Annual Report

Valencia Containerised Freight Index

Balance of the year 2021

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Valencia Containerised Freight Index

As in every year, this report seeks to review the factors that have influenced the evolution of the Valencia Containerised Freight Index (VCFI) in 2021 - the year of anticipated economic recovery following the crisis caused by the pandemic, but still very much affected by the evolving health situation. The different sections of the report will analyse in greater detail the situation of the international economy in 2021, in which strong growth data relating to some areas are clouded by the serious threat of the return of inflation, as well as the behaviour of international trade and its impact on supply chains. The maritime industry has had to deal with outstanding growth in demand, which supply has had difficulty meeting, thus causing ongoing problems of logistical tensions and congestion at key ports within the system, and both reducing available maritime capacity and pushing up transport prices to record levels. This trend will be analysed both at a general level and by geographical area, focusing on three of Valenciaport's main markets: the United States and Canada, the Far East and the Western Mediterranean.

As in previous years, the report has also sought to outline in broad terms the main challenges facing the industry in 2022 - a task that is always complex but has proved particularly difficult to address this year. At the end of February 2022, as the content of this report was being finalised, Russian troops had just begun their invasion of Ukraine, leaving many questions about how the crisis might evolve. Whilst uncertainty remains at an all-time high, after the report was completed in mid-March the trend of events and the rawness of the conflict do not bode well for an easy resolution, and the impact of the war will undoubtedly sadly overshadow 2022.

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Macroeconomic Environment

2021: THE YEAR OF REBOUND... AND INFLATION

Introduction

2021 has seen the world economy (especially in the West) recover strongly from the devastating consequences of the SARS-CoV-2 pandemic. The successful process of creating and distributing effective vaccines against the disease (although, sadly and unnecessarily, a large part of the world has not benefited from this success), together with the energetic and reasonably coordinated action of macroeconomic policies to support families and companies, especially those most affected by the crisis, led to a more intense and accelerated rebound in economic activity in 2021 than expected.

However, the "stop & go" dynamic of the disease's evolution and its successive variants, intensified by the tightening of key points in global supply chains - which have proved to be intense in the face of fluctuations in supply and demand - have raised the spectre of inflation, with a dynamic that has not been seen in the West for almost half a century. Ultra-expansionary monetary and fiscal policies have only reinforced this trajectory, forcing a readjustment of these policies.

Unfortunately, the beginning of 2022 - with geopolitical tensions that have led to a war the repercussions of which will undoubtedly extend beyond the short term, the threat of inflation, the depletion of public policy support and the difficult situation many low-income countries face - points to a year of a much more hesitant recovery than last year, and with predominantly downside risks.

A recovery that is as dynamic as it is uneven

After a loss of activity in 2020, relative to the forecast, estimated at around nine trillion dollars[1], the global economy experienced a markedly more favourable recovery in 2021 than expected in the early months of the pandemic. Thus, it was 2.5% larger than it was before the outbreak of Covid-19 (see Chart 1). Although the levels reached by the emerging countries of Asia and Europe appear to be the most favourable, the most remarkable aspect of last year compared to the 2020 slump was the performance of the developed economies which, against all odds (and led by the United States) had also already recovered their levels of pre-pandemic activity after having been the economies that experienced the largest declines in 2020 (note: this was not the case in the Eurozone or Spain, which remained 1.6 and 4 percentage points below, respectively).

In fact, Chart 1 also reveals the difference between the cumulative growth forecast between 2019 and 2022 for the different economic areas[2] prior to the pandemic and in its aftermath. This is the benchmark that shows most clearly the uneven global economic recovery. The developed world will have grown *more* with the pandemic[3] than anticipated before the pandemic . Only emerging Europe will achieve a similar result. Even with its most dynamic growth in absolute terms, emerging Asia would have fallen more than six points short of expectations. However, where real concern arises is when looking at the figures for Latin America, Sub-Saharan Africa, the Middle East and North Africa: with a

[1] In terms of Purchasing Power Parity
[2] The forecasts for 2022 are those provided most recently by the International Monetary Fund, prior to the Russian invasion of Ukraine.
[3] There are however, even within the developed countries, significant differences between, for example, the Eurozone, which would have lost one and a half percentage points of cumulative growth over the three-year period, and the United States, which will have grown about two points more than expected.

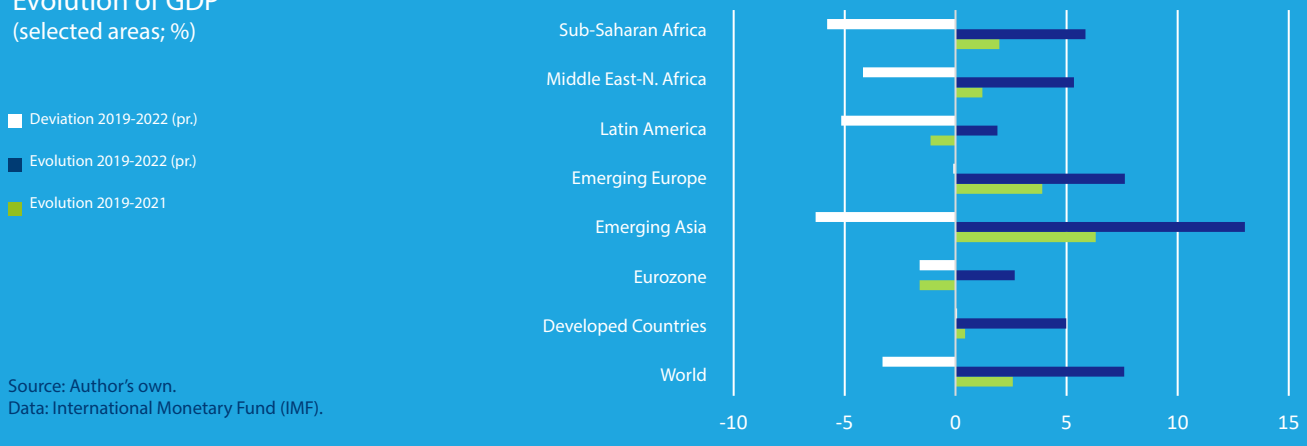
loss of growth over forecast of around five points for the whole of the 2019-22 three-year period, the implication is that GDP per capita in all three areas will have declined over the period.

When the causes of these different speeds of recovery are analysed, it is not difficult to understand the result: on the one hand, the return to (relative) normality in economic activities has been determined by the vaccination process - the speed and extent of which has been much greater in the West. On the other hand, the intensity of general support measures for companies, workers and citizens under the different dimensions of macroeconomic policies was higher in developed countries to an extraordinary extent. The cumulative fiscal effort in the first year and a half of the pandemic was over $16 trillion in advanced economies, compared to approximately $2.3 trillion in emerging economies and a meagre $700 billion in low-income economies. In parallel, while the expansion of the balance sheet of the developed world's central banks comfortably exceeded 12 trillion dollars, for the rest (and where such initiatives were implemented - which has not been the norm) it would amount to a few hundred billion.

Moreover, when inflation began to rise significantly, developed countries - with their strong anchoring of inflationary expectations and easy access to financing from international capital markets - have postponed interest rate hikes to curb this acceleration in prices. In contrast, much of the rest of the world (with the exception of most of emerging Asia[4]), began the monetary tightening cycle as early as 2021, sometimes with sharp rises. With higher previous inflation rates, and without the aforementioned anchoring of expectations, currencies under devaluation pressure due to the uncertainty generated by the pandemic, and heavy dependence on external savings (not great lovers of either depreciated currencies and uncontrolled prices), these economies have not been able to delay rate hikes. And this, of course, has not contributed to growth. Chart 2 shows these disparate developments in benchmark interest rates.

Chart 1|

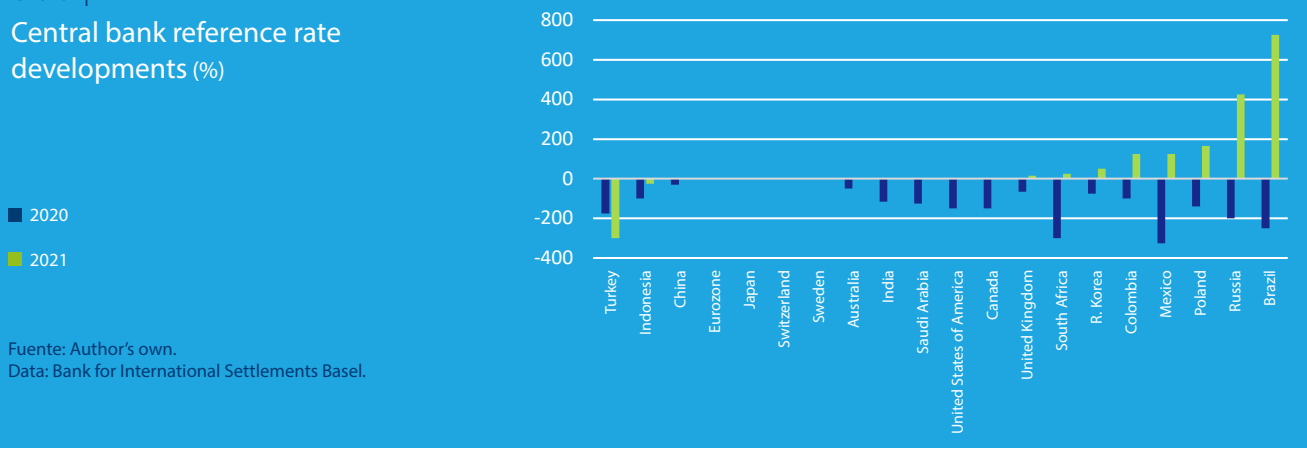
Evolution of GDP
(selected areas; %)



Source: Author's own.
Data: International Monetary Fund (IMF).

Chart 2|

Central bank reference rate developments (%)



Fuente: Author's own.
Data: Bank for International Settlements Basel.

[4] The decisions of Turkey's Central Bank have long since ceased to relate to the needs of the country's economy (which is facing inflation rates close to 50% year-on-year), and are based instead on the whims and misconceptions of President Erdogan.

The "non-transitory" return of an old acquaintance

The good news for growth in 2021, besides being asymmetric, as we explained in the previous section, has been accompanied by an alarming increase in prices which were more concentrated at the start of the year (for example, energy), but increasingly spread to all sectors. Moreover, as Chart 3 shows, inflation rates have been accelerating in recent months, affecting the developed and emerging world alike (with few exceptions in both cases), although figures that have not been seen for decades in most of Europe and North America are more striking than the equally alarming figures for emerging and developing areas that have suffered severe inflationary episodes more recently.

Initially, the acceleration in prices was correctly but incompletely attributed to factors that would necessarily or probably disappear in a few months. This led to the unnecessary recourse to the term *transitory* to define the inflation problem by major central banks[5]. The contrast between what transitoriness implies for monetary policy makers (and their conception of medium-term price stability) and for citizens who have been suffering from the increase in the cost of living could not be more marked - to the extent that the term has disappeared from the language of the central banks in recent months.

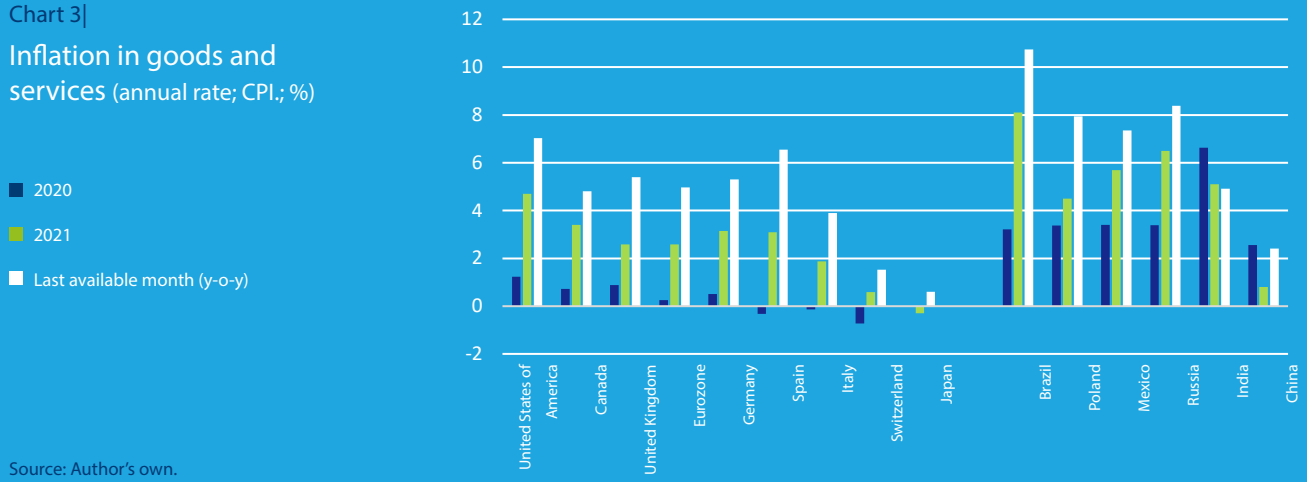
Among those factors that sustained the transitory concept are the following:

- A statistical effect: comparing prices in 2021 with those in 2020 - during which there was stagnation and even a decline in prices for several months due to the initial impact of Covid-19 (see Chart 3 for inflation rates around zero in the West in 2020) - implied a year-on-year increase that was certain to extend only during the middle months of 2021.

- Tensions in global supply chains: the difficulties caused by successive shocks from the pandemic on global activity (and recovery from them), with highly variable demands, temporally and geographically, on the components of international supply chains (ships, containers, people, transport to and from ports), coupled with shortages of key elements in global production processes (from microprocessors to raw materials) led to strong price tensions throughout the global manufacturing and transport process.

Chart 3|

Inflation in goods and services (annual rate; CPI.; %)



Source: Author's own.
Data: Bank for International Settlements Basel.

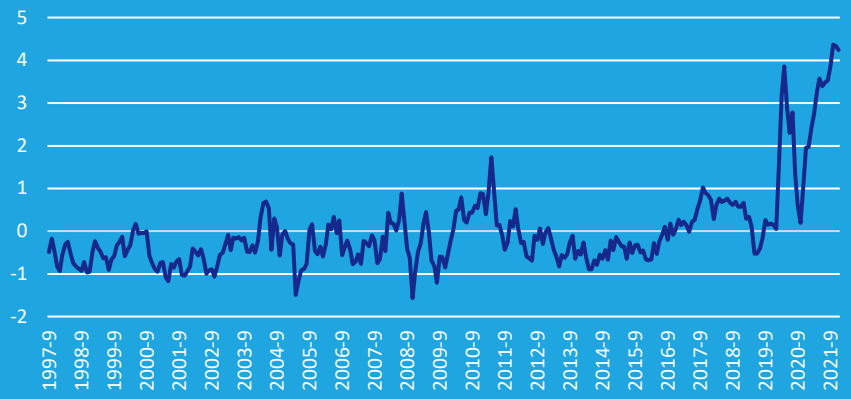
[5] Not only by the central banks. The economic debate has been pitting the experts on the transitory team against those on the permanent team.

Chart 4, which captures the recent effort by the New York Federal Reserve to synthesise the above-mentioned supply chain stresses into one indicator - incorporating data at production, shipping and air transport levels - shows a degree of pressure unprecedented during the quarter century over which this composite index has been constructed. To complement this information, and by way of example, Chart 5 shows the unchecked increase in trucking prices in the United States.

The component of headline inflation attributed to these supply difficulties was expected to decrease in importance over the months - an optimistic perspective that, in this case, did not materialise. In addition to this temporary nature, there was the fact that it was a supply factor, to which the central banks considered that they should not respond, because "rate hikes cannot restore normality to supply chains".

Chart 4|

Global Supply Chain Pressure Index

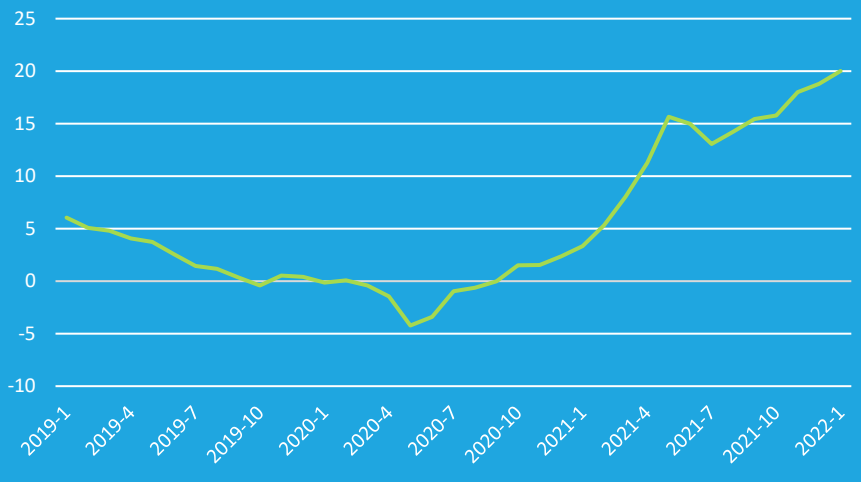


Source: Author's own.
Data: Federal Reserve Bank of New York.

Note: the indicator shows the number of standard deviations from the "average pressure" to which the global supply chain is subject, calculated from the 27 variables used in the composite index.

Chart 5|

Trucking in the United States (Prices to product; year-on-year change; %)



Source: Author's own.
Data: Federal Reserve Bank of St Louis.

- The increase in the price of raw materials: the global dynamics of slowdowns and accelerations in activity, the fall in prices at the start of the pandemic (again the statistical effect noted above), difficulties in transporting them, geopolitical tensions and unfavourable weather at the beginning of the year pushed the prices of many raw materials up very sharply during 2021 (see the first column of Table 1) - in particular hydrocarbons and their derivatives, and even more clearly natural gas. The inevitable pass-through of these price increases to production, transportation and consumption activities has been the other supply factor driving up inflation. In this case (second column of Table 1), the data prior to the invasion of Ukraine did point to a change in trend, at least for most commodities. But with the aforementioned pass-through to the rest of the economy, still underway, and the abrupt and intense increase in hydrocarbon and food prices as a result of the worsening situation in Ukraine, the scenario is almost impossible for general inflation to revert to central banks' objectives.

Table 1|

Price of raw materials (% change during the indicated period)

Type of raw material	2021	October 2021-January 2022
Energy	77.1	-1.6
Petroleum	49.5	2.3
Natural gas	270.3	-11.2
Farming products	15.3	6.4
Fertilisers	163.9	16.9
Metals and minerals	17.1	3.2
Precious metals	-4.7	1.6

Source: Author's own. Data: World Bank.

Note: the values for oil and natural gas correspond to the indicators used by the World Bank as a synthesis of the different types of benchmark oil and gas values in the different geographic areas.

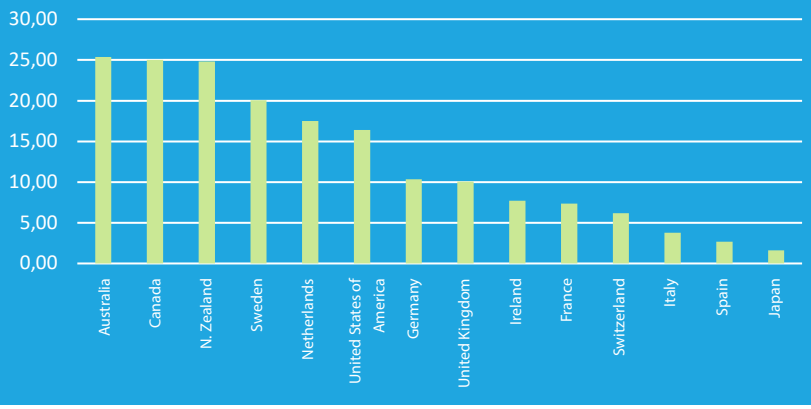
It is certainly open to debate whether a high and rising inflation rate, even if it were based solely on supply factors, should be condoned by central banks. The experience after the energy shocks (among others) of the 1970s and early 1980s alerts us to the consequences of such complacency. However, in addition, the supply-side explanation is neither complete nor convincing for understanding what has been happening with prices in the West.

The restrictions on certain activities (and therefore on spending), especially during the early months of the pandemic, coupled with the unprecedented magnitude of the aid injected into the non-financial private sector under fiscal and monetary policies, generated an increase in the savings rate of European and North American households of more than seven points over disposable income[6] (that is, more than 50% over pre-pandemic levels). This implies an additional spending capacity of more than two and a half trillion dollars. The better-than-expected performance of the healthcare side of the crisis has meant that, between the average of the last three quarters of 2020 and the third quarter of 2021 (latest available data), more than half of these additional savings have already been consumed (more than 60% if weighted by the size of the included economies). Therefore, a fully-fledged positive demand shock concentrated in goods (given that restrictions on service activities have continued, albeit to a decreasing extent) - goods that are, at the same time, the most affected by global supply problems. It is surprising under these circumstances that central banks have also not found it necessary to change their monetary policy - until the end of 2021 at the earliest.

Moreover, the imbalances already accumulated as a result of this hyper-expansionary monetary policy, such as those related to the growth in the price of financial assets, have been accentuated (when combined with the aforementioned increase in households' spending capacity), by the threat of new excesses in the real estate market[7] , as can be seen in Chart 6.

Chart 6|

House price developments
(2020:3Qr.-2021:3Qr.; %)



Source: Author's own.
Data: Federal Reserve Bank of Dallas.

[6] Author's estimate for the nine largest Western economies
[7] To which, at least for the time being, the economies of southern Europe are oblivious.

In this very report a year ago, when the start of monetary normalisation was announced for 2023 (or even 2024), we suggested that this change of cycle should begin in the second half of 2022, starting in the Anglo-Saxon world and a few months later in continental Europe. The unexpectedly dynamic evolution of activity and prices in 2021 should also have brought forward the reduction in the size of the central banks' balance sheets and gradual but firm increases in the benchmark interest rate.

It seems clear that the monetary authorities are, at the time of writing, well behind the curve. The risks of inflation festering and excesses in Western real estate markets as a result of this delay are obvious. There are also risks of overreacting in an attempt to make up for lost time. Sometimes late is almost as bad as never. And the geopolitical scenario, to which we return immediately, is not going to help.

An increasingly complicated 2022

The year 2022 was announced with a number of specific challenges, in addition to the need to continue to address (preferably with greater intensity) those that structurally impact the global situation (environmental degradation, inequality, cybersecurity and so on). Of note among these challenges are the following:

- The above-mentioned process of adjusting monetary policies, and combining sufficient forcefulness to curb inflation in goods and assets with a progressive profile that does not disrupt either the recovery or Western governments' financing at reasonable cost (although it must of course be higher than in recent years).

- The progressive standardising of global supply chains, seeking to reduce their bottlenecks, and initiating the duplication of sources of supply, transportation and/or storage as far as necessary, assuming the increase in costs that this may entail.

- Leading the transition from growth based on unsustainable lavish monetary and fiscal policies (which had been necessary in response to the pandemic) to growth based on the structural improvement of economies, making appropriate use of the abundant funds that have been endowed, especially in the West, for this purpose. The improvement in the evolution of productivity that would result from this appropriate use would be of extraordinary value, and reduce the excessive dependence on debt (first in the West and increasingly in the emerging world) as a means of sustaining economic growth. This transition may be facilitated by the remaining savings accumulated by the private sector during the first 18 months of the pandemic (see previous section on this).

- Offering a sufficient response to the worrisome problems that were created and/or aggravated by the pandemic, that a majority of Low Income Countries (LICs) present. Not only is the vaccination process still clearly behind schedule in these countries, but the potential for injecting strength into the recovery based on public policies has been very limited due to the scarcity of resources. Furthermore, the decrease in income and increase in expenses as a result of Covid-19 has meant these countries are now in the process of defaulting on their debt (if not directly so). The creation of new Special Drawing Rights (SDRs) by the International Monetary Fund, insofar as they were granted on the basis of quotas to the Institution (therefore, roughly based on the size of the economies) hardly benefited these fifty or so countries. Despite proposals to that effect, these SDRs were not transferred free of charge by developed and major emerging economies to the LICs either. Nor has the G20 agreement to defer interest payments on debt been helpful, as it has not reduced the overall burden. Indeed, even taking up this option has been avoided by many of the least developed countries as they feared they would be adversely marked in the international capital markets if they did so.

Only sufficient progress across all these areas would make it possible to sustain growth, rebalance it in favour of developing countries and contain the inflationary threat. A difficult and complicated exercise, and made even more so by the Russian invasion of Ukraine. In addition to the direct and immediate human and economic costs of this unjustifiable aggression, and the indirect medium- to long-term implications for international order and law, the impact on the scenario we have defined above for 2022 will be unequivocally negative: inflationary tensions - especially in relation to hydrocarbons - will be accentuated, while the distortions introduced by the conflict in the global economy will lead to lower growth, combining to resurrect a term that has been almost forgotten, in the West at least: stagflation.

In this new scenario, it will be difficult for fiscal policy to retreat and look at rebalancing the books and reducing public debt without, at least for a time, continuing to cushion the impact of rising energy costs on businesses and citizens. The task of monetary policy becomes more

complex, since the double negative effect of the conflict on activity and prices hinders the normalisation process that had been underway. To that effect, although it would be advisable to follow a cautious approach (which was in fact already foreseen - at least outside the United States), it is nonetheless urgent for monetary authorities (in particular the Federal Reserve) to begin now to reduce the size of the balance sheet and start raising interest rates. Because the spectre of the 1970s is lurking.

Final thoughts

2021 turned out to be significantly more favourable in terms of recovery of activity and employment than initially expected, in view of the disruption caused by Covid-19 to the global economy. Nevertheless, three factors in the legacy left by the "year of rebound" raised concerns: the need to get the right pace of macroeconomic policy normalisation; the disengagement from recovery of the least favoured countries (ie some one billion people); and the return of inflation across much of the world - an imbalance that has been almost forgotten in the West.

Unfortunately, the worst possible disruption, a war, as deplorable as it is damaging, mean that the prospects for continuing the strength of the recovery and correcting the issues highlighted above are scarcely flattering. Hopefully, we will be able to eliminate this factor from the equation as soon as possible.

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Maritime economy:

GLOBAL TRENDS IN MARITIME SUPPLY CHAINS AND PORTS IN 2021

Introduction

2021 was a turbulent year for the shipping and port sector – from the negative effects of the Coronavirus that impacted global supply chains and the Ever Given incident in the Suez Canal to the tightening environmental standards demanding a greener global fleet.

The roll-out of large-scale vaccination programs in late 2020 – early 2021 initially raised the hopes the COVID-19 pandemic would have a much smaller impact on economic life than in 2020. However, massive infection waves with Delta and Omicron variants led to periods of tightened restrictions on economic activities and semi-lockdowns throughout the world. Despite the pandemic situation, the global economy recovered in 2021 to reach a real GDP growth of 5.9%, although differences can be observed between the major economies: 5.6% for the US, 5.2% for the Eurozone, 8.1% for China, 9% for India, 4.5% for Russia, 3.1% for the five main ASEAN countries, 4.7% for Brazil and 4.6% for South Africa (figures IMF – World Economic Outlook). The growth figures somewhat hide the negative impacts major supply chain disruptions in North America, Europe, China and elsewhere have had on economic growth. Furthermore, China's recovery was impacted by the pandemic-induced disruptions related to the zero-tolerance COVID-19 policy and protracted financial stress among property developers such as Evergrande.

In early 2021, most experts, governments and international organizations still considered high inflation levels as a short-term temporary side effect of the path towards economic recovery. Soon, a growing concern spread that the elevated inflation levels are expected to persist for longer than envisioned with ongoing supply chain disruptions and high energy prices continuing in 2022, and possibly in 2023 as well. In the second half of 2021, a large number of countries started to downscale the large-scale stimulus packages which were installed at the start of the pandemic in early 2020. These packages contributed to rising debt levels in the past two years particularly in advanced economies, thereby undermining financial stability. For example, the US has scaled down monetary accommodation and the Federal Reserve intends to fight rising inflation levels by a series of interest rate increases in 2022 and by trimming the nearly USD 9 trillion in securities that the central bank holds. However, it remains to be seen how far the Fed will push through its policy, as inflation could begin to cool on its own in case supply chain bottlenecks ease and government spending fades.

Maritime trade and port activity in 2021 has not only been impacted by COVID-induced supply-demand imbalances and monetary policies around the world. Geopolitical tensions and growing impacts of climate change combined with major natural disasters also made their mark on supply chains and the global maritime and port network. The year 2021 has been marked by natural events such as forest and bush fires, heavy flooding, volcano eruptions and draughts, with varied impacts on supply chains in the affected regions of the world. Growing geopolitical tensions between Russia and the western world were already felt in 2021,

but it is only at the beginning of 2022 that these tensions escalated into the start of a Russian invasion in Ukraine on 24 February 2022. After COVID-19 and other natural and manmade disruptions of the past few years, this military conflict has the potential to disrupt economic markets (such as commodity and energy price levels), geo-economic relations and global supply chains even further. However, at the time of writing, it was still early days to fully grasp the ramifications of the war situation in eastern Europe.

The COVID-induced supply chain crisis

The Coronavirus emerged in China in December 2019. A full lockdown in China followed in January 2020, with an immediate effect on trade volumes as production activities were halted and ports were forced to downsize their activities. The closure of factories generated a supply shock in China. The disruptions in China and later also in other East Asian economies started to disrupt global supply chains, which made container carriers to announce a first wave of blank sailings. The full impact of these blanked sailings on European and North American ports became only visible from March 2020 onwards. In the early months of the virus, the container volume situation in individual ports was largely determined by their exposure to trade with the Far East, with most ports recording negative growth figures. In mid-March 2020, the World Health Organization officially declared the Coronacrisis a pandemic. At that time, the supply shock in Asia faded as factories were reopening on a massive scale. However, the sharp rise in full and semi lockdown situations in virtually all European countries and parts of the Americas generated a demand shock. This resulted in a second wave in blank sailings with container carriers withdrawing up to 20% of their network capacity on the main trade lanes and idling more than 2.5 million TEU of fleet capacity or more than 10% of the world's container fleet. For some ports, the blank sailings implied 20% to even up to 50% less vessel calls for April and May 2020. This second wave of blank sailings negatively affected Q2 2020 volumes in main ports on the east-west trade routes. The situation in H1 2020 was particularly bad in North America such as in the ports of Seattle/Tacoma (-18.3% year-on-year in TEU terms), Los Angeles (-17.1%) and Norfolk (-12.4%). In Europe, the port of Antwerp was the only large gateway port which was able to reach a volume level in H1 2020 comparable to H1 2019 (+0.4%), while some other ports saw their TEU throughput drop by more than 20% (e.g. Le Havre and Barcelona).

The situation started to reverse strongly in the Summer of 2020, fueled by a shift in consumer spending from services to products, strong growth in e-commerce and a rather unexpected fast economic recovery supported by extensive government stimulus packages. Strong demand growth (particularly for durable goods such as office equipment, electronics and furniture) and large-scale restocking by importers and retailers stretched supply chains. At the same time, the supply side could not react in a satisfactory way due to vessel capacity and equipment shortages (empty containers, trailers, wagons, etc.) and availability issues concerning dock workers, truckers and other logistics staff. The temporary closures of factories, logistics facilities and terminals in China and elsewhere, and the lack of labor due to quarantines, lockdowns, and home isolation further aggravated the situation. The combined effects of these supply-demand imbalances gave rise to elevated congestion levels in key ports around the world, mainly along the US West Coast, in China and northwest Europe. Overall, the ports that have been impacted the most have a strong orientation on consumer products and a strong position as gateways for containerized trade flows in relation to Asia.

The spike in containerized trade initiated in the Summer of 2020 even intensified throughout 2021. As the supply chain crisis gained momentum in 2021, cargo owners had to accept historically high freight rates, despite rising container dwell times in ports, historically low schedule reliability in liner services and severe supply chain delays. Large shippers typically rely on long-term contracts with preferred carriers, and were less exposed to short-term rate fluctuations on the spot market. Still, they had to implement initiatives to deal with high freight rate levels. Some trade routes saw a fivefold or even tenfold increase in transport costs compared to pre-pandemic levels, thereby contributing to rising inflation. For a forty foot container or FEU filled with higher value products (sport shoes or mid-priced clothing) with a combined retail value of USD 1 million, ocean and port costs on the Far East-North Europe trade at the end of 2021 represented 1.5-2% of shelf value, while this used to be less than 0.3% in the period 2017-2019. For voluminous low value products of USD 50,000 per FEU, such as low-end assembled furniture, the share of ocean and port costs in total retail value increased from 5-6% in 2019 to a hefty 30-40% at the end of 2021, pushing retailers to consider a significant upward shelf price correction.

While the extraordinary conditions in the market could be seen as the result of a 'perfect storm', the supply chain crisis clearly surfaced the limits of contemporary supply chain management principles (such as just-in-

time or JIT resulting in minimal inventories and a lack of buffer capacity to cope with disruptions) and the overall somewhat rigid organization of the market (see also Notteboom et al., 2021; Kent and Haralambides, 2022). No wonder that supply chain resilience has rapidly gained interest among supply chain actors as a cornerstone concept in view of dealing in a systematic way with current and future disruptions. However, many questions still remain unanswered, or at least need a lot more coordination and cooperation between market players and public entities before they can be effectively addressed.

How can we disentangle the current supply chain knots in a sustainable way? How and where to insert buffers or slack capacity in supply chains? Is there willingness to pay for such additional capacity and who should or will pay for such buffers?

The container port market in 2021

In 2021, COVID-19 has incentivized container carriers and alliances among them (i.e., 2M, The Alliance, and Ocean Alliance) to implement various contingency measures resulting in vessel repositioning from other trade routes to the Pacific and Europe-Far East trade; shifts in port calls; the deployment of larger vessels on the trans-Pacific trade; and higher call sizes per port call. On the latter, call size records have been broken around the world such as at the port of Los Angeles (34,263 TEU were handled when MSC Isabella called the port), Singapore (18,059 TEU handled during one call), Antwerp (24,433 TEU handled on MSC Allegra in December 2021) and Felixstowe (23,773 TEU in one call).

After the cancellation of services in Q2 2020, the number of blanked sailings started to increase again in early 2021, due to port congestion in China (i.e. temporary terminal closures due to COVID-19 infections in ports of Tianjin, Ningbo, Shenzhen, Xiamen, etc.) and along the US West coast, LA and Long Beach in particular. In mid-November 2021, a record of 86 container ships were at anchor in the San Pedro bay area (data of Marine Exchange of Southern California). The average waiting time at the US southwest ports amounted to 18 days, up from 8 days in April 2021. The blanked sailings no longer were blanks to pull out vessel capacity, but blanks caused by container vessels not being able to make the return journey in time due to long port delays. Carriers could not resort to recovery vessels to keep weekly services operational as the fleets were fully deployed and stretched beyond capacity. The number of port calls then reduces, but the call sizes at major container ports in North America increased, creating peaks in ship-to-ship operations and yard activity, gate congestion, and other operational challenges for terminals.

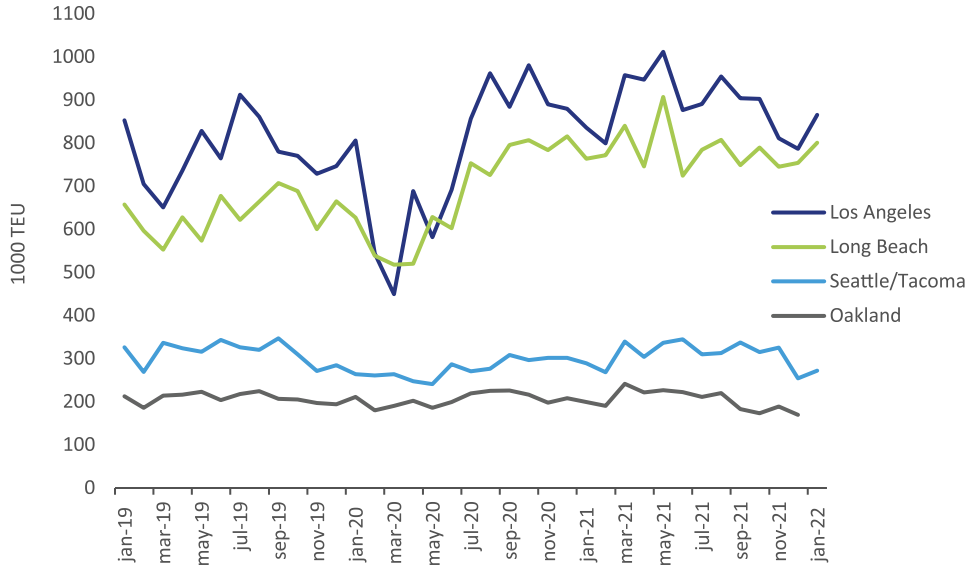
However, not all shipping lines were impacted in the same way. An analysis of Alphaliner (2021) based on November 2021 data revealed that carriers which own terminal capacity along West Coast ports faced far less vessel delays. For example, the ships of American niche carrier Matson are handled at its own SSA Marine Terminal in Long Beach while Evergreen also benefits from the fact that it has its own terminal with Everport. The longest port waiting times were observed for the newcomers on the trade (such as Transfar Shipping) leaving Asia using newly chartered ships without having already signed a terminal contract.

Despite the supply chain disruptions, most container ports in the US, Europe and Asia recorded healthy container throughput growth figures in 2021, see Chart 7 and Table 2. The differences in growth rates among ports located in the same region point to the level of flexibility in dealing with supply-demand imbalances. In Europe, the 2021 TEU growth in some of the largest container ports faced by congestion such as Antwerp and Hamburg remained lower than in neighboring ports. In other words, part of the container trade flows, mainly the sea-sea transshipment volumes, were (temporarily) shifted to other ports such as nearby Le Havre or Zeebrugge and even Med ports to avoid further delays and capacity shortages in some of these large hub ports. The US port system, however, showed a much more rigid structure. Although some container vessels have been diverted to other US gateway ports, overall cargo diversion remained rather modest at the San Pedro Bay. Asian import flows remained strongly aligned to the LA/Long Beach inland distribution network, despite shortages in the availability of trucks, warehouse space and labor. Other US West Coast ports not only have a much smaller container handling level than the LA/Long Beach cluster, they also face capacity shortages at the terminals and inland, reducing their capability to efficiently accommodate a TEU overflow from LA/Long Beach.

Competition for sea-sea transshipment flows heated up in 2021. This was particularly the case in port regions near interoceanic passages such as the Straits of Gibraltar (e.g. +24.3% growth of Tanger Med in Morocco to reach 7.17 million TEU in 2021, mainly at the expense of Algeciras in Spain) and in large multi-port gateway regions (e.g. large transshipment volumes shifting from Antwerp/Rotterdam to Le Havre).

Chart 7|

Monthly TEU volumes at major US West Coast container ports, Jan 2019 to Jan 2022 (in 1000 TEU)



Source: Author's own compilation based on port authority data.

Table 2|

Total container throughput in TEU in main ports of the European Union and China

	Main container ports in the EU				Main container ports in China			
	2021 million TEU	Growth 2020-2021	Growth 2019-2021		2021 million TEU	Growth 2020-2021	Growth 2019-2021
Rotterdam (NL)	15.30	7.8%	3.2%	Shanghai	47.03	8.1%	8.6%
Antwerp (BE)	12.02	-0.1%	1.4%	Ningbo-Zhoushan	31.08	8.2%	12.9%
Hamburg (DE)	8.71	2.2%	-5.9%	Shenzhen	28.77	8.3%	11.6%
Valencia (ES)	5.61	3.4%	3.2%	Guangzhou	24.18	4.2%	6.1%
Piraeus (EL)	5.32	-2.2%	-5.9%	Qingdao	23.71	7.8%	12.9%
Bremerhaven (DE)	5.02	5.2%	3.3%	Tianjin	20.27	10.4%	17.2%
Algeciras (ES)	4.80	-6.1%	-6.4%	Hong Kong SAR	17.77	-1.1%	-2.9%
Barcelona (ES)	3.53	19.4%	6.2%	Xiamen	12.05	5.6%	8.4%
Gioia Tauro (IT)	3.15	-1.5%	24.7%	Beibu Gulf	6.01	19.0%	26.5%
Le Havre/Rouen (FR)	3.07	25.6%	10.2%	Yinkou	5.21	-8.2%	-4.9%
Marsaxlokk (MT)	2.97	21.7%	9.2%	Rizhao	5.17	6.4%	12.4%
Genoa (IT)	2.56	8.7%	-2.2%	Lianyungang	5.03	4.8%	5.9%
Gdansk (PL)	2.12	10.1%	2.2%	Dalian	3.67	-28.0%	-57.3%
Zeebrugge (BE)	2.08	15.1%	23.9%				
Sines (PT)	1.82	13.2%	28.2%				

(*)Estimated, as final data for the year 2021 is not available at the time of writing this report.

Source: Author's own compilation based on port authority data.

Vertical integration, decarbonization and digitalization

By the second half of 2021, the search for resilience in supply chains and growing frustrations resulted in intensified tensions between supply chain actors, as exemplified by formal actions of forwarders and logistics service providers against the high freight rates, and the strategic behavior of some major carriers to increase their grip on logistics. Helped by historically high operating margins, carriers, such as Maersk Line, CMA CGM or MSC, have embarked on a take-over spree in the air freight business, e-commerce and last-mile logistics, digital platforms and forwarding activities. Examples include the take-over by Maersk of Senator International (air freight forwarding) and e-commerce firms HUUB (fashion industry), B2C Europe Holding, Visible SCM (US) and Pilot Freight Services in the past 12 months; or the take-over by CMA-CGM of Ingram Micro's Commerce & Lifecycle Services (CLS) in November 2021 to boost its e-commerce expertise and the preliminary agreement to acquire a 51% stake in the Colis Privé Group (e-commerce services & last-mile logistics, Feb 2022).

This apparent expansion of carriers' business activities from the ocean liner market to global logistics services, supported by an increased focus on digital transformation, adds to an emerging new market environment in which also large retailers, e-commerce firms (Amazon, Alibaba) and even terminal operators (e.g. the take-over of Syncreon and Imperial Logistics by DP World or the take-over of BDP International by PSA) are eyeing a much great involvement in global supply chain management. The present level of consolidation in liner shipping (i.e. the top 10 shipping lines control 91.5% of the total fleet capacity and all belong to an alliance) combined with elevated freight rates give new entrants, such as large e-commerce players and logistics service providers, incentives to consider a direct involvement in container shipping. Faced with the challenge of keeping stores stocked amid a global supply chain crisis, e-commerce giants such as Amazon as well as large retailers like Walmart and Costco went so far as to charter their own container ships, typically calling at smaller container ports.

Some shipping lines have used their financial position also to place massive vessel orders and expand their portfolios by acquiring regional niche carriers to anticipate possible reshoring and nearshoring trends in a post-pandemic setting. The stronger financial position of carriers in principle should also support the green shipping agenda. Carriers are anticipating carbon taxation and new fuel types.

COVID-19 leaves terminal operators in a complex situation since their capacity cannot be changed in the short run and with limited margin to expand their hinterlands. However, partly because of land scarcity, ports continue to be considered long-term investments, and the COVID-19 pandemic did not impact this assessment.

The Suez Canal blockage: an acute shipping crisis making headlines

Not only the supply chain crisis received global media coverage in 2021. On March 23, the containership Ever Given ran aground in the Suez Canal. The vessel's bow got lodged in the eastern bank of the Canal. The Ever Given measures 400m long with a beam of 59m and a capacity of over 20,000 TEU. The incident occurred in the southern section of the Suez Canal, which has only one navigation lane. The blockage resulted in a traffic jam on both entries of the Canal (the Mediterranean and the Red Sea) where more than 430 ships were forced to wait. For shipping lines, this resulted in time costs for the vessels, a loss of revenue, and a loss of capacity. A few dozen ships were diverted through the Cape Route around Africa. The blockage held up some USD 9 billion in global trade each day, leading to time costs of the goods. The incident also led to a loss of revenue for the Suez Canal authority in the range of USD 100 million. On March 29, the containership was refloated and towed away to the Great Bitter Lake. The backlog of ships in the Suez Canal was cleared on April 3. In reaction to the incident, the Suez Canal Authority (SCA) announced plans on widening and deepening the Canal, particularly focusing on its most southernly section. The expansion is ongoing and is expected to be completed in 2023.

The acute incident was among the top news headlines around the world for almost a week, which generated more visibility and a better overall understanding of the general public as regards supply chain management and international shipping. The blockage added another layer to what some have called the 'perfect storm' in supply chain disruptions in 2021. The Suez blockage temporarily contributed to a further constriction in shipping capacity and equipment, and consequently, some deterioration in supply chain reliability. Days and weeks after the opening of the Canal, European ports experienced peaks in vessel arrivals, further increasing the pressure on seaport terminals, which was already high due to the peak in cargo demand induced by the COVID-19 pandemic.

Port mergers on the rise

Many countries around the world are confronted with a shift from the management of individual ports to the management of multi-port regions. Port authorities are thus regionally integrated or even merged and this trend has intensified in 2021. This includes 'bottom-up' integrations such the announced merger between Belgian ports Antwerp and Zeebrugge to form the Port of Antwerp-Bruges by April 2022, the founding of the new North Sea Port in 2018 (Belgium/the Netherlands), or the corridor-based gradual integration process of the ports of Le Havre, Rouen and Paris into HAROPA. This latter development resulted in a formal merger between the respective port authorities into HAROPA in the Summer of 2021. Other port authority integration processes have been more top down, like in the case of the creation of the Italian port system authorities and the integration of Chinese port groups at provincial level. Port integration and mergers have become key strategic enablers to respond to consolidation and vertical integration in the logistics market, to increase port resilience by moving to a more diversified offer to port users, and to enhance capacity building in view of dealing with energy transition and climate change challenges faced by managing bodies of ports and broader port communities.

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METHODOLOGY

Conceptually, the Valencia Containerised Freight Index (VCFI) is a quantitative index that allows us to measure and compare data relating to maritime freights from the port of Valencia. This index has been created based on information obtained from primary data sources, formed by twelve top level panellists who operate in the port of Valencia, including forwarding agents and shipping companies (Alonso Pricing, Arkas, Cosco Shipping, Cotunav, DAL Grimaldi, Grupo Raminatrans, ONE, MSC, Savino del Bene, TIBA, White Line Shipping).

The composite index is calculated after receiving and checking monthly data on freight prices of exports for each of the ports, obtaining the weighted average of average freight prices for each port.

The individual indexes are calculated based on the rates at 42 ports, which represent approximately 60% of the total export traffic of TEUs at Valenciaport in 2017, aggregating 13 geographic areas, as displayed in the table below.

VCFI geographic area	Reference ports
WESTERN MEDITERRANEAN	Casablanca (MA), El Djazair (DZ), Tunis (TN)
ATLANTIC EUROPE	Felixstowe (GB), Hamburg (DE), Antwerp (BE)
EASTERN MEDITERRANEAN	Alexandria (EG) Ashdod (IL) Piraeus (GR) Istanbul (TR)
FAR EAST	Shanghai (CN), Hong Kong (HK), Port Kelang (MY), Singapore (SG), Busan (KR), Tokyo (JP), Kaohsiung (TW), Bangkok (TH), Ho Chi Minh (VN)
MIDDLE EAST	Jeddah (SA), Jebel Ali (AE)
ATLANTIC USA-CANADA	New York (US), Montreal (CA), Houston (US), Miami (US)
CENTRAL AMERICA AND THE CARIBBEAN	Veracruz (MX), Cartagena (CO) Altamira (MX), Caucedo (DO)
ATLANTIC LATIN AMERICA	Santos (BR), Buenos Aires (AR)
AFRICA WEST COAST	Luanda (AO), Bata (GQ), Dakar (SN)
AFRICA EAST COAST	Durban (ZA), Port Elizabeth (ZA)
PACIFIC LATIN AMERICA	Callao (PE), San Antonio (CL)
INDIAN SUBCONTINENT	Nhava Sheva (IN), Kandla (IN)
BALTIC COUNTRIES	Saint Petersburg (RU), Helsinki (FI)

To calculate the index, the individual data (latest data for current month) for the export freight prices (in dollars or euros per TEU are collected monthly for each of the 42 ports considered. As freights on some maritime routes are negotiated in dollars, for conversion to euros, the exchange rates published monthly by the European Central Bank shall be used. The items included in the final freight prices from panellists are the following:

- Bunker Adjustment Factor (BAF)/ Fuel Adjustment Factor (FAF)/ Low Sulphur Surcharge (LSS)
- Emergency Bunker Surcharge(EBS)/ Emergency Bunker Additional (EBA)
- Currency Adjustment Factor(CAF)/ Yen Appreciation Surcharge (YAS)
- Peak Season Surcharge(PSS)
- War Risk Surcharge(WRS)
- Port Congestion Surcharge (PCS)
- Suez Canal transit Fee/Surcharge (SCS)/ Suez Canal Fee (SCF)/ Panama Transit Fee (PTF)/ Panama Canal Charge (PCC).

The calculation of the index is materialised from the following formula:

$$f_j = \sum_{i=1}^{n} \frac{t_{ij}}{n}$$

$$VCFI = \sum_{j=1}^{m} k_j * f_j$$

whereas:

f_j = average freight for Port j

t_ij = freight reported by panellist I for Puerto j

n = number of panellists for Port j

k_j = weighting factor for Port j

In the first place, the average freight is calculated per port (f_j) based on the data received for that port by all panellists. Secondly, a weighting factor is applied to the average freight based on the weighting of the port, resulting in the final index.

With the aim of representing the performance of freights over time, the decision was taken not to show absolute values but to show index number, the VCFI. This is the statistical measure that contains the evolution of a period for a specific magnitude. In this case freights, for a base reference period. The base of the composite index will be 1,000 points and the base of the period coincides with publication, that is January 2018.

This index aims to provide an index reference in the Western Mediterranean, much as the Shanghai Containerized Freight Index does for the Asia region. There will be monitoring of the pertinence and practical utility of the publication of the VCFI, analysing the new needs and priorities and developing new complementary statistical indicators.

The objective of VCFI is to provide value-added information on the key factor to defining port competitiveness, in the form of freight rates. The publication of the VCFI represents an important change in the sector by making information that until now was confidential, available to the port community. This exercise in transparency helps improve decision making for different port users.

On the one hand, this information will be useful for transporters, providing them with a composite index that will set the market trend. The VCFI will serve as a barometer for the health of the market by showing supply and demand for shipping for the principal trade routes from Valencia. This will serve transporters as a tool to predict the evolution of freights with their target markets, which is a determining element of their operating costs.

On the other hand, it will also be useful for operators to offer these services by constituting a benchmarking element for the performance of freights on the market and their own.

As a result, the VCFI favours the functioning of a more transparent market and better information available through decision making, resulting in a more efficient market.

VCFI: FREIGHT PERFORMANCE IN 2021

As previous sections of the report have made clear, in 2021 the international maritime market reached unprecedented levels of tension, thus completing a span of challenges that exploded in the wake of the Covid-19 health crisis. As a result of different market dynamics and supply and demand movements, ocean freight rates have reached record highs this past year and this is clearly reflected in how the VCFI has evolved in 2021. (Chart 8).

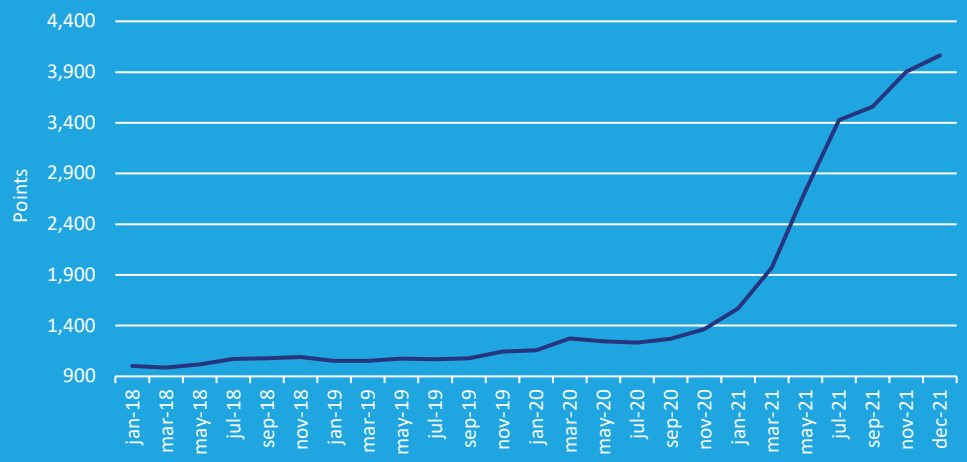
Following a period of restrained freight rates during most of 2018 and 2019, it can therefore be seen that the trend was reversed at the end of 2019 due to the effects of the IMO 2020 legislation. This trend was cut short by the effects of the Covid-19 pandemic, which showed two distinct periods of evolution: the first half of the year showing a slowdown, and in some cases a standstill, in international trade and activity; and the second half of the year seeing intense growth in freight rates, largely due to the growth in trade and its effects on ports and sea transport.

This growing trend in maritime freight rates seen at the end of 2020 was strengthened in 2021 and the VCFI ended the year at a record 4,063 points, representing a cumulative growth of 306% since the historical series started. This figure is well above the values achieved in both 2019 and 2018, with year-end values of 1,101.31 and 1,098.46 and a cumulative growth of 10.13% and 9.85% respectively. The index's upward trend was particularly pronounced in the first part of the year and especially so during the second quarter, impacted by the effects of the Ever Given mega-ship becoming blocked in the Suez Canal, as has already been analysed in previous pages.

In a market as globalised as is the maritime, benchmarking the VCFI with the main market reference indexes allows us to identify common behavioural patterns in the evolution of the different indexes, compatible with market dynamics and associated trade flows. Thus, taking as a point of reference the Shanghai Containerised Freight Index (SCFI)[1] - which shows container freight rates from the main Chinese ports - the same intensified upward trend was seen throughout 2021. There was some moderation in the first few months of the year, attributable to the Chinese New Year, followed by a subsequent intensification from March onwards partly caused by the Suez Canal blockage mentioned previously, in addition to the major trends that have been reviewed in the previous sections of this report (Chart 9).

Chart 8|

Monthly evolution of VCFI points, 2018-21

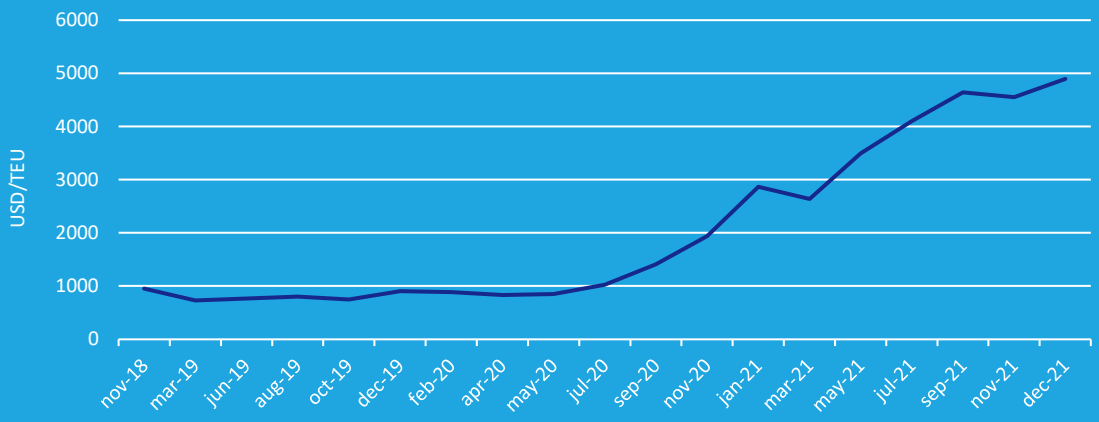


Source: Author's own.

[1] The SCFI is the methodological reference used for designing and drafting the VCFI.

Chart 9|

.Evolution of the Shanghai Containerised Freight Index (SCFI), 2018-2021.



Source: Author's own.
Data: Alphaliner.

Global Analysis: Sea Transportation Market

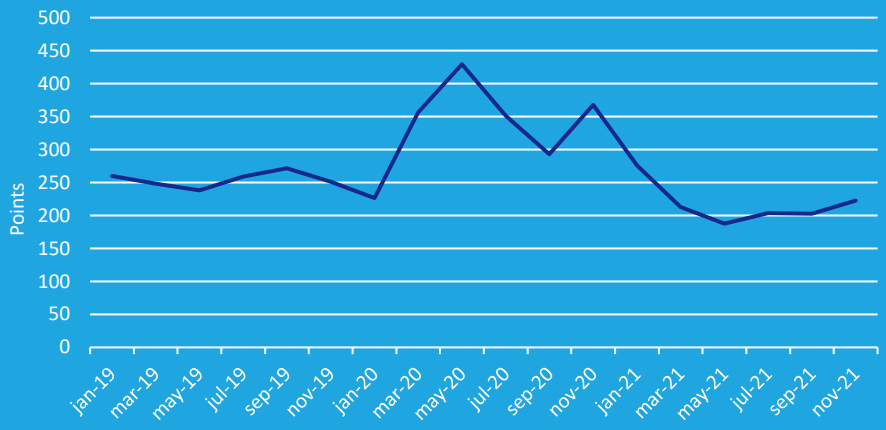
The evolution of freight rates is determined in the first instance by the global economic environment, which, in turn, determines the behaviour of both the demand and supply of capacity in the sea transportation market. Undoubtedly, the Covid-19 pandemic that began in early 2020 has been the biggest disruptive phenomenon in the global economy since the end of World War II and has caused unprecedented economic effects. Along these lines, and as explained in the first section of this report, a key feature of 2021 has been the effects of the pandemic, even though certain catalysts for economic growth - such as fiscal and monetary stimuli along with the arrival of the initial Covid-19 vaccines - have contributed to a solid improvement in economic records, especially during the first part of the year. Along with this improvement in the economic environment, there was an increase in business confidence as well as an improvement in the world uncertainty index during most of the year, and a return to pre-pandemic levels. It did however show a slight decline during the closing months of the year as a direct consequence of the new Omicron variant and the related reimposition of restrictions (Chart 10).

In this vein, according to the latest data compiled in the World Economic Outlook, produced by the IMF and as can be seen in Chart 11, Gross Domestic Product (GDP) for 2021 grew 5.9% for the world economy as a whole, which is above the growth of advanced economies (5%) but below that of emerging market and developing economies (6.5%).

As can also be seen in Chart 11, trade in goods and services is highly correlated with GDP growth. In this regard, and according to the latest annual estimate also prepared by the IMF, world trade increased by 9.3%, representing a GDP multiplier of 1.57 - the highest in the last decade. Analysing the monthly evolution, trading volumes are clearly at pre-pandemic levels, highlighting the boom in demand experienced in recent months. Similar behaviour is observed when analysing the Purchasing Managers' Index (PMI), an indicator that shows the situation of the manufacturing sector, as well as the Industrial Production Index (IPI), which measures the monthly evolution of the industrial branches' productive activity - ie the extractive, manufacturing and electric power, water and gas production and distribution industries (Chart 12).

Chart 10|

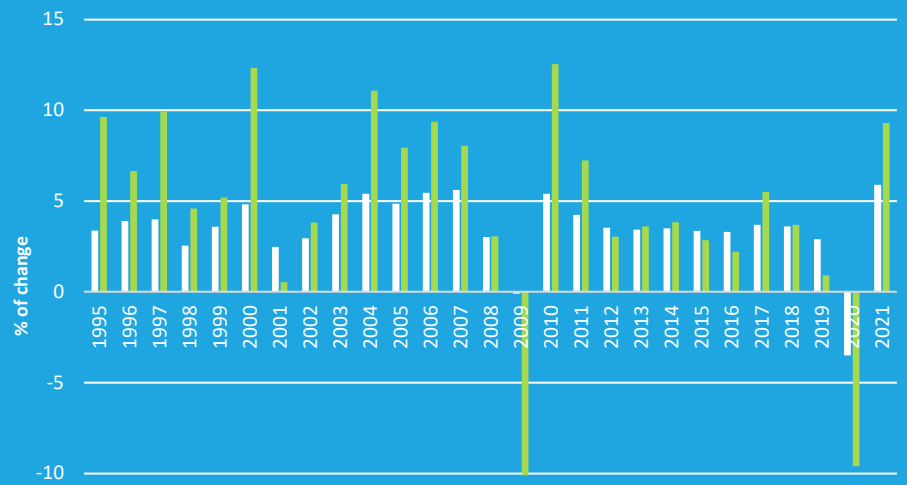
Evolution of the World Uncertainty Index



Source: Author's own
Data: Economic Policy Uncertainty

Chart 11|

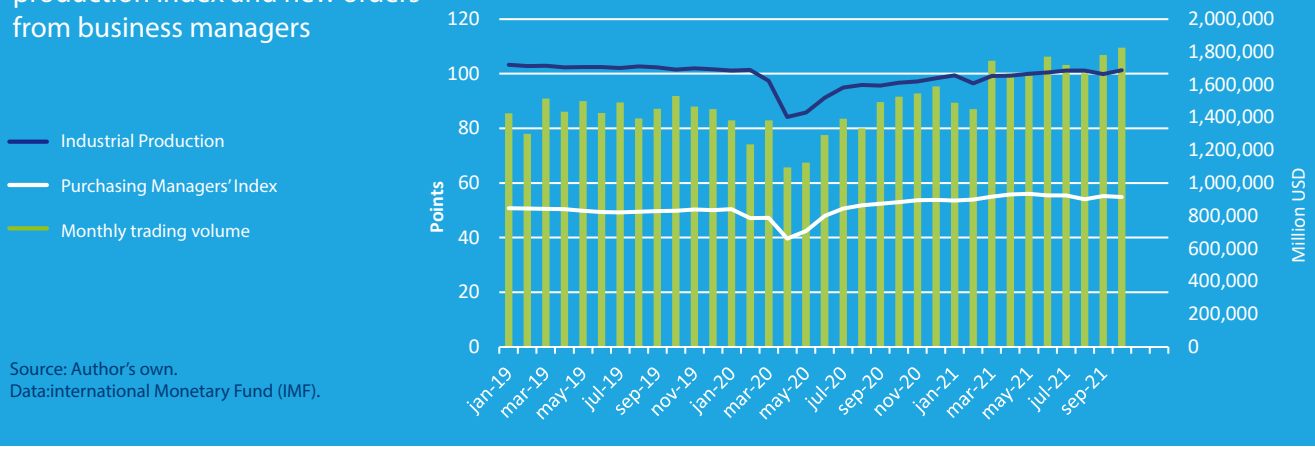
Overall GDP growth and trade



Source: Author's own.
Data:international Monetary Fund (IMF).

Chart 12|

Evolution of trade, industrial production index and new orders from business managers



Source: Author's own.
Data:international Monetary Fund (IMF).

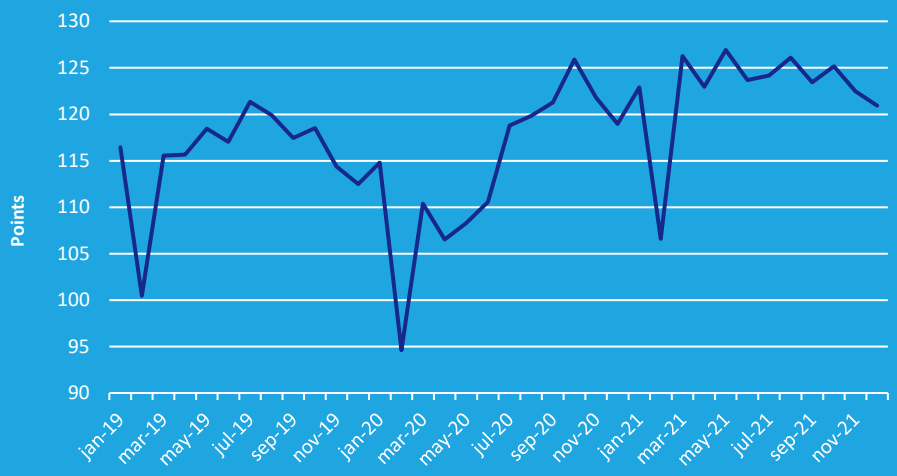
As a direct consequence of the growth in trade and, consequently, in the demand for goods to be transported, overall port traffic volume has increased, as shown by the RWI/ISL (Chart 13), showing an upward trend for most of the year. However, as mentioned above, when explaining the evolution of the VCFI, a decrease was observed during March due to the incident in the Suez Canal. In addition, and as is common in the container market, the beginning of Chinese New Year celebrations marks a turning point in the volatility of the container trade due to the effect on the transportation market and on port traffic of reduced economic activity in China, as observed in every start of the year in the series on the chart.

Although growth in the volume of container traffic was the common trend throughout most of 2021, it is important to note that, as a whole, the regional distribution of container traffic was uneven as demand was mostly concentrated in the North American area. In this vein, and according to the information provided by Alphaliner, when separating out by commercial routes, a notable increase can be seen in the evolution of traffic from the Far East to Europe and the USA during most of 2021 (Chart 14). Similarly, according to data provided by Sea Intelligence, North American imports based on personal consumption reached record levels in October 2021. Thus, they grew 31.2% year-on-year (18.7% compared to January-October 2019), while the volume of containers handled increased by 28.4% year-on-year (15.8% compared to January-October 2019).

According to Alphaliner's data, on the supply side, 2021 closed with an available capacity of 25.4 Million TEU, which was a growth of 4.5% over the previous year. New ship deliveries reached 1,127,063 TEUs (an

Chart 13|

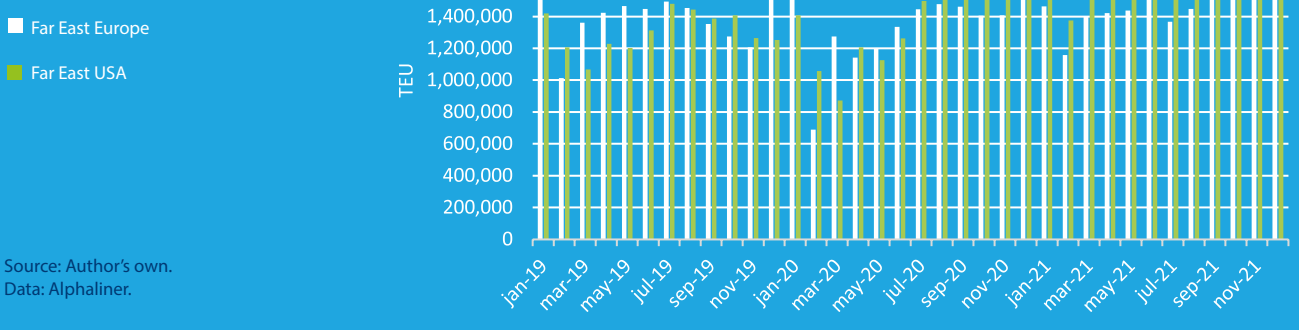
Evolution of port traffic in TEU, 2019-21



Source: Author's own.
Data: RWI/ISL.

Chart 14|

Demand by trade routes 2019-21



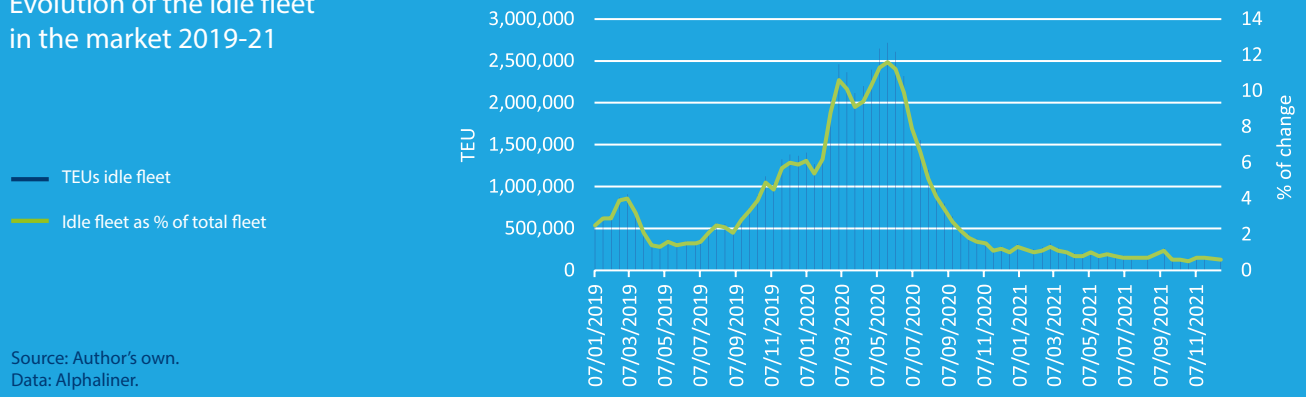
Source: Author's own.
Data: Alphaliner.

increase of 31.72% over 2020) and vessel retirements reached 205,447 TEUs (a decrease of 91.96% over 2020). The difference between the two figures reveals that the actual fleet delivered throughout 2021 was more than 921,616 TEUs.

Along these lines, there is no doubt that the high demand for sea transportation has encouraged carriers to deploy all available vessels in order to meet export levels and even to look for alternative boats. In view of this scenario, shipping lines have been making practically full use of the vessels and available capacity on each route, thus keeping idle fleet to a minimum and restricted in most cases to operational reasons rather than commercial decisions (Chart 15).

Chart 15|

Evolution of the idle fleet in the market 2019-21



Source: Author's own.
Data: Alphaliner.

In fact, a significant proportion of the cancellations in 2021 were related to one of the problems that has most marked the evolution of the market during the year: port congestion at many of the world's major ports. Although there are various reasons for this congestion that has left containers out of service, and they are individual to each port and its idiosyncrasies, key factors have included the common denominator that is the slowdown in operations due to the new outbreaks of Covid-19 and the mandatory compliance with health requirements, together with the strong and unbalanced increase in demand. Also of major relevance to the congestion problems in 2021 was the land logistics and equipment management side, where the processes that ended up stressing the supply and procurement chain caused a lower turnover of empty containers and impacted their availability. In market terms, a direct implication of this phenomenon has been an effective reduction in capacity, which at times has been as high as 20%.

As can be seen in Chart 16, the total congestion index prepared by Sea Intelligence shows a significant increase in the late summer months, peaking in mid-September. Although there were signs of improvement thereafter, in the latter part of the year, from mid-October to December, the situation worsened again and showed a clear decline.

Chart 16|

Global congestion index

Source: Author's own.
Data: Sea Intelligence.

In this regard, it is worth noting on the one hand the collapses at Chinese ports where congestion problems began to worsen from May 2021 and reached their peak in late summer, when large-scale port closures coincided due to outbreaks of Covid-19 at ports such as Yantian or Ningbo, along with the effects of Typhoon In-Fa, which hit eastern China and restricted access to major ports like Shanghai and Ningbo. In addition, prolonged closure at the port of Ho Chi Minh City due to Covid-19 caused import cargo to pile up. Similarly, by the end of 2021, there were signs of improvement and congestion gradually stabilised.

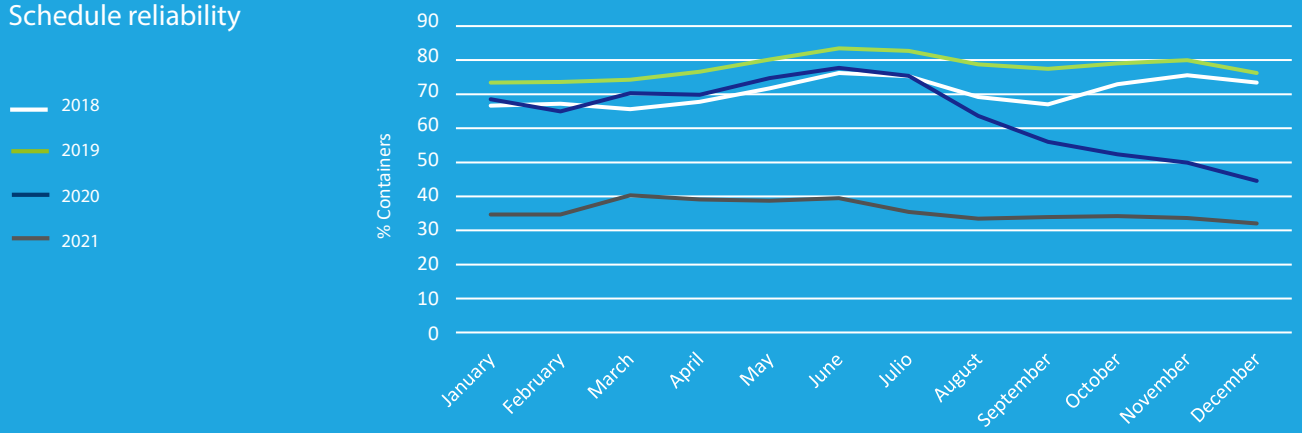
Congestion levels also increased at import destination ports, increasing significantly from July 2021 onwards and reaching their initial peak in mid-September 2021. While there were signs of improvement in early October, this improvement was quickly reversed, with congestion reaching an all-time high by the end of the year. In terms of the United States, the most obvious example is the ports of Los Angeles and Long Beach, where dozens of ships wait every week in the bay to begin operations. Overall congestion at European terminals peaked in June 2021, followed by a secondary peak in mid-August. After that, congestion levels decreased, but were seen again with significant increases in November and December 2021. The worsening of the situation occurred especially in Antwerp and Fos-sur-Mer and Le Havre, as well as in Genoa and Piraeus, while the Spanish ports as a whole continued with minor operational problems.

As mentioned above, the effect of congestion in the ports has resulted in an increase in the amount of time required to complete vessel rotations and, given the impossibility of adhering to the schedules, shipping lines were forced to cancel calls and even complete voyages. In parallel, a direct consequence of port congestion has been ship delays that led to schedule reliability being at an all-time low by 2021. Schedule reliability is provided by the shipping companies for their services, in such a way that it demonstrates the degree or percentage of compliance with maritime service arrival times at the port vs official schedules. Schedule reliability fell by 35.8% in 2021, surpassing the figures reached in 2020 and 2019, with values of 63.9% and 78%, respectively (Chart 17). Delays to vessels that were already behind schedule saw an upward trend since the lowest record of 2.19 days in 2016. The figure for 2021 was almost 7 days.

Another key aspect in understanding the evolution of freight rates due to their direct influence on shipping companies' operating costs is the cost of fuel (Chart 18). Specifically, the global bunker market resumed its upward trend in 2021 after reaching lows in April 2020, following the Covid-19 impact and geostrategic conflicts between producing countries. Thus, the sustained increase in fuel oil prices in 2021 has led to a point where VLSFO fuel is now almost on par with levels seen during the introduction of the IMO 2020 standards in early 2020. Similarly, it is also evident that IFO 380 price levels are above those observed prior to the pandemic.

Chart 17|

Schedule reliability

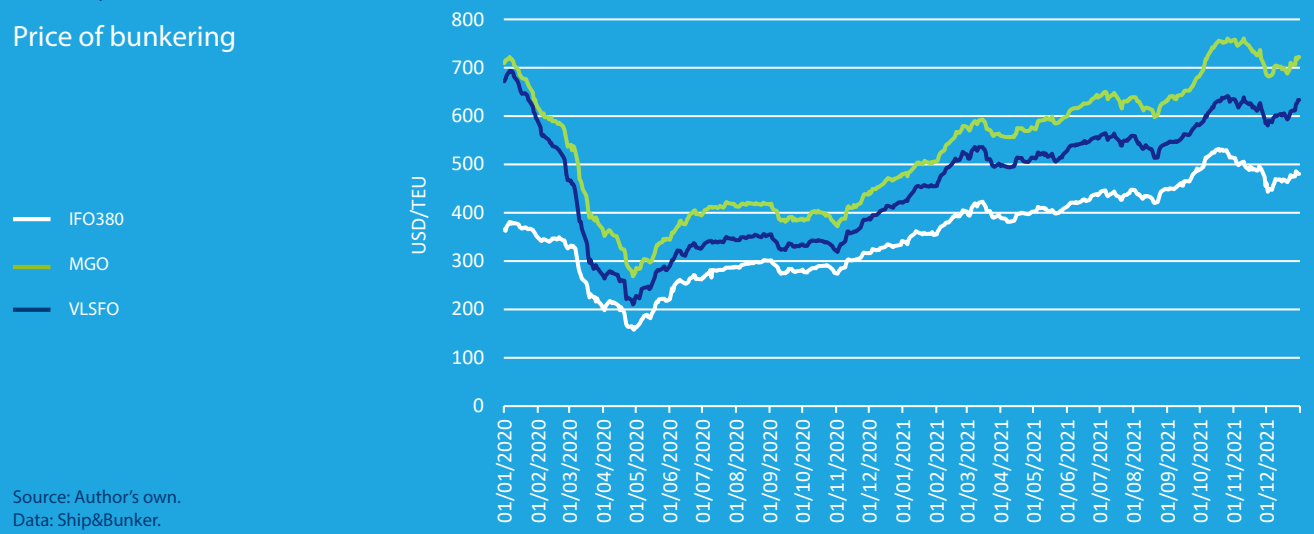


Source: Author's own.
Data: Sea Intelligence.

Thus, according to data provided by Ship&Bunker on the cost of bunkering ships at sea, at the 20 main ports of the world, the average price of IFO 380 (Intermediate Fuel Oil) fuel was $481.25 compared to $337.50 in December the previous year, representing an increase of 42.59%. Similarly and even more intensely, VLSFO (Very Low Sulphur Fuel Oil) has increased by 50.47%, from $421 in December 2020 to $633.50 in December 2021.

Chart 18|

Price of bunkering



Source: Author's own.
Data: Ship&Bunker.

Regional analysis: the situation at Valenciaport

As this report shows, the complex international environment has greatly impacted the evolution of the maritime market in 2021, and the impact of disrupted globalised supply chains have been felt in most countries. However, the changes in Valenciaport's export and import traffic also has a national dimension - related to the vitality in the Spanish economy this year and the export sector around Valenciaport's hinterland.

In 2021 as a whole, preliminary estimates from the Spanish National Statistics Institute forecast Spanish economic growth of 5%, which represents a considerable recovery following the sharp fall in 2020, albeit below expectations at the beginning of the year due to the progression of the pandemic. In quarterly terms, Gross Domestic Product grew by 2% in the fourth quarter (provisional figures), after growing by 2.6% and 1.2% in the third and second quarters, respectively, and contracting by 0.7% in the first quarter. The contribution of domestic demand to year-on-year GDP growth was 3.6 points, 1.1 points higher than in the third quarter. External demand contributed 1.7 points, eight-tenths of a point more than in the previous quarter.

In regard to industrial production, a clear example of the effects of the pandemic can be seen in the following Chart 19, which shows the Industrial Production Index (IPI) in 2021 and the evolution of productive activity by industrial branches, excluding construction. As shown - and especially in Spain or China's case, following the indicator's drastic fall in 2020, 2021 shows a strengthening recovery with an unprecedented rebound during the first part of the year and sustained growth in the second half.

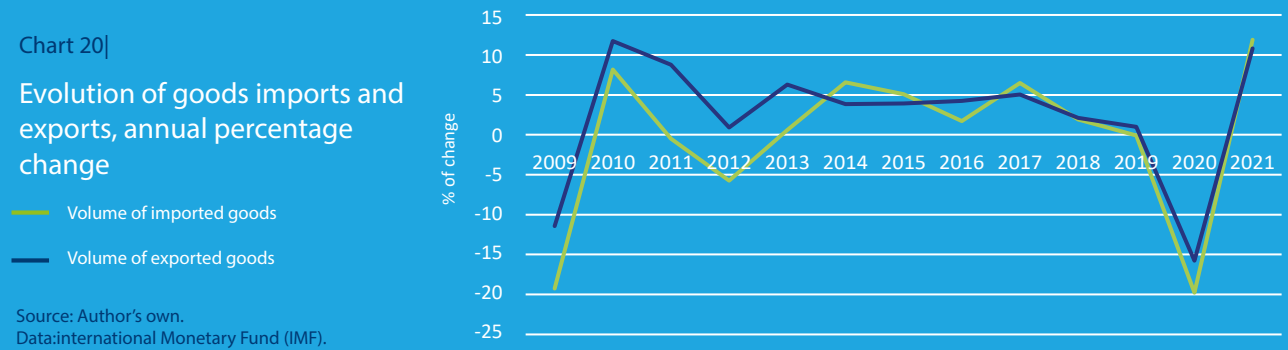
Chart 19|

Evolution of the Industrial Production Index (IPI) in Spain, China and the United States, 2020

Source: Author's own.
Data: INE; Federal Reserve; National Bureau of Statistics of China.

Chart 20|

Evolution of goods imports and exports, annual percentage change



Source: Author's own.
Data:international Monetary Fund (IMF).

Focusing on the evolution of international trade in Spain (Chart 20), IMF data (based on information from Spain's tax authority AEAT) estimates for 2021 forecast a clear recovery in goods exports and imports, growing 10.8% and 11.9%, respectively. In total, goods exports amounted to €316.61 bn euros while imports stood at €342.78 bn, representing a coverage rate of 92.4%. As measured in tonnes, 2021 goods exports exceeded those of 2019, exceeding 186 million tonnes, while imports grew to 246 million tonnes, falling short of pre-pandemic figures.

This vitality in the economy and trade is also reflected in Valenciaport's traffic, which was over 85 million tonnes in 2021, representing a growth of 5.42% compared to 2020. Containerised cargo also grew to 5.6 million TEUs - 3.25% more than the previous year. This made Valencia the fourth largest European port in terms of container throughput, behind Rotterdam, Antwerp and Hamburg. Within Valenciaport's traffic mix, the evolution of traffic associated with foreign trade requires special attention - that is, the evolution of the loading and unloading of full containers, which closed the year with very significant growth rates (13.89% and 17.38%, respectively). 837,584 TEUs were unloaded in 2021, while for cargo it was over one million TEUs (1,081,103). These figures represent 41% of the full import/export containers of the Spain's network of ports, which demonstrates both the importance of the business fabric in Valenciaport's hinterland and the role of the port in servicing the productive economy.

In terms of the monthly evolution of the traffic on which the VCFI is based (full-container cargo), all months are at levels higher than 2019, with the first half of the year being particularly significant, when 95,000 TEUs per month were reached in March. This first part of the year coincides with the period of most pronounced growth in terms of VCFI, meaning that we can identify a correlated evolution of both terms. In addition to this, and as noted at the beginning of this section, the changes in transportation prices included in the VCFI refers to traffic inserted into global supply chains and which, therefore, react to the determining factors and development of the maritime market as a whole. Thus, the consequences of the imbalances between supply and demand that have occurred this year, external shocks and congestion and equipment problems are key determining factors in the evolution of the VCFI.

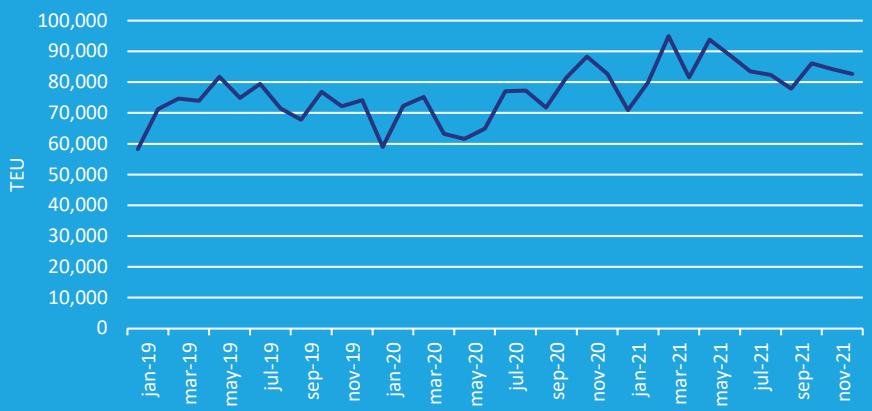
An analysis of freight rates by area for the different sub-indices shows a general upward trend for all three areas and is in line with the overall development of the VCFI. Additionally, to consider the peculiarities of each country and the dynamism of its economy need to be taken into account, as well as the idiosyncrasy of each port system and the characteristics of the container trade routes that link two countries; these have a direct influence on how the VCFI evolves. In order to understand the evolution of the benchmark sub-indices, the three main areas for Valenciaport are analysed below: Far East, Western Mediterranean and the United States and Canada (Chart 22).

The chart above clearly shows the behaviour for each of the areas. In terms of economic and commercial vitality, the main economic variables for each area (Table 3, Table 4 and Table 5) show solid improvement in terms of the records in line with the global economic recovery. Thus, increased activity can be seen in 2021, with economic growth and a positive variation in import and export levels.

In the Far East, an increasing trend is noted in the development of freight rates throughout 2021. Thus, shipping prices with this area increased - a growth since the series began in January 2018 of 274.30%, reaching 3742.98 points at the close of 2021. As can be seen in the chart, although the general trend has been upward, throughout the year there has been some downward movement in certain months; -1.92% in April, -3.35% in September and -1.31% in December. On the other hand, the highest increase occurred in March, with an increase of 8.05% over the previous month, reaching 3180.31 points, thus reflecting the economic situation at Chinese ports during much of the year, with high levels of congestion, meaning a strong surcharge on freight rates for shipments to China.

Chart 21|

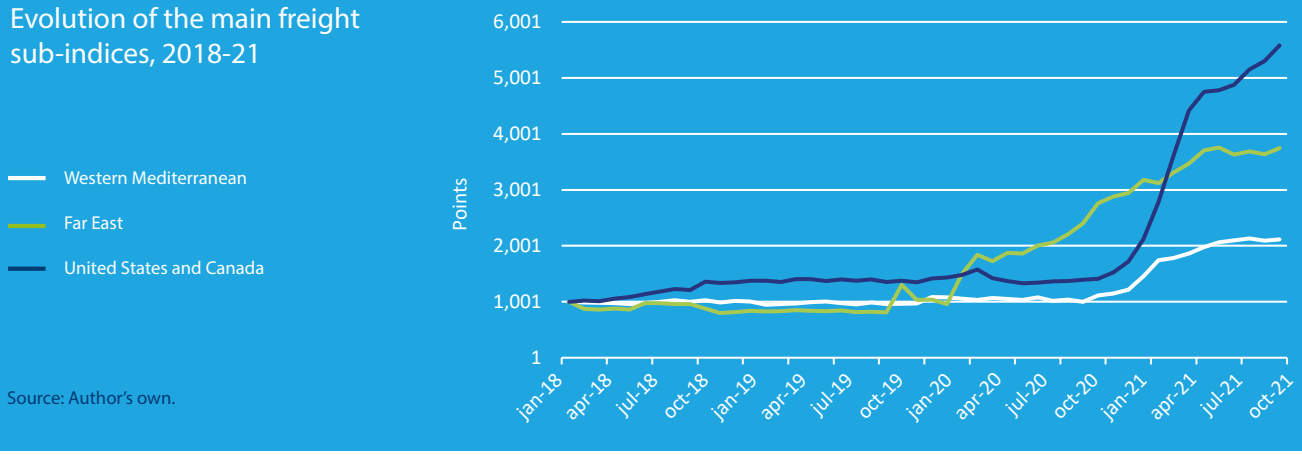
Evolution of full TEU exports from Valenciaport, 2019-21



Source: Author's own.
Data: Port Authority of Valencia.

Chart 22|

Evolution of the main freight sub-indices, 2018-21



Source: Author's own.

It is also worth highlighting the growth in full TEU export traffics from Valenciaport to China - the main trading partner for Valencia in this area and for full container traffics as a whole from Valenciaport, which in 2021 increased by 14.37% compared to the previous year, to reach 612,497 managed TEUs (both loading and unloading), and leading to greater pressure on transport prices. Similarly, but even more strongly, the US and Canada region has intensified freight rates during 2021, after recording moderate growth during most of 2020. As can be seen in the chart, the highest growth occurred in April, with an increase of 31.16% compared to the previous month. Thus, at the end of 2021, a cumulative growth of 457.93% was recorded since the series started in January 2018, to reach 5579.27 points. As explained throughout this report, North America, where a very large part of import demand has been concentrated, has been one of the areas most affected by the global problems of congestion, lack of equipment and maximum tension in terms of supply chains. This has resulted in unusual pressure on freight rates. It should also be noted that the United States has been the main country in terms of movement of cargo containers from Valenciaport, where a total of 145,953 TEUs were shipped in 2021.

Finally, turning to the Western Mediterranean, there is also an upward trend in freight rates throughout the year, when the highest growth was in March 2021; there was an increase of 19.74% over the previous month and reaching 2120.50 points. The maximum peak in freight rates for this area was in October with a cumulative growth of 112.98%, to reach 2129.97 points. The year closed with a cumulative growth of 111.73% since the series started in 2018, reaching 2117.25 points. On the demand side, exports from Valenciaport to this area increased by 9.19% in 2021 over the previous year. This strong growth is mainly due to exports to Morocco, which increased by 26.96%. Meanwhile exports to Algeria fell by -23.48%.

Therefore, beyond the peculiarities of each area, in general, they all experienced growth in 2021, albeit with varying intensity. Thus, the evolution of freight rates is a reflection of the stresses in global supply chains together with private consumption demand pressures, as explained throughout the report. While there may be some signs of relief in some of these components by the end of 2021, their progress in 2022 is once again an unknown quantity and the world is once again facing a period of maximum uncertainty following Russia's invasion of Ukraine.

Table 3 |

Far East: main economic variables in 2021, annual change

	China	Hong Kong	Singa-pore	South Korea	Japan	Vietnam	Thailand	Taiwan	Malaysia
Economic growth (% annual change at constant prices)	8.02	6.4	6,00	4.3	2.4	3.8	1.00	5.9	3.5
Export performance (as % of GDP)	19.80	17.46	5.67	9.04	13.18	-0.34	19.94	3.76	8.52
Import performance (as % of GDP)	17.3	16.11	6.21	11.06	9.45	-4.65	19.34	9.99	6.19

Source: international Monetary Fund (IMF).

Table 4|

US and Canada: main economic variables in 2021, annual change

	EE.UU	Canada
Economic growth (% annual change at constant prices)	5.60	5.68
Export performance (as % of GDP)	8.05	5.78
Import performance (as % of GDP)	15.26	15.01

Source: international Monetary Fund (IMF).

Table 5|

Western Mediterranean: key economic variables in 2020, annual change

	Morocco	Tunisia	Algeria
Economic growth (% annual change at constant prices)	5.70	3.00	3.40
Export performance (as % of GDP)	10.63	13.80	5.20
Import performance (as % of GDP)	2.27	5.46	1.65

Source: international Monetary Fund (IMF).

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Valencia Containerised Freight Index

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