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The impact of COVID-19 on global supply chains and the transport sector*

UPDATE 9 April 2020

(Previous versions: 27, 29, 30 March and 1 April 2020)

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The ”Big Picture” of COVID-19 impact on world economy in end-March and early April 2020

Macroeconomic (country) estimates based on COVID-19 impacts*:

- **The World Bank**
- **ECB European Central Bank**
- **EIB European Investment Bank**
- **OECD and ITF at the OCED (International Transport Forum)**
- **ASEAN**
- **Fitch ratings***
- **Standard & Poors***
- **McKinsey 25 March 2020**

- **See also e.g.:**
- Stéphane Hallegatte and Stephen Hammer (30 March 2020) *"Thinking ahead: For a sustainable recovery from COVID-19"*, The World Bank
- Christian Odendahl and John Springford (26 March 2020) *"The Two Economic Stages of Coronavirus"*, Centre for European Reform,

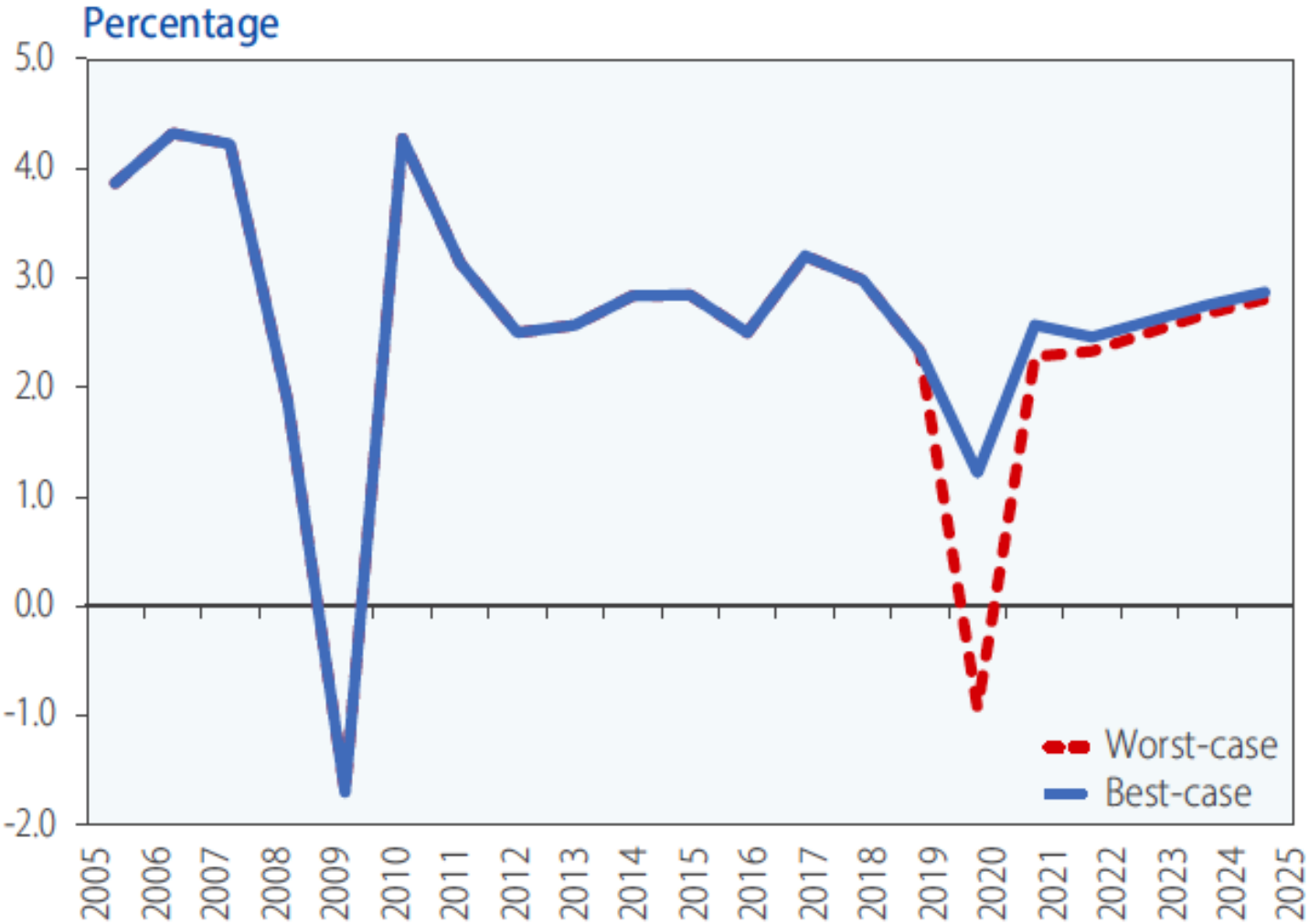
) All other Open access, but these may require registration

UN on 1 April 2020: COVID-19 likely to shrink global GDP by almost one per cent in 2020

Governments are considering and rolling out large stimulus packages to avert a sharp downturn of their economies which could potentially plunge the global economy into a deep recession.

According to UN DESA* on 1 April 2020, the world economy could contract by 0.9 per cent in 2020 in the worst-case scenario.

World growth outlook for 2020 in the best- and worst-case scenarios, as of late March 2020



Source: UN DESA.

*) UN Department of Economic and Social AffairsEconomic Analysis

OECD estimates released on 2 March 2020 on the impact of COVID-19 on GDP for years 2020 and 2021

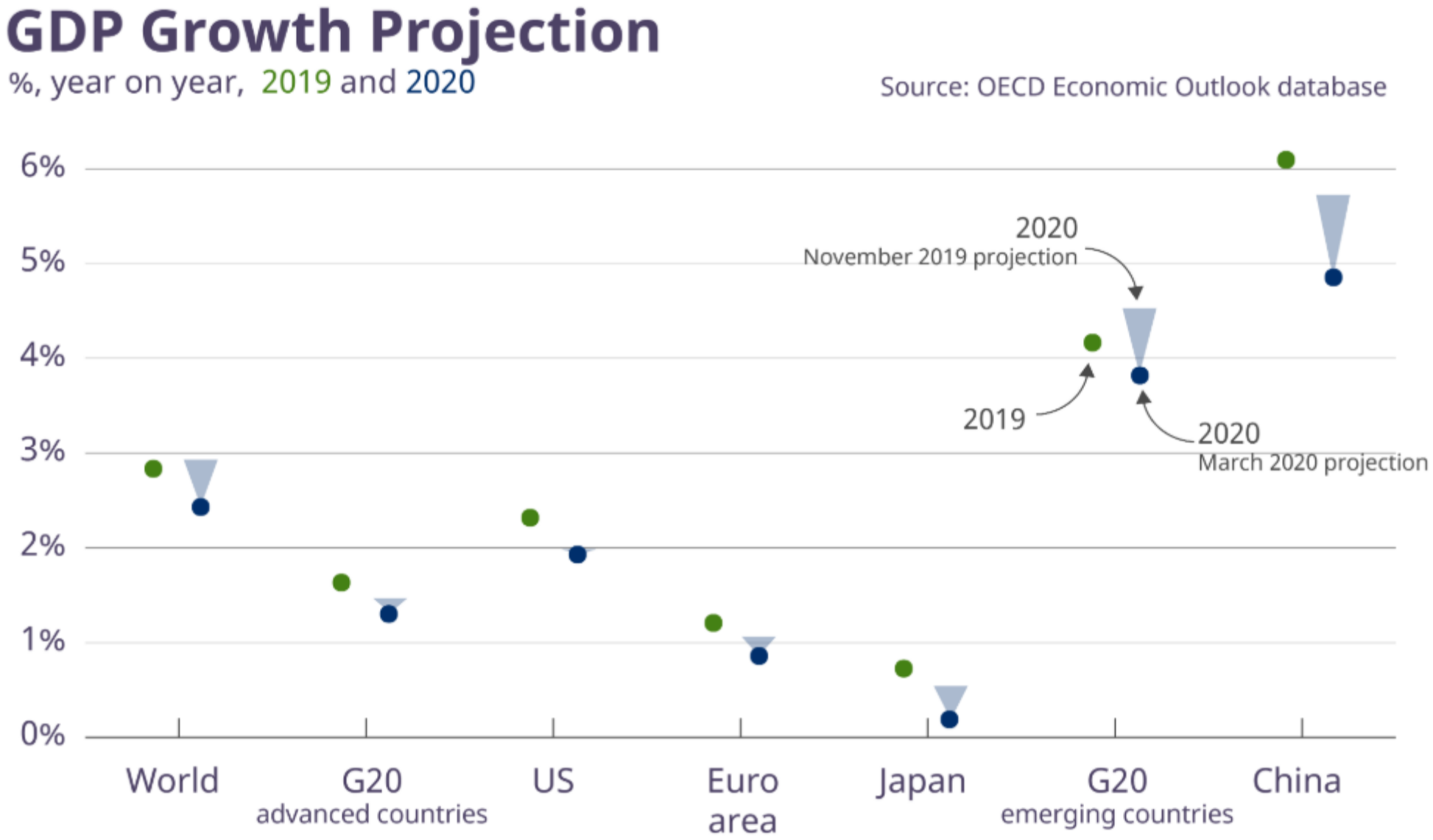
OECD Base scenario: temporary blow

- Severe, short-lived downturn in China, where GDP growth falls below 5% in 2020 after 6.1% in 2019, but recovering to 6.4% in 2021.
- In Japan, Korea, Australia, growth also hit hard then gradual recovery.
- Impact less severe in other economies but still hit by drop in confidence and supply chain disruption.

Domino scenario: broader contagion

- Intensity of China impact repeated in northern advanced economies severely hitting confidence, travel, and spending.
- Global growth could drop to 1.5 per cent in 2020, half the rate projected before the virus outbreak.
- Recovery much more gradual through 2021.

OECD estimates on 2 March 2020 on the impact of COVID-19 on GDP for years 2020 and 2021



Global recession almost “inevitable”

IESE Business School’s Nuno Fernandes on economic impact of COVID-19 (24 March 2020)

- **Service-oriented economies particularly negatively affected, with more jobs at risk**
- **Countries like Greece, Portugal, and Spain that are more reliant on tourism (more than 15% of GDP) will be more affected by this crisis**
- **Countries more reliant on exports will suffer disproportionally (e.g. Finland)**
- The report also attempts a rough estimate of the potential global economic costs of COVID-19 under three different scenarios: a shutdown of 1.5 months (from mid-March to end of April), of 3 months (lasting until mid-June), and of 4.5 months (until end of July.)
- In a mild scenario an average impact of -3.5% of GDP is expected for all countries analyzed.
  - The U.S. expected to enter into a recession, and the crisis is expected to cost it nearly 3% of its GDP
  - Most European countries will face significant recessions, seeing contractions of their GDP of 2% to 3%, causing significantly increased unemployment
  - China the only country with a GDP growth, slashed from a pre-crisis estimate of 6% to below 3%
- If crisis measures are extended, each additional month of shutdowns will cost 2%-2.5% of global GDP.
  - If extreme COVID-19-related measures last until mid-June 2020, the U.S. will see its GDP fall almost 4%. **Italy and Germany will see their GDP fall close to 6%, and the UK more than 5%. (→ Finland would suffer more)**
- If it lasts until the end of July 2020, the average decline in GDP would be close to 8%. And the decrease in GDP could, in some cases, be higher than 10%.

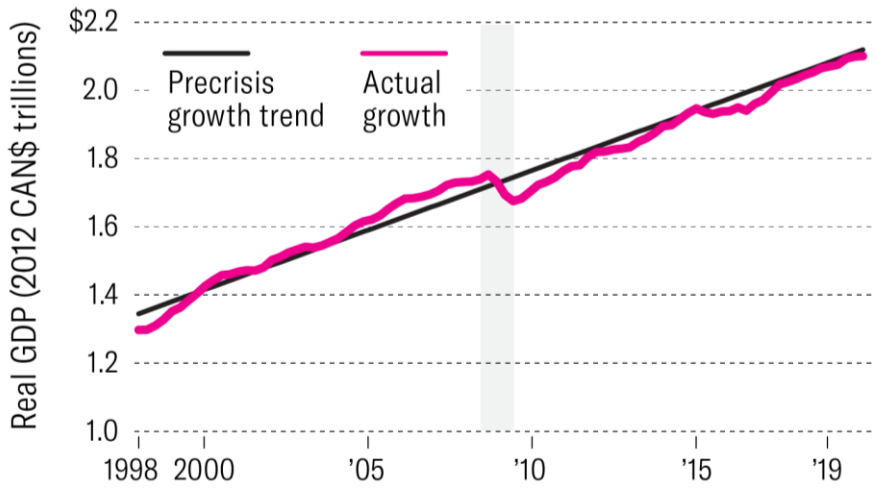
Examples of three types of economic shock: the L-, V- and U-shaped developments

Examples of three types of economic shock: the L-, V- and U-shaped developments

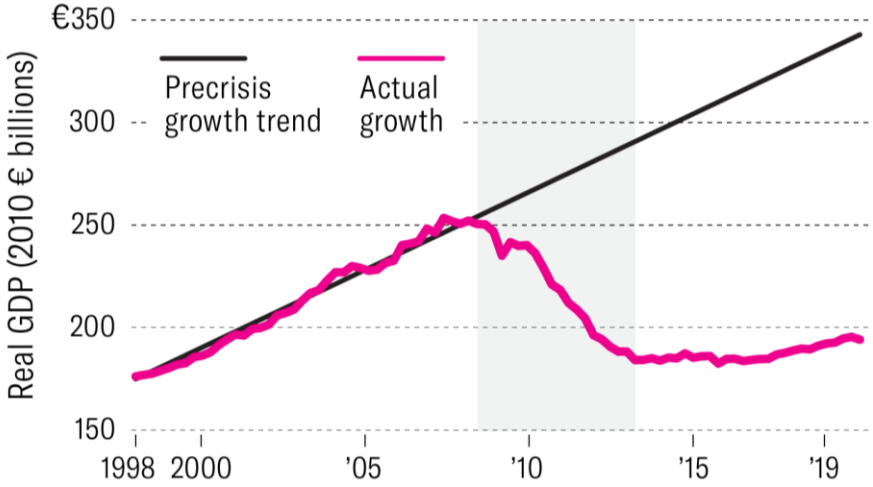
Economic Shock: 3 Examples

The concept of a recession is binary and blunt. The bigger-scenario question revolves around the shape of the shock and its structural legacy. To illustrate, consider how the 2008 global financial crisis delivered recessions in three sample countries, yet followed vastly different shapes in terms of shock progression and recovery.

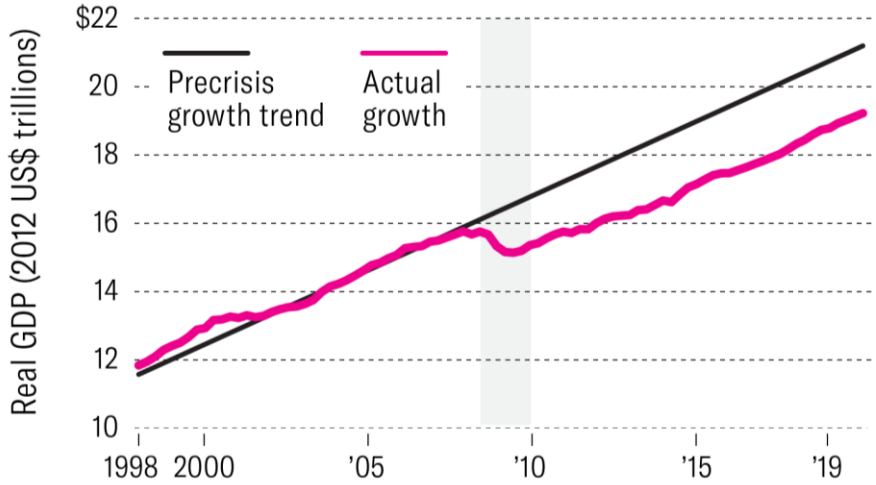
V-shaped (Canada)



L-shaped (Greece)



U-shaped (United States)



Source: Statistics Canada, NBER, BEA, Hellenic Statistical Authority, BCG Center for Macroeconomics Analysis

HBR

Philipp Carlsson-Szlezak, Martin Reeves and Paul Swartz, Harvard Business Review, 27 March 2020; read more here

Two Economic Supply-Side Threats from Covid-19

The Covid-19 shock uniquely raises liquidity and capital risks in both the financial system *and* the real economy simultaneously.

The two paths of COVID-19's structural damage in a **U-shaped scenario**:

Financial system risks. The unprecedented Covid-19 shock has already generated stress in capital markets, triggering a forceful response from central banks. If liquidity problems persist and real economy problems lead to write-downs, capital problems can arise. While from a policy perspective we may know the solutions, bailouts and recapitalization of banks are politically controversial. In the case of a financial crisis, capital formation would take a huge hit, driving a prolonged slump with damage to labor and productivity as well.

Extended real economy "freeze." The truly unprecedented possibility. Months of social distancing could disrupt capital formation and ultimately labor participation and productivity growth. Unlike financial crises, an extended freeze of this magnitude damaging the supply side would be new territory for policy makers.

Source: BCG Center for Macroeconomics analysis HBR

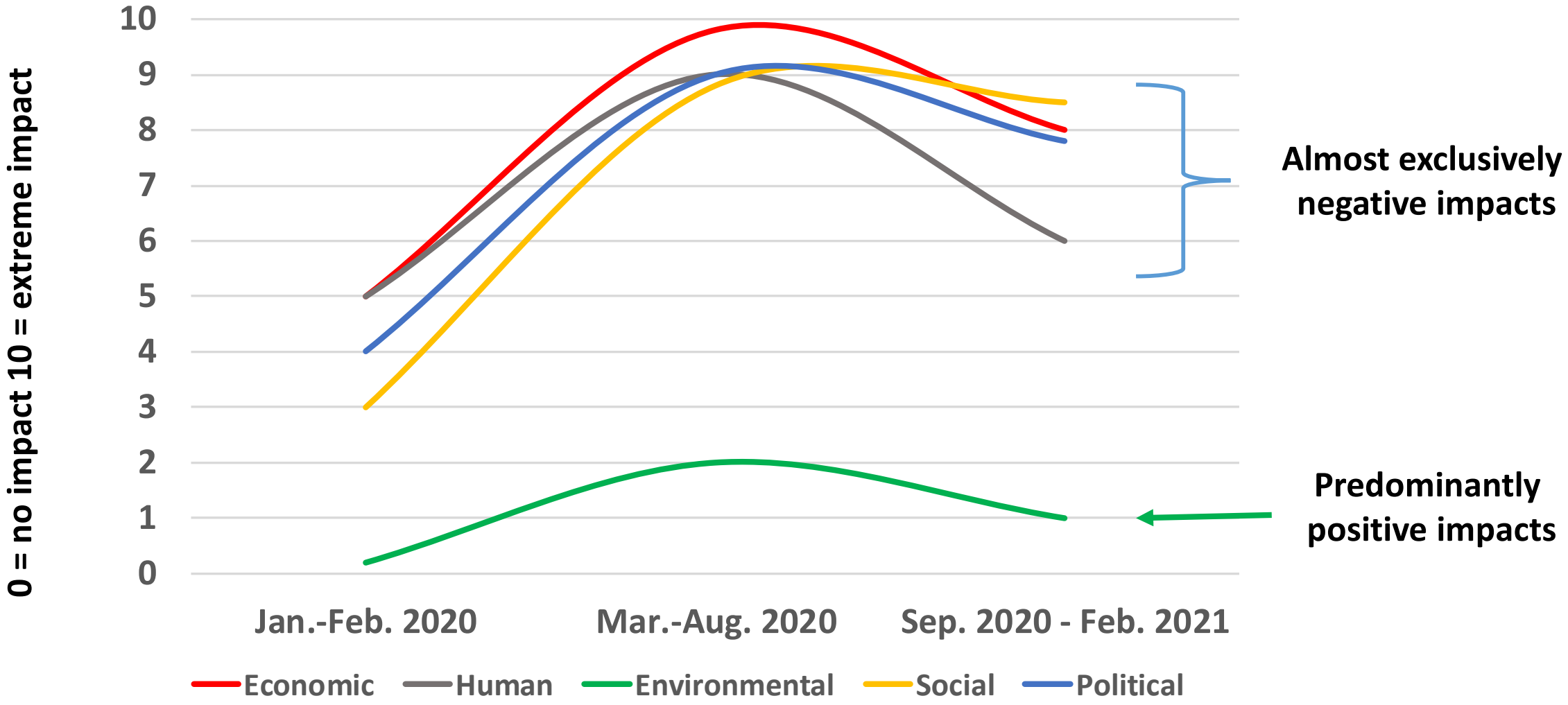
Philipp Carlsson-Szlezak, Martin Reeves and Paul Swartz, Harvard Business Review, 27 March 2020; read more here

How long will this last, and what shape will it take?

– well, too early to say:

nobody seems to have the answer right now, only good or less good guesses…

An initial ”questimate”* of broader impacts of COVID-19 in EU countries: social problems may become the main concern by early 2021



*) N.B. This is purely for illustration purposes, and reflects the Author’s personal ”questimate” in early April 2020

Source: Prof. Lauri Ojala; updated on 9 April 2020

What type of financial or economic help is on offer?

Some of the largest help packages since mid-March 2020

- On Thu, 26 March 2020, G20 economies announced to pump **US$5,000 billion** into the world economy as part of a joint pledge to use all policy tools available to cushion the impacts of the global COVID-19 pandemic
- ECB (European Central Bank) injected an additional **870 billion euro** – about 7% of the euro area's GDP – into financial markets to address the challenge. Through its refinancing lines it is also making up to **3,000 billion euro** in liquidity available, at the lowest interest rate it has ever offered: -0.75%.
- IMF (International Monetary Fund) ready to deploy US$1,000 billion in lending capacity
  - On 25 March 2020, IMF launched a Tracker of fiscal, monetary or macro-financial policies Governments are taking in response to COVID-19 **covering 186+ economies**
- The EIB Group (European Investment Bank) has proposed a plan to mobilise up to €40 billion of financing.
- On 17 March 2020, World Bank Group Increases COVID-19 Response to US$14 Billion To Help Sustain Economies and Protect Jobs

How does COVID-19 impact on trade and supply chains look like now*?

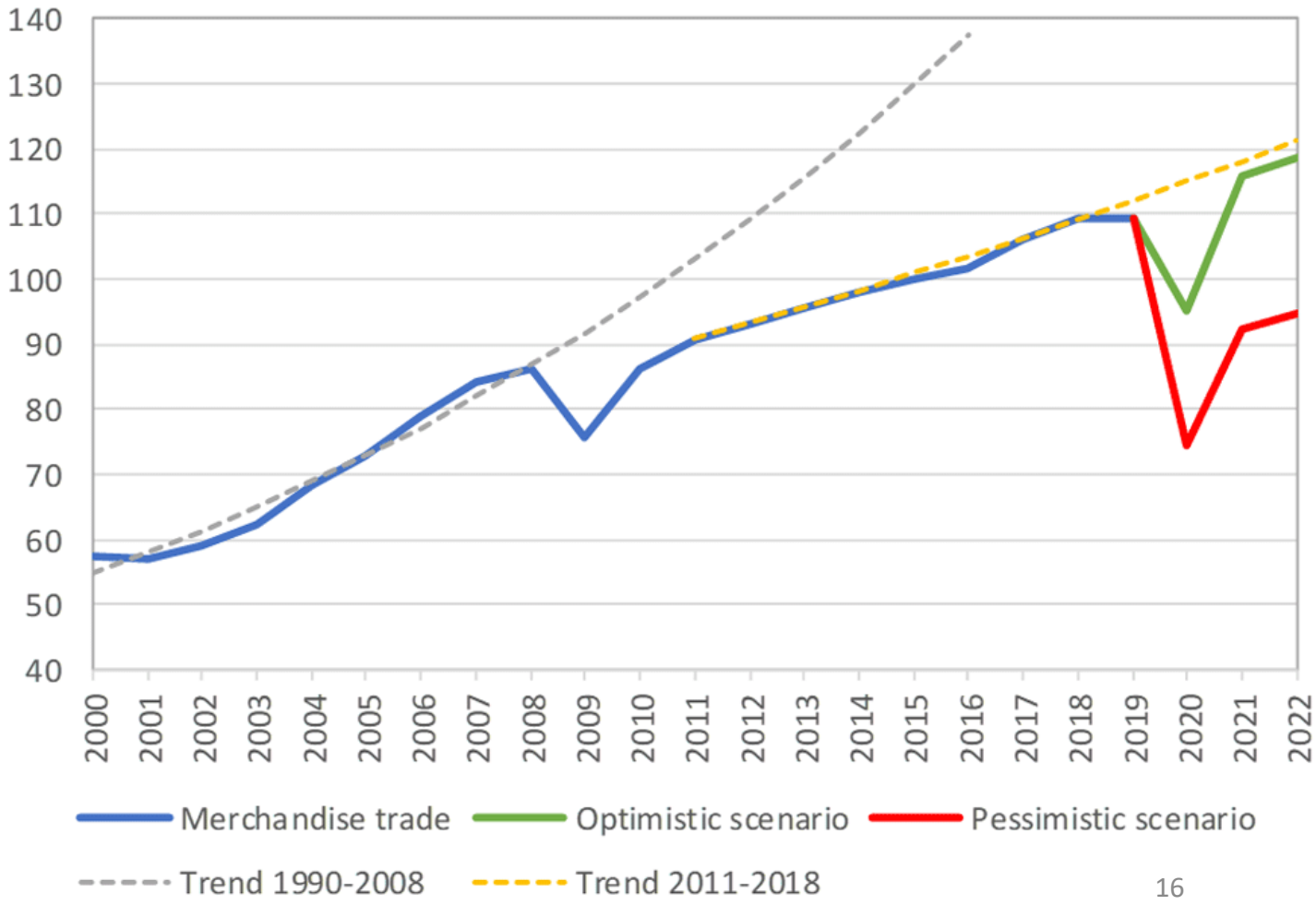
*) Early April 2020

WTO on 8 April 2020: Trade set to plunge as COVID-19 pandemic upends global economy

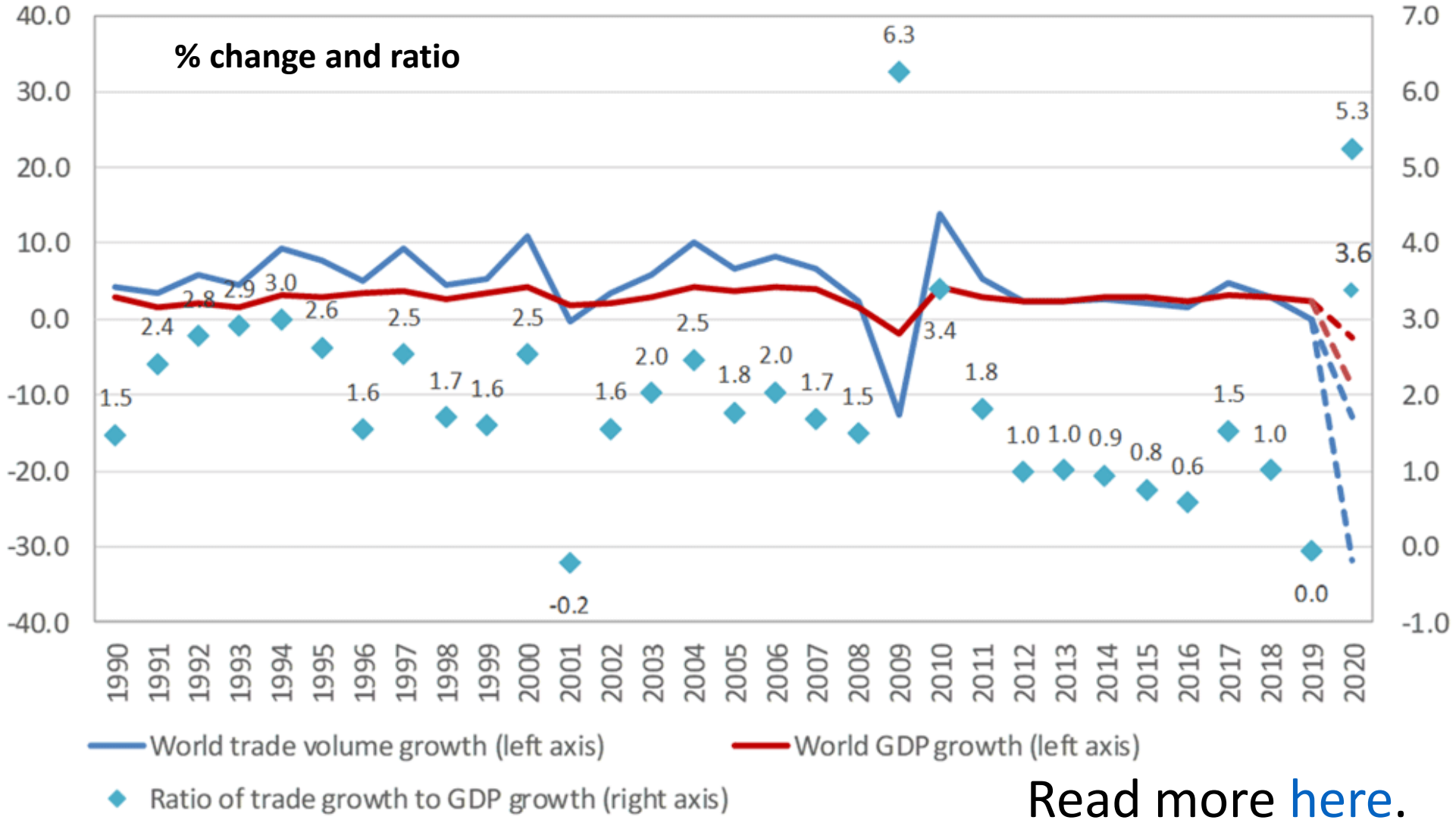
WTO expects world trade to fall by between 13% and 32% in 2020 as the COVID 19 pandemic disrupts normal economic activity and life around the world.

Read more here.

World merchandise trade volume, 2000-2022



WTO on 8 April 2020: Ratio of world merchandise trade growth to world GDP growth, 1990-2020



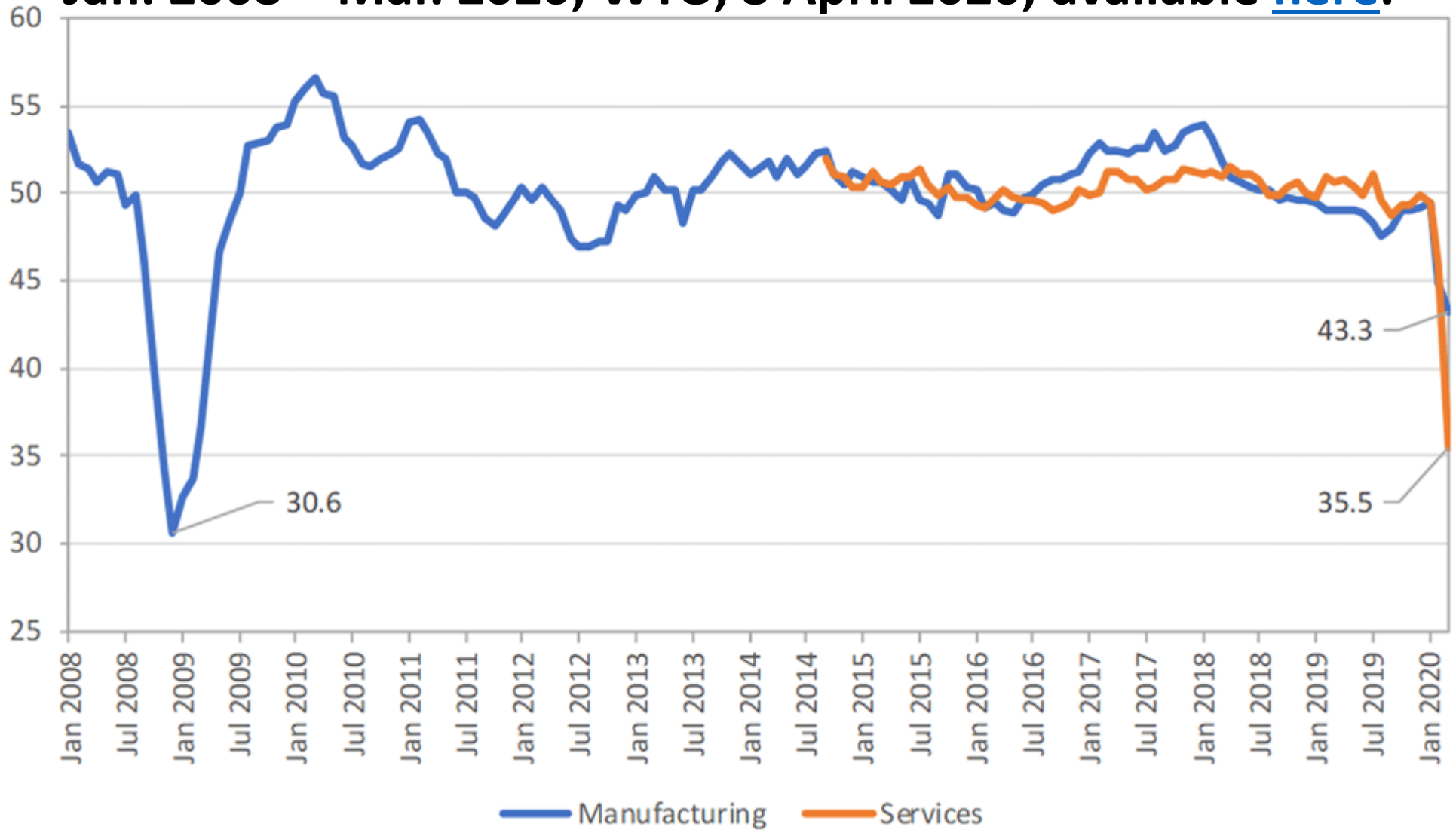
Read more here.

UNCTAD estimates released on 26 March 2020

- A new UNCTAD analysis of how the coronavirus pandemic will affect global foreign direct investment (FDI) prospects shows that the negative impact will be worse than previously projected on 8 March.
- Updated estimates of COVID-19's economic impact and revisions of earnings of the largest multinational enterprises (MNEs) now suggest that the downward pressure on **FDI flows could range from -30% to -40% during 2020-2021, much more than previous projections of -5% to -15%.**
- Since then, 61% of the top 100 MNEs that UNCTAD tracks have issued earnings revisions that confirm the rapid deterioration of global prospects. And 57% have warned of the global demand shock's impact on sales, showing that COVID-19 is causing problems beyond supply chain disruptions after a production slowdown in parts of China.
- In addition, the top 5,000 MNEs, which account for a significant share of global FDI, have now seen downward revisions of 30% on average for 2020 earnings estimates. And the trend is likely to continue.
- The hardest-hit sectors are the energy and basic materials industries (-208% for energy, with the additional shock caused by the recent drop in oil prices), airlines (-116%) and the automotive industry (-47%).

See also UNCTAD's Investment Monitor, March 2020 here

New export orders from purchasing managers indices (Global) Jan. 2008 – Mar. 2020; WTO, 8 April 2020; available here.

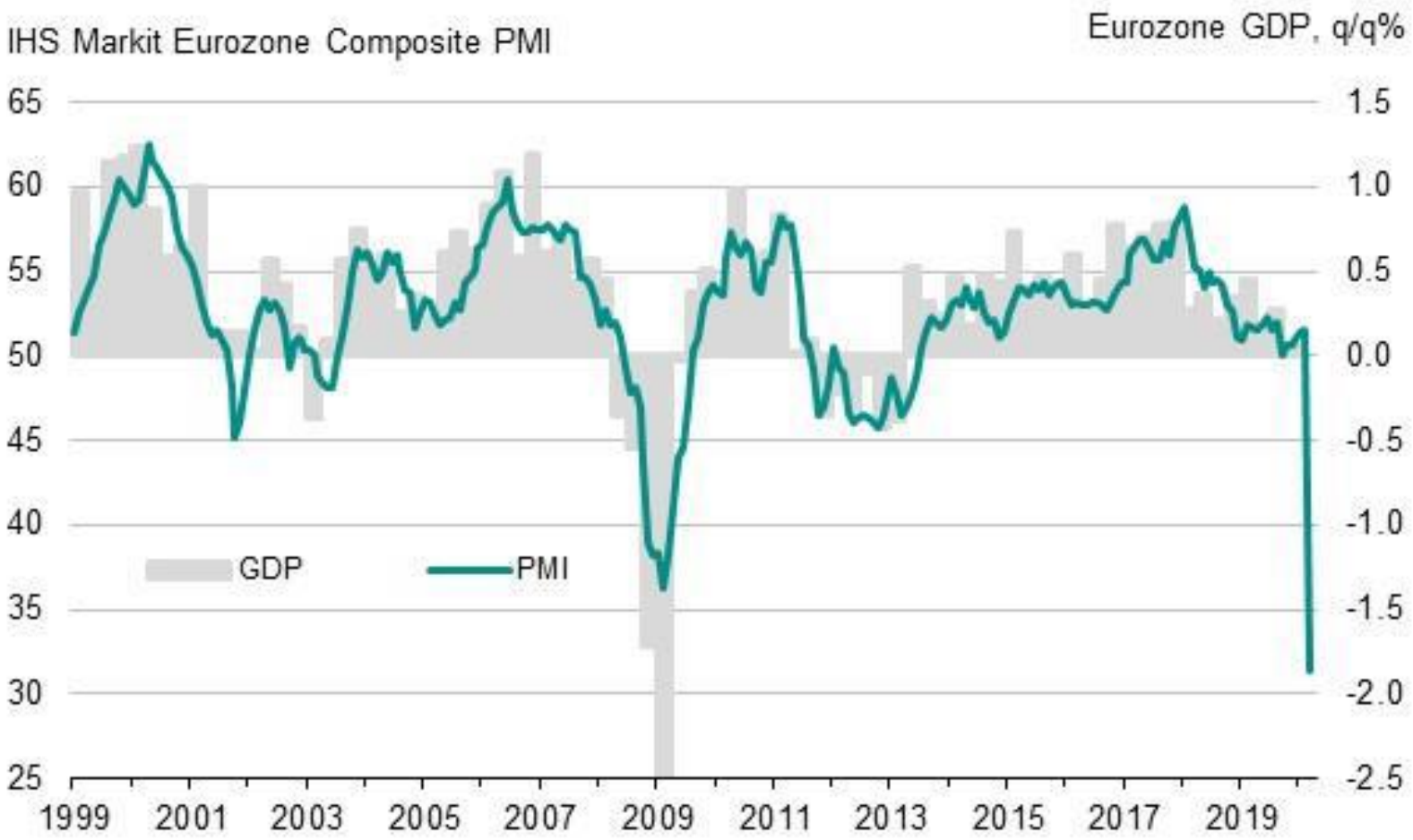


Note: Values greater than 50 indicate expansion while values less than 50 denote contraction.
Source: IHS Markit.

IHS Markit Eurozone PMI®: COVID-19 outbreak leads to largest collapse in business activity ever recorded

Key findings:

- Flash Eurozone PMI Composite Output Index(1) at 31.4 (51.6 in February). Record low (since July 1998).
- Flash Eurozone Services PMI Activity Index(2) at 28.4 (52.6 in February). Record low (since July 1998).
- Flash Eurozone Manufacturing PMI Output Index(4) at 39.5 (48.7 in February). 131-month low.
- Flash Eurozone Manufacturing PMI(3) at 44.8 (49.2 in February). 92-month low.

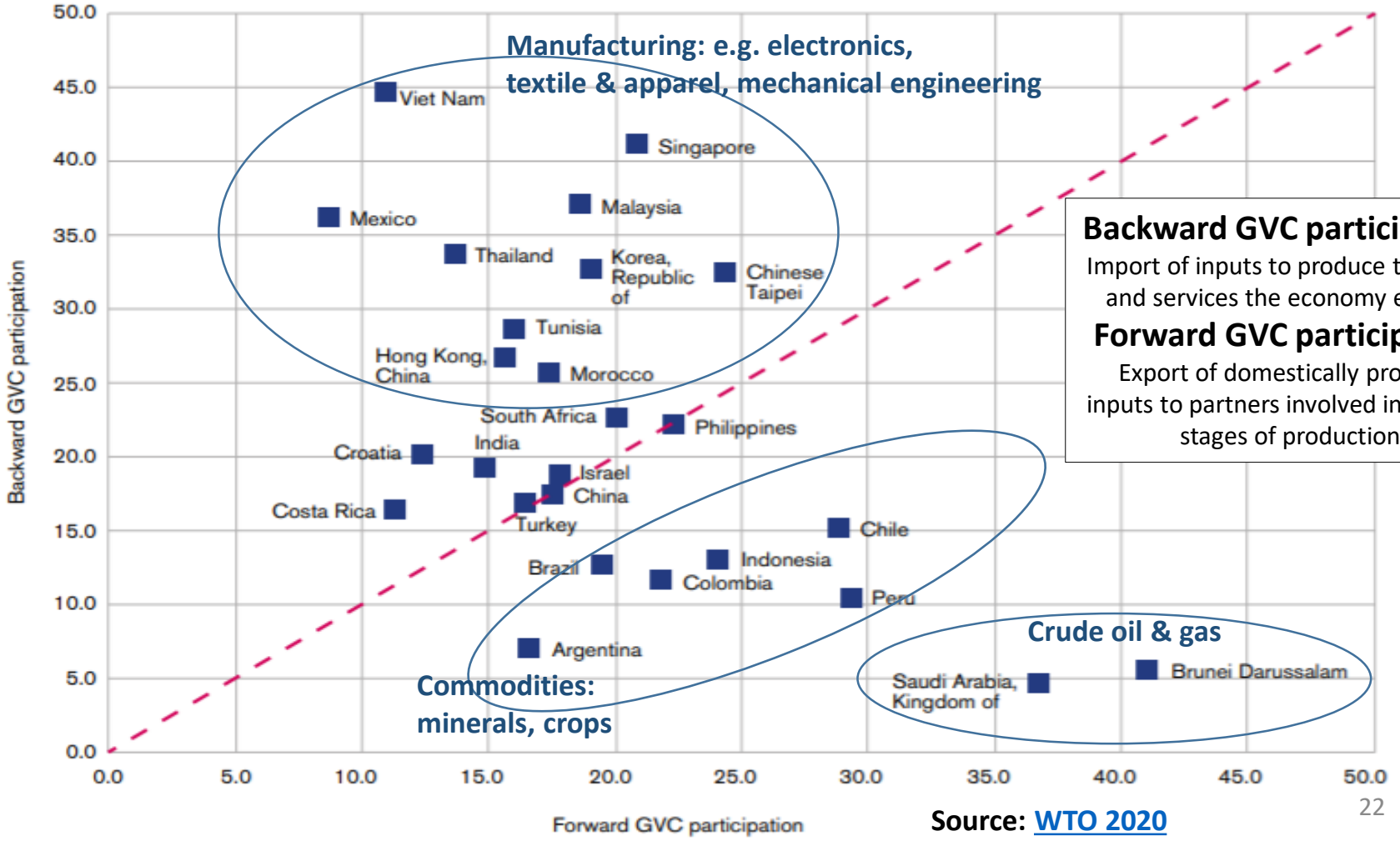


Supply value chains cannot be established overnight. It takes time and effort to qualify potential suppliers in areas of manufacturing quality, capacity, delivery, cost and their ability to respond to engineering or demand changes.

Thus, supply value chains are designed for longer-term needs. Once they are established, it can be difficult to change them quickly to adapt to unpredictable disruptions.

Backward and Forward Global Value Chain (GVC) participation, selected developing economies, 2015 (% in total gross exports)

Explanation:
30 % to 45 % of the export value from these countries is first imported as inputs



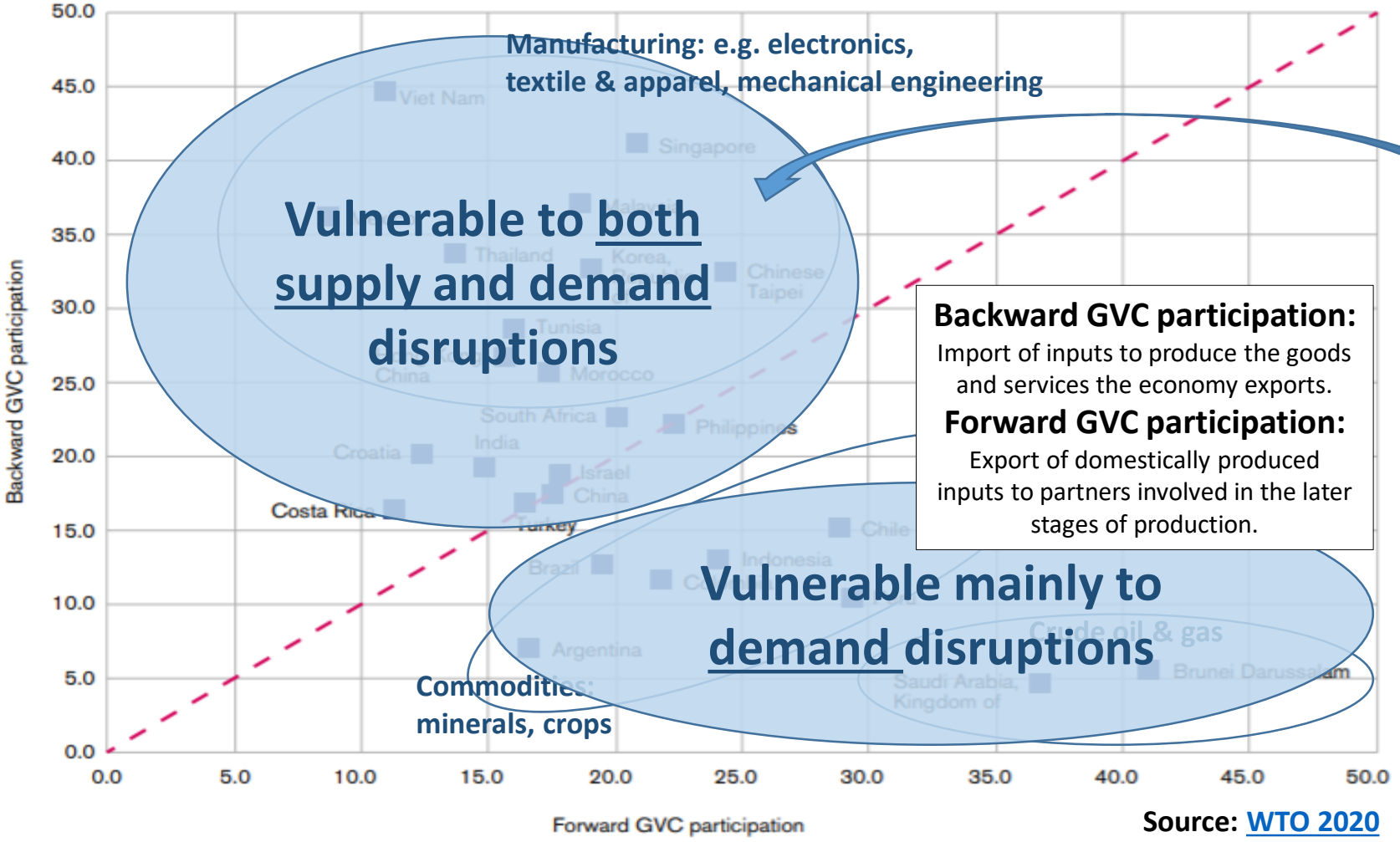
Backward GVC participation:
Import of inputs to produce the goods and services the economy exports.

Forward GVC participation:
Export of domestically produced inputs to partners involved in the later stages of production.

Source: WTO 2020

The COVID-19 crisis has intensified the competition for valuable supply sources in several industrial sectors, such as in electronics and mechanical manufacturing

Backward and forward Global Value Chain (GVC) participation, selected developing economies, 2015 (% in total gross exports)



Source: [WTO 2020]

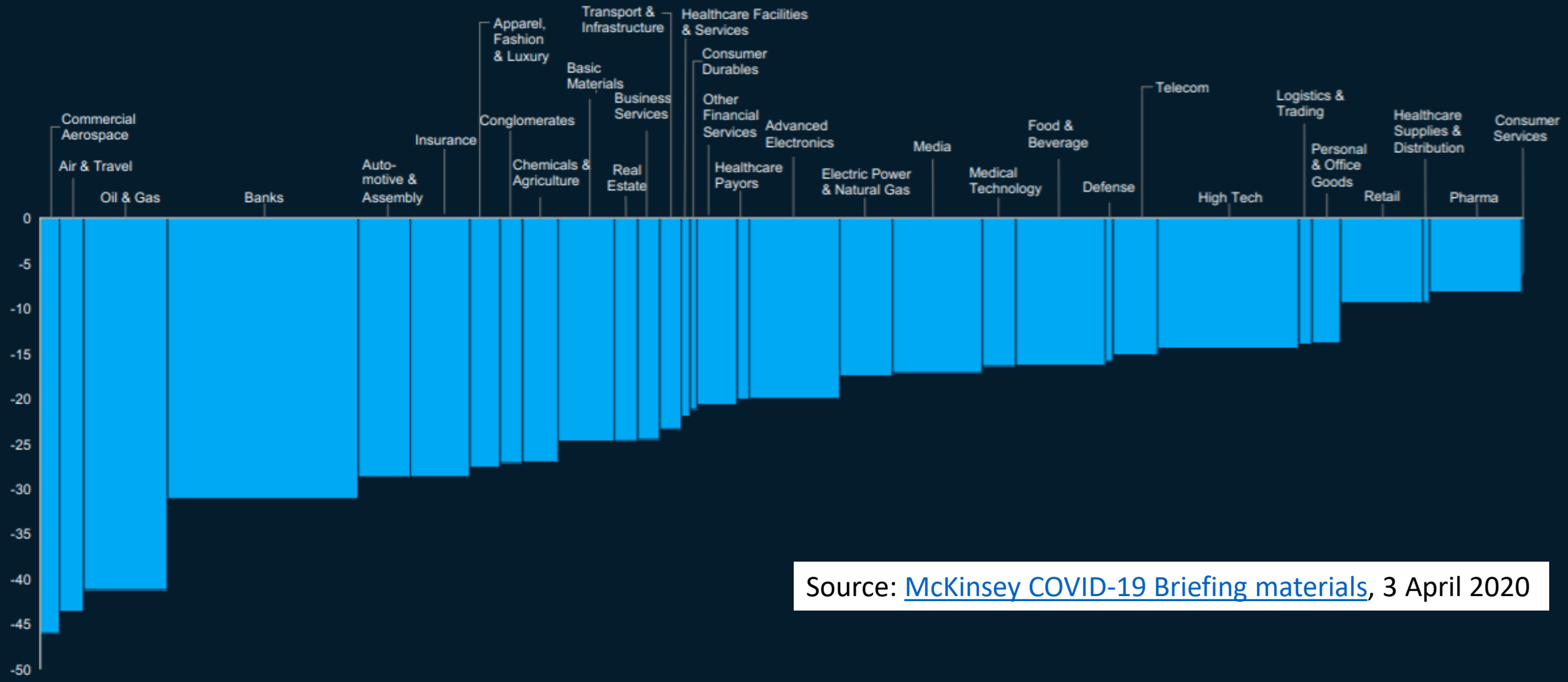
This has shifted the bargaining power from Original Equipment Manufacturers (OEMs) to suppliers.

This means that countries with a high share of Backward Global Value Chain participation tend to be hit hard by trade disruptions.

Current as of April 2, 2020

Market capitalization has declined across sectors, with significant variation to the extent of the decline

Weighted average year-to-date local currency total shareholder returns by industry in percent[1]. Width of bars is starting market cap in $



Source: McKinsey COVID-19 Briefing materials, 3 April 2020

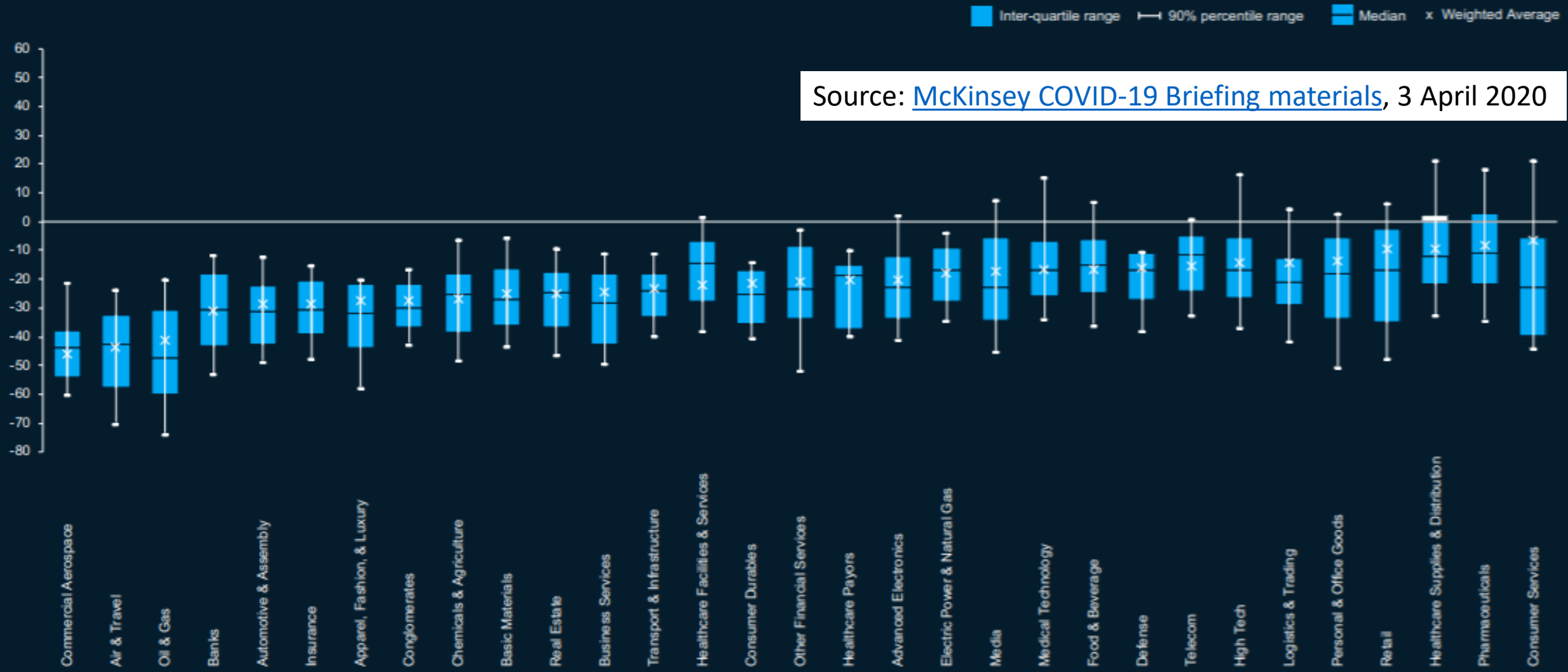
1. Data set includes global top 3000 companies by market cap in 2019, excluding some subsidiaries, holding companies, companies with very small free float and companies that have delisted since

Source: Corporate Performance Analytics, S&CF Insights, S&P Global

Current as of April 2, 2020

Even within sectors, there is significant variance between companies

Distribution of year-to-date total shareholder returns by industry percent[1]



Source: [McKinsey COVID-19 Briefing materials](), 3 April 2020

1. Data set includes global top 3000 companies by market cap in 2019, excluding some subsidiaries, holding companies, companies with very small free float and companies that have delisted since

Source: Corporate Performance Analytics, S&CF Insights, S&P Global

COVID-19 impact on supply chains – some conceptual issues

Insights from McKinsey* on how COVID-19 affects supply chains and on how firms could try to cope with the consequences

*) 16 and 25 March and 3 April 2020

Supply chains are being disrupted around the world, but the full impacts have not yet been felt

Current as of March 25, 2020

Impact: High / Medium / Low

	Supply—production	Logistics—transportation			Customer demand
		or	or		
Situation today	**~80% plants restarted** Across China, ex-Hubei, with large enterprises restarting, albeit with partial capacity, at much higher rate than smaller ones	**1.4M idle containers** 5.5% of global container capacity affected by reduced demand	**60% China flights suspended[5]** Commercial flights account for ~50% of air cargo capacity, some airlines converting flights for cargo[6]	**60% truck staff available** 1–14 day quarantine- and capacity-induced increase in freight transport times	**20.5% decline in retail sales** China consumer sentiment since January sharply lower; online/express deliveries up
		66% BDI increase Baltic Dry Index[1] 66% higher since CLNY[3] but at 10% lower levels compared to March 2019	**2x TAC index** TAC index rate +27% for U.S.–China, +93% EU–China[2], +37% China–U.S., and +45% for China–EU since CLNY[3]	**MED** Demand for express last-mile delivery has spiked in China due to quarantine and social distancing	**MED** Europe and U.S. sentiments evolving, but localized
What to expect	**MED** Parts and labor shortages leading to further supply chain disruptions (e.g., decreased production capacity) Other regions will be facing production capacity reductions Customer pressure for prioritization	**7,000 TEU/week reduction** Volumes will return as factories restart, may see peak for restocks Future capacity 2.3% reduction for a Asia-U.S. route from May due to sea freight alliance revisions	**5% global air traffic decrease[4]** Decline in capacity available due to travel ban on commercial flights YoY global air freight belly capacity reduction of 14% in March 2020[4] Rates likely to continue to increase	**High** Trucking capacity constraints in China likely to ease Declines at U.S. ports foreshadow declines in U.S. intermodal (rail)	**High** Demand slump may persist Inventory "whiplash"—7–8 weeks for auto, 2–4 weeks for high-tech Inventory hoarding and demand spikes due to uncoordinated actors exacerbate supply chain
		MED Impact on freight will take an extended period of time to correct with slower ramp-up Logistics capacity returns but faces constraints; near-term price increases			

1. Assessment of risk premium to ship raw materials on a number of shipping routes, data as of 3/13
2. Frankfurt (FRA) to Shanghi (PVG) used as a proxy
3. End of extended Chinese Lunar New Year holiday (2/7-3/13 for BDI, 2/10-3/2 for U.S.–China TAC, 2/10–3/9 for other TAC routes)
4. Estimated prior to implementation of EU-US travel ban
5. Commercial flights from China
6. Companies such as Cathay Pacific and Singapore Airlines now starting to fly empty passenger aircrafts as dedicated cargo planes

Source: Baidu, WSJ, Bloomberg, Alphaliner, Quartz, TAC index, IATA, Seabury Consulting, A.P. Moller-Maersk Group of Denmark, Agility Logistics, Press search

McKinsey & Company 48

Source: McKinsey Update 25 March 2020 Report

B: There are multiple end-to-end immediate supply chain actions to consider in response to COVID-19

Current as of March 16, 2020

1 Create transparency on multi-tier supply chain

Determine critical components, and determine origin of supply

Assess interruption risk and identify likely Tier 2+ risk

Look to alternative sources if suppliers in severely affected regions

3 Optimize production and distribution capacity

Assess impact on operations and available resource capacity (mainly workforce)

Ensure employee safety and clearly communicate with employees

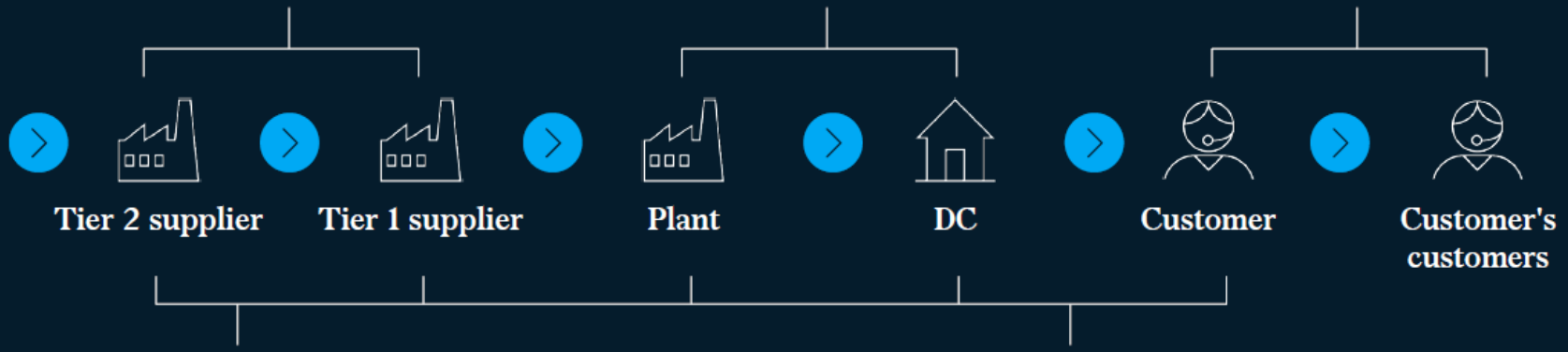
Conduct scenario planning and assess impact on operations based on available capacity

4 Estimate realistic final customer demand

Work with S&OP to get demand signal to determine required supply

Leverage direct communication channels with direct customer

Use market insights/external databases to estimate for customer's customers



2 Analyze available inventory

Estimate inventory along the value chain, including spare parts/ re-manufactured stock

Use after sales stock as bridge to keep production running

5 Leverage available logistics capacity

Estimate available logistics capacity for air/sea/road/rail

Accelerate customs clearance

Change mode of transport and pre-book air/rail capacity given current exposure

Collaborate with all parties to jointly leverage freight capacity

McKinsey & Company 24

Source: McKinsey COVID-19 Briefing Note

B: Supply chain actions to consider in the next two to four months

Continuously improve material supply stability

Evaluate alternative sourcing for all materials impacted – availability of suppliers, additional cost due to logistics, tariffs, estimated component price increases

Enhance the demand verification process to correct inflated demand to mitigate the whiplash effect

Provide continuous support to small and mid-sized tier 2-3 suppliers in financial trouble

Assess regional risks for current and backup suppliers

Kick off designing resilient supply chain for the future

Establish a supply chain risk function

Digitize process and tools to integrate demand, supply, and capacity planning

Trigger the new supply network design for resilience

Codify the processes and tools created during the crisis management as formal documentation

Convert war room into a reliable risk management process

Build collaborative relationships with external partners

Work with public agencies to explore opportunities for support

Engage investors and other stakeholders to improve transparency and get help

Source: McKinsey COVID-19 Briefing Note

Supply chain: The next normal

Degree of shift in Consumer behavior, Regulation, Organizations, and Supply Chain all drive a “next normal”

Illustrative “next normal” of supply chain

Levers for Organizations		Degree of change		
		Minimal		Substantial
Supply Chain	Resilience	Unchanged focus on ‘efficient’ supply chain, with lowest cost today as primary goal	Primarily optimized for lowest cost with critical components sourced to ensure resiliency across scenarios	Fully quantified the risk of supply chain design to earnings, and optimized trade off between earnings today and earnings resilience
	Digitization	Status quo with limited digitization and lack of visibility across supply chain	Some digitization with transparency available at key points but no end to end visibility	End to end digitized supply chain with full visibility across inventories and products

Source: McKinsey COVID-19 Briefing materials, 3 April 2020

Example of market information on COVID-19 in the public domain

March 2020

Observatory on border crossing status due to COVID-19

Facilitated by: UNECE

The Observatory was opened on 26 March 2020; find it HERE

Supported by the:

UNECLAC, United Nations Economic Commission for Latin America and the Caribbean

UNESCAP, United Nations Economic and Social Commission for Asia and the Pacific

UN ESCWA, United Nations Economic and Social Commission for Western Asia

ECO Secretariat, the Economic Cooperation Organization

IRU, the International Road Transport Union

Ex. of market intelligence gathering on COVID-19 in the public domain: DHL Ocean freight market update, March 2020

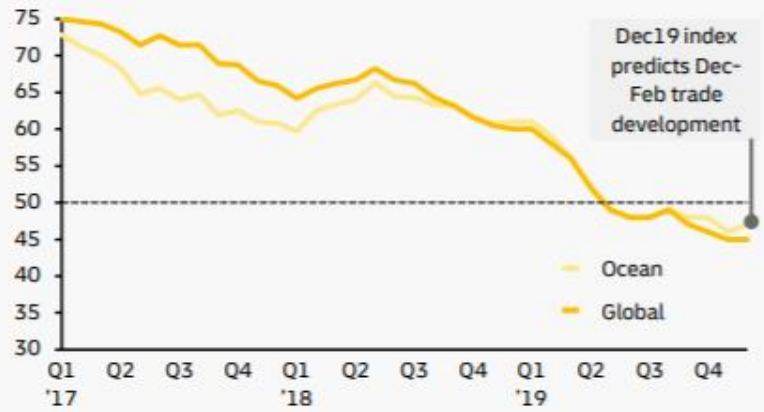
- Global supply chains integrities under pressure as the Coronavirus outbreaks increase and extend beyond China with large reported increases in Korea and Italy Overall port operations in China remain normal, exception being Wuhan's barge service. All carriers report reefer plug shortages in Shanghai, Tianjin and Ningbo.
- Local Chinese governments have restricted truck operations and imposed a 14 day self-quarantine for those crossing city or province boarders, impacting capacity and rates. Globally normal port operations including Korea and Italy.
- Carriers have announced blank sailings to counter the resulting cargo supply/demand imbalances. New cancellations are announced by the carriers without the usual notice periods. This in turn has created equipment imbalances now impacting the global capacity.
- DHL Global Freight (DGF) has declared "Force Majeure" for the Europe-Asia trade lanes with immediate effect as the situation is unforeseeable and beyond our reasonable control. We will continuously review this positon and will communicate any updates, including a potential widening of the "Force Majeure" scope as deemed appropriate.
- Any carrier imposed surcharges (with different naming conventions) will be communicated pro-actively and with full transparency and billed forward as Emergency Cost Recovery Surcharges.
- Return of normal post-Lunar New Year cargo flows not foreseen until March/April [2020]

DHL Ocean freight market update, March 2020

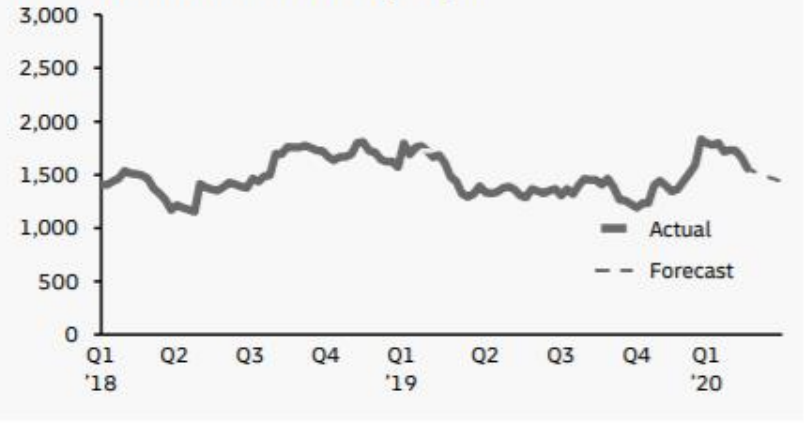
ECONOMIC OUTLOOK GDP GROWTH BY REGION[1)]

	2020F	2021F	2022F	2023F	2024F	CAGR (2021-24)
EURO	1.1%	1.2%	1.5%	1.6%	1.6%	1.5%
MEA	2.7%	2.7%	2.9%	3.2%	3.4%	3.2%
AMER	1.9%	1.9%	1.6%	1.6%	2.0%	1.7%
ASPA	4.2%	4.3%	4.3%	4.4%	4.4%	4.4%
DGF World	**2.5%**	**2.6%**	**2.6%**	**2.7%**	**2.9%**	**2.8%**

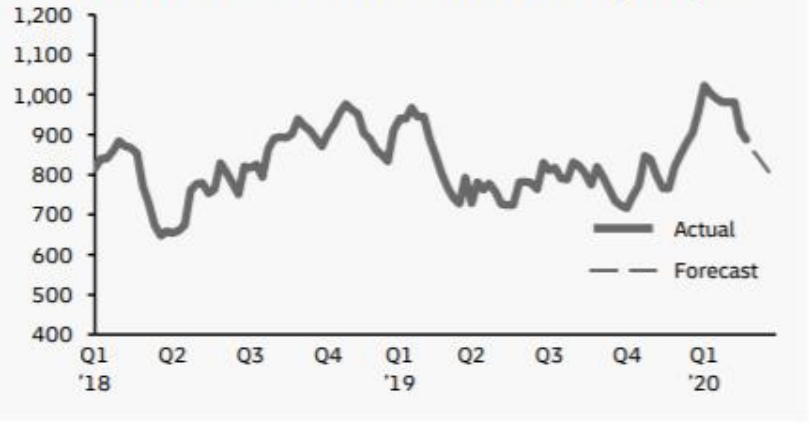
DHL TRADE BAROMETER[6)]



WORLD CONTAINER INDEX (WCI)[3)]



SHANGHAI CONTAINERIZED FREIGHT INDEX (SCFI)[4)]



BUNKER PRICES[5)]

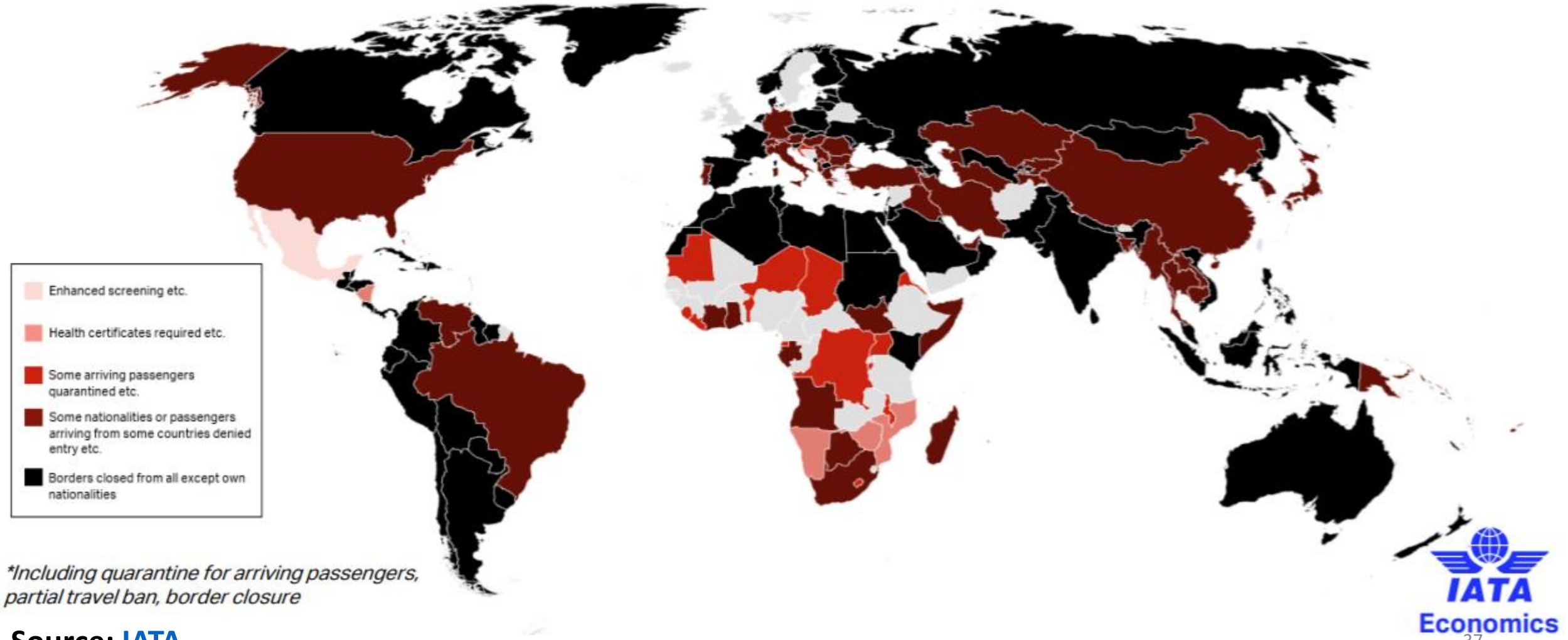
1) real GDP, Global Insight, Copyright © IHS, Q4 2019 . All rights reserved. 2) Demand growth = Port-to-Port Container Traffic growth. Supply growth = Fleet Growth. Source: Drewry Maritime Research. 3) Drewry, in USD/40ft container, including BAF & THC both ends, 42 individual routes, excluding intra-Asia routes. 4) Shanghai Shipping Exchange, in USD/20ft container & USD/40ft ctnr for US routes, 15 routes from Shanghai. 5) Source: DHL. 6) DHL Global Trade Barometer Jun19, index value represents weighted average of current growth and upcoming two months of trade, a value at 50 is considered neutral, expanding above 50, and shrinking below 50.

IATA's assessment (24 March 2020)

- The International Air Transport Association (IATA) updated its analysis of the revenue impact of the COVID-19 pandemic on the global air transport industry.
- Owing to the severity of travel restrictions and the expected global recession, IATA now estimates that industry passenger revenues could plummet $252 billion or 44% below 2019's figure. This is in a scenario in which severe travel restrictions last for up to three months, followed by a gradual economic recovery later this year.
- IATA's previous analysis of up to a $113 billion revenue loss was made on 5 March 2020, before the countries around the world introduced sweeping travel restrictions that largely eliminated the international air travel market.
- *"The airline industry faces its gravest crisis. Within a matter of a few weeks, our previous worst case scenario is looking better than our latest estimates. But without immediate government relief measures, there will not be an industry left standing. Airlines need $200 billion in liquidity support simply to make it through. Some governments have already stepped forward, but many more need to follow suit,"* said IATA's Director General and CEO, Alexandre de Juniac.
- See also IATA's briefing
- https://www.iata.org/en/iata-repository/publications/economic-reports/third-impact-assessment/

Travel restrictions are closing down international aviation

Markets with severe* restrictions cover 98% of global passenger revenues



*Including quarantine for arriving passengers, partial travel ban, border closure

IATA Economics

Source: IATA

In road freight transport, most European borders are currently free of major slow-downs, with some exceptions that you can find on the map.

Situation as at Sun 29 Mar 2020 18:00 (CET)

Real-time updates available at (public domain):

https://covid-19.sixfold.com/

Road freight transport congestion at European borders somewhat increasing in Central Europe, but mostly free of major slow-downs

Situation as at Sun 9 Apr 2020 11:37 (CET)

Real-time updates available at (public domain):

https://covid-19.sixfold.com/

Seaports:
UNCTAD's guidelines for safe operations in ports on 26 March 2020
Baltic Sea Ports and Shipping by BPO on 30 March 2020

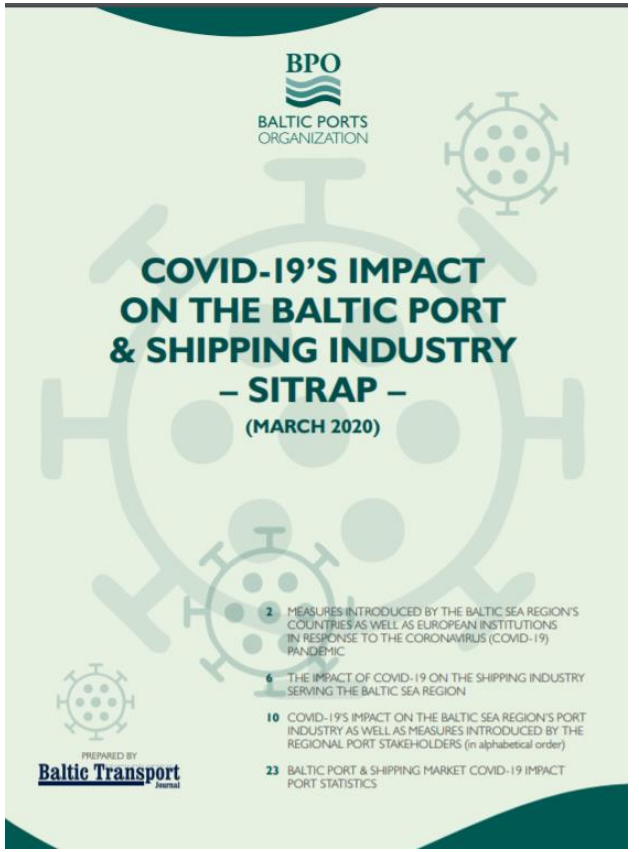
Example of a Crisis Protocol for Seaports proposed by UNCTAD

LEVEL 1	○ International Emergency declared ○ NO cases in the country
PARTIES INVOLVED Collaborators, Clients, Partners	**CRISIS COMMITTEE/ LEADERS** Names
ACTIONS	• Test communication channels • Identify isolation areas throughout the port • Engage in preventive campaigns against COVID-19 and follow WHO recommendations • Communicate key messages internally • Prepare messages to answer customer concerns • Maintain direct communication with relevant National Authorities (Public Health, Migration, Navy, etc.)

LEVEL 2	○ International Emergency declared ○ Confirmed cases in the country ○ NO cases in the Port
PARTIES INVOLVED Collaborators, Clients, Partners, Media	**CRISIS COMMITTEE LEADERS** Names
ACTIONS	• All actions mentioned in Level 1, and in addition: • Organise the distribution of antibacterial gel dispensers (Clean Handyman) in all access points and critical areas of the port • Strengthen internal campaign that promotes the importance of COVID-19 prevention and follow WHO recommendations • Suspend guided visits to the port (students, clients, etc.) • Inform clients about compliance with security protocols of their cargo • Maintain direct communication with community leaders

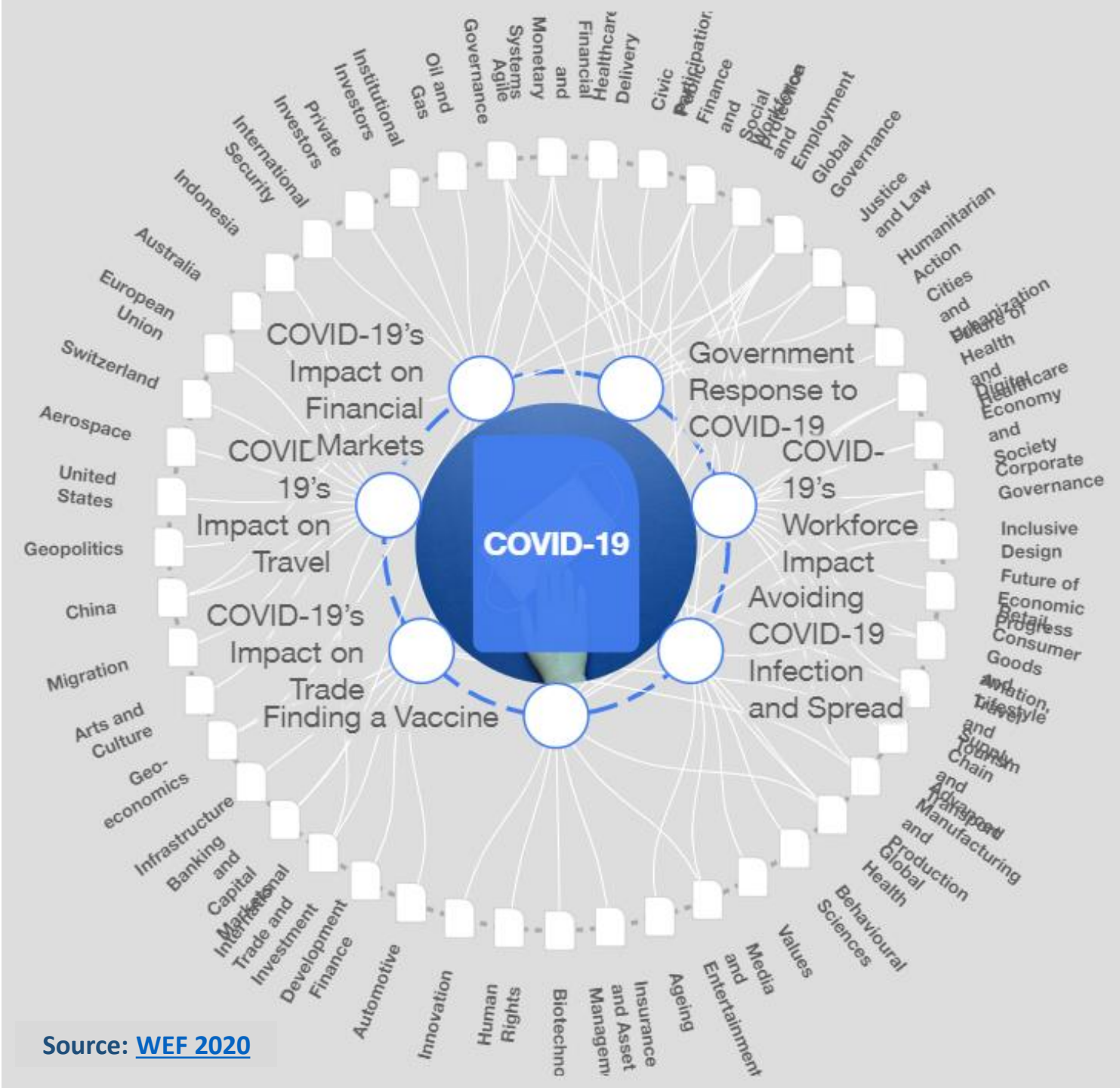
LEVEL 3	○ International Emergency declared ○ Confirmed cases in the country ○ Suspicious cases detected in the Port (crew or staff)
PARTIES INVOLVED Collaborators, Clients, Partners, Media	**CRISIS COMMITTEE LEADERS** Names
ACTIONS	• All actions mentioned in Level 1 and 2, and in addition: • Introduce remote work when possible in relation to the area concerned • Isolate suspected person in the designated areas and organize transfer to a dedicated Medical Center • Disinfect the area of interaction of the isolated person • Notify the suspected person's relatives • Send a statement to the company's employees informing the situation and the measures adopted by the authorities and that operations continue as normal • Issue Press Release for the media

LEVEL 4	○ International Emergency declared ○ Increased number of cases in the country ○ Confirmed cases in the Port (crew or staff) ○ Several staffs are sick
PARTIES INVOLVED Collaborators, Clients, Partners, Media	**CRISIS COMMITTEE LEADERS** Names
ACTIONS	• All actions mentioned in Level 1, 2 and 3, and in addition: • Limit access to port premises only to critical staff • Trace working contacts of confirmed cases in the previous 2 weeks • Deploy remote communication for all employees • Inform national health authorities of sick staff members and seek their advice • Proceed with confirmed cases among staff members in line with recommendations from national health authorities and WHO



A key takeaway: all ports in the region stay operational and were very quick in responding to the restrictions applied by governments and governmental agencies.

How do transport and supply chains meet the impact of COVID-19 in general?



Source: [WEF 2020]

The COVID-19 pandemic has reminded corporate decision-makers that there is a need to develop new business strategies in their future supply chain designs.

The KPIs to be considered for future supply value chain designs will likely contain both traditional metrics such as:

- **cost,**
- **quality and**
- **delivery,**

and new performance measures including (also known as the 3Rs):

- **resilience,**
- **responsiveness, and**
- **reconfigurability.**

The COVID-19 crisis has intensified the competition for valuable supply sources in several industrial sectors, such as in electronics and mechanical manufacturing.

This has shifted the bargaining power from Original Equipment Manufacturers (OEMs) to suppliers.

This means that countries with a high share of Backward Global Value Chain participation tend to be hit hard by such a disruption.

Source: WEF 2020

Supply Risk and Recovery: The frequency and severity of supply chain disruptions are steadily increasing

Supply chains (SC) are vulnerable to a broad range of threats, including pandemics, extreme weather, cyberattack, and political crises.

The vulnerability of SCs has been highlighted by major incidents (COVID-19, the Petya cyberattack in 2017) and the hurricanes that hit the US in 2017 with estimated $200 billion in damage.

Ironically, the susceptibility of supply chains has been heightened by business practices, such as single-sourcing of supplies, inventory centralization, just-in-time replenishment, and the concentration of freight traffic at hubs. These improve economic performance, but also create greater risk exposure and lower resilience.

As a result of the globalization of SCs and a tighter coupling of logistical processes, the damaging effects of disruptions now spread much further and faster, and have a broader impact.

The human cost of SC disruption can also be high, as with the tsunami that hit Indonesia in 2018. In addition to the direct loss of life during natural disasters and military conflicts, death and suffering can occur when SCs relied upon to deliver medical and essential supplies are fractured.

The impact of COVID-19 on the functioning of GVCs encouraged SC professionals to seek out more robust supplier-monitoring systems that may help build resilience. In the corporate world, the management of SC risk is being given greater priority; risk auditing and business continuity planning are now widespread, particularly among larger companies.

However, strategic risk is not always adequately addressed at an operational level - and there is little evidence that companies are effectively reversing the long-term trends that have made their supply chains more vulnerable.

Source: WEF 2020

How do various type of major disruptions affect the transport sector?

Some simplified and generic illustrations

A generic illustration of the demand & composition dynamics upon disruptions in freight & logistics and passenger transport

The type of disruption or disaster is decisive on what type of and how severe the impacts will be (see next slide).

E.g. COVID-19 has caused a simultaneous and an almost global drop in both (industrial or mobility) demand and supply.

As transport demand for passengers and freight is derived from the underlying mobility needs, the change in transport services is typically much bigger than the change in the underlying demand.

COVID-19 has certainly proved this true especially in air travel, passenger shipping and long-distance bus and rail as well as in commuter traffic – not to speak of cruise shipping.

Source: Lauri Ojala 2020

Freight transport and logistics services		<-- Decrease		Demand		Increase -->
		Significant	Somewhat	About the same	Somewhat	Significant
Cargo types and/or transport modes	Remain the same	Overcapacity, service level deterioration, financial strain	Capacity, service and freight level adjustments	No change	Capacity, service and freight level adjustments	Significant capacity and freight increases, service level deterioration
	Change somewhat	Severe overcapacity, financial and service level deterioration	Overcapacity and service deterioration	Slight adjustments under market conditions	Undercapacity, service level deterioration, freight level rises	Significant capacity and freight increases, service level deterioration
	Change significantly	Extreme overcapacity, financial strain and service deterioration	Severe simultaneous over- and under-capacity, service deterioration	Severe supply and demand imbalance of vehicles,units, staff and infrastructure	Severe simultaneous over- and under-capacity, service deterioration	Extreme capacity constraints and management & cost implications

Passenger transport and traffic		Decrease		Demand	Increase	
		Significant	Somewhat	About the same	Somewhat	Significant
Traffic modes	Remain the same					
	Change somewhat					
	Change significantly					

The impact (of COVID-19) will be different for each transport mode, and differs also between domestic and international transport/logistics services.

E.g. in scheduled air traffic up to 90 % or more of flights have been cancelled in many parts of East and South Asia and Europe.

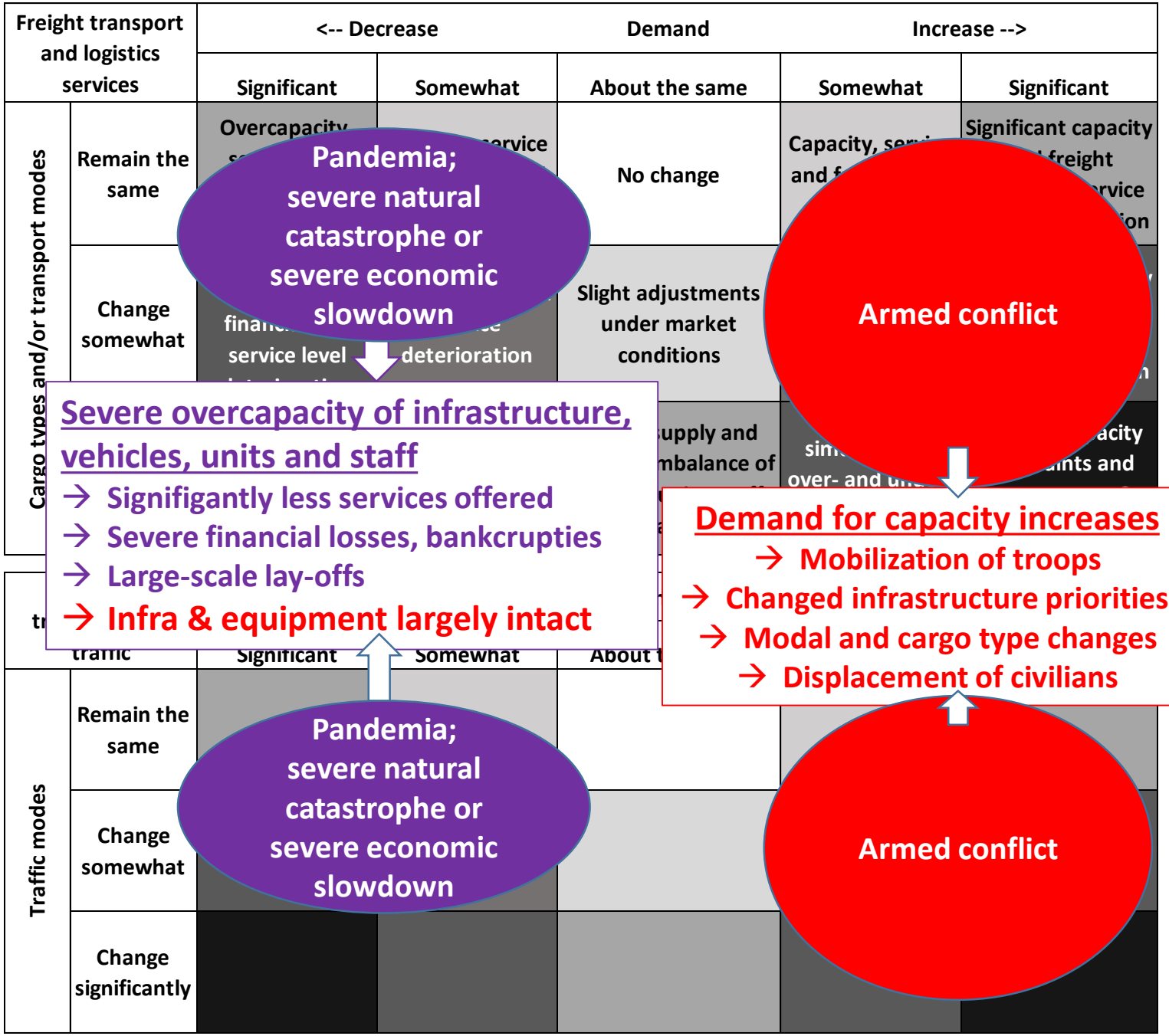
40 % to 50 % of air freight volumes e.g. in Asia has been so-called belly cargo. Now passenger aircraft have been refitted to freight for longhaul routes b/w U.S., Europe and Asia.

In early March 2020, 2M empty containers are stuck in China, and container shipping capacity substantially lower than in December 2019.

Ferry operations have practically lost all passengers, freight operations maintained.

Long-distance as well as local bus and rail travel declined over 50 %, in many cases over 90 %

Source: Lauri Ojala 2020



An illustration of response in freight & logistics demand, when capacity constrained

The same logic applies also to goods (e.g. surgical masks, hand desinfection liquids…)

Scaleable either at the firm (micro), industry (meso) or e.g. national security of supply level (macro)

		Availability of suitable transport and logistics capacity (incl. warehousing and materials management)		
	Logistics impact of the disruption	**Abundant**	**Constrained**	**Not available**
Available modes and/or routes	Transport distances may grow, while modes & types remain the same	Regular freight levels and other logistics costs	More expensive freight or other logistics costs	Depending on the severity and duration of the disruption, substituting products needed and/or creating own transport or logistics capacity. Government intervention and ransoning required.
	Transport distances grow, more expensive modes & types required	Market-based freights; logistics cost grows by distance and/or more expensive modes/types	Significantly higher logistics costs compared to a normal situation	
	Transport distances and/or times grow signifcantly, much more expensive modes & types required			
	No transport options available, or they are extremely expensive	Costs of available logistics options extremely high	Unbearably high logistics costs; substitutes are needed	

Source:
Lauri Ojala

See also:
Hybrid CoE 2019

Some indicative policy actions in the transport sector

COVID-19: Severity of impacts and policy responses exemplified in the transport sector

Passenger or freight		COVID-19 impacts			Policy responses exemplified
Mode	Vehicle / service	Mobility	Financial	Social inclusion	
Road transport	Bus, Taxi, Minivans	**Very negative**			Financial assistance to service providers: loan guarantees, loans, tax cuts or payment deferrals, cash handouts as a last resort.
	Road haulage	**Negative to Mixed**		**n.a.**	Ensure speedy authority operations especially for border-crossing traffic. Taking care of road safety issues for freight and passenger car movements.
Rail transport		**Very negative for passengers; mixed to negative for freight**			Rapid need of financial assistance to service providers: loan guarantees, tax cuts, payment deferrals and/or cash handouts. If there is Government ownership in rail or air transport operations, eligible subsidies or capital endownments to operators. Also government purchases of air transport capacity e.g. for repatriation of nationals, supply of emergency and medical products. Very large lay-offs to be excpected especially in airlines but also in rail passenger operations. Significant impact also on air trafiic control capacity, where large lay-offs already taking place. This may also partly happen in rail network management. It is extremely important not to compromise safety and security in these.
Air transport	PAX & belly cargo	**Catastrophic for passengers and belly cargo**			
	Cargo only	**Positive to Mixed**		**n.a.**	
Maritime transport	Cruise shipping	**Catastrophic**			Cruise shipping is commercial recreational business without national Security of Supply potential, so new government bail-outs unlikely. However, substantial financial (Gov:t) guarantees to shipyards and cruise operators exist, which may materialize. For flag states the impact is likely to be very negative. For Port-of-Call states, not much to be done, as shipping companies need to survive first.
	PAX & cargo	**Very negative for passengers Negative on cargo**			With or without a national merchant fleet, every effort needs to be made to ensure the functionality of the Sea Lines of Communications, and the commercial viabilty of services. Gov:t purchases of cargo space to secure national supplies already in use e.g. in Finland. The part of merchant fleet and crew in a country's ship register that serves national supply needs may require financial support or relaxation of some fees or taxes, i.e. fiscal implications highly likely. Ensure speedy rotation of ships and enable necessary crew changes at ports. Ensuring safety and security in shipping by maintaining operational Vessel Traffic Management services, and viable operations in main seaports.
	Cargo only	**Negative to mixed due to cargo type & route**		**n.a.**	

Source: Lauri Ojala, Update 29 March 2020

COVID-19: Severity of impacts and policy responses exemplified in the transport sector

- **A more fine-grained illustration of Slide 27**

Source: Lauri Ojala

Update 29 March 2020

Type and mode of passenger or freight transport					COVID-19 impacts			
Mode	**Vehicle type**		**PAX**	**Freight**	**Type or speed of impact**	**Mobility**	**Financial**	**Social inclusion**
Road transport	Taxis and minivans		Primary use	Parcels and courier shipments possible	Immediate on intracity and commuter traffic	**Very negative**		
	Bus	Local		Seldom				
		Intercity		Widely used: parcels and special goods	Immediate on passenger mobility, parcel logistics			
		International		Seldom	Immediate on passenger mobility			
	Road haulage (Light < 3.5 ton; Heavy > 3.5 ton)	Light vehicles		Exclusive use	**Negative** to Mixed: overcapacity in city logistics; undercapacity in home deliveries	**Negative** to Mixed		n.a.
		Domestic heavy vehicles			**Negative** to Mixed impacts due to the industry they serve; despite border closures			
		International heavy vehicles						
Rail transport		Local	Exclusive	Exclusive freight trains	Immediate on intracity and commuter traffic	**Very negative to catast-rophic for passengers. Negative for freight; exception: China-Europe**		
		Intercity			Immediate on passenger mobility			
		International						
Air transport	Passenger routes	Domestic	Primary	Mail, parcels & courier	Dramatically decreased demand of domestic and transfer travel and of mail & parcel services	**Very negative to catastrophic for passengers and for belly cargo freight**		
		Short haul		Mail, belly cargo (high unit value)	Immediate on passenger mobility & loss of belly cargo capacity			
		Long haul						
		Charter		Belly cargo				
	Cargo	Scheduled		Mail, parcels & courier	Increased demand due to rapid loss of belly cargo capacity	**Positive**		n.a.
		Heavy lift		Special cargoes	Mixed: due to cargo type	Mixed		
Maritime transport	Cruise shipping		Exclusive		Immediate and devastating	**Catastrophic**		
	PAX & cargo	Passenger cruise ferries	Primary	Roll on- roll off cargo	Immediate on passenger mobility & loss of belly cargo capacity	**Very negative to catastrophic**		
		Ro-ro shipping	Some		Decreased demand on most short sea shipping routes	**Negative**		
	Cargo	Container shipping		Containers	Rapid decrease in volumes; large backlog of empty boxes in China			
		Dry bulk		Large bulk shipments	**Negative** to Mixed: due to cargo type	Mixed		n.a.
		Liquid bulk						
		Other		Special cargoes				

Some useful sites to follow

Some useful sites to follow on COVID-19 response and info:

- Selected UN Agencies on COVID-19:
- IMO ICAO UNECE (Europe) UNESCAP (Asia Pacific)
  - UNECE Observatory on Border Crossings due to COVID-19 launched on 26 March 2020

- EU Mobility and Transport (European Commission)
  - European Maritime Safety Agency EMSA listings on MS actions

- Impacts on road haulage by IRU
- Aviation industry by IATA: https://www.iata.org/en/
- Baltic Sea Ports and Shipping by BPO (30 March 2020)

Major logistics firms on COVID-19 (updated constantly):

- DB Schenker DHL DSV CEVA UPS FedEx
- Wilhelmsen COVID-19 Global Port Restrictions Map (a very good one!)
- Bolloré COVID-19 IMPACT UPDATE March 27th, 2020
- Kuehne & Nagel https://www.kn-portal.com/updates_on_coronavirus
- Maersk: https://www.maersk.com/stay-ahead
- Ti Coronavirus March 2020 updates
- Zipline Logistics, 2020 Q2 Freight Market Update, 24 March 2020

Selected sources

- DHL Ocean freight market update (March 2020)
- Hybrid CoE (2019) *HANDBOOK ON MARITIME HYBRID THREATS — 10 Scenarios and Legal Scans*
- IATA (24 March 2020) *Deeper Revenue Hit from COVID-19*
- McKinsey (25 March 2020)
- McKinsey (16 March 2020) COVID-19 Briefing Note
- UNCTAD (26 March 2020) *Coronavirus could cut global investment by 40%*
- WEF a) (March 2020) , World Economic Forum
- WEF b) (23 March 2020) , *How China can rebuild global supply chain resilience after COVID-19*
- WTO (2020) World Trade Statistical Review 2019

Selected Video presentations:

- **MIT video briefing** "**A Coronavirus Briefing - The Impact of COVID-19 on Business and Supply Chain",** 16 March 2020, 56 minutes

Thank you – and take care!

[I got the flight path via]:

Jan Hoffmann, UNCTAD, 27 March 2020

-Lauri