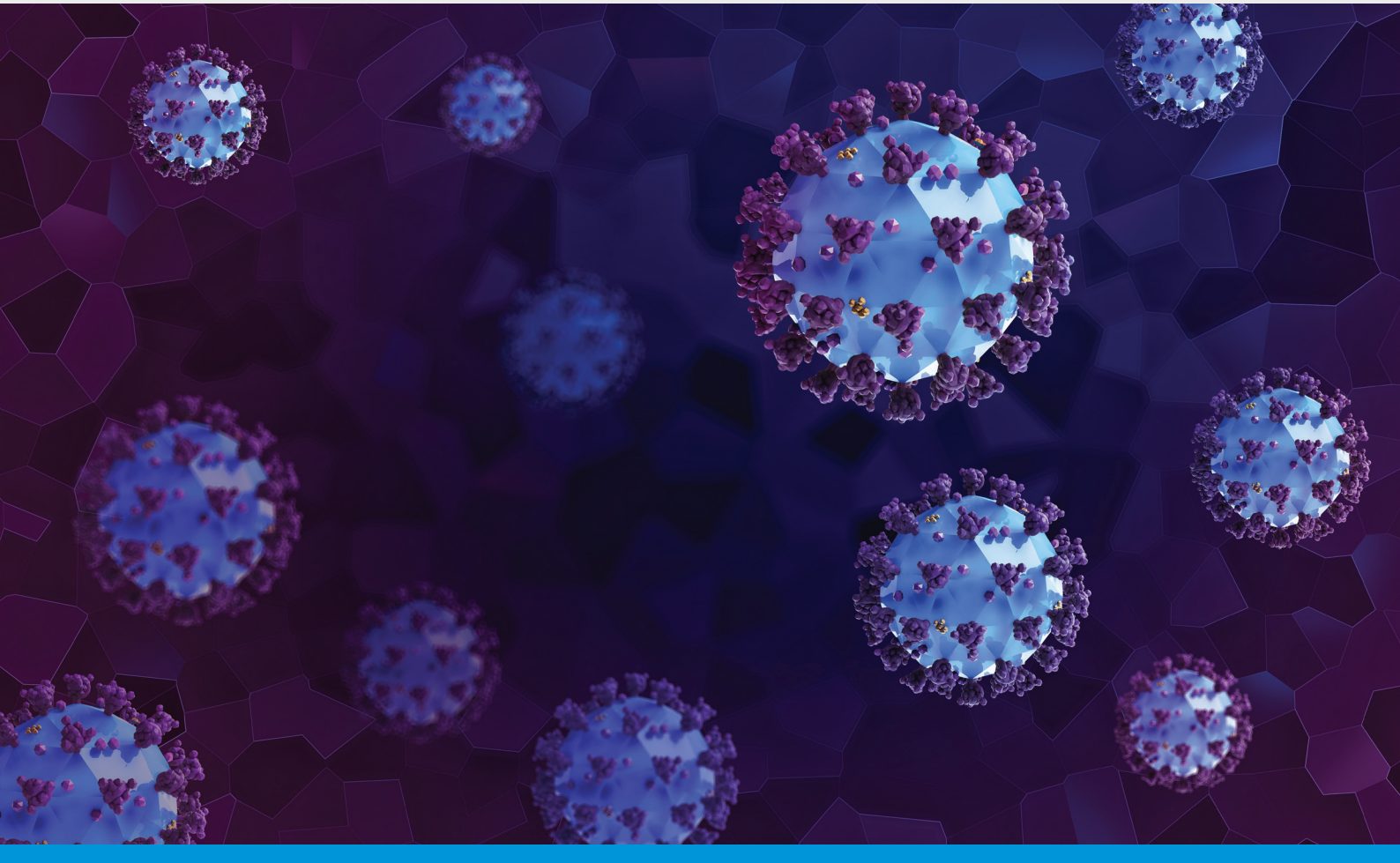
GSTTA BOOK

Impact of COVID-19 on Maritime Industry

Global Shipping Think Tank Alliance
Edited by Young Tae Chang and Meifeng Luo



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Global Shipping Think Tank Alliance(GSTTA)

Global Shipping Think Tank Alliance(GSTTA) was established in Shanghai in December, 2016. It was initiated by SISI and co-founded by 12 other global shipping think tanks including KMI, SRM, PMLC, CATS, CMS, Drewry, HKMRC, ISL, PARI, Marsoft, SDRI, WMUSC. The alliance establishes a long-term cooperation mechanism, builds a common research platform, and encourages alliance members to conduct joint research combining their own characteristics and complementary advantages. It convenes annual meetings to conduct forward-looking researches and discussions focusing on the hot issues and new trends in the shipping industry. Leveraging the platform of the Global Shipping Think Tank Alliance, member organizations can communicate with each other and share the shipping developments and experience in different regions and countries, so as to strengthen all-round comprehension, exchange and cooperation in more fields and at all levels.

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PREFACE

The Global Shipping Think Tank Alliance (GSTTA) consists of 18 global professional institutes that cover an array of shipping sectors. The GSTTA was inaugurated jointly by SISI (Shanghai International Shipping Institute) and KMI (Korea Maritime Institute) in Shanghai, December 2016. While this Alliance has held its plenary annual meeting since 2016, the meeting which took place in April, 2020 was held as an online seminar due to COVID-19.

After I became the President of KMI in October 2019, and therefore, the incumbent Chairman of the Alliance, I was astonished by the excellent network that the GSTTA possesses. While seriously considering the impacts of COVID-19 on maritime sectors, I was motivated by the two e-books entitled 'Economics in the Time of COVID-19' and 'Mitigating the COVID Economic Crisis: Act Fast and Do Whatever It Takes'. The e-books were published promptly after the outbreak of COVID-19 by the Center for Economic Policy Research (CEPR), consisting of 1,500 economists from across the world. Consequently, I suggested the online conference on COVID-19's impact on the maritime industry in April, 2020, and completing the conference, I proposed the publication of this whitebook.

"Impact of COVID-19 on Maritime Industry" is a collection of 7 presentation-based chapters and one new chapter. Its contributors are prominent researchers in their fields. They wrote on the COVID-19's impact in their respective fields and on how their institutes and/or their governments and industries have responded to the impact. In this preface, I express my deep gratitude to everyone who has contributed to this book.

In order for the GSTTA members to lead maritime industries, we plan to conduct high quality research with high practicability to address major issues surrounding maritime industries in the future.

Finally, I hope that this book may help those cope with the uncertainties stemming from COVID-19 and ultimately lead to improved performances of maritime industries. Furthermore, I expect this book to further stimulate more exchanges of ideas and policies on the industry. The 2021 annual conference is likely to be held again as a video conference if COVID-19 prevails and/or lingers over us.

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GSTTA BOOK

Impact of COVID-19 on Maritime Industry

Sail with the Tide: COVID-19 impact on Global Economy, Logistics Supply Chains, and Ports & Shipping industry

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Introduction

Historically, epidemics and plagues are repeatedly reported to have happened since the ancient civilizations (Egypt, Greece, Rome and Imperial China). Most known examples of a devastating global pandemics in recent history are the 'Black Death' (14th century) and the global influenza (1918-1919), also known as 'Spanish Flu', that has killed nearly 50 million people in the world. Even though pandemics may vary in their dimensions, length (short vs. long), scope (local/regional, national, global) and severity of effects (minimal effects or maximal effects), they all represent distinct exogenous and endogenous shocks that have far reaching effects on population, health, economy and other societal domains.

Currently, the COVID-19 pandemic has relentlessly spreaded around the world, leaving behind destructive marks on health, populations, economies and societies.

In addition to devastating effects on health, the COVID-19 has severely affected most of economic sectors, especially the service export sectors like tourism, travel, hotels, retailing, shops, restaurants and entertainment. Other economic effects of the coronavirus include indirect or implicit costs, such as potential changes in business environment, changes in supply and demand patterns, and changes in the behaviour of consumers e.g. consumers' confidence, as well as businesses e.g. investments.

The SARS pandemic, which took place in 2003 in East-Asia, is a good example that can help us to understand the potential impacts of the COVID-19 on the population, global economy, logistics supply chains and shipping industry. Indeed, during the outbreak of the SARS pandemic, a widespread panic among people across Asia resulted into self-lockdown and stay at home, travel movements were restricted (airport were operated at limited number of arrivals and departure), and service export (tourism, retails, etc.) were hardly hit.

SARS pandemic has affected economic growth through supply shocks as well as demand shock channel. On the supply side, the labour markets, business operations, production, transport and logistics services were disrupted. The major demand shock was caused by a dramatic decline in consumer confidence, that has led to a decrease in private consumption spending. Due to increasing uncertainty about what will be happened next, there was also a decrease in investments by companies and businesses (Lee at al. 2008., pp. 7-8).

It is worthy to mention that, in opposition to the COVID-19, SARS epidemic was short in duration, had a regional rather than global character, and was minimal in human deaths (774 deaths).

The COVID-19 pandemic could spread quickly around the globe because of the current structure of the global economy, which is highly interconnected through sophisticated global transport networks. An important characteristic of such a networked complex system is its vulnerable to attack events of systemic risk such as the COVID-19 pandemic for example. These systemic risks cause substantial cascading effects, which lead to extreme outcomes that could permanently alter economic, environmental, and social systems.

Most analysts agree that the COVID-19 will cause an unemployment crisis, which will have significant consequences for the whole economy. For example, in April 2020, the US unemployment rate has risen to a record high of 14.7% (a post war record!), with more than 20 million jobs lost in March 2020. Also, there are strong evidences that the number of firms closure/bankruptcies in the service sector and -to a less extent- in the manufacturing industry, especially SME's, will increase during the year 2020. In this sense, all governments around the world are facing several challenges caused by the COVID-19, which require rapid actions at large scale across a wide range of policy areas (OECD, 2020).

In this article, discussions and analysis will focus first on the impacts of the COVID-19 on global economy, trade and supply chains, taking as example the case of Europe and/or the Netherlands. Second, we examine the effects of the COVID-19 crisis on the shipping industry and on the hub ports worldwide, with special attention to Europe. Next, we present and discuss policy measures applied by different countries around the world before providing some concluding remarks.

Impact on global economy

Basically, the coronavirus crisis is at first instance a public health crisis, posing serious risks to the economy and societies. Because of the fast spread of the virus, production activities came to a halt, people's movement was interrupted, and many transport and logistics supply chains activities were disrupted. What make the COVID-19 crisis exceptional is its direct effects on both production and demand for goods and services (i.e. combined features of a demand and supply shock).

First, the supply shock is manifested in sharp drop in manufacturing production, which is a direct consequence of combined effects of lockdown measures (e.g. workers cannot be used) and disruptions in the supply of intermediary inputs/goods. According to the OECD, the initial direct impact of decrease in production, caused by the COVID-19, will lead to a decline in the level of output of between one-fifth to one-quarter in many economies, with consumer expenditure potentially dropping by around one-third (OECD, 2020., p. 5). Consequently, a decrease in production will weaken short-term growth prospects substantially. It was estimated that the decline in annual GDP growth could reach 2 percentage points for each month of containment, not considering the potentially large indirect impact (e.g. loss of confidence, delayed consumption of good and services and delayed investments).

In Europe, estimations show that GDP of EU countries will decline by -7.7% in 2020. In China, GDP fell by -6.8% in the period of January-march, compared to the same period in 2019, and it is expected that economic growth decrease by -2.5% in 2020 (the slowest growth in 50 years), due to the drop in global demand for Chinese products.

Second, the demand shock was triggered by contact restrictions, decreasing trade, and changes in behaviour of consumers and businesses (i.e. delay in purchases and investments). The most affected economic sectors are the service export sectors such as tourism, travel, hotels, retailing, shops, restaurants and entertainment. The WTTC (World Travel Tourism Council) has estimated the potential job losses in the travel and tourism sector as result of Coviod-19 to about 100.8 millions worldwide, from which 63.4 millions in Asia, 13 millions in Europe, 7.6 million in Africa, 14.1 millions in Americas and 2.6 millions in Middle East (WTTC, April 2020).

Other demand shocks include indirect or implicit costs, such as potential changes in business environment, changes in demand patterns, and changes in behaviour e.g. consumers' confidence and business investments. Nonetheless, looking at what happened in China, it appears that the biggest challenge to bring the economy back to normal depend on how fast confidence of consumers and businesses can be restored, and spendings can be increased.

However, experience shows that the drop-in consumers demand may persist longer than the re-establishment of the damaged productive capacity. In China for example, the manufacturing output fell by about 18% between December 2019 and February 2020. In April 2020, the Chinese manufacturing were recovered almost completely, but consumption spending was still about 13% below its prior level. The same observation applies also to South Korea, where the manufacturing output was down by -1% and consumer spending by - 12%.

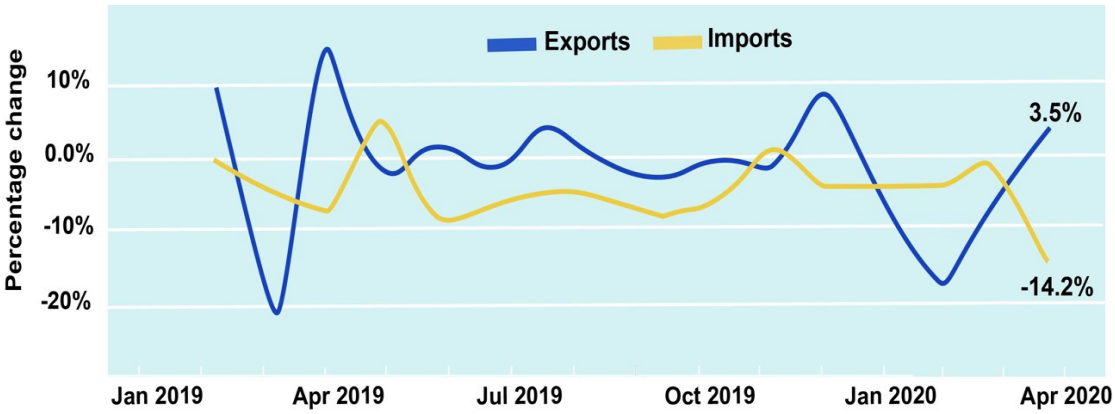
More generally, the COVID-19 induced glut at global economic level lays in the mismatch between somewhat larger supply and weak global demand. This situation push companies into fierce competition to maintain or increase their market share in a shrinking global market. In case this crisis lasts longer, other problems could arise in the financial sector that might be triggered by disruption in the housing market or an increase in bad debts. The channels through which the COVID-19 affect the global economy are the following three channels:

1. Trade and manufacturing production/output of goods and services: The most obvious impact of COVID-19 on trade is manifested by the disruption in already vulnerable global supply chains. The supply shock in one nation or an industry within a nation, affect other nations and/or industries when the goods being supplied from one place serve as an input to produce final good in other place. This 'supply-chain contagion' is an important element of COVID-19's economic legacy. Shortages of some goods, especially pharmaceutical products, face masks, and medical equipments, have been exacerbated by decrease in export and production in China, Europe and other producing countries.

The OECD has estimated the potential initial impact of partial or complete shutdowns of economic activities, and hence reduced trade, to about -19% of GDP in China (at constant prices), -18% in India, -24% in Korea and -23% in Russia. In Europe, France and the Netherlands will suffer a loss of -26% of GDP, -28% in Germany and -27% in Great Britain. In Latin America, Brazil and Argentina will loss -21% and -22% of GDP respectively, Mexico -30% and USA -26% (OECD, 2020., p. 4).

China's imports and exports fell by 0.9% and 6.6% respectively in March 2020 compared to the same month last year (YoY). However, the country's March trade surplus was $19.9 billion, showing clear sign of recovery of exports.

Figure 1. China's overall trade in Jan 2019-Apr 2020.



Note: The lines show year-to-year percentage changes in Chinese Exports and Imports. Source: China Customs, Refinitiv.

One important consequence of the fall in production capacity and demand is the increase shortages in inventories of manufacturing industries, particularly those who are organized in lean and just-in-time manufacturing process.

The economic sectors that are most directly affected by COVID-19 impact on trade are: transport sectors, air transport being the most affected than shipping industry and other transport modalities (rail, road, etc.), Service sectors, especially activities involving travel, including tourism, retails, shops, museums, entertainment parks, etc., and some parts of the manufacturing sector, such as producers of transport equipment, where production was completely shutdowns, because of the cut in provision of necessary inputs from suppliers from other countries.

2. Supply chain and market disruption

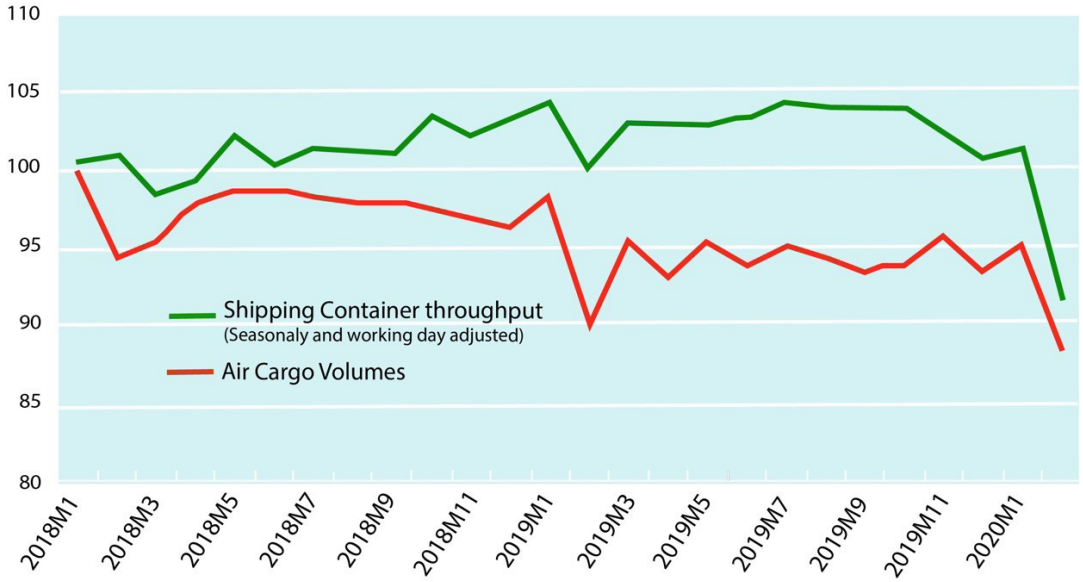
The slowdown of key economic activities, and transportation restrictions, has an impact on the manufacturing production and profitability of global companies. Small and medium-sized firms are most vulnerable to supply chains disruption, because of transport constraints and restrictions of the movements of people.

According to the International Air Transportation Association (IATA) for example, the airline industry is set to lose $29 trillion worldwide. Urgent shipping of essential goods, especially pharmaceutical products and small packages, have shown increased demand, resulting in 30% increase in air freight cargo between China and USA and 60% between Europe and North America.

In the shipping industry, the impact of COVID-19 has been significant. Some estimates show a total loss of about $US 350 million a week of revenues for the shipping industry (International Chamber of Shipping (ICS)). In the period of mid-January to mid-February, the Chinese factories were operated at 50-60% of capacity and the container carriers from China operated at 49% less sailings than normal (Baldwin et al, 2020., p. 15). The decrease in container shipping made direct effects on ports and port operations. Important global shipping ports reported decrease in cargo between 10% and 20% in February 2020(Year-on-Year).

Port authorities in more than 50 countries were forced to change port protocols and restrictions, ranging from port closure and quarantine measures to additional documentation requirements and examination. In addition, the restrictions imposed on the movement of people/workers reduced the availability of labour at ports. A variety of port activities related to trade processes suffered the shortage in labor, such as physical inspection of goods, testing and certification, etc.

Figure 2. Changes in Sea and air cargo activities from 2018 to Q1_2020.



Source: OECD, 2020 (figure is based on data from ISL (container index) (www.isl.org/en/containerindex) and IATA for air cargo volumes (www.iata.org)).

3. Financial impact on firms and financial markets/capital flows

Due to the COVID-19, an increasing number of firms begin to suffer from liquidity problems. The risk of solvability makes direct effects on financial market players, and in turn could lead to significant decline in equity markets and corporate bond markets. Also, with the difficulties that might face the banking system (loan losses), access to funding by firms might become difficult, which in turn will increase the loss of confidence in the financial and banking system.

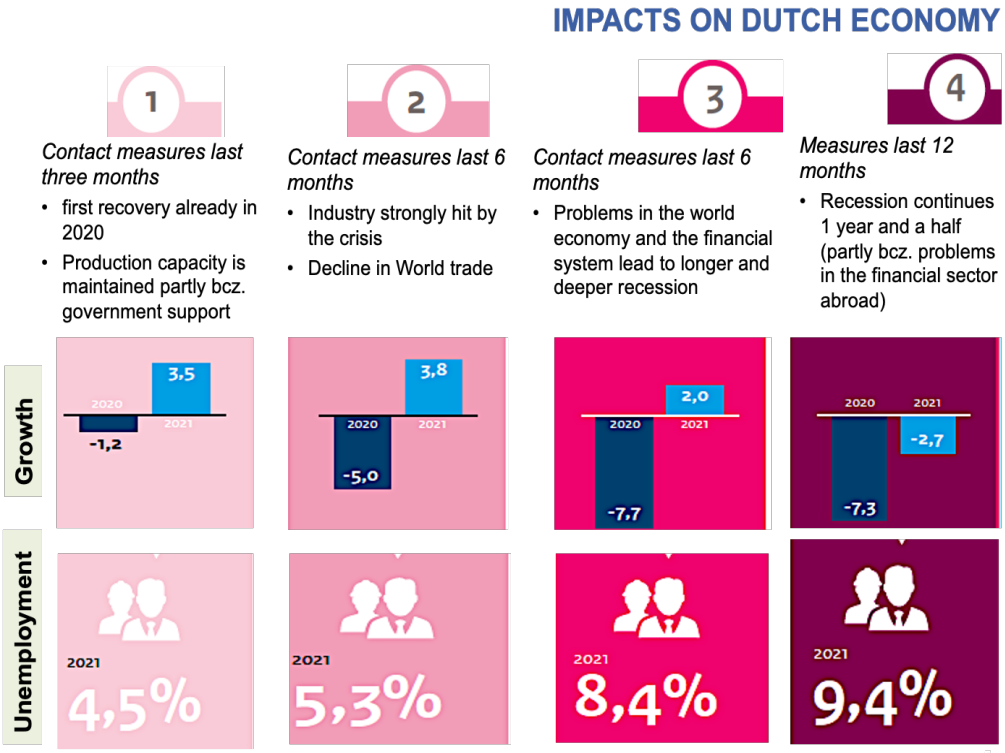
Despite the efforts to reduce fiscal deficits, many governments in Europe and the rest of the world still have high levels of debt following their interventions to deal with the financial crisis and its aftermath. Perhaps the most worrying element of the implication of the COVID- 19 on the financial market is the very high level of private debt, encouraged by low interest rates, the decrease in foreign direct investment, which is important for developing countries, and the difficulties to borrow from international institutions and international markets.

COVID-19 impact on economy: The case of the Netherlands

As many other European countries, the Netherlands was less affected than Italy, Spain or the UK. In order to measure the potential effects of the COVID-19 on the Dutch Economy, the Dutch Central Planning Bureau (CPB) has tested four scenarios to indicate the possible magnitude of the impact of the corona crisis on the Dutch economy in 2020 and 2021. The four scenarios differ mainly in the assumption of the duration and depth of the economic crisis.

The results of the CPB scenarios show that the economy will be hit hard in all four scenarios, with GDP shrinking between 1.2% to 7.7% in 2020. In the lightest scenario, GDP will shrink by 2 in 2021 and the economy will start to recover during the third quarter of 2020. In the worst scenario, the GDP will shrink by 2 in 2021and the economic recovery will take place during the second half of 2021. In three of the four scenarios, the economic downturn is considerably deeper than in the crisis of 2008/2009. Figure 3 below gives an overview of the impact of the COVID-19 on growth and employment.

Figure 3. Impacts of COVID-19 on the Dutch Economy in 2020 and 2021.



Source: based on CPB (2020).

The impact of COVID-19 on the labor market is substantial in all four scenarios, ranging from slightly rise of 4.5% in the first scenario to almost 9.4% in 2021 in the most severe scenario. In case the economic recession will persist longer, unemployment will rise further than the estimated 9.4%.

The government policy, based on various support packages to key sectors and households in addition to monetary and fiscal measures, is aimed at limiting layoffs and bankruptcies in the short term. These measures to the economy are intended to prevent a downward spiral and from lasting economic damage. However, government spending come with a cost, especially for public finances and public debt as percentage of GDP. Indeed, the CPB study suggests that the government costs will be high, but not prohibitive.

On one hand, public finances are deteriorating sharply in all scenarios, the deficit reach 1.3% of GDP in 2020 in the lightest scenario and 7.3% of GDP in the worst scenario (the deficit will further increase to 9.9% of GDP in 2021). On the other hand, public debt is not directly in the danger zone. In the worst-case scenario the debt will reach 73.6% of GDP at the end of 2021, which is far below the risky levels considered in the literature.

The main uncertainty surrounding the COVID-19 and its impact on the economy is the duration of contact restrictions necessary to contain the spread of the virus and the development of new medicine that cure this virus. In addition, it is also uncertain to know if the applied support measures are successful, and whether the financial sector will be affected too.

Impacts on logistics and global supply chains

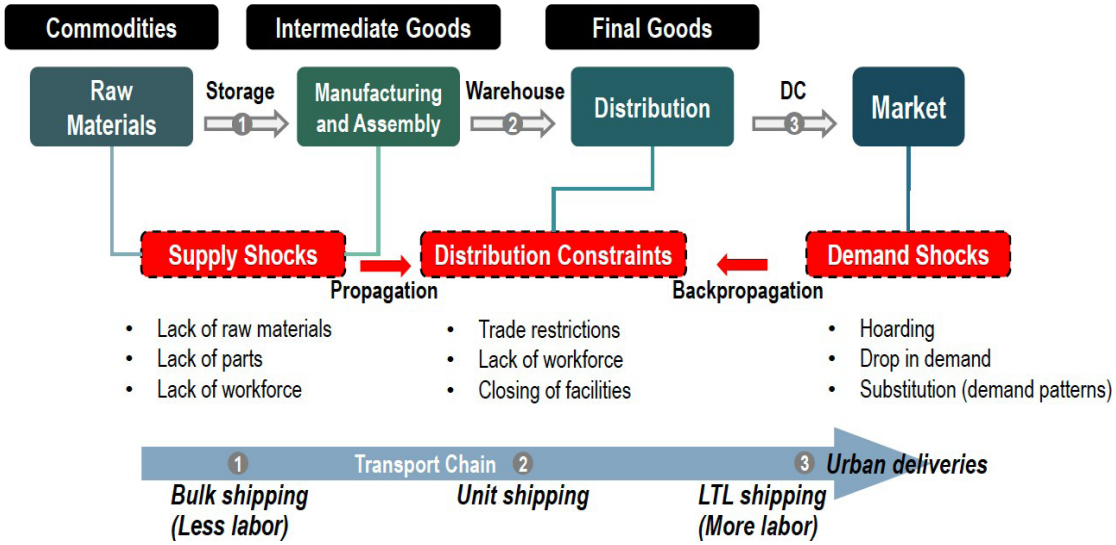
Current global supply chains are designed to serve the needs of hyper specialized global production and distribution of goods (and services), in terms of quality, capacity, timely delivery and cost effectiveness. They are built on outsourcing and risky organizational principal of 'just in time' delivery and limited inventory buffer where products are kept only 15 to 30 day on hand. In addition, globalization has intensified from the competition for valuable supply sources in several industrial sectors and enabled consolidation of key players in global supply chains. These two elements make global supply chains highly vulnerable to unpredictable disruptions, because they cannot be changed quickly in order to absorb the effects of such disruptions.

UNCTAD data shows that the coronavirus has cost global value chains $50 billion in exports in the month of February 2020 (UNCTAD, 2020). The top 7 most affected economies are: European Union with a total estimated cost of $15597 millions, followed by United States ($5779 millions), Japan ($5187 millions), Korea ($3816 millions), Vietnam ($2298 millions), Singapore ($2165 millions) and United Kingdom ($1917 millions).

More generally, there are two type of global supply chains participation that can be distinguished: (1). Backward global value participation where inputs are imported to produce the goods and services the economy export. (2). Forward global value participation where domestically produced inputs are exported to trade partners involved in the later stages of production. Countries with a high share of backward global value chain participation tend to be hardly hit by disruption in global value chain than countries involved in forward global value participation (e.g. countries exporting commodities like minerals, crops, oil and gas, etc.). These later countries are more vulnerable to demand disruption.

Figure 4 below shows the channels through which shocks may occur along the supply chains and their potential impacts at different legs of the supply chain.

Figure 4. Impacts of pandemics on supply chains



Source : Rodrigues (2020., p.17)

As figure 4 shows, supply and demand shocks are the main two channels through which disruptions in supply chains may occur. Both demand and supply shocks affect directly the transport chains, and hence the distribution channels. Supply shocks propagate into transport chains and distribution channels, leading to serious disruptions in transport and logistics sectors, especially the last mile deliveries. In opposition demand shocks can affect transport chains and distribution channels (back propagation), when for example global decline in demand, due to lockdown measures, results into decline in demand for transport (air, sea, road, rail, etc.) and logistics activities.

In this perspective, and as result of the demand shock of the COVID-19, the shipping transport, which is responsible for 80% of global trade, was severely hit as inactive fleet size has swelled to 2.04 million TEUs or 8.8% of global capacity between February and March 2020. This decline is greater than the 1.52 million TEUs of canceled capacity during the financial crisis in 2008. Almost 5.5% of global container capacity was affected by the decrease in demand.

Basically, the whole transport sector, especially road transport, was hardily hit by the COVID-19. A historical drop in transport demand for passengers and freight has been registered worldwide, as consequence of travel restrictions and borders closure. However, the impact on road transport shows a mixed impact, depending on the industry they serve. For example, transport companies working in the e-commerce and food distribution saw an increase in their activities, other transport companies working in airfreight transport were practically inactive/jobless.

According to McKinsey (2020), supply chains are being disrupted around the world, but the full impacts have not yet been felt. On the supply-production side, most manufacturing industries can restart their activities relatively quickly, but parts of the labor shortage that might persist can lead to further disruptions in supply chains (e.g. decrease in production capacity).

Some analysts argue that both firms and government will be pushed by the weaknesses of global supply chains that are clearly exposed by the COVID-19 to rethink how to re-restructure the global production in term of developing new strategies that separate between strategic goods that can/should be produced domestically and other global sourcing strategies. Other analysts stress the urgency to take this opportunity, after the COVID-19 crisis, to strengthen the resilience and the sustainability of the current global supply chains and integrate them in a broader strategy aiming at balancing environmental gains with economic efficiency (OECD, 2020., p.9).

We believe that strengthening the resilience of the global supply chains should begin by improving the transparency of the whole supply chains from the origins to the final sources. Digitalization and smart use of new technologies could help to increase the resilience of the supply chains. Also, there is a need to optimize the production and distribution capacity of the global supply chains by identifying the main constraints and determine the critical components of the supply chains that are subject to interruption risk. These can be reached only if all stakeholders along the supply chains are willingness to cooperate, improve communication and share information's. Finally, global supply chains re-design and development should be based on a realistic assessment of the customers need and their demand.

Impacts on shipping industry and ports

The last thirty years, China has developed into the most important driver of the shipping industry and the first manufacturing place in the world. After joining the WTO in December 2001, China strengthened its position as a powerful player in global trade. The world's cargo volumes and demand for cargo is driven by the Chinese manufacturing demand for raw materials and the exports of semi-finished and finished products from China to the world.

Consequently, the central position of China in global supply chains and the dependence of large part of the world on Chinese manufacturing production is obvious. When China

was the first country that was hit by the COVID-19 pandemic, international trade and various links of the global transport chains were disrupted. The shipping industry was one of the most affected sectors by this disruption. Not only large shipping companies, which are the backbones of international transport and seaborn trade, but also related industries like ports, terminals, etc., suffered from the COVID-19 crisis.

The demand shock translates into lower demand for commodities and raw material, and thus the need for transport/shipment. This makes direct effects on the total capacity of shipping, which has decreased significantly during the first three months of 2020. Compared to the same period in 2019, the Chinese coastal ports registered a drop in total throughput (in TEU million) of respectively -5.9% and 15.8%, and 10.1% in total container volumes in January, February and March 2020. Some key port like Hong Kong have registered 15% drop in total container volume in February 2020.

At the global level, the container trade volumes declined by 8.6% in February 2020, compared to the same period in 2019. The decline in container trade was particularly marked in the Far East (-17.5%), Europe (-4%), North America (-7%) and Oceania (-2.8%) (ITF, 2020., p.1).

The first reaction from most shipping companies to the falling global demand was a reduction in supply of container ships and temporary suspension (or combination) of some services and trade lanes (trade routes). As result, shipping operators have suppressed some scheduled sailing (e.g. tactical capacity) in order to maintain constant freight rates and to prevent worsening of their liquidity position. This has resulted into an increase in total blank sailing of 188 in the months of February-March2020.

According to ITF (2020), almost 30% of the far East-Europe service capacity was cancelled and up to 20% of the Trans-Pacific service capacity was expected to be cancelled by the end of May 2020. On May 11th 2020, 11.3% of the total containership fleet capacity was inactive.

This is equivalent to 2.65 million TEU.

In addition to shipping carriers, common feeder operators have also reduced their capacity as the effect of the many blanked sailing on Asia –Europe trade route is felt in Europe. As result, the demand for feeder services has decreased further.

It is worth to mention that despite the reduction in capacity by major shipping carriers, the prices of container shipping services remained stable, due to the control of container shipping prices by shipping alliances and consortia.

By the end of May 2020, global shipping carriers, such as The Alliance (Hapag-Lloyd,

HMM, ONE and Yang Ming), are progressively reinserting some previously cancelled sailings on transpacific and the Asia-Mediterranean tradelanes.

More generally the COVID-19 crisis has the following short term and medium and long-term effects on the shipping industry:

1. Short term effects:

- Increase in manufacturing delays, due to travel restrictions and shortage of labor force. (b). Increase in blank sailing, due to decreased global demand.
- Decreasing costs (20% decrease in Jan-February 2020) of hiring very large crude carrier, large tankers and bulkers.
- Slower port operations as priority is given to vessels carrying aid supplies and urgent products for the outbreak (pharmaceutical products, equipment's, etc.).
- Cancellation of important global events related to trade and maritime and shipping industry, which might cause less new purchases and income opportunities forsellers.
- Low demand of oil, due to lower demand and decreased capacity.

2. Medium- and Long-term effects:

- Lower freight rates for vessels (dry bulk and tankers) due to the combination of lower demand and lower manufacturing production capacity.
- Revenue losses and low profits caused by big drop in container volumes and additional costs that came in with the IMO 2020 regulation for steam shiplines.
- Risk of insolvency of some major carriers as result of the high debt levels of container carriers in addition to the COVID-19 effects on their profit ability.
- Potential (negative) effects of the China-U.S. Trade Deal on the international trade
- Potential risk of economic slowdown in China as it was the case during the SARS outbreak in 2003.

COVID-19 impacts on global container ports

As mentioned before, lower volumes and blank sailings of container shipping make also direct effects on ports and port activities. Indeed, most global hub ports reported significant decrease in total handled volume in the first quarter of 2020, laying between 8% and 10%. The decrease in imports from Asia lay between 10% and15%.

In May 2020, Chinese ports showed positive signs of recovery. The containerized cargo has improved significantly from a fall of -17% in February to only -2% in March (ITF, 2020, p. 9). The figures from the China Ports and Harbors Association show that in the eight major Chinese ports, the decrease has been 7.3% on YoY, and 50% of the Chinese ports registered a decrease of more than 15% YoY (IAPH-WPSP, 2020). The reduced volumes in international cargo was partly compensated by an increase in domestic cargo transits of Chinese ports. Outside China, the port of Singapore reported a reduction of 5% in container volume, and 12.6% in cargo throughput (million tonnes) in April 2020. The number of vessel arrivals in the same month decreased by 37.6% (YoY growth).

In Europe, most ports were among the world's hardest hit from the COVID-19 pandemic. Two- third or more of European ports were severely affected by the coronavirus crisis, due to falling ship calls (65% in the first week of May 2020) and strong contraction in global supply chains. High blank sailings (28% on the Asia-Europe route in the second half of May), in combination with demand shock in Europe, has increased the idling of the fleet capacity (more than 2.5 million TEU) and less vessel calls. Container ships, car carriers and industrial dry-bulk vessels were the hardest hit by the COVID-19 crisis. For example, on the Mediterranean range, the port of Barcelona recorded a decline of -14% in total volumes and only 3.2% decrease in total containerized cargo flows (import and export). The port of Valencia recorded a -5% decrease in total volumes. On the Le Havre-Hamburg range, and except for the port of Antwerp and Zeebrugge, who recorded a positive growth, total throughput dropped from moderate to strong in most other hub ports, with Hamburg recording -6.6% decrease, Bremerhaven -3.2% and Le Havre recording a decrease of -23%.

The port of Rotterdam, the largest port in Europe, registered a decrease of -9.3% in the total throughput in the first quarter of 2020, compared to the same period of 2019, which is equivalent to a total of 112.4 million tons. Projection for the years 2020 and 2022 shows a further decrease of the annual throughput volume between -10% to -20%.

Detailed figures per commodity show significant throughput decrease in the segments of dry bulk (-14%), crude oil (-8%) and oil products (-32.8%) compared to the same period of January-March 2019, while a clear increase was registered in the transhipment of iron ore (15.7%), biomass (106%), LNG (17.9%) and other wet bulk. The container shipping

registered -5.6% decrease in the total number of containers, while container transhipment in tons was almost the same in the first quarter of 2020 as in 2019 (-0.3% in tons, -4.7% in TEU). Finally, RoRo throughput decreased by 7.3% in the same period, as well as the transhipment of other general cargo (-3.2%) due to the economic downturn (Port of Rotterdam, Quarterly data, 16 April 2020). The second port in the Netherlands, the port of Amsterdam has been closed since March 2020 to all sea and river cruise ships until further notice, and all events -like SEAL event- were cancelled until 1 July 2020.

In the USA, container port volumes at the North America West Coast declined by 12% in the period of January-April 2020 compared to same period in 2019. In April 2020, total volume droped by 12%, due, among other things, to canceled sailing of about 20% in the ports of Los Angeles and Long Beach during the first three months of 2020. The same applies also to the port of Oakland, although with less blank sailings in February through March than in the ports of long beach and Los Angeles (total of 23 blank sailings).

Beyond the figures presented above, it is worthy to present and discuss here an important survey reporting on the economic impact of COVID-19 on ports in the world, which is currently conducted by the IAPH-WPSP. The IAPH-WPSP port economic impact barometer is conducted on a weekly basis, with the aim of monitoring the trends and changes in current situation in world ports.

The first survey results were collected in the week 15 of March 2020, the second, third, and fourth survey in the weeks 16, 17 and 18 of April 2020 and the fifth survey in the week 20 of May 2020. The surveys are conducted with the contribution of 90 ports from all over the globe, with Europe as the leading region with 44% of the total responses. North Asia and South East Asia/Australia are also well represented (9% and 10%), as well as an increasing contribution rate from Central/South American (15%) and African ports (11%).

The main categories of the survey are: 1) Impact of crisis on vessel calls 2) Extra restrictions on vessels. 3) Extra delays due to changes in port call procedures. 4) Impact of crisis on hinterland transport. 5) Impact on capacity utilization including warehousing and distribution activities. 6) Impact on availability of port workers.

In what follow, we only present and discuss the results of the last survey of the week 20 of May 20201. The main observed trend in this week is the somewhat mixed picture where some ports are heading towards a more stable situation, and other ports are still struggling to limit the losses from decreasing cargo volumes and the effects of the shutdown of the economies on trade (imports and exports).

First, concerning the impact of crisis on vessel calls, the results of the survey show that almost 50% of the ports still report significant drops in the number of container vessel and

other cargo vessel calls as result of the COVID-19. The share of ports facing a decrease of more than 25% in container vessel calls has risen to 10%, and the share of ports reporting reductions in other cargo vessel calls of more than 25% increased to 15% (vs. 12 to 14% throughout weeks 16 to 19).

Second, the share of ports imposing restrictions on container and other cargo vessels has decreased moderately. Nine out of ten ports did not impose any restrictions on container vessels and other cargo vessels. However, due to problems around crew change processes, some companies decided to increase the time of the crew on board, reducing the number of crew changes, and even dropping stopovers at some terminals.

Third, 92% of ports indicate that activities are normal or back to normal and that there are no extra delays due to changes in call procedures (e.g. hygiene inspections, distancing of workforce, disruption of port or related services). A slightly more ports report delays or major disruptions in container vessels and other cargo vessels. More technological advances are applied by the ports (web and mobile app for truck booking services, forwarding exports and delivery of import, etc.) to improve the port operations at the yard and at the gates of the terminals.

Fourth, concerning the impact of the COVID-19 on the hinterland transport, the results show an overall improvement in hinterland transport operations, except for cross-border trucking. About 21% of the ports are still suffering from disruption in transport sector. They report delays of 6-24 hours or heavy delays of more than 24 hours in cross-border road transportation. And 63% of ports witness normal operations in cross-border transport by truck or are back to a normal situation. Three quarters of ports are reporting normal activity of trucks arriving or leaving the port.

Fifth, the results show that the COVID19 crisis has resulted in 1 out of 5 ports reporting an increase in capacity utilization of warehousing and distribution facilities for foodstuffs and medical supplies. However, none of the respondent ports points to capacity shortages. Overall, there are more ports reporting under-utilization (23%) than increased utilization (13%).

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1 For further details and comparison between results of all conducted surveys, the reader may consult the IAPH-WPSP website at:https://sustainableworldports.org/latest-global-port-survey-pendulum-swing-from-over-capacity-to-under-utilization-at-some-port-storage-areas/

Sixth, the COVID-19 measures have not had a huge impact on the availability of port-related workers. 17% of the ports mention that they face shortages of dockworkers, and only 6% of the sample is confronted with shortages for the delivery of technical-nautical services. The availability of truck drivers is high and shows a clear trend towards further improvement: only 9% of the ports face truck driver shortages compared respectively 12%, 16% and 21% in the last three surveys of the monitor.

Countries / Government response to COVID-19: A comparison

Countries around the world have instantaneously responded to the spread of the COVID-19 by implementing public-health measures to control the spread of the virus as well as the application of various economic policies (fiscal and monetary policies, subventions, etc.) to support businesses and prevent structural economic damage from the economy. Cities and regions have also played a key role in implementing these policy measures in support of small and medium enterprises and the population.

In Asia, Southeast Asian countries were the first regions affected by the COVID-19, due to their geographical proximity to China and the high level of business travel, tourism and supply chain links to the China. As the rate of infection rose in Southeast Asia, the impact of the pandemic brought immediate interruption in all sectors of the economic activity. The governments of these countries have introduced comprehensive monetary policies measures and fiscal stimulus packages aimed at supporting businesses and households. These fiscal and monetary policies stimulus packages range from health system measures, income support measures for individuals and household, public sector loans or capital injections to key firms, loan guarantees by the state, benefiting private borrowers, tax and contribution policy measures, cut of interest rates and temporary suspensions of loan principal/interest repayments, setting up funds to facilitate lending to firms, deferral of taxes and social security contributions and bringing forward expenditures within current fiscal year, etc.

In Africa, and beyond health risks, the COVID-19 crisis will affect Africa's growth through domestic and external channels. The main shocks to African economies come from lower trade and investment (FDI) from China (was 16% between 2104-2018), the demand slump associated with the lockdowns in the European Union and OECD countries, which absorbs more than 50% of West African countries exports, and finally a continental supply shock affecting domestic demand and intra-African trade. More generally, the COVID-19 crisis will have significant impact on the well-being and number of people living in poverty (30

million more people could fall into poverty according to the UN estimates). Like other governments in the world, most African governments have responded to the COVID-19 pandemic by implementing monetary and fiscal stimulus measures.

In Latin America and the Caribbean, economic impact of the COVID-19 crisis is dramatic for some countries that are dependent on export services and tourism. Some Caribbean economies, where tourism accounted for more than 20% of GDP (2018) could fall by around 25%. Other sectors such as retail trade, wholesale trade and manufacturing sectors will also be heavily affected. Many SME's companies, which represent 99% of all companies in the region and generate more than half of jobs, are struggling to survive. To contain the spread of COVID-19, many LAC countries have already reacted swiftly by adopting social distancing and lockdown measures. In parallel, they have adopted fiscal and monetary policies measures to protect the most vulnerable things and to preserve productive and financial capacities of their economies.

Without further digging deeper into a comparative analysis of differences and similarities of applied fiscal and monetary policy measures by different governments around the world, we present in the table 1 (see the appendix) a detailed summary of the most important policies and stimulus packages launched by various countries around the continents (Asia and Southeast Asian countries: China, South Korea, Japan, Vietnam, Thailand; Africa: Côted'Ivoire, Egypt, Morocco, Senegal, and South Africa; Latin America and the Caribbean: Argentina, Brazil, Mexico, Chile, Ecuador, Paraguay and Peru)

Concluding remarks

From the discussions and analysis in this article, a couple of remarks arise:

First, if the outbreak of the COVID-19 has taught us something, that would be the fact of how vulnerable are the current interconnected and networked economic system and the (organization of) global value chains for unexpected events such as pandemics and/or other disruptions (like natural disasters). Recent discussions point out to the fact that COVID-19 crisis could result into less globalization (de-globalization) and increase regionalization. The reason for this is that because of globalization and interconnectedness, most economies become too dependent on each other's and too vulnerable for small risks that could hit some nodes in the global supply chains. Because of these, we might expect a restructuring moves of the economies as production and sourcing could move closer to end users and companies de-localize or regionalize their supply chains.

Second, the true economic effects of the COVID-19 crisis are difficult to quantify because the nature, properties, and the duration of the COVID-19 pandemic are not clear or unknown. We can only extrapolate from past shock experiences that are closely similar to the COVID-19 pandemic, like the SARS pandemic of 2002-2004. However, impacts on transport and logistics services, retails, hospitality, culture and entertainments, and domestic demand for, non-tradable services are substantial and could be disastrous for the economy if governments stimulus measures were not applied quickly, and governments interventions were not instantaneous.

Third, a possible result of the COVID-19 pandemic could lead to restructuring of the global production that will shift closer to big consumer markets, and re-design of the global supply chains based on resilience and sustainable short supply chains.

Fourth, rising awareness from companies and businesses find and apply smart solutions to anticipate risks. Emerging technologies such as Artificial Intelligence (AI), Internet of Thing (IoT), in combination with big data and predictive analytics, etc., offer huge potential for supply chains, and help to predict risk events and reduce disruptions, especially in transport and logistics supply chains. Some manufacturing companies (automotive manufacturers for example) have already installed systems that enable them to accurately forecast demand. A key element for a successful implementation of new technologies is the integration of all parties involved at different parts/legs of the supply chains that are willing to cooperate and share information.

Appendix

Table 1. Fiscal and monetary policy measures in response to the corona crisis: An overview

	Fiscal policy measures	Monetary policy measures
	Asia	
• **China**	• Temporary price subsidies, • Extension of social welfare • Subsidies and the subsidies and tax exemption for green car purchase • Exemption of a wide range of consumer services from VAT (currently 6%) • Reduced VAT collection rate to 1% in Hubei province (currently 3%) for small taxpayers. • Deferral of taxes and social security contribution • Bringing forward expenditures within current fiscal year, loan guarantees by the statebenefiting private borrowers.	• Lowering 1- and 5-year benchmark rate by 10 bp in February. • Issuing special bonds to fight the coronavirus by China Development Bank • Reduction of reserve requirement ratio for banks' lending to SMEs, agriculture and entrepreneurs, • Cut of interest rate paid on excess reserves (from 0.72% to 0.35%) • Liquidity injections and support financial institutions by issuing CNY 300 billion to lend to SMEs.
• **South Korea**	• A total of KRW 216 trillion support measures, including liquidity provisions and credit guarantees. A KRW 20 billion mergency support to help households and damaged industries • In March 24th an additional financial support package of KRW 100 trillion was announced to help local businesses and ease the financial burden on households and businesses. • Expansion of financial loans and guarantees (RKW 58 trillion) • Rolling over debt of SMEs and self-employed people and the provision of various relief support schemes to households and people (cash support and paying relief checks to households in the bottom 70% income bracket) • VAT exemption, tax deduction for individuals, and extension of filing and paying local taxes, etc	• The creation of a bond and a stock market stabilization funds (KRW 20 trillion and KRW 10.7 trillion) • Cut the interest rate to 0.25% (from 0.75%) to encourage bank lending to SMEs.

	Fiscal policy measures	Monetary policy measures
• **Japan**	• Emergency fiscal package of JPY 117 trillion (21.7% of GDP) that add to another JOY 38 trillion of public spending. • Financial support to SMEs and corporation that cover 2/3 and ½ of the cost of special paid leaves. • Cash transfer of JPY 12.8 trillion (2.4% of GDP) for every resident and JPY 2 trillion (0.4% of GDP) for SMEs who experience significant fall of their earnings. • Different public subsidies: deferment on tax payments, extension of tax payments, emergency loans and credit guarantee for SMEs such as tourism industry, special loan program for affected firms.	• Intervention of the Bank of Japan in the financial market (asset purchases, purchases of corporate bonds and Japanese Government bonds, • Providing loans against debt as collateral at 0% interest rate, etc.) to provide ample liquidity and ensure stability of the financial market.
• **Vietnam**	• Cash transfer of JPY 12.8 trillion (2.4% of GDP) for every resident and JPY 2 trillion (0.4% of GDP) for SMEs who experience significant fall of their earnings. • Different public subsidies: deferment on tax payments, extension of tax payments, emergency loans and credit guarantee for SMEs such as tourism industry, special loan program for affected firms. • The government launched mitigating measures such as request to financial institutions to facilitate credit access, shorten loan applications and reduce or exempt interest rates for affected firms. • Deferment of tax payment for 5 months. • Reduction of services fee by 10% to 50% for nine categories of stock market transactions. • Additional relief package, including cash handout to 20 million people and zero interest loans to employers for salaries. • The Ministry of Industry and Trade has cut electricity bills for businesses and households by 10% for three months • Deferred tax payment by 5 months without penalty	• Reduction of policy rate (refinancing rate) to 5% (was 6%) and later to 4.5%. • Discount rate to 3.5% (was 4%) and overnight rate to 6% (was 7%).

	Fiscal policy measures	Monetary policy measures
• **Thailand**	• Stimulus package of about 9% of GDP to help people and businesses, including financial aid to farmers, those in informal sector and outside of the social security system. • 9 million workers benefited from cash payment from April to June, with possible extension to the end of September. • Tax relief schemes were applied, ranging from tax exemption, lowering payment of withholding tax to boost liquidity • Deduction of employee salaries for SMEs for four months (from April to July) • Extension of the deadline for filing of corporate tax to September. • The central bank allocated THB 500 billion for soft loan to SMEs at an annual rate of 2% and interest rate-free for the first 6 months.	• Lowering policy rate by 0.25% point from 1.25% to 1% by the Bank of Thailand, and further to 0.75% by the end of March. • The Bank has also injected THB 400 billion into corporate bond market by establishing a financing fund.
Africa		
• **Côte d'Ivoire**	• The government adopted an emergency response plan of CFAF 96 billion (or 0.3% of GDP) • A package of CFAF 820 billion (2.3% GDP) of economic measures to prop the income of the most vulnerable segments of the population and provide relief to hard-hit sectors and firms. • Public entities in the transport and port sectors are supported by public funding to ensure the continuity of the supply chains.	
• **Egypt**	• The government has announced stimulus policies in the USD 6.4 billion package (EGP 100 billion, 2% GDP) to mitigate the economic impact of COVID-19.	
• **Ethiopia**	• The government announced a US$ 8.84 million package to bolster healthcare spending in early March. - On 3 April, a COVID-19 Multi • Sectoral Preparedness and Response Plan was announced (will require USD 1.64 billion in funding (about 1.6% GDP)).	

	Fiscal policy measures	Monetary policy measures
• **Morocco**	• The creation of a special fund dedicated to the management of the pandemic, of about 2.7% GDP financed by the government and by voluntary contributions from public and private entities which will be tax deductible. This fund will cover the costs of upgrading medical facilities and support businesses and households impacted by the pandemic.	
• **Nigeria**	• A fiscal stimulus package in the form of a COVID-19 intervention fund of N 500 billion (USD 1.4 billion), has been approved to support healthcare facilities, provide relief for taxpayers, and incentivize employers to retain and recruit staff during the downturn.	
• **Senegal**	• The government has set up an emergency fund of up to CFAF 1 000 billion (7% of GDP), financed by a mix of donor contributions, voluntary donations from the private sector, and the budget. The Fund will be used to support vulnerable households and firms.	
• **South Africa**	• The government launched the 'Unemployment Insurance Fund' (UIF) to assist companies and workers facing distress • Special programmes from the Industrial Development Corporation. • Additional funds are being made available to assist SMEs under stress and for the health response to COVID-19. • Workers with an income below a certain threshold will receive a small tax subsidy and the most vulnerable families will receive temporarily higher social grant amounts.	

	Fiscal policy measures	Monetary policy measures
Latin America and the Caribbean		
• Argentina	• Application of the Emergency Employment and Production Assistance Programme, which includes a reduction up to 95% of employer payments to the Argentinian social security agency. This Programme was expanded in mid-April to pay workers of companies facing financial crisis 50% of their salaries, as well as providing zero-interest loans to self-employed workers. • Flexible fiscal measures were applied, such as minimizing individual and corporate taxes, freezing the prices for food, personal care, drugs and medical products, etc. • Supporting private companies with working capital for up to 180 days by public banks.	• The government decided to loosen monetary policy.
• Brazil	• A stimulus package of over US$ 29 billion was launched to accelerate social assistance payments, defer corporate taxes and ease workers' access to various funds. • Payments of the equivalent of two monthly salaries for workers employed by SMEs. • A new US$ 6.1 billion programme was launched (1 April 2020) to subsidize salaries for those on suspended work contracts or saw their working hours reduced.	• Extra monetary policy measures.
• Mexico	• The government announced a plan to extend 1 million low or zero interest loans to SMEs. • Cancel and redirection of 281 government public trusts to the Federal Treasury, representing more than US$ 10 billion, which will be used for social programs, economic recovery and credit lending. • Support for state oil firm Pemex, and public debt payments. • Some trusts used for emergency purposes will be exempt.	• The Central Bank has cut its benchmark interest rate by 50 basis points to 6.5%.

	Fiscal policy measures	Monetary policy measures
• Chile	• A US$ 11.75 billion economic plan (4.7% of the GDP) was announced, including several other measures such as the delay for three months of company's income tax and VAT for companies with sales below US$ 10 million. • The postponement of payment of income tax and the payment of contributions in April for companies with sales of less than US$ 10 million. • A capital injection of US$ 500 million to fund loans to SMEs. • A US$ 3 billion guarantees fund for SMEs from Banco del Estado. • A fund of up to US$ 2 billion were launched for workers to access emergency benefits on 8 April 2020.	• Extra monetary policy measures were applied.
• Ecuador	• The country expects to receive a total of US$ 2 billion in emergency funds from three international agencies to combat the impact of Covid-19 virus: US$ 500 million from the IMF, US$ 500 million from theWorld Bank and US$ 1 billion from bilateral debt, primarily from China. • The government announced the postponement of social security payments for 90 days and deferral of taxes for the tourism and export sectors and SMEs for the three months (April-June).	
• Paraguay	• A US$ 1.6 billion in loans from international organizations was allocated to Health emergency, from which US$ 514 million is reserved for public health services and US$ 408 million for job protection. • A stimulus package of US$100 million was announced to support 1.2 million informal workers, and US$100 million to help finance the private healthcare subsidies, US$20 million to care for the elderly, and US$10 million for economic relief for 160.000 low-income families.	• The government reduced the interest rates from 4% to 3.75%.

	Fiscal policy measures	Monetary policy measures
• Peru	• A stimulus package of US$ 8.73 billion in loans benefitting small and medium sized businesses (SMEs) was announced. • The payment of income tax for SMEs and individuals was postponed to early June 2020. • From the beginning in mid-April, the government started to subsidize the salaries (US$ 225 per month) of those that lost their jobs due to the coronavirus crisis.	

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GSTTA BOOK
Impact of COVID-19 on Maritime Industry

Impact of COVID-19 on liner shipping industry

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Liner shipping has enabled the multinational businesses to use the lowest cost resources and manufacturing facilities worldwide, provided global consumers with the inexpensive imported commodities and contributed to the fast development of world economy. As stated by Marc Levinson in his book “The Box”, “the modern global economy would not exist is the introduction of the container were not and the liner shipping industry that moves them”.

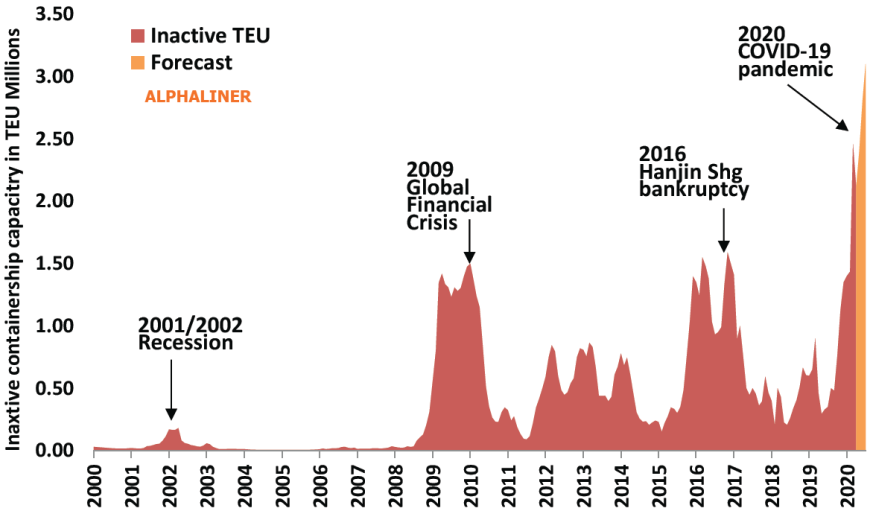
Important as it is, liner shipping industry does not have a very sound financial performance, especially after the 2008 financial crisis, due to the sluggish market demand at one side, and the overcapacity in the liner shipping supply in the other. To be competitive in the market, major carriers invested too many large Ultra Large Container Vessels, especially those over 18 thousand TEU. Almost all of them are deployed in the major East-west route, which will see the steepest plunge during and after the COVID-19.

This paper first demonstrates the status of the liner shipping industry, summarizes the development of large container ships and their deployment in the world shipping routes, and analyze the evolution of global trade patterns in the past 20 years. Then, it points out the difficulties of predicting the future trends of COVID-19, and summarizes the existing predictions about its impact on the world merchandise trade and the possible scenarios of future globalization. Based on this, the paper points out the possible impacts of the pandemic on the liner shipping industry.

Status quo of the liner shipping industry

Since 2008, the liner shipping industry is in a state of high overcapacity and low profit margin. As shown in Figure 1, the inactive capacity before 2009 is very low, except a short period in 2002. This low inactive capacity exhibits prosperous market during that period. Since 2009, there is an obvious difference in the distribution of inactive capacity. This long-time inactive capacity is an obvious evidence of overcapacity in liner shipping supply.

Figure 1. Inactive containership capacity from 2000 to 2020 (Alphaliner newsletter)



This long period of overcapacity has resulted in a chronical low profit margin from 2008. Figure 2 presents the quarterly average operating margin of the main carriers in the past 12 years from 2008 to 2019. Among the total 48 quarters in these 12 years, the average profit margins are negative in 25 quarters! Major carriers are spending more time losing money! In addition, the magnitude of losing is much bigger than that in the positive region. This long period of negative earnings has seriously undermined the financial sustainability of most major carriers. The bankruptcy risk for the major carriers has risen to *high* or *very high* level, as evaluated by Alphaliner (Alphaliner Newsletter Vol. 2020, issue 15) using the Altman Z-score (Figure 3). In theory, if the Z-score is less than 1.8, the chance of bankruptcy is *very high*; if it is between 1.81 and 2.7, the chance is high. If it is between 2.8 and 2.9, the chance is *possible*, and if it is 3.0 or higher, it is *not likely*. The resulting Z-scores shows that only two companies (Hapag-Lloyd and Maersk) are in the *high* range. All other firms' Z-scores are less than 1.8, which is *very likely* to bankruptcy. Although they may not really bankruptcy due to government support, it reflects the difficulties for the main carriers to maintain a healthy financial status.

Figure 2. Main carriers' average operating margin by quarter: 2008-2019 (Alphaliner)

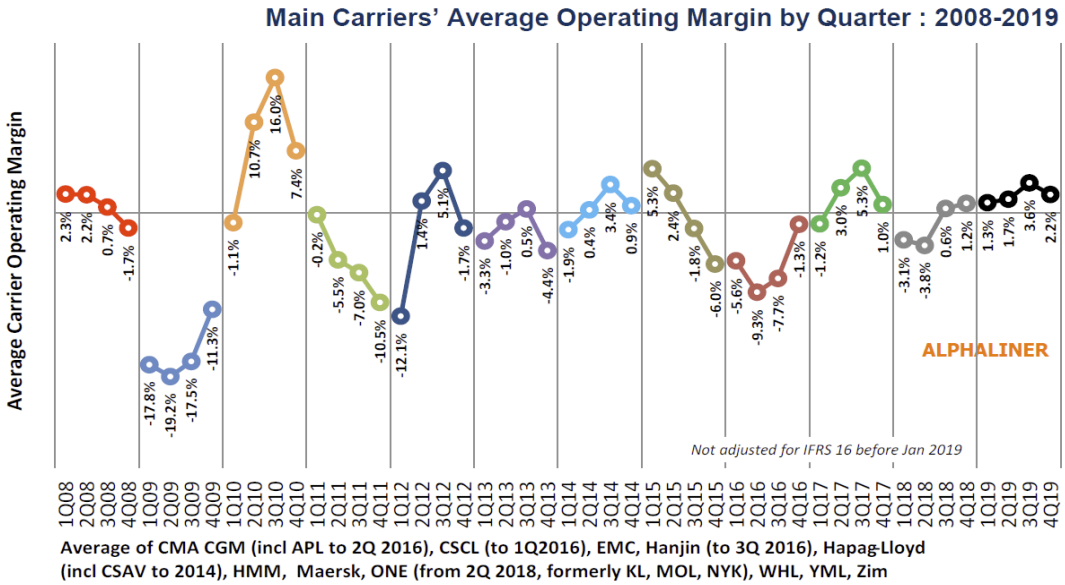
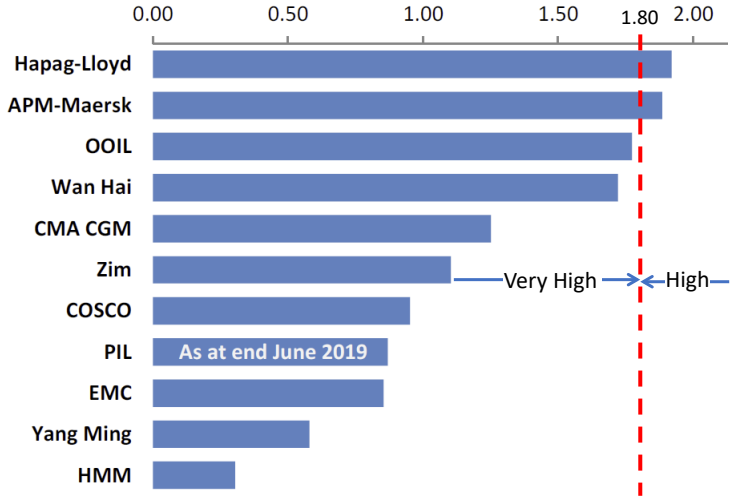


Figure 3. Altman's Z-scores of major carriers (as at end of 2019)



Large container ships and their deployments

After 2009, increasingly more ships with carrying capacity more than 18,000TEUs are delivered, which changed the structure of world containership fleet. As shown from Figure 4, the number of ships increased at a much slower rate after 2009, while the average ship size increased even faster than that before 2009. This is a clear indication on the change of world containership fleet structure. Most of these large ships are operated by the major

carriers in the three alliances, and deployed in the FE-Europe route (Figure 5). As of April 1, 2020, there are 116 ULCVs (18,000TEUs), operated by APM-Maersk (31), MSC(31), COSCO Group (28), CMA CGM Group (3), Hapag-Lloyd (6), ONE(6) and Evergreen (11). In addition, 37 of such ships are on the order book, which will be delivered in 2020 (18 units), 2021(11 units) and 2022 (8 units)[1].

Figure 4. Evolution of world container fleet 2000 – 2020

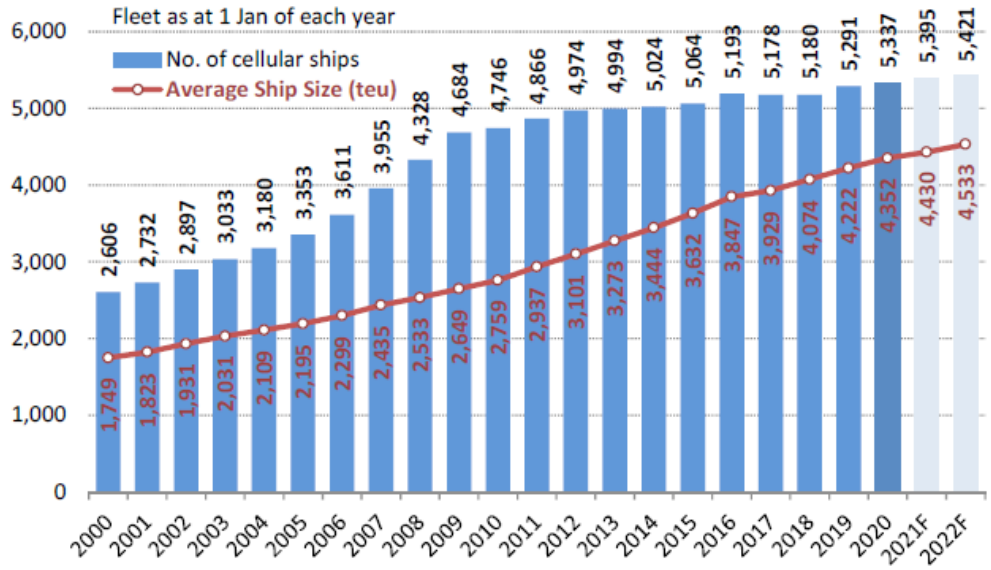
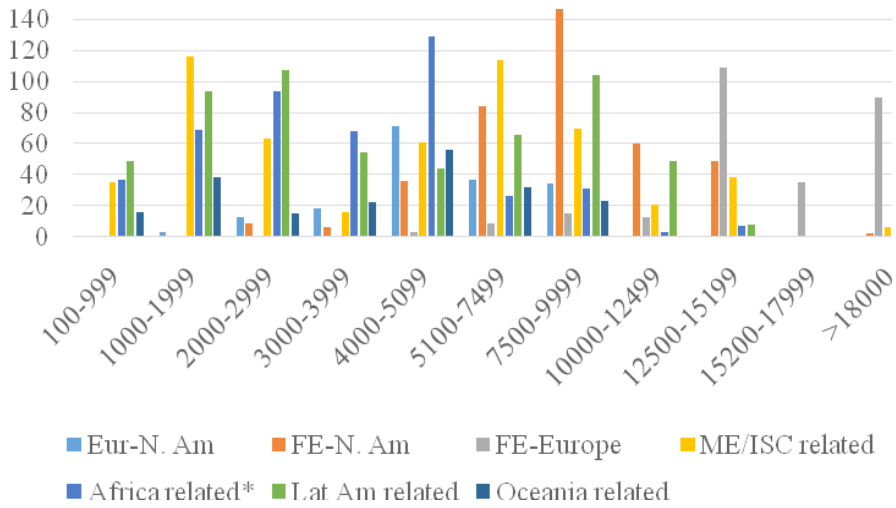


Figure 5. Number of ship deployment to different routes by size category

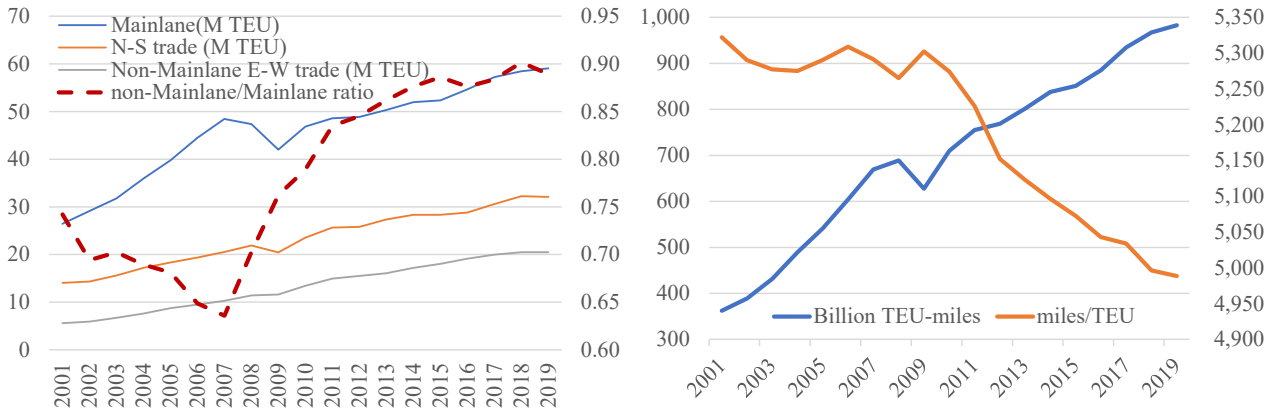


1 Alphaliner Monthly Monitor, April 2020.

Evolution of global trade patterns

The global financial crisis in 2008 has already changed the global trade pattern, where the high volume in the main East-West route is increasing at a slower speed than the non-mainlane trade, including the North-South trade and non-mainlane East-West trade. As shown in Figure 6(a), the proportion of non-mainlane trade decreases to only about 65% of the main land trade from 2001 to 2007, indicating the strong growth in the mainlane trade. This motivated the build of ultra-large containerships for using in this route. However, after 2007, the ratio of non-mainlane to mainlane trade increased and maintained at about 90%. This indicates the trade volume on non-mainlane route is almost similar to one in the mainlane. The importance of non-mainlane trade can also been seen in the average distance transported for each container box, as shown Figure 6(b). Before 2009, the total TEU-miles increased at much faster rate than after 2009. The lower increasing rate of TEU miles after 2009 implies the growth of mainlane trade is slowed down. If we look at the average transport distance per TEU (miles per TEU), it shows a fast decrease after 2009, indicating fast increase in the non-mainlane short-sea shipping.

Figure 6. Evolution of world trade patterns Since 2001 (2020-2021 predicted data)



(a) Mainlane v.s. non-mainlane trades

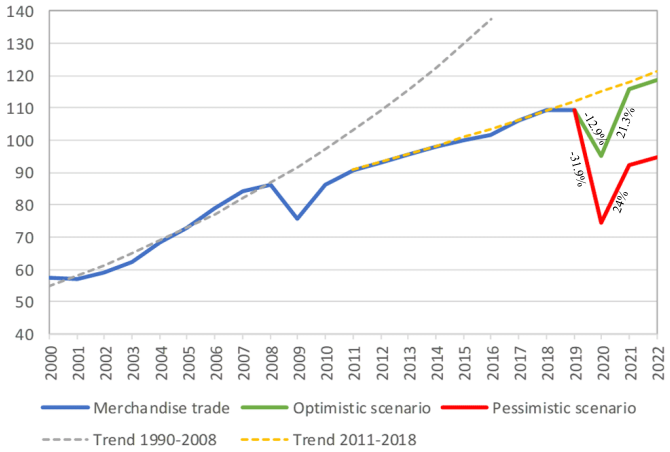
(b) TEU-miles and miles/TEU

Changes in the future world trade after COVID-19

COVID-19 is a virus with changing property. We know that it is extremely contagious, but people will behave differently after being infected. Although most will show the usual symptom withing 14 days, some may take longer time, and many can have no symptom at all. The virus seems like regenerating itself, and many new variations have been identified, which makes the research and production of the vaccine difficult, if not hopeless. Many hoped to develop herd-immunity to stop the transmission of virus. However, this expectation is based on the past experiences with other pandemics, which may not necessarily work this time. There is already evidence that people who have been infected once and developed antibody can be infected again. Quarantine seems the only effective way to eradicate them from the community, but the community cannot last long under quarantine. Therefore, it seems highly uncertain when we can have our life and our economy back.

Nevertheless, there are many predictions on the possible impacts of COVID-19 on world trade, which can be used as a reference to discuss its impacts on shipping industry. WTO, for example, predicted that in optimistic scenario, the merchandise trade volume will decrease by 12.9% in 2020, and will increase by 21.3% in 2021. In the pessimistic scenario, the decrease in 2020 will be 31.9%, and the increase in 2021 will be 24% (Figure 7).

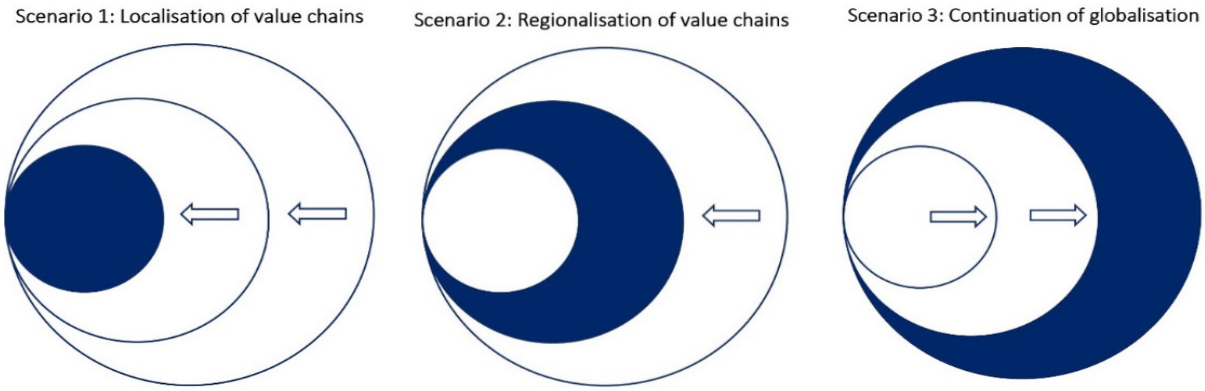
Figure 7. World merchandise trade volume 2000-2022 (From WTO)



In the long run, many also predicted that COVID-19 will structurally transform the globalization. Clingendael Spectator[2] generalized three scenarios for globalization in a post-COVID-19 world. 1. Localisation of value chains; 2. Regionalization of value chains; and 3. Continuation of globalization (Figure 8).

2 https://spectator.clingendael.org/en/publication/three-scenarios-globalisation-post-COVID-19-world#

Figure 8. Three scenarios on the assumption of future globalization[1].



The first scenario may happen if the virus cannot be eliminated, and people have to rely on the local commodities as international travel is not possible and many countries banned the export of some commodities considering the possible domestic shortage of such products. For example, according to WTO, many countries already restricted the export of critical medical supplies[3]. If the pandemic continues, the supply of imported commodities may be not sufficient, which may motivate the local production. If the local production lasted for long, they may continue to stay even when the pandemic is over, as people may learn a lesson that totally rely on global supply chain may not be a good idea.

The second scenario reflects the trend of regionalization, which has already in an increasing trend in the past two decades. The businesses are restructuring and shortening their supply chain, "with US companies moving production to Mexico and European ones to Eastern Europe or Turkey"[4]. This shortening of supply chain can help to overcome the weaknesses of local production, and at the same time, avoid the risks associated with the concentration of global manufacturing activity.

In the third scenario, globalization will continue, but definitely not business as usual. Japan and US have initiated government support to help businesses to move away from China. Apple, Microsoft and Google are intended to move out of China[5]. Apple has announced that it will move 20% of its iPhone production to India[6], to Taiwan[7], and airPods

3 http://www.wcoomd.org/en/topics/facilitation/activities-and-programmes/natural-disaster/list-of-countries-coronavirus.aspx

4 https://foreignpolicy.com/2020/03/12/coronavirus-killing-globalization-nationalism-protectionism-trump/

5 https://www.cnbc.com/2020/03/05/coronavirus-apple-microsoft-google-look-to-move-production-away-from-china.html

6 https://www.gsmarena.com/apple_to_become_indias_largest_exporter_may_reportedly_move_20_of_iphone_production_from_china_to_in-news-43133.php

7 https://www.imore.com/report-apple-moving-production-taiwan-amidst-virus-concern

production to Vietnam[8]. Such change in the global trade patterns cannot be down overnight. The developing the logistics system to support the new manufacturing site needs investment and time, which can further slowdown the recovery after the pandemic.

Possible impacts on the liner shipping industry

From the above description, most of the major carriers have high or very high probability of being insolvency, and most of them are having ULCVs plying in the FE-Europe Route. Only MSC, Evergreen and ONE are not listed in Figure 3, all other members in the three major alliances have *high* or *very high* possibility of bankruptcy. Further weakening on the container shipping demand will definitely create big headache for these top liner operators.

Without considering the change in the globalization pattern, if the reductions of merchandise trade are proportional on all route, then the about one third of the capacities in the FE-Europe route will become redundant. If the reduction on different size categories are also equal, then around 30 such ULCVs on the FE-Europe route can be redundant, as there are 91 such vessels deployed on this route.

There are also several other factors that may affect the competitiveness of using ULCVs in the FE-Europe route. First, the ULCVs are competitive only when the demand is high. If the weekly demand is not sufficient to fill up the vessel, then the economies of scale for using such larger ships cannot be realized. In this case, smaller ships may be more competitive than the larger ones.

Second, if localization or regionalization of the value chains really replace some part of the global supply chain, it will further decrease the competitiveness of using the ULCVs, which may further increase the difficulties for the major carriers.

Up to now, almost all of the ULCVs (>18,000TEUs) are owned by the top 7 major carriers. The reduction of these fleets due to the lower demand may result in a reshuffle of the whole shipping industry. This may bring up another round of government support to the major carriers. Without it, many major carriers may go bankruptcy.

8 https://vietnaminsider.vn/apple-to-move-airpods-production-to-vietnam-due-to-barriers-and-risks-from-coronavirus/

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GSTTA BOOK
Impact of COVID-19 on Maritime Industry

Propagation Mechanism of COVID-19 on the Shipping Industry, and a Proposed Early-Warning System

Byoung Wook Ko
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Propagation Mechanism of COVID-19 on the Shipping Industry, and a Proposed Early-Warning System

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Abstract

This article aims to suggest an integrated response mechanism to the COVID-19 crisis in the global shipping sector. For that purpose, it first shows the propagation mechanism of COVID-19 on the economies through a schematic approach. Then, it points out the two fundamental uncertainties involved in the economic forecasts produced by global institutes such as the IMF and the EIU. These two uncertainties are the degree of recession and the starting point of full-scale recovery. With these uncertainties of economic future courses facing the crises of their national shipping carriers, the governments should prepare further policy aids. But as there would be some time lag in implementing such economic policies, the governments would want to have early-warning system in order to respond to further shipping crises arising from COVID-19 in a timely manner. Therefore, this article proposes a real-time monitoring system to use the current marketing status information of shipping companies. The potential confidentiality problems caused by this monitoring system could be resolved through a relatively simple approach. Finally, this article recommends an integrated response mechanism to cope with the unexpected future crises similar to COVID-19. This response mechanism requires collaboration among research institutes, private sector entities in the shipping industry (companies and associations in particular), shipping financial institutes, and policy makers. This proposal is expected to enhance the ability of global shipping industries to cope with market risks.

Introduction

Since the initial outbreak of COVID-19 in China in December 2019, there have been several pivotal moments which have influenced the global community. First, on January 25, 2020, Wuhan (China) closed its ports because of the progressive spread of COVID-19. Simultaneously, the period of Chinese New Year was extended from January 30 to February 9. This first occasion impacted the global community through the supply shocks coming from China, the world's factory. In particular, many disruptions occurred in global supply chains involved with China, and then these brought about some serious reductions in seaborne trade.

The government of China responded to this first crisis of COVID-19 massive nationwide compulsory lockdowns, after which the spread of COVID-19 in China is lessened. But in the wake of China's outbreak, other countries such as South Korea experienced a second crisis of COVID-19. And as the second crisis in South Korea weakened in March, the advanced nations such as U.S.A. and EU nations started to experience outbreaks of COVID-19. In contrast with China and South Korea, the spread of COVID-19 in advanced countries could not seem to be controlled. Despite nationwide lockdowns, the infection curves of these advanced countries have still not reached the peak point.

The worldwide spread of COVID-19 has led to a serious economic recession. As of April, when the advanced economies saw explosive outbreaks of COVID-19 and consequential lockdowns, the IMF predicted that the global economy would experience deep recessions this year. For example, the IMF said that advanced economies including the U.S.A. would show a GDP growth rate of -6.1% and the developing economies would show a GDP growth rate of -1.0%, which means that the total global GDP growth rate would be -3.0%. This economic recession would lead to a significant decrease in international trade. So, the shipping industry, whose business is based on the physical flow of international cargo, should anticipate a significant current and future decrease in shipping demand.

In responding to this new kind of crisis in economy and shipping industry, the global shipping community should understand the surrounding situations and develop corresponding strategies and policies. But to the best of my knowledge, there has not been a comprehensive framework for the understanding of this current COVID-19 crisis and the subsequent design of strategies and policies. Further, in the global shipping community, there is no early-warning system to provide relevant information for decision-makers, for example, ship-owners, shipping operators, shipping financiers, policy-makers, etc.

Considering this lack of a schematic understanding of this COVID-19 crisis and the absence of an early-warning system, this article aims to propose an alternative framework for a comprehensive understanding of COVID-19's economic and shipping crisis and

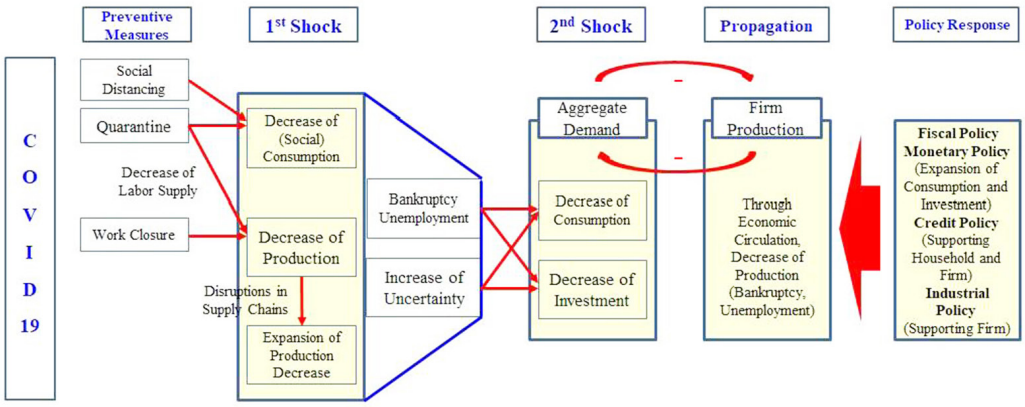
the relevant early-warning system. The next section will discuss the mechanism of the propagation of COVID-19 on economies. Then, the third section will propose an early-warning system, utilizing the information of on-going shipping contracts. Finally, this article suggests an integrated response mechanism to the COVID-19 crisis in the shipping sector.

Propagation Mechanism

The spread of COVID-19 causes the infected economies to lock down their countries and factories in order to prevent more infections. For example, the government requires measures such as so-called social distancing, quarantine (typically 2 weeks), work closure, and so forth. These preventive measures lead to the first economic shocks. In particular, social consumption decreases and production also decreases due to both the decreased demand and work closure. Further, the disruptions in (international) supply chains exacerbate the production decreases. The results of these first shocks have included bankruptcies of firms and massive unemployment. Also, the uncertainties surrounding the economies have increased.

So, these negative effects such as bankruptcies, unemployment, and increased uncertainties lead to a reduction in aggregate demand through decreases in private consumption and firms' investment. This decrease in aggregate demand is propagated into a circular reduction in firms' production. This kind of circular decreases of nation-wide economic activities require the government's intervention through the use of fiscal, monetary, credit and industrial policies, and so forth. This propagation mechanism of COVID-19 on economies is schematized in Figure 1.

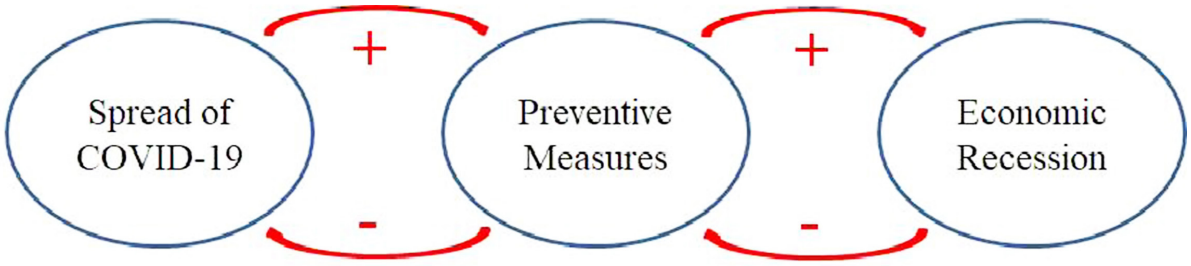
Figure 1. Propagation Mechanism of COVID-19 on Economies



Source : Korea Maritime Institute

But during the COVID-19 pandemic, there would be a mutual influence among the spread of COVID-19, preventive measures, and economic recessions. In many countries, such as South Korea, the U.S.A., and EU countries, serious economic recessions have induced their governments to lessen preventive measures such as lockdowns, work closures, quarantine, etc. This easing of health-related measures would be inclined to cause a further spread of COVID-19. This line of causality from easing preventive measures to spreading COVID-19 again suggests that the government must implement preventive health measures, which consequently leads to economic recessions. This mutual influence mechanism will be in play until the end of COVID-19. This is succinctly explained in Figure 2.

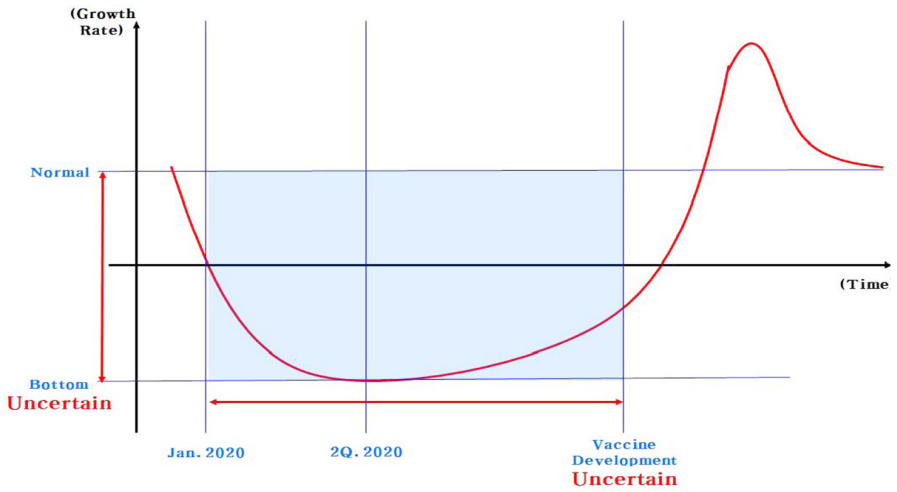
Figure 2. Mutual Influences among the Spread of COVID-19, Preventive Measures, and Economic Recession



Source : Korea Maritime Institute

Given this propagation mechanism, two questions remain: how deep will the recession be, and how long will it last? The representative global economic forecasting institutes such as the IMF and the EIU have produced some reasonable forecasts about economic growth rates and their patterns. However, these forecasts have been based on less accurate assumptions related to COVID-19's spread and its effects. In particular, the degree of recession (i.e., the bottom of the growth rate) and the starting point of full-scale recovery (time of vaccine development) are both fundamentally uncertain. Therefore, the economic agents should anticipate future events such as GDP decreases and the related revenue reductions by conditioning on these uncertain situations. This will require step-by-step updates regarding on-going economic movements, rather than rigid forecasting based on uncertain assumptions.

Figure 3. Outlook of Economic Recession and Recovery



Source : Korea Maritime Institute

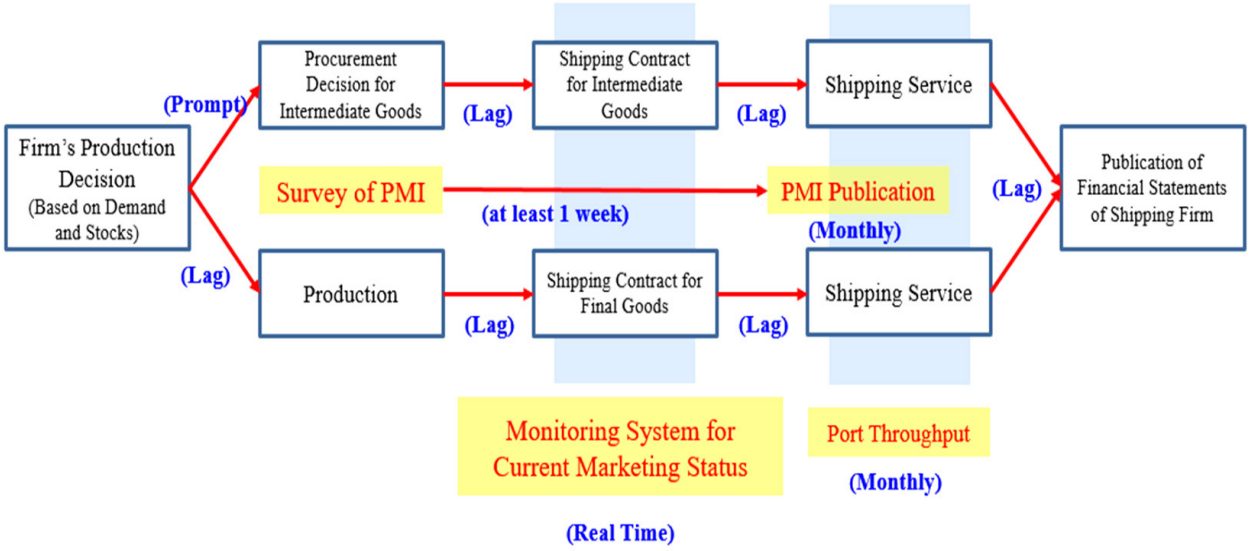
Proposal for an Early-Warning System

The global shipping media have reported that countries such as France, Singapore, China, Taiwan, and South Korea gave troubled shipping companies the liquidity required to survive. As was mentioned in the previous section, as the end of COVID-19 is uncertain, the governments, holding national shipping carriers, should prepare for further policy aids. But as is well-known in the economic policy literature, there would be some time lags when it comes to implementing the economic policies such as fiscal, monetary, credit, and industrial policies. Thus, if the government wants to respond to the shipping crisis from COVID-19 in a timely manner, there should be an early-warning system that could help the government to respond to such crisis.

Figure 4 shows a proposal for an early-warning system in the shipping sector. At present, there are two alternative practical indices for monitoring the current situation in the shipping sector. One is information about port throughputs. The port throughputs are collected by port authorities or customs. This information is typically released on a monthly basis. However, there are significant time lags between the actual shipping contract time and upload-unload time. As a worst-case example, in the dry bulk shipping market, the import cargo volumes in Chinese ports are released by Chinese customs. In this case, the time lag from shipping contract to unloading time could exceed two months. This means that port throughput data could not be an index for anticipating future negative effects in a timely manner. Another is PMI (Purchasing Managers' Index). In the middle two weeks

of the month, the survey for PMI is conducted. Then, at the start of the next month, the PMI of the previous month is released online. This monthly PMI could become an indirect measure for shipping activities. However, PMI also has two shortcomings. One problem is that there is also time lag. At most, theoretically there can be one month time lag. Another problem is that the PMI is only indirectly related with shipping activities. As such, even with the same level of PMI, the levels of shipping cargo can differ significantly.

Figure 4. Proposed Early-Warning System



Source : Korea Maritime Institute

As a practical source of early-warning information, I propose a real-time monitoring system for the current marketing status of shipping companies. For this monitoring system to work, the confidentiality problem of these marketing activities should be resolved. To solve this confidentiality problem, there are two issues that must be tackled simultaneously. The first is to maintain the confidentiality of the private information related with transaction participants. This issue is simply addressed by dropping all detailed information other than the volume of shipping activities. The second is to send the information only to the relevant monitoring unit. That is, the security of sending information to the responsible unit must be maintained. This requirement is also simply ensured by using an encrypted application suited for this service.

Besides this monitoring service for the shipping sector itself, this information on shipping activities could function as a leading economic indicator. Shipping-related indices such as BDI have long been used to forecasting the direction of overall level of economic

activities. The rationale behind this use as a leading indicator is that when the demand for shipping service increases, the demand for products also increases, which means the GDP potential increases. However, freight rate indices such as BDI incorporate both demand and supply information. So, in a period of over-supply, BDI has a bias, which results in a lower forecasting of shipping activities. The proposed direct measure of the volume of shipping contracts will show the actual demand for shipping services. In this way, this measure can function as an ideal leading indicator for the global economy.

Conclusion

Thus far, this article has shown the mechanism by which the effects of COVID-19 on the economies and the economic outlook have propagated, with two fundamental uncertainties. Then, to enable timely anticipation of future shipping crises, it proposes an early-warning system of monitoring the current marketing status of shipping companies. At the final stage of this improvement in the market risk management in shipping sectors, I would like to recommend an integrated response mechanism to the COVID-19 crisis in the shipping sector.

First, research institutes such as Korea Maritime Institute conduct nowcasting (estimating the current status) and forecasting of economic activities. This economic analysis would use scenario-based forecasting, and assign the probabilities to all scenarios. Simultaneously using this economic analysis, the representative associations of industrial participants (mainly private companies) assess the effects on revenues of their industries. By using this actual data of the shipping industry, the financial institutes predict the risk of default for shipping firms. These default risks are evaluated in terms of timing and size. As classic methods, the stress test and logit model can be used. As an alternative approach, I propose the use of an artificial intelligence model of shipping firms based on their historical financial statements and transaction information.

Finally, this organic understanding of impact of COVID-19 on the shipping sector and new proposal for market risk management are expected to enhance the competency of global shipping industries to cope with unexpected future crises similar to COVID-19.

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GSTTA BOOK

Impact of COVID-19 on Maritime Industry

COVID–19 Results of a brief investigation: the Logistics and maritime Italian operators' sentiment

Alessandro Panaro

SRM

COVID-19 Results of a brief investigation: the Logistics and maritime Italian operators' sentiment[9]

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SRM

In the international scenario and quantitative estimates on the impacts of COVID-19, as is SRM's style of research, it has been decided to provide added value by integrating these analyses with the interpretative keys of the phenomenon offered by operators, both Port Network Authorities and specialized Trade Associations.

At this moment, in fact, numerous proposals are being considered, and they are aimed at influencing the critical situation that the port and logistic enterprises are facing and which could at least mitigate, if not solve, some problems of health and economic-financial nature.

The players interviewed are all representatives of categories related to maritime transport (which is the focus of this paper), but also to the entire logistics chain and other modes of transport.

With them it was decided to undertake an analysis of sentiment, deepening and focusing only on the aspects related to their operations and not on healthcare-related ones; it is given that all subjects have prioritised their own health and that of their employees, and the intention to address all strategies and efforts considers the protection of employment and full support to public authorities to make the necessary sacrifices to combat this unprecedented phenomenon.

The interviews were conducted with authoritative representatives of: Assoporti, Confetra, Confitarma, Federagenti, Fedespedi and the presidencies of the Port Network Authorities involving the ports of Bari-Brindisi, Naples-Salerno, Taranto, Genoa-Savona, Trieste.

9 Analyses taken from the Review"Maritime Observatory on COVID-19" (www.srm-maritimeconomy.com) presented at the 5th annual meeting of Global ShippingThink Tank Alliance, 27th of April 2020

The topics covered have primarily concerned three aspects:

1. The critical factors that have the greatest impact on logistics and port operations and which are the sectors of the supply chain on which the crisis will have the greatest impact
2. Broad economic recovery estimates (short/medium/long term)
3. Possible proposals to address the above issues

Critical factors and the sectors most affected by the crisis

To some extent, this topic has been addressed by all the interviewees; in fact, the emergence of a financial liquidity crisis of enormous proportions, especially for small and very small transport companies, is considered as an absolute priority.

In particular, Confetra estimated that there would be more than 2.5 billion euros in outstanding receivables for the road transport, delivery and shipping sectors alone. Companies are also suffering from extended and delayed payments for work carried out; many customers have announced at least 12 months' deferral of payment. The problem of liquidity is also highlighted because it brings to the surface an issue that has always been the subject of debate in the entrepreneurial landscape of the country, i.e. the size of companies. Our logistic system, especially road, is very fragmented into small and very small companies that are extremely sensitive to the issue from a management point of view.

Another problem highlighted, especially by shipowners but also by all categories, is the objective reduction of the loads handled, both in import-export (on all modes of transport) and in cabotage.

This will lead to a reduction in companies' turnover on an annual basis, confirmed to be in the range of between 25% to 30%. If we apply this figure to Logistics turnover (€84.5 billion according to PoliMi - Milan Polytechnic - estimates) it would mean quantifiable damage of about €25 billion.

It is estimated that an enormous reduction of logistic volumes moved will take place in the 3 months of the COVID-19 peak (March-April-May), with a decline between 40 and 60%.

In particular, as stated by Port Network Authorities, the decrease would include containerized cargo (which for the Italian port sector accounts for at least a quarter of

volumes handled), but problems also exist for Ro-Ro in the Car Carrier segment. (ships used to transport new cars) in fact, according to data released by the Ministry of Transport in March 2020, the registrations of new cars in our country were 28,326 (-85.4% down compared to 2019) while transfers of ownership of used cars involved 142,230 vehicles (-62.33%).

All the Port Network Authorities have highlighted the issue of traffic decrease; Genoa is due to record a loss of total traffic for the year 2020 of about 35-45%.

Overall, performance in the first quarter was only partially affected by the Coronavirus emergency, the effects on traffic will be more visible from April and May 2020; with the slowdown in commercial activity, an estimated decrease in container traffic of 10% and 25% respectively is expected. For March-April alone, a more marked drop in Ro-Ro is expected due to the interruption of some lines on the Mediterranean (for the quarter it is estimated to be between -12% / -14%).

The good performance of the agri-food and health sectors does not seem to have a decisive impact on traffic volumes according to operators.

On the reduction of volumes, a significant effect is due to the reduction of traffic in Chinese ports. During the period January-April 2020, the volume of goods in Chinese ports decreased significantly and the container sector recorded a drop of -7.8%. The decrease of the volumes of goods, besides other factors such as the Trade War with the USA, whose effects have recently softened considerably, is certainly attributable to the negative impact on the economy and trade as a result of the spread of the Coronavirus.

In addition, the phenomenon of blank sailing needs to be taken into account. Some companies, even though they have scheduled vessels with weekly rotations, do not physically sail due to lack of cargo, postponing trips to the following week. Alternatively, they do not call at ports that do not guarantee unloading and loading of goods. In the second quarter of 2020, in fact, according to an analysis carried out by Sea-Intelligence, 435 blank sailings have already been announced by the main alliances, 2M, THE Alliance and Ocean Alliance: overall, this represents a drop in the transport offer of close to 7 million TEUs.

The Port Network Authorities strongly emphasised the issue of the almost total disappearance of passenger and cruise transport, which in Italy amounts to more than 53 million people, including 12 million cruise passengers.

This is especially detrimental to the ferry and cruise sector with the total or partial cancellation of the entire season.

For the cruise sector, in particular, a loss of 70%-80% of total passengers is estimated,

with a significant impact on tourism; it suffices to say that the sector has an impact on GDP of over €2 billion and was, before the crisis, rapidly growing.

Freight forwarders also focus on the uncertainty of journey times, congestion at ports, passages and border blocks. This is due to the tightening of controls on goods that cause delays in delivery, and to the fact that some countries' block cargo at the border which results in goods not being allowed to flow smoothly. There would also be the problem of full containers stuck in ports, which are not emptied because they contain orders placed by companies that had been forced to close by the time the goods reached Italy, although this issue seems to have been addressed by the Prime Ministerial Decree of 10 April 2020 which allowed companies to at least reopen their warehouses to store products.

The Fedespedi Study Centre estimates that COVID-19 could lead to a reduction in the Italian GDP of between 4% and 7% and a fall in volumes of goods moved of 20%- 25% in 2020; this drop in trade has a serious impact in terms of turnover in all sectors of the logistics chain.

As for the slowdown of the entire transport system, the operators point out that it would be appropriate to rethink the Italian model of the system of controls, focusing on the digitalization of procedures on which a lot still needs to be done.

Economic recovery estimates

There is still a great deal of uncertainty on this issue and no operator has provided dates or time periods, not even indicative, in which a recovery could take place. In the goods sector, a gradual recovery is conceivable as companies restart. Some operators, however, do not see any strong recovery at least throughout the first half of 2020. Others, on the other hand, believe that there could be problems for the whole of 2020 due to the fact that, even if Italy can restart, it will be the other countries, in the meantime, that will continue the blockades with consequences particularly on exports.

The passenger sector is different, as the psychological factor will make tourists refrain from undertaking trips or cruises on ships, which will undoubtedly have an impact. In this case it is believed that the entire tourist season will be compromised.

Proposals

Illustrated here in summary and in a non-exhaustive manner - which were put forward by the interviewees, beyond those specific to health and safety protection and income support for staffs and crews, mainly revolve around the following:

- Mitigating the liquidity crisis of companies to cover at least the entire lockdown period. This is considered to be the fundamental issue to be solved in order to save employment levels and revenue shortfalls of companies; on this subject, it should be specified that the Council of Ministers intervened on 6 April with a measure, although not specific to the sector.
- Reducing the burdens on companies, mitigating the tax wedge and introducing tax relief for companies that are committed to maintaining employment levels;
- Simplifying the bureaucratic procedures that are slowing down the fluidity or even causing blockages of goods and aim for a future based on the digitalization of logistics processes and controls.

As for liquidity, for example, it has been suggested by Confetra to activate an extraordinary intervention of *Cassa Depositi e Prestiti* so that this institution can, directly or through other banks, pay in advance some of the invoices issued. To cover this measure, it is estimated that €1.2 billion are needed, partly as a revolving fund and partly to cover charges and interest. A similar measure is also envisaged by Confitarma, which would like to obtain financing from *Cassa Depositi e Prestiti* for up to 3 years with a state guarantee as a last resort.

Another proposal regarded specific funds that included technical adjustments for shipping companies as a means of restoring those experiencing a drop in turnover as a result of the COVID-19 pandemic.

The shipowners would also like to see the suspension of procedural acts, communications and fulfilments of procedures pursuant to art. 161 and 182 bis of the Bankruptcy Law.

The Port Network Authorities have pointed out the possibility that ports will kickstart the recovery of the economy of the Country at the end of the emergency and, to this end, it is necessary to take decisive and firm measures aimed at removing bureaucracy and to give the Presidents the power to take decisions without too many regulatory hindrances (it had been proposed to adopt the normative Model used for the reconstruction of the *Morandi* bridge in Genoa, appointing the same Presidents as extraordinary Commissioners to carry

out the infrastructure works already planned and financed).

The Ports would have several billion euros worth of funds available for the timely completion of works, with consequent activation of private investment. It would be necessary, to prepare for the recovery, a great plan of infrastructural investments that could really move the economy of the "great numbers" of our country and that ports could be one of the keys to start economic recovery.

According to the port administrations, another factor on which to focus strongly, even in the future, is the incentive to rail transport, considered safer, faster and less subject to queues and long waiting times at the border controls. Rail represents an opportunity to be seized primarily because it can carry a greater quantity of goods than trucks and might be the perfect link to restart national and international traffic.

Analysis of sentiment : final results

The results of the survey led to the elaboration of some graphs aimed at representing the sentiment of the operators that were interviewed. It should be noted that the values represented are only a qualitative evaluation of the opinions expressed and have not been made explicit by the protagonists themselves.

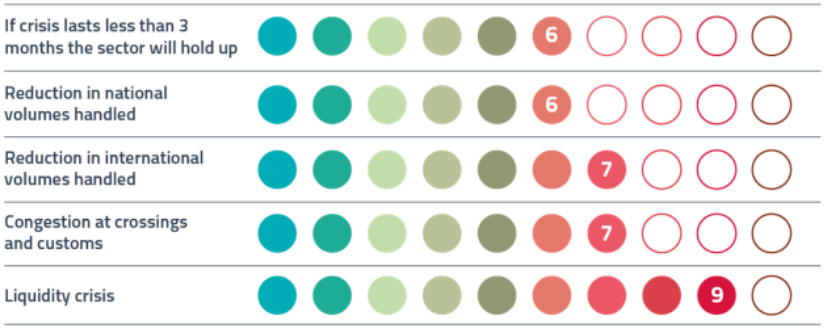
The graphs shown in the following pages, therefore, reflect the value of the importance attributed to the area analysed on a scale of values from 1 (minimum value for importance and severity) to 10 (maximum).

Theme 1

11

What do you think about the most critical issues?

Critical issues for Maritime & Logistics



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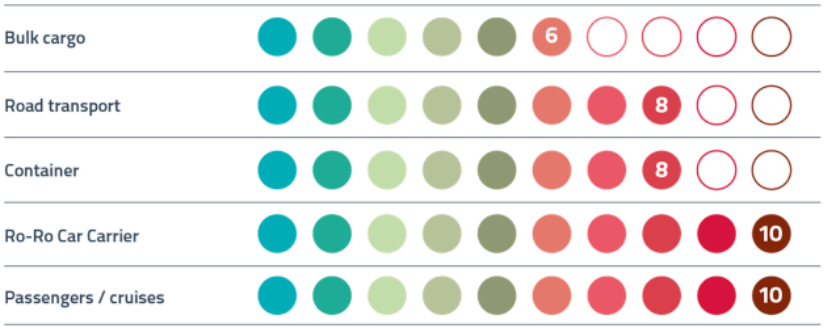
Theme 2

12

Which sectors Covid has the most impact on

Higher impact sectors



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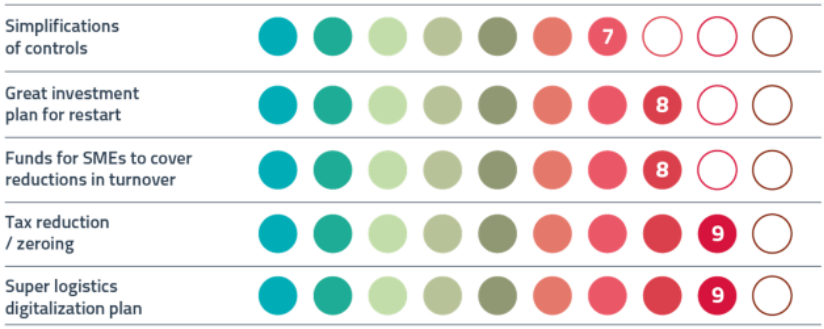
Theme 3

13

Where do we start from?

Proposals of greater impact



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Final considerations and more food for thought

The analyses shown so far have illustrated, from an economic as well as a health point of view, a complex moment with many implications both for the country and at a global level.

The scenarios are constantly evolving and the figures and statistics are also undergoing very rapid evolutions due to the progressive succession of decrees and regulations which, from time to time, force companies to close or partially limit their operations.

It has therefore been decided to offer a proposal that is not of a short-term nature but provides a broader vision, i.e. measures that can be put into practice once the country is ready to restart. We share, in fact, the approach suggested by all the subjects regarding the problems to be resolved and their urgency, as well as the issues on which the various proposals illustrated here have been based.

In our opinion, the economic recovery, from the point of view of ports and logistics, could also be achieved by taking into account the following guidelines.

Measures aimed at unlocking ports by boosting a series of port infrastructures with high economic impact

SRM has estimated in one of its studies that in a group of port operational programmes (POT – Operational Programmes Three years long) there are about €6 billion worth of port works in varying states of completion and of various sizes. It would be conceivable to propose again an analysis in order to identify and survey which are the works with a high economic impact and how close they are to being completed, in order to set up a streamlined restart procedure for them.

Set up a re-allocation of 2021-2027 structural funds with greater focus on ports in Southern Italy

The Coronavirus has highlighted two strategic points: firstly, the importance of starting processes of digitalization of port procedures and therefore avoid human contact as much as possible (except for that which cannot be eliminated) and, secondly, to focus on infrastructural integration and therefore encourage the development of railways and

intermodality; this, however, requires a lot of resources. Why not, then, with EU Funds, undertake strategies to benefit ports of the South (areas where contagion seems less widespread at the moment) and make them even more competitive?

The South is an area that moves goods accounting for 42.4% of the national total. It has the experience of a territory that uses the sea for 62% of its import-export. At present, the Mezzogiorno (Southern Italy) has two ports in a phase of great relaunch, namely Taranto and Gioia Tauro, with the presence of big international operators such as Yilport and MSC, in the investment phase. The South has multipurpose options that boast the presence of a port and logistics cluster of high standard and in strong development in the Ro-Ro sector such as Naples, Salerno, Bari and the Sicilian ports. In addition, the Port of Cagliari, which is building the foundations for the future, should also be taken into account.

Focusing on southern ports and the logistics system of the South could be a solution to make our ports more competitive and, simultaneously, set up a *Lockexit* Strategy.

At the moment these instruments, although they have taken off on a procedural level, also seem to be at a “technical deadlock”, due to the lack of implementing decrees necessary to make operational certain measures on administrative simplification. Furthermore, it does not seem that there has been a decisive move to promote the SEZs to large investors, except for the important initiatives carried out by Intesa Sanpaolo to attract Arab and Chinese players. These attempts ought to be continued and with ever more determination. The instrument, SRM has reiterated this in many of its studies, is aimed at attracting industrial investments in a territory, to enhance port traffic and maritime import and export. It seems that the economic impact that these can bring has not been fully understood.

The SEZs are certainly not instruments that produce results in the immediate future, but they serve to increase the credibility of a port and logistics system and, if well integrated with port Free Zones, they can have important effects for a territory through the exemption of VAT and duties for non-EU goods, and giving them the possibility to stockpile goods while waiting for the market to recover; a stimulus to international trade that is not insignificant.

Some responses of the Italian Government to the COVID-19 crisis

The Italian Government provided some specific measures dedicated to ports and maritime transport. They are contained in the Decree Law of 19 May 2020, n. 34 on “Urgent measures in the field of health, support to work and economy, as well as social policies

related to the epidemiological emergency by COVID-19" ("Relaunch Decree").

The possibility of resetting to zero the fees state property concessions of terminal operators (provided that a decrease in turnover of 20% or more in the same period of 2019 is demonstrated) has been confirmed for the Port Network Authorities, as it has to extend the concessions of the port companies by two years, and those of all other concessionaires of port services (including tugboats) by one year.

For Port Network Authorities without own resources that can be used for these purposes, the Ministry of Infrastructure and Transport will set up a fund with a special allocation of 6 million euros, plus another 24 million for moorers.

To Ferrobonus and Marebonus (the intermodal stimulus instruments) will be allocated EUR 30 million and EUR 20 million respectively for the year 2020.

To temporary providers of port labour are granted a contribution, "up to a maximum of 2 million euros for each of the years 2020 and 2021, equal to 60 euros for each employee and in relation to each shorter working day compared to the corresponding month of the year 2019. [...] This contribution is paid by the Port Network Authority itself or by the Port Authority and can be cumulated with the indemnity of lacked starter to the job (IMA)".

The decree also specifies that "in order to cope with the fluctuations in port cargo and passenger traffic caused by the COVID-19 emergency, until the end of the six months following the cessation of the state of emergency, the Port Network Authorities and the Gioia Tauro Port Network Authority may, with a reasoned measure, temporarily allocate areas and quays of competence to other port functions other than those provided for in the port regulatory plans in force".

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This article has been elaborated on the basis of interviews with protagonists of the maritime transport and logistics sector that represents main sources of the analysis

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GSTTA BOOK

Impact of COVID-19 on Maritime Industry

An Overview of the Impact of COVID-19 on International Shipping and Port Industry

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As the COVID-19 ravages the world, it is undeniable that trade cooperation and personnel exchanges has been severely influenced, let alone the shipping industry. This paper aims to have an overview of the impact of COVID-19 on international shipping and port industry. It contains six parts, including the impact on the world economy, the impact on liner and dry bulk shipping, the impact on China's port, AIS findings, questionnaire survey, and the summary of the author's perspectives.

Impact on the World Economy

The outbreak of the COVID-19 all over the world has brought great uncertainty and harm to the global economy as the world has been experiencing the most difficult economic situation since World War II.

On the one hand, the isolation measures taken by countries around the world, such as regional lockdown and social distancing, to control the outbreak of the pandemic, have forced the global economy to press the pause button, putting great pressure on both consumption and supply. Workplace closures cause layoffs and lower productivity. In addition, decline in income, fear of contagion, and heightened uncertainty make people spend less, which will trigger further business closures, job losses, and thus fall into a dead cycle. On the other hand, the spreading of panic caused by the coronavirus has led to a setback in investor confidence, triggering turmoil in financial and capital markets.

As a result of the COVID-19, almost all of the world's topmost economies have to face unavoidable economic decline. In the latest World Economic Outlook (April 2020), International Monetary Fund (IMF) has revised its global GDP growth estimate of 2020 from 3.3 percent just 3 months ago to a contraction of 3 percent, an outcome far worse

than during the 2009 global financial crisis, something not seen since the Great Depression of the 1930s.

Figure 1. Overview of the World Economic Outlook Projections(2020Q2)

		Projections		Difference from January 2020 WEO *Update*[1]		Difference from October 2019 WEO[1]	
	2019	2020	2021	2020	2021	2020	2021
World Output	**2.9**	**–3.0**	**5.8**	**–6.3**	**2.4**	**–6.4**	**2.2**
Advanced Economies	**1.7**	**–6.1**	**4.5**	**–7.7**	**2.9**	**–7.8**	**2.9**
United States	2.3	–5.9	4.7	–7.9	3.0	–8.0	3.0
Euro Area	1.2	–7.5	4.7	–8.8	3.3	–8.9	3.3
Germany	0.6	–7.0	5.2	–8.1	3.8	–8.2	3.8
France	1.3	–7.2	4.5	–8.5	3.2	–8.5	3.2
Italy	0.3	–9.1	4.8	–9.6	4.1	–9.6	4.0
Spain	2.0	–8.0	4.3	–9.6	2.7	–9.8	2.6
Japan	0.7	–5.2	3.0	–5.9	2.5	–5.7	2.5
United Kingdom	1.4	–6.5	4.0	–7.9	2.5	–7.9	2.5
Canada	1.6	–6.2	4.2	–8.0	2.4	–8.0	2.4
Other Advanced Economies[2]	1.7	–4.6	4.5	–6.5	2.1	–6.6	2.2

Source : IMF

From the perspective of the advanced economy group, where several economies are experiencing widespread outbreaks and deploying containment measures, is projected at -6.1 percent in 2020. Although essential to contain the virus, lockdown and restrictions on mobility are extracting a sizable toll on economic activity. Most economies in the group are forecasted to contract this year, among which, Italy will be the maximum contracting major economy in 2020 due to its fragile economy and is likely to decrease 9.1 percent.

Figure 2. Overview of the World Economic Outlook Projections(2020Q2)

		Projections		Difference from January 2020 WEO *Update*[1]		Difference from October 2019 WEO[1]	
	2019	2020	2021	2020	2021	2020	2021
Emerging Market and Developing Economies	**3.7**	**–1.0**	**6.6**	**–5.4**	**2.0**	**–5.6**	**1.8**
Emerging and Developing Asia	5.5	1.0	8.5	–4.8	2.6	–5.0	2.3
China	6.1	1.2	9.2	–4.8	3.4	–4.6	3.3
India[3]	4.2	1.9	7.4	–3.9	0.9	–5.1	0.0
ASEAN-5[4]	4.8	–0.6	7.8	–5.4	2.7	–5.5	2.6
Emerging and Developing Europe	2.1	–5.2	4.2	–7.8	1.7	–7.7	1.7
Russia	1.3	–5.5	3.5	–7.4	1.5	–7.4	1.5
Latin America and the Caribbean	0.1	–5.2	3.4	–6.8	1.1	–7.0	1.0
Brazil	1.1	–5.3	2.9	–7.5	0.6	–7.3	0.5
Mexico	–0.1	–6.6	3.0	–7.6	1.4	–7.9	1.1
Middle East and Central Asia	1.2	–2.8	4.0	–5.6	0.8	–5.7	0.8
Saudi Arabia	0.3	–2.3	2.9	–4.2	0.7	–4.5	0.7
Sub-Saharan Africa	3.1	–1.6	4.1	–5.1	0.6	–5.2	0.4
Nigeria	2.2	–3.4	2.4	–5.9	–0.1	–5.9	–0.1
South Africa	0.2	–5.8	4.0	–6.6	3.0	–6.9	2.6

Source : IMF

Among emerging market and developing economies, all countries face a health crisis, severe external demand shock, dramatic tightening in global financial conditions, and a plunge in commodity prices, which will have a severe impact on economic activity in commodity exporters. However, considering that some countries not experiencing widespread detected outbreaks and therefore not yet deploying containment measures of the kind seen in places with outbreaks, the group of emerging market and developing economies is projected to contract by -1.0 percent in 2020, less than advanced economies.

Figure 3. Overview of the World Economic Outlook Projections(2020Q2)

		Projections		Difference from January 2020 WEO *Update*[1]		Difference from October 2019 WEO[1]	
	2019	2020	2021	2020	2021	2020	2021
World Trade Volume (goods and services)	**0.9**	**–11.0**	**8.4**	**–13.9**	**4.7**	**–14.2**	**4.6**
Imports							
Advanced Economies	1.5	–11.5	7.5	–13.8	4.3	–14.2	4.2
Emerging Market and Developing Economies	–0.8	–8.2	9.1	–12.5	4.0	–12.5	4.0
Exports							
Advanced Economies	1.2	–12.8	7.4	–14.9	4.4	–15.3	4.3
Emerging Market and Developing Economies	0.8	–9.6	11.0	–13.7	6.8	–13.7	6.6

Source : IMF

The COVID-19 has a strong impact on international trade as well. The outbreak of the pandemic has caused general reduction of labour supply, rise in trade costs and reductions in both demand and supply in sectors affected by the containment measures. According to IMF, world trade volume, including goods and services, is expected to fall by 11 percent in 2020. The JP Morgan global PMI for March have showed, export orders in manufacturing sinking to 43.3 relative to a baseline value of 50 and new services export business dropping to 35.5, all suggesting a severe downturn.

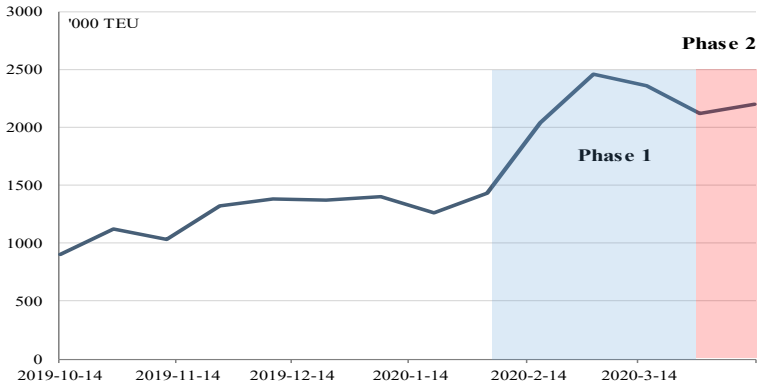
Until May, 2020, the dissemination of COVID-19 vaccine has not been finished. Therefore, the contraction of economy and world trade would be even larger if more stringent containment measures are necessitated by a wider spread of the virus around the world. The future is still full of uncertainty.

Impact on Liner and Dry Bulk Shipping

1. Impact on liner shipping

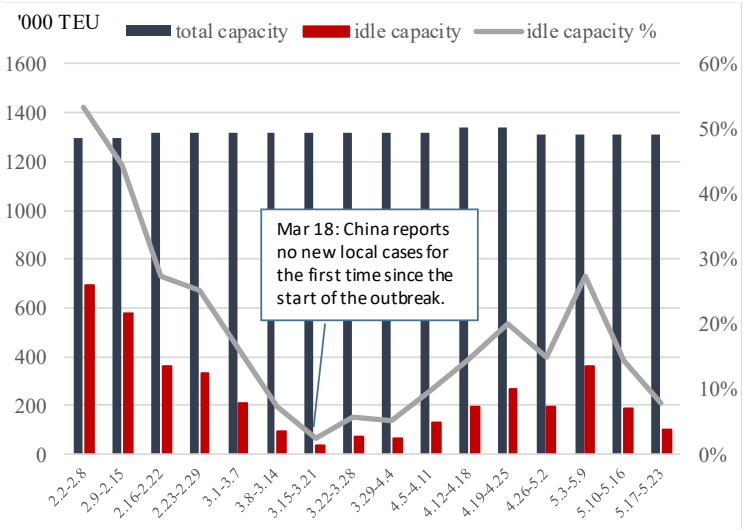
Because of Chinese badly affected logistics system and low demand, many container lines had suspended liner services from China in the early stages of the COVID-19 outbreak. The proportion of suspended capacity of major container lines relating to China's export reached over 50% in February. Chinese enterprises have resumed work and production order since March, making idle container ship capacity gradually declining. World is experiencing a significant outbreak of COVID-19 along with idle capacity gradually rebound.

Figure 4. Global Idle Capacity



Source : Alphaliner

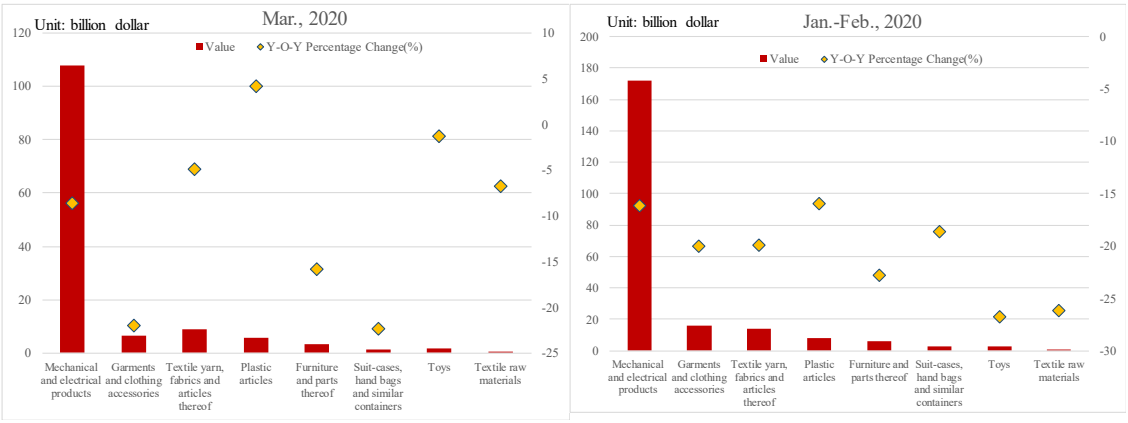
Figure 5. Suspended Capacity of Major Container Lines Relating to China's Export



Source : DZG

Major Chinese containerized cargo fell by more than 15% in the first two months of 2020. From March in 2020, Chinese major export containerized commodities in value are rising gradually.

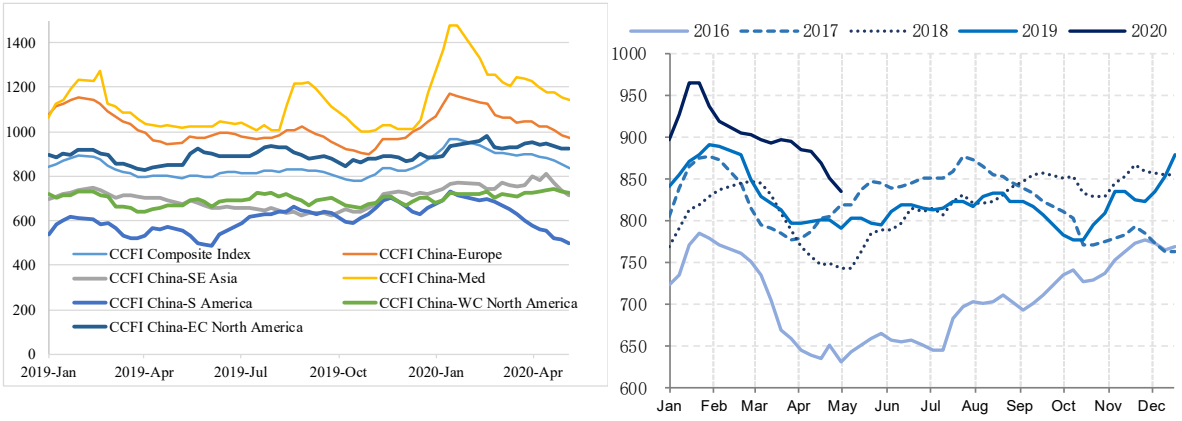
Figure 6. Chinese Major Export Containerized Commodities in Value



Source : General Administration of Customs of the People's Republic of China

China Containerized Freight Index (CCFI) dropped significantly, with the sub-index for South America route leading the fall. Benefited from the suspended capacity, CCFI was fluctuated above the same period last few years, though it went down a lot.

Figure 7. CCFI during Jan., 2019 – May., 2020 Figure 8. CCFI during Jan., 2016 – Apr., 2020



Source : Shanghai Shipping Exchange

2. Impact on dry bulk shipping

The dry bulk market in 2020 started poorly, influenced by the typical seasonal Chinese New Year dip, reduced demand and disrupted logistics caused by measures taken in China to contain the COVID-19 coronavirus outbreak. BCI bottomed out in late February and strengthened as Chinese activity gradually returned. However, COVID-19 is now causing an increasingly widespread lockdown of economic activity around the world, WTI crude oil futures prices fell below zero on April 20, and rates have weakened again. Unfavorable market sentiment impacts demolition. Scrapping in the year to date is well above the same period last year and is forecasted to increase further, and the recent weak freight rates and uncertain outlook slow down fleet growth.

Figure 9. Trends of Baltic exchange dry bulk index

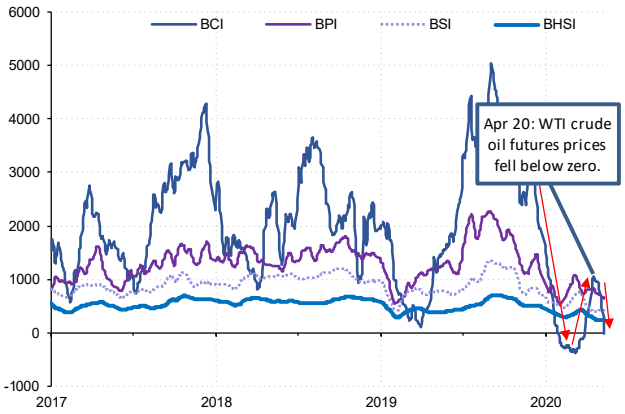
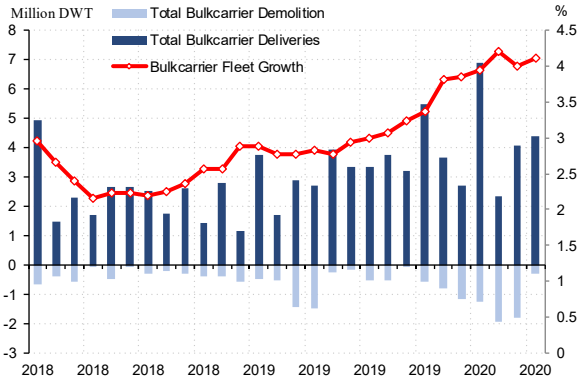


Figure 10. Dry bulk fleet development



Source : Baltic Shipping Exchange, Clarksons

China's manufacturing PMI rebounded in March in 2020 as COVID-19 situation had eased in China. The global PMI came in at 39.8 in April, down 7.5 points from March and down 10.6 points from a year ago. With over five weeks of nationwide lockdown to counter COVID-19, India's manufacturing activity contracted at its sharpest pace in April plunging to 27.4 from 51.8 in the preceding month of March. Iron ore shipments impacted less by COVID-19, top four mines reported fewer Q1 iron ore shipments, citing bad weather and port maintenance.

Figure 11. Trends of Manufacturing PMI

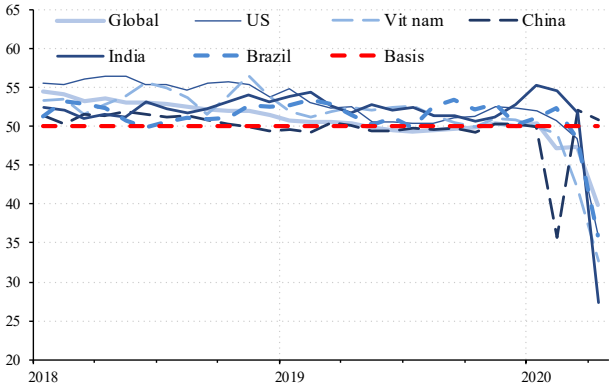
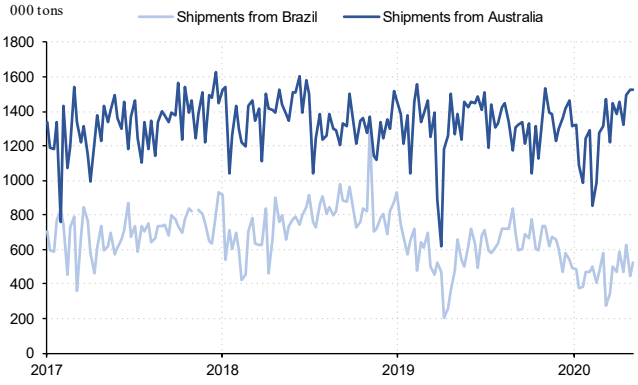


Figure 12. Iron ore shipments from Australia and Brazil



Source : Wind, Mysteel

Impact on China's Ports

According to the statistics released by China Ports & Harbors Association (CPHA), in the first quarter of 2020, container volumes of major Chinese ports declined 8.5 percent year-on-year. And the overall cargo throughput declined 4.6 percent, compared to the same period last year. The contraction was mainly because of the tough international trade situation.

Figure 13. Major Imports and Major Exports

Major Imports (2020 Q1)				Major Exports (2020 Q1)			
Commodity	Unit	Quantity	YoY ±%	Commodity	Unit	Quantity	YoY ±%
Grain	10^4 Tons	2460	1.5	Marine products	10^4 Tons	79	-14.9
Soya Beans	10^4 Tons	1179	-13.0	Coke	10^4 Tons	69	-45.9
Iron ores and concentrates	10^4 Tons	26273	1.0	Petroleum products	10^4 Tons	1802	0.8
Coal and lignite	10^4 Tons	9578	18.6	Fertilizers	10^4 Tons	540	29.4
Crude Petroleum Oil	10^4 Tons	12718	4.5	Garments	—	—	—
Petroleum products	10^4 Tons	711	-27.5	Shoes, boots, footwear	10^4 Pairs	172957	-26.3
Natural Gas	10^4 Tons	2466	0.3	Home electric appliances	10^4 Sets	54100	-7.3
Plastics in primary form	10^4 Tons	828	-0.3	Ceramic Products	10^4 Tons	358	-4.8

Source : China Ports & Harbors Association

In the first quarter, China's foreign trade has faced difficulties due to increasing uncertainties in the global market caused by the further spread of the COVID-19 pandemic and mounting downward pressure on the world economy. According to the statistics of Chinese customs, China's foreign trade has fell 6.4 percent year-on-year to 6.57 trillion CNY, among which, exports dropped 11.4 percent year-on-year to 3.33 trillion CNY and imports contract 0.7 percent to 3.24 trillion CNY. The trade surplus stood at 98.33 billion CNY during the period, down 80.6 percent on a yearly basis. Chinese exports bounced back quickly in March 2020, but it was largely because orders halted during the first two months were finally delivered as China resumed work, so as soon as those orders have been delivered, exports could decline further again.

From the perspective of major trade commodities, China mainly maintain the imports of coal/crude oil and grain. Among them, the imports of coal kept a high growth rate of 18.4 percent to 95.78 million tons in the first quarter. Imports of crude oil went up 4.5 percent, while grain and iron ore imports only saw a slight growth with 1.5 percent and 1 percent respectively. However, demand for petroleum products and soya beans has shown a sharp decline, among which the imports of petroleum products dropped 27.5 percent to 7.11 million tons and soya beans imports were down 13 percent to 11.79 million tons, compared with the same period in last year.

In terms of exports, the wide spread of the COVID-19 pandemic around the globe led to significant decline in many types of commodities. The exports of coke were the most affected, which have fell 45.9 percent year-on-year to only 690 thousand tons. Exports of clothing and home electric appliances also witness great decline, among which, the exports of clothing decreased 26.3 percent year-on-year, while home electric appliances went down 7.3 percent.

Faced with the severe foreign trade situation and the delay of work resumption in upstream and downstream enterprises, Chinese port has suffered the largest decline since the year of 2000. Ningbo-Zhoushan Port, the world's largest port in terms of cargo throughput, recorded the cargo and container throughput of 250.4 million tons and 6.15 million TEU respectively in Q1, down 1.9 percent and 8.2 percent year on year. Shanghai port, the world's largest container port, has dropped 10.4 percent in container throughput to 9.3 million TEU along with a decline of 15.1 percent in total cargo volume to 145.7 million tons.

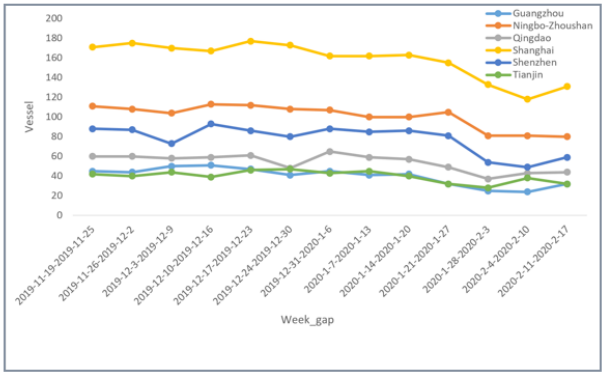
The global commodity trade is expected to decline by 13%-32% this year and it will be a tough time for ports undoubtedly. CPHA forecasts port cargo volume in Q2 2021 will continue to decline, and a shortage of cargo resources will be the common challenge for Chinese domestic ports.

AIS Findings

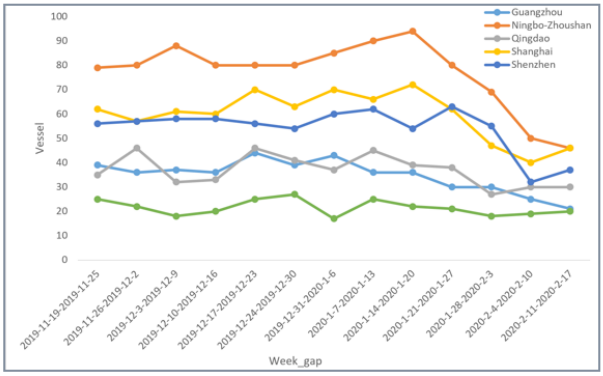
The influence of the COVID-19 on liner shipping was discovered based on the analysis of the AIS data of container ships.

Since the closure of Wuhan, the number of vessels calling at major coastal ports in China has generally shown a downward trend, and the Yangtze river delta and southern ports have been greatly affected. Including Shanghai, Shenzhen, Guangzhou, Ningbo-Zhoushan and other ports showed a downward trend from January 21st to January 27th, and the decrease continued for several weeks.

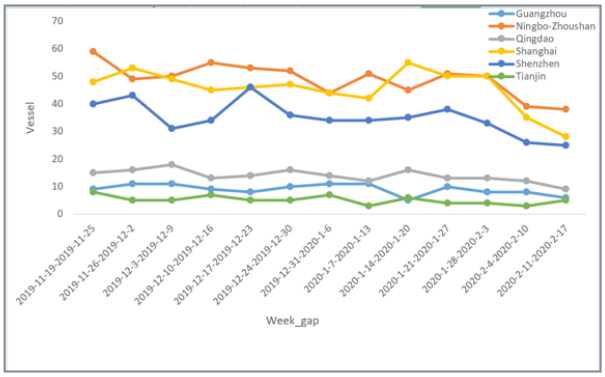
Figure 14. Number of vessels



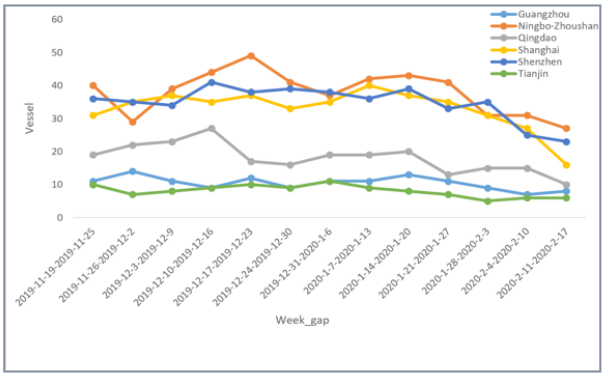
Number of vessels (0-4000 TEU)



Number of vessels (4000-8000 TEU)



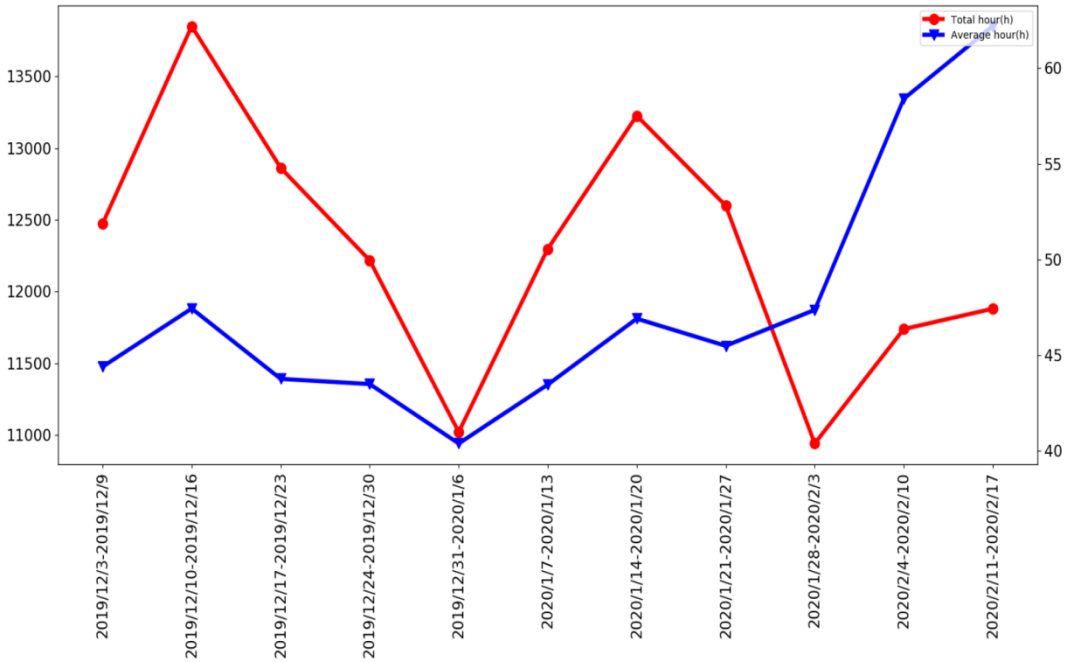
Number of vessels (8000-12000 TEU)



Number of vessels (12000+ TEU)

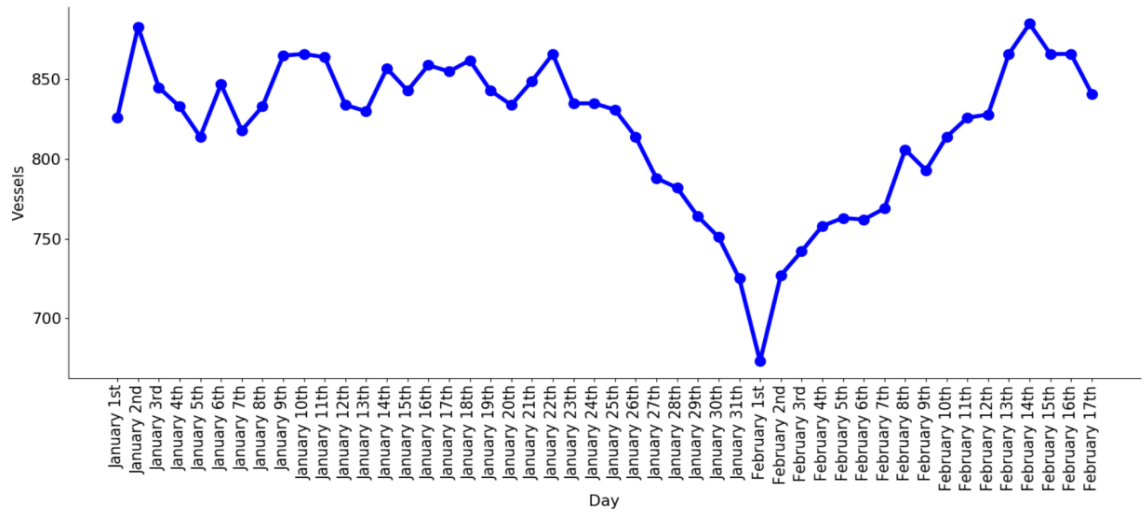
Affected by the decrease in the number of berthing vessels, the total length of berthing at major ports has declined to varying degrees starting from January 21st to 27th. At the same time, it is found that the average length of each ship is increasing in the major ports.

Figure 15. Length of berthing time of container ships calling at Ningbo-Zhoushan port



With the outbreak of the COVID-19, the number of China's coastal container ships decline sharply from January 23rd, and fell to a short-term trough on February 1st. When the number of international container ships in China's coastal areas reached 673.

Figure 16. Daily number of moving container ships in China's coastal area



During the week from January 21st to January 27th, the number of suspended and omitted ships increased sharply, and then the number of stopped and hopped liner ships continued to increase to a peak of 144 voyages in the following week, and gradually declined in the following two weeks.

Table 1. Weekly statistics of container vessels involved in port omission

Weeks	Suspended/omitted capacity (TEU)	Number of vessels involved
2020/1/21-2020/1/27	415339	128
2020/1/28-2020/2/3	427231	144
2020/2/4-2020/2/10	332504	115
2020/2/11-2020/2/17	133185	61

Meanwhile, it can be seen that the short-sea route has a greater impact than the Fareast-America Route and Fareast-Europe Route from the analysis of ships suspended and omitted.

Table 2. Weekly statistics of container vessels involved in port omission by route

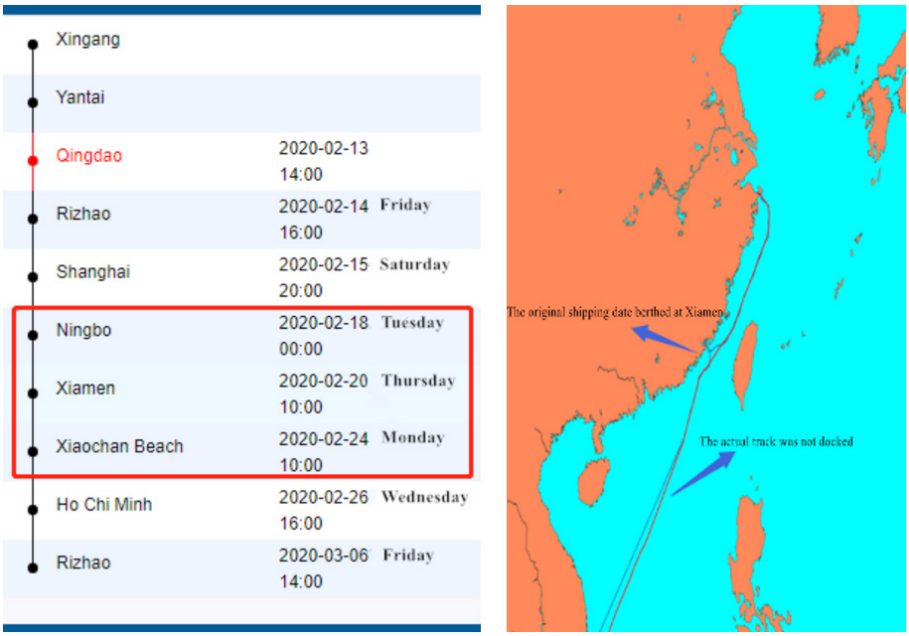
Weeks	Suspended/omitted capacity (TEU)	Number of vessels involved
2020/1/21-2020/1/27	415339	128
2020/1/28-2020/2/3	427231	144
2020/2/4-2020/2/10	332504	115
2020/2/11-2020/2/17	133185	61

A liner from Guangzhou Port to Klang Port, left Guangzhou Port on January 23rd in the latest voyage. It took 4 days to reach Klang Port, but waited at the anchorage for 11 days before berthing.

Figure 17. A case of affected liner route from Guangzhou to Port klang

For another vessel, the blue line shows the schedule originally planned to pass through Ningbo-Xiamen-Vietnam. The red line shows the actual trajectory indicating that she has not actually called at Xiamen.

Figure 18. A case of port omission



Questionnaire Survey

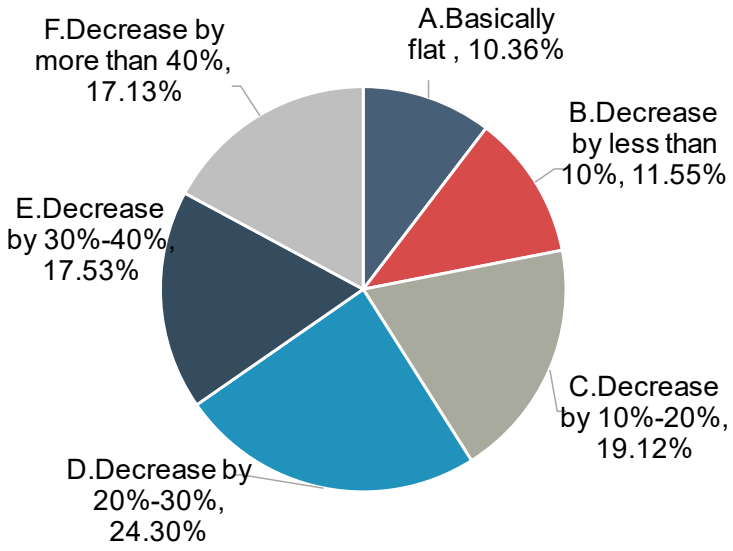
With regard to recent situation of shipping industry during the pandemic, we obtained first-hand data from a considerable number of shipping enterprises, made summaries and analysis and are going to propose several suggestions for development, in an effort to provide some reference to various shipping enterprises in their decision making.

1) Both shipping and port enterprises suffered business volume declines

The COVID-19 has caused most enterprises in China to suspend work and production and delay work resumption, leading to a dramatic drop in shipping demand. Against this background, we conducted a survey on the year-on-year business volume changes of shipping and port enterprises.

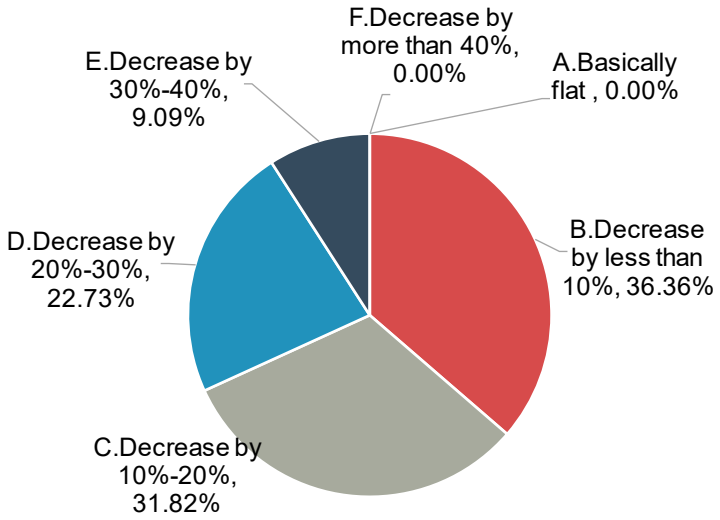
Nearly 90% of shipping enterprises suffer business volume declines. Among the surveyed shipping enterprises, 10.36% recorded flat business volumes year-on-year, 11.55% recorded a business volume decline of less than 10% year-on-year, 19.12% recorded a business volume decline between 10%-20% year-on-year, 24.30% recorded a business volume decline between 20%-30% year-on-year, 17.53% recorded a business volume decline between 30%-40% year-on-year, and the rest 17.13% recorded a business volume decline of more than 40% year-on-year.

Figure 19. Year-on-year Business Volume Changes of Shipping Enterprises



Almost all the port enterprises suffer business volume declines. Among the surveyed port enterprises, 36.36% recorded a business volume decline of less than 10% year-on-year, 31.82% recorded a business volume decline between 10%-20% year-on-year, 22.73% recorded a business volume decline between 20%-30% year-on-year, and 9.09% recorded a business volume decline between 30%-40% year-on-year. No port enterprises recorded flat business volumes year-on-year, nor are there any port enterprises recording more than 40% declines in business volume year-on-year.

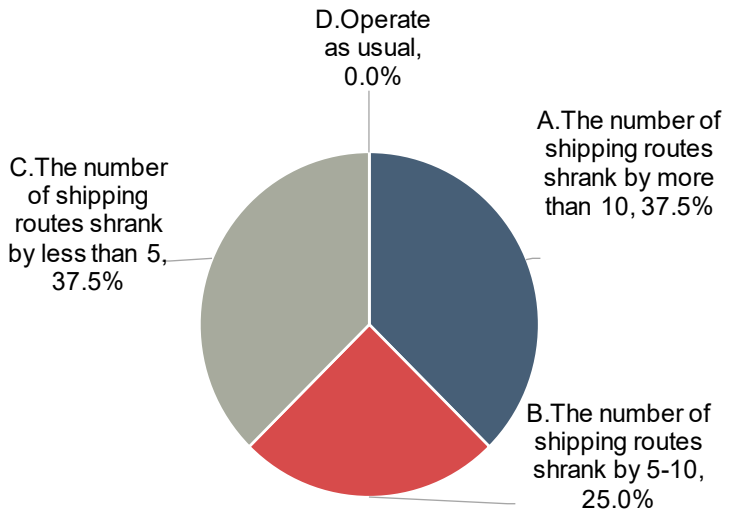
Figure 20. Year-on-year Business Volume Changes of Port Enterprises



2) Falling market demand is the biggest impact for enterprises

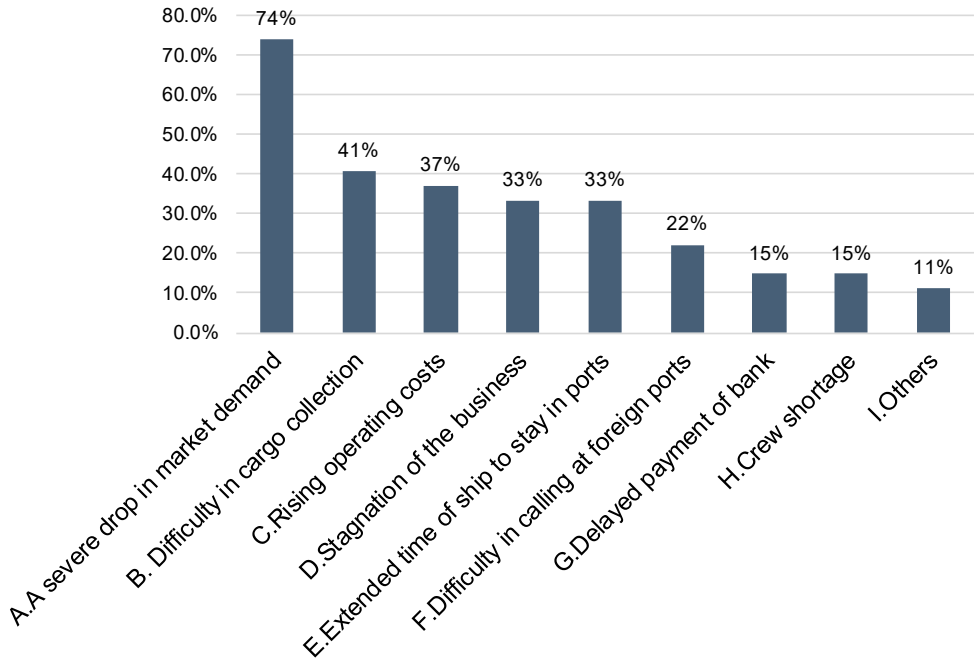
Almost all the ports are facing ports omission or shipping routes cancellation. Among the surveyed port enterprises, 37.5% responded the number of shipping routes shrank by more than 10, 25.0% responded the number of shipping routes shrank by 5-10, 37.5% responded the number of shipping routes shrank by less than 5. The above survey shows that most of ports are facing ports omission or shipping routes cancellation because of the strict pandemic prevention measures and the falling market demand.

Figure 21. The Changes of Port Enterprises in Shipping Routes Quantity



Falling market demand is the biggest impact for the shipping enterprises. Among the surveyed enterprises, 74% thought the severe drop in market demand is the most important influencing factor, 41% had the difficulty in cargo collection. And the other factors, like rising operating costs, stagnation of the business, extended time of ship to stay in ports, also ranked higher.

Figure 22. The Ranking of Shipping Enterprise Influencing Factors

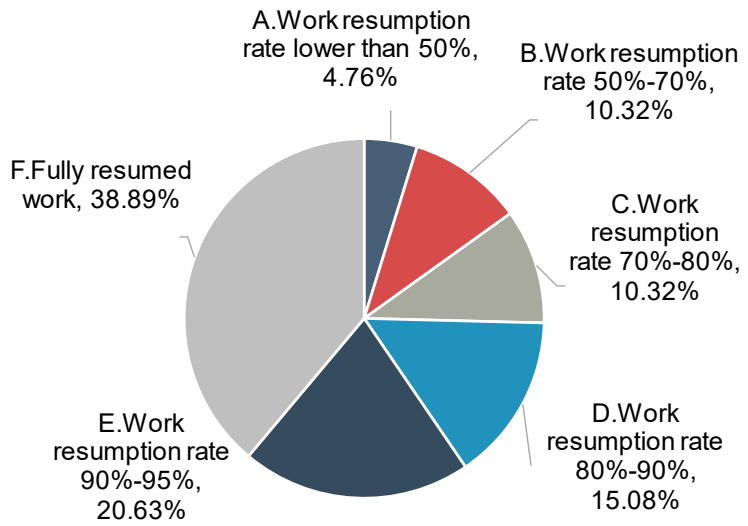


3) The shipping and port enterprises returned to work actively

Since the COVID-19 was put under initial control, how to push enterprises to resume work and production has become a shared concern in all social sectors. Against this background, we conducted a survey on the work resumption status of shipping and port enterprises.

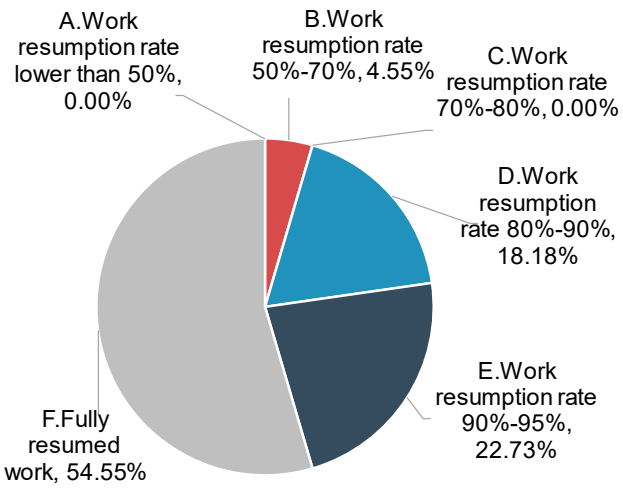
Nearly 60% of shipping enterprises record work resumption rate of 90% or higher. Among the surveyed shipping enterprises, 38.89% have fully resumed work and production, 20.63% recorded a resumption rate between 90%-95%, 15.08% recorded a resumption rate between 80%-90%, 10.32% recorded a resumption rate between 70%-80% and 10.32% recorded a resumption rate between 50%-70%. Only 4.76% responded with a resumption rate lower than 50%.

Figure 23. Work Resumption Status of Shipping Enterprises



Over 50% of port enterprises fully resumed work. Among the surveyed port enterprises, 54.55% have fully resumed work and production, 22.73% recorded a resumption rate between 90%-95%, and 18.18% recorded a resumption rate between 80%—90%. 4.55% responded with a resumption rate between 50%-70%.

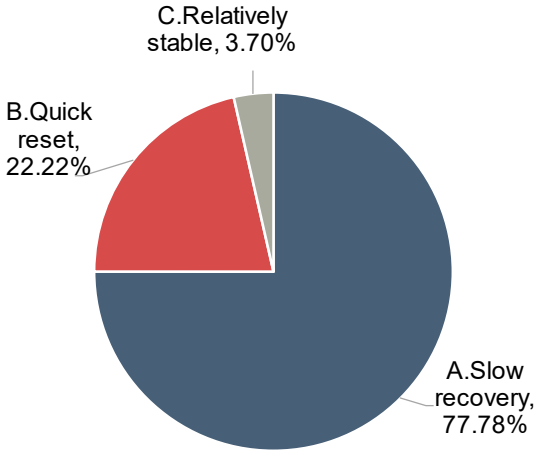
Figure 24. Work Resumption Status of Port Enterprises



4) Most companies expect a slow recovery after the pandemic

Since the COVID-19 was put under initial control and the enterprises gradually resumed work, the domestic shipping market was expected to rebound. However, among the surveyed enterprises, 77.78% of them forecast a slow recovery, only 22.22% forecast a quick reset. Because of the long term trade contract, the temporary shortage of labour and the disruption of transport services from raw material producers to manufacturing enterprises, the economy needs time to heal. And the global outbreak of COVID-19 is continuing to spread, which will weigh on offshore demand and multilateral trade.

Figure 25. Anticipation of the recovery of shipping market after pandemic



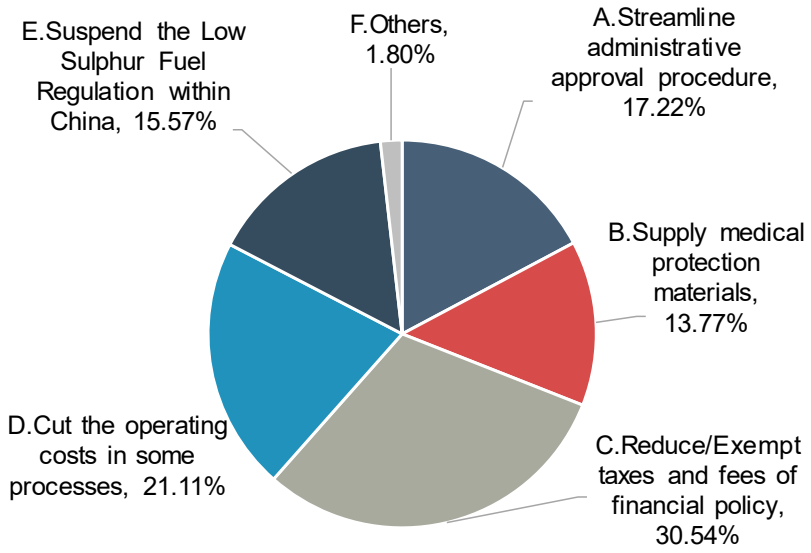
5) Over 30% of shipping enterprises look forward to obtaining fiscal, financial and policy support

The COVID-19 outbreak at the beginning of 2020 has caused a huge impact on the shipping industry. With the pandemic under initial control and enterprises vigorously resuming work and production, we conducted a survey among shipping enterprises to figure out their expected policy support.

Among the surveyed enterprises, 17.22% of them look forward to benefiting from policies that streamline approval procedure and formalities, 13.77% look forward to facing pandemic prevention materials from the government, 30.54% hope to benefite from fiscal and financial policies that reduce/exempt taxes and fees, and 21.11% expect to face policies that cut fees in some processes. The rest 15.57% of enterprises look forward to seeing policy support on suspending the low-sulfur oil order on ships calling at Chinese ports.

The above survey shows that more than 30% of surveyed enterprises look forward to facing fiscal and financial policies of reduction/exemption of taxes and fees to reduce enterprises' overheads and thereby ease the current operational difficulties.

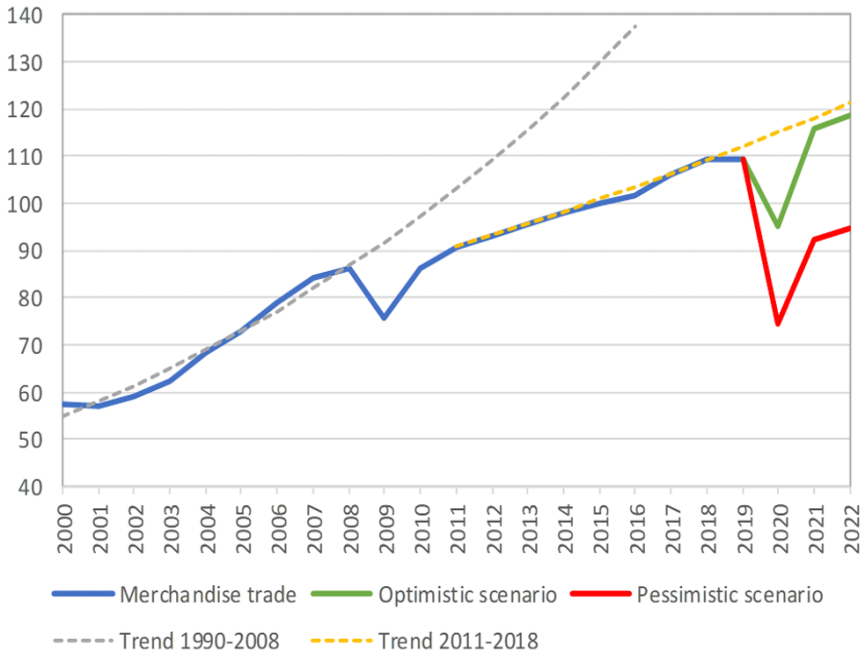
Figure 26. Expected Policy Support by Shipping Enterprises



Perspectives

The impact of COVID-19 on China's logistics is fading, but the effect on global trade is immense and profound. World trade is expected to fall by between 13% and 32% in 2020 as the COVID-19 pandemic disrupts normal economic activity and life around the world. Estimates of the expected recovery in 2021 are equally uncertain, with outcomes depending largely on the duration of the outbreak and the effectiveness of the policy responses.

Figure 27. World merchandise trade volume, 2000-2022



Source : WTO

Broken supply chains, closed borders, suspended transport, falling demand abroad are the major problems faced by shipping carriers cohose activity is based on international trade. More attention should be paid to the operation of carriers, especially the ones with high leverage ratios, as the COVID-19 may become a key catalyst for the upgrading of digitalization and automation in the shipping and port industry. Innovation can help crisis-proof globalization. Technologies like big data and smart manufacturing can help firms from spot risks early and to adapt supply chains and work arrangements in times of disruption.

The pattern and trend of globalization may be changed. The COVID-19 has shown the fragilities of our global system. But simply "rewinding" globalization and re-shoring

supply chains is neither desirable or possible. Single supplier and just-in-time inventory replenishment is exacerbating the coronavirus situation. Resilient form of globalization is emerging, and the trend of global supply chain management may be diversified suppliers and classified monitoring inventory.

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Haocan WTO. (2020) ' Trade set to plunge as COVID-19 pandemic upends global economy', WTO, 8 APRIL 2020. Available at: https://www.wto.org/english/news_e/pres20_e/pr855_e.htm?utm_source=dlvr.it&utm_medium=twitter(Accessed: 8 APRIL 2020)

About the authors

YIN Ming serves as the deputy Secretary-General of Shanghai International Shipping Institute (SISI) and the Secretary-General of International Shipping Think Tank Alliance (ISTTA), also a professor of Shanghai Maritime University (SMU), whose research interests cover theory, policy and business of international shipping.

YIN was invited to work in the headquarters of NORDEN A/S, Copenhagen Denmark, as a management supporter in 2006, and to conduct his post doctor research in Pusan National University, Korea from 2010 to 2011. From 2011 to 2016, he was invited by Regional Maritime University, Ghana to deliver lectures, for 1-2 months per year, to full-time undergraduates from different African countries. He also delivers the National Excellent Open Online Course – Containerization: A Revolution of the Carriage of Goods by Sea, and the Shanghai Excellent Course – Theory and Practice for Liner Shipping.

YIN has co-authored a dozen of books and dozens of papers. As a team leader or key member, he has finished dozens of projects sponsored/entrusted by National Natural Science Fund of China (NSFC), Ministry of Education of China, Ministry of Transport of China, and relevant shipping/port companies.

For his outstanding performance and contribution, YIN has been awarded several times by Shanghai Municipal Government and Shanghai Maritime University.

GSTTA BOOK
Impact of COVID-19 on Maritime Industry

Impact of COVID-19 crisis on global and regional container port markets

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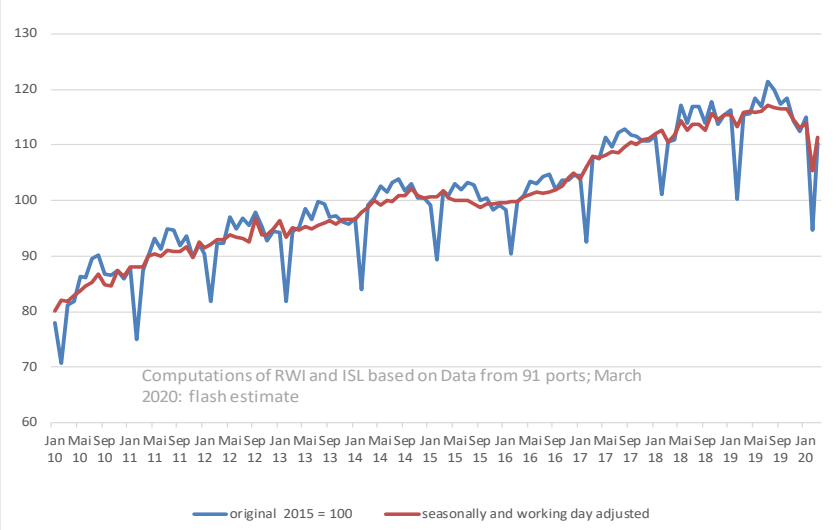
Although actual data regarding the impact of the COVID-19 crisis is limited and shows up only piecemeal, there are some figures from the container shipping industry and especially from container ports that allow at least some assessment of the impact on the global economy, international trade and, consequently, the container shipping industry.

Since 2000 the ISL closely monitors monthly up-to-date container handling data of about 100 ports worldwide. The data is partly provided directly by the port authorities or terminal operators, partly gathered via internet research.

It is, amongst others, processed and analysed since 2005 in the regular publication ISL Monthly Container Port Monitor (MCPM). Since 2011, ISL together with RWI (RWI – Leibniz Institute for Economic Research) publishes an index showing the global trend of container handling and hence international trade seasonally adjusted on a monthly basis.

Figure 1. RWI/ISL-Container Handling Index Global (2015=100)



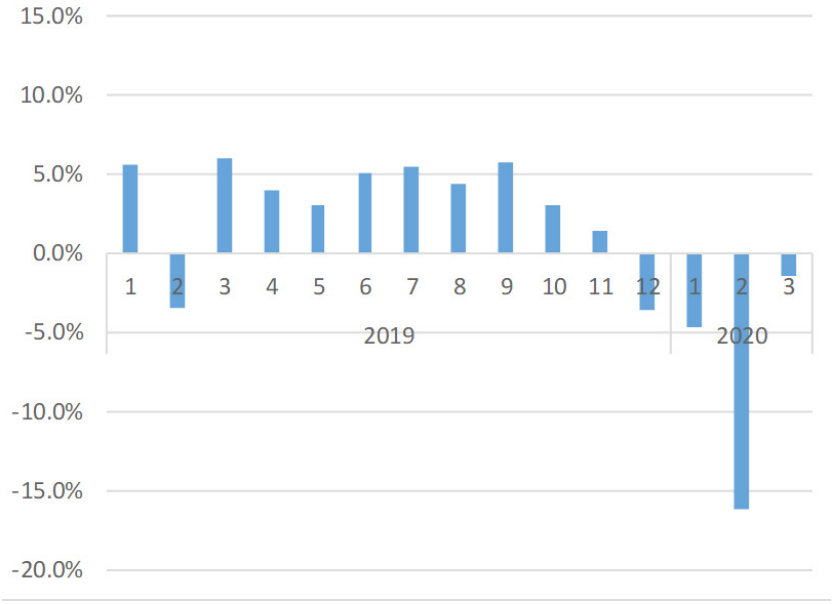
Source : ISL

In February 2020 the index experienced its sharpest drop ever since the start of the time series in 2007. The index lost -8.6 points after seasonal adjustments while the largest drop before was in January 2009 at the climax of the impact of the financial crisis on the container market with -7.0 points.

However, looking at the graph above it can be seen that the downturn of the index started already in autumn 2019, long before the COVID-19 crisis, probably as a result of reduced international trade following, amongst others, the trade war between China and the USA.

This downturn was intensified by the COVID-19 impact starting in January in Chinese ports and continuing in Europe and North America in February and March.

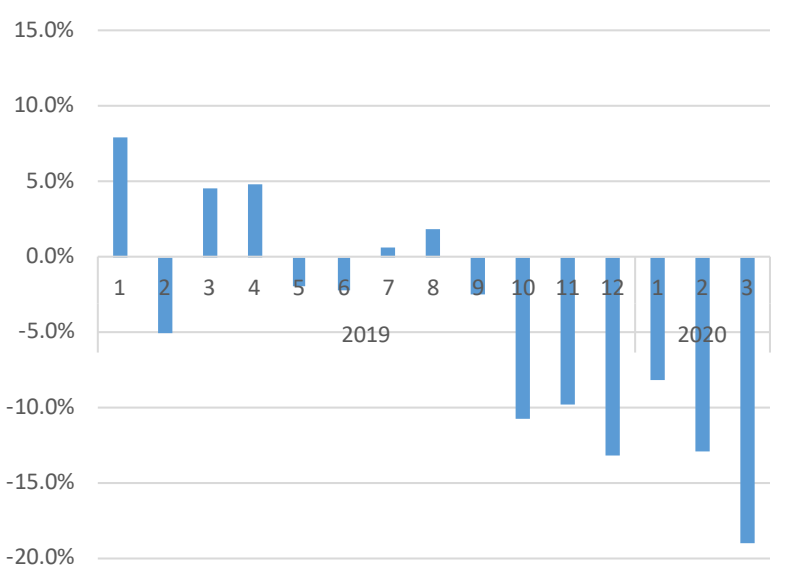
Figure 2. Ports in China: Growth compared with same month of previous year



Source : ISL Monthly Container Port Monitor

In Figure 2 it can be clearly seen, that the decline of y-o-y growth rates in Chinese ports already started in October 2019; December and January there was a decrease already compared with the same month of the previous year despite the fact, that a negative impact of COVID-19 was not possible for that period. In February, one can see the slump of container volumes in Chinese ports with a negative growth of more than -16% y-o-y. For March 2020 the ports in China already reported a recovery, as volumes were only less than 2% lower than one year before.

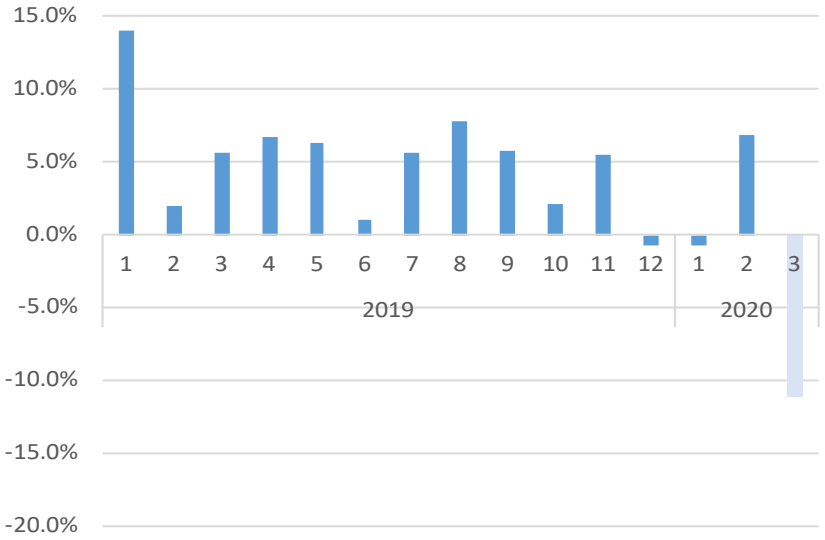
Figure 3. Ports on U.S. West Coast: Growth compared with same month of previous year



Source : ISL Monthly Container Port Monitor

For the ports on the U.S. West Coast the negative impact of the trade war with China can already be observed at least from September 2019 onwards. The effect of the COVID-19 crisis is visible especially in March 2020 with -19% compared with March 2019. With the current economic downturn in the U.S. and most other parts of the world this negative trend is likely to continue.

Figure 4. Ports on U.S. East Coast: Growth compared with same month of previous year

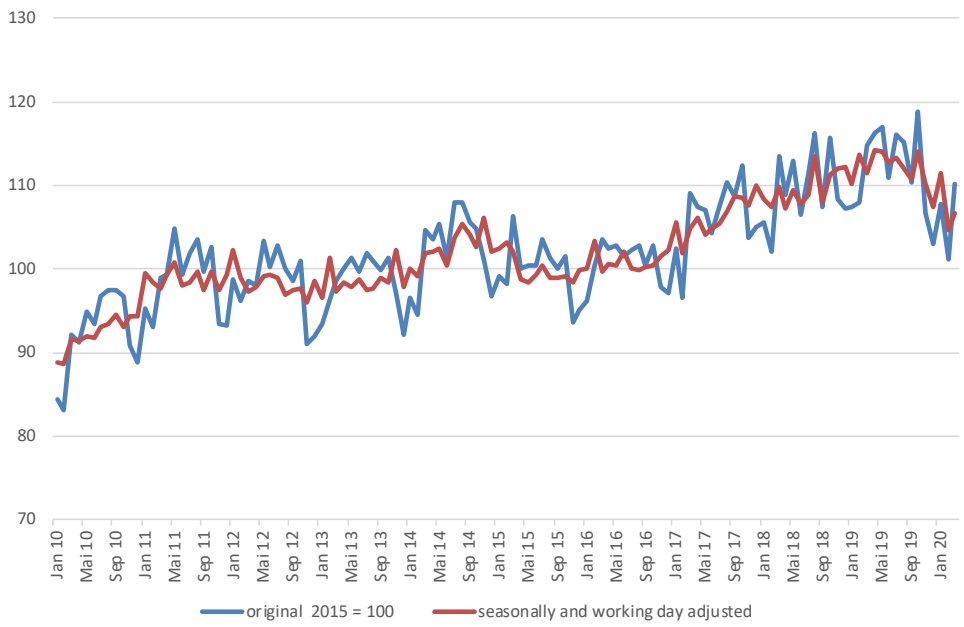


Source : ISL Monthly Container Port Monitor

Looking at the East coast ports of the U.S. the picture is a little different but confirms the interpretation before. The share of China-traffic is less at the East coast. Hence, the negative effect of the trade war was not as significant as for the West coast ports. However, in March 2020 there was a decrease in volume by more than 11% also as a result of the reduced container traffic out of China and also Europe.

Together with RWI ISL recently developed a specific index for the European Northrange ports (see figure 5). Also in this port region we could observe a decline before COVID-19. Until September 2019 the graph shows a positive trend (also for the seasonally adjusted indicator. Since October 2019 there is a significant drop in volumes and this negative trend was reinforced in February/ March 2020 by COVID-19 crisis.

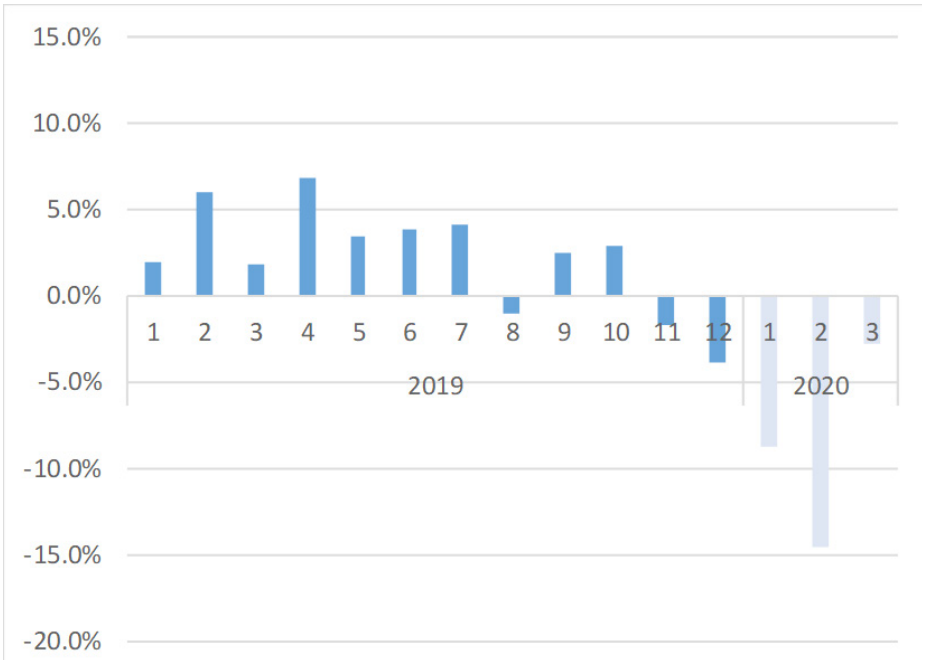
Figure 5. RWI/ISL-Container Handling-Index Northrange (2015=100)



Source : ISL/RWI

If we look for the total North European figures (see following figure 6), the trend is generally confirmed. Since November 2019 we already observe negative growth rates and this was reinforced especially in February 2020. Figures for March are surprisingly positive.

Figure 6. North Europe (excluding Baltic): Growth compared with same month of previous year



Source : ISL Monthly Container Port Monitor

For the next month and the whole year 2020 the outlook is very cautious. Even with starting recovery of Chinese economy, there will be further downward pressure on the market. More than 10% of the global container fleet are currently reported idle. Forecasts for global production and development of GDP are pessimistic and expecting a global recession.

This will result in reduced import demand for in at least Europe and North America, but probably also in most other parts of the world.

Reduced consumer confidence resulted in lower demand for consumables and reduced industrial production will lead to less demand for raw materials and investment goods.

Considering this, ISL expects that the negative trend for the container shipping and port industry continues for the major part of the year and that a sustainable turnaround may be seen towards autumn or end of the year. It seems very likely, that the industry is going to lose 10% and hence more than in the aftermath of the financial crisis in 2009.

About the authors

Burkhard Lemper is Managing Director at the Institute of Shipping Economics and Logistics (ISL), Bremen, Germany and Professor for Maritime Ecomics/Operations at the Bremen University of Applied Sciences. In his career of more than 25 years he has managed a wide variety of projects for individual national and international clients in the maritime industry, especially for port authorities, ship yards and shipping companies. He has worked on studies for the German Ministries of Transport as well as of Research and Technology, dealing with developments in the European and world wide transport markets, especially container transport, port development projects and feasibility studies including cost benefit analyses. He has written and published especially on maritime sector issues. Other important aspects of his research are cargo flow and market analysis, simulation of cargo flows and transport modeling.

GSTTA BOOK
Impact of COVID-19 on Maritime Industry

Short and long term impact of COVID-19 on international seafarers

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The impacts of COVID-19 on international seafarers can be divided into short term or long term. Such impacts can also be of direct or indirect nature. Usually, the short-term impacts are direct and the long-term impacts are indirect. My focus on seafarers, but the nature of the long-term impacts is similar to that on the international shipping sector as a whole.

One of the basic features and fundamental differences between the short-term and the long-term impact of the COVID-19 is that *the short-term impacts are about the newly emerged changes; while the long-term impacts are about the modifications of the processes of the existing changes*. This means that the short-term impacts are often a new phenomenon that people did not know about; while the long-term impacts are the existing changes that people are familiar with but the nature, speed, scope or processes of such changes are affected by the outbreak of the coronavirus. Let me further explain these points briefly with some examples.

A discussion about the short-term impact of COVID-19 on international seafarers

In the past, international seafarers were, on many occasions, the carriers of an epidemic. This time is no exception. Cruise ships have been denied entry to ports and stranded at sea. Although cruise ships and their passengers have been more often the headline stories and drawn more attention in the world, the threats faced by more than 1.6 million seafarers[10] on cargo ships are as serious and of the same nature. It is reported in May 2020 that after 10 crew members had been tested positive for COVID-19, the container

10 BIMCO/ISF "Manning updates 2015"

ship “Barbara” was put under quarantine at Santos Anchorage in Brazil until 17 May, or 17 days after the ship arrived at the port[11]. In a normal situation, the sick crew members could be replaced in a timely fashion so the ship could go back into operation in the shortest possible delay. But at the time of COVID-19, crew change has been seriously disturbed by two kinds of restrictions on seafarer mobility: air travel and crew exchange. When some crew members are infected by the disease, in addition to the human cost, it also leads to ships to be quarantined and most probably denied entry into the port.

Seafarer change has been affected by the international travel restrictions introduced since COVID-19. According to the ICS, each month about 100,000 merchant seafarers need to be changed over from the ships at ports around the world. In the vast majority of the cases, air travel is the only way for crew changes. But according to IATA12, virtually every country has introduced restrictive measures on international travel, ranging from a total ban to reduced services. Every day some 10,000 flights are cancelled, many of them are international[13]. From 25 March – 25 April, for example, some 356,800 flights were cancelled, many of them were international flights. Even international travellers are allowed to disembark an aircraft, many countries have introduced strict quarantine requirement.

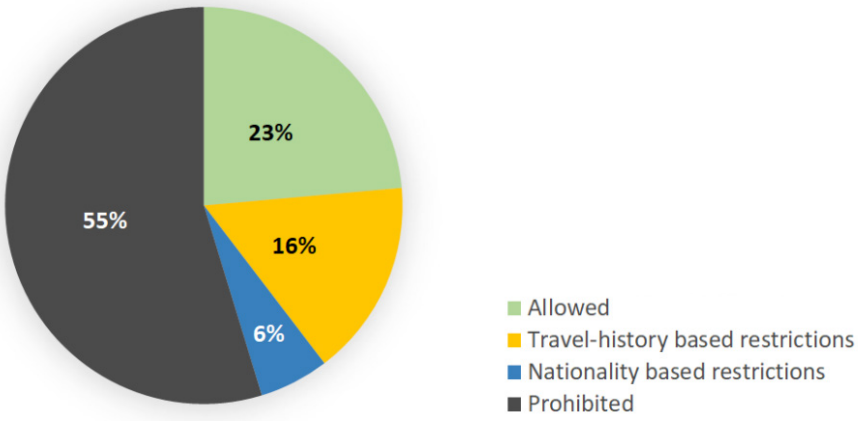
The massive reduction of passenger transport services by air is not the only obstacle to crew change operations. In many countries, new rules have been introduced to prohibit the change of crew to take place. In May 2020, for example, BIMCO published the reports and circulates it for imposing restrictive rules to keep the coronavirus from bay. Such restrictions have certainly an impact on seafarer mobility. As shown in Figure 1, out of a total of 106 countries which include all the major maritime traders, more than half of them have simply closed their ports for the international crew changes. Those that have prohibited foreign crew change at their ports include China, Germany and Singapore. Only less than a quarter of countries that still allow crew change at their ports, while the remaining 22 percent of countries have put in place various restrictive measures. Some of them impose restrictive rules based on the nationality of the crew, while others decide according to the travel history of the seafarers.

11 “Containership quarantined off Santos” retrieved 20 May from https://www.vesseltracker.com/en/Ships/Barbara-9437050.html

12 Retrieved 2 April from https://www.iatatravelcentre.com/international-travel-document-news/1580226297.htm

13 Retrieved 2 April from https://www.flightstats.com/v2/global-cancellations-and-delays

Figure 1. Contries and crew change with COVID19



Source : Based on data from BIMCO, May 2020

Note : Out of a total 106 countries, 58 of them, which include major trading nations and many big ports in the World, are closed to crew changes.

A discussion about the long-term impact of COVID-19 on international seafarers

Seafarers do deserve a better or even a special treatment, given the fact that they are the ones who can help alleviate the pain by keeping the world economy going. However, they also represent a risk and the danger is real and can be costly. COVID-19 is a disease different from the previous epidemics such as SARS or Ebola. From what we know so far, it might be more like Aids which means that it would not disappear. The effective cure has not been found and it is highly likely that the disease may stay with us for a long time until the right vaccines are found and produced with sufficient quantity. But this, according to some estimates, may not happen in the near future.

There are two types of long-term impact that I would like to discuss. One is related to digital technology and automation, the other is related to de-globalization. Both have an indirect impact on seafarers and both are existing trends but the processes of which have been affected by the outbreak of COVID-19.

The challenge also comes from the fact that the disease spreads very fast with a high mean RO at 5.7, rather than 2.5 previously thought[14]. A high portion of affected people with

14 See https://www.healthline.com/health/r-nought-reproduction-number#COVID-19-r-0retrieved 30 Apr 2020. R_0, is a mathematical term that indicates how

no symptoms, just like many of the 10 crew members tested positive on the containership Barbara. These two features present serious challenges to international seafarers. Because of the way the seafarers are working and living onboard in constrained conditions for an extended period of time. An obvious solution is obviously not to put any crew onboard a ship.

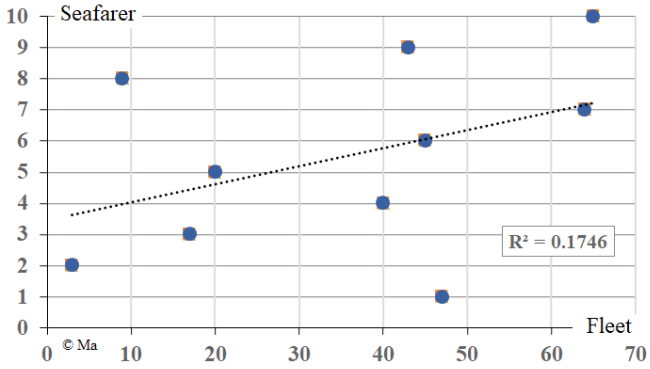
During the COVID-19, the world is like a big experimental lab. New things and practices that had been debated on for many years were adopted quickly and put in practice overnight. For example, at schools and universities, online courses which began decades ago had only progressed timidly due to strong resistance and the tendency of maintaining a status quo. Now, in the wake of the coronavirus outbreak, within weeks, virtually all teaching programs have been made available online. And, as far as I know, it was done with little complaint from students or faculty alike. This seems to be the situation for many schools around the world. As the potentials and advantages of e-learning have been discovered, recognized and appreciated, it looks highly possible that we will not go back to the pre-COVID-19 era even after the Pandemic is over.

A similar situation may also happen in the international shipping sector with a long-term impact on seafarers. COVID-19 may trigger some existing changes to accelerate. One of the biggest and most important change comes from digital technology, in the form of digitalization and automation of the sector. Autonomous ships, for example, would most probably encounter fewer oppositions and resistance when an additional COVID-19 related risk threatens the lives of seafarers working onboard ships. The logic is simple: if the Pandemic will stay for a long time, problems of infection, testing, quarantine, travel restriction and crew change will persist. A possible solution is to reduce crew size and eventually replace people with automation. The process of ship automation has already started for different reasons. Now with COVID-19, the development may be on a fast track.

contagious an infectious disease is. It's also referred to as the reproduction number. As an infection is transmitted to new people, it reproduces itself.

One of the reasons for people to resist the adoption of the new technology and automation is the high social cost in terms of seafarers losing their jobs to automation. But if such pressure is mostly not coming from the same country, the situation can be different. This is because when the employers or the shipowners and the employees or seafarers are from different countries there will be less obstacle to change. In other words, the decision would be easier if the savings made by replacing crew with automation is “net” for the country of a shipowner, because the social cost is paid by the seafarers’ countries. Figure 2 shows a lack of correlation between the largest seafaring countries and the leading ship owning countries. It means that they belong, by and large, to different groups of countries.

Figure 2. Correlation between seafarer and fleet supply



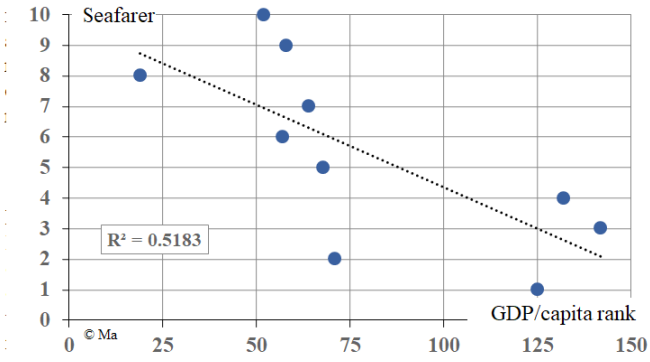
Source : Shuo Ma(2020), "Economics of Maritimes Business". Routledge

Note : It is about the world's top 10 seafarer supply countries and their rank of fleet supply. The two are not correlated.

Another obstacle to the adoption of autonomous ships is about economic justification. COVID-19, with all the associated problems described above, increases a ship’s manning cost. To cover the risk of crew members getting infected, more preventive measures have to be taken and higher health and life insurance costs have to be paid. To deal with travel restrictions and ban on crew changes, service schedule and arrangement have to be adjusted which may have both financial and operational consequences. Such extra costs will, in turn, be an additional incentive for the acceleration of the process of replacing seafarers by automation. A study shows that the seafarers of a country would start losing international competitiveness when the country’s GDP per capita reaches USD10,000.

It may also be possible that such COVID-19 led higher crew cost would offer a stronger incentive for accepting autonomous ships. Figure 3 is about the correlation between the largest seafaring countries and the rank of global GDP per capita of these countries.

Figure 3. Correlation between seafarer and GDP/capita



Source : Shuo Ma(2020), "Economics of Maritimes Business". Routledge

Note : It is about the world's top 10 seafarer supply countries and their rank of GDP/capita. The two are not negatively correlated.

Another pre-COVID-19 trend is deglobalization. One of the main driving forces behind is the social inequality happened in the rich as well as emerging countries that have been deeply involved in the economic globalization. The international shipping has both contributed to the globalization and benefitted from it. This is particularly true for the container shipping which moves finished and semi-finished manufactured goods around the world and forms the backbone of the global supply chain (GSC). A de-globalized world would certainly lead to a decrease in the demand for shipping services and subsequently for seafarers.

Then comes COVID-19, The Pandemic has quickly become an evil symbol of globalization and a target of the blame with the argument that the disease would not have spread quickly to almost every corner of the world had the world economy not been globalized so deeply. Because of globalization, people travel intensively between countries and as China is in a central position of the globalized economy when the outbreak happened there, few countries can be spared. On the other hand, COVID-19 has also put the GSC to the test for two reasons. The first is the disruption of the global supply chain. Being the factory of the world, China is probably the biggest supplier of spare parts for many globalized production lines in a variety of sectors from the car industry to pharmaceutical companies. The effect of the closure of factories and the restriction of people's circulation in China was quickly felt across the world causing stoppage of the productions.

The Pandemic has exposed another weak spot of the GSC, and that is the supply of medicine and particularly medical equipment needed in the fight against the disease. People quickly realized that there is over-dependence on China for much of supplies of e.g. test kits, ventilators, protective suits, gloves and face masks. Such ordinary goods in normal times became overnight life-saving products of strategic importance. The quasi total reliance on foreign productions of such products has been questioned in many countries.

In both cases described above, China is on the spotlight. This leads to another long-term impact of COVID-19 on international seafarers, which is related to the so-called "de-sinicization", or China-exclusion, in the global production in general and critical industries in particular. This process started a couple of years ago in the US under the name of "decoupling" from China. The earlier attempt of "China exclusion" such as TPP is now being extended, with a similar agenda, to have a global dimension such as EPN (Economic Prosperity Network) or a radically reformed WTO. The COVID-19 has increased the possibility of such a US-led alliance being formed and indeed its chance of success. On the other hand, however, given the size of the Chinese economy and its manufacturing sector, the sophistication of its industrial system and clusters, the efficiency of its infrastructure and logistics networks and the performance of its private sector and the labour force, etc. it is not easy to find a substitution for China, at least not in a short run (or not until India has made more progress in the above areas). Today, China is certainly more than a producer, it is one of the world's biggest consumers as well and has the potential to become the World's biggest consumer market in the future if its internal affairs won't go terribly wrong. That will make the decoupling harder. So far China has 7 of the world's top 10 container ports but its main trade partners are the OECD countries. If China would largely be decoupled from the West but the vacuum is not sufficiently refilled by alternative suppliers, the prices of many products would increase, the volume of goods would decrease and global trade would decline. As a consequence, less international shipping and fewer seafarers would be needed.

Conclusion : the differences between the short and the long term impacts of COVID-19 on international seafarers

The short-term impacts of COVID-19 on international seafarers appear together with the Pandemic and it will continue to last as long as the Pandemic itself, in other words, when COVID-19 is over, so will the short-term impacts. The impacts are those directly on the seafarers' ability to carry out their professional activities due to, for example, sickness, quarantine or travel ban. So the impacts change the life and the working environment of seafarers. The impacts are related to the special features of the coronavirus and are thus

new phenomena which did not exist before the outbreak of the Pandemic.

On the other hand, the long-term impacts of COVID-19 on international seafarers will last long after the Pandemic is over. It is possible that the post-COVID19 shipping won't be a "return to business as usual" or at least in the foreseeable future. The long-term impacts on international seafarers are indirect because they are from the fundamental changes in pre-COVID19 world economy and trade on the one hand and in the application of new technologies in the maritime transport sector as well as the new global geopolitical landscape on the other. Both changes would lead to the same result of a substantial reduction in the demand for seafarers. These impacts are not about new changes, they are about the changes in the process of the existing trends. Therefore, COVID-19 will alter the fundamental developments which already began. The impacts are on the speed, the scope, and even, the nature of the existing changes.

Table1. Short and Long Term Impacts of COVID-19 on International Seafarers

	Period	Direct vs indirect	New vs old	Nature of change	Examples
Short-term	As long as the Pandemic	Directly on seafarers	New and not seen before	The life of seafarers altered	- COVID-19 affected seafarers - Problems in the change of crew - Reduced recruitment
Long-term	Long after the Pandemic	On seafarers via changes in demand	Known and existing changes	The process of existing changes altered	- Acceleration of technology-related reduction of demand - Acceleration of trade-related reduction of demand

GSTTA BOOK

Impact of COVID-19 on Maritime Industry

Impact on Korean Shipping Services and Seafarers

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Impact on Korean Shipping Services and Seafarers

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Abstract

Maritime industries are a lifeline of the Korean economy, which depends mostly on shipping when moving trade. Since the COVID-19 reached pandemic status in mid-March of 2020, Korean maritime industries have been exposed to diminishing global demand.

In response to the COVID-19 outbreak, the researchers, who work with the Korea Maritime Institute (KMI), have tried to assess the impact of the pandemic on maritime industries, in particular Korean shipping services and seafarers. The authors distributed a questionnaire to collect opinions on the impact on shipping services around Korea. This paper traced the demand and supply of Korean seafarers by examining the statistics of Korean seafarers. The paper also analyzed the entry of foreign seafarers at the Korean border using data obtained from the Korea Immigration Service.

Industry experts who responded to the questionnaire address their assessment as follows. The demand decreased overall by 27.5%. The negative impacts of the pandemic are similar to or greater than that of the global financial crisis of 2008-2009, and will be sustained for one year. The experts requested governmental supports of working funds, lower interest rates, enhanced cargo transportation rates, and tax reduction or exemption.

The pandemic has hindered crew change internationally and heightened the fatigue of the Korean seafarers on board ships. Furthermore, reserved Korean seafarers and seafarers in temporary contracts below one year have experienced lower income rates

and faced the possibility of long–term unemployment. As in the cases of cruise ships in the pandemic, work conditions on board ships have deteriorated due to the effects of the COVID-19.The paper first suggests an improvement to immigration processes related to seafarers to resolve the bottleneck at borders. Second, it is imperative to establish separate and controlled designated ports and airports for crew changes of ocean-going shipping. Third, maritime industries should consider the introduction of a system of exemption or suspension related to training and re-education in the exceptional cases of a pandemic and other natural disasters.

Keywords: COVID-19, pandemic, impact, shipping services, seafarer, Korea.

Introduction

The Korean economy has been driven by export-oriented growth since the 1960s, and the trade of goods is mostly supported by shipping services, which move almost 100% (99.6%) of commodities based on volume (Ministry of Land, Transport and Maritime Affairs, 2009). Depression of the world economy negatively affects world trade and shipping activities in Korea.

Even though the status of COVID-19 has been exacerbated from an epidemic to a pandemic since March 11, 2020, the global supply chain and world shipping networks need to be working in order to sustain economic activities. While shipping services and seafarers on board in Korea are pillars of the global supply chain, they remain vulnerable to COVID-19.

The aim of the present paper is first to assess the negative effects of the COVID-19 pandemic on Korean shipping services by collecting the opinions of maritime industry experts. The opinions of the experts are collected via a questionnaire which was distributed throughout the maritime industry in Korea. Second, the paper traces the impact of the pandemic on Korean seafarers, in particular the effect of travel restrictions. While partially using the survey data of the Korea Shipowners Association (KSA) on the various restrictions on shipping and seafaring around the world, the paper evaluates the impact of the COVID-19 pandemic on the demand and supply of Korean seafarers.

The paper is structured as follows. Chapter 2 describes the questionnaire survey and its main results. Chapter 3 traces the impact of the COVID-19 pandemic on Korean seafarers and Korea-related foreign seafarers. Chapter 4 concludes the paper and includes suggestions for improvements in seafaring in direct response to the pandemic.

Results of survey on the impact of the pandemic on Korean Shipping Services

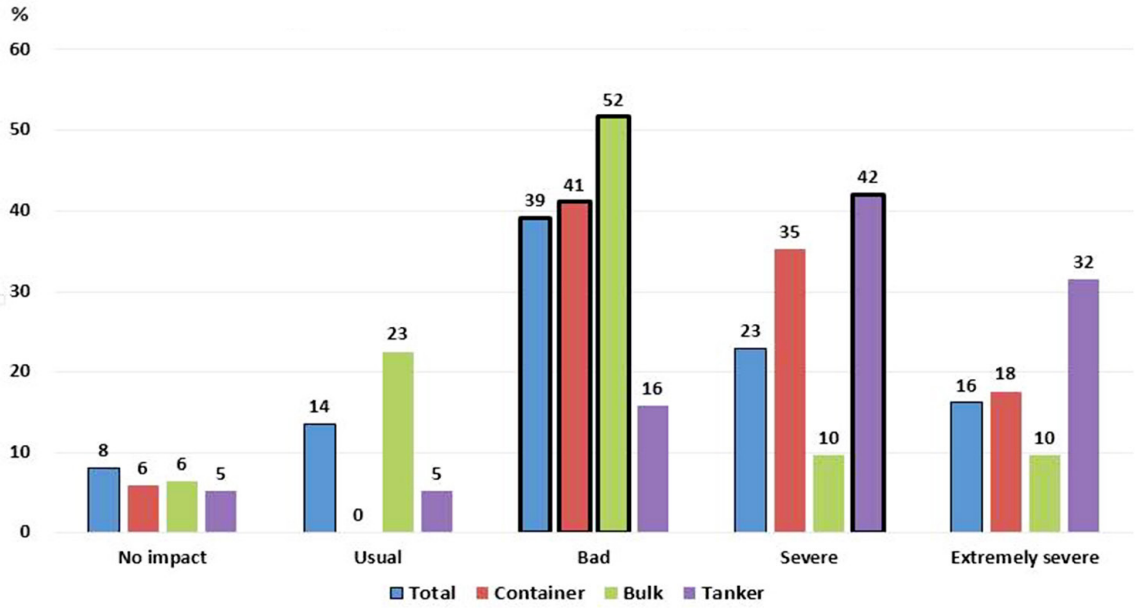
The authors in the Korea Maritime Institute (KMI) conducted a questionnaire survey on the impact of COVID-19 on Korean shipping companies. The questionnaire for this survey was sent to industry experts from 144 companies, registered in the Korea Shipowners Association, from the 17th to the 20th of March 2020. The 74 respondents are from 17 container companies, 31 dry bulk companies, 19 oil tanker companies, and 7 other companies.

Table 1. Contents of the questionnaire : Impact of COVID-19 on shipping companies

1-1	How would you describe the negative impacts of the COVID-19 pandemic on your business(reduced sales and volumes, etc.)?
1-2	How much have your sales decreased since the COVID-19 outbreak?
2-1	How has the COVID-19 pandemic affected your business compared to the global financial crisis?
2-2	Compared to the global financial crisis, how long do you expect the COVID-19 pandemic to affect your business?
3	When do you expect the hardship your business has experienced as a result of the COVID-19 pandemic to be resolved?
4	What government support is most needed for your business due to the COVID-19 outbreak?
5	When would the perfect time have been to receive effective government support?

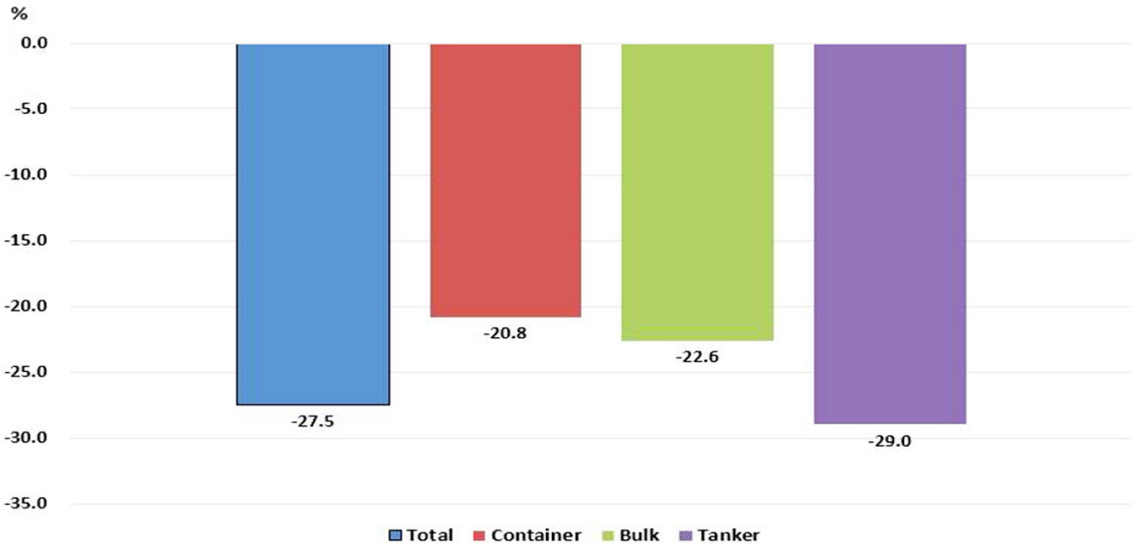
The results of the survey are as follows. First, since the COVID-19 outbreak, Korean shipping companies have been experiencing difficulties due to reduced sales and cargo volume. Their sales decreased by an average of 27.5% compared to the same month in the previous year. Specifically, 78% (39% bad, 23% severe, and 16% extremely severe) of experts reported that the negative effects of COVID-19 on shipping companies were “bad” or worse, as shown in Figure 1. The Tanker market is facing the worst negative effects from the pandemic, followed by the container market and then the bulk market. The reduction in sales was 27.5% overall as listed in Figure 2, which broke down as 21% in the container market, 23% in the bulk market, and 29% in the tanker market.

Figure 1. Negative Impact of COVID-19 on Shipping Companies



Source : Korea Maritime Institute.

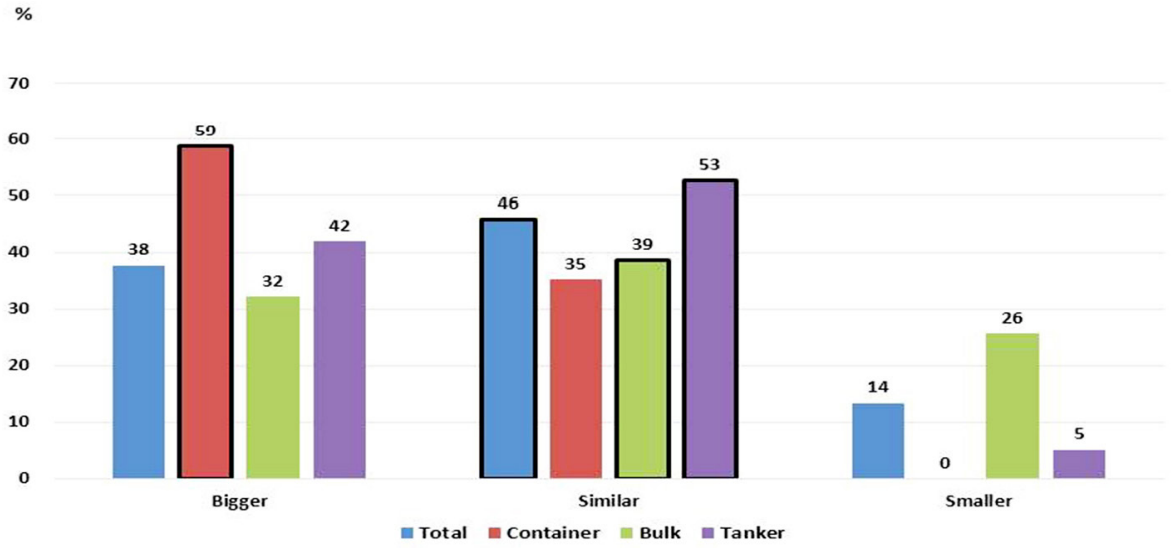
Figure 2. Reduction in Sales of Shipping Companies after COVID-19 Outbreak(YoY)



Source : Korea Maritime Institute

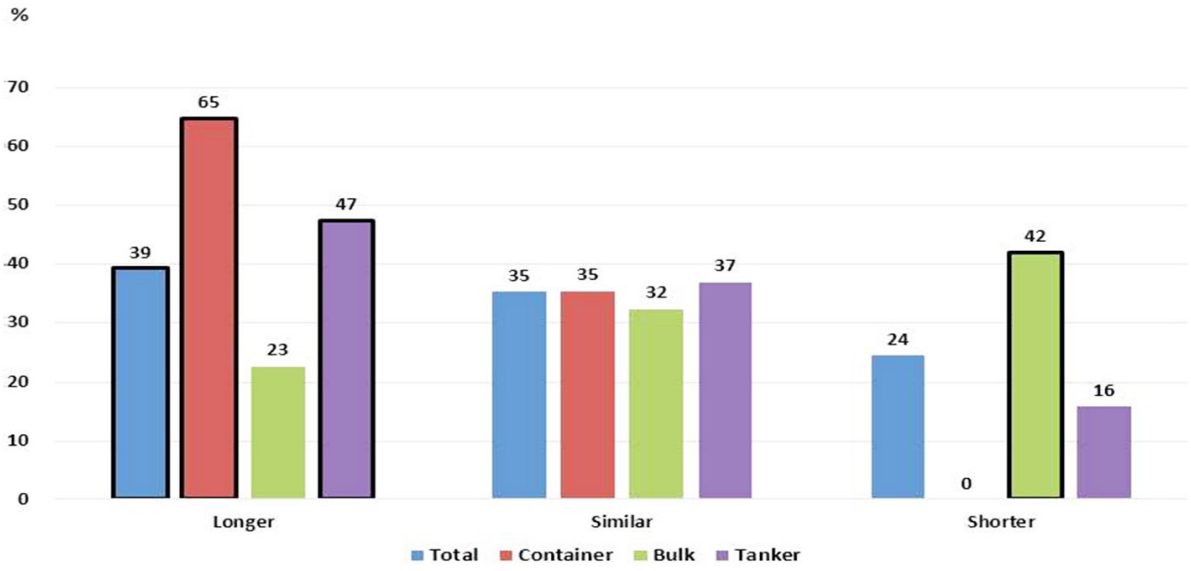
Second, the industry experts estimate that the impact of COVID-19 is similar to or greater than the impact of the global financial crisis in 2008-2009, as shown in Figure 3, and expect the period of impact to be similar to or longer than that of the global financial crisis, as shown in Figure 4. The pandemic's effect, in general, is expected to be worse than that of the global financial crisis in 2008, particularly in the container market, as illustrated in Figure 3.

Figure 3. Size of the Impact of COVID-19 Pandemic on Shipping Companies compared to the Global Financial Crisis



Source : Korea Maritime Institute.

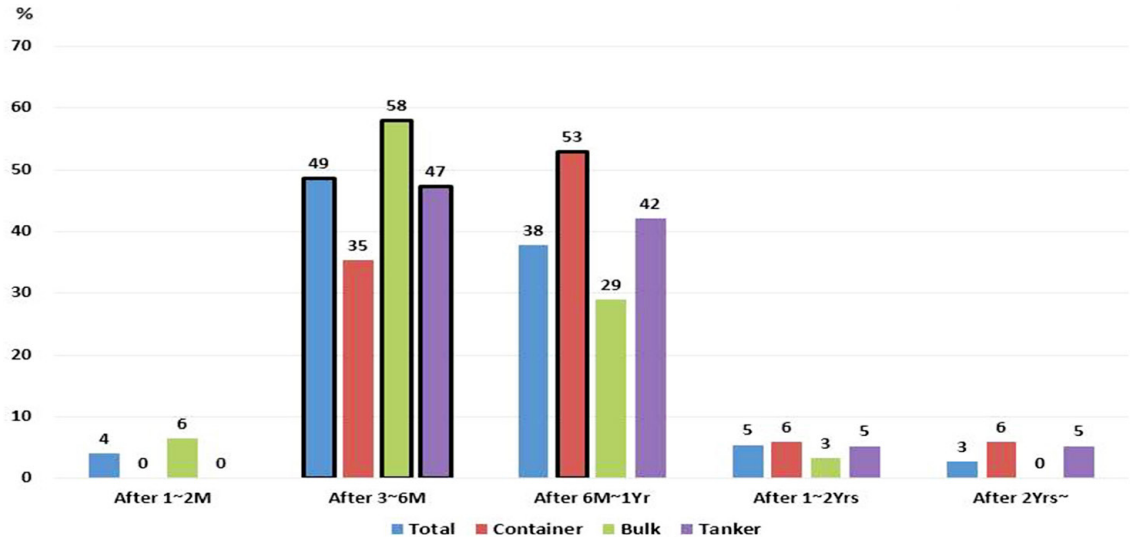
Figure 4. Expected Period of COVID-19's Impact on Shipping Companies compared to the Global Financial Crisis



Source : Korea Maritime Institute.

Third, Korean shipping companies expect that the hardship resulting from COVID-19 will be resolved within three months to one year, as illustrated in Figure 5. Although the respondents expect the hardship to end in a year or less, there is a possibility of long-term depression.

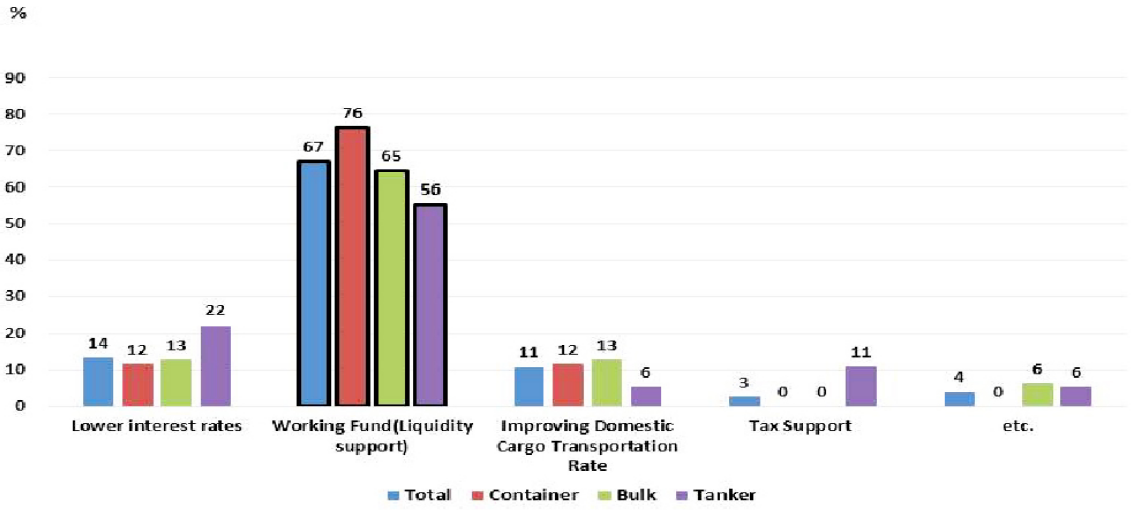
Figure 5. Period of Time to resolve COVID-19's Impact on Shipping Companies



Source : Korea Maritime Institute.

Fourth, Korean shipping companies replied that government support such as a working fund (liquidity fund) support is urgent in the short term to resolve the COVID-19 shock (Figure 6). The respondents are hoping to get financial support in the area of working funds and other aids such as lower interest rates, enhanced cargo transportation rates, and tax exemption.

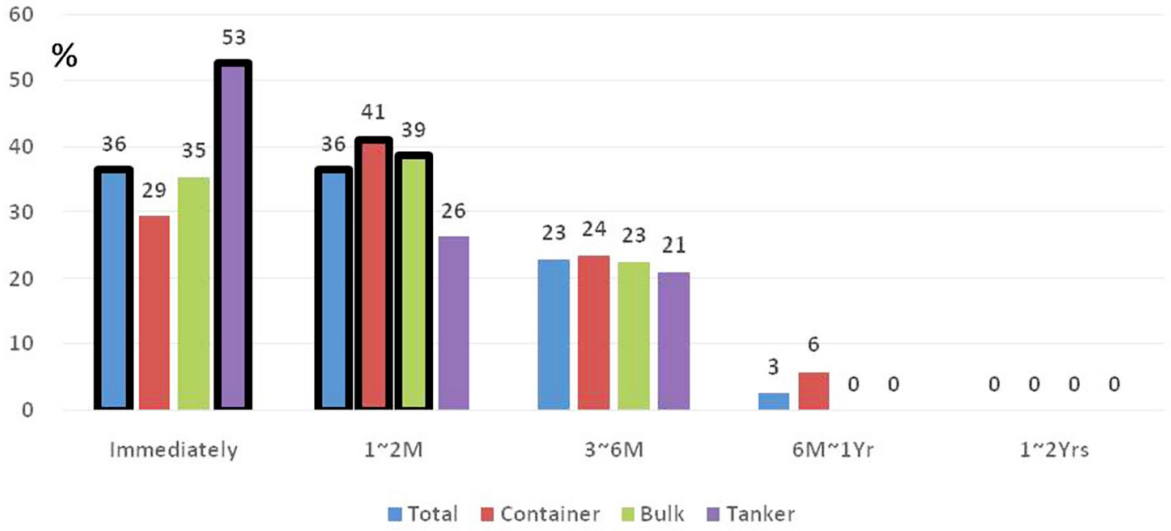
Figure 6. The Most Necessary Government Support



Source : Korea Maritime Institute.

Finally, in terms of improving the effectiveness of the governmental support given to shipping companies, 72% said that government support should be provided 'immediately' (36%) or 'within two months' (36%), as shown in Figure 7. The respondents' preference is for immediate support from the Korean government.

Figure 7. Golden Hour of Effective Government Support



Source : Korea Maritime Institute.

Impact on Korean Seafarers

Seafarers related to Korean maritime industries can be divided into three types: Korean seafarers under the Korean flag, foreign seafarers under the Korean flag, and Korean seafarers under a foreign flag (Ministry of Oceans and Fisheries and Korea Seafarers Welfare and Employment Center, 2019). Korean seafarers under the Korean flag were found to be less vulnerable to the negative impacts of the pandemic.

Development of the pandemic around Korea

In the beginning stages of the epidemic from early January to mid-February of 2020, the regions affected by COVID-19 were limited to Hubei Province in China, its capital the city of Wuhan, and the countries neighboring China. On the 11th of January 2020, the number of confirmed cases stood at 41, with only one recorded death, and these cases were recorded mainly in China (World Health Organization, 2020). The Chinese government blocked the Huanan Fishery Product Wholesale Market in Wuhan from the 21st of January, and instructed the lockdown of the city of Wuhan and its neighboring regions from the 23rd of January. The Chinese government also extended the Lunar New Year holidays to lower the spread of COVID-19. Heath authorities around the world developed their own

countermeasures to prevent the spread of infection by treating confirmed cases, suspected cases, and patients under investigation, while not closing borders and not enforcing any travel restriction. The first counter-measures in Korea included widely accessible testing, hospitalization and treatment of the infected in government-designated hospitals, self-quarantine of the people for 14 days who had made contact with a confirmed case, or who had entered Korea from the regions of Hubei, China (Ministry of Employment and Labor of Korea, 2020). The first infected case in Korea, who returned to Korea from Wuhan on the 19th of January 2020, was confirmed on the 20th of January 2020 (Prime Minister's Secretariat of Korea, 2020).

The spread of COVID-19 in Korea and the wider epidemic phenomenon throughout the world started from mid-February 2020. The number of infections recorded in Korea increased from one on the 20th of January 2020 to 104 on the 20th of February 2020, and 3,150 by the end of that same month. World Health Organization (WHO) named the disease of Novel coronavirus as COVID-19 on the 11th cases by the end of February 2020, and 124,101 cases by the 11th of March 2020 (WHO, 2020). The WHO classified COVID-19 as a pandemic on the 11th of March 2020 (WHO, 2020).

Travelling restriction on seafarers

The announcement of the pandemic triggered world-wide countermeasures beginning in mid-March. Since COVID-19 had been worsened to the level of a pandemic, each country has been required to take countermeasures. One measure which has been widely adopted throughout the world has been travel restrictions, particularly across international borders. The following countermeasures were sourced from the Ministry of Foreign Affairs of Korea (Ministry of Foreign Affairs of Korea, 2020).

Vietnam developed earlier measures related to Korean entry. Vietnam suspended the visa exemption for Korean nationals from the 29th of February 2020, stopped issuing visas to foreigners from the 17th of March 2020, and prohibited foreigners from entering from the 22nd of March. India ordered travelers from Korea, China, Italy, Iran, France, Spain, and Germany to self-quarantine for 14 days from the 13th of March 2020. Myanmar prohibited the entry of foreigners who had visited anywhere in China and specifically Daegu and Gyeongsangbuk-Do in Korea from the 15th of March 2020. Myanmar closed its inland border from the 19th of March and stopped visa exemptions and the issuing of visas for foreigners. The United Kingdom ordered anyone who had visited Daegu in Korea, Hubei

region, China, and Iran to self-quarantine for seven days. Japan prohibited foreigners from entering if they had stayed in Korea, China, USA or other specific countries from the 3rd of April 2020. Japan suspended visa exemptions for Korean, Hong Kong, and Macao nationals from the 27th of April 2020. China suspended visa exemptions from the 28th of March 2020. From the 1st of March 2020, Jilin Province in China legislated a self-quarantine of 14 days in hotels for all travelers arriving at Changchun Airport from overseas. Other municipal governments later introduced similar measures. In addition to these, many countries, including Austria and India, required travelers to produce a certificate confirming that they did not have COVID-19 from the beginning of March.

Some maritime friendly countries such as Hong Kong, Myanmar, Indonesia, Bahrain, Greece, Belgium, Bulgaria, the Netherlands, Denmark, Luxemburg, Sweden, Spain, Island, Kazakhstan, Mongolia, Ukraine, Turkmenistan and Russia have allowed entry by transport employees including crews of vessels and seafarers. The USA, Canada, Cambodia, and Austria qualify crews of airplanes for border entry; Portugal, Poland, and Tajikistan have extended this allowance to car drivers.

Even though some countries have chosen maritime friendly measures of travelling to allow crews and seafarers to keep trade moving, there has been a rapid increase in the countries, regions and cities under strict lockdown, which is having a big impact on movement. A general reduction in all transport facilities and a decrease in regular air transport routes have hindered the rotation of seafarers in foreign countries.

Countermeasures pursued by Korea, and immigration measures on seafarers

After the report of Coronavirus infections in Hubei Province and the city of Wuhan in China in January, the Korean government gradually heightened the levels of travel alert and warned Koreans intending to travel to Hubei Province, Wuhan and China.

The first immigration restrictions imposed by the Korean government came on the 4th of February 2020. These were for foreigners who had visited Hubei province in China, a suspension of the visa waiver program for entry to Jeju Island in Korea, and a restriction on visa-free entry of Chinese nationals. The first restriction on immigration due to COVID-19 came on 9th March 2020 (Korea Immigration Service, 2020). It was the first immigration measures Korea had imposed after the outbreak in China in January 2020. Visa-free entry and visa waiver programs at the Korean border for nationals of countries imposing entry bans on Koreans (except for crews and seafarers arriving by aeroplane and vessels) were

suspended from the 13th of March 2020. All short-term visas issued by immigration control in Korea were suspended from the 13th of April 2020, with the exception of long-term visas and visas for short-term employment.

Foreign seafarers with an E-10 Korean seafaring visa can enter Korea, both through airports and seaports, even with the March 13 suspension of visa-free entry and visa waiver programs in on Korean borders. Nevertheless, foreign seafarers with the E-10 visa who have entered into Korea through Korean airports are subject to a self-quarantine of 14 days; foreign seafarers with an E-10 visa who arrive though Korean seaports are exempted from this requirement. After it was classified as a pandemic assessment by WHO Korea, port authorities no longer allowed foreign cruise ships to berth in a port and have passengers and crews disembark; in some exceptional cases such as bunkering and logistics related to food, the authorities would allow the ships to berth in a port.

Direct impact on Korean seafarers and foreign seafarers under Korean flag

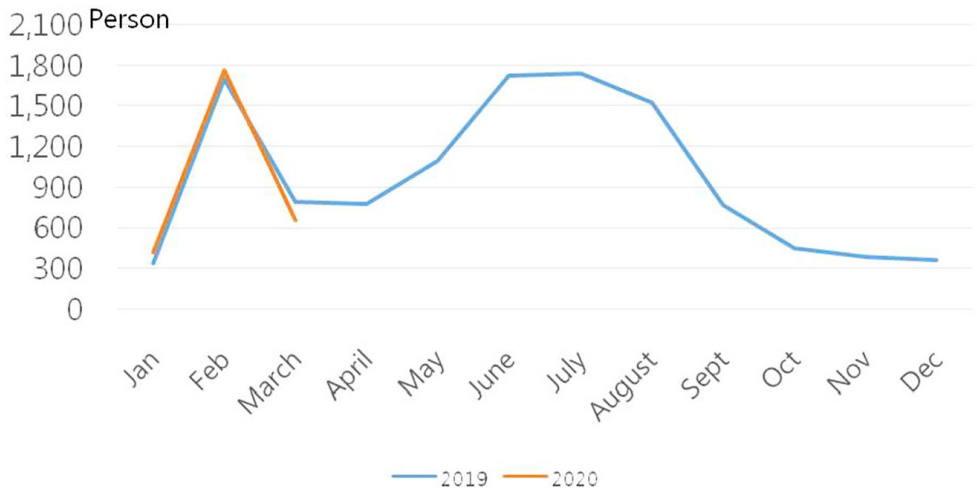
As mentioned before, seafarers related to shipping services can be divided into three categories: Korean seafarers under the Korean flag, foreign seafarers under the Korean flag, and Korean seafarers under a foreign flag. Korean seafarers under the Korean flag were less exposed to Korea's travel restriction in the pandemic, as they can rotate their seafaring through Korean airports and ports.

The pandemic has affected the conditions of Korean seafarers working under the Korean flag in different ways, right up until the time of this writing. There has been a minor impact due to a brief service suspension in car-ferry routes; a more immediate and direct impact in the ocean-going passenger shipping market; and an impact with time lag on cargo shipping markets. As Korea is a neighboring country to China, it has experienced first a decrease in passengers on car-ferry routes from China and then passenger shipping routes to Japan. The number of passengers traveling between Korea and China plummeted after the lockdown of Wuhan and its neighboring regions from the 23rd of January. The car-ferry liners suspended services for two weeks from the end of January to the mid of February 2020. Since the duration of service suspension of car-ferries to China routes was quite short, the seafarers working on these car-ferry routes were not exposed to worsened work conditions. The car-ferry liners between Korea and China experienced only a minor decrease in revenue due to the stable flow of cargoes, and resumed services after a short suspension.

Passenger liners between Korea and Japan have been substantially affected, and are going to suspend all services until the end of June 2020. The seafarers working on passenger routes between Korea and Japan experienced a 70% decrease in salary payment during the suspension period, as well as work leave payment, with the maximum period of six months of governmental aid. After the six months, these seafarers may face unemployment, and a long work leave without payment.

In the oceangoing shipping services of container and tramper ships of Korea, the suspension of air transport services, travel restrictions by countries, and the introduction of a mandatory 14-day quarantine for entering foreigners are hindering crew rotation of Korean seafarers and foreign seafarers. Even though Korean seafarers may take on additional seafaring work over the contracted period, the rotation of Korean seafarers is easier than that of foreign seafarers.

Figure 8. Entry of Foreign Seafarers in Korean Border



Source: Korea Immigration Service (2020)

In 2019, 13,653 foreign seafarers entered with an E-10 visa. The number of foreign seafarers entering decreased from 791 in March 2019 to 655 in March 2020; the numbers in January and February 2020 are similar to those in 2019 (Figure 8). Figure 8 shows two peaks in the entry of foreign seafarers, in February, and in June and July. If the pandemic is not kept under control and travel restrictions continue until July 2020, the crew change of foreign seafarers will be worsened and blocked gradually.

Korean seafarers operating under a foreign flag have faced many difficulties, including travel restrictions, mandatory self-quarantine of 14 days, decreased air routes, the lockdown of countries and prohibition of crew change in foreign ports such as Chinese ports, Australian ports, and Rotterdam port. The costs of crew change have soared for these reasons. This puts Korean seafarers in a compromised position. On the one hand, seafarers cannot disembark and must work aboard longer than the expected and contracted period of seafaring. On the other hand, some seafarers on temporary and short term contracts may experience involuntary unemployment and work leave without payment.

Case of suspension of seafaring of Korean cook

- A Korean seafarer, a novice in the maritime industry, prepared for seafaring on a ship managed by Wilhemsen Ship Management company. He could not participate in a compulsory training program for seafaring due to the restriction of participation by residents of Daegu and Gyeongsangbuk-do, Korea and the cancellation of the training program by the Korea Institute of Maritime and Fisheries Technology, a training institute.

Source: Authors- elaboration on the interview with staff of Korea Seafarers Welfare and Employment Center (2020)

Suggestions and Conclusions

With the decreasing demand for cargo, the Korean government could initiate immediate support measures such as working funds. In addition, the pandemic has been threatening the regular operation of shipping networks by hindering crew change throughout the world. The working conditions aboard are less desirable than those of onshore jobs, and have deteriorated and been affected directly as a result of the COVID-19. The proble matic of crew rotation, will gradually increase the human factor risks of maritime accidents and may in some cases stop the manipulation of vessels if there are COVID-19 outbreaks on a ship.

First, even though maritime services and seafaring workers play a key role in the global supply chain, their immigration status is lower than that of air transport crews. Many countries including the Philippines have introduced travel restrictions on Philippines seafarers and foreign seafarers, who are going to enter for work rotation. In contrast, Hong Kong, Myanmar, Indonesia, Greece, the Netherlands, Denmark, Luxemburg, Sweden, Spain, and Russia have allowed foreign seafarers to apply for immigration. For this reason, IMO and maritime industries should benchmark the cases of these maritime

friendly countries, and urge the international community to allow foreign seafarers entry immigration in similar cases.

Second, as IMO, the International Chamber of Shipping, ICAO, and IATA have suggested, it is imperative to establish safe, designated ports and airports for crew changes of ocean-going vessels. The international community can initially use passenger transport routes around maritime friendly countries, and then expand the network into other countries.

The third suggestion relates to the issues of training and re-education for the necessary qualification of seafaring. After the outbreak of COVID-19, many educational and training institutes have closed their programs. This closing causes problems in the qualification of seafaring personnel, who are scheduled to work seafaring; it does not create a significant problem for the seafarers on board, since the countries of the seafarers have issued a request of understanding for delayed education and training. It is important to introduce a system of exemption or suspension for training and re-education in the exceptional cases of a pandemic or a natural disaster in the future.

The fourth suggestion relates to the spatial structure of a merchant ship. Ships built a decade ago tends not to have an isolated room with a bathroom for the purpose of isolating among seafarers; when an infectious disease such as COVID-19 occurs during navigation on the high seas, an isolated room with a bathroom will be useful in keeping sanitation on board a ship, and reduce the spread of infectious cases. Nevertheless, the additional construction of an isolated room with a bathroom will be a burden to ship owners and shipping companies. As such, an international agreement after a discussion on the sanitation of a merchant ships and a cruise ships in an international organization is needed to construct a sanitation facility.

The outbreak of COVID-19 has resulted in various issues for maritime industries. The long-term tracking seafaring personnel around Korean maritime industries may bring us a new perspective on the interaction between the activities of maritime industries and seafaring.

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