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« Global containerisation under pressure »

It is beyond doubt that we are currently living through an era of extraordinary uniqueness. The health crisis is reshaping our lives, our societies, and our economies. Within this distinct landscape, international maritime freight transport emerges as a sector experiencing highly favorable conditions, and more specifically so for containerization. In fact, the sector's growth is so intense that operational disruptions are ultimately hindering its momentum. Phenomena such as undercapacity, systemic disorganization, and soaring prices are straining relationships between stakeholders throughout the transport chain. The "global plumbing" of containerization is failing to withstand market overpressure. This section reviews the strangest shipping market tension in merchant marine history.

An exceptional demand shock

Within the global health crisis we are experiencing, the period of blanket lockdowns ultimately lasted for a limited timeframe (February–June 2020). Since then, we have entered a strange era punctuated by periods of hope (driven by vaccination campaigns) and frustrations (caused by resurgences and variants). However, the prohibitions or restrictions tied to the risk of pandemic propagation only affect a specific segment of the economy. This is the famous "K-shaped" economic recovery.

A portion of the economy has been ground to a halt by governmental policy choices, deeply impacting travel, hospitality, catering, leisure, and entertainment. Conversely, brick-and-mortar retail and e-commerce consumption face no constraints. Not only is consumption propelled by robust demand, but it also feeds directly on the slowdown of other economic sectors. In practice, capital left unspent within the recreational economy has been massively transferred toward the material acquisition economy.

A critical factor to take into internal accounting is state financial aid. To prevent economic systems from collapsing, governments dug deep into their pockets. Stimulus packages and direct household support fell under an absolute "whatever it takes" strategy, which for two years has successfully prevented the health crisis from mutating into a global economic depression. In practice, public subsidies fueled household consumption. The Biden administration's \$1,400 stimulus check remains the most famous example.

The financial capacity of households—composed of wages, accumulated savings, and direct state aid—acted as a formidable engine driving the consumption of manufactured goods whose production centers are geographically distant, thereby feeding the flows of global containerization. Consequently, 2021 stands out as an exceptional year, posting a growth of +8% (reaching 220 million laden TEUs). The WTO forecasted a global merchandise trade expansion of +10.8% for 2021.

However, a stark divergence exists between Europe and the United States. To be clear, there is an American "grasshopper" that overconsumes and a European "ant" that remains structurally cautious. Over a 10-month period, container traffic between the Far East and Europe expanded by 10.3%, whereas the Transpacific corridor between the Far East and the United States surged by 23.3%. Total American imports from all origins are projected to expand by 18% in 2021 to reach 26 million laden TEUs (up from 22 million in 2020). To put this into perspective, US retail sales during the second and third quarters of 2021 jumped by 19% year-on-year.

Gateway ports naturally mirror this extraordinary year of 2021. The Southern Californian duo of Long Beach and Los Angeles posted a +22% volume surge over nine months. Proving that this boom is not exclusively Transpacific, the Port of New York and New Jersey recorded a 21.5% growth over the exact same period. Europe stands far behind these metrics. The performance breakdown by port is not necessarily revealing on its own: while Rotterdam expanded by 7.8% over nine months in 2021, Antwerp posted only 2.7% and Hamburg 2.2% growth, structural gaps explained by cargo diversions to alternative gateways (Le Havre, Zeebrugge, Bremerhaven, Wilhelmshaven). The cumulative growth

across the entire Northern Range facade over the first three quarters of 2021 stands at 9%. Nevertheless, when comparing 2019 to 2021, the multi-year growth of the Northern Range is only 3%. This demonstrates that Europe is merely contributing marginally to the current container shipping surge.

Organizational disorganization

This formidable American consumer appetite was an unexpected windfall for the container industry before transforming into a monstrous organizational mess on a global scale. The supreme symbol of this massive containerization breakdown is the image of dozens of ocean liners sitting at anchor in San Pedro Bay, waiting for vacant berths at the ports of Los Angeles and Long Beach. Less publicized, yet equally real, are the severe vessel backlogs outside primary Chinese gateways, whereas the operational situation in Europe remains more moderate. To this must be added the continuous problem of crew changes, systematically thwarted by domestic state travel restrictions.

Liner shipping has lost all semblance of regularity, as delays trigger domino effects across the entire system. Shippers are left to merely observe the severe degradation of service offerings. From a "median dysfunction" linked to a form of line over-rationalization in the spring of 2020, the landscape shifted to a "total dysfunction" driven by containerization's inability to absorb activity growth, particularly within the United States. The crisis rationalization of 2020 morphed into a acute capacity crisis in 2021.

The primary issue originates within the West Coast US port system. Since the transformation of the Transpacific corridor into a massive highway for Asian goods, American ports have changed very little. They are equipped with small terminals tailored to handle only intermediate vessels of around 10,000 TEUs, designed to serve localized logistics warehouses or the railheads of transcontinental rail networks. Funneling an additional 3 to 4 million boxes into these ports threw the entire system into chaos. Berth spaces are severely lacking, as are the road chassis required to move containers toward warehouses and rail yards, alongside trains and longshoremen's working hours. The structural inability of the American port and logistics system feeds continuous backlogs that reverberate from one end of the containerization chain to the other, a cycle that will only conclude with a slowdown in Transpacific transport demand.

Subsequently, the crisis is compounded by the problem of empty containers. Even in normal times, this system is structurally unbalanced. Disparities between production and consumption centers, alongside container size choices (40', 20'), naturally create a structural challenge surrounding empty units that require constant repositioning. Driven by intense American consumption, containers have been heavily monopolized on the US "market front," drying up empty box availability across alternative corridors (Europe–Asia, North–South). Because the American-Pacific maritime, port, and logistics system is entirely disorganized, the return loop of empty boxes toward Asian production zones is equally disrupted. The world is thus facing an acute shortage of empty containers with no short-term solution in sight, prompting the emergence of specific indicators to monitor empty container availability in exporting nations.

The Europe–Asia market is also suffering from the collateral effects of this Transpacific organizational breakdown, driven by a slight surge in European demand but also by carriers' aggressive rationalization choices. In Europe, vessel queues are explained by shipping lines' choice to heavily prioritize primary hubs and megaports. The simplest operational response is to re-spread port entries. Overall, the restructuring of liner services deployed during the spring 2020 crisis was never repaired; instead, it mutated into a permanent crisis mode characterized by cascading delays. Vessels arrive late, and the rhythm of port calls is entirely chaotic. The blank sailings (canceled voyages) utilized for rationalization in 2020 have turned into no calls (skipped port calls) to salvage remaining schedule reliability commitments. On their side, importers and exporters are increasingly exasperated by a containerization system operating without any guarantee of transit time or basic service delivery.

Soaring price tensions

Since the spring of 2020, all eyes have been focused on container shipping rates. The Shanghai Container Freight Index (SCFI) serves as a weekly indicator tracking "spot" prices across the primary container shipping routes. The composite index of major routes departing from the largest Chinese gateway stood at less than \$1,000 at the end of 2019, rose to around \$2,500 at the end of 2020, and surged to \$5,000 during the final months of 2021. Evidently, over a two-year period, spot rates have been multiplied by 4.5. Shippers watched in disbelief as spot rates skyrocketed, followed, during

subsequent renegotiations, by long-term contract rates tracked by the China Container Freight Index (CCFI), which recorded a threefold price increase across all routes. Looking at financial metrics, containerization is experiencing an unprecedented era of outperformance, eclipsing even the heavy growth years of 2006–2008.

In detail, it is clear that prices increased due to robust demand; however, in the case of Europe, demand did not truly explode. It was solid but not exceptional, yet prices surged significantly. Two factors come into play, particularly in the spot market, and this applies across all global markets. Shippers (retailers, importers) experienced an acute sense of urgency regarding their cargo, needing to repatriate it as quickly as possible before Asian factories or ports could be hit by a potential lockdown. There was a pervasive fear of shortages and an inability to meet demand. The short-term focus prevailed because it mirrored the climate of the era. The day-to-day spot market dominated within a balance of power heavily favoring supply over an urgent and anxious demand.

As prices soared, so did shipowners' profitability. The winners of the era were undeniably the ocean carriers, reaping around \$150 billion in profits in 2021 according to the consultancy firm Drewry—a figure eclipsing their cumulative earnings throughout the entire 2010s. This staggering figure bears witness to the massive profits cleared by shipowners, as well as by all actors involved in the distribution and logistics of manufactured goods during this complex era. The profits of these carriers—some of whom have few or no shareholders to remunerate, notably Maersk, CMA CGM, and MSC—were heavily reinvested into logistics enterprises through several remarkable corporate acquisitions.

Inevitably, a stark contrast emerged between the operational disorganization of containerization and the financial performance of shipowners. This outperformance was the direct product of a supply-demand balance of power favoring supply. It must be recalled that this had not been the case for fifteen years, as the race toward gigantism and commercial price wars among carriers had triggered chronic overcapacity and rock-bottom freight rates that consistently benefited shippers.

In 2016, the sector consolidated but also maintained highly depressed prices within a strategy to capture market shares. In 2019, the SCFI was consequently exceptionally low. When the health crisis struck, there was an initial anxiety of a major economic depression, yet maritime transport remained a fundamental and inescapable pillar of our interconnected world. Carriers decided not to slash their prices in the spring of 2020 because they were already barely remunerative. In the subsequent months, demand swelled, and shippers grew increasingly frantic. Prices initiated their sharp ascent, leaving shipowners in an absolute position of strength.

A form of "collective discipline" settled in, with all carriers playing the game of the rising market. This infuriated shippers, who suddenly bore the full brunt of the massive carrier consolidation wave of 2016. Only a handful of global operators remain. Even if new niche actors managed to position themselves, such as the Chinese line China United Lines (CULines), and even if major shippers announced they were taking control of their supply chains by chartering their own vessels, it changed very little about the fact that global containerization is dominated by a few corporate giants. That a handful of shipowners rules the sector is undoubtedly problematic, but is it any different from the landscapes of global logistics groups, mass retail, or big tech? A liberal economy and an oligopoly are far from being contradictory. American regulatory inquiries into the abuse of a dominant position represent a necessary debate, but the period was primarily an exceptional windfall for shipowners within a highly favorable market.

For the first time in decades, transport prices were exceptionally high—undoubtedly too high. The financial relevance of manufacturing certain products in Asia could eventually be questioned. In the long run, rates are bound to contract, and a "fair price" should emerge between rock-bottom rates and abusive tariffs. This represents a true test case for the future because, for environmental and energy reasons, freight rates will inevitably be higher in the coming decades, forcing a thorough re-evaluation of the production cost / transport price equation, even if short-term industrial nearshoring¹ remains merely marginal for now. In the immediate term, bunker fuel prices spiked during the second half of the year. In a context of faster vessel speeds deployed to make up for logistical delays, the fuel bill for carriers rose sharply and was systematically passed on to shippers.

¹ Nearshoring now depends on corporate sourcing strategies (purchasing policies) rather than on industrial investments.

Perspectives on supply capacity

There is evidently a temporary problem of undercapacity in terms of available vessels face to demand. This is, it must be recalled, the exact opposite of nearly fifteen years of containerization history. Traditional market analysis had long acted as an injunction to adapt to actual demand—meaning to halt newbuilding orders. Supply was growing far faster than demand, even on the scale of a globalized economy, because shipowners engaged in a relentless race toward gigantism in the name of economies of scale and competitive warfare. Returning to the present day, the global fleet is at the correct size format, but port congestions are effectively immobilizing a significant portion of the active tonnage. At the onset of the crisis, carriers rationalized their supply to avoid financial losses. This translated into canceled voyages (*blank sailings*), vessels returned at the expiration of their charters, and fleet layups. In June 2020, vessel idlings hit a record high (11% of the global fleet), but after the summer, the acute need for ships completely wiped out this inactive tonnage. Concurrently, ship demolitions virtually vanished.

Carriers also had to adjust their operational capacities. They cannot be accused of having artificially "starved" supply to drive up prices. Along the Far East–Europe corridor, comparing the months of November 2019 and November 2021 reveals that the weekly capacity deployed by carriers expanded by 12%. Along the Transpacific corridor, the leap reached a staggering 41%. Shipowners clearly flooded the most lucrative and high-yielding markets with vessels.

Exasperated by skyrocketing prices and operational degradation, some American retailers have—or reportedly have—chartered their own vessels. This does not resolve every issue, as quayside berths remain scarce and charter rates are far from being competitive. At the close of the 2010s, container ship charter rates were deeply depressed within a market lacking any real momentum. Naturally, these rates soared alongside demand growth. The emblematic case is the 8,500 TEU vessel category, which surged in two years from \$30,000 per day at the end of 2019 to \$138,000 per day. This intense transport demand fuels the chartering spike, which systematically reverberates onto freight rates.

Is it therefore necessary to order new ships? Considering the pre-pandemic overcapacity and the exceptional nature of the current demand shock, the logical answer would be no. In practice, however, between January and October, according to Alphaliner, nearly 500 units were ordered, representing 4 million TEUs of capacity. A massive wave of newbuilds is slated for delivery between 2023 and 2025. Within a few years, the global fleet is set to expand by 20%. Naturally, older vessels will also be decommissioned, and this represents a prime opportunity for shipowners—backed by rock-solid revenues—to order brand-new tonnage. Financial margins are also utilized for strategic corporate acquisitions across the logistics sector. It is clear that the race toward gigantism persists. Carriers notably seek larger vessel segments (7,000 TEU and 13,000 TEU) that are environmentally more efficient. The newbuilding fleet must, it should be recalled, tackle the challenge of drastically reducing CO2 emissions.

Thus, the container boom and the organizational breakdown go hand in hand. To the question of when this will all end, it must be clear: it is exceptionally difficult to predict. We can observe that charter and freight rates are hitting a plateau at the end of 2021. This appears normal, as the end-of-year holiday season stands as a natural peak for containerization. Now, the core of the current economic equation remains. Hyper-consumption fuels the overheating of containerization, but it also generates inflation. In the United States, labor market disruptions coupled with supply chain bottlenecks linked to the health crisis are accelerating inflation and exerting negative pressures on economies. Halting these disruptions will make containerization more fluid and regular, and bring prices back to more normal levels.

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