



Navigating the future

Changing business models
Shipping insights

November 2018

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Market overview



The economy around merchant shipping can be best described as a cyclical market of expected volatility occurring in it. The shipping cycle occurs in mainly four stages.



Stage one:

The trough

The first stage is the trough, signs of which are clear signs of capacity surplus, freight rates falling to the operating costs of the least-efficient ships, which move into lay-up and financial pressures building up due to negative cash flows from low freight rates.



Stage two:

Recovery

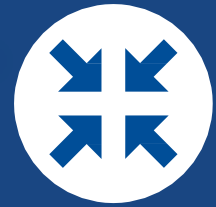
Freight rates move above operating costs and laid up tonnage falls, with market sentiment remaining uncertain but confidence gradually growing.



Stage three:

Peak

At this point freight rates rise, two to three times above operating costs. This eventually leads to over-trading and second hand prices moving above their replacement costs with new building orders increasing.



Stage four:

Collapse

In this final stage, supply overtakes demand with the market moving into its collapse phase and freight rates falling precipitously.

During 1958 to 1964 and 1982 to 1987 shipping underwent two major crises severely affecting the industry. The collapse lasted six and five years, respectively. The industry experienced a crisis where the collapse took eight years until freight rates began a recovery.

This industry is currently in a state of recovery with rising freight rates. This development was kicked off by the Hanjin bankruptcy in September 2017, which was unexpected as the freight rates were in a process of slow recovery.

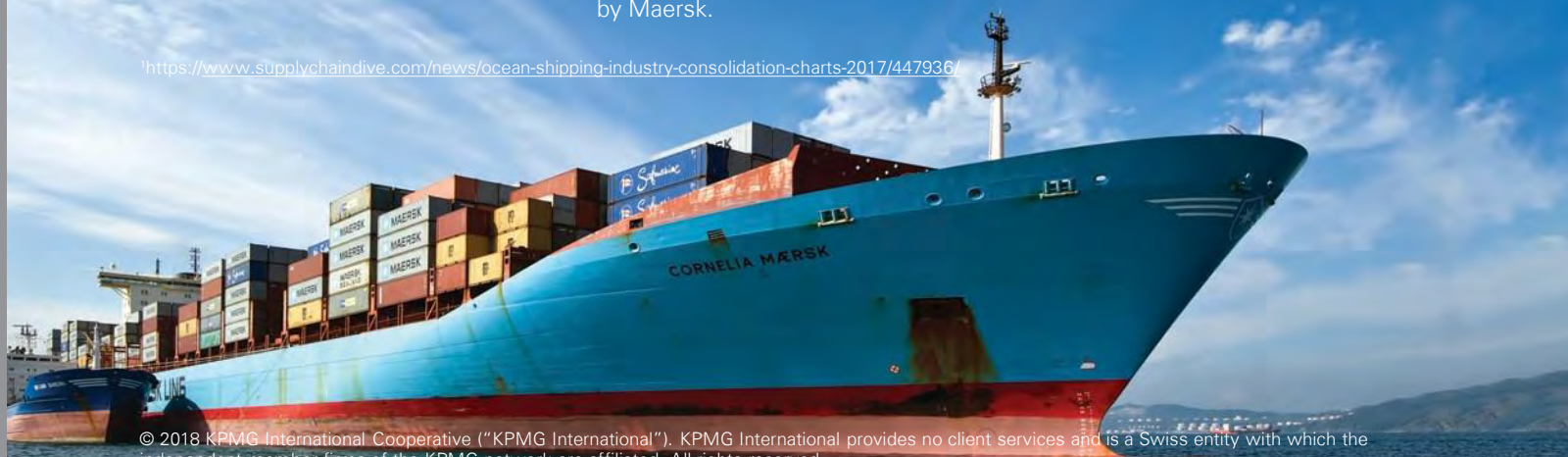
As a consequence, customers of the shipping companies were in such need to secure continuity of service for their products that they accepted higher freight rates.

Also coming into play were the new mergers, one example being the Japanese companies under the new brand ONE, a joint venture between Nippon Yusen Kaisha, Mitsui O.S.K. Lines and K Line, being the biggest liner companies of Japan with a market share of 6.7 percent, with a relocation to Singapore in 2017¹. Another factor was the takeover of Hamburg Sued by Maersk.

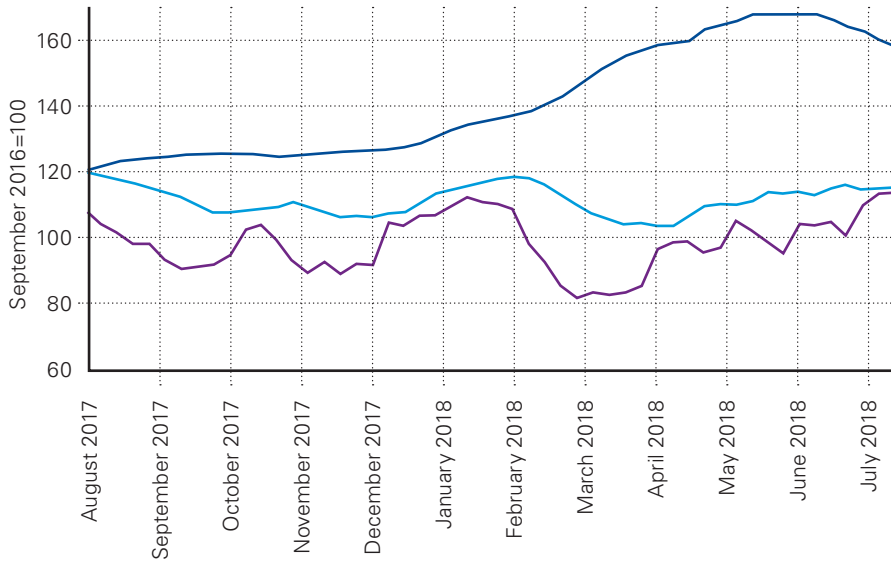
These events played an integral part in driving up the freight rates, as the shippers had to accept the demands of the major shipping companies including, APM-Maersk, Mediterranean Shipping, COSCO Group, CMA CGM Group and Hapag-Lloyd.

These five companies now comprise 60 percent of the market, consequently leading to an optimistic mindset throughout the shipping industry that business may recover to high profitability levels that also reflect the global economy.

¹<https://www.supplychaindive.com/news/ocean-shipping-industry-consolidation-charts-2017/447936/>



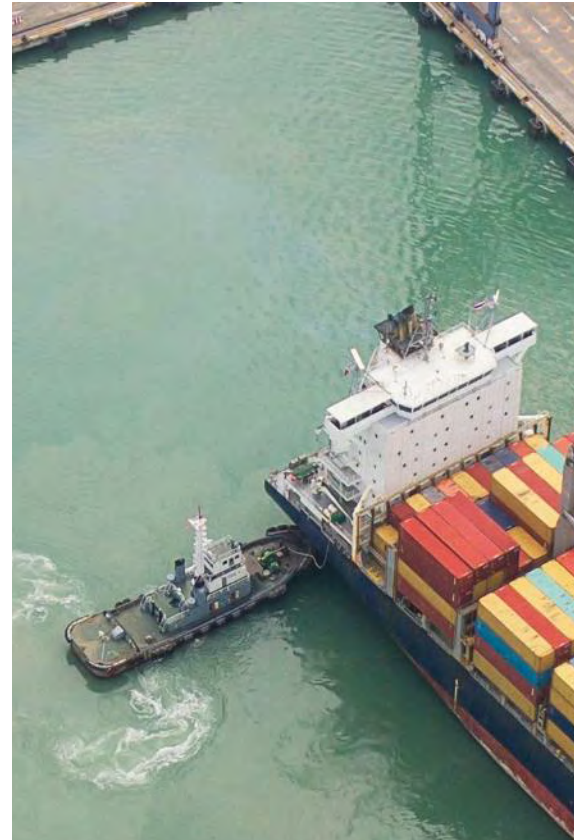
Container freight and time charter rates




Key
 — Container Time Charter Index (New ConTex)
 — Shanghai (Export) Containerized Freight Index (SCFI)
 — China (Export) Containerized Freight Index

There has been a steady increase in the development of both freight and time charter rates. There has been a tremendous increase in the Container time charter rates--58 percent over the course of almost 2 years, from September 2016 until August 2018. The freight rates, according to the Shanghai and China freight indexes, these have risen by 14 percent and 17 percent over the same timeline.

Looking at the two figures above illustrating the shipping market cycle, the shipping industry appears to be in a dangerous position, as the trend in freight rates can be viewed as a cause for speculators to create a new bubble by excessively ordering new vessels in anticipation of an acute market upswing. This would potentially lead to a premature oversupply of vessels in the market, effectively stagnating the recovery and consequently leading to a decrease in the freight and time charter rates.





> 58%

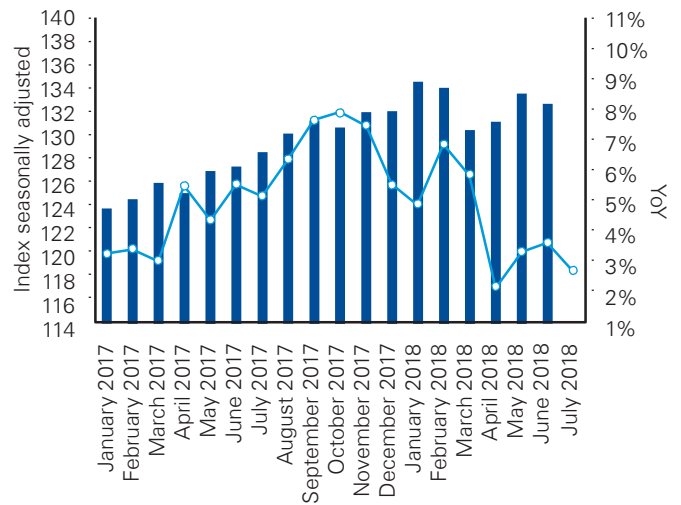
Container time charter rates have **increased dramatically by 58 percent over the course of almost two years**, starting from September 2016 until August 2018.





Container throughput

Container throughput index

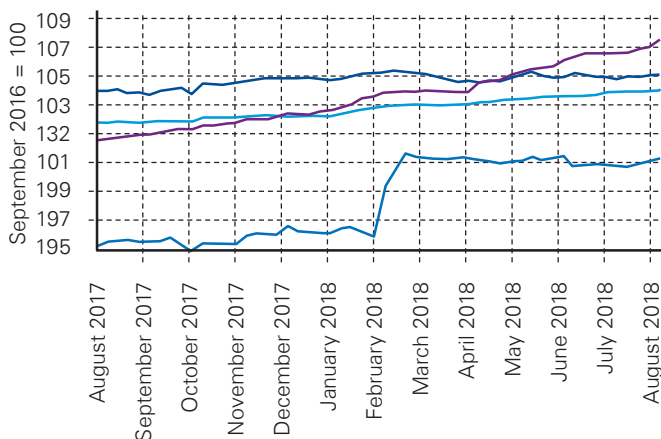


Moving on we now look at the container throughput index. The figures represent what we expect from the figure above regarding the freight and time charter rates. The general upswing in the world economy has consequently led to a greater movement of goods and services. The increase in container throughput supports this statement. Potentially adding to higher container throughput is the continuous expansion of DP World, Port of Singapore Authority (PSA) and Hutchinson Ports, each holding private terminals in major ports across the globe. This development in port logistics consequently leads to a more-efficient global network of container throughput as the systems become more homogenous, leading to more efficiency on a global scale.

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Fleet capacity

Total fleet capacity in DWT



Key

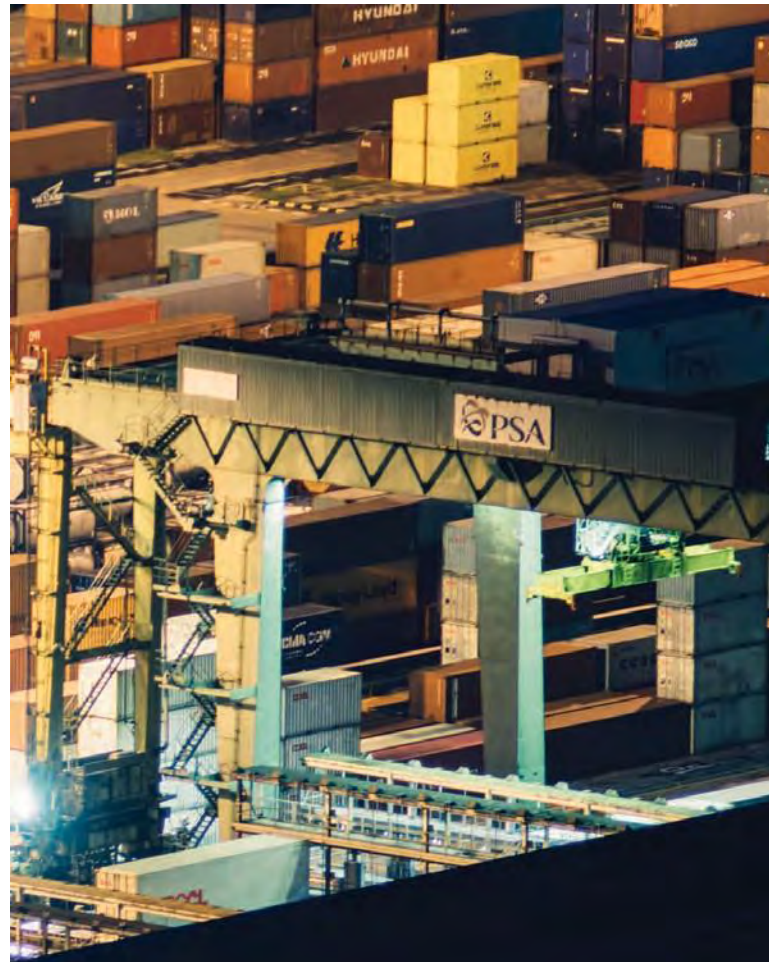
- Dry Bulk Carrier
- Containerships
- Crude Oil Tankers
- Oil Product Tankers

Looking at the total fleet capacity, which currently consists of around 50,000 vessels with a combined volume of around 18 million TEUs², there is a steady increase in the dry bulk carrier and the crude oil tanker capacity. A significant increase in the containership capacity can also be observed. This has most likely occurred due to the growing utilization of ultra large container ships (ULCS) by multiple shipping companies. Most notably, though, there is a rapid jump in oil product tanker capacity that is likely due to increased interest in oil imports by China, which is becoming the largest importer of oil, exceeding the United States in April 2017. This is due to the growing oil and liquid fuel consumption, a build-up in strategic reserves and a refinery sector reform which now allows independent refiners to import quotas of crude oil.³

²<http://stats.unctad.org/handbook/MaritimeTransport/MerchantFleet.html>

³<https://oilprice.com/Energy/Crude-Oil/Chinas-Becomes-Worlds-Next-Top-Oil-Importer.html>

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The industry's current challenge

The traditional model of the shipping industry can be viewed as a port-to-port operation, with the distinguishing service feature being the quality in which it is provided.

Indeed, first steps have been undertaken by Maersk and Hapag-Lloyd in integrating a new customer-to-customer strategy^{4 5}, gradually abandoning the outdated strategy executed by multiple members of the industry merely concentrating on ports. In addition, the shipping industry has always only reacted to demand, to which it then supplied a service. This in itself is not wrong, it merely has to be adjusted to the more-efficient industries with which it has economic interdependencies.

Due to the speed in which changes are introduced, be it economical or legislative, such passive operational behavior is largely inefficient, if not dangerous in the long term. As the current business models adoption and implementation towards change is slow, further change may already have been introduced while the company remains busy adapting to current circumstances.

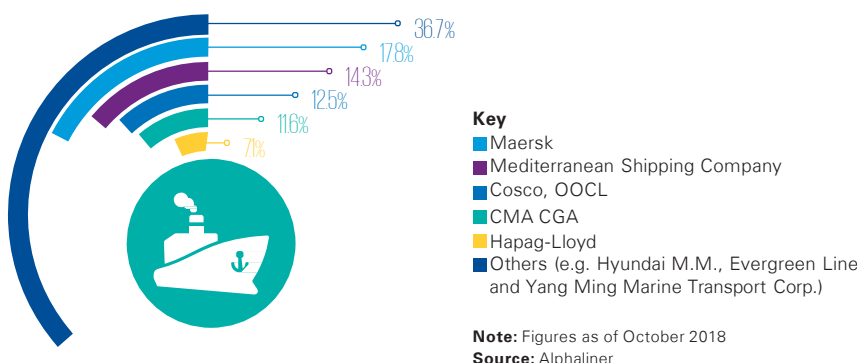
Studying the current state of the shipping industry it is impossible to miss the changes taking place in it.

Major companies have decided to acquire close competitors in order to drive growth and increase market share significantly.

Major players such as Maersk, acquiring Hamburg Sued, and Cosco Shipping Holdings Co., acquiring Orient Overseas, are just two examples of the ongoing consolidation in the shipping market. This leads to a market situation that can be described as an oligopoly because now over 60 percent of the global shipping market is being held by only seven liner companies.

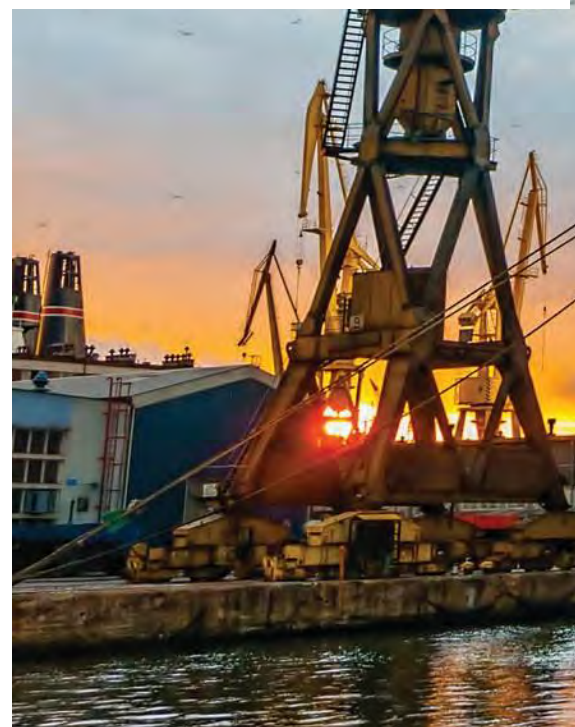
Tipping scale

Top 5 container lines control more than half of the global market



⁴<https://www.dvz.de/rubriken/see/detail/news/maersk-integriert-damco-in-maersk-line.html>

⁵<https://www.hapag-lloyd.com/en/products/e-business/mobile.html>



The idea behind these developments is the aim to acquire a better position in future freight rate negotiations and increase profitability. This has led to the use of so-called mammoth ships, which are becoming increasingly popular since companies can move more cargo on a single journey, benefiting from higher rates and lower costs⁶. A recent example is the Maersk order of 20 Mammoth ships from Daewoo, these vessels are 59 meters wide 400 meters long and able to carry more than 18,000 TEUs⁷.

With this radical increase in ship sizes and the ongoing dependency on bigger vessels by the big liner companies, problems are emerging.

One apparent issue is that only a few ports are able to service these ships. Another challenge is that these ocean giants are not able to pass through the Panama Canal, which only allows a maximum beam of 50 meters⁸ while almost all new ships exceed these measurements.

In contrast to the overall development of digitalization in the business world, the maritime industry remains very traditional. Processes are still mostly carried out manually, increasing costs and reducing efficiency. Adding to this issue is the fact that updates about the ship's immediate position and the cargo's progress are not carried out fully automatically. Approaches are currently developed by start-ups.

Digitalization in the maritime industry is moving slowly due to each company in the market searching for its own solution and failing to drive new synergies across the supply chain. Indeed the alliances such as 'The Alliance,' 'Ocean Alliance' and '2M Alliance' played a pivotal role in negotiating the higher freight rates and better services, but there has been little cooperation regarding other current challenges. Thus new concepts are not being adapted with the appropriate urgency, resulting in an increasing gap compared to other industries with which shipping shares economic interdependencies.

⁶<https://www.bloomberg.com/news/articles/2017-08-15/global-shipping-industry-bounces-back-from-its-lehman-moment>

⁷<http://www.seanews.com.tr/mammoth-ships-from-maersk-they-carry-a-lot/53795/>

⁸<https://www.pancanal.com/eng/op/notices/2018/N01-2018.pdf>





Digitalization

Digitalization, in business, refers to the ongoing improvement and transformation of business operations, functions, models and processes, leading to a more-efficient exchange of information within and among companies adopting this transformation.

This is done by leveraging digital technologies, enabling a broader use of digitized data and thus improving general efficiency and performance, as well as tapping into new revenue streams.¹⁰ Nowadays most industries, as well as the companies within them, have begun to adopt the changes and implement them into their work. In contrast, the maritime industry is one of the few left using complex paper-based systems, which is no longer a contemporary approach for success in the 21st century.

What can happen to such a vital, but not sufficiently digitalized, global industry was made apparent by the sudden Hanjin bankruptcy, during which there was no ability to locate more than half a million customer-owned containers.¹¹ The result was the emergence of multiple startups with the aim of eliminating this fundamental flaw of not being able to locate shipments.

One example of such a startup is ClearMetal, which is being funded by PSA unboxEd, a corporate venture capitalist arm of the Port of Singapore Authority (PSA) International.¹²

Further startups of note are; Marine Data Systems, Searoutes.com, Plank Aerosystems, Shipamax, SailRouter, Marine Robotics and Seagull Software.

Another flaw in the shipping industry is the mere reaction to demand and not its anticipation. For example, as a study from NAPA claims, ships spend 40 percent of their time in port, due to a “first come – first served” slot allocation system. Additionally, ships sail 40 percent of their time at sea in ballast because of a lack of suitable cargo, resulting in ships using only 36 percent of their time creating value for their owners. Thus representing a tremendous inefficiency.¹³ A possible solution is the analysis of data. A field with immense potential for the shipping industry profitability. This is being taken on by a start-up named Portcast, a program founded in Singapore in 2017. Its purpose is predicting profitable shipping routes in the near future, effectively identifying demand before it emerges using artificial intelligence and machine learning.

Another field where urgency is required is cyber security, best exemplified with the hacking of Maersk systems on the 27 June 2017.

For about 10 days, computer systems were out of order and processes had to be carried out with a pen and paper, causing damages of up to US\$300 million in the process¹⁴. This had a significant global impact since Maersk is responsible for transporting 20 percent of world trade.¹⁵

This occurrence can be viewed as a catalyst for Maersk’s ambitions in the field of blockchain. Blockchain is a technology where the data and systems are not centralized on a server. Information is shared among multiple computers which compile a secure network requiring each to be individually hacked in order to gain access to the whole system. Imagine having to hack 50,000 computers individually to achieve any objective, such as acquiring customer information or discovering the most-lucrative trade routes.

This technological possibility has led to Maersk’s collaboration with IBM to create a global blockchain trade platform, going by the name TradeLens, which went live with the early adopter program on 9 August 2018.

This platform aims to enable participants to digitalize and exchange trade documentation, anything from packing lists, shipping instructions to bill of landings and certificates of origin, all made available to the whole shipping industry.¹⁶ This can create a vast shared network of security and transparency in which the shipping industry can safely transition into the modern digital age, with a minimum of risk for its assets.

Another flaw in the shipping industry is the mere reaction to demand and not its anticipation.

In addition, there is also the subject of autonomous ships, and even though industry experts state that autonomous box ships will not be a reality for a few more years, Rolls-Royce begs to differ. They have already envisioned a remotely operated local vessel being introduced in 2020, leading through a 15-year process and culminating in an autonomous-unmanned ocean-going ship by 2035.¹⁷



Another flaw in the shipping industry is the mere reaction to demand rather than its anticipation. For example, as a study from NAPA claims, **ships spend 40 percent of their time in port, due to a “first come – first served” slot allocation system.**

⁹<https://freighthub.com/en/blog/shipping-alliances-mean/>

¹⁰<https://www.i-scoop.eu/digitization-digitalization-digital-transformation-disruption/>

¹¹<https://www.ocean-insights.com/business-news/lessons-learned-hanjin-collapse-visibility-key-success/>

¹²<https://www.straitstimes.com/business/companies-markets/psa-international-unveils-s20-million-incubator-programme-for-start-ups>

¹³https://www.trafi.fi/filebank/a/1460530147/685a20debbf9ed1f0f6d3f394603b376/20359-FINAL_Sundell_julkaisuversio.pdf

¹⁴<http://www.spiegel.de/netzwelt/netzpolitik/moller-m-rsk-cyberangriff-kostet-reederei-hunderte-millionen-a-1163111.html>

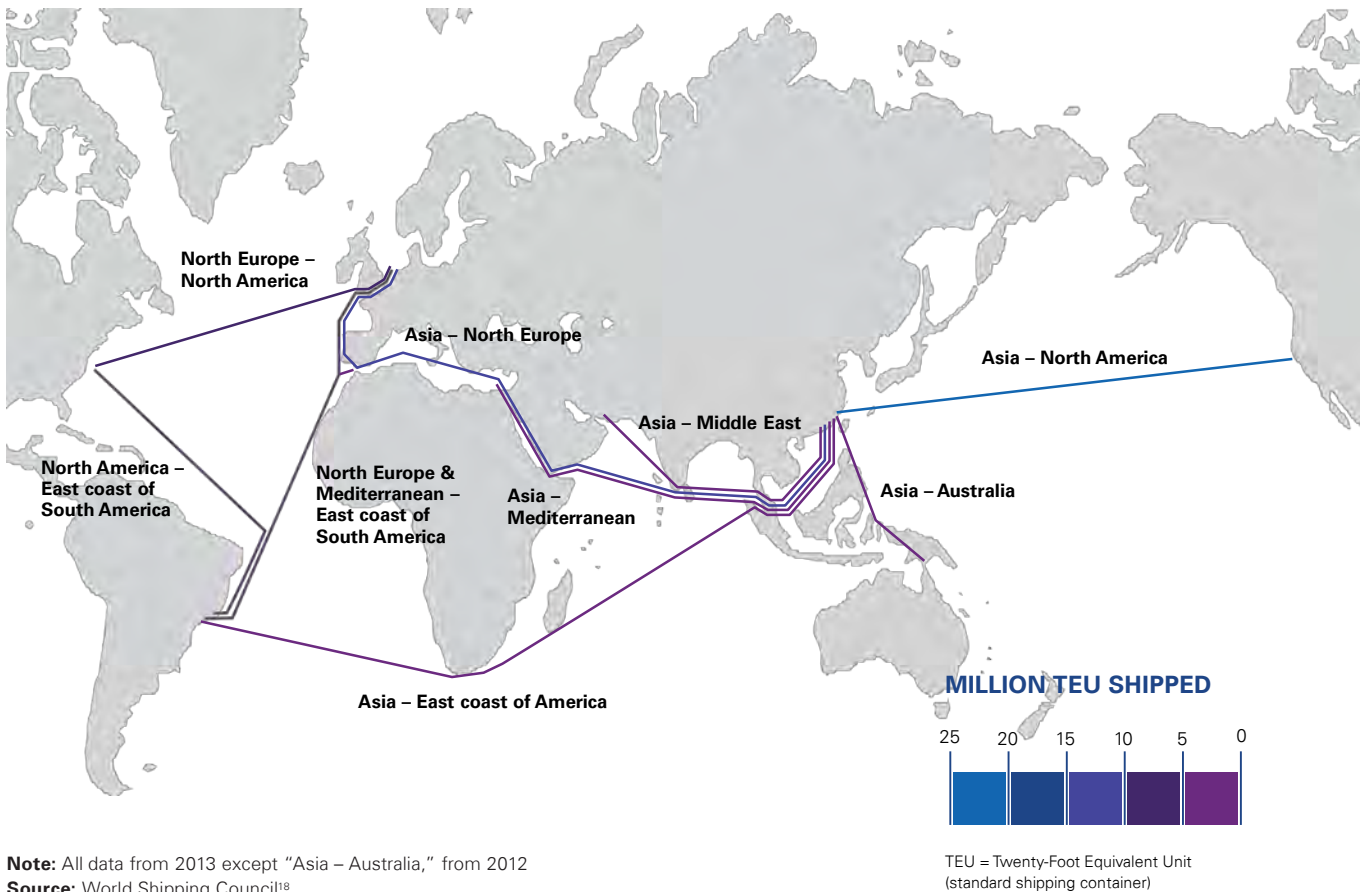
¹⁵<https://www.heise.de/newsticker/meldung/Nach-NotPetya-Angriff-Weltkonzern-Maersk-arbeitete-zehn-Tage-lang-analog-3952112.html>

¹⁶<https://www.gtreview.com/news/fintech/maersk-and-ibm-go-live-with-blockchain-supply-chain-platform-tradelens/>

¹⁷<https://www.rolls-royce.com/-/media/Files/R/Rolls-Royce/documents/customers/marine/ship-intel/rr-ship-intel-aawa-8pg.pdf>

Development of global trade and its impact on the shipping industry

Shipping and global trade Top container-ship trade routes



Note: All data from 2013 except "Asia - Australia," from 2012
Source: World Shipping Council¹⁸

¹⁸<https://geopoliticalfutures.com/top-container-ship-trade-routes/>



The ECAs now account for 33 percent of shipping and offshore-related debt finance, from a mere 10 percent before the crisis.²²

Global trade and shipping can be viewed as a mirror image of each other.

When one is doing well, the other usually is too. We can follow global trade's development by looking at the global economic center of gravity. The economic center of gravity is annually calculated with weighting countries by their Gross domestic product (GDP), generating a center of gravity on a global map and thus signaling the most potent economic region. Looking at the center of gravity's path, KPMG analysis observes a shift from Europe to Asia during the years 2000-2010, where projections for 2025 see the point firmly situated in China.¹⁹

This development has also been present in shipping and according to data from the UNCTAD 61 percent of goods delivered by sea are unloaded in Asian seaports, roughly 6.29 billion metric tons. Additionally to that around 40 percent of goods delivered by sea are loaded in Asian seaports.²⁰ Asia's largest liner company Cosco Shipping Holdings Co. also solidified its position as one of the world's largest liner companies by purchasing Orient Overseas International Ltd, increasing its market share to about 12 percent, third to only Maersk and Mediterranean Shipping.²¹

This example further highlights the emerging significance Asian companies exhibit on a global scale.

Adding further weight to the increasing Asian, specifically Chinese, influence in shipping is the provision of finance in which the Asian export credit agencies (ECAs) have become the main source of stable financing for the shipping companies. The ECAs now account for 33 percent of shipping and offshore-related debt finance, from a mere 10 percent before the crisis.²²

Even the great container lines have begun to engage with the ECA's among others Maersk received a lease of \$500 million from such an Asian entity, as well as the Bank of Communications providing \$500 million to Hapag-Lloyd, refinancing its Ultra Large Container Ships (ULCS) and the Export Import Bank of China (CEXIM) provided finance worth of up to \$1 billion to CMA CGM.²³

On further note, looking at the port operating business, a big emphasis must be placed on the market share in this sector by companies from Asia and the Middle East.

In fact over 40 percent of the market share is held by PSA International (Singapore), China Cosco Shipping (China), Hutchison Port Holdings (Hong Kong) and DP World (Dubai).²⁴ Looking at the locations of the economic hub terminals, one can see that the largest container ports to date are all located in Asia and Dubai, adding further emphasis to the impending and ongoing shift of global trade to the east.²⁵

Further moving global trade to the east is the willingness of the ports under the control of Asian companies to modernize and further expand their facilities, enabling them to service the upcoming wave of Ultra Large Container Vessels (ULCV/S) which are currently being utilized by most of the major shipping companies. At this current stage regarding both existing and ordered ultra-large container ships (ULCV/S), considering their 20 foot equivalent units (TEU), they already amount to almost half of the currently existing capacities (TEU's) available for shippers,²⁶ thus exerting additional pressure on port authorities to modernize their facilities in order to service the vessels.

¹⁹<https://globaltrends2030.files.wordpress.com/2012/07/nic-blog-mgi-shifting-economic-center-of-gravity.pdf>

²⁰<http://stats.unctad.org/handbook/MaritimeTransport/WorldSeaborneTrade.html>

²¹<https://www.bloomberg.com/news/articles/2017-08-15/global-shipping-industry-bounces-back-from-its-lehman-moment>

²²<https://home.kpmg.com/gr/en/home/insights/2016/06/funding-shipping-industry-obstacles-alternatives.html>

²³https://www.joc.com/maritime-news/ships-shipbuilding/ship-financing-cusp-major-change_20171018.html

²⁴<https://www.statista.com/statistics/325934/major-global-marine-terminal-operators/>

²⁵<https://www.statista.com/statistics/264171/turnover-volume-of-the-largest-container-ports-worldwide/>

²⁶<https://www.maritime-executive.com/editorials/snapshot-the-world-s-ultra-large-container-ship-fleet#gs.UeORDzU>

This feat is currently being accomplished on a large scale by the above mentioned DP World²⁷, Hutchinson Port Holdings²⁸ and Port of Singapore Authority (PSA)²⁹ regarding their own privately held terminals. But the private terminal operators do not stop there. They also decisively react to new global regulations currently being introduced. One of the most prominent regulatory introductions is regulation LSF2020.

LSF2020 is a regulation with the goal of minimizing the fuels sulfur content from 3.5 to 0.5 percent.³⁰ Since the lower sulfur fuel is increasingly expensive, the shipping companies have begun utilizing liquefied natural gas (LNG) as a better alternative long-term solution, best exemplified by Hapag-Lloyd's most recent additions to its current fleet all utilizing LNG fuel.³¹ Thus the building of LNG-terminals, in order to service these ships in the adjacent ports, becomes of vital importance for a port wanting to remain relevant in the shipping industry of the future.

²⁷<https://worldmaritimeneeds.com/archives/240123/dp-world-to-inject-usd-3-bn-by-2020-in-expansion/>

²⁸<https://hutchisonports.com/en/media/news/>

²⁹<https://www.straitstimes.com/singapore/keeping-the-ships-sailing-in-why-the-mega-port-matters>

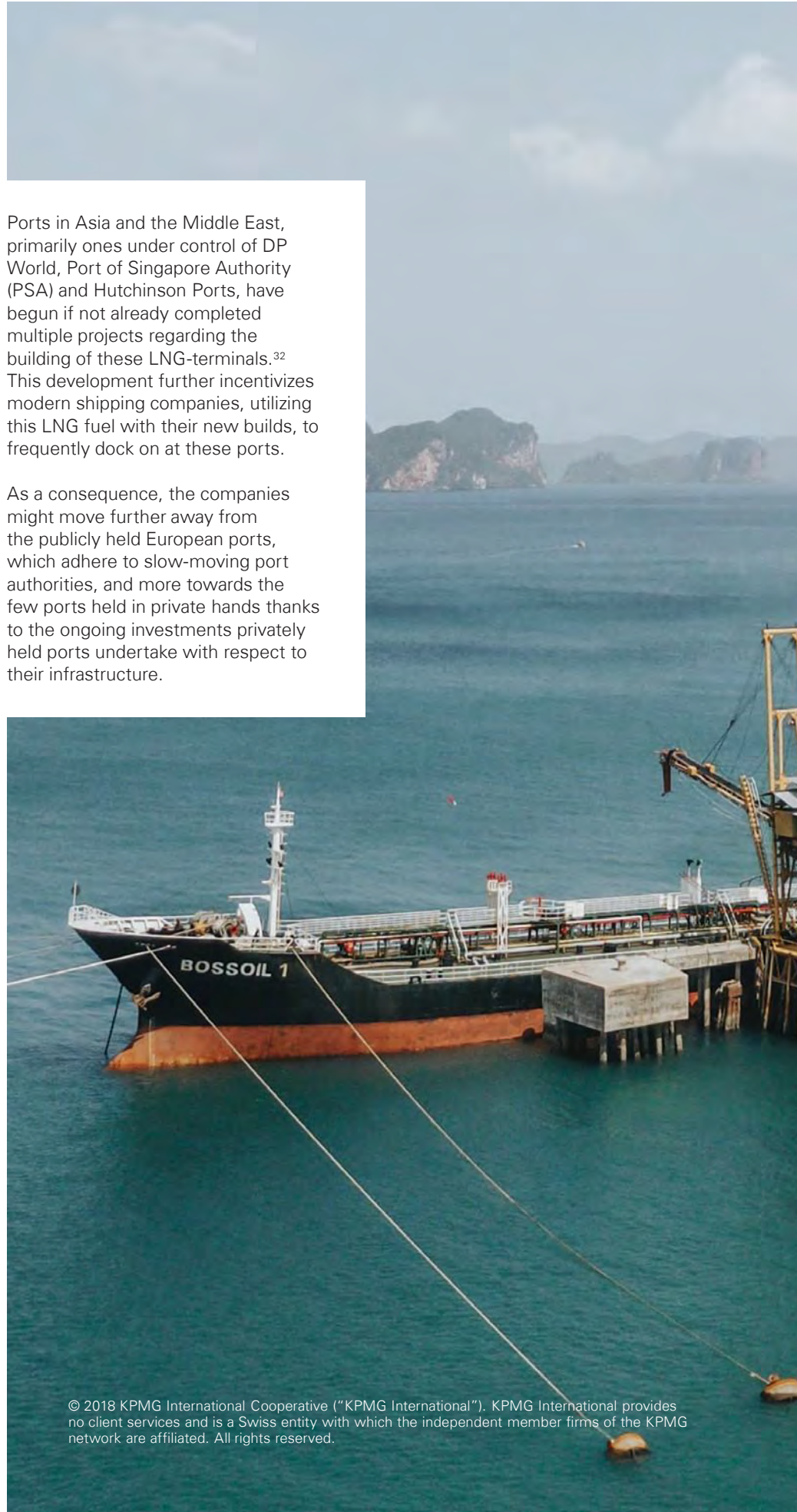
³⁰<https://www.hapag-loyd.com/de/news-insights/insights/2018/08/why-the-new-fuel-regulations-change-the-entire-shipping-industry.html>

³¹<https://www.lngworldnews.com/hapag-loyd-to-convert-large-containership-to-lng/>

³²http://www.energy.ca.gov/lng/worldwide/maps/Asia_Pacific_Map-B.pdf

Ports in Asia and the Middle East, primarily ones under control of DP World, Port of Singapore Authority (PSA) and Hutchinson Ports, have begun if not already completed multiple projects regarding the building of these LNG-terminals.³² This development further incentivizes modern shipping companies, utilizing this LNG fuel with their new builds, to frequently dock on at these ports.

As a consequence, the companies might move further away from the publicly held European ports, which adhere to slow-moving port authorities, and more towards the few ports held in private hands thanks to the ongoing investments privately held ports undertake with respect to their infrastructure.





Dynamically changing global players in the shipping industry

Here we will take a closer look at the development of port operators and their strategies. These are best described and represented by looking at DP World's current approach.

This company has emerged as one of the shipping industry's leading and fastest-growing terminal operators, with evident ambitions to reshape the industry as we know it. Its Strategy has been to acquire other Terminal operators such as CSX World Terminals (USA), enabling it to become one of the three largest terminal operators in a matter of years, alongside Hutchinson Port Holdings (Hong Kong) and PSA International (Singapore).³³

But among the most-significant strategic acquisitions was the recent deal for Unifeeder, a company with expertise and assets centered on coastal trade. With this acquisition DP World has essentially created its own service to address the increasing difficulties liner companies face in getting cargo through to smaller ports.

New ultra-large cargo ships (ULCS) are wider and possess more draught, thus making manoeuvring impossible in those narrow and shallow surroundings. DP's as well as PSA International's and Hutchinson Ports' strategies seem to be almost tailored to solve these problems reaching regions beyond the deep sea terminals.

The exclusive operation of port terminals by DP World, PSA International³⁴ and Hutchinson Ports³⁵ can be viewed as the creation of a focal point from which the cargo is distributed to its desired location, in essence transforming the port operators to all-encompassing door-to-door logistical providers.

This strategic set-up is further emphasized by the investments undertaken and ownership by PSA³⁶, DP World³⁷ and Hutchinson³⁸ of railway tracks from their port terminals. All these developments point to a new role emerging among the port operators.

All these developments point to a new role emerging among the port operators.

Their strategic set-up could be to become the entity where cargo is received from an ULCV/S, from where it is distributed by a logistical entity, be it their private train or feeder service, effectively owning and administering a modern logistical supply chain.

³³<http://www.referenceforbusiness.com/history2/30/DP-World.html>

³⁴<https://www.globalpsa.com/portsworldwide/>

³⁵<https://hutchinsonports.com/en/ports/americas/>

³⁶<http://www.londonthamesport.co.uk/pressreleases/frmPress.aspx?pid=239>

³⁷<https://www.londongateway.com/news-media/news/first-uk-to-china-exports-train-departs-from-dp-world-london-gateway>

³⁸<http://www.londonthamesport.co.uk/pressreleases/frmPress.aspx?pid=239>

Potential impacts of US and Chinese tariffs on the shipping industry

The exchange of tariffs between the US, Europe and China increases uncertainty within the shipping industry as the free flow of goods is hindered. It might also lead to changes regarding use of the trade routes. The US for instance imposed 25 percent tariffs on steel and 10 percent tariffs on aluminium for the EU and also imposed 25 percent tariffs on US\$200 billion worth of Chinese goods.⁴⁰

The dry bulk shipping industry will be affected by this development, but not as severely as many might come to believe, in terms of volume.⁴¹ In container shipping, the impact when looking at the big picture is relatively small. Indeed the US Tariffs on Chinese exports to the US will affect the container shipping industry on the eastbound Asia-North America lane.

If the proposed tariffs are implemented accordingly, the tanker and gas shipping industries may also experience minor difficulties, primarily the US crude oil exports, which will likely experience some hardship, as it was driven by Chinese demand in 2017.

On further note, the EU have imposed tariffs on US goods. These target US exports on a broad scale as characterized by the diagram below, especially sensitive goods, such as bourbon and motorcycles.

In 2017, 1.24 million tonnes of these dry bulk goods were exported to the EU by the US. These goods have now all been imposed with tariffs. On further note Canada and Mexico have imposed tariffs, but their effect on the shipping industry remains low.

Indeed the transatlantic and the transpacific trade routes have been affected, but the other major routes, notably between Europe and Asia, remain largely intact and unharmed by the sanctions. Indeed the strategic partnerships between Europe and Asia, primarily China, have further been deepened. This happened due to the most recent Chinese intentions allowing foreign companies to conduct investments into major projects independently and not as part of a joint venture.

For instance a major DAX30 company has now been granted a permit to invest into a 10 billion Euro project in China⁴². In conclusion, the trade war's impact on shipping is indeed present but, looking at the bigger picture, a key effect seems to be the continued convergence of European and Asian collaboration on trade – which for the maritime industry would mean an increase in cargo waiting to be transported between Europe and Asia. The result would likely be Asia's greater significance to the world economy and the maritime industry as a whole.

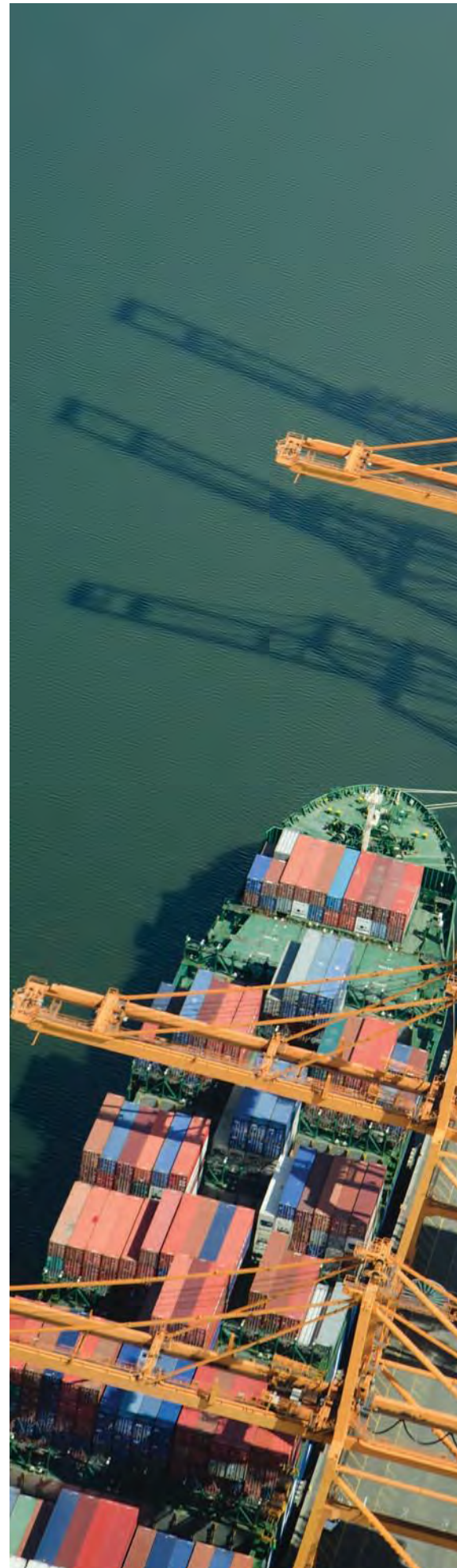
1.24
million tonnes

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⁴⁰<https://www.bbc.com/news/business-45555749>

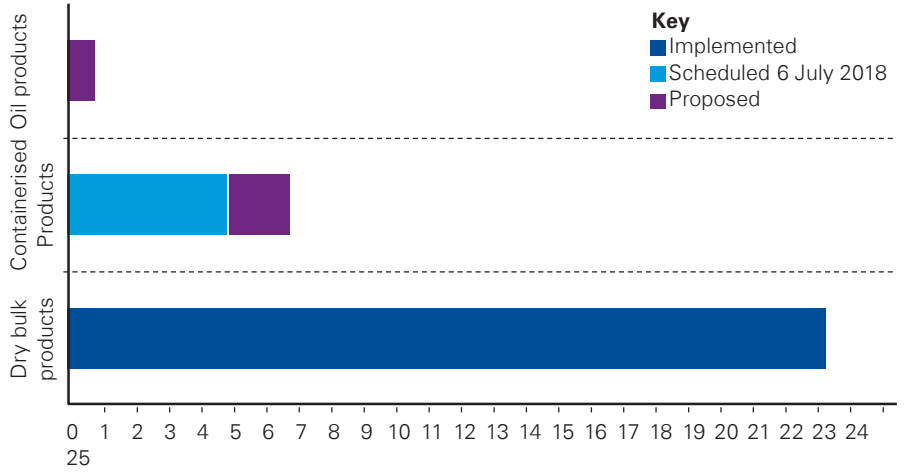
⁴¹<https://safety4sea.com/how-trade-war-affects-shipping-industry/>

⁴²<https://cen.acs.org/business/petrochemicals/BASF-considering-10-billion-investment/96/i29>



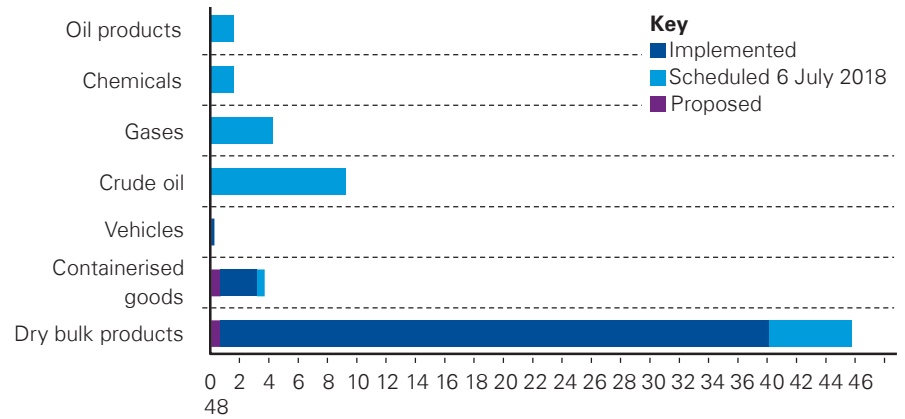


US seaborne imports from nations affected by US tariffs
In million tonnes, 2017

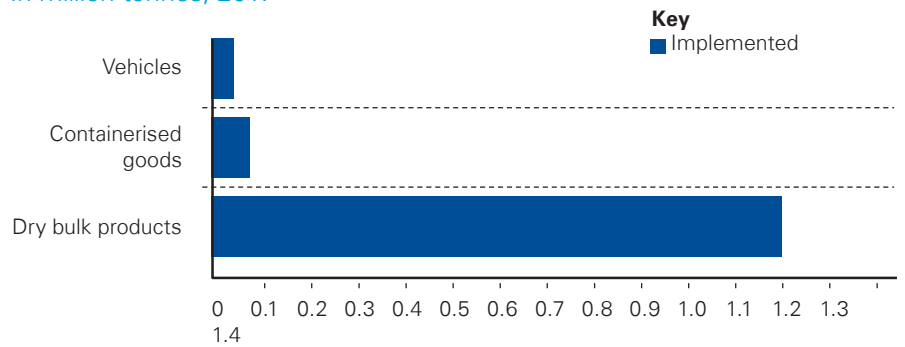


Source: BMCO, US Census

Chinese seaborne imports from the US affected by Chinese tariffs
In million tonnes, 2017



EU seaborne imports from the US affected by EU tariffs
In million tonnes, 2017



Source: BMCO, EU Commission

Fundamental threats to the maritime industry

Shortcomings in digitalization.

A term that comes to mind when one adjudicates the rapidly changing economic circumstances is Moore's Law.

Moore's law states that computer processing power will double approximately every two years the implication being that performance improvements will continue to drive the replacement of human activity with digital tools.⁴³ For the shipping industry this can be interpreted as follows. Every year that companies do not radically embark into digitalization, the harder it may be for them to catch up in the future given the current speed and acceleration with which digitalization is taking.

If these changes are not timely the doors will be opened for so called industry disruptors – in other words 'hub firms'. These agile and innovative business aim to keep their their systems at the current possible peak of digitalization and therefore claim utmost efficiency, especially when it comes to serving customer wants and needs.

Further proof of the effectiveness of keeping up with Moore's law is exhibited by certain hub firms almost twenty-fold revenue increase over a 10 year time period.^{44 45}

Today's connected and mobile consumer market cares less about brand loyalty and more about a convenient and rewarding customer experience.⁴⁶ Meaning that when a brand is deemed to provide sub-par service the customer will quickly just change the product without exhibiting the patience to wait for a change to occur. When translated to shipping this means that the customer would look at the shipping company's service provided and should these prove unsatisfactory, they will decisively change provider very fast.

A hub firm does not operate like a traditional shipping company. Its business model is tailored towards customer satisfaction, providing each one with a positive experience, through its algorithm.

An algorithm is, simply speaking, a program which performs a logical thought process, taking in information and processing it accordingly.

When done in combination with consumer information, it creates a customer profile based upon with that person's wants and needs. For example, if a consumer frequently orders exotic beer, the program will ensure its ongoing availability and earn the customer's loyalty. With this approach hub firms acquire a higher market share by attracting more of the relevant consumer base to its services.

In the shipping industry such a scenario is possible, as an industry with a vast upwards potential. Indeed it would not be viewed in a traditional way, as a port-to-port logistical service.

⁴³Harvard Business Review September – October 2017

⁴⁴<https://www.statista.com/statistics/266282/annual-net-revenue-of-amazoncom/>

⁴⁵<https://www.statista.com/statistics/225614/net-revenue-of-alibaba/>

⁴⁶<https://targetdatacorp.com/understanding-modern-consumers/>

A completely digital hub firm, for example a global retailer, striving for independence, would much rather implement shipping into its supply chain, allowing them to establish an independent global logistical network and allowing them to provide exceptional customer service. This is on par with most global retailers' global strategies of owning their complete supply chains. Many already own their own logistical networks and fleets of trucks and airplanes.⁴⁷

This logistical transformation comes amid the introduction of multiple self-owned logistics services by global retailers⁴⁸ This trend in strategy by global retailers does not only remove shippers like FedEx, UPS and DHL from the supply chain but also the people handling paperwork and cargo.⁴⁹ One hub firm described a "revolutionary system that will automate the entire international supply chain and eliminate much of the legacy waste associated with document handling and freight booking".

This quote from a hub firm offers a direct look at their strategy, which is not to peacefully coexist with the shipping industry but to eliminate the inefficiency it represents in its supply chain, as "once they have mastered the shipping model and have achieved scale, they will kick them all out and run it on their own and dominate a US\$400 billion industry."⁵⁰

⁴⁷<https://www.cnn.com/2018/06/27/amazon-is-recruiting-entrepreneurs-to-start-delivery-networks.html>

⁴⁸<https://www.businessinsider.de/amazon-launching-own-delivery-service-compete-ups-fedex-2018-2?r=US&IR=T>

⁴⁹<https://www.forbes.com/sites/robinlewis/2016/04/01/planes-trains-trucks-and-ships/#9928d9f6d390>

⁵⁰<https://www.forbes.com/sites/robinlewis/2016/04/01/planes-trains-trucks-and-ships/#9928d9f6d390>



Further proof of the effectiveness of keeping up with digital transformation is exhibited when looking at an almost twenty-fold revenue increase over a 10-year span.^{50 51}

3D printing

The rapidly increasing focus on and importance of 3D printing technology represents a major potential disruption for global trade. It provides companies with an unprecedented ability to quickly adapt to changing economic and conditions.

Over the years it has further increased its importance for the manufacturing industry by taking up a central role for multiple companies. One such company is Boeing, which is heavily investing in 3D Printing.⁵¹ Boeing has begun a collaboration with the Norwegian company Norsk Titanium, which offers titanium parts via 3D printing that is projected to save up to US\$3 million in transport and manufacturing costs.⁵²

It is clear that 3D printing poses a danger for the shipping industry, as companies who see these figures would embrace that technology. As a study from Dutch ING Bank predicts, by 2060 half of manufacturing worldwide will be based on local 3D printing and it also states that, if investments accelerate further, domestically printed goods could already wipe out 40 percent of world imports in 2040.⁵³ This means that at a some moment in time, 40 percent of all storage space (TEU) on the currently existing vessels becomes obsolete.

On first glance this might seem fatal for the shipping but upon closer this merely would result in a change of focus.

Indeed 3D technology might lead to fewer imports of “finished” products, and therefore less demand for container shipping, but 3D printers cannot produce products out of thin air, they require raw materials and that is where the focus of the maritime industry may shift to.

In turn, this would lead to a greater demand for bulk carriers by the shipping companies, as well as oil product carriers which will possibly experience a surge in demand, as illustrated by the diagram above showing the ‘Total Fleet Capacity.’ This in its entirety would disrupt the industry as multiple container ships are deemed obsolete, leading to a short term drop of freight rates which, if not handled with the appropriate urgency, may prove dangerous for a number of companies in the maritime industry.

⁵¹Harvard Business Review July-August 2018 Issue, page 108

⁵²<https://www.golem.de/news/3d-druck-boeing-laesst-flugzeugteile-drucken-1704-127273.html>

⁵³<https://www.ingwb.com/insights/research/3d-printing-a-threat-to-global-trade>



The industry itself

In conclusion though, neither hub firms, nor 3D printing are the most-urgent threats to be tackled by the industry. The greatest threat is the industry itself misjudging the precarious situation they are in. Undeniably, the freight rates are recovering, due to shippers wanting to ensure continuity of service and new alliances being formed, enabling the companies to acquire a better position in freight rate negotiations.⁵⁴ Adding to this optimism towards the industry's recovery is the increasing unwillingness of ship owners to scrap their vessels, with the surge in freight rates making their business profitable again.⁵⁵

In conclusion though, neither hub firms, nor 3D printing are the most urgent threats to be tackled by the industry.

This leads to the belief that the market will recover as it always did. The danger at hand though might potentially be a misinterpretation of the situation. Indeed previous crises in the shipping industry always occurred parallel to a corresponding global crisis.

But despite cyclical declines in demand for transported goods, there always was a subsequent recovery of the market and in shipping. But those were simpler times!

In this era of economic interdependencies, with a stringent focus on efficiency and the previously mentioned disruptors, the situation has become a lot more complex. These new circumstances, in combination with the world's imports undergoing a significant decrease in the near future will refute the past bias of the shipping companies. Namely that the maritime industry will likely survive any crisis, if they just hold out long enough and make minor adjustments.

Indeed the next critical situation for the maritime industry will not be kicked off by a global economic crisis, it will be initiated by a combination of the above mentioned factors and most likely hit the maritime industry off-guard. This will most likely result in further consolidations within the industry, with multiple smaller companies being liquidated entirely in the process. This is where hub firms would step in and incorporate the pieces, implementing them into their supply-chain, further expanding their global logistical network.

The few survivors remaining would charter out their remaining vessels to the Port Operators, DP World, PSA International and Hutchinson Port Authority respectively, which at this point have become major logistical companies themselves.

These companies will require vessels of a certain size in order to uphold the smooth transition of goods across the canals and to regional ports in the near future. The economic landscape of the near future could be the following. The big liner companies will be servicing a selection of ports, which are able to host their ultra-large container ships (ULCS) which are most profitable.

The port operators, at this point shipping companies in their own right, will be transporting the goods to less-accessible regions and ports, additionally ensuring the transportation of goods along the canals, which may no longer be possible with the massive vessels of the future. Multiple global retailers have already partnered with third-party shipping carriers and this scenario would continue until they would have mastered the shipping model, achieving scale.

At this point, where the industry is at its weakest, the hub firms might begin to disband from their partners, and begin their own enterprise, offering the now mastered service at a cheaper price than their former partners.⁵⁶ Consequently this would plunge the industry into a crisis it won't be able to endure. The hub firms will come out on top as the great benefactors, acquiring a significant market share for their operations in the process.

⁵⁴<https://www.morethanshipping.com/2018-rate-expectations/>

⁵⁵<https://www.hellenicshippingnews.com/ships-demolition-prices-skyrocket-on-high-demand/> ⁵⁶<https://www.forbes.com/sites/robinlewis/2016/04/01/planes-trains-trucks-and-ships/#695802f6d390>



The modern shipping company

The current situation the shipping industry finds itself in is indeed a precarious one.

On the one hand the shipping industry is seemingly effectively recovering from the crisis of 2008, with higher freight rates and better container throughput thanks to industry players gaining a more advantageous position and port operators setting new standards in efficiency.

The industry as a whole seems to have learnt its lesson and started modernizing accordingly in order to remain a viable option in the modern global supply chain, with platforms, such as the one created by Maersk and IBM, spanning the whole industry and ensuring an effective cooperation. On an individual level the industry players have learned to plan their ventures more effectively, with the creation of ULCV/S they have finally begun operating economies of scale.

These can prove essential in providing a continued transport of goods between Europe and Asia, as the volume of trade might increase further, even more so with the ongoing trade war. On the other hand the question remains to be asked: is all this modernization and digitalization too little too late?

This comes with the dangers imposed by the Modern Silk Road, the 3D technology looming on the horizon and the current shortcomings in digitalization which can and will be

exploited by hub firms, should these not be managed accordingly and decisively by the industry as a whole.' to 'This comes with the impacts imposed by the Modern Silk Road, the 3D technology looming on the horizon and the current shortcomings in digitalization which can and will be exploited by hub firms, should these

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not be managed accordingly and decisively by the industry as a whole.

All these challenges come along with the upcoming hybrid forms of business between port operating business and shipping companies which are emerging under the oversight of primarily DP World, Port of Singapore Authority (PSA) and Hutchinson ports. These are on course to fundamentally disrupt the industry from within.





The shipping company of the future will likely fundamentally differ from what we are familiar with today. It may move away from its traditional role, being a port-to-port facilitator of cargo. It may evolve towards a global logistical entity, rivaling the global supply chain offered by hub firms for instance, resolutely expanding its area of operations on land and providing a customer-to-customer service, in order to remain competitive as a logistical service provider. Furthermore, the most radical change will likely take place in the form of a new department focusing exclusively on data science, more precisely big data analysis.

In effect its main objective may be identifying the most lucrative routes, essentially predicting demand. The most important point will be the one of cooperation and collaboration within the industry.

The maritime industry will need to move toward greater collaboration and interaction if it hopes to successfully address today's critical issues and weaknesses. The platform introduced by Maersk and IBM, as well as Maersk's and Hapag-Lloyd's first strategic attempts to adopt a modern, customer-centric approach, represent major steps forward within the industry.

Should the pursuit of such innovations prove too challenging the companies could and should incorporate the ideas and concepts generated by startups, such as Portcasts identification of the most lucrative shipping routes, in order to enhance their current outdated business model.

The idea is to stimulate a change from within the shipping industry, dictating the terms which they can abide to and not have dictated by industry disrupters. Doing so can ensure a secure transition into the future for the industry as a whole.

The maritime industry as such needs to move away from its previously exhibited individuality and towards a combined agenda to address its most-urgent issues and weaknesses





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