery capacity will outstrip oil demand during the next five years, although time will tell whether capacity will expand according to schedule or whether the low oil price will cause some of the scheduled expansion to be postponed.

EXCESS REFINERY CAPACITY WILL NOT DRIVE CRUDE TANKER DEMAND

It is worth noting that nominal global refinery capacity (i.e. 97 million barrels per day) already seems sufficient to cover global demand for refined oil products beyond our 2030 scenario. The IEA projects that global demand for refined oil products will reach 87.4 million barrels per day in 2021, indicating potential nominal refinery overcapacity of more than 17 million barrels per day

(i.e. close to 17%). While it is true that old refinery capacity could be closed in response to lower utilisation rates and some capacity expansions may be postponed further, it seems reasonable to expect overcapacity to expand in the years to come.

OIL SUPPLY IS VERY PRICE-SENSITIVE

So far, we have not discussed the future supply of oil. The volatility in prices in recent years has highlighted how price-sensitive oil supply is. Most oil experts seem to agree that there will be a global undersupply of oil if prices remain at current levels. It seems commonly accepted that the unprecedented wave of investment cuts in the upstream oil and gas industry seen during 2015 and 2016 have raised the risk of a temporary shortage in oil supply. On a positive note, there should be sufficient oil resources in the short term if oil prices increase from today's levels. In general, oil companies have to invest heavily simply to offset the impact of natural rates of decline on their existing fields, and even more if they want the oil supply to increase. The average rate of decline on oil fields outside OPEC has now risen to 5% per year and is expected to continue accelerating in the next few years. However, if OPEC members continue to produce as much oil as possible, and if US, Libyan and Nigerian oil production recovers, stock-building and low oil prices could continue for large parts of 2017. The jury is still out, but it is clear that great uncertainty persists.

RISK OF SURPLUS FLEET SUPPLY

Our demand outlook is considerably less optimistic than shipowners' expectations. The Crude Tanker fleet is geared towards growth in transport volumes. The fleet is young with only 17% of vessels older than 15 years, whereas the orderbook corresponds to 16% of the fleet. The majority of vessels on order are scheduled to be delivered within the next two years. With few scrapping candidates available, vessel supply looks likely to expand by more than 4% per annum up to 2018.

GLOBAL SEABORNE OIL TRADE COULD BE NEAR ITS PEAK

We believe global seaborne trade in crude oil is near its peak. Lower US oil production has increased US oil imports, but the effect is expected to be relatively short-lived, since most observers expect US shale oil production to begin increasing either towards the end of 2016 or during the first half of 2017. Crude oil trade volumes are therefore forecast to decline slowly beginning in 2017 as stock draws reduce refiners' need to import crude oil and new refinery capacity comes online in oil-exporting countries. In short, we do not believe that transport volumes will be sufficient to employ the expanding Crude Tanker fleet and hence we expect the Crude Tanker market to remain low during the next two years.

VESSELS' ECONOMIC LIFE LIKELY TO BE REDUCED

In the event that seaborne transport volumes do not meet supply growth, either due to inventory reductions or insufficient demand, it will be necessary to scrap young vessels to maintain freight rates. In the past two years, we have seen very few vessels scrapped, due to the high market. The economic life of vessels is therefore currently close to 25 years. However, the fleet is young and few scrapping candidates remain, which means that young vessels will have to be scrapped to balance supply and demand. In such a scenario, the average age of vessels scrapped will quickly decline and the economic life of the fleets will thereby be reduced. This development poses a significant risk to secondhand values, as a shortening of the vessels' economic life implies a shorter cash-flow period and hence reduces the value of the vessels even with stable freight rates.

DOWNSIDE RISK TO TIMECHARTER RATES AND SECONDHAND PRICES

The outlook for the Crude Tanker market up to the end of 2017 is characterised by a large inflow of new vessels, a risk of massive inventory withdrawals and low underlying demand potential. Timecharter rates could decline by as much as 20% from the October levels, while secondhand values of younger vessels could

decline by 10% and vessels older than 10 years could be at risk of losing up to 20% of their current values during this period. In the near term, however, the expansion of refinery capacity could provide an unexpected boost to seaborne Crude Tanker volumes, supporting a short-term improvement in freight rates that could spill over to secondhand values. If this were to happen, we would definitely consider it a selling opportunity for owners with older vessels and urge that it does not trigger a new round of ordering.

PRODUCT TANKER

SHIPPING MARKET REVIEW – DECEMBER 2016

DANISH SHIP FINANCE

PRODUCT TANKER

THE OVERCAPACITY THAT HAS BEEN BUILDING UP IN THE BACKGROUND HAS UNFORTUNATELY CAUGHT UP WITH THE PRODUCT TANKER MARKET, AND FREIGHT RATES HAVE SEEN HUGE DECLINES DURING 2016. THE FLEET IS SET FOR FURTHER GROWTH AND ALTHOUGH TEMPORARY SPIKES MAY OCCUR, WE EXPECT FREIGHT RATES TO REMAIN UNDER PRESSURE.

FREIGHT RATES

FREIGHT RATES PLUMMETED DURING THE FIRST ELEVEN MONTHS OF 2016, AS DEMAND FAILED TO EMPLOY THE ENTERING VESSELS. MANY OF THE TEMPORARY FACTORS THAT HAVE SO OFTEN IN THE PAST FILLED VESSELS REMAINED SUBDUED.

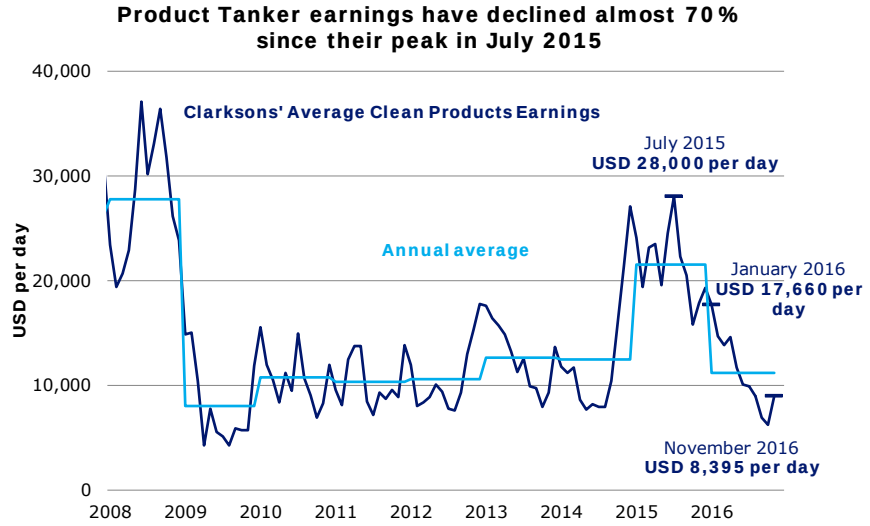
CLEAN TANKER EARNINGS HAVE DECLINED SHARPLY

Clarksons' Average Clean Products Earnings has declined sharply from its peak in July 2015, from more than USD 28,000 per day to USD 8,395 per day in November 2016 (fig. 1). Earnings usually decline in the third quarter of each year when seasonal maintenance at refineries takes place. This year has been no different but the decline in earnings has been exacerbated by the oversupply of refined petroleum products, which has lowered arbitrage flows and filled storage tanks. Trading activity has therefore been lower than many expected.

TIMECHARTER RATES HAVE ALSO COME DOWN TO A LOWER LEVEL

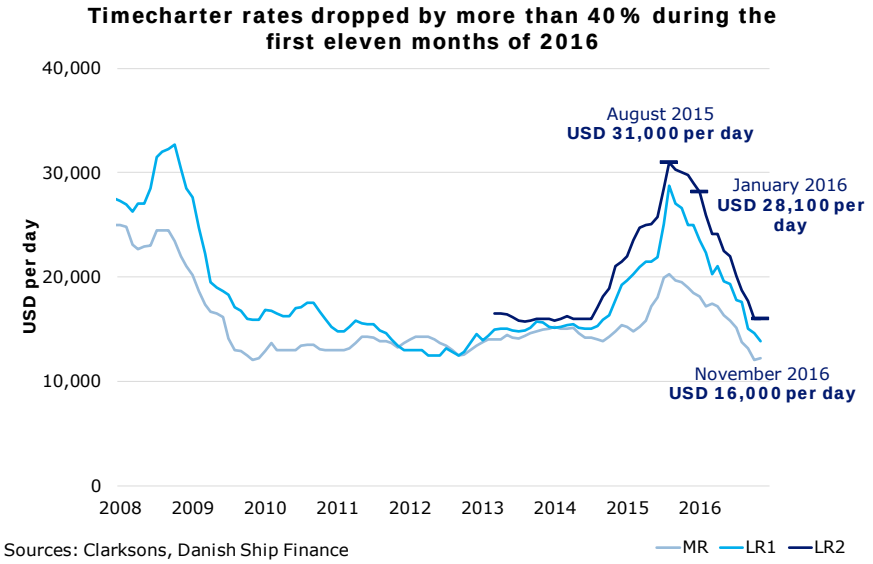
Overall, trade growth has failed to absorb the net addition of vessels, and consequently timecharter rates have softened since their peak in the summer months of 2015. LR2s were being chartered for one year at USD 31,000 per day in August 2015, but the average rate was almost 50% lower at USD 16,000 per day in November 2016 (fig. 2). The weaker Crude Tanker market has resulted in more Aframax newbuildings servicing the Product Tanker trade on their first voyage, before taking on their first crude oil cargo. This caused some of the negative momentum in the Crude Tanker market to spill over to the Product Tanker market.

Figure P.1



Sources: Clarksons, Danish Ship Finance

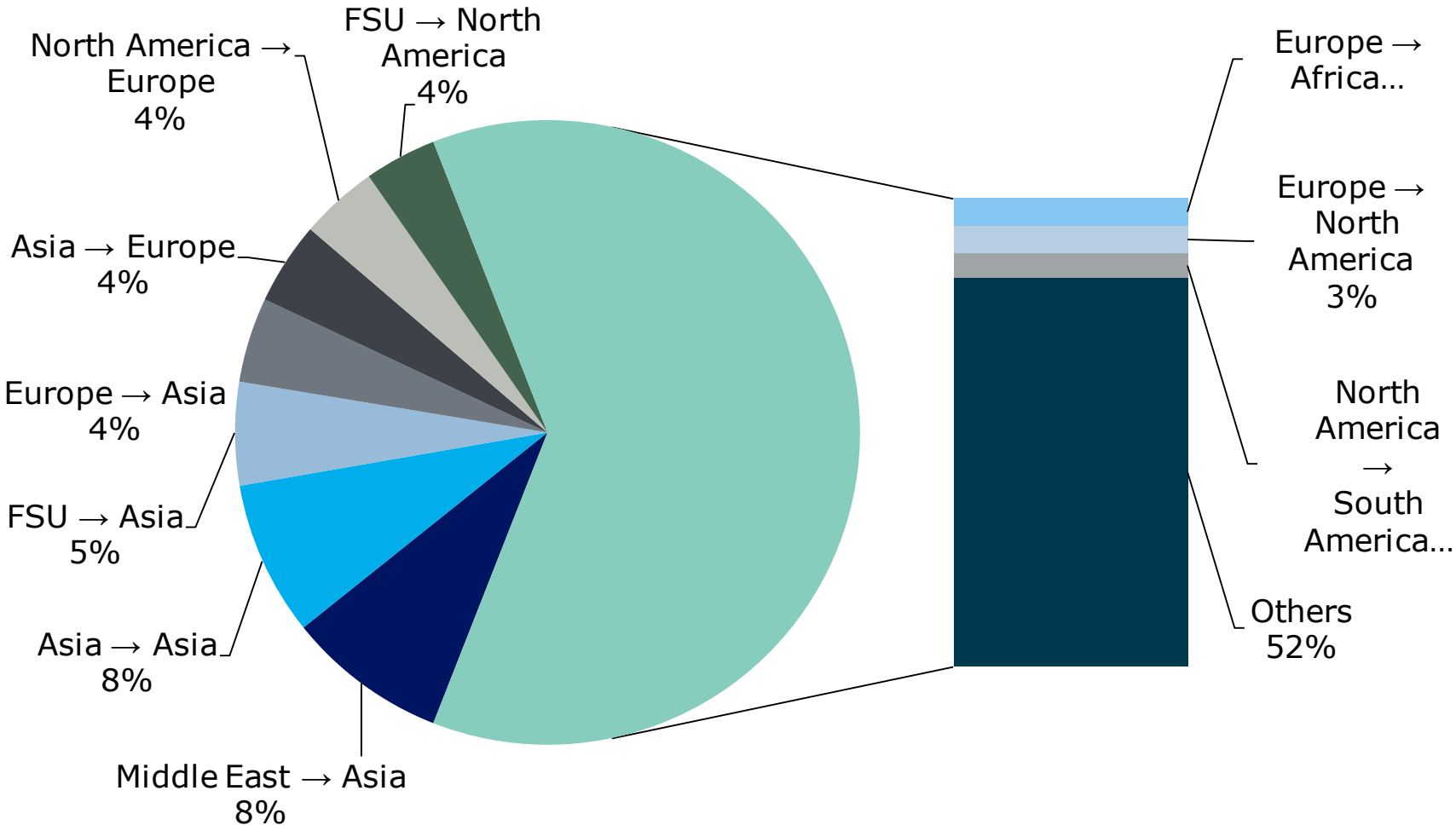
Figure P.2



Sources: Clarksons, Danish Ship Finance

Major Product Tanker trades

(Measured in billion tonne-miles, 2016)



Sources: IHS Global Insight, Danish Ship Finance

A LARGE NUMBER OF NEW PRODUCT TANKERS CONTINUES TO ENTER THE FLEET. PRODUCT TANKER DEMAND HAS BEEN KEPT HIGH BY OVERPRODUCTION OF REFINED OIL PRODUCTS BUT HAS FAILED TO EMPLOY THE ENTERING VESSELS. WE SPECULATE WHETHER THE HIGH MARKET HAS BEEN OIL SUPPLY-PUSHED RATHER THAN DEMAND-DRIVEN.

In our previous reports, we emphasised that the outlook for Product Tankers was deteriorating. We predicted downward pressure on freight rates and secondhand values, as we did not expect trading activity to be sufficient to employ the steady inflow of vessels.

SUPPLY INCREASED BY 5% IN THE FIRST TEN MONTHS OF 2016

The influx of Product Tankers remained high during the first ten months of 2016, pushing net fleet growth to around 5% (fig. 4). A total of 122 Product Tankers were delivered during the period. Seven out of ten vessels were MR Tankers, but the LR2 fleet showed the strongest growth rate of 9% in the first ten months of 2016.

20% OF SCHEDULED ORDERS WERE POSTPONED FOR LATER DELIVERY

Despite the deteriorating freight rate environment, shipowners took delivery of 80% of the orders scheduled to be delivered during the first ten months of 2016. The remaining orders were postponed for five months on average. No orders appear to have been cancelled during the period (fig. 5).

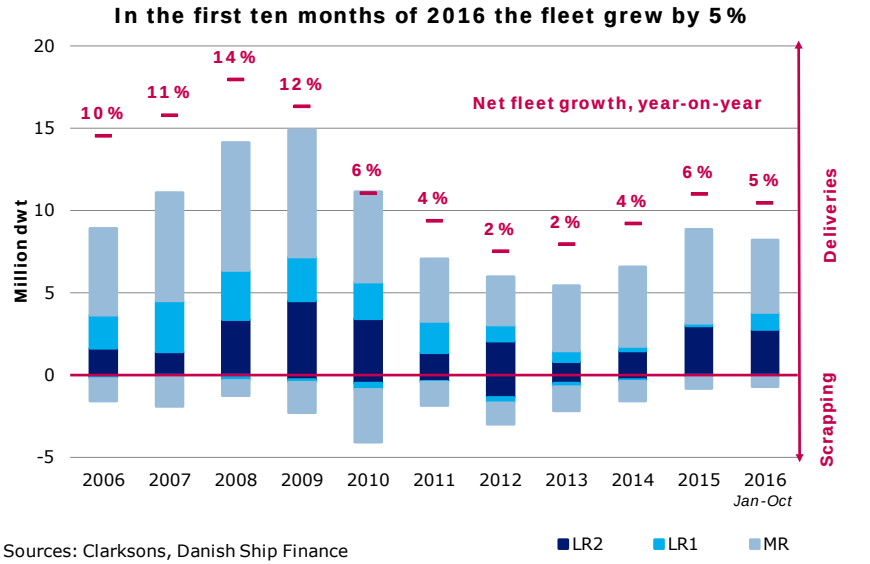
SCRAPPING DECREASED TO A HISTORICALLY LOW LEVEL

Scrapping remained low despite the sharp drop in freight rates and secondhand values during the first ten months. Only 24 vessels with a combined capacity of 0.7 million dwt were scrapped during the period, one of the lowest levels seen in the last decade (fig. 4).

WEAK ECONOMIC GROWTH

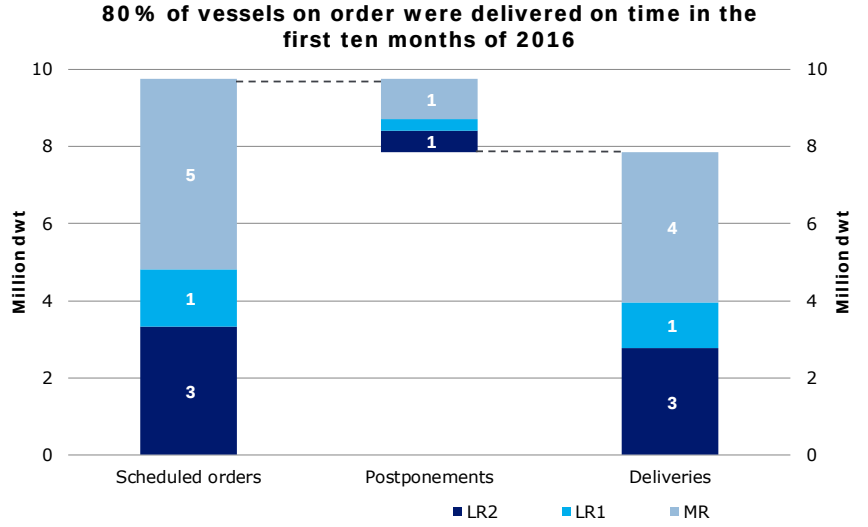
Global economic growth is projected to remain modest at 3.1%

Figure P.4



Sources: Clarksons, Danish Ship Finance

Figure P.5



Sources: Clarksons, Danish Ship Finance

in 2016, slightly weaker than the IMF's estimates from January of 3.4%. This forecast incorporates somewhat weaker-than-expected activity in advanced economies, while growth in emerging markets and developing economies is expected to strengthen. Emerging markets and developing economies are expected to account for over three-quarters of projected growth in global GDP in 2016.

LOPSIDED GROWTH IN OIL DEMAND

Demand for refined oil products grew by some 2% during the first half of 2016. Most of the growth was driven by the US, China and India, but Europe also contributed, with demand there increasing for the first time in eight years. Weak economic growth in Japan and Latin America reduced their demand for refined oil products. Overall, the growth in volumes was driven by stronger gasoline demand, while diesel demand shrunk due to the weak global industrial activity. Only India, South Korea and Europe (where diesel is mostly used for transportation) saw diesel demand grow robustly.

SUPPLY HAS PUSHED TANKER DEMAND

Refinery capacity seems to have been expanding ahead of demand. In China, large refinery outputs have led to massive downstream stock-building and strong growth in export volumes. The situation seems to have worsened, as unconventional gasoline producers are supplying blended gasoline (as opposed to refined gasoline) to the Chinese market. Apparent gasoline demand growth – domestic output plus net exports – slowed to 4% in the period from January to June, compared with 11% in the same period last year. China's actual consumption of gasoline rose by 15%, however. This discrepancy reflects the supply of blended gasoline. The displacement of refined gasoline by blended gasoline has helped inflate seaborne net exports of gasoline. Current projections indicate that Chinese exports of refined oil products could see a significant increase in 2016.

PRODUCT TANKER DEMAND IS EXPECTED TO GROW BY 4% IN 2016

Product Tanker trading activity was artificially high during 2015 and going into 2016, as high refinery margins ensured that refinery output was significantly ahead of oil demand. It is somewhat surprising that the combination of overproduction and increasing oil prices have had such a negligible impact on refining margins. Nonetheless, the excess production of refined oil products has increased transport volumes in both 2015 and 2016. It has also caused a huge build-up in local product stocks in all key importing areas during large parts of 2016. Product Tanker demand is nonetheless expected to grow by approximately 4% in 2016, more than double the rate of underlying global demand for refined oil products, which is expected to increase by only 1.8%.

AFTER REACHING ITS FOURTH-HIGHEST LEVEL IN 2015, CONTRACTING HAS GROUND TO A HALT IN 2016 AS MARKET EXPECTATIONS HAVE WEAKENED. SHIP PRICES HAVE DECLINED ACCORDINGLY.

CONTRACTING SEEMS TO HAVE COME TO A HALT IN 2016

Contracting appears to have petered out in 2016 after the ordering spree in 2015; only eight vessels with a combined capacity of 0.4 million dwt have been contracted. Six of these are MR tankers. The average delivery time continues to shorten as yards run out of orders (fig. 6).

NEWBUILDING PRICES ARE FALLING AS CONTRACTING REMAINS LOW

Newbuilding prices have decreased by around 10% this year, reflecting weak demand not only for new Product Tankers but for most ship segments. Still, newbuilding prices remain significantly above their historical lows (fig. 7).

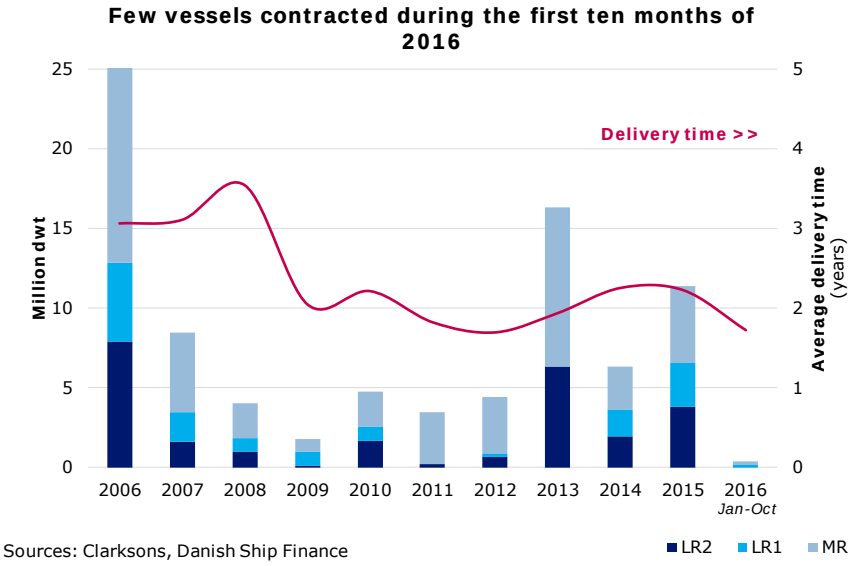
SECONDHAND PRICES HAVE DROPPED IN 2016

Secondhand prices fell by more than 20% in the first ten months, reflecting weaker timecharter rates and reduced expectations for future earnings (fig. 7). The average age of vessels scrapped remains above their technical operating life (i.e. 25 years), which is why we have seen little value destruction from premature scrapping. Only six vessels have been scrapped prematurely during 2016 (i.e. younger than 25 years old).

LOW SALES ACTIVITY IN 2016

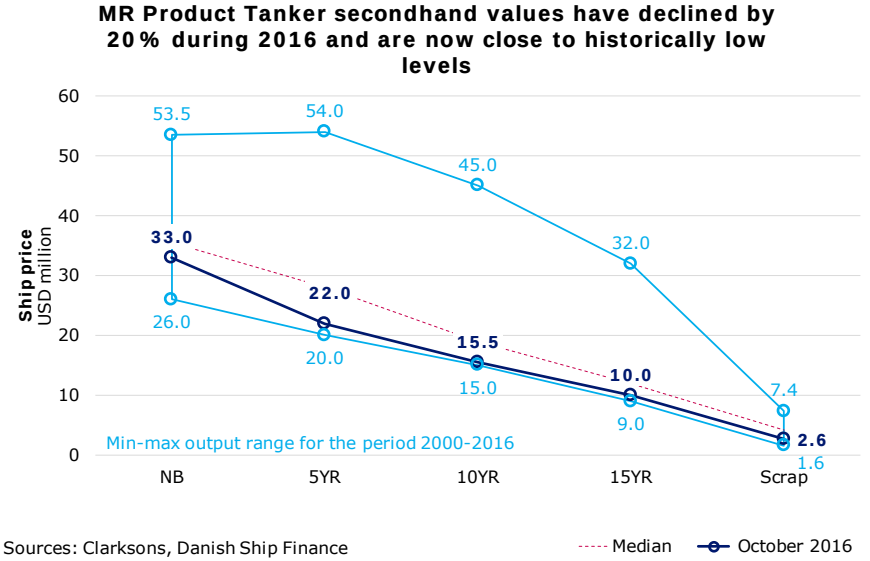
The low market has dampened sales activity, since it appears that very few owners are willing to sell at today's low prices. Activity has primarily been seen for MR vessels older than ten years, while we have only seen five vessels sold in both LR segments, all older than ten years. Prices for older vessels (+ten years) have come down to levels close to the lows of previous down-cycles (fig. 7). Still, we identify additional downside risk to today's secondhand prices, as a likely future reduction in the average age of vessels scrapped is expected to reduce the economic life of older vessels.

Figure P.6



Sources: Clarksons, Danish Ship Finance

Figure P.7



Sources: Clarksons, Danish Ship Finance

THE STEEP DROP IN FREIGHT RATES WITNESSED ALL THROUGH 2016 INDICATES A GROWING OVERSUPPLY IN THE PRODUCT TANKER MARKET. UNFORTUNATELY, THERE ARE STILL MANY VESSELS ON ORDER AND FLEET GROWTH IS EXPECTED TO SURPASS DEMAND IN 2017 AT LEAST. THIS COULD MEAN CONTINUOUS PRESSURE ON FREIGHT RATES AND SHIP VALUES.

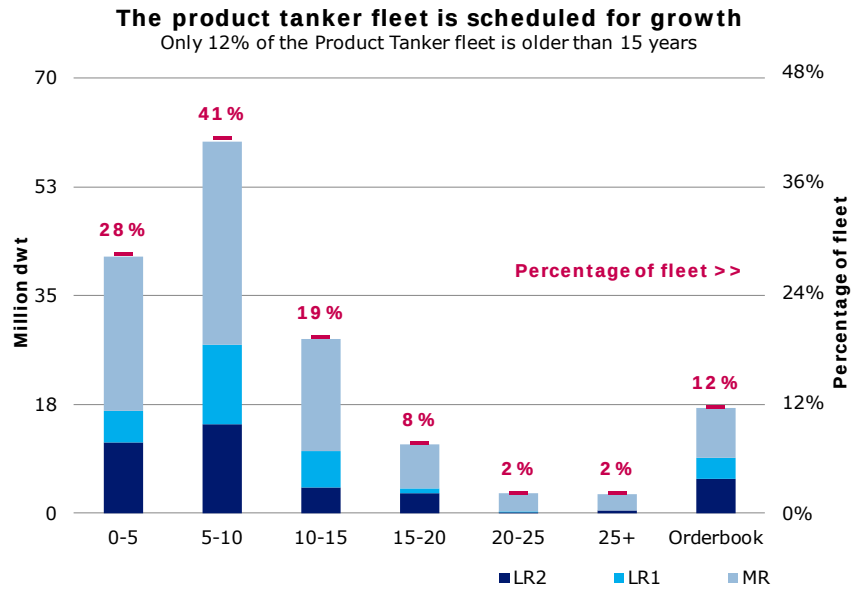
THE PRODUCT TANKER FLEET IS GEARED FOR GROWTH

Judging by the orderbook schedule and the age distribution of the fleet, the Product Tanker fleet is set for growth in seaborne trade volumes. The fleet is young, with only 12% of vessels older than 15 years, and the orderbook equals 12% of the fleet (fig. 8). The orderbook is heavily front-loaded with seven out of ten vessels on order projected to be delivered before the end of next year. The fleet is estimated to grow by around 6% in 2016 and 4% 2017 (fig. 9). The larger segments are particularly vulnerable if demand fails to absorb the new vessels. In the LR2 segment, there are currently around 50 vessels on order while only six vessels in the fleet are older than 20 years and 37 vessels older than 15 years. Consequently, premature scrapping will become a necessity in the event of subdued demand if freight rates are to be kept at the current levels. It is important to bear in mind that even if freight rates are kept stable, systematic premature scrapping will lower the value of older secondhand vessels, since the economic life of the fleet will be shortened.

GREAT EXPECTATIONS BUT SEVERE RISKS

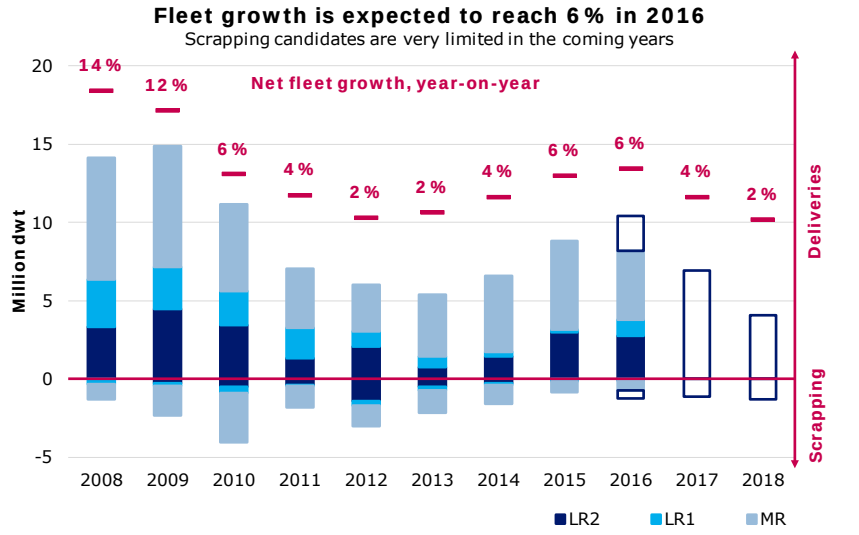
Demand for refined oil products has proved more responsive to lower oil prices than we were anticipating. Oil inventories have been filled to unprecedented levels and motorists have been driving longer distances than previously expected. In short, global oil demand has been very strong following the drop in oil prices. For Product Tankers, this has sparked a significant increase in trading activity, which, on the one hand, increased freight rates

Figure P.8



Sources: Clarksons, Danish Ship Finance

Figure P.9



Sources: Clarksons, Danish Ship Finance

and ship prices during 2015 but, on the other, has spurred excessive ordering of new vessels, far beyond the long-term requirement for replacing older vessels.

NEW REFINERY CAPACITY CREATES SUPPLY-PUSHED DEMAND BOOST

The planned expansion of global refining capacity indicates that some investors continue to have great expectations for future oil demand. Global refinery capacity is scheduled to expand by nearly 8% in total (i.e. 8 million barrels per day) over the next five years. These expansion plans have the potential to employ a larger number of Product Tankers. But as we discuss in more detail in the Crude Tanker section of this report, additional refinery capacity provides only the infrastructure needed to support potential future growth but not necessarily the underlying oil demand. As a consequence, in the short term, demand for Product Tankers could be more oil supply-pushed than oil demand-driven. The possible negative effects of supply-pushed demand can be substantial, as when it coincides with the right mix of regional shortages/surpluses of products with specific grades, blends or components, it can create the illusion that oil demand is much stronger than it actually is.

LESSONS LEARNED FROM THE DRY BULK INDUSTRY

We saw similar expectations in the Dry Bulk industry when industry experts argued that the expansion of global mining capacity would pave the way for continued growth in trade volumes and support Capesize freight rates for years to come. We all heard the persuasive arguments about steel consumption per capita and the future need for building materials alongside Asia's continued urbanisation. Several Asian economies continue to become urbanised, but the mining expansion was clearly well ahead of demand. We identify a similar risk to the Product Tanker outlook, although we do recognise that the arbitrage component of Product Tanker demand remains a powerful dark horse that could absorb, or simply postpone, part of the effects of the oversupply.

NON-OECD EXPECTED TO DRIVE DEMAND IN THE SHORT TO MEDIUM TERM

In this report, we address what we believe to be the primary downside risks to future Product Tanker demand: the global agenda to cut carbon emissions and the technological advances within car manufacturing. More than half of global demand for petroleum products stems from transportation — around one-third from personal transportation. Hence, the developments within transportation and car manufacturing are pertinent to the outlook for Product Tanker demand. The above-mentioned refinery capacity additions are expected to support demand during the next couple of years, but the primary demand driver will be growing demand for gasoline and diesel, primarily in non-OECD regions. Asian demand looks especially promising, as the number of miles driven is expected to increase as the population continues to grow and more people enter the middle class. It is clear that if the average person in Asia ends up driving as many miles a year as the average European, in a car powered by gasoline or diesel, future oil demand looks very promising. Miles driven in the OECD, on the other hand, are expected to stagnate or even decline as demographic changes act as a restraining factor and many regions continue to struggle with low economic growth.

NEW TECHNOLOGIES BRING DOWN LONG-TERM DEMAND EXPECTATIONS

Overall, we expect the growing demand for gasoline and diesel in Asia to facilitate an annual increase in Product Tanker demand of around 2% in the period up until 2021. In the longer term, however, the question remains as to whether cars will continue to be powered by gasoline and diesel. As the technologies behind hybrid and electric vehicles gradually become more sophisticated and mature, we no longer expect growth in Product Tanker demand to be governed by refinery capacity but by technological penetration. Some remain sceptical about the potential of hybrid and electric vehicles within the not-too-distant future, arguing that it usually takes decades before a new technology is properly enrolled in an industry. We think they could gain market shares much faster than expected.

THE LNG ARGUMENT

LNG is often used as an example in the case against the short- to medium-term potential of electric vehicles, because it took about 30 years for LNG to become an integrated part of the energy mix. What is important to keep in mind in the case of LNG, however, is that it required huge national investments in the proper infrastructure from both the exporting and importing countries, which complicated the enrolment process substantially. The business case for hybrid and electric vehicles, self-driving or not, is of an entirely different nature. The initial investments required for these cars to gain market share are largely shouldered by car manufacturers, which have a huge incentive to invest in these technologies in order to be better able to service the mobility demand of the future.

REGULATION PROMPTS CAR MAKERS TO INVEST IN NEW TECHNOLOGY

Car manufacturers' incentive to invest in and develop electric and self-driving vehicles will only increase as more regulation is imposed on them to reduce CO_2 emissions. The Volkswagen emissions scandal has led regulators to turn a watchful eye to the industry, and it has prompted Volkswagen, among others, to raise their ambitions within electric vehicles. Volkswagen now aims to launch 30 different electric models by 2025, and to increase its focus on autonomous driving technology. Volkswagen is by no means the only car manufacturer with these ambitions. Regardless of the pace at which electric cars gain market share, all these regulations are forcing car manufacturers to enhance their engine designs and improve fuel efficiency, ensuring that the fuel needed to service the same number of cars driving the same number of miles is gradually reduced.

ACCESS, NOT OWNERSHIP

It could be argued that for these new technologies to gain ground, it is not only the car manufacturers that have to invest in them; consumers also need to buy into the idea, since they are the ones buying the cars in the end. Consumers might be sceptical about investing in hybrids, electric vehicles, and even more so self-driving cars, as the technologies are new and to some extent unproven, making them risky investments. However, these types of cars are increasingly being developed into a framework centred around car and ride-sharing schemes, leasing agreements, car subscriptions and the like. What these initiatives have in common is that they are aimed at facilitating future car demand which is expected to become increasingly about accessibility, as opposed to ownership. Individual consumers therefore do not necessarily have to invest large sums in the technologies for these to gain market share – they only need to pay for the services they use. Hence, the technology risk on the part of the consumers is minimal, and market penetration could therefore happen much faster than expected.

THE YOUNGER GENERATIONS ARE ABANDONING THE CAR

The shift away from ownership towards accessibility is a phenomenon gaining traction primarily among the younger generations. The millennial generation is especially keen on buying access to services instead of owning assets. This trend is, for example, becoming visible in the number of young people seeking a driver's licence. In the US, the share of people under 40 with a driver's licence declined significantly in the period from 1983 to 2014, and the decline was especially marked among people under 25. Today, it is much more important for the younger generations to be able to buy the latest smartphone than to get a driver's licence, since there are plenty of other options for getting around.

AN URBAN PHENOMENON

We acknowledge that this phenomenon is largely occurring in urban settings and will take much longer to spread to rural areas. However, over half of the world's population lives in large cities and this share is only expected to increase. It is also in the urban space that electric and self-driving cars present the biggest opportunities, as they can help alleviate problems such as pollution, congestion and parking, to name but a few.

CHINA'S ELECTRIC VEHICLE SALES ARE TAKING OFF

New technologies often develop exponentially and gain market shares much faster than we have been used to - the more people that uses a technology the cheaper it gets. We expect this could be the case for the market penetration of electric vehicles. In China alone, sales of electric vehicles are expected to reach 450,000 units in 2016, up from 150,000 in 2015 – a tripling of sales in only a year. In 2010, sales of electric vehicles were almost non-existent. Assuming the current pace continues, sales of electric vehicles in China will reach 36.5 million by 2020. We are not suggesting that this will happen, but it serves to illustrate how fast the development could be in theory and underlines that just because market penetration has been low in the last couple of years does not necessarily mean it will remain low in the coming years.

LOW LONG-TERM EXPECTATIONS FOR PRODUCT TANKER DEMAND

Given the commitment that many of the world's countries have made to lowering carbon emissions and the huge advances made within electric and autonomous driving technologies, we are bullish about the prospects for electric vehicles and expect them to make an impact faster than parts of the Product Tanker industry might be expecting. These technologies will incrementally undermine underlying demand for oil, and that could mean that growth in overall demand begins to level off by the start of next decade and possibly drops as low as 1% by 2030. Royal Dutch Shell's CFO, Simon Henry, has just announced that Shell expects oil consumption to peak within the next five to 15 years, primarily due to substitution and efficiency gains, outpacing growth in demand. That is a bold statement coming from one of the oil majors, and to us, a sign of the huge potential that new technologies hold.

FREIGHT RATES EXPECTED TO REMAIN UNDER PRESSURE

Even though we expect Product Tanker demand to be supported by new refinery capacity and a growing Asian population in the next three to five years, it is not expected to be sufficient to restore the market balance. The more or less continuous decline in freight rates that we have witnessed since the middle of last year reflects an industry burdened by overcapacity. Given that fleet growth is expected to stay high in 2017, at around 3.5%, and demand is expected to grow by no more than 2%, this overcapacity will expand further. Hence, if ordering of new vessels is resumed, the overcapacity could continue to burden the industry, keeping freight rates and ship values under pressure. In the Dry Bulk and Container segments, we have seen how costly it can be to underestimate a growing oversupply, and we therefore hope that contracting will remain muted the next couple of years.

LPG TANKER

SHIPPING MARKET REVIEW – DECEMBER 2016

DANISH SHIP FINANCE

LPG TANKER

THE MASSIVE INFLOW OF NEW VESSELS HAS PUSHED THE LPG FLEET AHEAD OF DEMAND AND FREIGHT RATES HAVE BEEN DECLINING ACCORDINGLY. FLEET GROWTH IS EXPECTED TO SURPASS DEMAND GROWTH AGAIN IN 2017. WE EXPECT THAT THE MARKET COULD STAY LOW OR WORSEN IN 2017.

FREIGHT RATES

FREIGHT RATES HAVE PLUMMETED SINCE THE START OF THE YEAR, AS RECORD-HIGH FLEET GROWTH CONTINUES TO CAUSE MARKET CONDITIONS TO DETERIORATE. IN THE FIRST ELEVEN MONTHS OF THE YEAR, AVERAGE FREIGHT RATES DROPPED BY AROUND 65% COMPARED WITH 2015.

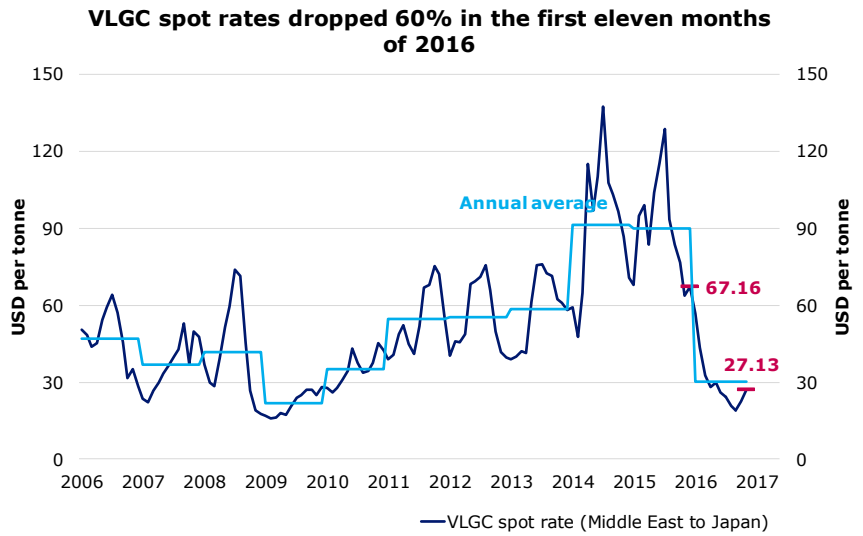
SPOT RATES REMAIN UNDER PRESSURE

The record-high inflow of new LPG tankers has kept spot rates under pressure. By November, the VLGC spot rate (fig. 1) had dropped 60% from the start of the year and the average spot rate was USD 30 per tonne, 65% lower than in 2015. The seasonal uplift in spot rates at the end of the petrochemical plant maintenance period (late spring/early summer) did not materialise and spot rates continued to decline over the summer months. Spot rates have seen a small seasonal uplift at the start of the winter months, propelled by increasing demand for heating. The scale of the seasonal boost could, however, be diminished by the large number of vessels currently in the spot market and by mild winter weather.

TIMECHARTER RATES NEARING ALL-TIME LOW

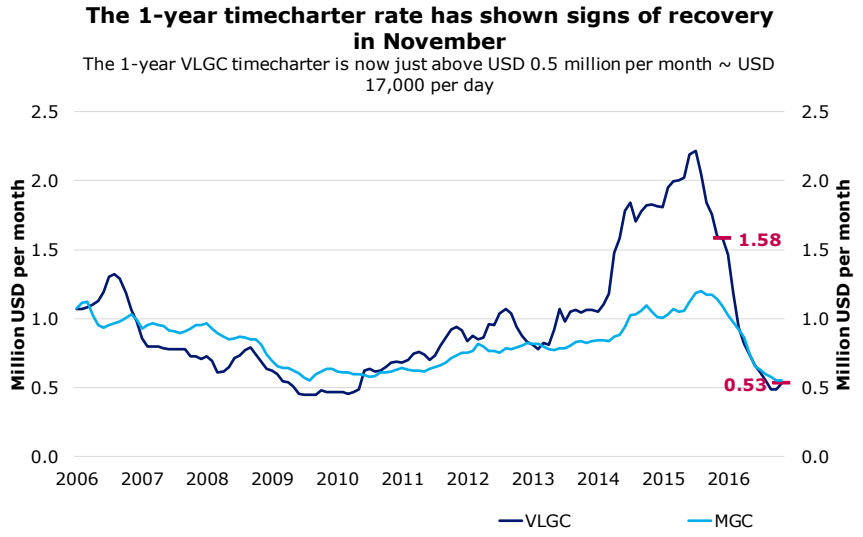
Like spot rates, timecharter rates have been declining in 2016 and are also being pressured by fleet additions. The 1-year VLGC timecharter rate has dropped by more than USD 1 million per month (65%) since the start of 2016 and is now just above USD 0.5 million per month. The decline has been less severe in other LPG segments, but timecharter rates in these segments were also lower at the start of the year.

Figure LPG.1



Sources: Clarksons, Danish Ship Finance

Figure LPG.2

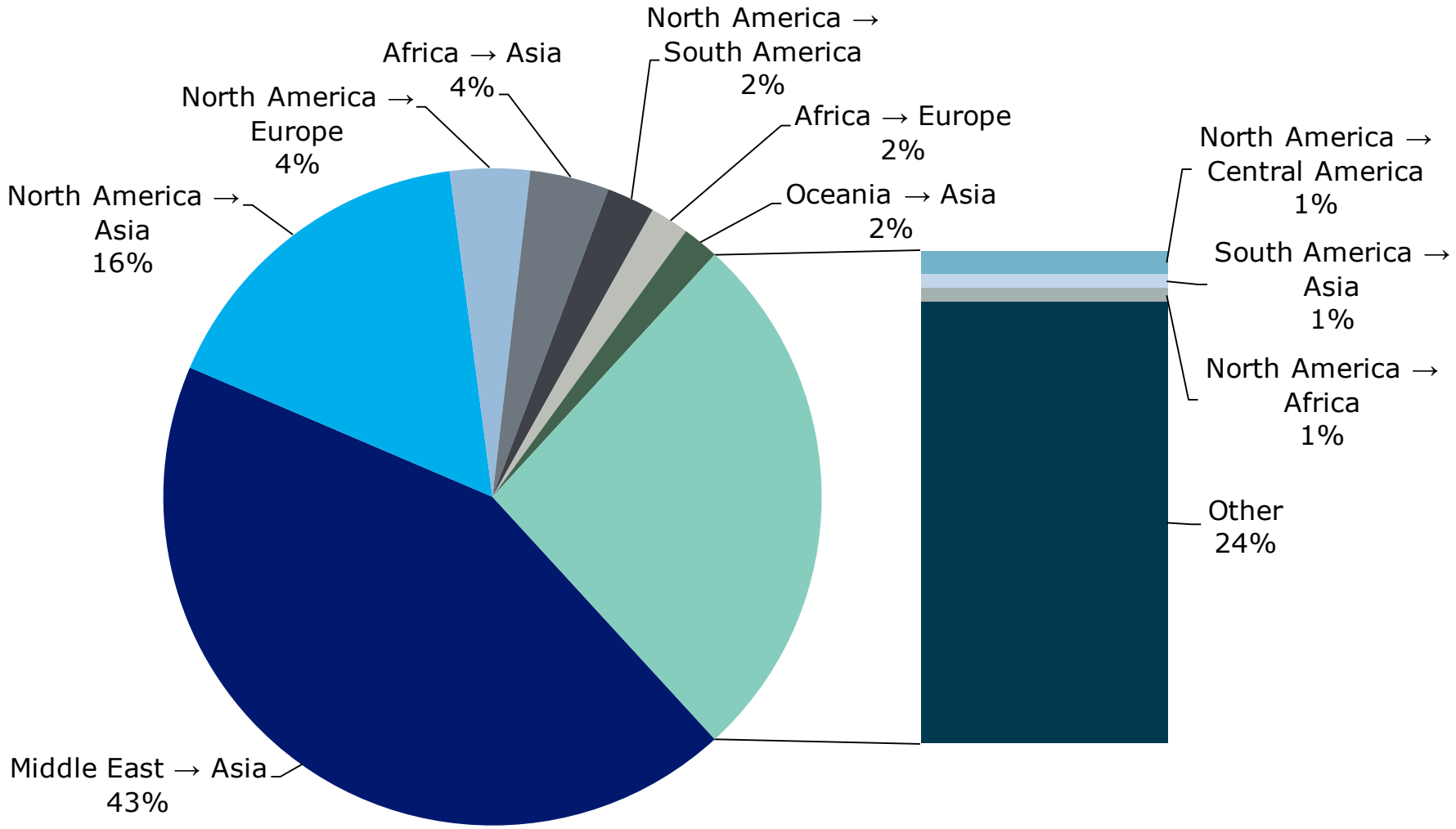


Sources: Clarksons, Danish Ship Finance

Figure LPG.3

Major LPG trades

(Measured in million tonne-miles, 2016)



Source: IHS Global Insight, Danish Ship Finance

THE PERSISTENT DECLINE IN FREIGHT RATES INDICATES THAT THE GAP BETWEEN SUPPLY AND DEMAND IS GROWING. HOWEVER, DECLINING FREIGHT RATES HAVE ALSO KEPT ARBITRAGE TRADE BETWEEN THE US AND ASIA WORKABLE FOR MOST OF THE YEAR.

FLEET GROWTH IS EXPECTED TO REACH A RECORD HIGH IN 2016

The LPG fleet expanded at a record rate of 16% in the first ten months of 2016 (fig. 4). This was powered by the VLGC segment which increased by 20% (41 vessels). The other segments grew by between 4% and 12%. Fleet growth was highest in the first quarter, especially in March when almost 1 million Cu.M. was delivered. We expect the LPG fleet to grow by another 3 percentage points, resulting in record-high net fleet growth of 19% in 2016.

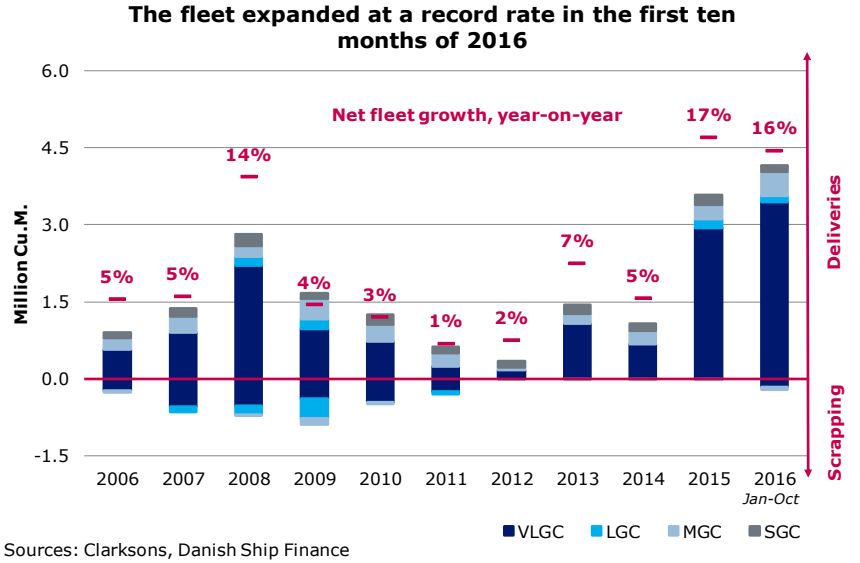
OVER 80% OF ORDERS HAVE BEEN DELIVERED ON TIME

84% of scheduled orders were delivered on time during the first ten months of 2016 (fig. 5), even though decreasing freight rates throughout 2016 have created a strong incentive to postpone or even cancel deliveries. The postponement ratio (17 vessels, equal to 13% of scheduled orders) was close to that of 2015, although the average postponement time increased. For VLGCs, the average postponement time has increased from two months in 2015 to six months so far in 2016.

SCRAPPING HAS REMAINED LIMITED

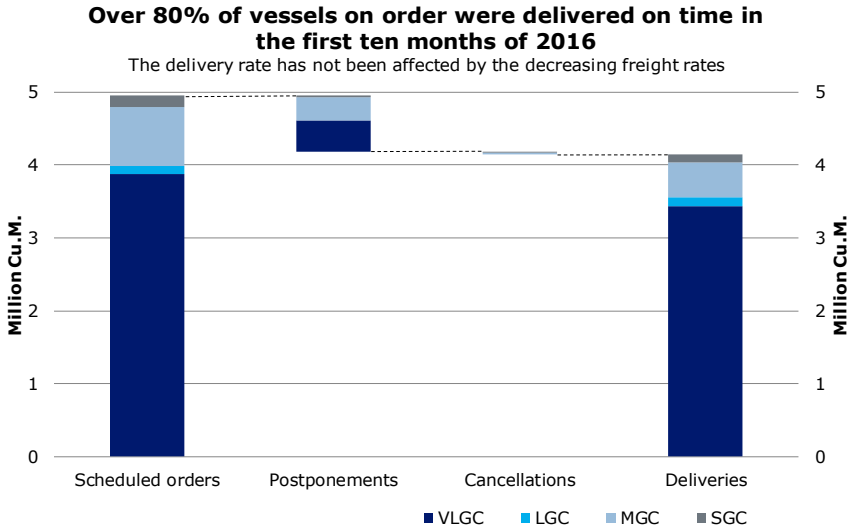
Despite the large inflow of new vessels and continuously decreasing freight rates, scrapping was limited during the first ten months of 2016. Out of a stock of 57 vessels older than 25 years, nine vessels were scrapped, equal to 6% of the delivered capacity. The average scrapping age was 32 years, ranging from 27 to 38 years. Given the remaining vessels older than 25 years (48 vessels) and the high average scrapping age, we expect scrapping to remain limited.

Figure LPG.4



Sources: Clarksons, Danish Ship Finance

Figure LPG.5



Sources: Clarksons, Danish Ship Finance

THE SUPPLY/DEMAND GAP HAS CONTINUED TO WIDEN IN 2016

The Asian economies continue to drive global LPG demand. Asian LPG imports have risen strongly during 2016 to meet growing demand from the petrochemical industry and the household sector. The problems have emerged because the fleet has expanded significantly ahead of its short-term potential. In 2015, the massive inflow of new vessels to the fleet was absorbed by long-haul Asian imports from the US, but when this trade window closed during the second half of the year, partly due to declining demand from the Asia petrochemical sector, signs of oversupply began to emerge. Freight rates declined accordingly. The trade window between the US and Asia has reopened in 2016, but the fleet has grown quicker than demand.

GLOBAL OVERSUPPLY OF LPG

The global oversupply of LPG has caused the price spread between regions to narrow and has turned the market from being demand-driven to supply-pushed. The potential for arbitrage trading could have disappeared completely were it not for the low freight rate environment.

THE CHINESE PETROCHEMICAL INDUSTRY IS BOOSTING IMPORTS

Chinese LPG imports are expected to have grown by around 40% during 2016. It has mainly been the Chinese petrochemical industry that has fuelled demand for seaborne LPG, as propane dehydrogenation plants (PDH plants) have stepped up production in order to take advantage of higher propylene margins. The continued growth in Chinese LPG imports has set the country on course to become the world's largest LPG importer.

NO GROWTH IN JAPANESE LPG IMPORTS

Japanese LPG imports are expected to fall by approximately 1% in 2016. A large proportion of imported volumes have ended up in storage, resulting in LPG stocks peaking at a three-year high in October 2016. Historically, Japan has been the world's largest LPG importer, but Japanese LPG demand has been tailing off over the past decade. One reason for this is that household demand for LPG is being dampened by the increasing availability of pipeline LNG (liquefied natural gas).

HOUSEHOLD DEMAND IS LIFTING SOUTH KOREAN AND INDIAN IMPORTS

South Korea is expected to have increased LPG imports by around 30% in 2016. The rise is mainly attributable to strong household demand. Likewise, growth in India's LPG consumption has been powered by increasing demand from the household sector. India's continued success in substituting traditional cooking fuels (kerosene and biofuels) with LPG, specifically in rural areas, means the country is set to become the second-largest LPG consumer in Asia.

US CONTINUES TO INCREASE LPG EXPORTS

US exports of LPG are expected to increase by more than 30% in 2016. The increase is due to a combination of rising naphtha prices (i.e. making LPG an alternative feedstock for the petrochemical sector), low and declining freight rates, and low US LPG prices. A hike in naphtha prices at the start of the year, especially in Asia, boosted demand for LPG and increased Asian LPG prices enough to allow for US exports into the region.

CONTRACTING ACTIVITY HAS BEEN LIMITED DURING 2016. THE HIGH FLEET GROWTH AND DECLINING FREIGHT RATES HAVE REDUCED SECONDHAND VALUES BY APPROXIMATELY 20%.

CONTRACTING HAS ALMOST COME TO A HALT IN 2016

After three years of record-high contracting, only seven newbuilding orders were placed during the first ten months of 2016. Five of the orders were in the VLGC segment and have a combined capacity of 416,000 Cu.M. and an average delivery time of 2.8 years (fig. 6). The remaining two orders were SGCs. The reason for the sharp drop this year is the combination of low and decreasing freight rates and the new NOx regulations. The new regulations are designed to limit engine NOx emissions, adding an extra cost to newbuild ships contracted (keel laid) after 1 January 2016.

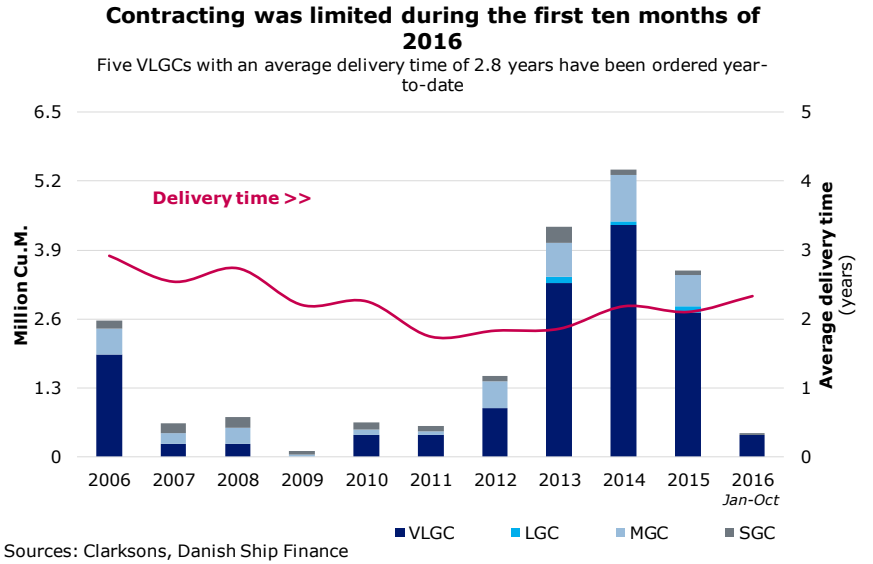
PRESSURE IS MOUNTING ON NEWBUILDING AND SECONDHAND VALUES

The low level of contracting and the declining freight rates have put downward pressure on newbuilding prices (fig. 7). VLGC and MGC newbuilding prices have both dropped about 10% year-to-date, while secondhand prices for 5-year-old VLGC and MGC vessels have fallen by around 20%. In the light of the massive drop in VLGC freight rates (65%), the decline in VLGC secondhand values has been moderate (20%). We identify additional downside risk in today's secondhand prices, not least due to an expected reduction in the economic life of older vessels.

LOW SALES ACTIVITY COULD BE SHIELDING SECONDHAND VALUES

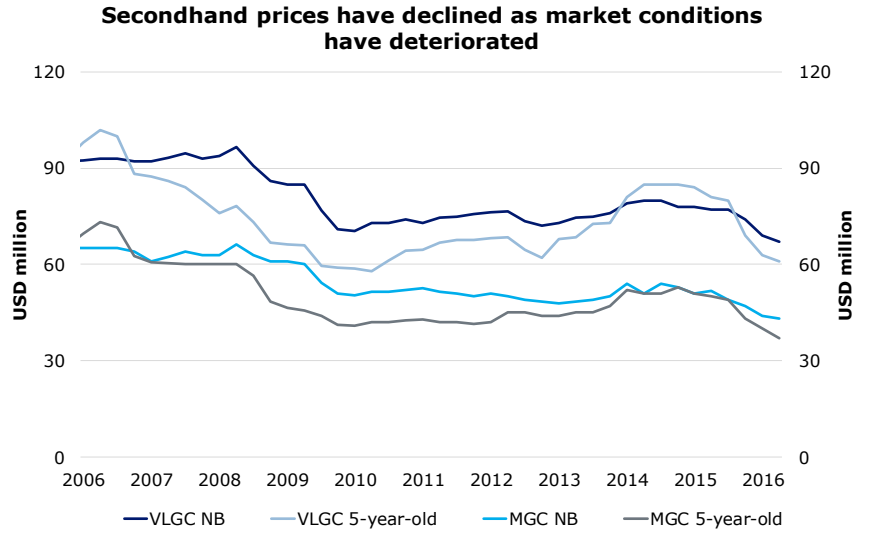
Activity in the sales and purchase market has been limited in 2016; only four transactions (Cu.M. >20,000) have been made with older vessels (i.e. with an average age of 19 years). No vessels under the age of 10 years have been sold, indicating that owners are not willing to accept the current low prices.

Figure LPG.6



Sources: Clarksons, Danish Ship Finance

Figure LPG.7



Sources: Clarksons, Danish Ship Finance

FREIGHT RATES AND SECONDHAND VALUES ARE EXPECTED TO STAY LOW UNTIL 2018. SECONDHAND VALUES OF OLDER VESSELS ARE FURTHER EXPOSED TO A REDUCTION IN THEIR ECONOMIC LIFE, WHICH MAY CAUSE SIGNIFICANT VALUE DECLINES IN 2017 AND 2018.

THE ORDERBOOK WILL BE DIFFICULT TO ABSORB

The orderbook currently equals 22% of the fleet, indicating a significant expansion in the fleet still over the next three years. The low freight rate environment clearly shows that supply is ahead of demand, but the young age profile of the fleet leaves little room for extraordinary scrapping without jeopardising the value of the older vessels. Today, only 2% of the fleet is older than 30 years, while only 14% is older than 20 years. Should demand fail to absorb the incoming vessels, younger vessels could easily become scrapping candidates prematurely. We have seen similar developments in other segments. The impact on the secondhand values of older vessels, from a reduction in the average age of vessels scrapped, could be significant.

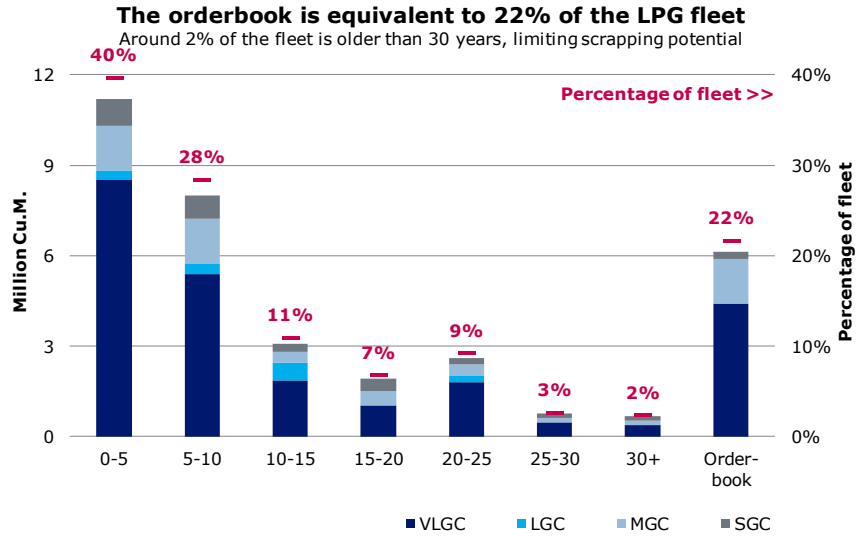
OWNERS COULD BE FORCED TO INCREASE SCRAPPING

Fleet growth is set to peak at 19% in 2016. Deliveries in the VLGC segment are expected to peak this year and subside in 2017, while MGC deliveries are expected to peak in 2017 with a 40% increase in delivered capacity compared with 2016. Currently, there are no scheduled deliveries in the LGC segment. As the influx of new VLGC and MGC vessels puts further pressure on freight rates and secondhand values, we believe that a possible scenario could be that owners are forced to scrap almost all vessels older than 25 years over the next two years (fig. 9).

LOW CONTRACTING COULD LEAD TO A MARKET RECOVERY

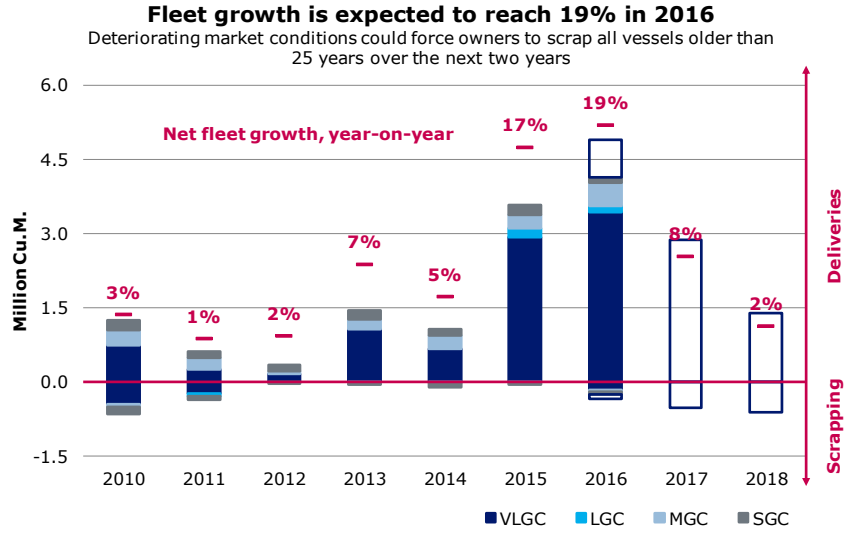
The fleet is poised to grow by 10% in 2017 and 4% in 2018, before allowing for demolition and potential new orders. Adjusting for expected demolition and assuming that no new orders will be

Figure LPG.8



Sources: Clarksons, Danish Ship Finance

Figure LPG.9



Sources: Clarksons, Danish Ship Finance

placed, we predict that the fleet will actually grow by 8% in 2017 and 2% in 2018 (fig. 9). There is great uncertainty attached to the forecast supply and demand figures (fig. 9 and fig. 10), but it seems reasonable to assume that 2017 will be another difficult year. If annual demand growth stays around 5% the balance between supply and demand could begin to recover during 2018, but much depends on owners' willingness to scrap vessels prematurely.

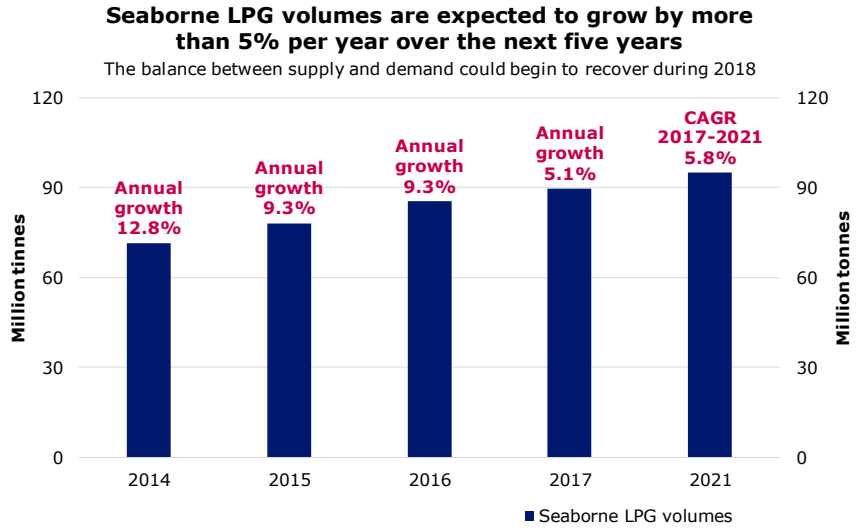
THE EXPANDED PANAMA CANAL COULD INCREASE SUPPLY

The expanded Panama Canal could shorten travel distances between the US and Asia and increase the effective vessel supply. In June 2016, the first VLGC vessel transited the newly expanded Panama Canal. By using this route, a VLGC vessel voyaging between the US and Asia can reduce the distance it travels by one-third compared with going round the Cape of Good Hope. Diminishing travelling distances increase the effective vessel supply, creating additional available tonnage. In the VLGC market, this could exacerbate the effect of the oversupply, depressing rates and values further and prolonging the recovery. If 25% of LPG trade between the US and Japan, China and South Korea goes through the Panama Canal, distance-adjusted demand on these routes will decrease by around 10% (calculated from 2015 trade volumes). The precise effect of the expanded Panama Canal on vessel supply will depend on transit fees and waiting times.

DEMAND IS STILL EXPECTED TO GROW

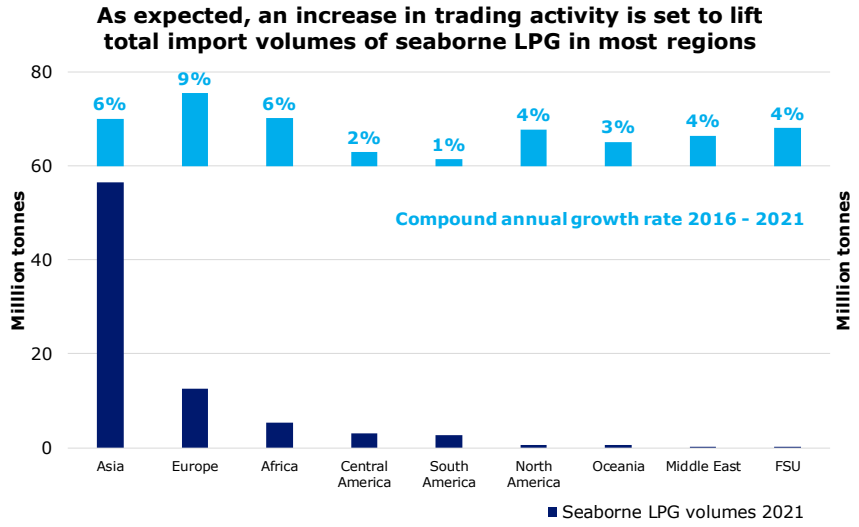
Asia will remain the main driver for seaborne LPG trade (fig. 11). LPG demand from the Chinese petrochemical industry and households is expected to continue to grow. Investments in propane dehydrogenations plants (PDH plants) are expected to increase, as domestic production of propylene – the main yield from PDH plants – only covers around two-thirds of domestic demand. Household demand in India is also expected to grow. A new pipeline in the north of the country has been proposed, as part of the

Figure LPG.10



Sources: Clarksons and IHS Global Insight, Danish Ship Finance

Figure LPG.11



Sources: IHS Global Insight, Danish Ship Finance

government's plan to increase the number of households with LPG connection by 100 million in 2018. As India's domestic LPG production is limited, the pipeline is expected to primarily distribute seaborne LPG imported from the Middle East. Likewise, household demand and petrochemical demand from South Korea are expected to increase.

INCREASING US LPG PRODUCTION COULD BOOST EXPORTS...

In US shale oil production, LPG accounts for a large part of the retrieved volumes. The cost of producing US shale oil relative to oil prices is therefore an important driver for US LPG production. If US shale oil production increases, due to reduced production costs and/or higher oil prices, this should ensure growing LPG production, keeping US LPG export prices low. This could boost demand for vessels on the arbitrage routes from the US to Asia and Europe.

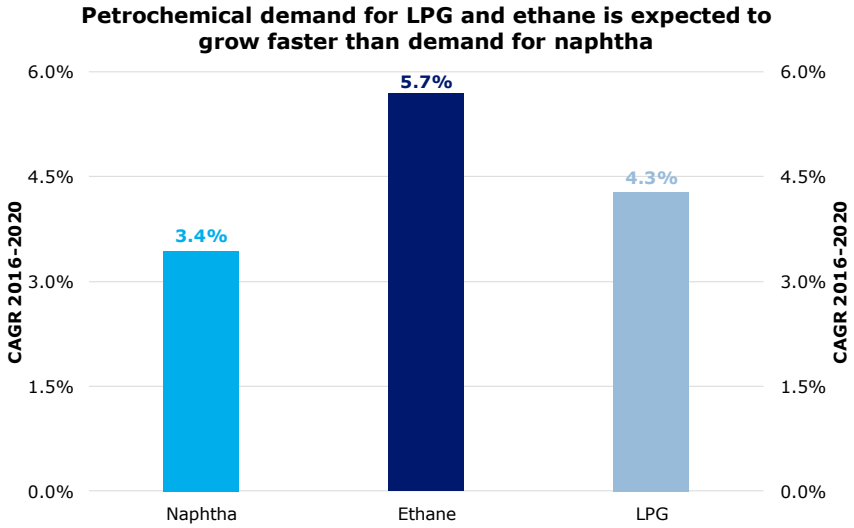
...BUT THERE HAVE BEEN SIGNS OF EXCESS LPG EXPORTS

So far in 2016, we have seen a relatively narrow price gap between export and import regions as export volumes from the US and the Middle East have increased. This reflects the fact that LPG production is growing faster than demand. Increasing export volumes are only being partially absorbed by rising import requirements. Increasing LPG exports could potentially narrow the price gap between export and import regions to such an extent that arbitrage windows become unworkable and seaborne transportation demand stagnates. The point is that it is not necessarily the case any longer that increasing LPG production automatically leads to higher demand for seaborne LPG transport.

ONE OF THE BIGGEST THREATS TO LPG DEMAND IS LOW OIL PRICES...

The refined petroleum product naphtha can be a substitute for LPG in the petrochemical industry. It produces a better yield (wider production mix) and hence, if naphtha is not sold at a premium to LPG, it is the preferred option for the petrochemical industry. If oil prices and thereby naphtha prices remain low or decline, demand for LPG vessels could also decrease.

Figure LPG.12



Sources: Platts, Danish Ship Finance

...BUT DEMAND COULD BECOME MORE DETACHED FROM OIL PRICES

The main products produced from naphtha are ethylene, aromatics and propylene. Depending on the type of technology used, naphtha can yield different amounts of these products. However, ethylene and propylene can be produced in higher yields by using ethane in steam cracking and propane (LPG) in propane dehydrogenation plants (PDH plants). New investments in these technologies are growing faster than investments in naphtha technology. This could mean that propane (LPG) demand becomes less dependent on the naphtha/LPG spread as PDH plants that cannot use naphtha as a substitute account for a growing share of propane demand. This could ensure less volatility in LPG demand from the petrochemical industry and increase vessel demand.

RECYCLING COULD DISRUPT FUTURE DEMAND

A large part of future LPG demand is expected to be generated by

the petrochemical industry, particularly by growth in plastic products. Currently, annual plastic production is around 300 million tonnes and this is expected to double within 20 years. However, plastic production contains untapped recycling potential. The vast majority of plastic products currently have a short first-use cycle, after which they are discarded; only limited recycling takes place. A specific example of this is plastic packaging, for which limited recycling after first use results in 95% of its material value being lost to the economy. If large-scale plastic recycling, as outlined in the World Economic Forum, Ellen MacArthur Foundation and McKinsey & Company, *The New Plastic Economy – Rethinking the future of plastics*, gains a foothold, some of the input of plastic production could be locally produced by recycling. This could disrupt some of the current trade patterns by simply decreasing demand for seaborne LPG transport.

GLOSSARY

SHIPPING MARKET REVIEW – DECEMBER 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 approximately 40,000 and 65,000 dwt.

Handysize, dry cargo:	Dry bulk carrier of between approximately 10,000 and 40,000 dwt.
Head-haul:	The leg of a trade route that has the highest container volumes is often called 'head-haul, whereas the return leg is often referred to as 'back-haul'. On routes where there is a great trading volume mismatch between head-haul and back-haul, the head-haul demand will most often determine the freight rate level.
Heavy distillates:	This oil type includes fuel oils and lubes.
IEA:	International Energy Agency. A subsidiary of the OECD. www.iea.org
IHS Global Insight:	American economic consulting company. www.globalinsight.com
IMO:	International Maritime Organization. An organisation under the UN.
IMO I-III:	Quality grades for tankers for the permission to transport different chemical and oil products. IMO I are the most hazardous products, IMO III the least hazardous.
Inorganic chemicals:	A combination of chemical elements not containing carbon. The three most common inorganic chemicals are 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 Panama 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.
Pyrolysis gasoline:	A by-product of high temperature naphtha cracking during ethylene and propylene production. High aromatics content.
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.ssyonline.com
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.

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