

WAREHOUSING TO ADDRESS SUPPLY CHAIN DISRUPTIONS



FOREWORD

by David Hutchings

Supply chain disruptions due to the Covid-19 pandemic are still playing out at Europe's top gateway ports but this is only one of the many factors which have impacted supply chains in recent years, from the blocking of the Suez Canal in March to Brexit and global trade disputes, not to mention the weather.

Of course, every delay inflicted on trading patterns has profit implications for businesses using and relying on the supply chain and as businesses look to reduce the vulnerability they know they face, particularly as supply chains have lengthened, they are reacting by changing how and when they distribute goods.

This involves diversifying their routes to market, adding new layers of logistics and warehousing as they look to increase flexibility as well as resilience. This is coming though in Europe in a push towards multimodal freight but also near-shoring or reshoring production and moving from Just-in-Time to Just-in-Case, essentially holding more inventory closer to the end user.

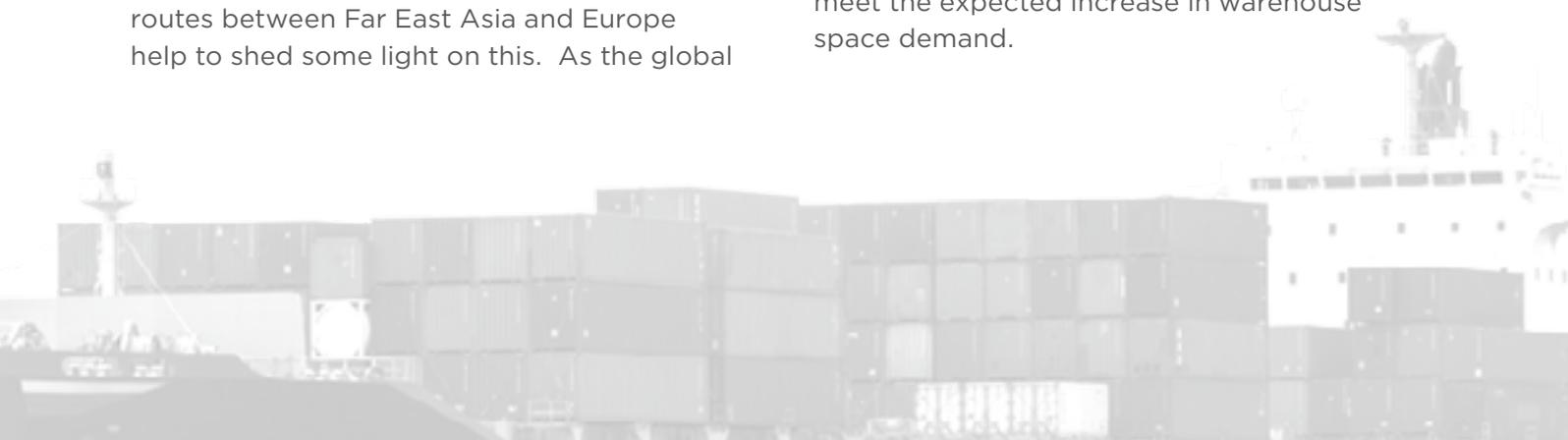
All of this has far reaching implications for the warehousing space used in the supply chain but data on the drivers of recent take-up is limited so how can we assess the scale of the impact?

Data on container volumes for the shipping routes between Far East Asia and Europe help to shed some light on this. As the global

manufacturing sector started to recover in H2 2020, this fed through to a stabilisation in container volumes arriving at Europe's ports in H1 2021. Comparing H1 2021 container volumes to pre-Covid levels of H1 2019 therefore provides an estimate of additional inventory levels needed to safeguard supply chains and production lines. According to our analysis this stood in the range of 3-4%.

Looking at Brexit meanwhile, the Port of Rotterdam estimated and planned for increased inventory of 2-4% as a safety valve to ensure a smooth transition to new trade agreements. Taking into account that approximately half of this stockpile will be temporary, these two factors combined, point to a potential 5-6% increase in inventory to be held at European ports and transit nodes.

This will flow through directly to increased warehousing needs, albeit spread across different parts of the supply chain and with land values rising, the emphasis on the right location will increase. In our view, there will be some diversion from the e-commerce led focus on the bottom end of the supply chain, serving the user and the market, and a renewed focus on the top end of the chain, serving the producer and key transit hubs. Indeed, there will be a special emphasis on locations that serve gateway ports and airports. However, since land is especially scarce near these hubs, secondary ports including inner waterway ports, might be well positioned to also help meet the expected increase in warehouse space demand.





TRADE DISRUPTIONS DEMAND A LOGISTICS RETHINK

When this past March, 60 northbound cargo ships heading to Rotterdam port were delayed for a week until the Ever-Green vessel could be dislodged to reopen the Suez Canal for ship passage, the world was again reminded of the inherent vulnerabilities associated with long global supply chains. This latest incident follows a year of managing the most extreme goods shipment irregularities on record created by national-level reactions to the Covid-19 pandemic that resulted in a globally disconnected series of often repeated national lockdowns and reopenings.

Compounding the situation further, Brexit adds another layer of unpredictability to the flow of goods between the EU and the UK. For all these reasons, key gateway ports have been experiencing overwhelming levels of congestion as ship delays and cancellations lead to lulls followed by sharp surges in container volumes. The consequences of these global supply chain disruptions can be seen first-hand at Europe's ports.

After global ship schedule reliability declined over the course of 2020 with an accelerated double digit decrease during H2, the index registered an historical low in Q1 2021, dropping to 34.9%. Average delays for late

vessels increased to 6.42 days compared to a pre-pandemic average of 0.6 days. Most recently for example, the Suez Canal crisis left 60 vessels arriving 6 days late at Rotterdam port.



THE SHIPPING RELIABILITY INDEX REGISTERED AN HISTORICAL LOW OF 34.9% IN Q1 2021.



AVERAGE DELAYS FOR LATE VESSELS INCREASED TO 6.42 DAYS COMPARED TO A PRE-PANDEMIC AVERAGE OF 0.6 DAYS.



INCREASED FREQUENCY OF GLOBAL SHOCKS

While Europe is still experiencing the effects of the Covid-19 pandemic, it is worth noting that this is not the first shock or crisis to have raised cause for concern in recent times.

Extreme weather events, trade disputes, rising geopolitical instability, terrorism, heightened exposure to cyberattacks, macro-economic/financial crises and supplier bankruptcy have increased in frequency, more than doubling since 1980.

According to a McKinsey Global Institute (MGI) study, a shock with a duration of 1-2 months currently occurs every 3.7 years. At this shock frequency, companies can expect to lose on average more than 40% of a year's profits every decade. A single severe event that disrupts production for 100 days – that usually happens every five to seven years – could cost some industries almost a year's earnings. Based on MGI's estimates, disruptions associated with the Covid-19 pandemic over the last year and a half could cost over four years of earnings for some industries –



MORE THAN
40%

DISRUPTIONS COST COMPANIES MORE THAN 40% OF A YEAR'S PROFITS EVERY DECADE.

underlining how critical has been the support offered by the UK and EU member states to protect their economies by subsidizing businesses during this crisis.

The level of exposure to the pandemic and other crises depends on the type of industry but also on the geographic reach of supply chains (shorter or longer). Whether or not the event can be either locally or regionally contained and therefore unable reach a global level will determine which supply chains are most likely to be impacted.

INDUSTRY	SUPPLY CHAIN	EXPOSURE
High-tech: communication, computers, electronics	GLOBAL	ABOVE AVERAGE - production disruptions
Labour-intensive (e.g. apparel)	GLOBAL and REGIONAL	ABOVE AVERAGE - pandemics, heat stress and floods
Food & beverage	REGIONAL	LOWER than AVERAGE
Pharmaceuticals, medical equipment	GLOBAL and REGIONAL	Limited to pandemics and trade disputes

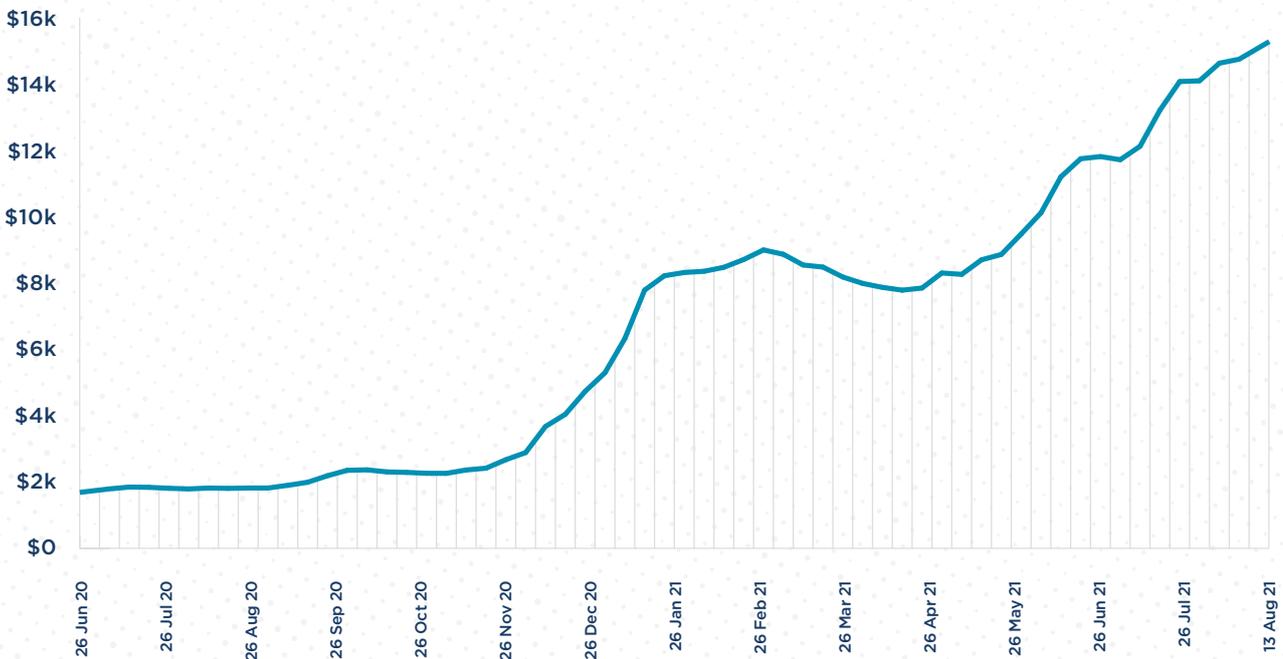
Source: "Post-Covid-19 value chains"; INTA Committee; European Parliament

RESILIENCE THROUGH DIVERSIFICATION

While globalisation provides cost advantages, the world is coming to terms with the reality that longer supply chains are more vulnerable to global and regional shocks. Over the course of just one year, companies have gone from simply ensuring they have procedures in place to be able to safeguard their supply chains

and production lines to actually implementing them. To mitigate costs associated with higher risk, more companies are indicating a willingness to increase spending to achieve diversification on several fronts. By adding new layers of logistics and warehousing, diversification can inject a higher level of flexibility and reliance into supply chains which after a year of unprecedented failures, is now deemed essential for reducing risk to costs and protecting profit margins.

China/East Asia to Northern Europe Container Spot Rates, June 2020 - August 2021



Source: *Freightos Baltic index*

Diversification approaches to futureproof supply chains are being implemented in three key ways:

1 Rise in multi-modal movement of goods globally and regionally

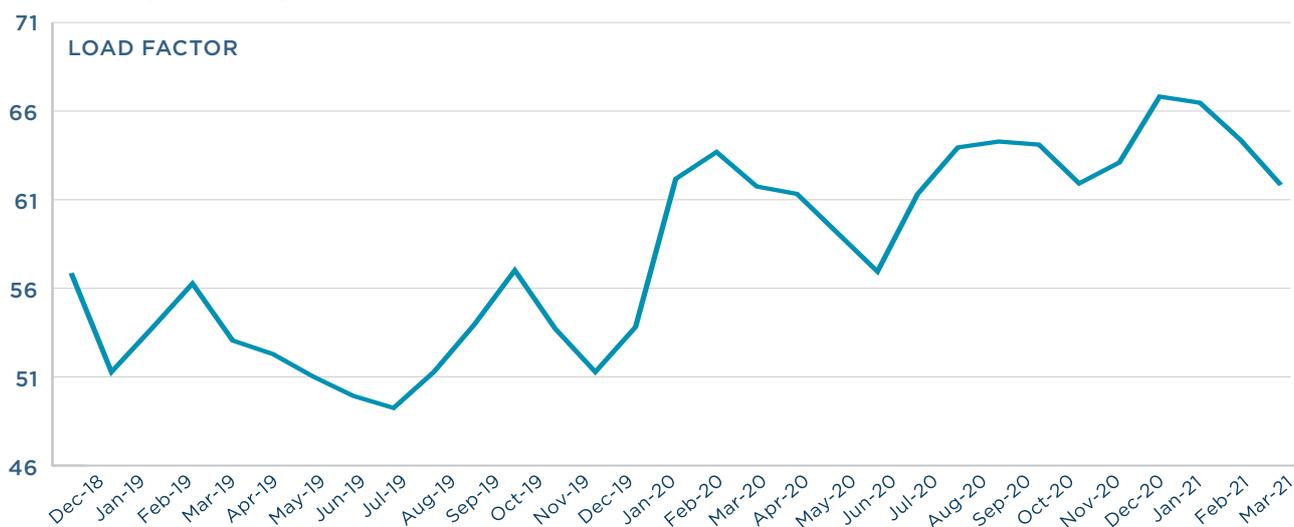
Thousands of empty containers were left stranded in Europe during the first half of 2020 when shipping lines cancelled hundreds of trips as coronavirus lockdowns caused a sudden slowdown in production and global trade. When western demand for Asian-made goods rebounded during H2, competition among shippers for available containers sent freight rates soaring. Brexit and the more recent Suez Canal blockage exacerbated already pandemic-related severe congestion at ports that continued through Q1 this year.



According to the Freightos Baltic Index, container rates between Asia and Northern European ports increased from about \$2,000 in November to over \$8,000 in late January and mid-March then declined slightly in late April before rising again to the current rate of \$14,146 – over 7 times higher in 9 months. This rise in container rates, combined with shipping’s growing lead time and routing

unpredictability, means that other, less vulnerable modes of transport are becoming more feasible. A growing number of retailers, for example, are paying more to have goods flown by air cargo to bypass long port delays as already indicated by 12% higher global air cargo demand in April 2021 than in April 2019, as measured in cargo-tonne kms (CTKs).⁷

Monthly Air Freight Load Factor



Source: IATA data

2 Acceleration of near-shoring and re-shoring strategies

While it still remains to be seen if the impact of technology will indeed facilitate a trend to re-shore large scale production to Europe, as the current pandemic has exposed global supply chain

vulnerabilities, it has put added pressure on manufacturers to diversify already outsourced production like suppliers and parts producers.

Against the backdrop of shrinking wage differentials between OECD countries and emerging economies due to wage

⁷IATA, “Air Cargo remain the ‘Good News Story’ for the Air Transport sector”, 8 June 2021.

increases in the latter (particularly in China), and now Covid-19, the decreasing investment costs for robotics, automation and computerised manufacturing could reinforce a trend towards partial or full regionalisation of production lines. Starting last year in Europe during the two peaks of the pandemic, additive manufacturing such as 3-D printing already helped remedy shortfalls in ventilator valves and other ventilator parts, and face masks and plastic shields.

3 JIC (Just-in-Case) inventory management

As we anticipated in our 2020 Manufacturing Risk Index report, manufacturers would reduce reliance on Just-in-Time (JIT) by holding more inventory closer to factories. While more expensive to hold and store more inventory, especially finished goods at destinations close to Europe's consumption markets, moving away from a 100% JIT model makes it easier for businesses to adjust goods and material flows further down supply chains.

Holding inventory closer to factories and consumers injects an additional "safety stock" link in supply chains making it possible to manage delivery surges due to shipping delays and plant closures. Freight can be efficiently moved from ports, airports, and rail stations into warehouses to alleviate congestion at Europe's trade import/export points.



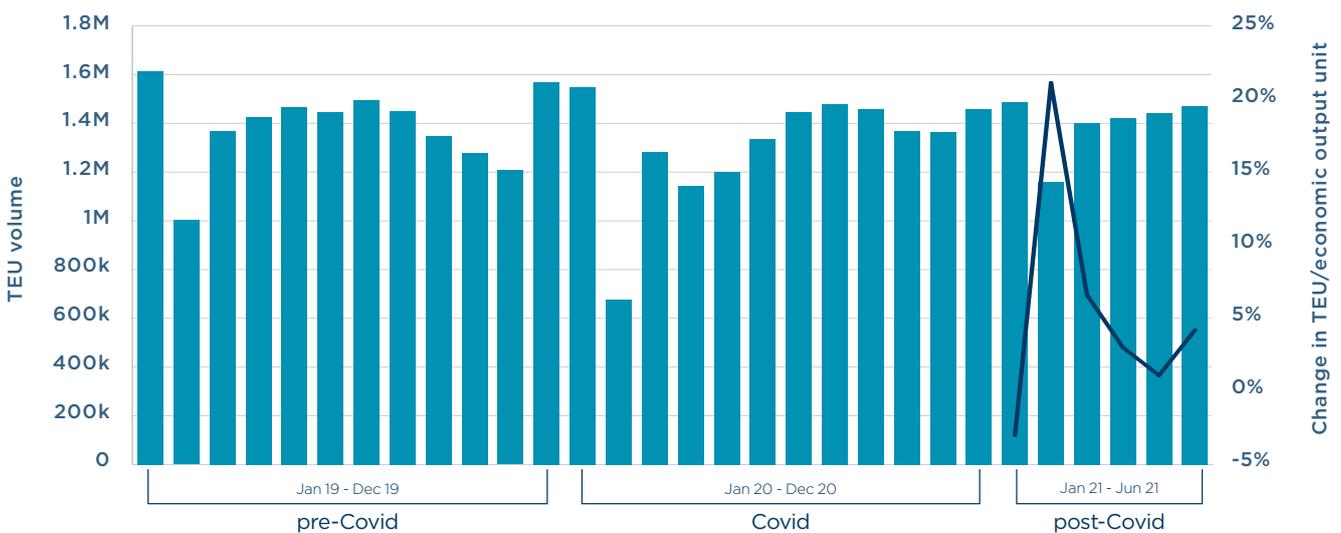
IMPACT ON WAREHOUSE SPACE NEEDS

Supply chain disruptions and Brexit anticipation contributed to significant congestion at UK and Europe’s gateway ports. Additional warehouse space near these regional entry points or one or two links down supply chains is becoming necessary to alleviate surges in container volumes following long lulls in port activity created by increasingly unreliable shipping schedules. Adopting a JIC approach to inventory management to minimise inventory gaps suggests that additional space needs in traditional locations is a longer-term trend.

JIT TO JIC: HOW MUCH SAFETY STOCK?

The drama that has been playing out at Europe’s ports since January 2020 provides important empirical evidence of the real time Covid pandemic and Brexit impact on supply chains and the safeguards being put in place. To measure the earliest evidence of a post-Covid response, we used monthly TEU data for the Far East Asia to Europe shipping trade routes to calculate TEU of economic output unit in order to adjust for any change in inventories due to fluctuations in economic activity.

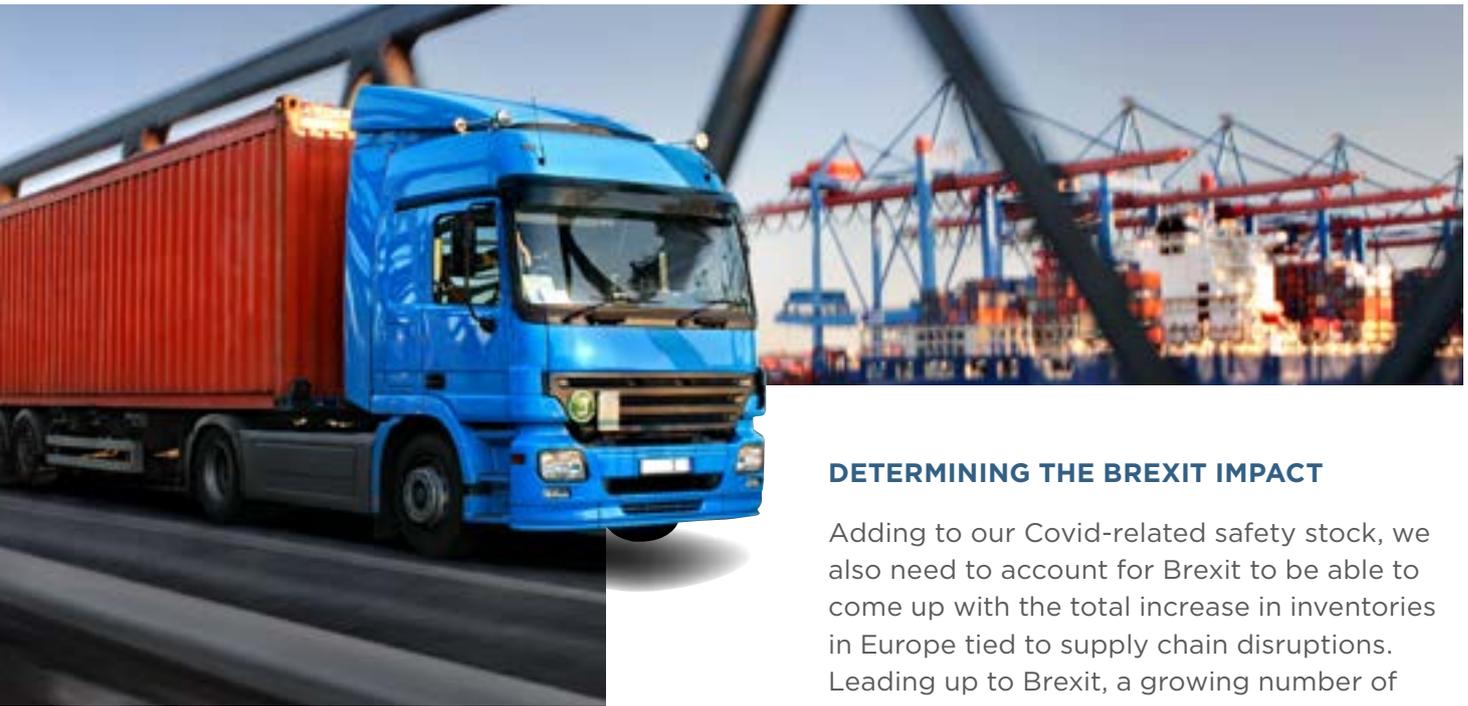
Monthly TEU Volumes and % Change in TEU per Economic Output Unit*²



Source: BIMCO, CTS, Moody’s, and Cushman & Wakefield

*TEU/economic output unit (% change) is calculated for only “post-Covid” months: Jan-June 2019 to Jan-June 2021.

²A special thanks to Peter Sand from BIMCO who provided shipping market insights and data for this report.



Comparing the change in TEU volume per economic output unit for the first half of 2019 (pre-Covid norm) to the same period this year (new post-Covid norm), we calculate an average increase of 5.5% this year. Since TEU volumes in January and February this year appear to show a lull and then a surge in TEU volumes arriving at European ports which had been documented in a number of articles earlier this year, we used TEU per economic output unit for only March through June 2021 (the four most stable post-Covid months) compared to the same months in 2019 to calculate an average increase of 3.7%.

Since ports are showing the most visible and quantifiable Covid impact on inventory levels, our TEU of economic output unit data has become the basis for our European estimate of safety stock. Therefore, to move from JIT (Just-in-Time) to JIC (Just-in-Case) inventory management post-Covid, European companies are expected to maintain a 3-4% increase over pre-Covid stock levels.

DETERMINING THE BREXIT IMPACT

Adding to our Covid-related safety stock, we also need to account for Brexit to be able to come up with the total increase in inventories in Europe tied to supply chain disruptions. Leading up to Brexit, a growing number of companies indicated a need to stockpile to be able to safeguard against delivery disruptions at borders on either side of the English Channel.

The Port of Rotterdam is the largest gateway port in Europe handling a throughput of 436.8 million TEU in 2020 of which 10% is connected to trade with the UK. Together with the Port of Antwerp, the Port of Rotterdam handles 80% of the EU's trade with the UK. After the Brexit referendum was passed in 2016, the Port of Rotterdam determined that the port needed to prepare for a 2-4% increase in TEU volumes due to stockpiling. In the years leading up to Brexit that went into effect in January this year, all preparations at the port were based on this estimate which has helped the port manage high congestion and bottlenecks during the pandemic. Since we consider that at least half of Brexit-related stockpiling is temporary, we assume the port of Rotterdam's lower estimate of a 2% increase in inventories to represent longer term stockpiling of goods that will take longer to negotiate as the UK continues its trade agreements with the EU.

CONCLUSION

While temporary drivers such as Covid and Brexit have exposed supply chain vulnerabilities, longer-term structural drivers associated with a narrowing wage differential between Europe and China, technology, ESG and IP protection are already contributing to an acceleration in supply chain and production line reconfiguration. Our view is that supply chain changes will continue over the long-term and will include greater diversity in transportation and logistics solutions, as well as a greater focus at the top end of supply chains.

Supply chain disruptions due to the Covid-19 and Brexit have been playing out at Europe's gateway ports. Unfortunately, take up data does not specifically track demand generated by corporate diversification measures pertaining to global supply chains, especially those originating in Far East Asia. In the absence of real estate data, TEU volumes per economic output unit for Far East Asia to Europe shipping routes can be used as a proxy for this demand expressed as an increase over pre-Covid levels. Adding the Port of Rotterdam's lower estimate of the increase in inventory levels due to Brexit, we expect that companies will maintain post-Covid and Brexit inventory levels between 5-6% above pre-Covid/Brexit levels in order to effectively future proof supply chains.

Demand for warehouse space at the top end of supply chains for goods arriving by sea, rail and air is expected to rise. To that extent, where land is constrained and is therefore expensive at Europe's top gateway ports, secondary ports including inner waterway ports may be better positioned to provide additional warehouse space. Certainly, multi-modal locations serving main ports and airports are future locations to facilitate integration of additional stocks into regional and national supply chains.

E-commerce has directed a lot of attention to the bottom investors of supply chains and rightfully so. Diversification will now redirect both occupiers' and investors attention to the top end of supply chains.







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