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Global Maritime Weekly Digest

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*The **Global Maritime Weekly Digest**, based at **SOLENT University**, provides a regular flow of maritime news and analysis, of significance in a global context.*
Topics covered include shipping fleets and management, seaborne trade, ports, shipbuilding, ship recycling, maritime policy and regulations, and seafarers' labour.

Contents

Editorial comments

- During this year's first quarter, ***global ship recycling*** comprised over two hundred vessels, of which three quarters were sold to the beaching yards of South Asia (item 4). Numerous accidents and worker fatalities occurred in this period at shipbreakers in Bangladesh, and a few more were also reported in India.
- An amendment to the ***Maritime Labour Convention of 2006*** has been submitted for adoption. It covers circumstances often encountered by seafarers held captive by piracy or armed robbery, who face loss of wages and other contractual entitlements during captivity (item 2).
- As an alternative, cleaner fuel the characteristics of ***liquefied natural gas (LNG)*** are becoming more attractive (item 1). But retrofitting existing ships to burn LNG is considered to be a risky option for many shipowners, given the high cost of installation. For new ships it is potentially a feasible solution, although there is uncertainty about whether enough bunkering (refueling) facilities will be available globally to meet demand.
- Contrasts between ***shipping market cycles and commodity market cycles*** sometimes occur and analysts are currently watching the oil market closely for signs of any change that could alter and improve the tone of a depressed tanker market. Item 3 examines recent patterns of world oil demand and supply trends and possible future changes.
- During the past decade the number of active ***shipbuilding yards in China*** has declined steeply amid falling orderbooks for new vessels. However, state-backed shipbuilders have increased their share of total contracts obtained (item 5).

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(1) Hellenic Shipping News, 1 May 2018/ Drewry Shipping Consultants

LNG: fuel of the future?

With less than two years before the sulphur cap comes into force, LNG is looking more plausible as the marine fuel of the 21st Century.

Many shipowners are still weighing up the dilemma of how to comply with the stringent new rules on sulphur emissions, due to come into force in January 2020. The options have been widely publicised: scrap older tonnage, fit sulphur scrubbers, switch to low-sulphur marine gasoil (LSMGO) or install power plants capable of burning LNG.

Scrubbers are increasingly seen as a messy answer. A scrubbing system will cost roughly $4 million to install, and users will still be faced with the problem of waste disposal. Owners will also feel vulnerable to later changes in regulations that might make their scrubbers non-compliant. Unlike the other two options, scrubbers will not reduce emissions of greenhouse gases, and this is an area that is likely to come under increasing regulatory scrutiny. A survey of owners by Drewry suggests that they see scrubbers as only a short-term solution.

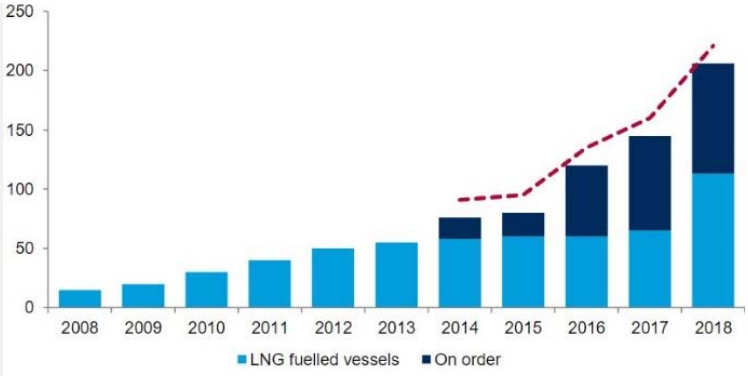
LSMGO is less problematic on those criteria and is likely to be a popular alternative in the early years, especially as an IMO-appointed consultant has reported that fears of a possible shortage have been exaggerated. If the industry wants LSMGO, it can have it. Admittedly, Bimco's own study was less optimistic, and the owners of liquefaction plants are also less confident. But even if the IMO is right, Drewry reckons that about a million barrels a day will be needed, so operators will have to pay a premium in the early years.

A carbon-neutral industry?

The maritime industry used to be hostile to environmental pressure, but going green is increasingly being seen less as a burden and more as an opportunity, not just ethically but also commercially. Major owners are now talking about the possibility of a carbon-neutral maritime industry, and that makes LNG even more attractive – aside from the fact that it will be cheaper than LSMGO. The question is whether it will be practical.

Not many ships trading today can burn LNG – mostly cruise ships, passenger carriers and LNG tankers using boil-off gas for their auxiliary engines. Large container ships are next in line, while the technology is even making inroads into the bulk-carrier and tanker markets. Of the 93 LNG-capable vessels on order, eight are dry bulk carriers. Recently, Forward Maritime Group, an affiliate of Alexander Panagopulos-controlled Arista Group, signed a letter of intent with the Chinese yard, Jiangsu Yangzijiang to build 20 LNG powered Ultramax vessels between 2020 and 2023.

Growth in number of LNG fuelled vessels



Source: Drewry Maritime Research

For the existing fleet, retrofitting is a risky option. Retrofitting a dry bulk carrier would cost about $6 million, which is a considerable gamble for owners operating in such a volatile market. Even retrofitting LNG engines in small dry bulk and tankers is not possible due to space constraint. It will not be

economical for vessels over 15 years old, and retrofits do not work well for tankers. So far, four 2011-built container vessels have gone for retrofitting.
It is likely that owners will opt for LSMGO in the early years, while newbuildings will increasingly be built with LNG-capable engines. That will also provide a breathing space while the necessary infrastructure is built.
At the moment, LNG bunkering is only possible in North America, North Europe and Northeast Asia, with facilities available in 60 ports. New sites are being prepared in Singapore, the Middle East, the Caribbean and Europe, and still more are being considered. The orders for LNG bunkering vessels are also picking up as they provide a flexible and cheaper option of providing fuel to LNG fuelled vessels. Mitsui OSK has recently ordered the largest such vessel ever, and the average size will triple from 5,000 dwt to 15,000 dwt in 2020.

More LNG projects to come live

The next big question is whether shipowners will order enough vessels, and whether there will be enough LNG to cope with demand if they do. In order to answer this question, Drewry has made a quantitative model to estimate total demand generated by LNG as bunker fuel in 2022. LNG fuel demand is estimated from total fuel consumption by major segments such as dry bulk, tankers and containers. We have assumed that some large vessels in these segments with age below 15 years will retrofit LNG engine. We have made three scenarios, low case assuming 5% of the identified fleet retrofits LNG engines, base case assumes 10%, and high case presumes 15% of the total fleet.
Adding the confirmed new LNG projects to the current capacity in the market, we estimate that annual supply will be about 72 million tonnes by 2022. Demand is lagging behind that figure, but the high case (15% of vessels retrofitting) will add an extra 10 million tonnes demand in 2022, and even the 10% base case will push demand beyond expected supply.
More LNG projects will need to come on-line and more bunkering facilities will need to be completed in a short period of time if the industry is to cope with demand for LNG bunkering.
Source: Drewry Shipping Consultants Limited
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(2) International Transport Workers' Federation, 30 April 2018

MLC enters 'new chapter' for seafarers' rights

The ITF has welcomed the positive outcome of the third meeting of the Special Tripartite Committee of the ILO (International Labour Organization) in Geneva. The STC has agreed on a new amendment to the Maritime Labour Convention (MLC) 2006 and will now be submitted to the next session of the International Labour Conference for adoption.
The amendment, when it enters into force, will address a potential contractual gap for those seafarers who unfortunately fall victim and are held captive on or off a ship as a result of an act of piracy or armed robbery against ships.
The seafarers' wages and other contractual entitlements will continue to be paid during the entire period of captivity. This will provide the families with the necessary means of survival to partially alleviate the unbelievable psychological distress they undergo whilst their loved ones are held hostages.
Dave Heindel, chair of the ITF seafarers' section, and spokesperson for the seafarers' group at the ILO session said: "This result has been a critical step forward for seafarer protections. With the agreement of the shipowners and member States, we managed to secure an amendment on wage protections, a resolution on shore leave, one on crew abandonment and one for the inland navigation sector, which will provide a way forward for our colleagues working on tugs and inland equipment. Overall, I believe the week was successful for all in the maritime sector.
"The MLC has entered a new chapter today. We have always known how challenging this would be to propose such an amendment and we are pleased that the seafarers' position has been recognized by the social partners and governments, as a necessary instrument to provide Seafarers with a greater protections."
The adoption of the amendment was not the only positive outcome of the week-long meeting in Geneva, in fact a number of important resolutions have been adopted.

The Seafarers Group and the Ship Owners Group have jointly submitted three resolutions to draw the attention and to call for action by the Governments on vital issues, like the facilitation of shore leave for seafarers and seafarer abandonment.
The Seafarers Group has also tabled a resolution concerning the decent work in the inland navigation sector, drawing the attention on the importance of internal waterways as a sustainable mode of transport for both of cargo and passengers, calling for the ILO to consider convening a sectoral meeting to discuss decent work in the inland navigation sector.
"The adoption of the resolution concerning decent work in the inland navigation sector is a very welcomed and timely addition to the positive outcome of third session of the Special Tripartite Committee", remarked Paddy Crumlin, the ITF president.
"This is the acknowledgment that the inland navigation personnel are faced with unique living and working conditions that require special consideration.
"Whilst we celebrate for the adoption of this resolution, our support and thoughts are with our inland navigation affiliates in Panama, who are fighting a bitter battle against the Canal Authority's retaliation for raising concerns about safety in the towing operations within the Canal's new locks, an action we firmly condemned"
Source: ITF
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(3) Clarksons Research, 27 April 2018

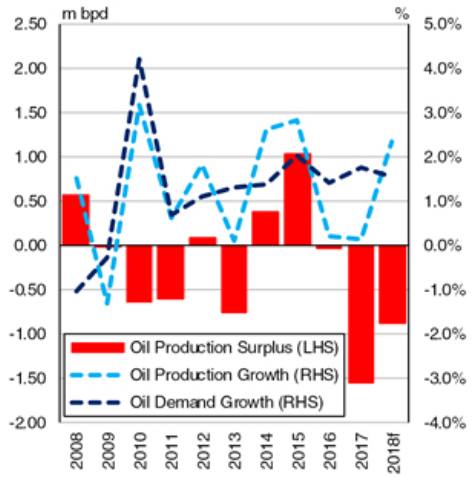
Wheels Within Wheels: Shipping And Oil Market Cycles

Shipping markets are by their nature cyclical, but anticipating the timing of market cycles is rarely easy in practice, not least because shipping's cycles are so enmeshed with other economic cycles, notably in underlying commodity markets. For example, while some of the key shipping sectors appear to be moving into the next phase of the cycle, current oil market uncertainties are complicating matters elsewhere.

Graph of the Week

Cycle After Cycle: Global Oil Supply And Demand Trends

The graph shows annual global oil supply and oil demand growth rates and the difference between annual global oil production and demand in absolute terms. Oil supply is here defined as the sum of crude oil, lease condensates, NGLs, refinery gains and other liquids (primarily biofuels) produced in a given timeframe globally. For further analysis and information on oil supply and demand trends, see the *Offshore Intelligence Monthly*, available on the *World Offshore Register*.



Source : Clarksons Research

Getting Into Gear
Oil is one of the headline global commodities and no wonder: it meets around a third of all global energy needs. From a shipping perspective, quite apart from the bunkers currently used to fuel the vast majority of ships, the seaborne oil trade (40m bpd of crude and 24m bpd of products in 2017) is the raison d'être of the oil tanker fleet of over 10,000 vessels, while the mobile offshore fleet of over 13,000 vessels is involved in producing 26m bpd of oil offshore (28% of global oil output).

In the wake of the global financial crisis, oil prices bounced back quickly and remained high. Brent averaging $103/bbl in 2010-13, as oil demand growth exceeded supply growth in most years. This supported a boom in the offshore sector and peak-of-cycle rates, for example $510-650,000/day for an ultra-deepwater floater in West Africa (80% above today's 20-year average). Tankers, however, went through a period of depressed earnings, with oil demand and trade growing at a slower rate than fleet capacity.

Oleaginous Oscillations

In 2014, the wheels came off oil prices, with world oil supply swinging into a surplus: US shale had unexpectedly added 2.1m bpd to global oil output from 2012 to 2014 (see SIW 1,311). As the graph shows, oil production exceeded demand by 0.4m bpd and 1.0m bpd in 2014 and 2015, and Brent fell to $30/bbl in early 2016. This was very challenging for offshore, but cheap oil stimulated demand, which grew by 2.0% in 2015, lifting the tanker market: VLCC spot earnings averaged $64,914/day in 2015, thrice 2013 levels. Various factors – the OPEC agreement in Q4 2016 and outages in Nigeria, Libya and Venezuela – then saw oil supply to swing back into deficit (1.6m bpd in 2017), supporting rising if volatile prices.

Forwards Or Backwards?

So far in 2018, oil has been highly volatile in the $60-$75/bbl range, partly because there are many contradictory price signals. OECD oil stocks are almost back to the five year average, the OPEC target level, and the group has floated a 2019 cuts extension. But US shale oil output has grown m-o-m by an average of 1.9% since start 2017 and total US production recently passed 1970s records. In the consensus view, oil demand is still expected to exceed supply in absolute terms in 2018. Though with supply growing more firmly than demand, narrowing the gap, a move along the cycle is not assured. Things are clearly uncertain, and wildcard political risks exist too.

So in actuality the oil market may or may not be poised for an upswing, and the meshing of shipping and commodity cycles means the latter can influence the former, for example in tankers and offshore. Shipping cycles are important but evidently not the only ones to watch. Have a nice day.

Source: Clarksons

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(4) Hellenic Shipping News, 28 April 2018/ NGO Shipbreaking Platform

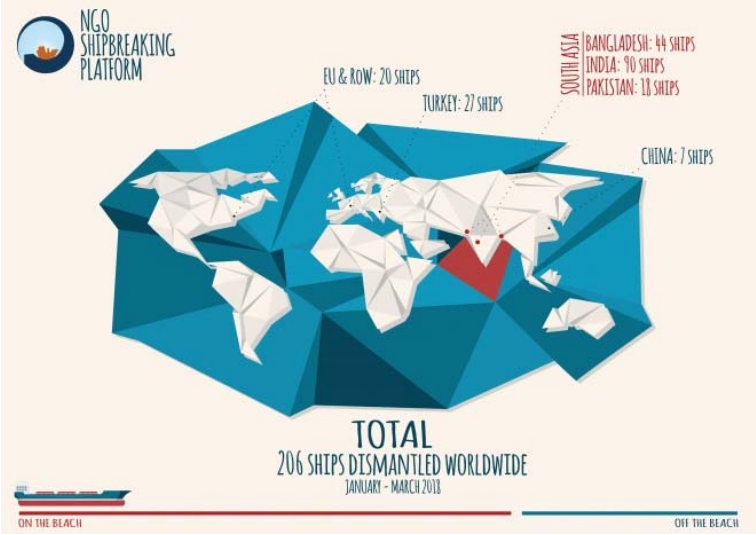
206 Ships Were Sold for Demolition During the First Quarter of 2018

There were a total of 206 ships broken in the first quarter of 2018. Of these, 152 ships were sold to the beaches of South Asia for dirty and dangerous breaking [1]. So far this year, 10 workers have lost their lives and 2 workers have been severely injured when breaking ships in Chittagong, Bangladesh. Another two workers were reported dead after an accident at a shipbreaking yard in Alang, India.

2018 has so far seen a high number of fatalities at the shipbreaking yards in South Asia. Platform sources have recorded 10 workers who have lost their lives and 2 who have been seriously injured at the shipbreaking yards in Chittagong. A fire on the South Korean Sinokor-owned PACIFIC CAPE broke out on 18 February at the Jamuna Shipbreaking yard, costing the life of a fitter man, Harun, and causing serious burn wounds to workers Moajjem and Johirul. The breaking of the tanker EKTA at Zuma Enterprise yard has been particularly hazardous: there, two fatalities have been recorded on two separate occasions. Fitter man Muhammad Khalil fell from great height while working on the EKTA on 31 March; and only three days ago, on 24 April, Shahidul Islam died when hit by a falling steel plate. According to industry sources, the EKTA was owned by the Greek company Anangel Group, and, in the last weeks prior to its breaking, the vessel was operated by Wirana, one of the world's largest cash-buyers.

Also in Bangladesh this quarter, Abul Hossain died in RA Shipbreaking yard. However, the local police and the yard owner claim that the cause of death was a heart attack. Another worker, Borhan, died in Premium Trade Corporation shipbreaking yard – in this case the yard owner is claiming that the cause of death was a road accident. The ASTUTE, which was sold for breaking by shipping company Teekay, was

beached at the Premium Trade Corporation yard at the time of the accident. Another Teekay ship, TINA, was beached at Kabir Steel when Azahar Molla died after falling from height. Abdul Mannan Juarder was hit by a falling steel plate at H.M. Steel Shipyard. Md. Babul fell down from stairs when he was on top of a ship beached at M. A. Ship Breaking Ltd and got seriously injured – he was brought to hospital, where doctors announced his death. At the same yard, M. A. Ship Breaking Ltd, Shofiqul Islam died when he was hit by an iron piece. Worker Offil Rema died of burn wounds after a fire broke out in a tank at Khawja Shipbreaking yard.



On 28 April, on World Day for Safety and Health at Work, the Platform member organisations, OSHE and YPSA, are organising a demonstration in Chittagong to protest against the serious lack of safety measures at the shipbreaking yards and to denounce the particularly high accident rate at the yards so far this year. Demonstrations by the members will also be held on 1 May to mark International Labour Day.

There were victims in Indian shipbreaking yards this quarter too. The Times of India reported that two workers lost their lives due to a toxic gas leak on plot 32 on 14 March. Earlier that month it was reported that an accident happened on plot 7, where the tower of a rig crashed onto plot 9. The extent of damage and injuries caused is unknown. The lack of transparency on the conditions at the yards in Alang is disconcerting – no record of any accident is made publically available by the GMB, the local authority regulating the industry. The Platform has on several occasions called upon the industry and authorities to put on record every single accident which happens in the Alang shipbreaking yards. Injured and dead workers should never remain hidden and go forgotten.

Ship owners continue to sell their ships to the beaching yards despite the well documented deplorable conditions. The prices offered for ships this first quarter have been high in South Asia, especially when compared to the figures of last year. Whilst a South Asian beaching yard can pay about USD 450/LDT, Turkish and Chinese yards are respectively currently paying USD 280/LDT and USD 210/LDT. This situation led to especially a significant decrease in number of vessels recycled in China, where only 7 vessels were scrapped this quarter.

South Korean and UAE ship owners have sold the most ships to South Asian yards the first quarter of 2018 with 14 beached vessels each, followed by Greek and Russian owners. Shipping companies from the United States beached 5 vessels. South Korean Sinokor is, for now, the worst corporate dumper with seven vessels beached in South Asia in 2018. South Korean H-Line Shipping is a close runner-up, with five ships sold for dirty and dangerous scrapping on the beach. Following the ban on the import of tankers to Pakistan due to major explosions that occurred in 2016 and 2017, no tankers were sold to the Gadani yards this first quarter. However, Pakistan has re-opened to the import of tankers this week.

Only 3 ships had a European flag – Belgium, Italy and Norway – when they arrived on the beach. All ships sold to the beaching yards pass via the hands of scrap-dealers, also known as cash-buyers, that often re-register and re-flag the vessel on its last voyage. In this regard, flags of convenience, in particular those that are grey- and black-listed under the Paris MoU, are used by cash-buyers to send ships to the worst breaking locations. Almost half of the ships sold to South Asia this quarter changed flag to the grey- and black-listed registries of Comoros, Niue, Palau and St. Kitts and Nevis just weeks before hitting the beach. These flags are not typically used during the operational life of ships and offer 'last voyage registration' discounts. They are grey- and black-listed due to their poor implementation of international maritime law.
[1] During the first quarter of 2018, the following number of vessels were broken in other locations: 27 in Turkey, 7 in China, 11 in Europe and 9 in the rest of the world.
Source: NGO Shipbreaking Platform
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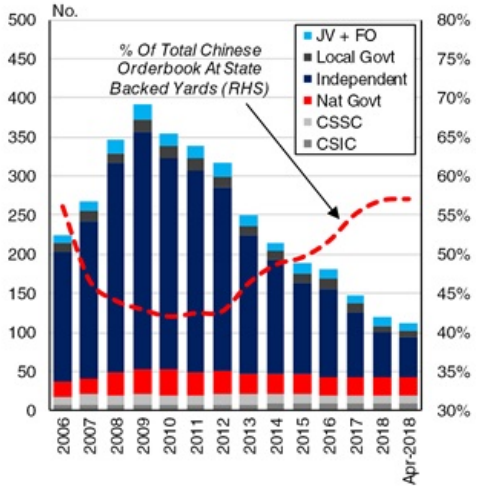
(5) Clarksons Research, 30 March 2018

Chinese Shipbuilding: State Yards Still Working Out?

Following the onset of the global financial crisis, the number of active shipyards globally has declined rapidly, reaching 350 as of start April 2018. This trend is most notable in China, where although state interests support state-backed yards, many independent yards have increasingly struggled to win orders. This month's Shipbuilding Focus takes a look at the impact this has had on Chinese shipbuilding.

Graph of the Month

The State-Backed Orderbook: Picking Up The Workload



Source : Clarksons Research

The bars on the graph show the number of 'active' Chinese yards at the start of each year and as of start April 2018, split by 'builder administration type'. The dotted line shows the share of the total Chinese orderbook accounted for by state-backed yards, in CGT terms. A wide range of orderbook data is available on the *Shipping Intelligence Network*.

The author of this feature article is George Warner. Any views or opinions presented are solely those of the author and do not necessarily represent those of the Clarksons group.

Trying To Stay Active
Since the start of 2009, the number of 'active' yards (with at least one vessel 1,000+ GT on order) in China has fallen from 391 to reach 112 at the start of April 2018, its lowest level since 2003. This has been the sharpest decline in yard numbers among the 'big 3' builder countries, with the number of active yards in Korea and Japan down from 39 to 14 and 70 to 55 respectively in the same period. However, in China the situation has varied between state-backed and other yards (split here according to the 'builder administration types' used in the Clarksons Research database). The number of active state-backed yards, comprising the CSSC and CSIC groups, and national government yards controlled by state interests, declined from 52 as of start 2009 to 44 as of start April 2018. In the same period, the number of active independent yards (which make up the majority of other yards) declined sharply from 305 to 50, while the combined number of active joint venture (JV), foreign owned (FO) and local government yards

declined from 34 to 18. As a result, state-backed yards accounted for 40% of the active yards in China as of start April 2018, the highest share since 2000, and up from 13% at the start of 2009.

State-Backed Muscle

Although total ordering at Chinese yards has declined, state-backed yards have increased their share of contracts, accounting for 59% (255 units of 6.3m CGT) of the total in 2017 in CGT terms, up from 31% in 2009. This increase has been supported by orders from state related interests. In contrast, the share of contracts at independent yards declined from 50% in 2009 to 31% (177 units of 3.4m CGT) in 2017. Meanwhile, consolidation among independent yards has increased. In 2017 two yards, Jiangsu New YZJ and New Times, accounted for 70% of CGT ordered at independent yards, down from over 30 yards in 2009.

Lifting More Of The Weight

Driven by an increasing share of orders, the proportion of the Chinese orderbook represented by state-backed yards has now returned to levels last seen in 2006. Although the overall picture in Chinese shipbuilding is now very different (with the orderbook expanding rapidly before declining by 60% since start 2009), this share has increased from 44% as of start 2009 to 57% as of start April 2018.

So, while the number of active yards in China has declined sharply, the situation varies greatly between state-backed and independent yards. Although state-backed yards have been supported by state related interests, independent yards have generally struggled, with many leaving the market altogether. With the orderbook at independent yards declining rapidly, the prominence of state-backed yards appears to have returned to levels last seen before the financial crisis.

Source: Clarkson Research Services Limited

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(6) Hellenic Shipping News, 4 May 2018/ Drewry

"Invoicing and payment processes in global container shipping: ready for disruption?"

The container liner shipping industry carries about 60% of the goods (by value) that are moved internationally by sea. To do so, container shipping lines (carriers) deploy about 5,100 containerships worldwide and provide approximately 400 scheduled liner services, most of which sail weekly.

Drewry estimates that the global container shipping industry generated transport revenues of $166 billion globally in 2017, managing the flows of 207 million twenty-foot equivalent units (teu) of ocean containers, and requiring about 1.26 billion freight invoices to be issued, verified, paid, and reconciled.

In this white paper, we will examine the current invoicing and payment processes, and compare them with an ideal global container liner shipping industry with frictionless invoice reconciliation and settlement, and immediate payments. The cost of today's process inefficiencies and lack of trust represent $34.4 billion annually.

INDUSTRY ISSUE	COST DRIVER	ANNUAL COST
Low level of automation	Cost of credit	$1.6 bn
	Transaction cost	$30.7 bn
Lack of trust	'Cash Against Documents'	
	Cost of bad debt	$2.1 bn

Source: Drewry Supply Chain Advisors

The impact of the costs and inefficiencies on each stakeholder diminishes as the stakeholder gets larger in size:

• Smaller stakeholders tend to be more reliant on spot markets, where more of the processes are manual, freight rates and supplier bases are most volatile, and most of the invoice errors occur.

• Larger stakeholders tend to rely more on long-term contracts, which allow for IT solutions to be developed that, after the initial setup cost, provide for nearly frictionless freight invoicing, checking and settlement processes.

Regardless of the size of the stakeholder, the prevailing inefficiencies in invoicing and reconciliation processes pose a significant market opportunity for technological disruptors, provided they address the underlying industry issues by:

• Offering simplified and/or automated invoicing and payment practices
• Creating sufficient trust, so that market participants can drop the antiquated practice of 'Cash Against Documents'

Key issues in invoicing and reconciliation

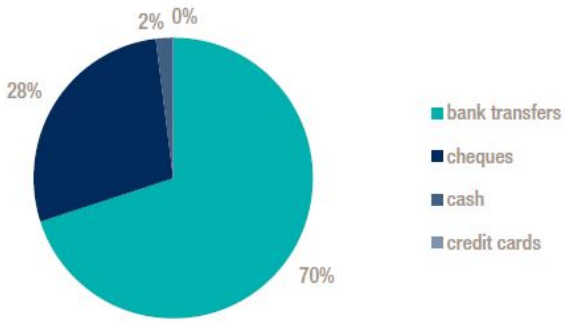
Low levels of automation

Among shippers and forwarders, the level of automation of invoice reconciliation and settlement is very low, particularly among small and medium size players. For shipping lines, invoicing is largely a manual activity, except for a few large BCO setups where self-billing and/or EDI solutions are in place.

The most used payment methods in global container shipping are bank transfers and cheques. Credit card payments are rare. There are established automated solutions for domestic freight payments in the US, but for ocean freight payments they are almost non-existent.

The use of payment platforms, where customers can apply for credit, is spreading, but is still in its infancy. Examples are: PayCargo.com, payanybiz.com, US Bank and Elavon, Cass, Data2logistics, Veem, and some 30 finance providers and banks delivering financial services on the GT Nexus platform.

Share of payment methods in global container trade (% of revenue)



Source: Drewry Supply Chain Advisors

The shipper's perspective:

For small and medium shippers, reconciliation between bookings and invoices is partly or fully manual and timeconsuming. For many, it is a costly manual process, made more onerous owing to invoicing errors. Checking the freight invoices for spot shipments manually, and printing the cheque may take between 2 and 15 minutes per invoice, if the invoice is correct. This time increases dramatically in case the invoice is incorrect. Smaller shippers, who play the spot market, experience much higher invoice error rates (up to 30%) than larger shippers working on annual contracts (between 2% and 5%). Additionally, invoices from forwarders tend to be much more accurate (95-98%) than
from shipping lines, among others, because of more standardised pricing structures and lower freight rate volatility.

For medium/large shippers, automated reconciliation or self-invoicing can decimate the process cost of invoice reconciliation. For medium size shippers, receiving and settling freight invoices via EDI (Electronic Data Interchange) can be much more efficient than manual reconciliation, but has a setup time of about three months. Once the EDI connections with shipping lines are up, shippers can receive the invoice automatically after the vessel's departure, can reconcile at the push of a button, and periodically execute consolidated payments. However, most shippers do not achieve EDI ratios above 85% on account of various vendor and overseas counterparty issues. Selfbilling, whereby the shipper periodically sends a pro-forma invoice to the supplier, which then invoices that amount, can equally decimate the process cost compared to a largely manual process.

The forwarder's perspective:

For well-organised small forwarders with rate databases, reconciliation takes about three minutes per carrier invoice. Forwarders with credit facilities can bundle several shipments onto one single payment,

and process payments, for example, once every week or 14 days. That would take about 20 minutes per payment. This is a manual process.
Medium sized forwarders, who use EDI with their suppliers, can reconcile invoices much quicker using automation.
Large forwarders will often centralise all their global payments in one location. They negotiate up to 30-45 days credit from the carriers, and group different bookings onto a single payment, for example, once per week.
For destination charges (mostly Terminal Handling Charges (THCs), documentation fees and inland haulage charges), carriers usually do not grant credit. These charges must be paid before the carrier releases the cargo (Cash Against Documents). This imposes courier costs of about $30 per BL and $25 per cheque in the US. Charges per transaction are about 20% lower in Europe, 33% lower in China and 70% lower in North-South relations, and can partly be avoided by using the online printing of BLs services that carriers usually offer for free.
The shipping line's perspective:
For carriers, the key pain point is the manual reconciliation of their invoices when they are disputed by customers. A lot of shippers use third-party auditors to check carrier invoices and reject the invoices when they do not match. The carrier's target for invoice accuracy tends to be between 92% and 95%. The most frequent causes of invoice disputes are: BL fees, demurrage and detention, freight rates and fuel surcharges (BAF or Bunker Adjustment Factor).

Level of time required, cost and automation by type and size of company

	SMALL/MEDIUM	LARGE
Shipper	Process: manual reconciliation of carrier bookings and invoices Time spent: 2 to 15 minutes, if the invoice is correct	Process: automated reconciliation or self-invoicing are very efficient Time spent: minimal, once the setup investment is made
Forwarder	Process: mainly manual reconciliation of carrier bookings and invoices Time spent: about 3 minutes per carrier invoice; 20 minutes for bundled payment Occasionally automated reconciliation of shipper bookings and invoices	Process: centralised payment process to the carriers. For automated bookings from shippers (about 60% of the total), reconciliation is done automatically using the forwarder's internal system. For manual bookings from customers (about 40% of total bookings), the reconciliation process remains cumbersome.
Carrier	Invoicing errors and invoice disputes make reconciliation time-consuming	

Source: Drewry Supply Chain Advisors

Antiquated practice: 'Cash Against Documents' payment arrangements
'Cash Against Documents', the standard payment arrangement for new commercial relationships and for destination charges, increasingly looks like an antiquated way to manage the question of trust and payment risk in container shipping.

Understanding 'Cash Against Documents' payment arrangements
The Incoterm may stipulate which party is responsible for paying the maritime transport, but for shipping lines, obtaining payment, in particular for 'collect' charges, i.e. charges that are payable by the consignee, is a major concern. Shipping lines are in a vulnerable position vis-à-vis those charges, firstly because the shipping line may not know the consignee party when accepting the booking, and secondly because collect charges are only due after the ocean transport service has been provided.
To cater for this situation, shipping lines contractually have a right ('lien') to the cargo, giving them the right to sell off the cargo to recover any unpaid invoices. However, to avoid this situation from occurring, they prefer to get payed while they have the cargo in their possession. That's why 'Cash Against Documents' payment arrangements are the norm for all new customers. 'Cash against Documents' means that the shipping line requires payment of origin charges before releasing the Bill of Lading, and of destination charges before releasing the cargo. And while shipping lines might grant credit terms to existing customers for origin charges, the same is usually not true for destination charges.
Forwarders also apply 'Cash Against Documents' payment arrangements for any new or untrusted shipper, but tend to be more generous in their credit arrangements towards their trusted customers than

shipping lines. Our research has shown that shipping lines have on average about 25 days of trade receivables days outstanding, while large forwarders have 50 days or more.

The case against 'Cash Against Documents'

The 'Cash Against Documents' payment arrangements cause extensive manual verification of 'hard copy' payment and shipping documents, and are responsible for a substantial part of the $30bn in transaction cost inefficiencies that we identified.

The underlying industry issue which causes 'Cash against Documents' payment arrangements, is the lack of trust between providers and their customers in the context of global and ever changing trading arrangements. As justified as this concern may have been historically, in modern times this can be addressed: third party financial services organisations have started offering innovative technological solutions whereby they provide payment guarantees at a much lower cost that the current process inefficiency.

Adopting those technological solutions would have a positive impact on the cost structure for providers (shipping lines and freight forwarders alike), and their end customers, by unlocking opportunities for removing manual interventions in the payments process flow, and the costly courier charges that are involved with exchanging 'hard copy' payment and shipping documents.

Managing risk for new and unknown customers

Bankruptcies and bad debt have a different impact depending which part of the supply chain is affected. In general, it affects smaller companies more than larger ones. Bad debt represents 0.5% of revenue for large sipping lines, going up to 1% for small ones. Among forwarders, it ranges between 0.2% for large forwarders up to 2-3% for small and medium size ones.

Risk assessment of shipper bankruptcies on providers

Customer	Provider	
	Forwarder	Shipping line
Shipper	Big issue for small forwarders	Low

Source: Drewry Supply Chain Advisors

Cost of shipper bankruptcies

To shipping lines

If shippers go bankrupt, then they might not pay the freight to the shipping line. According to a top three shipping line, the cost of bad debt (from shippers and forwarders) is about 0.5% of revenue. Some of the 'bad debt' appears to be part of disputed invoices where the shipper says that the shipping line invoice is wrong.

What shipping lines do about it:

— Shipping lines give small shippers and small forwarders either no or little credit.

— For many shippers without shipping line credit, the cargo is delivered only after receipt of payment. Exporters generally pay the shipping line before the cargo is delivered to the consignee.

— Large shipping lines check a shipper's credit worthiness with Dun & Bradstreet, and might not do business with them if they do not fulfil the requirements.

— If the shipper goes bankrupt, the shipping line has a right of 'lien' contractually and can sell off the cargo to recover the unpaid payment of the shipper.

To forwarders

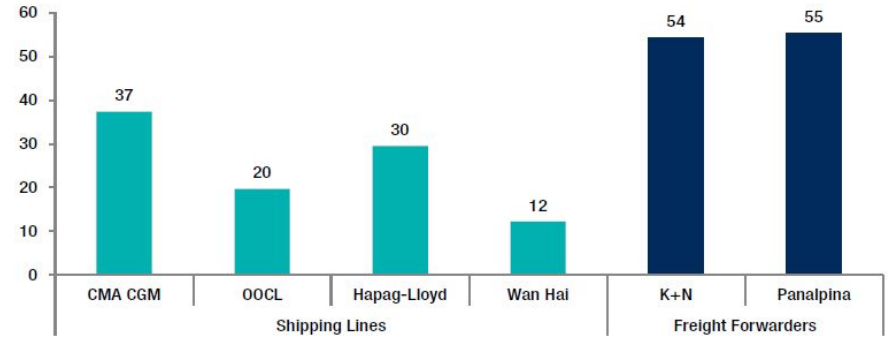
Forwarders risk not getting paid when a shipper client goes bankrupt. Some small forwarders spend 2-3% of receivables on insuring against bad debt. Medium forwarders appear to have quite a lower cost of bad debt and bankruptcies of customers (estimated loss of revenue of up to 2%). Large forwarders have a low cost of bad debt – about 0.2% according to two major forwarders. Large shippers (who tend to be financially strong) tend to use large forwarders (or shipping lines direct), whereas smaller shippers tend to use small forwarders.

What forwarders do about it:

— Credit checking and onboarding new customers is quite important for forwarders, and can be expensive (for a new customer, it can take a small forwarder five to seven man-days of work to call their vendors and credit check them).

— Forwarders request one-off customers to pay upfront (no credit).
— Large forwarders check with Dun & Bradstreet that the shipper is creditworthy and might not do business with them if they are not.
— All forwarders monitor receivables and late payments closely.
— Some forwarders take insurance against bad debt.

Trade receivables (days outstanding) for a selection of Shipping Lines and Freight Forwarders, based on 2015 balance sheets



Source: Drewry Supply Chain Advisors

Cost of shipping line bankruptcies

Risk assessment of shipping line bankruptcies on customers

Provider	Customer	
	Forwarder	Shipper
Shipping line	Rare but potentially big impact for all forwarders	Big impact but rare, partially mitigated by forwarders

Source: Drewry Supply Chain Advisors

Shipping line bankruptcies are rare. Roughly one large shipping line goes bankrupt every 20 years and one small shipping line every five to ten years. When a shipping line goes bankrupt (such as Hanjin Shipping in 2016), the impact on shippers and forwarders can be very severe: usually one of them will have to pay a second time for the ocean freight, or spend money to correct the problems (re-stuffing of containers). Sometimes, forwarders can recharge the additional costs to the shipper, but this can be commercially difficult.

<u>to forwarders</u>

The Hanjin bankruptcy, being the latest example of a large shipping line bankruptcy, had widely varying impact depending on the forwarder: one large forwarder told us that it cost them several millions of dollars, a smaller forwarder mentioned losing about 10% of their annual revenue which they were unable to recover extra costs from their customers. Other, more fortunate forwarders said that the bankruptcy did not cost them anything, except the need to find alternative shipping lines and to negotiate new contracts.
What forwarders do about it:
— Forwarders are more careful selecting which shipping lines they use; some prefer larger shipping lines.
— Forwarders have in their customer contracts, terms and conditions that limit their liability in case of shipping lines not performing, even though commercially, customers may resent having to ‘pay twice’.
— Some forwarders and shippers have cargo insurance, which covers the risk of goods abandoned by bankrupt shipping lines.

<u>to shippers</u>

Also for shippers, bankruptcies of shipping lines can have severe cost implications. Shippers have to pay a second time for the ocean freight or spend money on extra terminal charges, cargo transloading, air freight and road freight. There can also be huge operational and commercial problems if goods do not arrive at destination, as planned (such as dissatisfied customers, lack of inventory and lost sales).
What shippers do about it:
— Shippers increasingly run credit ratings on their shipping lines (e.g. the Drewry “Z score”).

— Shippers follow the trade news and avoid shipping lines reported to be 'struggling'.
— Some forwarders and shippers have cargo insurance, which covers the risk of goods abandoned by bankrupt shipping lines.

Cost of forwarder bankruptcies

Risk assessment of forwarder bankruptcies on customers and providers

Customer	Provider	
	Forwarder	Shipping line
Forwarder	n/a	Low
Shipper	Low	n/a

Source: Drewry Supply Chain Advisors

to shippers

For shippers, bankruptcies of forwarders are quite rare and are not seen as a risk. In recent years, shippers have not experienced any large forwarder bankruptcies or associated costs. Also the cost of forwarder bankruptcies associated to shippers is relatively low and centres around having to pay the freight twice.

What shippers do about it:

— Shippers generally do not take measures against the risk of forwarder bankruptcies.
— One medium sized shipper said that it requires a bank guarantee from every forwarder. However this is an expensive solution and certainly not the norm in the industry.

to shipping lines

If a forwarder goes bankrupt, they might not pay the freight to the shipping line. For large ocean shipping lines, the cost of bad debt (from shippers and forwarders) is about 0.5% of revenue; for a smaller shipping line, it is about 1%. As a note of caution, these amounts will include some 'bad debt' which in fact are disputed invoices.

What shipping lines do about it:

— Large shipping lines check with Dun & Bradstreet that the forwarder is creditworthy and do not do business with them if they are not.
— Shipping lines give small forwarders either no or little credit.
— 'Cash against Documents' practices applied to forwarders without credit, limit the risk to shipping lines
— If the forwarder goes bankrupt, the shipping line contractually has the right to sell off the cargo to recover the unpaid payment of the forwarder.

Key numbers regarding payment and credit practices in global container shipping

1. Transaction cost for payments and reconciliation	**$30.7 bn**
a. Number of freight-related invoices issued	2.16 billion
b. Estimated cost per transaction of couriers and cheques for payment in the US (incl. labour)	$51 per payment
c. Estimated cost per transaction of freight payment platforms (excl. labour)	$2
d. Estimated time of checking invoices for small and large shippers.	Small shippers: between 2 and 15 minutes per invoice (longer in case of invoice errors)
	Large shippers (EDI/Self Billing): between 2 and 15 minutes for 10 invoices
2. Cost of bad debt	**$2.1 bn**
a. Cost of bad debt for shipping lines	0.6% of sales (equivalent to $1.0bn)
b. Cost of bad debt for forwarders and NVOCCs	1.3% of sales (equivalent to $1.1bn)
3. Cost of credit	**$1.6 bn**
c. Average amount of receivables for a shipping line	25 days
d. Average amount of receivables for a forwarder or NVOCC	50 days
e. Estimated average number of credit days (if any) obtained by small and large shippers	Small shippers: 10 days
	Large shippers: 40 days

Source: Drewry Supply Chain Advisors

Conclusions and Recommendations

What the market needs – opportunities for disruptors

This white paper has identified widespread inefficiencies, large costs and pain points due to current processes, lack of automation and inconsistencies in data across the maritime transport chain. In particular, we estimated that the total cost of invoicing and payment processes to the industry players (shipping lines, forwarders and NVOCC, and shippers) amounts to $34.4 billion a year and that the smaller players are most affected by these inefficiencies.

There must be a better way, and in Drewry's opinion, new technologies aimed at resolving some of these problems will form part of the solution.

In order to address these pain points, we believe that technological solutions are required that:

• Support the simplification and/or automation of invoicing and payment practices, especially for small and medium sized shippers and forwarders

• Create trust or provide payment guarantees between stakeholders, so that 'Cash Against Documents' practices are no longer required

• Streamline and solidify the end-to-end workflows of quotation requests, quotations, booking requests, booking confirmations, fulfilment of the transport service as booked, in alignment with invoicing and payments across the transport chain without errors and re-work.

Types of solutions needed

In Drewry's opinion, large players within the container shipping industry can push to simplify and standardise some of these complex processes, but recent or new third parties have a unique opportunity to develop common platforms or technology-based services which shipping lines or forwarders cannot provide on their own.

Some of the types of solutions which seem within reach or under development are:

• Online marketplaces should simplify and automate invoicing and streamline and solidify the workflows of booking requests and booking confirmations for spot shipments.

• Technology-driven providers should provide platforms to reconcile bookings, invoices and payments automatically, linking all stakeholders. To reduce the number of disputes, this should include not only the sea freight but also audits and payment of surcharges, detention and demurrage.

• The automated reconciliation and payment can be a key benefit for checking ancillaries, surcharges, inland haulage, D&D, Invoices/PO references match, based on near real time shipment tracking and cargo monitoring. Indeed part of the issue with invoice auditing lies in these additional amounts which may be cumbersome to check, and labour intensive.

• Pre-requisite: Efficient procurement practice and tariff management

• Financial or insurance companies or other companies working for the shipper or the NVOCC should provide automated payment guarantees to the providers and create trust, removing the need for 'cash against documents'. They could also provide cheaper and ideally automated forms of payments for shippers (linked to a system where the price has already been authorised at the time of booking or before booking).

• Financial firms could collect the freight payment from many small shippers more efficiently than providers and then
pay the providers, reducing the cost of collecting payables and bypassing complex payment processes.

• A centralised shipping capacity platform operated jointly by shipping lines or by an independent party (similar to the airline capacity platforms) and updated in real time, should one day provide full access and real-time bookings to customers to all ships, avoiding ghost bookings or roll-overs. Pricing would probably still need to be determined by the provider (shipping lines or forwarder) and subject to rules agreed directly between the customer and the provider.

• Financial companies or rate audit firms working for the shipper or NVOCC should increasingly provide instant payment to the providers, reducing long or late settlement to (often) financially stretched providers.

There will be other technology solutions which Drewry has not envisaged and which innovative start-ups will bring to the market, but the space for disruption in the booking, freight invoicing and freight payment practices is wide open.

Source: Drewry

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