BCG

Executive Perspectives

Achieving Supply Chain Resilience in a Volatile World

July 2021

BCG Executive Perspectives

IN THIS DOCUMENT

GLOBAL TRADE REBOUNDING, BUT FUTURE WILL SHIFT

After falling dramatically in Q2 2020, global trade rebounded strongly and recorded a full-year drop of only 8%. Currently, global trade is on track to reach its 2019 levels by 2022-2023. But this aggregate return to the pre-COVID peak masks significant shifts in the relative volumes across trade corridors in the future. These shifts will be driven by changing trade dynamics among nations, including increased industry-specific protective policies, ambitious new free trade agreements in places like East Asia and Africa, and the explicit linking of climate policy and trade policy.

IMPACT OF COVID-19 AND GEOPOLITICS IMPLY SUSTAINED IMPORTANCE OF SUPPLY CHAIN RESILIENCE

The unpredictable supply and demand shocks brought on by COVID-19 and global geopolitics have led to numerous disruptions and shortages in supply chains. Companies recognize that they must act quickly to build supply chain resilience to continue absorbing and recovering from potential future disruptions. As businesses evolve their supply chain strategies, they must take the opportunity to integrate their net-zero journey as well.

Sources: WTO, BCG analysis and case experience

Summary

Achieving Supply Chain Resilience in a Volatile World

1	**TRADE & SUPPLY CHAIN TRENDS**	1 After an 8% drop in trade during 2020, global trade is forecast to grow at ~2.7% to 2030 2 The global south is forecast to increase its share of global trade in the next decade 3 Key sectors are more likely to see supply changes as companies respond to geopolitical risk 4 US-China trade dynamics reflect broader trend of geopolitical tensions causing trade shifts 5 Shorter-term inflation increased owing to low base in 2020 and supply/demand mismatches 6 Semiconductor disruptions will last beyond 2022; other sectors are also facing shortages 7 Companies and governments are factoring in climate impacts
2	**IMPLICATIONS FOR LEADERS**	Supply chain resilience goes beyond raising inventory levels: companies should build capabilities to absorb disruptions and recover quickly 1 Leveraging digital tools can protect against near-term volatility by adding supply chain transparency and scenario planning 2 Regional supply chain model and improved risk management reduce disruption from geopolitical tensions 3 Companies should take action to achieve net-zero supply chains as governments begin pricing in climate change costs

Source: BCG analysis and case experience

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AGENDA

GLOBAL TRADE AND SUPPLY CHAINS: TRENDS AND ACTIONS

- Developments in global trade and supply chains
- Opportunities for businesses to build resilience

UPDATED ANALYSES AND IMPACT

Epidemic progression and virus monitoring

Economic and business impact

COVID-19 and geopolitics have significant impacts on global value chains

Shutdowns

90% of EU and US auto **manufacturers** had halted production during 2020

Reduced trade

8% reduction in **global trade** in 2020; expected to recover by **2022-2023**

Shipping costs

330% increase in YoY price to **ship international freight**[1] from Feb '20 to '21

Geopolitics

$4T in **lost trade** by 2025[2] for G20 countries if **tensions** continue and **trade barriers** increase

Inflation

5% **inflation** in the US in May 2021[3] compared to **~2%** pre-pandemic[4]

Sustained impacts

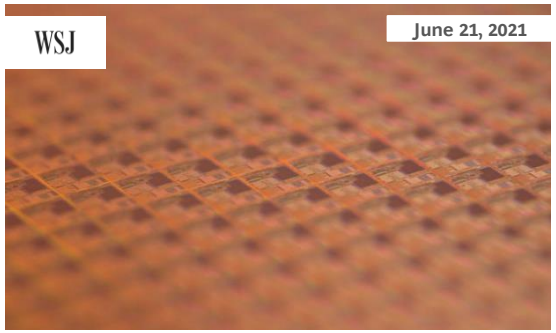
$114B forecasted reduction in **US-China** trade in 2030 compared to 2019, a **3.7%** annual decrease

1. Drewery's composite World Container index 2. In worst case trade scenario with rising unilateralism and protectionism, which will lead to G20 loss of ~$3.4-4.9T in trade value. Assumes ineffectiveness of WTO and increase in trade-restricting measures and global average MFN tariff rate.. 3. Annual growth rate measured by CPI (Consumer Price Index). 4. Average annual inflation from 2016-2019
Sources: BCG *The $10 Trillion Case for Open Trade* article (2020), World Bank, WTO, UN Contrade, OECD, IHS, IMF, BCG Trade Finance Model, Drewry, BCG analysis

Global shortages and disruptions come amid pandemic and increased geopolitical tensions

As of 22 June 2021

How the world ran out of everything: global shortages of many goods reflect the disruption of the pandemic



Chip shortages are starting to hit consumers. Higher prices are likely

Disruption to shipping could delay Christmas orders

White House launches task force to address short-term supply chain disruptions

G7 leaders seek right balance in dealing with their China dilemma

EU eyes first-of-a-kind carbon border levy in climate fight

Australia-China conflict spotlights WTO limits

Trade war costs global value chains 3-5 years of growth, UN says

1.1 After an 8% drop in trade during 2020, global trade is forecast to grow at ~2.7% annually through 2030

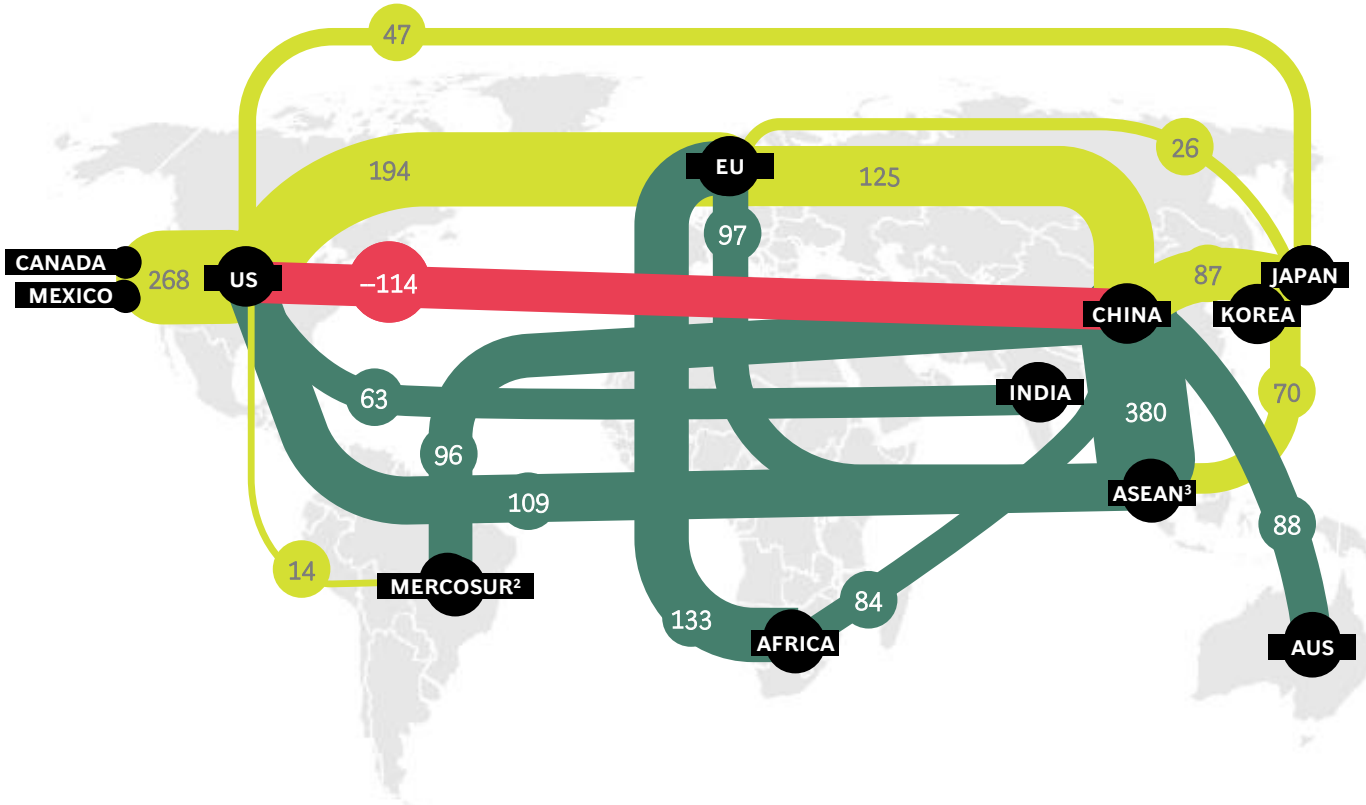
Trade will grow through 2030

~2.7%

Global CAGR, 2019-2030

- Total global trade decreased by **8%** in 2020 but will grow steadily with GDP through **2030**
- Overall, trade is expected to **grow in value** across every trade corridor (an established pathway across major trading blocs) other than **US-China**
- Changing **geopolitical dynamics** and **new trade agreements** will cause a **shift** in trade corridors

Trade is expected to grow on an absolute basis. Forecasted change in trade value (major corridors[1], 2030F vs. 2019, $B)



Color of arrow represents projected CAGR from 2019 to 2030F per corridor (relative to global average of 2.7%)

-3 to 0% | 0 to 2.7% | 2.7 to 5%

Width of arrow represents $B change

1. Excludes intra-bloc trade (e.g., trade within EU). Corridors shown represent ~40% of all trade. 2. South American trade bloc. 3. Southeast Asian trade bloc. Sources: BCG Global Trade Model 2021, UN Comtrade, OECD, WEF, IHS, Global InTradeAlert, BCG analysis

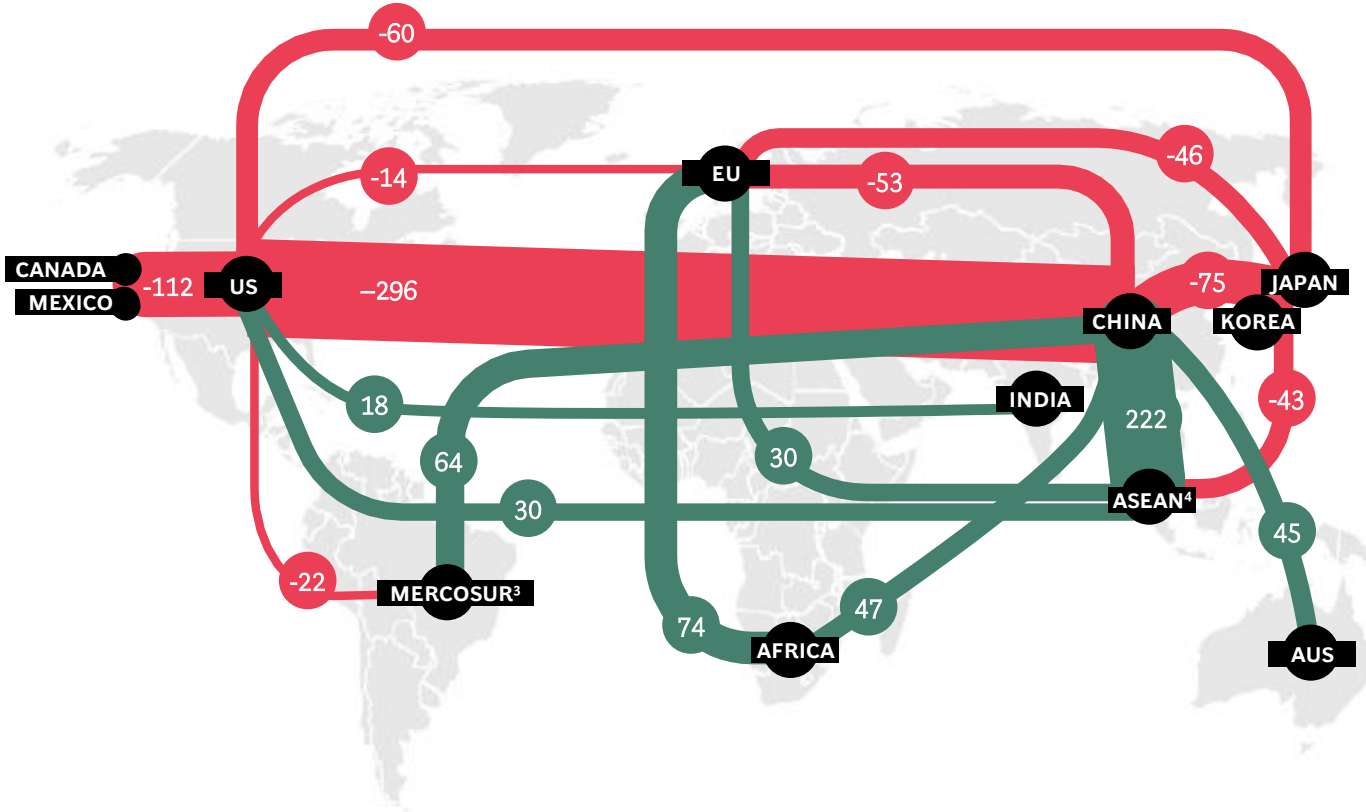
1.2 The global south is forecast to increase its share of global trade

Share of trade across corridors to shift as geopolitical dynamics play out

- Largest loss in global trade share is in the **US-China** trade corridor
  - Both China and US will be shifting trade to other blocs, such as **ASEAN**
  - China is also increasing trade activity in **Mercosur and Africa** and decreasing activity in **Europe**
- Growth expected in southern trade blocs of **Mercosur, Africa, ASEAN, and Australia**, leading to greater importance in global trade
- Share will likely be **reduced** in some other larger corridors such as US-Canada/Mexico and China-Japan/Korea

1. Excludes intra-bloc trade (e.g., trade within EU). Corridors shown represent ~40% of all trade.
2. Compares value of share of corridor if it changes in % of global trade in 2030 based on forecasts with if it maintains the same % of global trade in 2019 in 2030. 3. South American trade bloc.
4. Southeast Asian trade bloc. Sources: BCG Global Trade Model 2021, UN Comtrade, OECD, WEF, IHS, Global InTradeAlert, BCG analysis

Major trade corridors[1] to gain/lose share of global trade. ($B change in 2030F share vs. 2030 share if maintaining 2019 % of total[2])



Color of label represents +/- value share

Width of arrow represents $B dollar value of share loss/gain

1.3 Key sectors are more likely to face supply chain changes as companies try to protect against supply and geopolitical risks

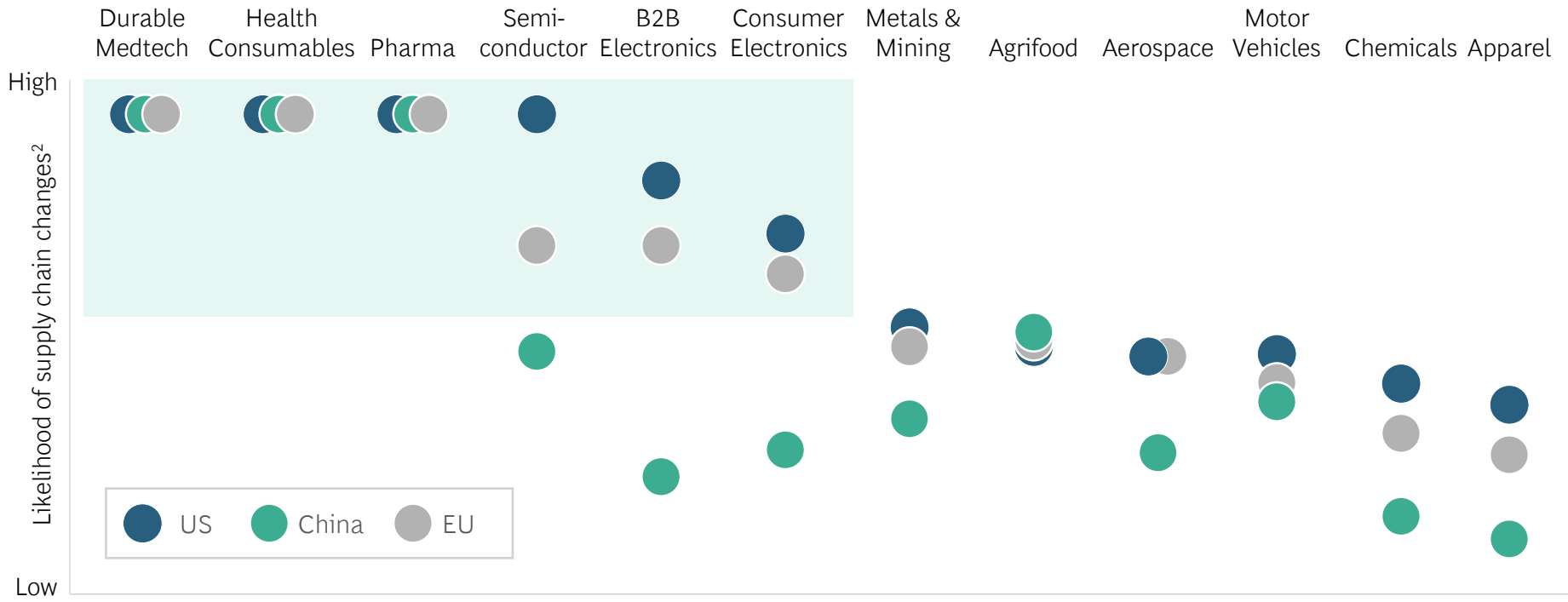
Even as international trade recovers, the **mix of industries** will shift as **strategic sectors** such as health care will likely take more action to protect against **geopolitical risks**

Governments are implementing policies with an emphasis on **self-sufficiency, national well-being, and strategic independence**

For example, India banned exports on 26 active pharmaceutical ingredients in 2020

Critical sectors such as health care, semiconductors, and electronics are more likely to change supply chains[1] to protect against supply and geopolitical risks

By geography and sector, examples provided



1. For example, by changing from single to dual sourcing or from global to local sourcing. 2. Likelihood or measure of level of impetus to change supply chain based on 0-10 ratings along 4 dimensions: Import dependency by sector (e.g., % of sector imports over total consumption), supplier country risks (e.g., geopolitical trust), supply chain structural risks (e.g., distance between supply chain steps), and increase in protectionist measures after COVID-19. Analysis conducted at a country / sector level as a proxy for companies' general impetus to change
Sources: OECD, HIS, Oxford Economy, press search, BCG analyses and case experience

1.4 US-China trade dynamics reflect broader trend of geopolitical tensions; US and China continue to safeguard tech and find alternative imports

Technology

Tech products are critical for **strategic competitiveness and national security** and account for a significant part of **trade gap**

Both countries are enacting technology protections:

- US restricted exports of **strategic technologies** (e.g., artificial intelligence software)
- China published a draft law to **restrict exports** of emerging and foundational technologies

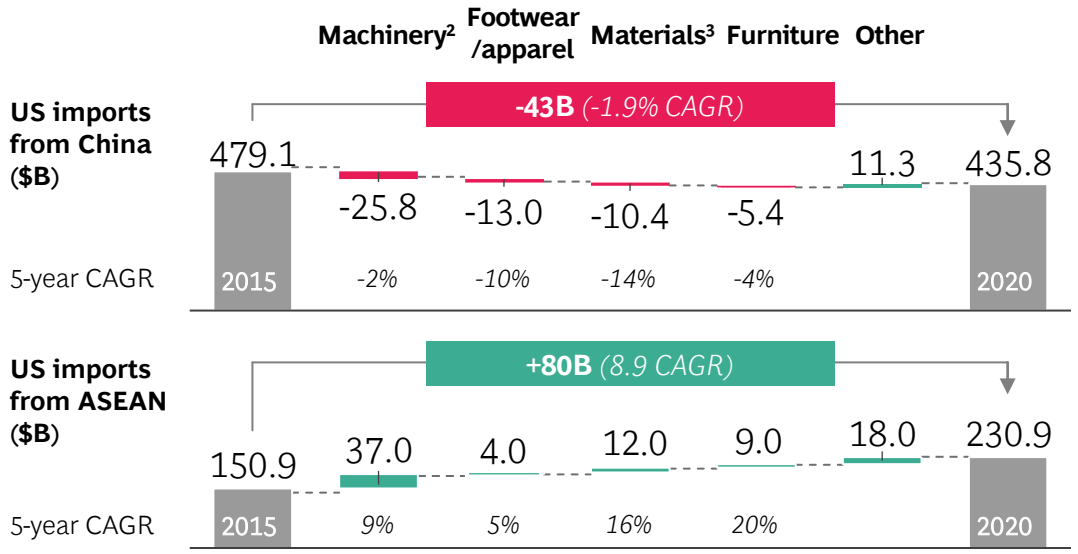
Protections likely to continue as China makes tech gains:

- Shift in Chinese manufacturing from low-cost sectors to **technology-driven sectors** like semiconductors and AI-enabled manufacturing
- Chinese Greater Bay Area[1] accounted for **$313B** in high-tech investments between 2017 and H1 2020 compared with **$231B** in the San Francisco Bay Area

Nontechnology

US has increased nontech imports from regions such as **Southeast Asia** (largest displacer) and India to **replace imports** from China

2015-2020 US imports from China and ASEAN – largest ASEAN gains



1. Guangdong, Hong Kong, Macau. 2. Includes electrical machinery. 3. Such as rubber, wood, and precious metals
Sources: BCG *What's at Stake If the US and China Really Decouple* article (2020); IHS Markit Global Trade Atlas; BCG analysis

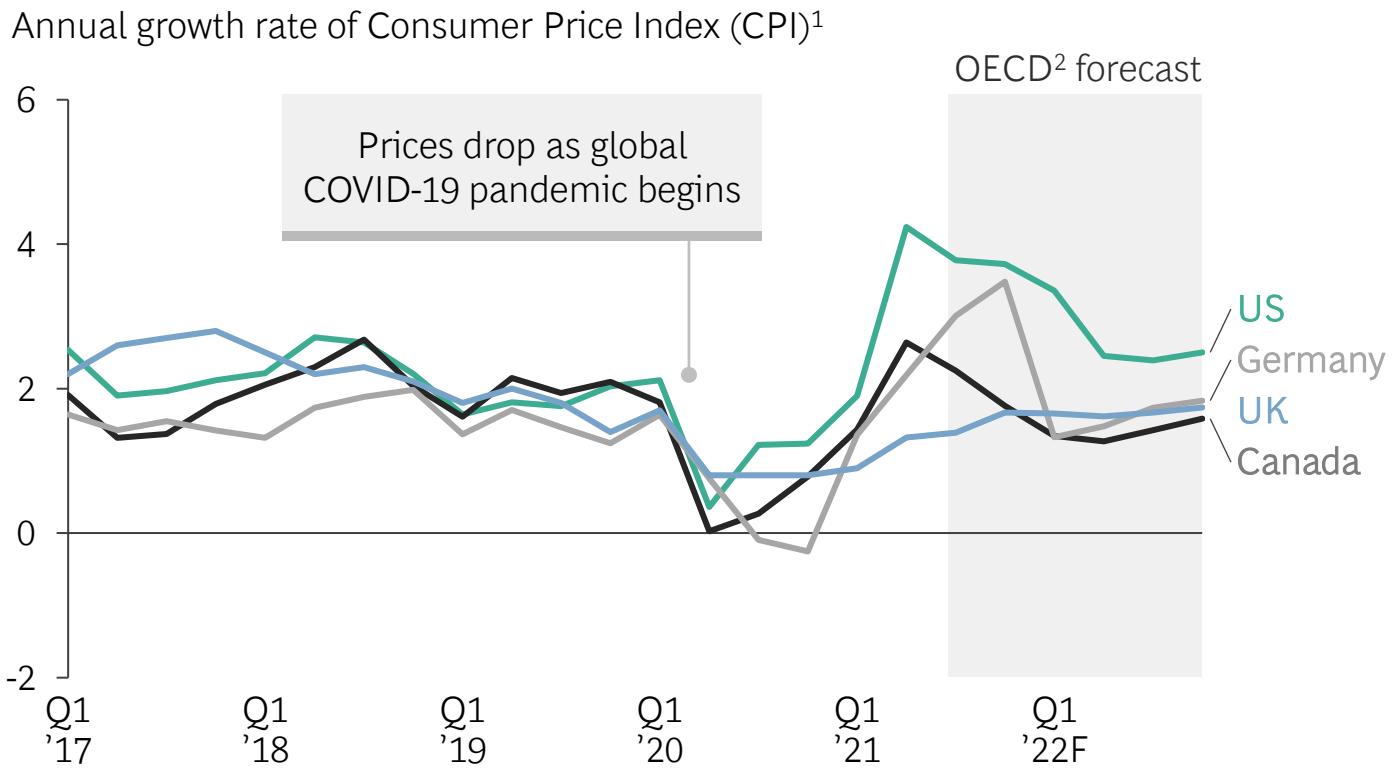
1.5 Inflation has increased owing to low base in 2020 and supply/demand mismatches; spikes expected to be shorter-term as rates normalize by 2022

Inflation is higher in 2021 compared with 2020. Primary causes include:

1. **Base effects**: Low comparison prices in 2020, as many nations were still in **lockdown**
2. **Supply:** There have been supply **disruptions**, such as those caused by factory shutdowns and port congestion, contributing to higher prices
3. **Demand**: There is a **rebound** in prices as demand picks back up in certain areas, such as air travel

Price spikes likely shorter-term as the economy adjusts

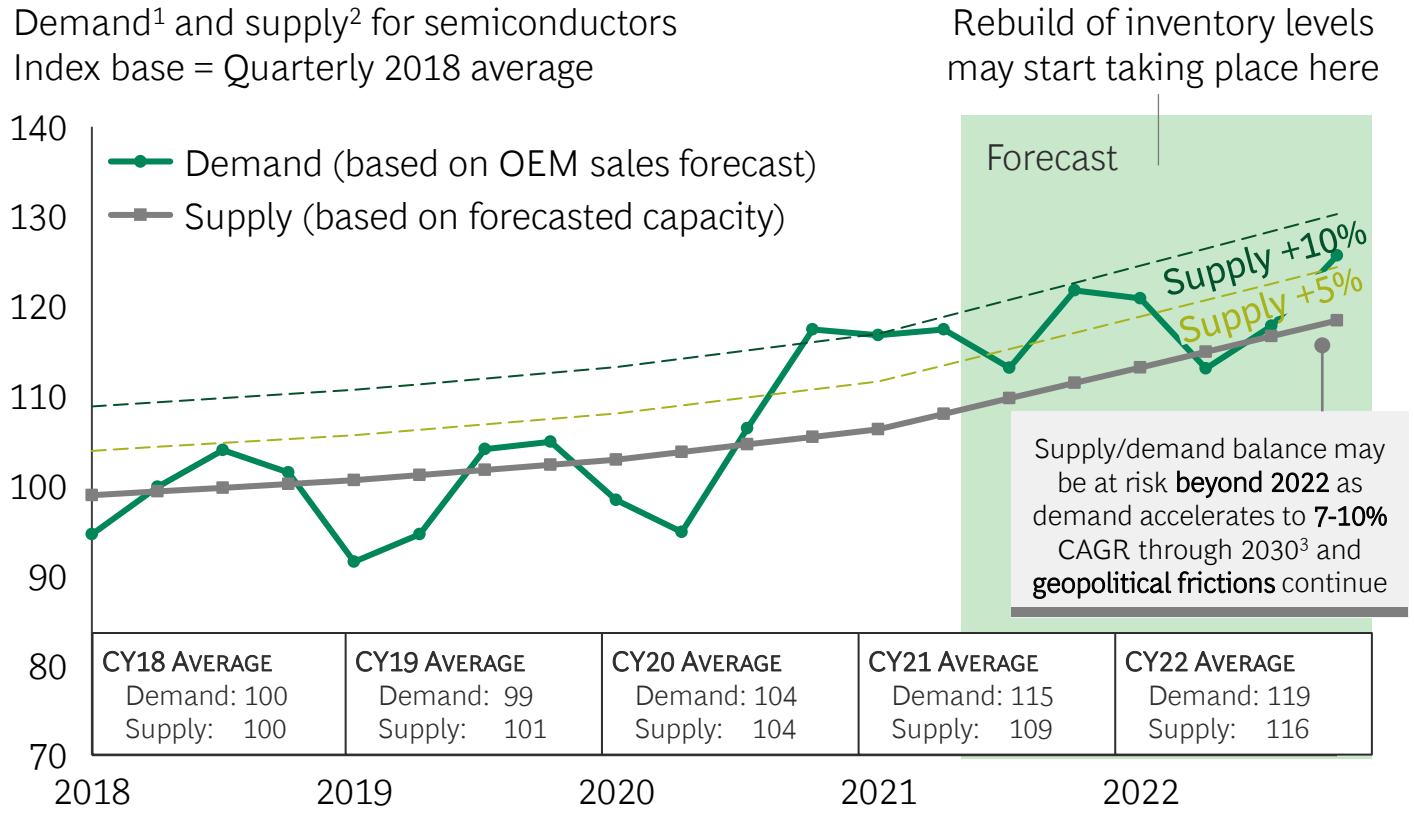
Prices have rebounded from initial dip during COVID-19; rates are expected to return to pre-pandemic levels by end of 2022



1. Inflation measured by CPI is defined as the change in prices of a basket of goods and services typically purchased by specific groups of households. 2. Organisation for Economic Co-operation and Development – intergovernmental economic organization with 38 member countries
Sources: World Bank, OECD, BCG analysis

1.6 Semiconductor sector disruptions will continue through 2022 and beyond; various other sectors are also grappling with shortages

Immediate semiconductor shortage will continue through 2022 and risk of supply/demand imbalance may last several years



Various sectors grapple with supply disruptions and shortages

COVID-19, geopolitical tensions, and anomalous events[4] have led to **disruptions** in the supply chain, exacerbating recent **shortages** (e.g., in semiconductors, auto, building materials, etc.)

Companies noted increased backorders and wait times

Appliances co.: *A **COVID-constrained supply chain** (such as for semiconductors and resins) against a stronger consumer demand …what it ultimately translates into is **backorders***

Apparel co.: *Spring '21 deliveries in the U.S. were **delayed** by approximately 3 weeks on average during the quarter… This will result in a **shorter selling season***

1. Historical and projected sales; forecasts derived from projected demand evolution of selected end-industries. 2. Historical and projected production. 3. Compared to 5% annual CAGR in the past 5 years. Growth in the future is driven by structural trends such as the increased uptake of 5G, Internet of Things (IoT), AI, automated/electric vehicles. 4. For example, the February 2021 Texas winter storm led to the temporary shutdown of several semiconductor chipmaker plants. In March 2021, there was also a major fire in the factor of one of the auto industry's largest computer chip suppliers in Japan
Sources: BCG forecast model and analysis, Q1 2021 earnings calls

1.7 Companies and governments are both increasingly planning to price climate impacts into supply chains

Sustainability has gained importance since 2016 and companies have set targets

~80%

of companies[1] say they are planning to transition to **carbon-neutral operations**

~60%

of these companies[1] plan to achieve carbon neutrality by **2030**, with some even aiming for **2025**

Momentum increasing for proposed EU carbon border tax on certain products, supporting ambition to reduce emissions by 50% by 2030

A carbon border tax would be assessed on **carbon emissions** attributed to **imported goods**. This would reduce profits for goods that are **not sustainably produced** in order to level the playing field, price in climate impacts, and support **local production**

Commodity examples	Potential tax ($M)[2]	Potential profit reduction[3]
Semi-manufactured gold	450–950	~10%
Bituminous coal	100–200	~10%
Mechanical and chemical wood pulp[3]	17–20	~65%
Crude oil	200–700	~20%
Flat-rolled steel products	250–1,300	~40%

1. Based on a BCG online survey of 1,705 global industrial companies' executives and operations managers, to assess priorities for manufacturing and supply chain operations. 2. Tax forecast based on future carbon tax assumption of $30 per metric ton of CO_2, in line with EU's Emissions Trading System's current emission allowances. Analysis as of February 2020. 3. Estimate applies only to profits on good imported into EU
Sources: BCG *The Zero-Based Factory* article (2021), BCG *How an EU Carbon Border Tax Could Jolt World Trade* article (2020)

2 Supply chain resilience goes beyond raising inventory levels: companies should build capabilities to absorb disruptions and recover quickly

of companies plan to invest in **supply chain resilience in next 2 years** to prepare for **future disruptions**[1]

Resilience can be increased through building both ***Absorb*** and ***Recover*** capabilities or focusing more on one capability based on a company's context

ABSORB

Resist disruptions by making structural changes to supply chain

EXAMPLES

- **Increased inventory** to allow for backup capacity
- **Dual sourcing** to reduce outage risk
- **Optimized** supply chain network as supply/demand continues to evolve
- Self-sufficiency by **bringing steps in-house**
- **Flexible contracts** across supply, manufacturing, and distribution

RECOVER

Add processes or systems that allow supply chains to adapt to disruption

EXAMPLES

- End-to-end sales and operations **visibility**
- Risks/bottlenecks identification
- Design **mitigation actions** for highest risk or value segments
- Digital tools to increase visibility or help with **future scenario planning**

1. Gartner 2021 supply chain study (n = 1,300)
Sources: Gartner, BCG analysis and case experience

2.1 Leveraging digital tools can protect against near-term volatility by adding supply chain visibility and scenario planning

FOCUS ON ABSORB | BOTH ABSORB & RECOVER | **FOCUS ON RECOVER**

Digital tool use cases can help build stronger recover abilities

1

IMPROVE SUPPLY CHAIN VISIBILITY

- Add external supplier/distributor data into supply chain view to understand **potential supply risks**
- Add control tower to provide up-to-date view **across entire supply chain process**
- Solve immediate bottlenecks **with AI-enabled decisions**

EXAMPLE

Medtech company saw exponential increase in demand during pandemic but had limited visibility into raw material risks. By collecting **supplier risk data** and improving **tracking of raw material requirements**, company saw 50% reduction in forecast error

2

ANTICIPATE AND SIMULATE WITH SCENARIOS

- Simulate supply chain performance **with digital twin**
- Move to **scenario-based demand/supply planning** to consider financial effects of multiple futures
- Prepare **response plan** if highest risk or highest value segments get disrupted

EXAMPLE

Steel manufacturer facing volatile supply and demand developed digital twin and scenario planning process resulting in **10+ days** lower average inventory time and **50% fewer** late orders

Sources: BCG analysis and case experience

2.2 Regional supply chain model and improved risk management reduce disruption from geopolitical tensions

FOCUS ON ABSORB | BOTH ABSORB & RECOVER | FOCUS ON RECOVER

Consider shifting global supply chains into regional supply chains to absorb geopolitical disruption

Some company contexts warrant moving elements of supply chains closer to end markets to benefit from **government incentives and regional trading blocs**

- Rethink **local and regional footprint** across every step (raw materials, conversion/manufacturing, and distribution)
- Focus on **cost-efficient sites** to make up lost global efficiencies
- **Increase visibility** as supply chains become regional

CONVERGING WAGE LEVELS

In the last decade, previously **low-cost labor countries are seeing increasing labor costs** - Brazil (15pp), China (10pp), and Korea (9pp) - relative to US labor costs according to ILO. Increased automation reduces costs in high labor-cost countries to further close the gap

Build internal supply chain risk management to quickly make decisions to recover after disruptions

Function's responsibility includes

- **Calculating risk-adjusted net present value** for business in every region and setting acceptable operating thresholds
- **Frequent monitoring of external political and supply chain events** with mitigation responses ready
- **Making investments based on emerging opportunities**

EXAMPLE

Technology company invested in data centers **closer to customers' home countries** in response to lawmakers' mounting anxiety over storing cloud data in foreign countries. Decision paid off as competition that responded slower lost market share

Sources: BCG *Turning Geopolitical Risk into Strategic Advantage* (2021), BCG *How Countries Can Attract Investment as Supply Chains Localize* (2021), BLS, Euromonitor, ILO, NDRC Price Monitoring Center, World Economic Forum

2.3 Companies should take action to achieve net-zero supply chains as governments begin pricing in climate change costs

FOCUS ON ABSORB | BOTH ABSORB & RECOVER | FOCUS ON RECOVER

Transform supply chain model to net-zero to stay ahead of competition

1. Measure carbon footprint and raise transparency within the firm
2. Redesign products for sustainability (e.g., circularity) and lock in supply of sustainable goods
3. Engage suppliers on emission reduction goals and consider switching to localized suppliers
4. Push industry ecosystems to join efforts, which can help scale green demand and improve economics
5. Empower organization through adjusted governance and internal incentives

ENTERPRISE VISIBILITY

Enterprise software company developed an add-on module to **track and trace carbon in supply chain** in response to large demand from companies to have greater visibility of their footprint

FUNDING THROUGH ZERO-BASED BUDGETING

Complete supply chain model reset can be done concurrently with a zero-based exercise to identify and remove **inefficient and noncritical activities** by rethinking operations from the ground up. Zero-based approach helps streamline sourcing costs to fund net-zero supply chain costs while embedding sustainability into business

Click here to read BCG and World Economic Forum's *Net Zero Challenge: The Supply Chain Opportunity* report.

Sources: WEF/BCG *Net Zero Challenge: The Supply Chain Opportunity* (2021), BCG *The Zero-based Factory* (2021)

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GLOBAL TRADE AND SUPPLY CHAINS: TRENDS AND ACTIONS

Developments in global trade and supply chains

Opportunities for businesses to build resilience

UPDATED ANALYSES AND IMPACT

- Epidemic progression and virus monitoring
- Economic and business impact

Summary dashboard

As of 29 June 2021

To be updated in forthcoming editions

Epidemic Progression

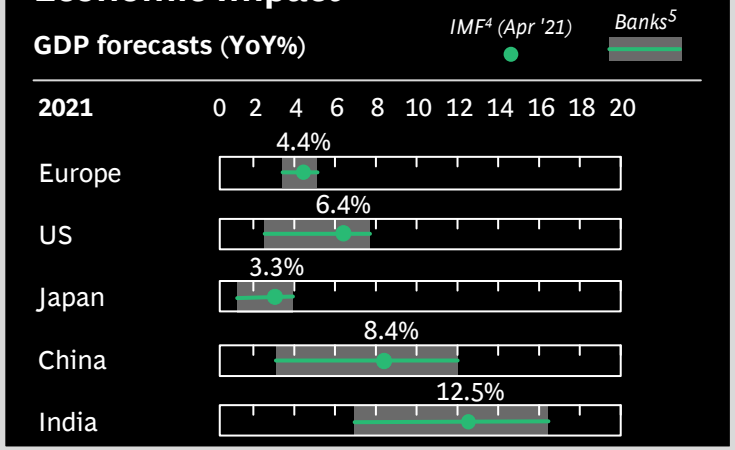
Global epidemic snapshot

180M	11.4M	3.9M	3B
# of cases	# of active cases[1]	# of fatalities	Vaccine doses administered

Month-on-month growth of new cases[2]	Mar	Apr	May	Jun
Americas	1.0x	1.2x	0.8x	1.0x
Europe	1.3x	0.9x	0.5x	0.6x
Asia[3]	1.7x	3.3x	1.0x	0.4x

Economic Impact

GDP forecasts (YoY%)



Consumer Activity

Mobility

		Mar	Apr	May
Mobility[6] *(month vs. Jan '20)*	US	-18%	-15%	-12%
	Europe	-26%	-25%	--17%
	Japan	-12%	-12%	--16%
Domestic air travel tickets booking[7,8] (YoY)	US	18%	189%	129%
	UK	-47%	181%	276%
	China	138%	157%	76%

Sales

		Mar	Apr	May
Retail goods sales[9] (excl. auto & fuel, YoY)	US	20%	40%	24%
	Europe[10]	12%	21%	
	China[11]	34%	18%	12%
Passenger vehicle sales[12](YoY)	US	61%	113%	43%
	Germany	36%	90%	37%
	China	75%	9%	-3%

Business Impact

Stock market performance

02 Jan '20 vs Month end	Mar	Apr	May
S&P500	22%	28%	29%
FTSE100	-12%	-8%	-8%
CHN SSE	12%	12%	17%
Volatility Index (S&P500)[13]	1.6x	1.5x	1.3x

International trade

		Mar	Apr	May
Trade value[14] (YoY)	US	18%	43%	
	France	29%	81%	
	China	34%	37%	38%

Industrial production

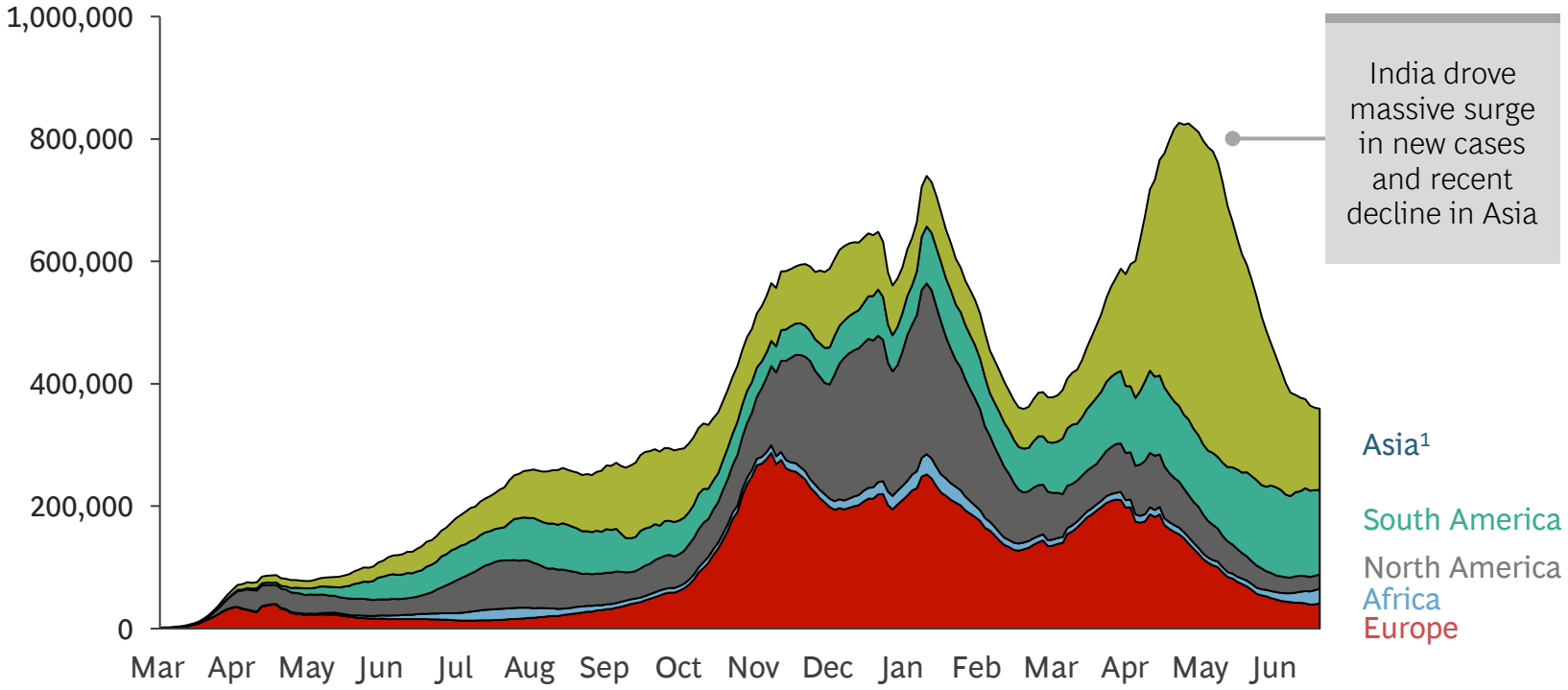
		Mar	Apr	May
Purchasing manager's index[15] (base = 50)	US	59	61	62
	Germany	67	66	64
	China	52	51	51
Steel production (YoY)[16]		16%	24%	17%

1. Total cases less deaths and recovery; 2. Calculated as monthly average of daily cases vs. previous month; 3. Includes Middle East and Oceania; 4. IMF Apr 2021 forecast; 5. For India, forecast is for financial year; for others, it is for calendar year; YoY forecasts; range from forecasts (where available) of World Bank, International Monetary Fund, JP Morgan Chase; Morgan Stanley; Bank of America; Fitch Solutions; Credit Suisse; Danske Bank; ING Group; HSBC; As of reports dated 08 June 2020 to Mar 01 2021; For India's GDP forecast, World Bank's 2020 forecast from 08 June provides the upper bound of the forecast range; 6. Mobility values are calculated as the average of mean monthly mobilities in workplace, public transit, retail & recreation, and grocery & pharmacy and compared to a baseline from 03 Jan – 06 Feb 2020; Europe mobility values are calculated as the average of Germany, France, UK, Spain, and Italy; 7. Calculated as change in last 14 days rolling average value as compared to same period last year; 8. As of 01 Mar 2021; 9. Retail goods sales include online & offline sales and comprise food & beverages, apparel, cosmetics & personal care, home appliances, general merchandise, building material; do not include auto, fuel & food services; 10. Europe includes 27 countries currently in EU; 11. For China, Jan & Feb are reported together due to National Holidays. 12. Figures represent passenger vehicle (including sedan, hatchback, SUV, MPV, van and pickup) sales data for over same month in previous year; Europe value calculated as cumulative sales in Germany, France, UK, Spain, and Italy; 13. Underlying data is from Chicago Board Options Exchange Volatility Index (VIX); Volatility Index is a real-time market index that represents the market's expectation of 30-day forward-looking volatility and provides a measure of market risk and investors' sentiments; 14. Calculated as sum of imports and exports, measured in USD and compared to previous year period; EU trade values between EU and all outside countries 15. PMI (Purchasing Manager's Index) is a diffusion index that summarizes whether market conditions, as viewed by purchasing managers, are expanding (>50), staying the same (50), or contracting (<50); 16. Data corresponds to G-20 countries (minus Indonesia). Sources: JHU CSSE, Our World in Data, WHO, World Bank, IMF, Bloomberg, Google Mobility, US Census Bureau, Eurostat, PRC National Bureau of Statistics, ACEA actuals, Marklines, ARC ticketing data, STR, Statista, CBOE, OECD, BEA, GACC (customs) China, ONS, BCG

Case counts reduced as vaccine rollout continues, especially in North America and Europe

As of 24 June 2021

Daily new cases (7-day rolling average)



Month-on-month growth of new cases[2]	215%	15%	50%	60%	10%	10%	40%	45%	10%	0%	(35%)	20%	60%	(15)%	(55)%

1. Includes Oceania (Australia, New Zealand, Papua New Guinea, and surrounding island nations of the Pacific ocean); 2. Calculated monthly as average of daily cases compared with previous month daily cases and rounded to nearest 5%. Sources: Johns Hopkins CSSE; Our World in Data; Worldometer; press search; BCG

Key observations

180M
# of confirmed cases

11.4M
# of active cases

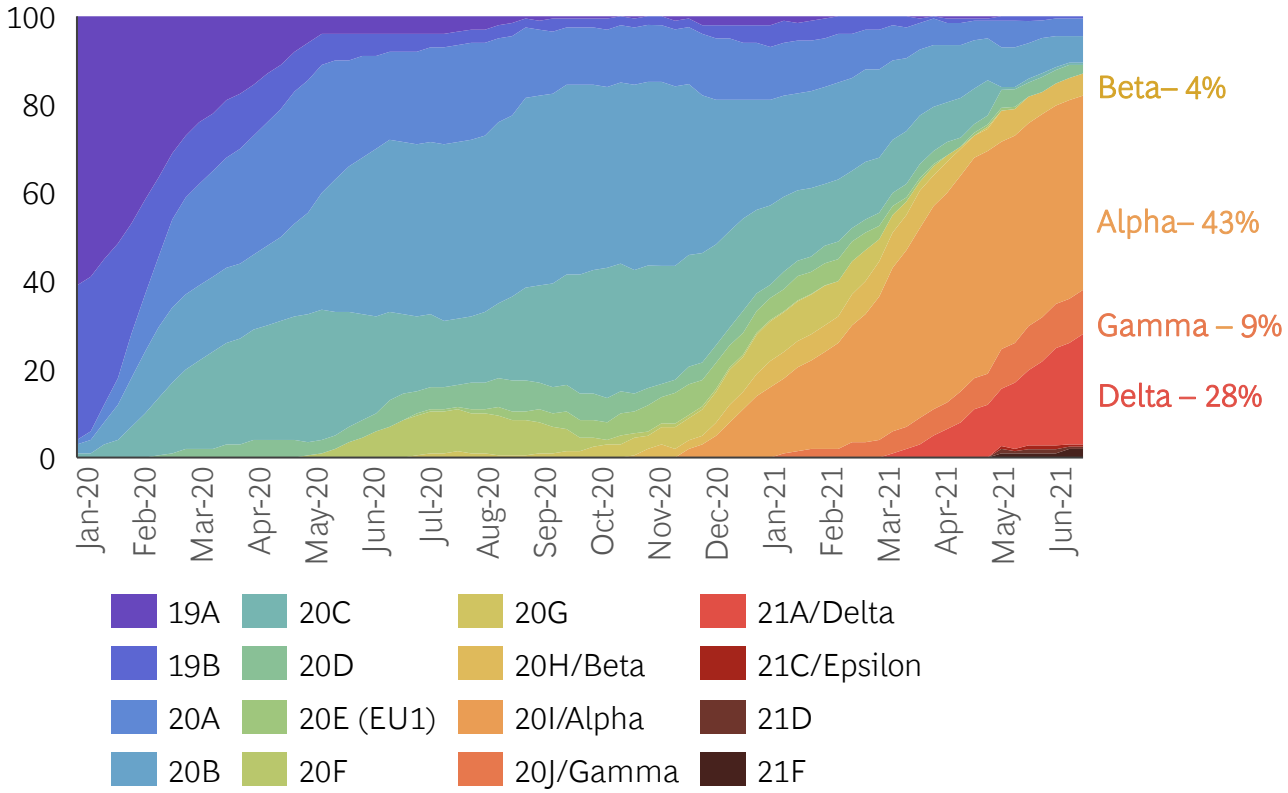
3.9M
# of fatalities

Despite progress on vaccination across the world, caution required as concerning variants spread among immune-naïve population

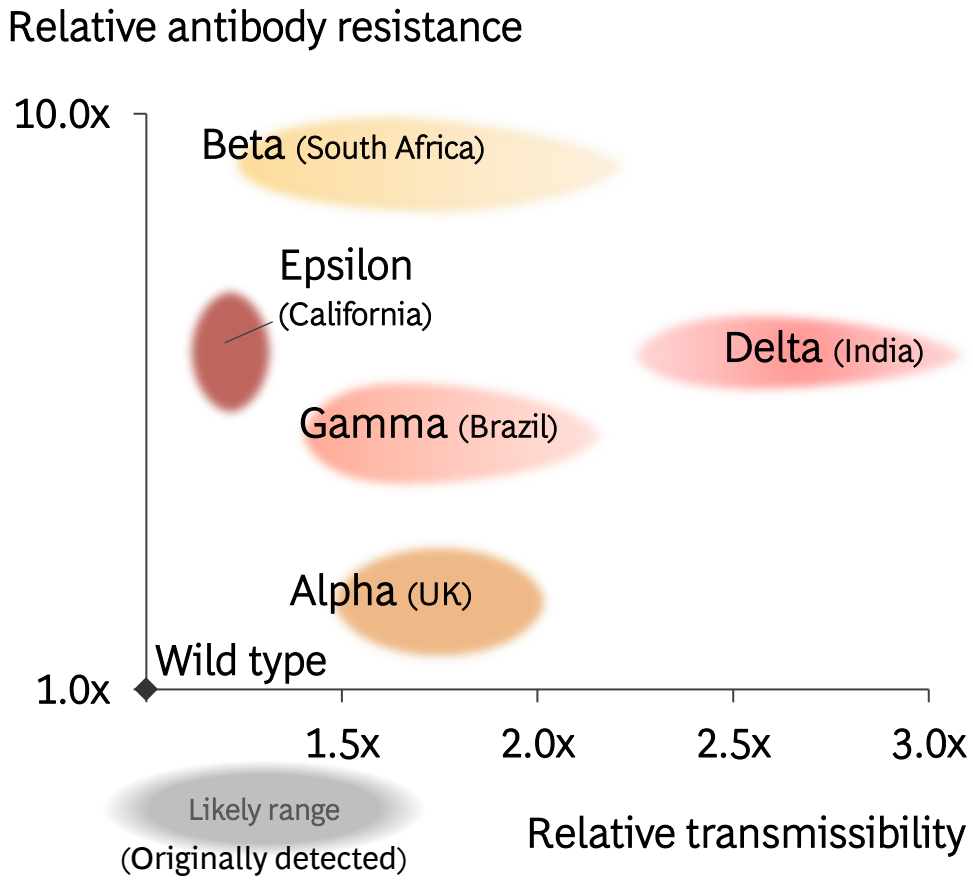
As of 21 Jun 2021

Time series view of variant frequency

4 variants of concern are ~85% of sequenced samples



Variants of concern compared with wild type



Note: Several of the concerning variants (e.g., those first identified in the UK and South Africa) share mutations (e.g., N501Y) while also having distinct mutations (some more than others)
Sources: JAMA, Nextstrain, Financial Times, Virological; Centers for Disease Control and Prevention; cov-lineages.org, Lancet Infectious Diseases, press search; Axios variant tracker; Nature

COVID-19 has broad geographic reach today with countries at different stages in their fight

As of 24 June 2021

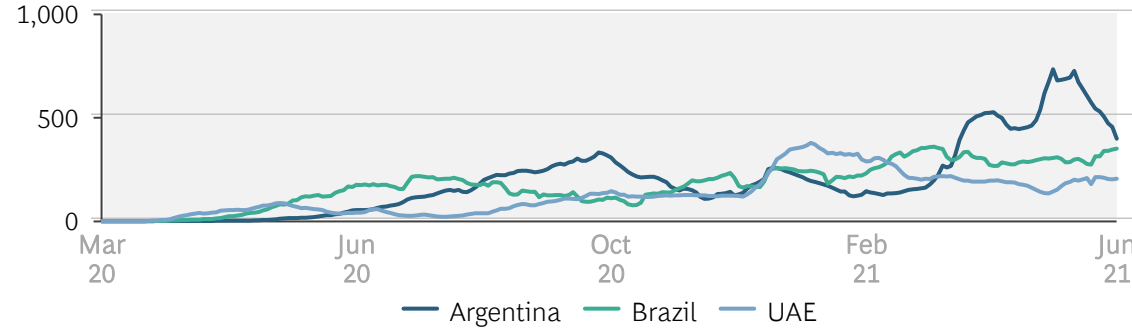
Non-exhaustive

Epidemic Progression

Continuation

Curve was never quite flattened; ongoing battle

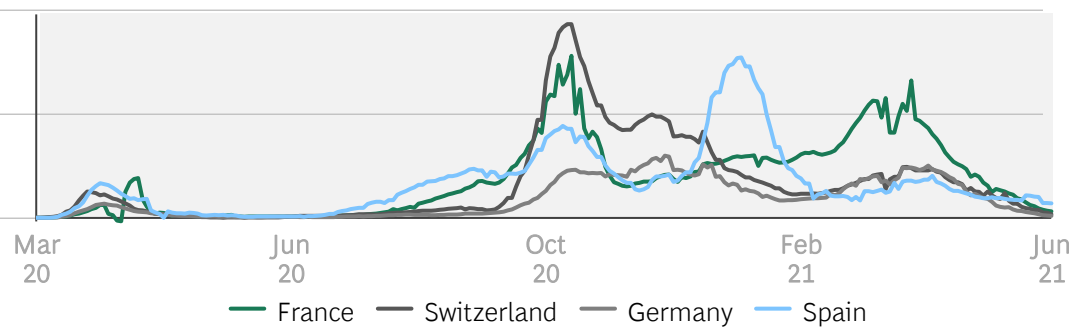
Daily new confirmed cases per million[1]



Resurgence

Curve was flattened but saw one or more resurgences

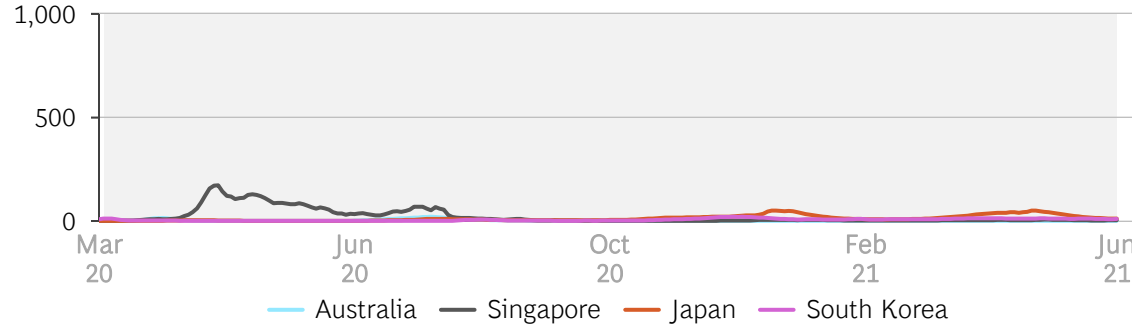
Daily new confirmed cases per million[1]



Crush and contain

Curve was flattened and case counts continue to remain low

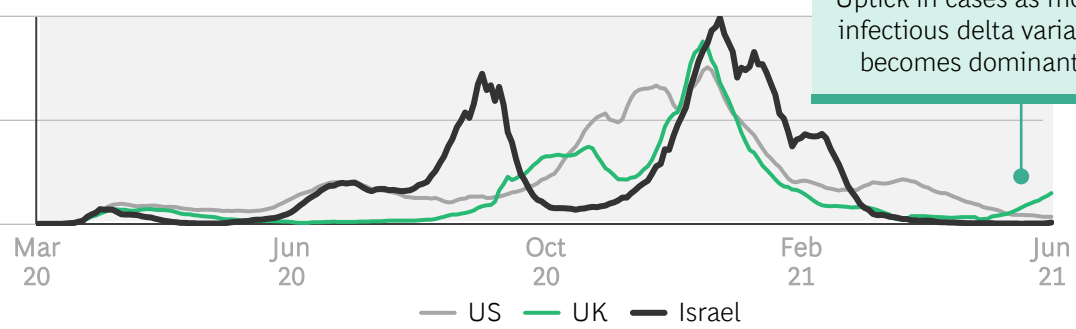
Daily new confirmed cases per million[1]



Vaccinated

Curve reduced through vaccination progress

Daily new confirmed cases per million[1]

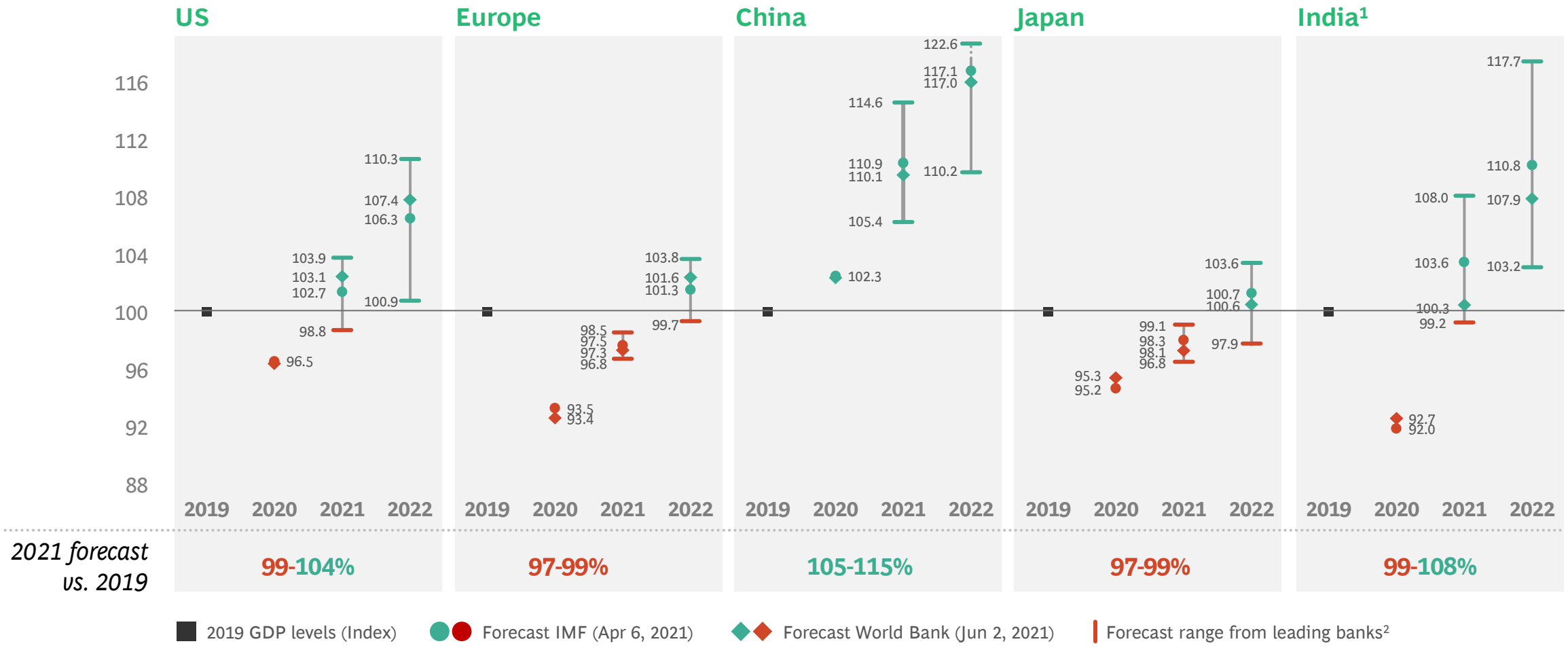


1. Data shown as 7 day rolling average of daily new cases per million
Sources: Our World in Data; BCG

Many large economies expected to continue recovery and reach 2019 GDP levels between 2021 and 2022

As of 23 Jun 2021

GDP forecast levels indexed to 2019 value (Base: 100)



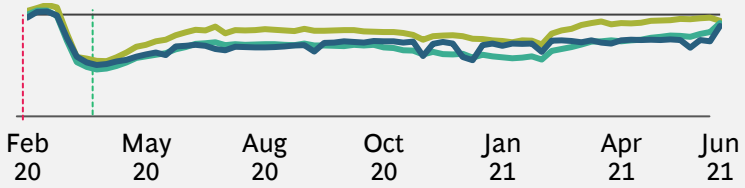
Note: As of reports dated 08 June 2020 to 01 Mar 2021, YoY forecast 2020 values are estimated actual GDP; 1. For India, forecast is for financial year; for other countries, the forecast is for calendar year; 2. Range from forecasts (where available) of JPMorgan Chase; Morgan Stanley; Bank of America; Fitch Solutions; Credit Suisse; Danske Bank; ING Group; HSBC; Sources: Bloomberg; World Bank; IMF; BCG

Retail and recreation mobility recovered fastest; public transit mobility remains lower in most countries

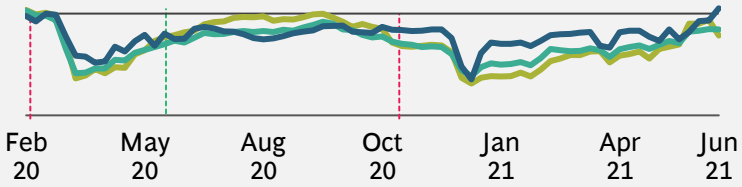
As of 29 Jun 2021

Workplace[1], public transit[2], and retail and recreation[3] mobility compared with baseline of January 2020 to February 2020

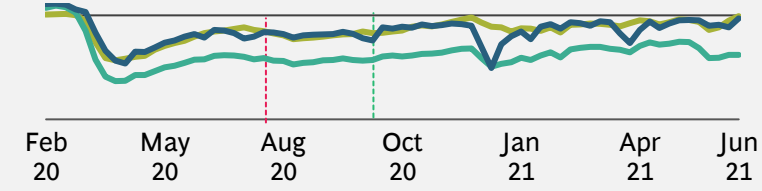
US



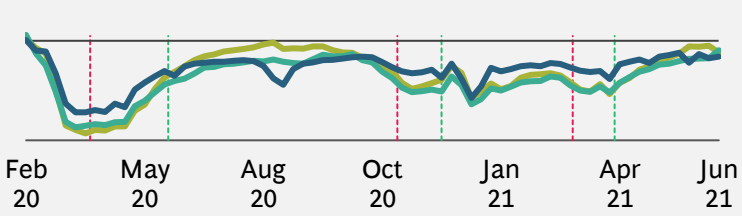
Germany



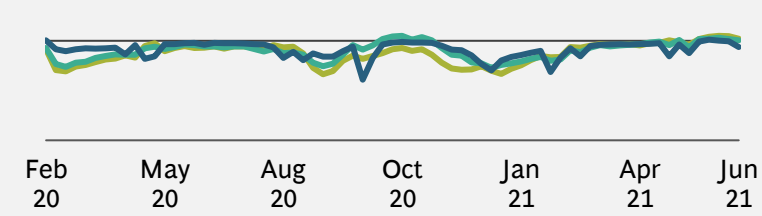
Australia



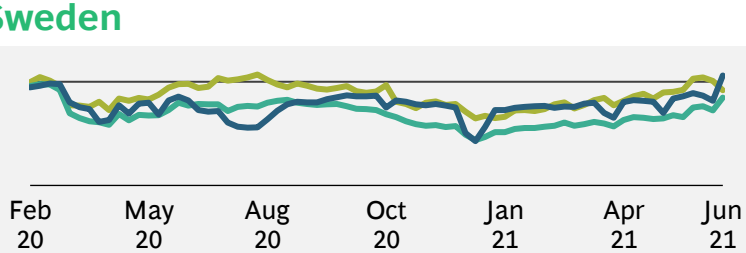
Italy



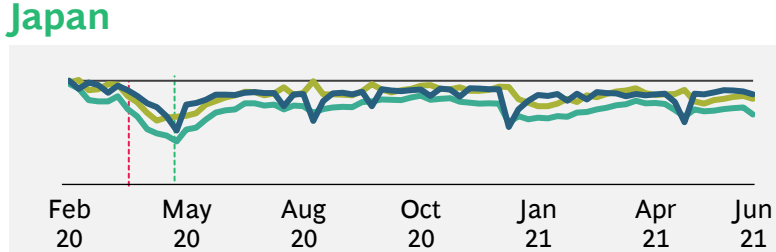
South Korea



Sweden



Japan



- Public transit mobility
- Workplace mobility
- Retail and recreation

- Lockdown easing[4]
- Lockdown started[4]

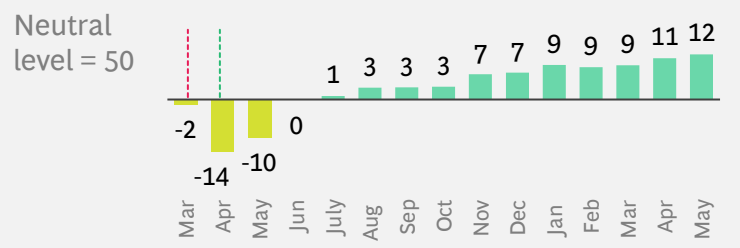
1. Tracked as changes in visits to workplaces; 2. Tracked as changes in visits to public transport hubs, such as underground, bus and train stations; 3. Tracked as changes for restaurants, cafés, shopping centers, theme parks, museums, libraries and cinemas; 4. Refers to average lockdown start and easing dates for larger lockdowns; Note: Data taken as weekly average compared with baseline (average of all daily values of respective weeks during Feb 15 2020–Feb 28 2021); Sources: Google LLC "Google COVID-19 Community Mobility Reports". https://www.google.com/covid19/mobility/ Accessed: 01 Mar 2020; Press search; BCG

Manufacturing PMI global recovery indicates continued positive momentum

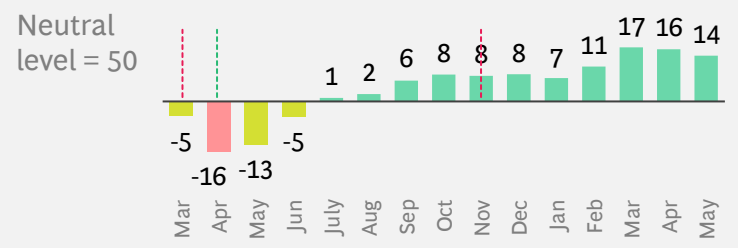
As of 29 June 2021

Manufacturing PMI before, during, and after the crisis

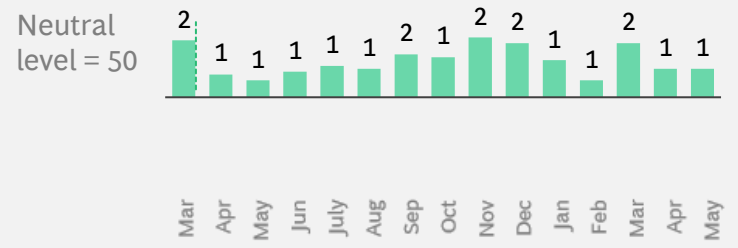
US



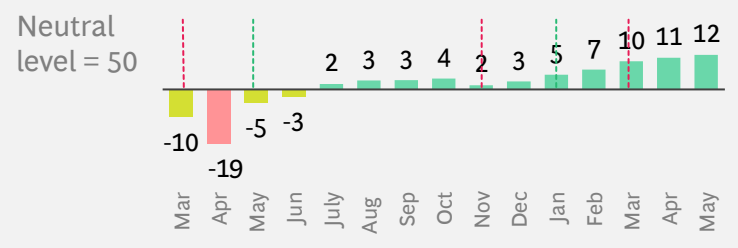
Germany



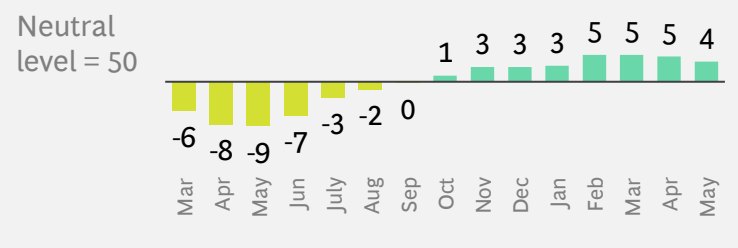
China[1]



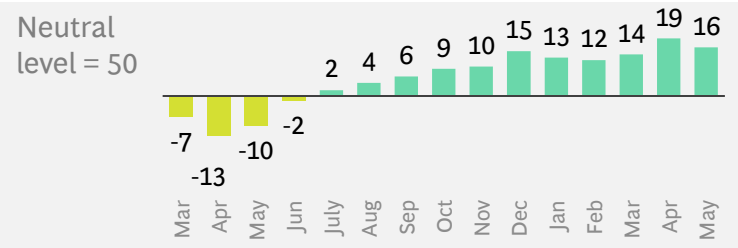
Italy



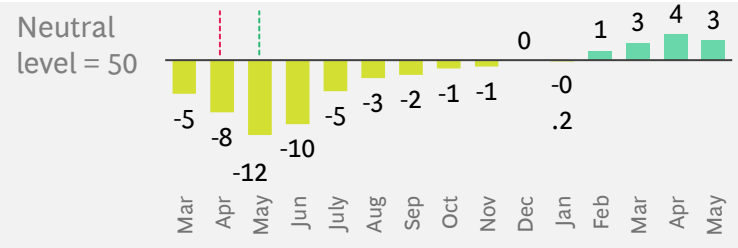
South Korea

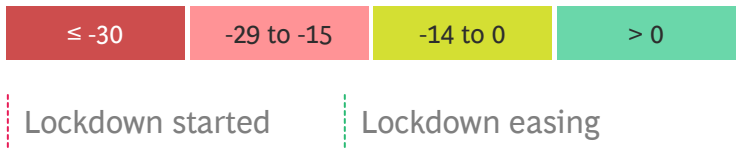


Sweden



Japan





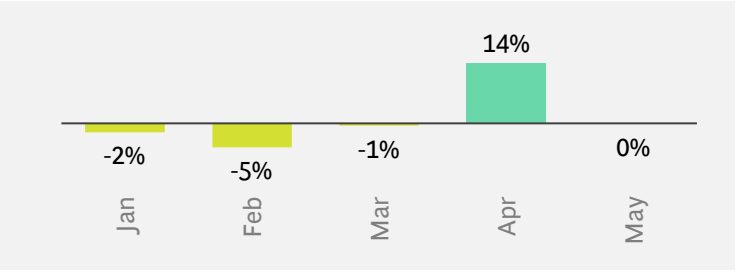
1. Lockdown dates are only pertaining to Hubei province; Note: PMI (Purchasing Manager's Index) is a diffusion index that summarizes whether market conditions, as viewed by purchasing managers, are expanding, staying the same, or contracting. 50 is neutral, >50 is considered to be positive sentiment and <50 is considered to be negative sentiment; Sources: Markit South Korea Manufacturing PMI SA; Jibun Bank Japan Manufacturing PMI SA; China Manufacturing PMI SA; Swedbank Sweden PMI SA; Markit/BME Germany Manufacturing PMI SA; Markit Italy Manufacturing PMI SA; Markit US Manufacturing PMI SA; EIKON

Monthly passenger vehicle sales show return to pre-pandemic levels in US and Asia while still lower in Europe

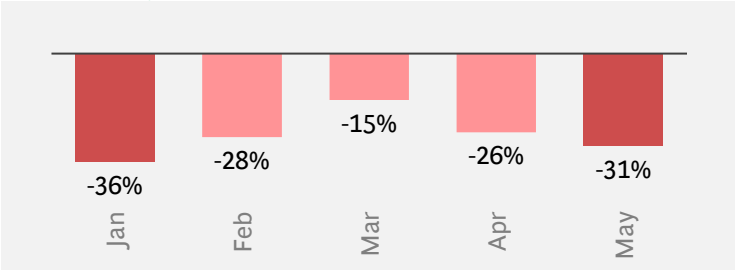
As of 29 June 2021

Monthly passenger vehicle[1] sales, % change vs. same month in 2019

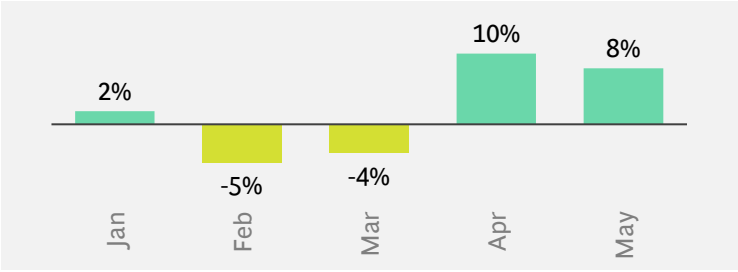
US



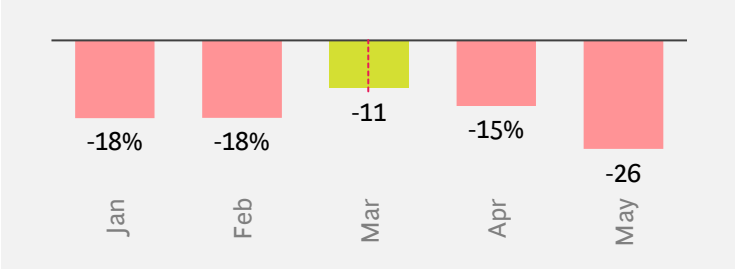
Germany



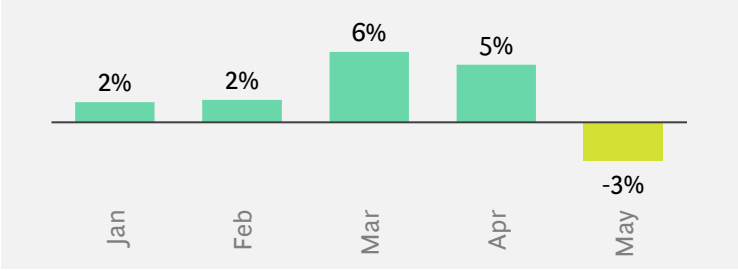
China[2]



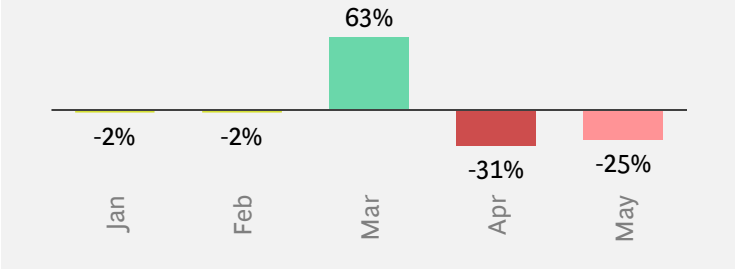
Italy



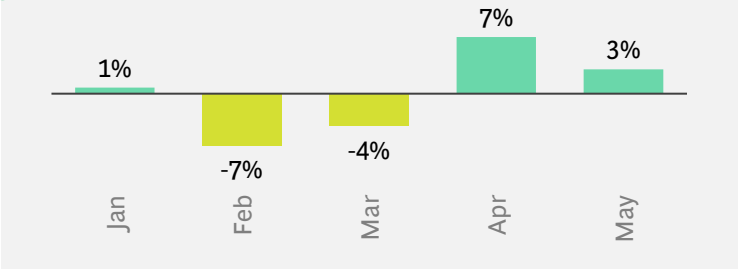
South Korea[3]



Sweden



Japan



≤ -30% | -29% to -15% | -14% to 0% | > 0%

Lockdown started | Lockdown easing

1. Passenger vehicle sales includes data on, where available, hatchback, MPV, pickup, sedan, SUV, mini trucks, light trucks, and vans; 2. Stimulus policies: Launched subsidies for car purchases in 10 cities, lessened purchase restriction in high tier cities and extended NEV subsidies; 3. South Korea's growth in auto sales from Mar through June 2020 is supported by recent tax cuts for individual consumption goods (e.g., cars), several carmakers (e.g. Audi, VW) launching new models and the increased appreciation by the Koreans of cars as a safe mode of transport and as a travel alternative for camping during COVID-19, supported by recently passed legislation to allow a variety of different cars to be modified into 'camping cars'
Sources: Marklines; BCG

Retail goods sales (excluding auto and fuel) have grown compared with pre-COVID-19 levels in most countries

As of 24 Jun 2021

Growth of retail goods sales (excluding auto and fuel)[1], % change vs. same month in 2019

Retail goods sales include online and offline sales and comprise food and beverages, apparel, cosmetics and personal care, home appliances, general merchandise, building material; do not include auto, fuel, and food services

	Jan '21	Feb '21	Mar '21	Apr '21	May '21
US	14%	11%	21%	20%	19%
UK[2]	-2%	-1%	3%	13%	12%
Spain	-6%	-3%	-1%	-2%	-
Sweden	6%	9%	10%	5%	11%
Belgium	8%	11%	11%	7%	-
China[3]	6%		11%	7%	9%
Japan	3%	7%	5%	2%	1%

-29% to -15% | -14% to 0% | > 0%

1. Retail goods sales categorization may be different across countries; seasonally adjusted values taken; country-specific categorization; 2. UK figures include total retail sales excluding automotive fuels sourced from Office for National Statistics United Kingdom as data is no longer reported in Eurostat after Brexit 3. For China, Jan & Feb 2021 are reported together due to national holidays
Sources: US Census Bureau; PRC National Bureau of Statistics; Eurostat; Office for National Statistics United Kingdom; Ministry of Economy Japan

Retail goods sales have **rebounded** with growth above 2019 levels, potentially signifying effects of **pent-up demand**

US has seen strongest growth relative to 2019, but most other countries have also started seeing double-digit percentage growth

Some European countries have seen retail sales dips in early 2021 coinciding with increased cases and lockdowns

DE-AVERAGED VIEW

Retail store sales in China and US have rebounded across categories; apparel sales continue to be impacted in other countries

As of 24 Jun 2021

Retail store sales breakdown by category, % change vs. same month in 2019

Food and beverage stores

	Jan '21	Feb '21	Mar '21	Apr '21	May '21
US	14%	16%	14%	15%	16%
UK	6%	9%	10%	10%	4%
Spain	3%	1%	0%	0%	-
Sweden	9%	12%	14%	7%	16%
Belgium	6%	6%	7%	9%	-
China[1]	14%		23%	20%	18%
Japan	-2%	-1%	-3%	-2%	0%

Personal care and cosmetics stores

	Jan '21	Feb '21	Mar '21	Apr '21	May '21
US	5%	3%	12%	14%	15%
UK[2]	-47%	-30%	-25%	-6%	-7%
Spain	-4%	-1%	0%	1%	-
Sweden	0%	7%	12%	4%	10%
Belgium	1%	0%	7%	4%	-
China[1]	24%		31%	30%	36%
Japan	44%	45%	45%	42%	39%

Apparel stores[3]

	Jan '21	Feb '21	Mar '21	Apr '21	May '21
US	-3%	-8%	12%	10%	13%
UK	-47%	-52%	-44%	-5%	-2%
Spain	-36%	-35%	-21%	-23%	-
Sweden	-25%	-22%	-20%	-27%	-17%
Belgium	-8%	-3%	-11%	-39%	-
China[1]	-3%		4%	3%	8%
Japan	-24%	-26%	-19%	-30%	-29%

Home appliance stores[4]

	Jan '21	Feb '21	Mar '21	Apr '21	May '21
US	-1%	-6%	10%	13%	8%
UK	-13%	12%	-10%	30%	30%
Spain	-4%	-1%	9%	7%	-
Sweden	21%	22%	26%	18%	27%
Belgium	-	-	-	-	-
China[1]	-5%		-5%	-7%	3%
Japan	19%	17%	1%	5%	11%

≤ -30% | -29% to -15% | -14% to 0% | > 0%

1. For China, Jan & Feb 2021 are reported together due to national holidays; food & beverages category only includes food & grains; 2. UK data set switched over from Eurostat to Office for National Statistics following Brexit. 3. Includes clothing accessories, shoes, etc.; 4. Includes audio video & home appliances stores; Note: For US, share in retail store sales in Q4 2019: F&B ~25%, personal care & cosmetics ~12%, apparel ~6%, home appliances ~3%, general merchandising ~25% and building material & gardening equipment ~13%. Sector classification & mix may be different across countries; Sources: US Census Bureau; PRC National Bureau of Statistics; Eurostat; Office for National Statistics United Kingdom, Ministry of Economy Japan

China and US have seen **strong rebounds in almost all categories**, most even above 2019 levels

Retail store sales recovery driven by **F&B** across almost all countries

Apparel category continues to see decline compared with 2019, except for US and China

Home appliances sales had mixed development across countries but has returned to pre-pandemic levels

Stock markets continue to have an optimistic outlook: 22 out of 24 sectors currently above pre-crisis TSR levels

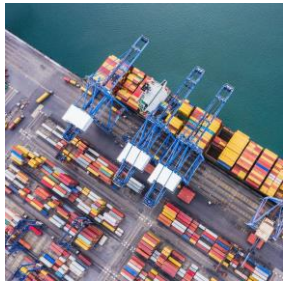
As of 28 Jun 2021

Based on top S&P Global 1200 companies

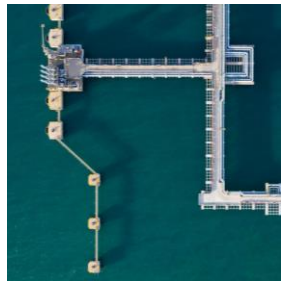
	TSR[1]	Companies with default probability >15%[2]	
	21 Feb 2020–25 Jun 2021	21 Feb 2020	25 Jun 2021
Semiconductors	61%	0%	0%
Materials	37%	5%	4%
Tech Hardware	37%	0%	0%
Durable Goods	35%	0%	0%
Media	35%	0%	0%
Auto	35%	0%	0%
Retailing	32%	0%	11%
Capital Goods	29%	2%	2%
Financials	28%	0%	0%
Software	19%	0%	0%
Health Equipment	18%	0%	0%
Prof. Services	15%	0%	0%
Food/Staples Retail	11%	0%	0%
Pharma	9%	0%	5%
Household Products	7%	0%	0%
Banks	7%	0%	0%
Hospitality	6%	8%	15%
Food & Beverage	6%	0%	0%
Insurance	4%	0%	0%
Real Estate	2%	0%	0%
Telecom	2%	0%	4%
Energy	2%	0%	3%
Utilities	-6%	0%	0%
Transport	-9%	0%	24%

1. Performance is tracked for two periods, first from 21 February 2020 (before international acceleration of outbreak) to 20 March 2020 (trough of the market) and from 21 February 2020 through 25 Jun 2021; 2. Implied by 5-year credit default swap based on median; Note: Based on top S&P Global 1200 companies; sectors are based on GICS definitions; Sources: S&P Capital IQ; BCG ValueScience Center; BCG

Additional perspectives on global trade and supply chains



Designing Resilience into Global Supply Chains



Redrawing the Map of Global Trade

The $10 Trillion Dollar Case for Open Trade

Your Supply Chain Is the Secret to Sustainability Success

The New Reality for Chief Supply Chain Officers

How an EU Carbon Border Tax Could Jolt World Trade

Turning Geopolitical Risk into Strategic Advantage

The Zero-Based Factory

Bionic Supply Chains Power a New Operating Model

Source: BCG

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