Ports and shipping in the COVID-19 pandemic

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PORTS AND SHIPPING IN THE COVID-19 PANDEMIC

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A CRISIS LIKE NO OTHER

The COVID-19 pandemic led to the second global crisis since the 2009 financial crisis, which resulted in a recession in all OECD countries and most emerging economies. It fundamentally challenged the direction of future trade flows and trade arrangements. The stability of global financial institutions, continuous and sustainable GDP growth, the reliance on OECD economies, government economic interventions, and widely applied logistics concepts such as just-in-time were put in question and contested, if not opposed. From a business cycle perspective, periods of growth are commonly followed by adjustment phases where misallocations are corrected. This phase of readjustment was felt in the aftermath of the 2008-2009 financial crisis with a substantial impact on maritime shipping companies and port terminals.

This time, the COVID-19 presents new and unprecedented impacts on global supply chains, and the port and shipping industry. In this contribution, we discuss the main implications of the pandemic on global logistics with a specific focus on container ports and shipping lines.

EFFECTS ON GLOBAL SUPPLY CHAINS

From a supply chain perspective, COVID-19 is unfolding in several phases. The first phase in early 2020 consisted of a supply shock in China where lockdown measures resulted in a de facto extension of sharply decreased Chinese production during the New Year's period. The lockdown affected most of the workforce and curtailed the industrial base between mid-January and early March 2020. At the same time, some sectors faced shortages (pharmaceuticals and medical equipment) due to a demand surge and the diversion of inventories.

The second phase began in mid-March 2020 and consisted of a (global) demand shock with backpropagation along the supply chain. The lockdown and semi-lockdown measures implemented across the world resulted in a decline in globalisation deprived demand because of lower consumer and industrial confidence and limited retail activity. Except for the temporary

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hoarding shock on inventories, the demand for most consumer products saw a sharp decline. The lockdown of a large consumer base removed people from the workforce and shifted consumption patterns to essential goods (food and personal items). The collapse of travel, tourism (cruise industry), and the entertainment industry, as well as the temporary closure of bars and restaurants, had additional depressing effects on demand. Last-mile vulnerabilities in distribution became visible because of the lower availability of the workforce (e.g. absenteeism in trucking). The lower economic activity level and uncertainty about the path to economic recovery also generated a steep drop in the price of several commodities, such as petroleum.

In the third phase, many regions in the world started to relax the COVID-19 measures with most economic sectors resuming activity. However, deferred demand levels remain uncertain. As regional, national or supranational social protection measures (e.g. technical unemployment or financial support to cover turnover loss in several business sectors) are gradually downsized in scale and scope, the risk of rolling defaults, massive layoffs, and bankruptcies sharply increase. The uncertainty about economic recovery diverts savings and capital away from discretionary demand. New local outbreaks of the Coronavirus, particularly in developing economies such as Brazil and India, and the ongoing presence of the first wave in several countries resulting in new forms of restrictions on economic and social life, further lowered the chance that initial deferred demand will turn into actual demand.

In this highly uncertain environment, and under the condition that expectations for a muted recovery in the second half of the year will be materialised, the International Monetary Fund, Oxford Economics, and IHS Market seem to reach a consensus that GDP heads for a 3% decline in 2020, though skeptical forecasts go as far as doubling this decline. A similar range is present in the 2021 GDP forecasts, with scenarios ranging from -2% to +6% depending on health issues (virus containment, vaccine progress), the effectiveness of stimuli and debt tackling policies, and the impact of the pandemic on consumer behavior. For the moment, orders at Chinese factories remain substantially down on last year, suggesting forward bookings could tail off sharply in Q4 2020.

The above observations suggest that we are far from reaching the final phase consisting of a clear and consistent recovery with a strong trend toward the restocking of inventories at distribution centers and stores, as well as the return to normal demand patterns. Once this restocking is done, there will be a rebalancing of supply and demand to a new normal. The recovery phase might go hand in hand with an increased risk for protectionism to support national production, as many economies will be trying to recover from low demand. Moreover, nearshoring and reshoring strategies are being considered to reduce the dependence on overseas production, to develop essential economic activities at the regional/local level, and to increase supply chain resilience.

The demand for maritime shipping and terminal operations is a derived demand. A sudden drop in demand has an immediate impact on their activity levels. In the next sections, we summarize the main implications of COVID-19 for shipping and ports.

THE ADAPTIVE CAPACITY OF CONTAINER CARRIERS

The 2008/2009 crisis had a dramatic impact on the profitability in the liner shipping market not only because of exogenous factors (i.e. drop in demand) but also because of the endogenous behavior of shipping lines. Container shipping entered a long period of depressed freight rates partly as a result of poor capacity management and the lack of any rationalization in the industry (note that M&As only started in 2014 and the bankruptcy of Hanjin took place in 2016). In an environment of overcapacity and high fixed costs, lines were chasing short-run contributions filling ships at a marginal cost, leading to direct operational losses on the trades considered.

This time, container lines seem to have adjusted their strategy to cope with the recent significant drop in volumes. Freight rates did not erode in the first half of 2020 as carriers took actions in the field of capacity management and pricing. Despite the crisis, shipping lines and their alliances (i.e. The Alliance, Ocean Alliance, and 2M) tried to maintain network integrity and resorted to blanked sailings to deal with supply/demand imbalances. In April/May 2020, carriers were withdrawing up to 20% of their network capacity on the main trade lanes and idling more than 2.5 million TEU of fleet capacity. In June/July 2020, some announced blanked sailings were reinstated as demand on some trade routes resumed due to the relaxation of COVID-19 measures in major markets. Carriers further controlled the vessel capacity situation by shrinking their vessel order books, by increasing vessel scrapping activity (with even several post-Panamax vessels sent to the scrapyards) and by the occasional use of the Cape route around South Africa instead of the Suez Canal route.

In the early months of COVID-19, carriers implemented programs to slow the flow of trade for shippers who were unable to take deliveries amid the crisis, e.g. "suspension of transit", "detention in transit" or "storage in transit" which allow the customer to adapt the delivery date.

In the longer term, the expected slow economic recovery and the ongoing gradual reorganisation of the global economic production system (e.g. nearshoring and reshoring) could push shipping lines to rationalise services on the main east-west trade routes while strengthening intra-regional shipping networks. The structure of the shipping fleet and the high economies of scale will impose a very specific restructuring of services. The outcome is likely to be concentration on trunk routes.

The current crisis might also have an impact on the market structure. There is no immediate reason to resort to a new wave of mergers and acquisitions among carriers. However, quite a few container lines are likely to intensify their focus on vertical integration through a stronger involvement in inland logistics and digital transformation, while also pushing for the greening of their fleets. In any case, the crisis is an opportunity for shipping lines to make a comprehensive review of their business models. The pace and timing of economic recovery will be an important factor for shipping lines. A path of slow recovery would allow shipping lines to redeploy resources and equipment step by step without destabilising the market and rates. However, a steep recovery would put strong pressure on making idle capacity available to the market in a short time period. Such a fast development towards

Figure 1. Global Container Vessel Calls (2020 vs. 2019)

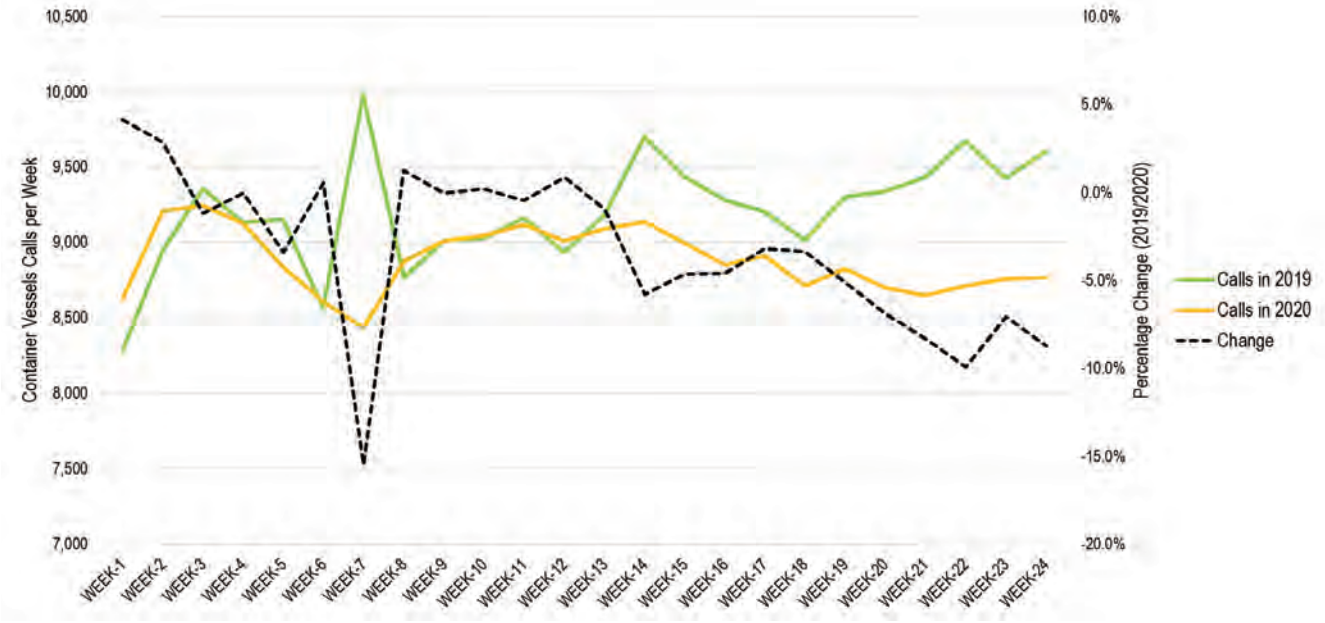
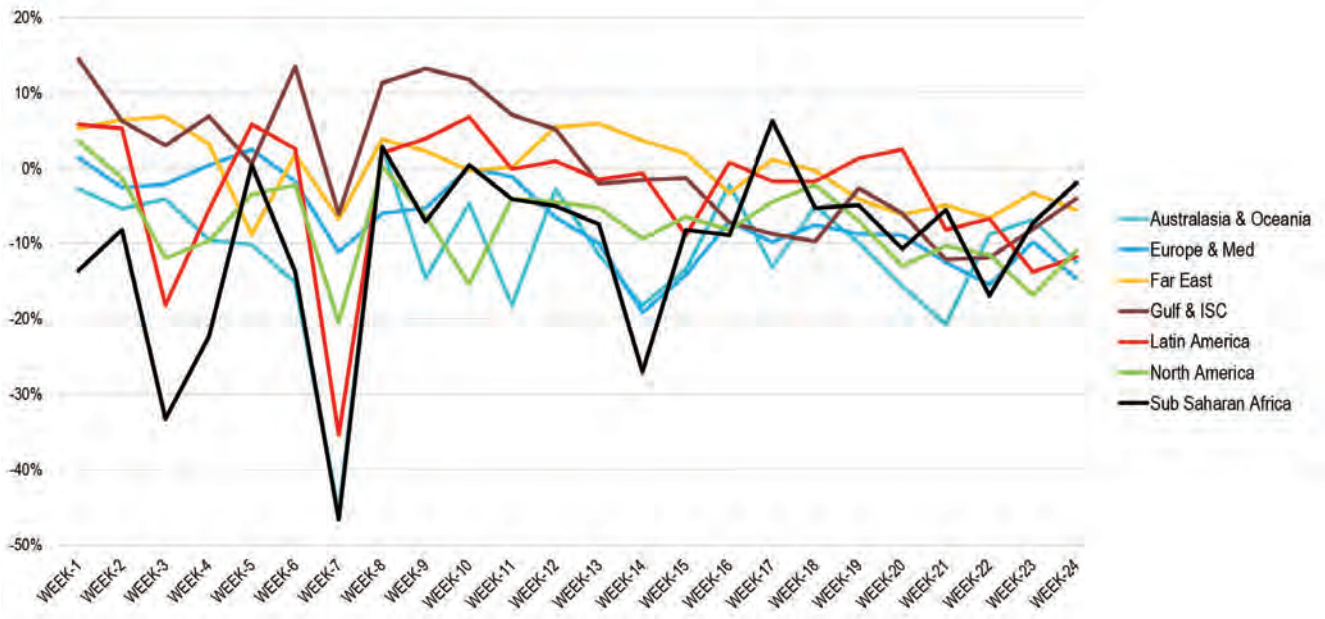


Figure 2. Change in Container Vessel Calls by Region (2020 vs. 2019)

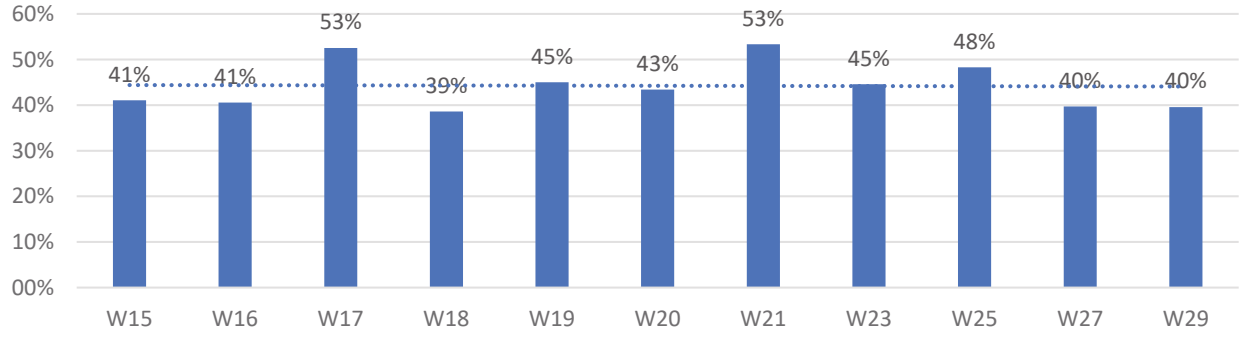


Source: our calculations in the context of the UNCTAD Project (in progress) "Assessing the impact of COVID-19 on the maritime transport systems". Data for Q2 is provisional.

high demand could lead to a situation of (infrastructural) capacity constraints, soaring rates, and soaring fuel prices. Finally, the present level of consolidation in the liner shipping combined with stable freight rates during a major crisis might give incentives to large e-commerce players and logistics service providers to consider a direct involvement in container shipping.

THE SHAPE OF THE MARITIME INDUSTRY REMAINS DEPENDENT ON ECONOMIC PROSPECTS FOR WHICH IT HAS LIMITED CONTROL.

Figure 3. Containerised maritime transportation 2020 (percentage of ports affected by blank sailings)



Source: Notteboom T. and Pallis A.A. (2020). IAPH-WPSP COVID-19 Port Economic Impact Barometer. Issue No 11. Antwerp: IAPH-WPSP.

CONTAINER VESSEL CALLS AND TEU VOLUMES IN PORTS

In February 2020, the supply shock in China generated the first wave of blank sailings. Given the sailing time on the Europe-Far East trade, the effect of these blank sailings could only be observed in European ports by March 2020. In mid-March, the whole picture turned around as the supply side resumed in Asia, but a demand shock in Europe and North America emerged due to the full and semi lockdown situations. For some ports, the blank sailings implied 20% to even up to 50% fewer vessel calls for April, May, and June 2020, although for most ports the impact was mainly visible on the main trade routes (e.g. Far East-Europe) and not so much on other trade routes. Shipping data collected for UNCTAD confirms the significant drops in the number of vessel calls (see Figures 1 and 2). According to the IAPH-WPSP COVID-19 Economics Impact Barometer, at least 40% of container ports worldwide have experienced blank sailings each week since the declaration of the pandemic in mid-March 2020 (Figure 3).

Despite a sharp drop in vessel calls, the container volumes in ports were generally less impacted. Still, significant differences can be observed among the larger container ports as illustrated by the year-on-year growth in the first half of 2020 (basis = TEU): minus 6.8% for Shanghai,-1.1% in Singapore, -17.1% in LA,-6.9% in Long Beach,-7% in Rotterdam, +0.4% in Antwerp,-9.1% in Valencia, -20.5% for Barcelona and-29% for Le Havre.

The maximum size of the container vessels deployed at each port continued to increase despite the pandemic as shipping lines continue to exploit economies of scale. As a result, terminal operations and the entire maritime supply chain faced additional pressure as they hosted fewer vessel calls with substantially more cargoes to be handled per port call. Overall, ports have witnessed a rise in the average call size. In the first half of 2020, quite a few call size records have been broken. For example, 34,263 TEU was handled on MSC Isabella calling the port of Los Angeles (June 2020), 21,500 TEU handled on MSC Kalina in Singapore (April 2020), and 18,059 TEU handled on MSC Mina calling Antwerp (June 2020).

As liner service rationalisation takes place, shipping companies face a more comprehensive review of their port calls and network configurations. Port pricing plays an important role in this reconfiguration with larger ports and their more developed hinterland transport systems in a better position than small and medium-sized ports. Ports that have a relatively captive hinterland in proximity have more latitude than ports that have a more long-distance and fragmented hinterland, or those who depend heavily on transshipment. Also, ports that have balanced traffic are likely to be less impacted. However, it is not entirely clear at this point to what extent sustained declines in traffic could be a factor of cargo concentration or deconcentration in port systems.

IMPACT ON LINER SHIPPING CONNECTIVITY OF PORTS

A negative trend has been observed across the various components that determine liner shipping connectivity levels (Figure 4). The number of liner shipping services, weekly port calls, liner shipping operators, vessel carrying capacity deployed, and direct calls, have dropped over the first half of 2020. The decline intensified since the COVID-19 pandemic was declared in Week 12 of 2020. The negative impact of the COVID-19 pandemic on liner shipping connectivity levels varied widely at the regional level. In Asia and Oceania, ports experienced a moderate decrease in connectivity levels. Even though China was the first country to face the challenges caused by the COVID-19 pandemic, the initial negative effect on the liner shipping connectivity of Chinese ports was relatively moderate. Europe, which was the second wave after China, has seen substantial drops in liner shipping connectivity levels. In North America, the picture was mixed. West Coast port in the United States experienced significant negative trends, especially during the second quarter of 2020. The impact was not as severe on ports located on the East Coast. In Central and Latin America, container ports showed signs of strength as their liner shipping connectivity levels remained steady and, in some cases, increased during the early days of the pandemic. African ports also performed comparatively well. During the second quarter of 2020, the decline of the liner shipping connectivity accelerated.

TERMINAL OPERATORS: MAKING THE MOST OF THEIR ASSET-BASED POSITIONS

Whereas two decades ago, the container handling sector was still rather fragmented, the picture looks drastically different today with the container handling industry dominated by global container terminal operators. In developing a global expansion strategy, both the independent and carrier-related operators try to keep a competitive edge by the building of strongholds in selected ports and on advanced know-how on the construction, management, and operation of container terminals.

In the first months of COVID-19, terminal operators faced an unintended terminalisa-

Figure 4. Trends in Liner Shipping Connectivity of selected major container ports (Q1 & Q2 of 2020; percentage change over respective periods in 2019)

	Shipping Services		Weekly Port Calls		Shipping Operators		Max TEU capacity		Deployed Capacity		Direct Calls	
	Q1	Q2	Q1	Q2	Q1	Q2	Q1	Q2	Q1	Q2	Q1	Q2
Los Angeles	↓	↓	↓	↓	↓	↓	-	↑	↓	↓	↑	↓
Long Beach	↑	↓	↑	↓	↑	↓	↑	↑	↑	-	↑	↑
NY&NJ	↑	-	↑	-	-	↑	-	↑	↑	↑	↓	↓
Rotterdam	↓	↓	-	↓	↓	↓	↑	↑	↑	↓	↓	↓
Antwerp	↓	↓	↓	↓	↓	↓	↑	-	-	↓	↓	-
Hamburg	-	↓	-	↓	↓	↓	-	↑	-	↓	↓	↓
Bremerhaven	↓	↓	↓	↓	↓	↓	↑	↑	↓	↓	↓	↓
Piraeus	-	-	-	↓	-	↑	-	-	-	↓	-	↓
Felixstowe	↑	↑	↑	↑	-	↑	↑	↑	-	↑	↑	↑
Marsaxlokk	↓	↓	↓	↓	-	↓	↑	↑	↓	↓	↓	↓
Melbourne	↓	↓	↓	↓	↓	↓	↑	↑	↓	↓	↓	↓
Sydney	↓	↓	↓	↓	↓	↓	↑	↑	-	↑	↓	↓
Tanger Med	↑	-	↑	-	↓	↓	↑	↑	↑	↑	↑	↓
Durban	-	↓	-	↓	↑	↑	↑	↑	↓	↓	-	-
Lagos	↓	-	↑	↑	-	↑	↑	↑	↑	↑	↑	↑
Mombasa	↓	↓	↓	↓	-	↓	↓	-	↓	↓	↓	↓
Shanghai	↓	↓	-	↓	-	↓	↑	↑	-	↓	↓	↓
Singapore	↓	↓	↓	↓	-	-	↑	↑	-	↓	↓	↓
Ningbo	-	↓	-	↓	↑	-	↑	↑	-	↓	-	-
Hong Kong	↓	↓	↓	↓	↓	↓	↑	↑	-	↓	↑	-
Busan	↓	↓	↓	↓	-	-	↑	↑	↑	↓	-	↓
Dubai	↓	↓	↓	↓	↑	↑	-	↑	↓	↓	-	↑

Legend ↓ *R <-2%* -- *-2% ≤ R ≤ +2%* ↑ *R> +2%*

Source: our calculations in the context of the UNCTAD Project (in progress) "Assessing the impact of COVID-19 on the maritime transport systems". Data for Q2 is provisional.

tion of the inventory with high utilisation levels of terminal yards and warehousing facilities in ports. Many importers did not take ownership of the cargo since there were limited demand and the uncertainties of receiving the inventory in terms of labor costs and warehousing.

It became acceptable to 'abandon' the inventory. In some cases, such as in the crude oil business, a part of the inventory was stored on ships and barges to cope with the temporary peak. Then, as demand remained low, the peak inventory situation at terminals and warehouses eased with a growing number of facilities reporting a moderate or even severe underutilisation. Another temporary consequence for shipping lines and terminals was a rebalancing of empty container flows. As demand dropped in North America and Europe, large volumes of empty containers were repositioned back to China and major exporters. This created storage problems at terminals and inland depots until the situation is rectified, assuming that trade resumes to pre-crisis levels and that trade imbalances remain similar.

COVID-19 leaves terminal operators in a complex situation since their capacity cannot be changed (reduced) effectively, and they have a limited margin to expand their hinterlands. Their pricing power is reduced, and several will struggle to retain their added value activities. Most terminals are frantically looking for additional clients, ships, and cargo. The changed economic situation means that terminal operators have adopted a more cautious assessment of business prospects. An extended period of economic slowdown may well result in some investors having to sell terminal interests. This may create opportunities for global terminal operators and financial investors with ready access to the necessary funds. The financing of large terminal projects might become more difficult to secure. However, partly because of the scarcity of land, ports should be considered as long-term investments.

The shape of the maritime industry remains dependent on economic prospects for which it has limited control. COVID-19 is a stark reminder that external shocks are recurring events testing the resilience of the industry. Still, the severity of the pandemic is unparalleled since it impacted a multiplicity of issues all at once, such as the supply of goods and resources, demand patterns, and even the operations of ships, terminals, and inland freight distribution systems. In the medium term, there is a risk of divergence in global trade between economies that were able to tackle the challenges of COVID-19 and economies that were less successful in doing so

ABOUT THE ORGANIZATION

PortEconomics is a web-based initiative aiming at generating and disseminating knowledge about seaports. It is developed and empowered by the members of the PortEconomics group, who are actively involved in academic and contract research in port economics, management, and policy. PortEconomics has been contributing to the Port Technology International Journal since 2012. www.porteconomics.eu