COVID-19

Review of mid- to long-term implications

11 May 2020

HSBC

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HSBC presence in cities globally

Commercial Financial Institution.
63 Countries
c 300 cities
1865
Trade and cross border finance.
Global Network
236,000
Together We Thrive

City	Head Count
Hong Kong	33,819
London	19,983
Paris	6,091
Shanghai	4,849
Birmingham	4,209
Mexico City	3,894
New York	3,763
Singapore	3,566
Dusseldorf	3,268
Buenos Aires	3,181
Dubai	3,040
Kuala Lumpur	2,733
Mumbai	2,281
Sydney	1,168
Shenzhen	1,074
Beijing	1,016
Sao Paulo	180
Abu Dhabi	160
New Delhi	139
Total	98,414

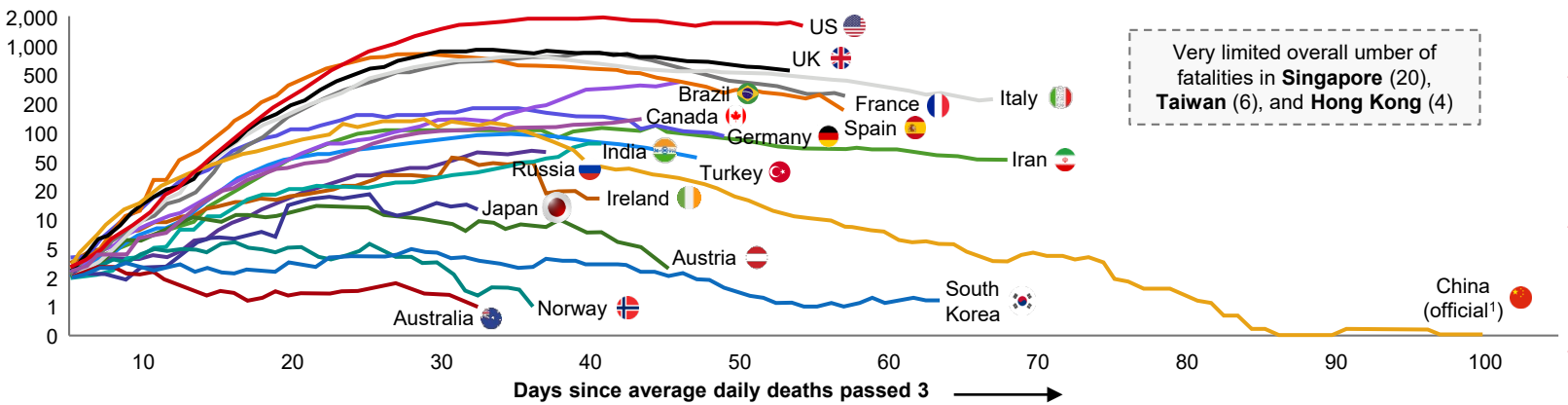
Note:

1. 2017 data. Bubble size proportional to GDP. Based on combining JLL data on GDP per capita with UN data on population size.

Over 4.0m COVID-19 cases confirmed and 279k+ fatalities with countries at different stages of the "curve" and varying approaches to measures to counter the pandemic

Daily deaths with COVID-19 (7-day rolling average), by number of days since 3 daily deaths first recorded

of daily cases



Very limited overall umber of fatalities in **Singapore** (20), **Taiwan** (6), and **Hong Kong** (4)

- As of 10-May-20, **c.4.0m cases confirmed globally and over 279k fatalities from the virus**
- **Cases within countries are not evenly spread**. Lombardy in Italy as well as Spain's capital eclipsed Wuhan in China as the most severely affected parts of the world
- **The hardest-hit urban centre in the world is the New York state**. The state's death toll is rising faster than in any other subnational region
- **Delayed spread of the COVID-19 virus in the Southern hemisphere**

Countries took different approaches to counter the pandemic, however most countries went into lockdown to a large extent

			China	Italy	France	Germany	South Korea	Spain	UK	USA
Government measures during the lockdown phase	Shared spaces measures	Lockdown measures[2]	●	●	●	◑	◔	●	◑	◑
		Travel bans/restrictions	◔	●	◔	◑	◔	●	◑	◑
		Remote working/learning	◔	●	●	◔	◑	●	●	◔
		Cancellation of public events	◔	●	●	●	◔	●	●	◔
	Personal health measures	Mass testing	●	◑	◔	◔	●	◑	◔	◔
		Ramp-up of medical care[3]	◔	◑	◔	◔	●	◑	◔	◔
		Availability of PPE	●	◔	◔	◑	●	◔	◔	◔
		Mobile contact-tracing[4]	◔	⧗	⧗	⧗	●	⧗	⧗	💬

⧗ In development 💬 In debate

Sources: European Centre for Disease Prevention and Control, Governments' official communication, McKinsey, OECD, Press articles, Worldometers

Notes: Data as of 10-May-20; Fatality rates may be under- or over-estimated depending on countries' capacity of mass testing

1. May be subject to revision
2. Incl. restrictive nature of lockdown, citizen acceptance, and enforceable nature of the measures (e.g. fines)
3. Ramp-up of medical care includes access to universal care, number of ICUs, number of ventilators and respirators, national vs regional healthcare management, air/train patient transfer between regions, healthcare crisis management, etc.
4. Data privacy to be ensured through: open-source algorithm code; data to be stored only on smartphones; anonymised; encrypted, downloadable if required only on health authorities' servers, removed in mid-term (c. 6 months), etc.

Potential exit scenarios – Risk-adjusted de-confinement strategies provide actionable measures to gradually reopen economic and social activities

Five building blocks of de-confinement scenarios

Timeline

1 Scientific management

- Many countries have set up expert committees to **assess containment measures** and **evaluate gradual de-confinement plans**
- The focus is on studying options to eradicate the virus and avoid potential next waves post de-confinement

2 Extensive provision of medical and hygiene PPE[1]

- Uninterrupted **provision of face masks and hand sanitizers at large scale** for the population
- **Domestic insourcing of production** mainly through manufacturing lines' reconversion if required
- Massive **increase of import capacity** of critical basic medical and hygiene supplies

3 Hospital and testing capacity ramp up

- Reorganisation of domestic care systems with **substantial add-ons of ICUs and ventilators**
- Loosening of restrictions would require a massive **increase in testing capacity** (both RT-PCR[2] lab tests and serological home kits)
- Focus on high-quality kits with low risks of false negatives

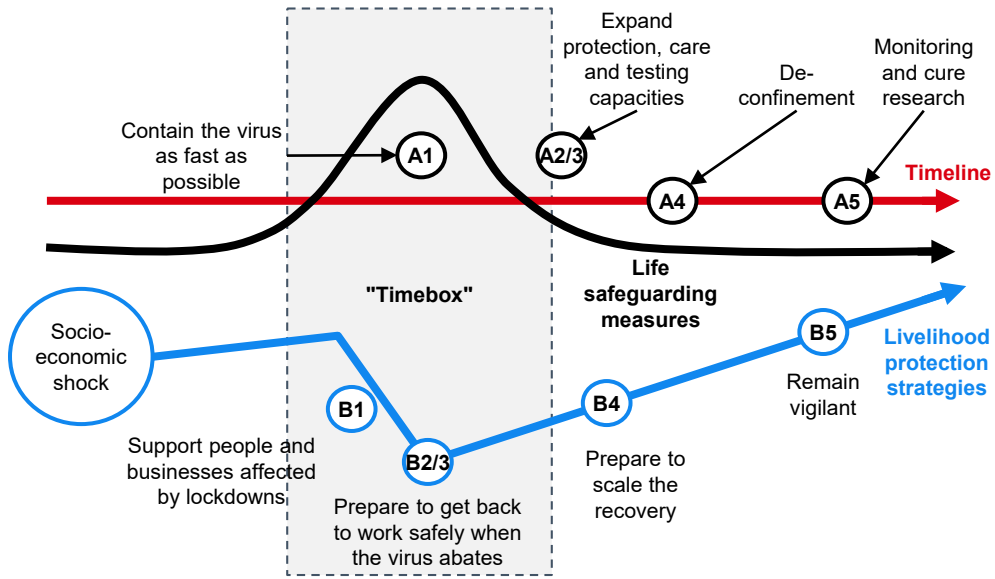
4 Gradual risk-adjusted de-confinement strategies

- **De-confinement or lockdown exit would not be for everyone at the same time**
- Some age groups, regions and business functions can resume activity before others with **prioritisation of key workers** essential for vital functions and **young / least vulnerable populations in the least affected areas**

5 Post lockdown supporting measures (e.g. mobile tracking)

- Rigorous **contact tracking** via mobile phone apps and operators can help monitor citizens' movements (provided privacy to be ensured[3])
- Monitoring would allow for quick reaction, crucial in order to isolate potential new infected clusters and **avoid new waves**

Imperatives for "timeboxing" the virus and economic impact



Next wave risks may waste lockdown efforts

- The potential for future waves is now being observed in Asia and **new arrivals from overseas represent a significant risk**
- Mitigant measures include **restrictions on overseas arrivals** and **resumed social distancing as well as quarantine for people coming in from overseas**
- Examples from Asia:
  - China: Re-closes all cinemas after re-opening post lockdown due to 2nd wave fears
  - Hong Kong: Shut down recreational facilities, mandated civil servants to restart working from home and encouraged private firms to follow the same approach
  - Singapore: Re-introduced social distancing measures, banning short-term visitors from entering or transiting in the city and imposing a 14-day quarantine for returning residents
  - Thailand: Imposed closure of shopping malls, non-food markets, cinemas, theatres and most other non-essential and public venues

Sources: McKinsey, Press articles

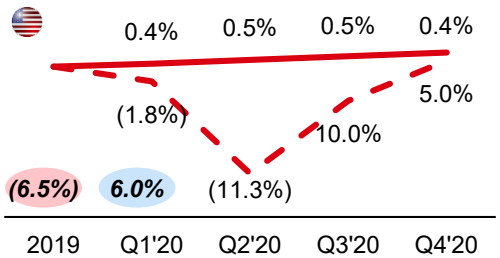
Notes:

1. Personal protective equipment
2. RT-PCR tests: Reverse transcription polymerase chain reaction technique used to measure the amount / concentration of SARS-CoV2 (COVID-19 virus code) gene expression in laboratory testing
3. E.g. Singapore is removing tracking apps and related personal data after 6 months

Peak of the COVID-19 impact on GDP in H1 with a sharp recovery in H2, however a resurgence of the virus and lockdown measures could prolong the recession period

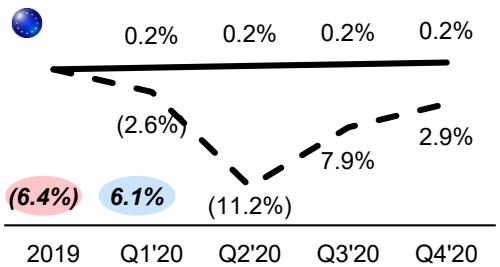
Developed markets: Anticipating a V-shaped recovery, but level of GDP will still be below previous trend

US



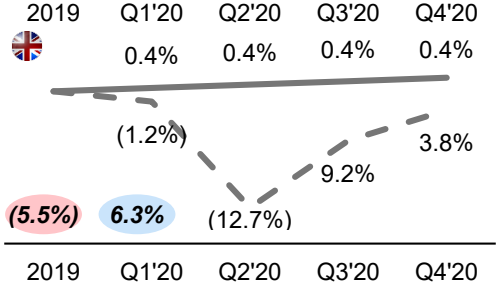
- Significant drop in Q1 and even greater in Q2 as **domestic demand drops** and **labour market worsens with temporary lay-offs**
- Level of **GDP in 2021 c.5% below the level that would have been achieved pre COVID-19**
- Magnitude of defaults and bankruptcies will be important for longevity of crisis

Eurozone



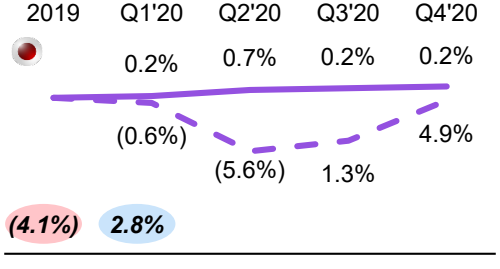
- **V-shaped recovery assuming shutdowns easing in May**
- Once restrictions are eased, **economic output could swiftly return close to where it would otherwise have been**
- **High sovereign debts in certain countries may form longer term risk**

UK



- **Decline in Q1 smaller than Eurozone with spread of COVID-19 behind mainland Europe, however a greater impact in Q2**

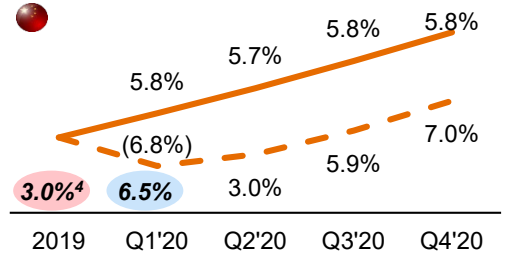
Japan



- Growth **momentum was already weak pre COVID-19**
- **Impact of cancellation of Olympics 2020, with rebound in 2021**
- **Deflation environment persists in Japan with significant demand pressure**

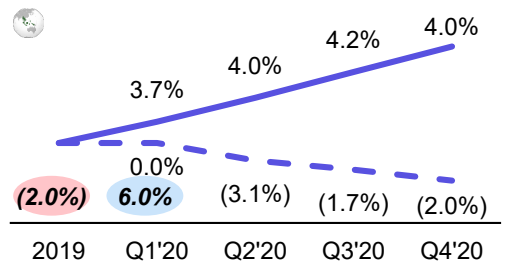
Emerging markets: Disparity in recovery and length of GDP decline, with recovery post 2020 at a lower GDP level

China[1]



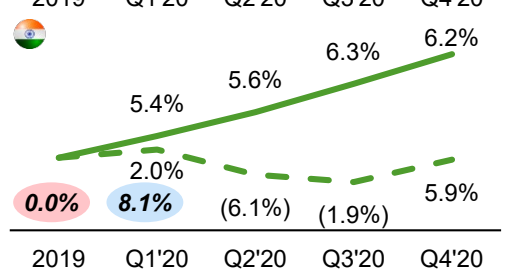
- In the **first two months of the year, industrial and service sector output dropped by 13% y-o-y** while nominal measures such as **retail sales dropped by even more**
- **Global downturn in Q2 will impact China's ability to grow as demand may be limited**

ASEAN[1,2]



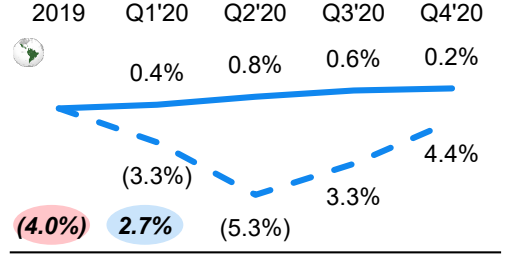
- **Indonesia**: Negative GDP growth from Q2 '20, GDP growth expected to rebound in '21
- **Malaysia, Thailand and Singapore**: Negative GDP growth across all quarters, with GDP growth expected to rebound in 2021
- **Philippines**: GDP growth halted but continuing to grow

India[1]



- **Large population and insufficient infrastructure likely to prolong COVID-19 impact in India**
- **Big dislocation of the labour force will be slow to normalize**

LatAm[3]



- **Argentina**: decline of 6.1% in 2020 and rebound of +3.0% in 2021
- **Brazil**: decline of 2.7% in 2020 and rebound of +2.6% in 2021
- **Chile:** decline of 2.5% in 2020 and rebound of +2.5% in 2021
- **Colombia**: decline of 4.1% in 2020 and rebound of +2.0% in 2021
- **Mexico**: decline of 4.5% in 2020 and rebound of +3.5% in 2021

Source: HSBC Global Research

Notes: Data as of 2-Apr-20 (based on available info); indexed to 100

1. Y-o-y % growth
2. Average of Indonesia, Malaysia, Philippines, Singapore and Vietnam
3. Average of Argentina, Brazil, Chile, Colombia and Mexico
4. Estimate pre (6.8%) actual Q1 disclosure

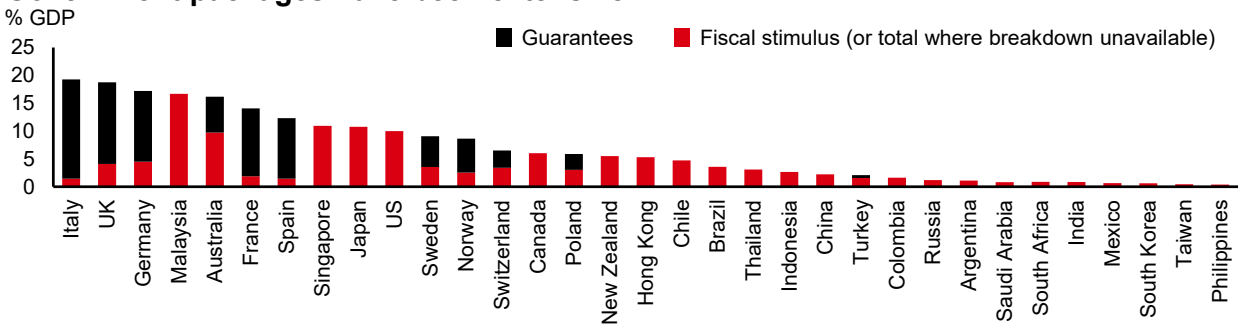
2020 GDP y-o-y% forecast[5] — Forecasted GDP growth prior to COVID-19 impact (Q_n vs. Q_{n-1})

2021 GDP y-o-y% forecast[5] — Revised GDP growth rate post COVID-19 impact (Q_n vs. Q_{n-1})

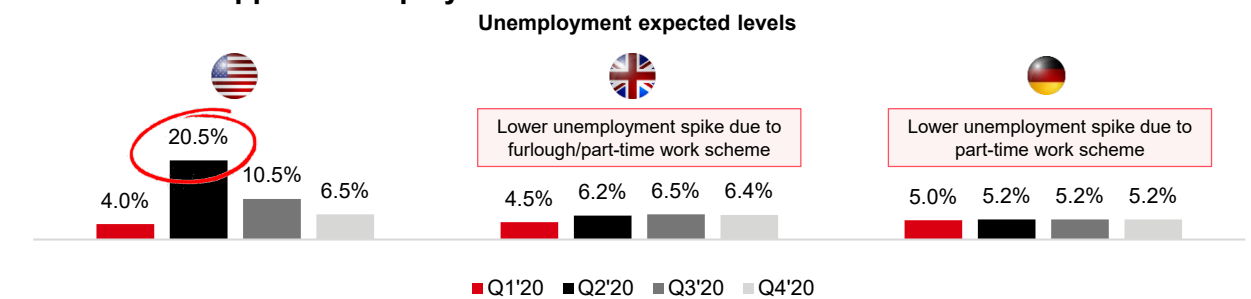
5. GDP growth y-o-y% forecasts are based on quarterly sums, e.g. Q1-Q4 2019 vs Q1-Q4 2020

Unprecedented public stimulus packages to support businesses and the unemployed will have a significant impact on the debt burden of nations

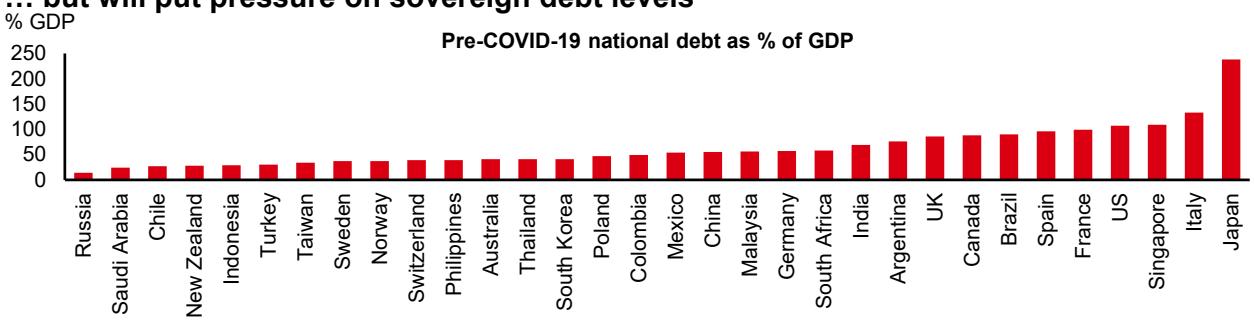
Government packages have been extensive[1]…



… in order to support unemployed…



… but will put pressure on sovereign debt levels



Potential medium-term fiscal impacts

Economic (stimulus and infrastructure investment) and individuals' (operating and wage subsidies) support measures will increase debt levels significantly, with certain countries (e.g. Japan, Italy, the US, Spain) **already having high public debt**

Debt burden may increase further post COVID-19 economic and tax measures in some countries as **stimulus packages may be rolled out to counter the recession** *(vs. austerity in other countries)*

Increased debt burden may result in **higher taxation for corporates and individuals in the future to support deleveraging**

Post COVID-19 **increased spending in healthcare and essential infrastructure (e.g. transport)** may create co-investment opportunities. Although **higher debt burden may restrict some nations in increasing investments significantly**

Risk of increased borrowing costs for governments as debt burdens rise and post COVID-19 investors may look to rebalance their portfolios towards equities again in search of yield?

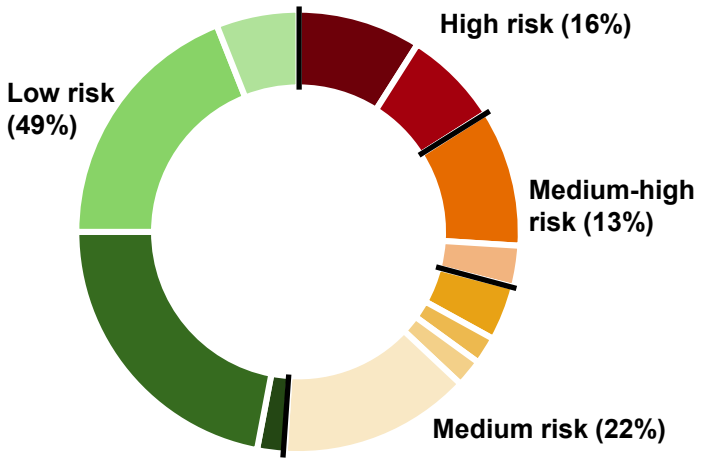
Sources: BIS, HSBC Global Research, IMF, National governments, OECD
Note: Data as of 2-Apr-20
1. Based on available information. Some breakdowns are unavailable

Significant change in consumption behaviour due to the COVID-19 pandemic…

Roughly half of spending could be adversely affected…

(US consumer spending by category)

- Recreation & Culture (9%)
- Restaurants & Hotels (7%)
- Transport (10%)
- Clothing & Footwear (3%)
- Household & Furnishings (4%)
- Alcohol & Tobacco (2%)
- Communications (2%)
- Misc (14%)
- Education (2%)
- Health (22%)
- Housing & Utilities (19%)
- Food & Drink (6%)



	How affected?	Change in spend[1]
Recreation & Culture	High	(80%)
Restaurant & Hotels	High	(90%)
Transport	Medium – High	(60%)
Clothing & Footwear	Medium – High	(50%)
Household & Furnishings	Medium – High	(50%)
Alcohol & Tobacco	Medium – Low	(5%)
Communications	Medium – Low	(5%)
Misc	Medium – Low	(10%)
Education	Low	0%
Health	Low	10%
Housing & Utilities	Low	15%
Food & Drink	Low	50%

… with certain sectors being impacted significantly from the shutdowns

High: >75% closed	Medium-high: >50% closed	Medium-low: <50% closed	Low (as normal) / positive (sales up)
Hospitality	Mining / Natural Resources	Manufacturing	Healthcare
Restaurants / Catering	Construction	Non-Essential / Non-Food Retail	Agriculture
Recreational activities / Leisure	Transport	Corporate and Industrial Real Estate	Education
Travel services / Tourism	Business services		Utilities
Entertainment and Lodging Real Estate (e.g. pubs, restaurants, hotels, etc.)			Public services

Sources: HSBC Global Research, OECD

Note:

1. Expected in Q2 2020

… whilst the medical response to COVID-19 will be a key critical driver to restoring consumer confidence and the "re-opening" sectors…

Care type	Government response	Consumer confidence	Considerations	Select "open" sectors
Reactive care (anti-inflammatories)	◆ **Lockdown measures** ◆ **Travel bans** ◆ **Closure of public spaces**		◆ Low consumer confidence given the **economic shock** and expected growth prospects ◆ Potential **loss in household income** as a result of the economic and health policy responses to the crisis ◆ **Increase of savings** amid future **uncertainty** and fears of **unemployment and labour market shrinkage** ◆ Focus on **non-adjustable household spending** ◆ Deferral of most non-essential spending	**Energy** **FMCG / F&B** **Residential rents** **Telecom** **Utilities**
Treatment care (antivirals)	◆ **Continuous social distancing and adoption of PPE across the population**		◆ Better consumer confidence if clinical trials lead to an effective treatment ◆ **Improvement of household spend** dedicated to goods and services previously prohibited or discouraged due to social distancing ◆ Deferral of significant spending given **continuous vulnerability of the economy**	**Cinemas** **Entertainment** **Pubs** **Restaurants** **Unis & education campuses**
Preventive care (vaccines)	◆ **Progressive return to "normalcy"**		◆ **Restoration of consumer confidence** and **optimism** across the population ◆ **Decrease of saving rates** as employment and market conditions are recovering and re-injection of cash in the economy ◆ Recovery of spending index, incl. significant expenditures in leisure and other recreational activities ◆ **Central business districts may be impacted** by longer term social distancing measures and working from home	**Automotive** **Corporate RE (in dense CBDs)[1]** **Hotels** **Luxury goods** **Real estate** **Travel**

Note:
1. Corporate real estate in dense central business districts

… with the hardest hit sectors potentially not seeing a restart until 2021 and taking significant time to recover from the COVID-19 pandemic…

Preliminary views on some of the hardest hit sectors based on partially effective scenario[1]

	Commercial Aerospace	Air & Travel	Insurance Carriers	Oil & Gas	Automotive	Education	Apparel / Fashion / Luxury
Estimated time to recover	Longest → Shortest						
Estimated global restart	Q3 / Q4 2021	Q1 / Q2 2021	Q4 2020	Q3 2020	Q3 2020	Late Q2 / Q3 2020	Late Q2 / Q3 2020
Industry specific examples	Preexisting industry challenges, a quick drop in possible revenue, and high fixed costs cause **near term cash flow and long term growth uncertainty** It may take years to recover from production and supply chain stoppages, due to critical vendors located in areas impacted by the virus Long order backlogs mitigate some concerns, though rapid adoption of remote work technologies may put a dent in high profitability business travel	Deep, immediate demand shock 5–6x greater than 11-Sep; c.70–80% near term demand erosion due to international travel bans and quarantines now prevalent in 130+ nations Northern hemisphere summer travel peak season deeply impacted since pandemic fears coincide with peak booking period Recovery pace faster for **domestic travel** (c.2–3 quarters); slower for **long-haul and international travel** (6+ quarters)	**US insurers have been strongly affected**, especially reinsurers and life and health insurers **Reduced interest rates** and investment performance **impacting returns—especially for longer-tail lines** **Disruptions expected in new business and underwriting processes** due to dependence on paper applications and medical underwriting	**Oil price massive decline** driven by i) the Russia-Saudi Arabia price war, ii) the sharp decrease in global demand and consumption, itself related to air travel and other transport restrictions, fall in industrial production, and drop in energy production needs, and iii) crude oil glut given rapid filling up of storage capacity (oil futures prices go negative in 20-Apr) **Oversupply expected to remain in the market even after demand recovery**, and post 2020, despite OPEC+ decision to cut production	Existing vulnerabilities (e.g. trade tensions, declining sales) **amplified by acute decline in Chinese demand**, continued supply chain and production disruption (in China, rest of Asia, EU) to amplify impact despite ongoing Chinese economic Restart Headwinds to persist into Q3 given **tight inventories** (<6 weeks), **supply chain complexity** (therefore, minimal ability to shift)	**Physical closure of campuses and schools** are impacting the education industry… … with a number of **students requesting reductions or refunds on fees**… … **prolonged social distancing may slow down a return to "normal"**… … and in the mid-term the **recession may impact the decision to postpone higher education** Select segments of the education industry are benefiting from the **surge in online education and remote learning,** a trend that may continue post COVID-19	**Overall decline** in private consumption and exports of services **Demand** for apparel categories **down sharply overall** and expected to take longer to return than economic restart**; online** growth exists (though hampered by labour shortage) Retail **stores temporarily closed** in many parts of the world—high regional variation
Company specific examples	AIRBUS BOEING Production and assembling activities have been temporarily suspended in locations affected by lockdowns due to COVID-19	AIRFRANCE KLM Number of passengers down 57% in March. Government bail-out under negotiation TUI GROUP German federal government approves EUR1.8bn KfW bridge loan	Munich RE "Exposure of over EUR500m should all events covered for pandemics be cancelled"	"Taking decisive action to reinforce the financial strength and resilience of our business so that we are well-positioned for the eventual economic recovery" "Organic capex cut of USD3bn and opex savings of USD0.8bn" TOTAL	"Volkswagen is responding especially to the fall in demand on the automobile market and the challenges faced by the supply chain" Ford Temporarily suspends European production	Wharton Stanford University "MBA students at top business schools like Wharton and Stanford have signed online petitions requesting that tuition fees are reduced as their learning experience has been impacted by coronavirus"	LVMH "COVID-19 pandemic has resulted in the closure of production sites and stores in several countries which will have an impact on the group's results"

Sources: Company information, Corporate Performance Analytics, IHS Market, McKinsey Global Institute, Press articles, Subject matter experts, S&CF Insights, S&P Capital IQ

Note:

1. Subject to change depending on the evolution of the situation

… whilst other sectors have seen very limited impact from the current pandemic and remain resilient

Preliminary views on some of the hardest hit sectors based on partially effective scenario[1]

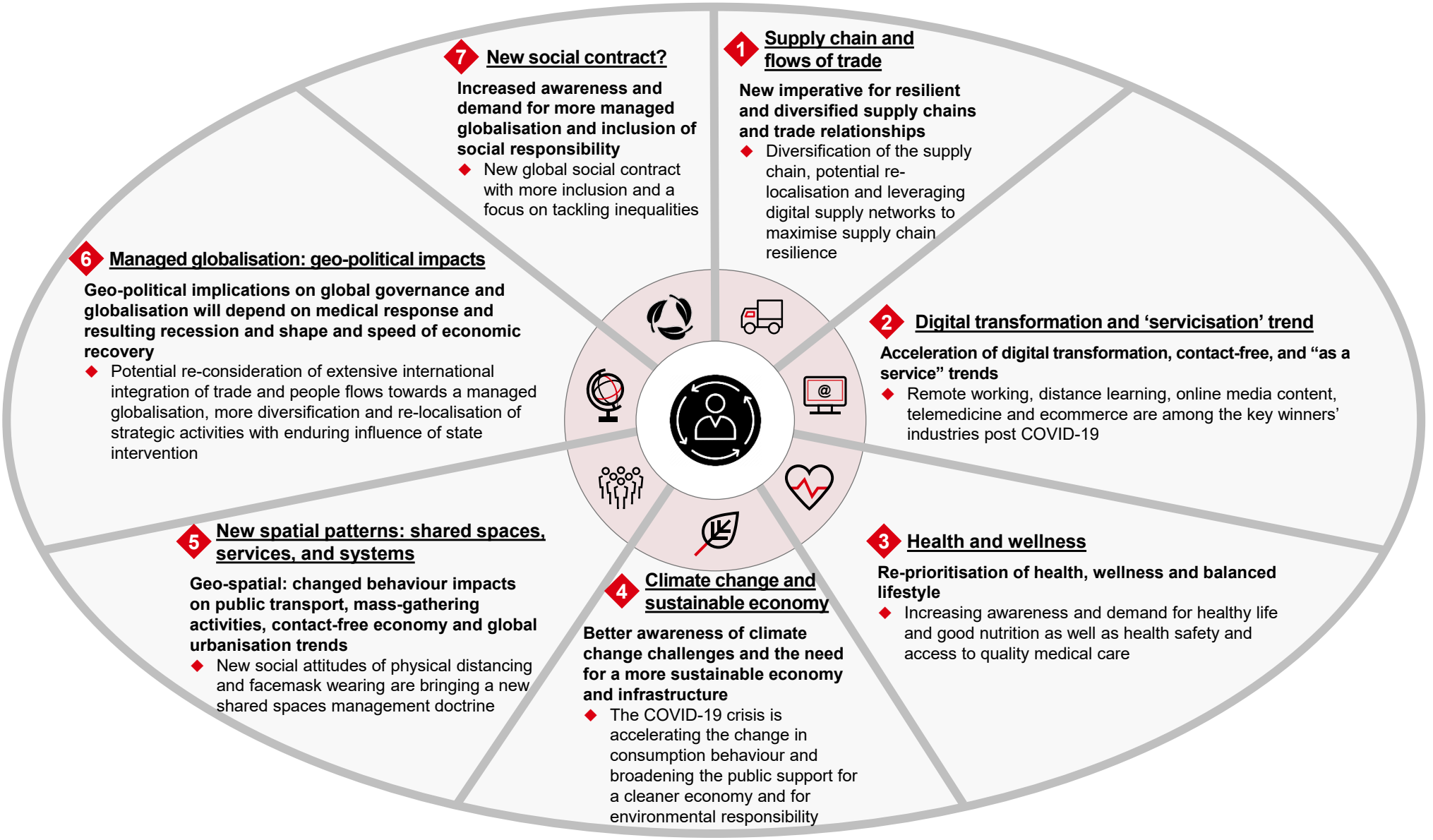
	Consumer staples and food delivery	Technology	Healthcare	Telecoms	Utilities / Renewables
Estimated level of negative impact	**Very limited / positive**				**Limited**
Industry specific examples	**Strong short-term increase in demand** for food staples and grocery shopping… … with food delivery seeing a strong increase on the back of **safety concerns and lockdown measures** Positive long-term outlook for food delivery and online food retail remains strong as safety concerns may continue to persist post COVID-19 pandemic, with **supermarkets and other retailers increasing their online presence and ramping up delivery platforms…** **… economics of delivery platforms key question for long term profitability and change of consumer behaviour as consumers look for value-based shopping**	The effects of COVID-19 are having a **significant impact on the technology sector, affecting raw materials supply, disrupting the electronics value chain, and causing an inflationary risk on products** More positively, the disruption has caused an **acceleration of remote working, and a rapid focus on evaluating and de-risking the end-to-end value chain** **Key subsectors that may benefit: software and network equipment**	**Pharma diversified supply chains and typically hold significant inventory** while governments tend to ensure ease of passage even in crisis scenarios such as COVID-19 **Manufacturing plants classified as Essential by governments** **Significant demand increase to cope with current COVID-19 pandemic for hospitals, medical equipment and lab services**	Given the quick spread of COVID-19 and an increase in countries imposing restrictions on movement, our daily lives have required **more time at home and more usage of data for work and leisure** Telecommunication companies are **focusing on increasing network resiliency and reliability for the consumer while also looking at how COVID-19 may impact their planned investments, particularly in 5G** **Governments** are likely to prioritise telecoms (e.g. towers, fibre, 5G, etc.) given the **increasing critical nature** of the sector, as it is becoming a 'utility-like' infrastructure amid the current crisis	Utilities might encounter shortages due to constrained production of supplies produced in countries highly affected by COVID-19 Developers of **renewable energy projects could potentially experience difficulties in getting critical components** from suppliers in affected countries, especially those in Asia **Expect some utilities to experience load reductions** due to **dampened demand from the commercial and industrial sectors**. They also may find that some customers are struggling to pay their bills Decline in energy prices due to demand and oil prices
Company specific examples	Takeaway.com: "Orders up 50% in Q1" ocado GROUP: "Experiencing unprecedented levels of demand, ten times higher than normal" TESCO: "Recruit 20,000 temporary colleagues"	cisco: "Cisco sees demand surge for Webex" Microsoft: "All other components of our Q3 guidance remain unchanged"[2]	PHILIPS: "Increasing the production of certain critical care products and solutions to help diagnose and treat patients with the new coronavirus disease"	vodafone: "Vodafone can play a critical role in supporting society during this unprecedented time and that is why we are announcing our five-point plan, A plan that ensures better outcomes for all citizens by working more closely with governments"	ENGIE: "Networks are demonstrating resilience, facing moderate volume timing effects and delays in selected maintenance investments. Thermal and Nuclear operations are modestly impacted by price movements on unhedged merchant power sales. Renewables operations are also impacted by such merchant price movements as well as selected instances of operational, supply chain and finance partnering constraints on capacity builds and sell-downs. Supply is impacted by lower volumes and a potential increase in bad debts"

Sources: Company information, Deloitte Insights, PwC

Notes:

1. Subject to change depending on the evolution of the situation
2. Except for the Windows OEM and Surface division

Overview of mid- to long-term socio-economic implications



1 Supply chain and flows of trade

New imperative for resilient and diversified supply chains and trade relationships

- Diversification of the supply chain, potential re-localisation and leveraging digital supply networks to maximise supply chain resilience

2 Digital transformation and 'servicisation' trend

Acceleration of digital transformation, contact-free, and "as a service" trends

- Remote working, distance learning, online media content, telemedicine and ecommerce are among the key winners' industries post COVID-19

3 Health and wellness

Re-prioritisation of health, wellness and balanced lifestyle

- Increasing awareness and demand for healthy life and good nutrition as well as health safety and access to quality medical care

4 Climate change and sustainable economy

Better awareness of climate change challenges and the need for a more sustainable economy and infrastructure

- The COVID-19 crisis is accelerating the change in consumption behaviour and broadening the public support for a cleaner economy and for environmental responsibility

5 New spatial patterns: shared spaces, services, and systems

Geo-spatial: changed behaviour impacts on public transport, mass-gathering activities, contact-free economy and global urbanisation trends

- New social attitudes of physical distancing and facemask wearing are bringing a new shared spaces management doctrine

6 Managed globalisation: geo-political impacts

Geo-political implications on global governance and globalisation will depend on medical response and resulting recession and shape and speed of economic recovery

- Potential re-consideration of extensive international integration of trade and people flows towards a managed globalisation, more diversification and re-localisation of strategic activities with enduring influence of state intervention

7 New social contract?

Increased awareness and demand for more managed globalisation and inclusion of social responsibility

- New global social contract with more inclusion and a focus on tackling inequalities

1 New supply chain paradigm, moving from a just-in-time model to a just-in-case near-shoring approach

Mitigating the crisis impact requires short-term actions on the full value chain…

Procurement and sourcing (suppliers)

- Ensure a **precise mapping** of components (origin, price, region, quality, type)
- Assess **risk of interruption** for the activity (e.g. critical components shortage, after-sales stock, customs)
- Identify **tier-2 alternative suppliers**

Assembly and manufacturing (production plants)

- Assess **shock impact** on operations, finance and production capacity
- Conduct **stress tests and scenario planning** (e.g. joint sourcing, change of transport mode)
- Identify **key workers** and activate **business continuity plan** (e.g. Roche)

Distribution (logistic platforms and dispatching centres)

- Gather **real-time inventory** information
- Ensure **safety for exposed workforce** such as delivery, retail, and after-sales (e.g. Nestle put in place additional measures for its personnel safety to avoid any cross-contamination)
- Optimise **distribution policy** (e.g. lean strategy, resilience of physical flow, alternative distributors)

… while considering mid-term solutions to build resilience and diversification against potential future market disruptions

Diversification and geographical complexity

- **Diversification of supply chain beyond the dual sourcing model**
- Potential for **re-localisation of strategic suppliers** for key products in the supply chain closer to demand locations (e.g. Hitachi expecting “serious problems” in its supply chain for rail cars in specific areas)

Leverage technology

- **Improve visibility** across end-to-end supply chain through **digital supply networks**
- **Leverage advanced technologies** such as the Internet of Things, artificial intelligence, big data, and 5G solutions
- Use **robotisation and automation** technologies

Embedding resilience in the supply chain

- **Materials or components substitutability** (alternative spare parts, use of after-sales stock, other geographical markets, etc.)
- **Embedding future resilience** though **redundancy** (increased stocks and supply competition), **resistance** (automation) and **reliability** (e.g. payment terms reducing supplier’s cash-flow exposure)

Sources: Arcadis, Harvard Business Review, McKinsey, Press articles

2 Acceleration of digital transformation, contact-free, and "as a service" trends creating new opportunities towards online channels and service-focused business models

	Tech – Remote working	Education – Distance learning	Media – Online content	Consumer & Retail – Ecommerce	Healthcare – Telemedecine	Telecom – Data surge	Real Estate – "Servicisation"
Drivers	◆ Expensive rents for companies ◆ Enlarge job search radius for employees ◆ Development of high speed internet and video conferencing tools ◆ Development of high capacity servers and secured remote access ◆ Demand for better work / life balance ◆ Savings in commuting time and costs, childcare costs, catering costs	◆ Existing commitments (e.g. work or family) not allowing for physical attendance ◆ Employer incentives ◆ Lower tuition fees	◆ Development of regional and specialised platforms ◆ Large investments in content and production capabilities ◆ Low cost solution for customers	◆ Expensive rents in offline high street ◆ Unlimited stocks and opening hours ◆ Development of supply chain, fast delivery and easy processes for returns ◆ Change of shopping behaviour and massive adoption of digital channels ◆ Robotisation / automation of logistics hubs	◆ Convenient solution for senior population with mobility issues ◆ Cheaper solution vs offline medical examination ◆ Convenient service to avoid long line-ups before an appointment	◆ Underlying driver for the development of a number of sectors ◆ Ongoing intensification of 4G and roll-out of 5G ◆ Development of data-consuming applications and content (IoT, remote working and learning, OTT[1], future cities, social media, etc.)	◆ Favourable trend towards operating and industrial real estate ◆ More supply chain, logistics and distribution platforms ◆ Collection hubs in the city centres (management of the last mile) ◆ More medical-related infrastructure (hospitals, nursing homes, care centres) ◆ Essential infrastructure (e.g. transport) mainly in emerging countries)
Challenges	◆ Inability to unplug from work ◆ Loneliness and isolation ◆ Need for high self-discipline ◆ Less collaborative environment ◆ Internet access regional disparities	◆ Reputation of online diplomas/degrees ◆ Challenging nature of grading and evaluation ◆ Absence of fellowship spirit	◆ Very fragmented content offer given multiplication of platforms ◆ Business model yet to be validated (most platforms are still loss making)	◆ A number of consumer goods still require an offline real customer experience ◆ Preference of offline shops for senior population	◆ Convenient only for community / ambulatory medicine ◆ Not adapted for specific medical needs	◆ Expensive long-term infrastructure investments ◆ Risk of internet bottlenecks during surges of usage ◆ Broadband power and speed disparities across regions	◆ Challenging market conditions for residential real estate (consumers deferring large spending, potential increase in mortgage rates) ◆ Challenging environment for corporate real estate (remote working) and commercial properties (ecommerce) ◆ Unfavourable trend for student housing (less international students with travel restrictions)

Note:
1. OTT refers to over-the-top on-demand video streaming services

3 Re-prioritisation of health, wellness and balanced lifestyle

Past reduction in healthcare public spending

- Past **budget cuts scaled down healthcare systems**[1] and participated therefore in the scarcity of resources in hospitals
- Key cost-containment measures include signi**ficant reductions in the number of curative beds and ICUs**, one of the most needed elements in the context of the current crisis

Privatisation of healthcare

- Introduction of market-like competitive instruments in the provision of medical care incl. privatisation of beds, change of hospital ownership model, and creation of private-for-profit structures

Increasing awareness for healthy lifestyle

- Higher demand for **better wellness and nutrition** alongside changing habits towards healthy living (incl. food, sport and gym, work/life balance, mental health, etc.)

Adoption of healthy food

- Adoption of more **organic and healthier diet** from more **sustainable sources** (ethical and green purchasing, small and local producers, short circuits, fair trade, etc.)

Ongoing change of behaviour and re-prioritisation of health

Push for higher government spending in health

- More public health-related expenditure is inevitable, incl. better **basic insurance coverage, medical infrastructure, and hospital capacity ramp-up**

More resources for scientific research

- Governments would be more likely to **incentivise medical research** (lab funding, drug and vaccines discovery, etc.) and create dedicated schemes to attract and retain talents

Ensure national health safety

- Consider the **re-localisation of strategic medical activities** to ensure health safety and better preparedness in the case of a health crisis

Past | **Present** | **Future**

Erosion on public health system solidarity

- Creation of **two-tiered health system**, dependent for one's capacity to afford quality private medical care in a **context of increase of social inequalities**

Limited universal access to care

- **Limited or absence of universal access to care** in a number of developed and emerging countries (e.g. the US)

Fast development or remote healthcare and health

- Increasing use of **telemedicine** and **adoption of digital and remote healthcare technologies** incl. tele-health, tracking devices, monitoring apps, connected and wearable consumer healthcare devices, etc.

Increasing development of health insurance

- Limited universal access to care is increasingly pushing households of some countries to resort increasingly to **healthcare insurance** (e.g. US)

Source: WHO

Note:

1. Many countries responded to fiscal pressure by controlling public spending on health, reducing or freezing budgets dedicated to health insurance and cutting budgets of ministry of health (e.g. Denmark, Finland, France, Ireland, Portugal, Spain)

4 Better awareness of climate change challenges and the need for a more sustainable economy and infrastructure

The current pandemic is accelerating the ongoing shift towards more sustainable infrastructure and better awareness of climate change with an environmental footprint on ecosystems…

- Governments (e.g. EU in its "Marshall Green deal") are prioritising **sustainable infrastructure investments** for the use of **public stimulus packages** (e.g. clean energy and new transport systems, more sustainable homes and buildings, improved agricultural practices water and waste management)
- COVID-19 pandemic is a **harbinger of incoming climate disasters** and the resilience required into our systems to deal with the adverse impacts of climate change
- **Oil price turmoil**[1] may be seen as a historic opportunity for cleaner energy
- Since the **Paris agreement**, the economic activity is directly linked to climate change and carbon emissions
- **Increasing corporate awareness and investor demand** for a more responsible and cleaner economy (e.g. the USD7tr BlackRock and USD3tn State Street both announced in Jan-20 putting climate change at the centre of the investment strategies for their passive funds)
- Increasing pressures on governments for **de-carbonising low-emission tech roadmaps**, by investing in green energy, power efficiency and optimised storage

… and push governments and corporates to re-think global food industry

- Changed market demand and **significant excess stocks** (e.g. daily surplus of 14m of litres of milk in the US and 0.7m litre in the UK due to coffee shops shutdown)
- **Agriculture staffing shortage** as lockdown measures are disrupting usual flows of farmers (e.g. Germany made an exception for Polish and Romanian workers to fly in and help with Spring harvest)
- **Changing food shopping habits** towards more organic and healthier food (e.g. orange commodity futures spiked on global markets by more than 20%+)
- Trends towards a more **managed globalisation** and local-centric consumption behaviour
- Pressure on China to **re-consider trade in wildlife** and reduce the number of live animals in food markets
- **Relocalisation** of some production chains to be closer to end markets, allowing to react more quickly

Note:
1. Oil price fall driven by i) the Russia-Saudi Arabia price war, ii) the sharp decrease in global demand and consumption, itself related to air travel and other transport restrictions, fall in industrial production, and drop in energy production, and iii) crude oil glut given rapid filling up of storage capacity (oil futures prices go negative in 20-Apr). Oversupply expected to remain in the market even after demand recovery, and post 2020, despite OPEC+ decision to cut production

5 New Spatial patterns: changed behaviour impacts on public transport, mass-gathering activities, low-touch economy and global urbanisation trends

1 Medical response to the crisis and resulting citizen behaviour in shared spaces

- The **medical response** to the crisis will be key in determining **the depth and the long term nature** of the ongoing **changes in lifestyle and customer behaviour in shared spaces. Shared spaces and services would need to become 'health risk assured' through either vaccine or health status security**

2 Adoption of new social attitudes in public areas

- **New social behaviour** is emerging from the current crisis (**e.g. social distancing, facemask wearing**) and having an impact on a number of sectors involving **mass-gathering**

3 Challenges around public transport

- **Mass transit modes** are face dilemma between social distancing government recommendations and ensuring continuity of a sustainable and vital service to global cities and regions
- Potential **change of dynamics** between modes: **mass transport**, **personal shared transports** (e.g. ridesharing services such as Uber or Didi), and **privately owned transports, with spatial consequences**

4 Acceleration of the low-touch economy in the light of social distancing behaviour

- Whilst **online shopping** was already meaningfully taking market share from brick-and-mortar shops, a number of new industries are **revising their business models and going online and omni channel**
- Expected spikes for **telemedicine, remote working and learning, and automation, minimising human contact across value chain** of a number of products and services

5 City planning challenges in urban agglomerations

- Future shape of successful cities depends upon health assurance of concentration and agglomeration. It may include **more distributed urbanisation** for city centre activities and **digitised advanced urban services**
- Multi-million emerging mega-cities (e.g. Delhi, Manila, Sao Paulo, Mexico, Lagos) are facing critical prevalence risk of infections and fatalities due to **dense urban areas with limited services**

6 South-Eastern Asian countries experience in pandemic management in shared spaces

- **Mimetisation of Asian approach in pandemic containment** and management of shared spaces and systems (mass testing, lockdown and self-isolation, tracking of infected people and their contacts, travel bans, cancellation of mass-gathering events, closure of public spaces, mobile tracing, etc.)

6 Geo-political implications on global governance towards a more managed globalisation and new multilateral dynamics

Citizen confidence: medical response to the crisis and resulting nature of the recovery

- The **medical response** to the crisis will be key in determining the **depth and the nature of the recession** and the **subsequent recovery** across economic operators
- Level of **population optimism** towards the economy, labour market and unemployment level, public investment in health safety and social protection, and future prospects would shape political discourse and narrative around **managed and more sustainable and responsible globalisation**

Enduring influence of State intervention

- **State intervention** across multiple sectors is **unlikely to be reversed quickly** after the crisis
- **Healthcare systems, transport networks and ICT infrastructure** are likely to be far more robust in a post COVID-19 world
- COVID-19 may spell the **end of small government** and a return of social democratic social policies and Keynesian economic policies, entailing potential implications on public investments, income tax and corporate tax systems

An era of national competition between the major powers

- **US-China competition will be supercharged** but the extent will be shaped by the outcome of the US election, itself related to the post crisis evolution
- There will be a **long geopolitical tail risk**, where countries may remember who aided / "abandoned" them during this period
- Potential for ongoing frictions between China and Western countries
- The issue of **rescuing some ailing Emerging Markets** may arise and **multiple players might emerge** (e.g. China, the US, EU)

Potential new restrictions on flows of trade and people

- Potential increasing restrictions on flows of trade including **tariffs**, **customs clearance procedures**, and **export restrictions** on strategic products
- **Re-localisation of newly strategic activities** (e.g. production of PPE[1], critical medical appliances, pharma active ingredients, testing kits)
- **Critical resources and supply chains** required to maintain functioning economies will be more tightly contested among countries
- Restrictive measures on flows of people including **travel bans** and additional **visa requirements**

Much of this disruption may be temporary but the crisis is likely to have a lasting impact on political governance, global dynamics around relationships between developed and emerging countries, and new forms of globalisation and flows of trade and people

Note:
1. PPE refers to personal protective equipment including face masks, medical professional masks, medical gloves and coats, protective glasses, sanitisers, etc.

7 A New Social Contract? Increased awareness and demand for a more managed globalisation and inclusion of social responsibility

1 Increase of social responsibility among population

- Massive adoption of remote working and video conferencing increases awareness around **responsible travelling** behaviour (e.g. in corporates) and avoiding non-essential high ecological footprint
- Lockdown and restrictive **anti-stockpiling measures** in supermarkets push customers to be more considerate paving the way to a **more local and sustainable economy and lower waste attitudes**

2 Awareness of magnified inequalities across the population

- **Low-income frontline employees** of the service economy are the most vulnerable workers during the current crisis
- Modest households are suffering from **low social protection / safety nets**

3 Appetite for more socialised globalisation in investment decisions

- The increasing pace of trade flows highlights extensive interdependencies between the countries, whetting the appetite for **more responsible and controlled globalisation**
- Increasing consideration of social responsibility in **investment decisions** of large institutional investors

4 Universal access to care to become a non-negotiable social right for governments and companies

- Increased taxation on high income taxpayers and large corporations **to finance a more protective public healthcare system for all**

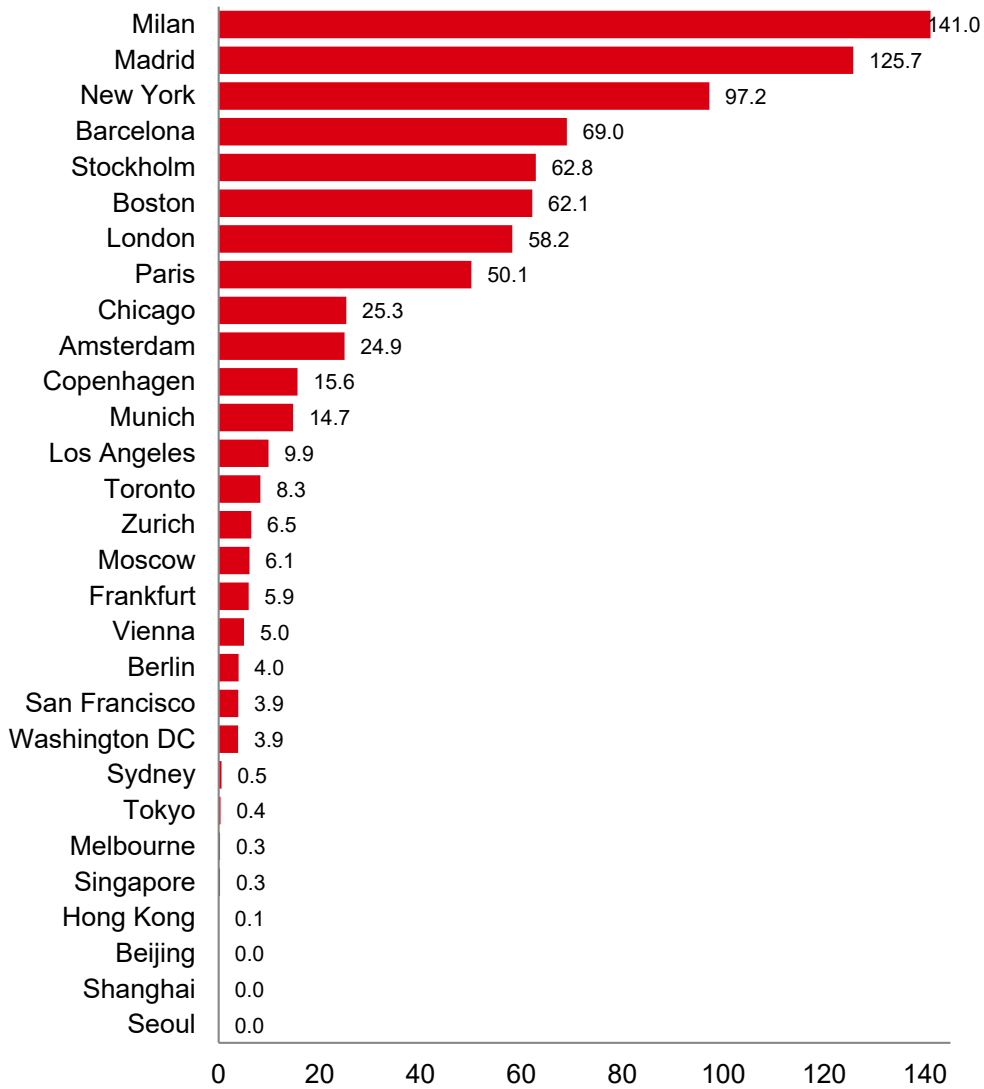
5 Intensification of the battle against tax havens

- EU and a number of governments are setting up a set of measures to **counter the tax dumping** from low-income non-cooperative offshore jurisdictions

COVID-19: Cities and New Urbanisation Trends?

- COVID-19 has emerged just as we enter the **5th decade of the century of cities**. We are on the way from 40% urbanisation in 1980 to 80% urbanisation in 2080
- COVID-19 **emerged in Wuhan**, the **largest city in Central China**
- **Cities have been at the epicentre of the contagion** due to the high levels of proximity and interaction, their greater exposure to international travellers and their connections with other cities with high infection
- Concentration effects in many cities tend to **congregate people with similar socio-economic profiles**, accelerating infection rates
- Although all countries have different patterns, **infection is more highly concentrated in cities** than in other locations
- **Cities** have been the **focus of lockdown measures**. For many cities the lockdown has been associated with the rise in digital transformation, home deliveries and 'as a service' business models, remote working, home schooling as well as a 'low-touch' economy
- It has also seen a **reduction in pollution** and the return of cleaner air and more visible wild life. This has raised many questions about the future of urban services, the built environment and gathering places.
- We are already in a major cycle of **urban-tech and smart system development for cities** with the use of IoT, AI, robotics, supporting cleaner urban growth
- **New Zero Carbon strategies** for cities have been emerging that emphasises the role of the built environment and mobility, along with energy, industry, food and consumption
- New behaviours and **changes in work and learning patterns** adopted during lockdown **may carry over into the recovery phase and next cycle**, changing the way that our cities work and the services, amenities, buildings and systems they need. The exact new patterns will vary with the speed and effectiveness of medical systems coupled with the willingness and appetite of citizens and governments to return to previous patterns or embrace change

Top 30 global cities by death rate per 100,000 population[1]

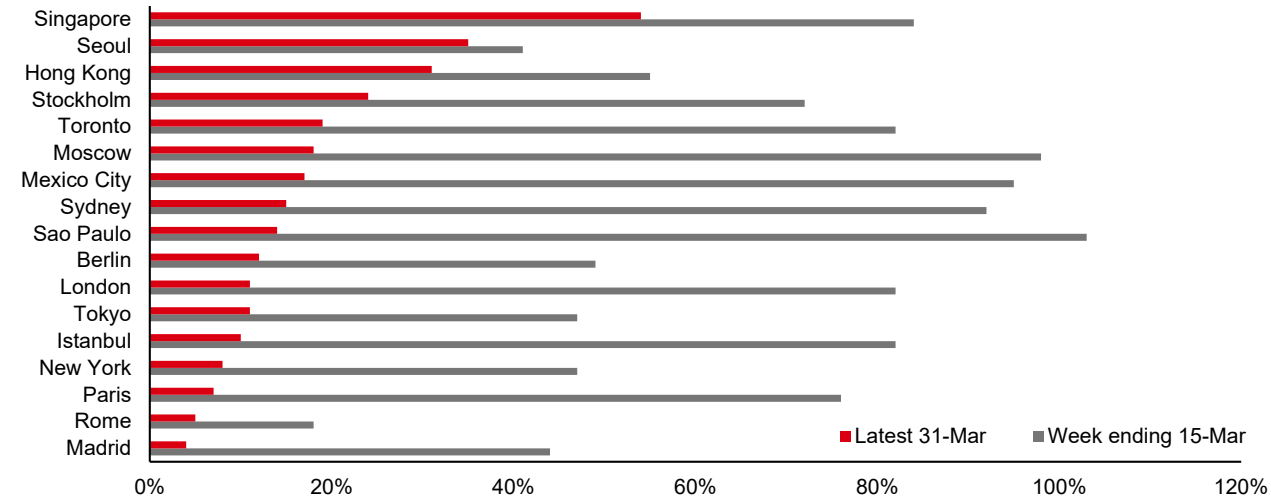


Note:
1. As of 3-May-20

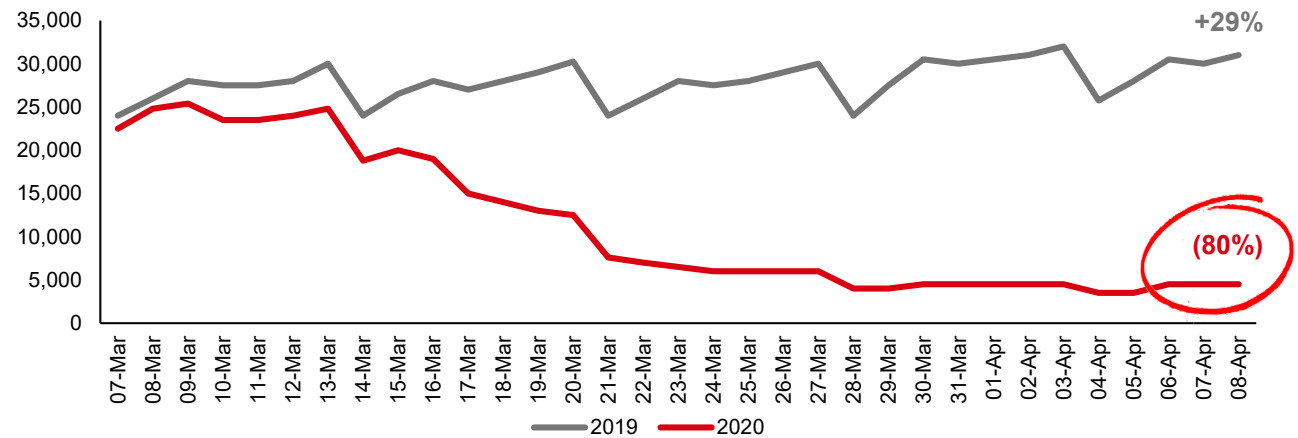
To be updated

Government lockdown restrictions on human movements may impact flows of people post crisis

Traffic is less than 20% of usual levels across major cities…
(Citymapper Mobility Index[1] - % of city moving vs. normal)



… and international travel has been significantly reduced on y-o-y basis
(# of flights)



Potential impacts on long term human movements post COVID-19

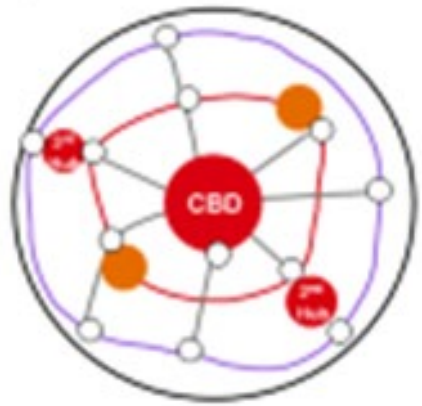
- **Reduced international business travel with video conferencing technology replacing selected face-to-face meetings**
- **International leisure travel impacted due to safety concerns**
- **Impact on migration of international employees and students**
- **Increased awareness for responsible travel and implied ecological footprint**
- **Major Issues for Cities**

Sources: Citymapper, Eurocontrol
Note:
1. Calculated by comparing trips planned in the Citymapper app to a recent typical usage period

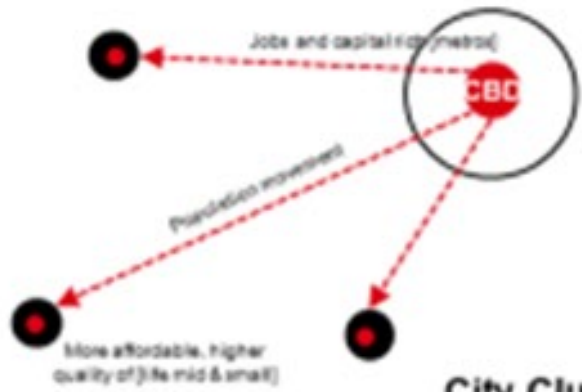
Cities interdependencies between mobility and built environment

i. Major cities need to risk adjust transit, public space, and dense buildings until vaccine is widely used.
ii. This will involve: adjusting transit ridership and finances, staggered journey times, and optimising flexibility on modes and amounts of travel.
iii. Friction with other goals such as carbon reduction and air quality will lead to efforts to avoid excessive car use, and may instead spawn acceleration in walking, cycling, e-vehicles, and other sustainable transport modes.
iv. Patterns of flexible working, eg combined home-working/office working, split shifts, and localisation of co-working facilities in sectors where this is feasible are likely to be sustained after the pandemic, resulting in some permanent changes in travel and land use patterns.
v. In the medium term this may influence adjustments in land uses, de-concentration of CBDs towards more polycentric cities, increased population spread in 2nd and 3rd tier cities, and potentially more conversion of office buildings to residential and other uses.
vi. Larger cities in some markets may see a drop in population as these processes play out. (eg in India and China)

Metropolitan Areas

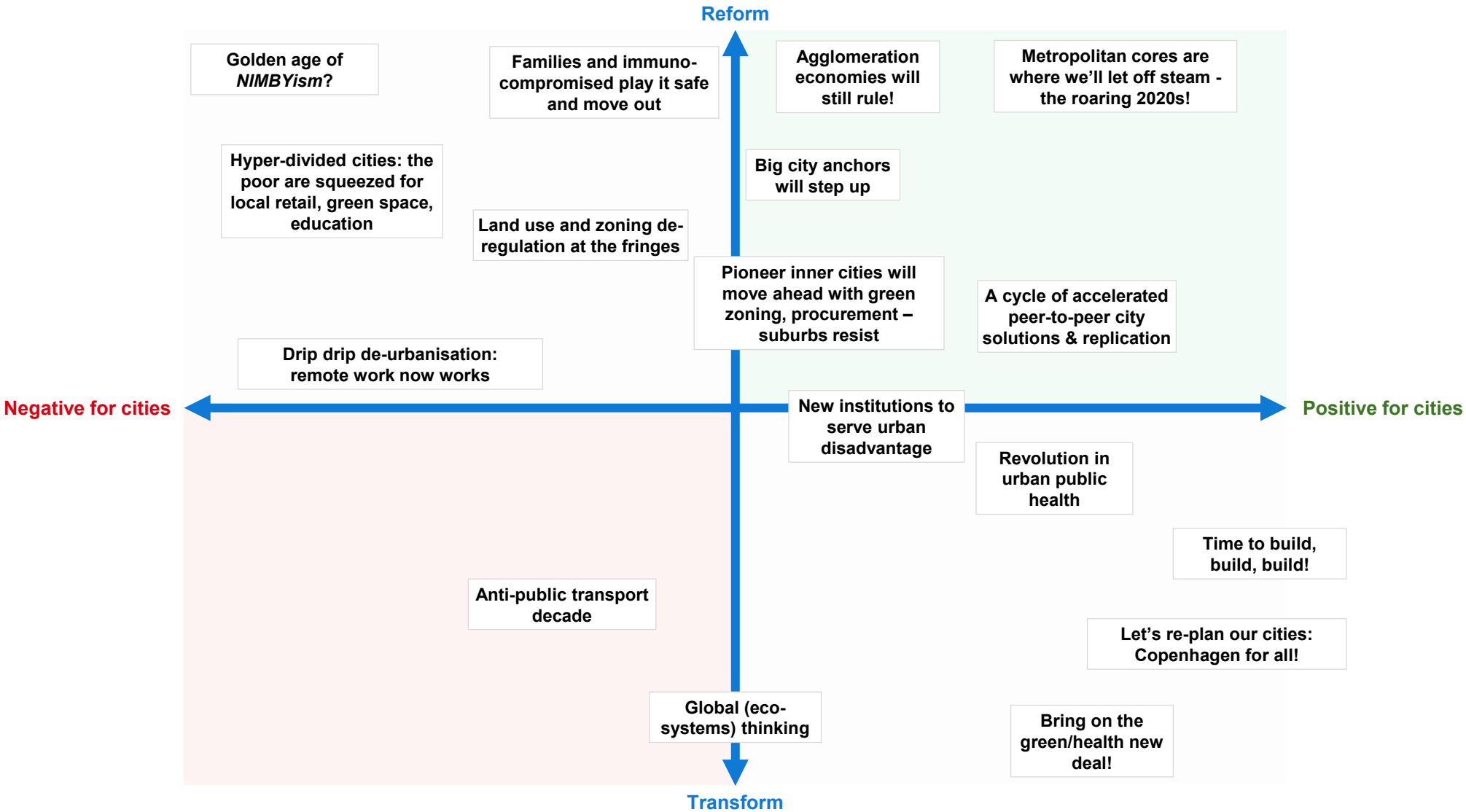


Reurbanisation of 3rd and 4th tier cities



City Clusters/Mega Regions

Geo-spatial: range of potential urbanisation impacts for global cities eco-system post COVID-19



Source: HSBC analysis

The Unbundled City v The Centripetal City

The unbundled city	V	The centripetal city
◆ De-centralisation from the big city due to diseconomies, attitudes, technologies, public policies and demographics		◆ Momentum continues towards re-urbanisation and densification, just marginally interrupted
◆ Acceleration of internet, AI, VR and autonomous transport allow clusters to disperse beyond big cities efficiently		◆ COVID-19 sorts for value-creating industries that are even more dependent on face-to-face, trust and co-ordination
◆ City-regions, especially large expensive ones, lose their competitive edge. Second cities and rural areas prosper		◆ The scale and pulling power and city-regions, and costs of de-concentration, sees demand for prime metropolitan locations intensify further
◆ Flat Earth		◆ The Single-Centre Metropolis

Potential new urban equilibrium towards the blended city pattern

The unbundled city

- De-centralisation from the big city due to diseconomies, attitudes, technologies, public policies and demographics
- Acceleration of internet, AI, VR and autonomous transport allow clusters to disperse beyond big cities efficiently
- City-regions, especially large expensive ones, lose their competitive edge. Second cities and rural areas prosper
- Flat Earth

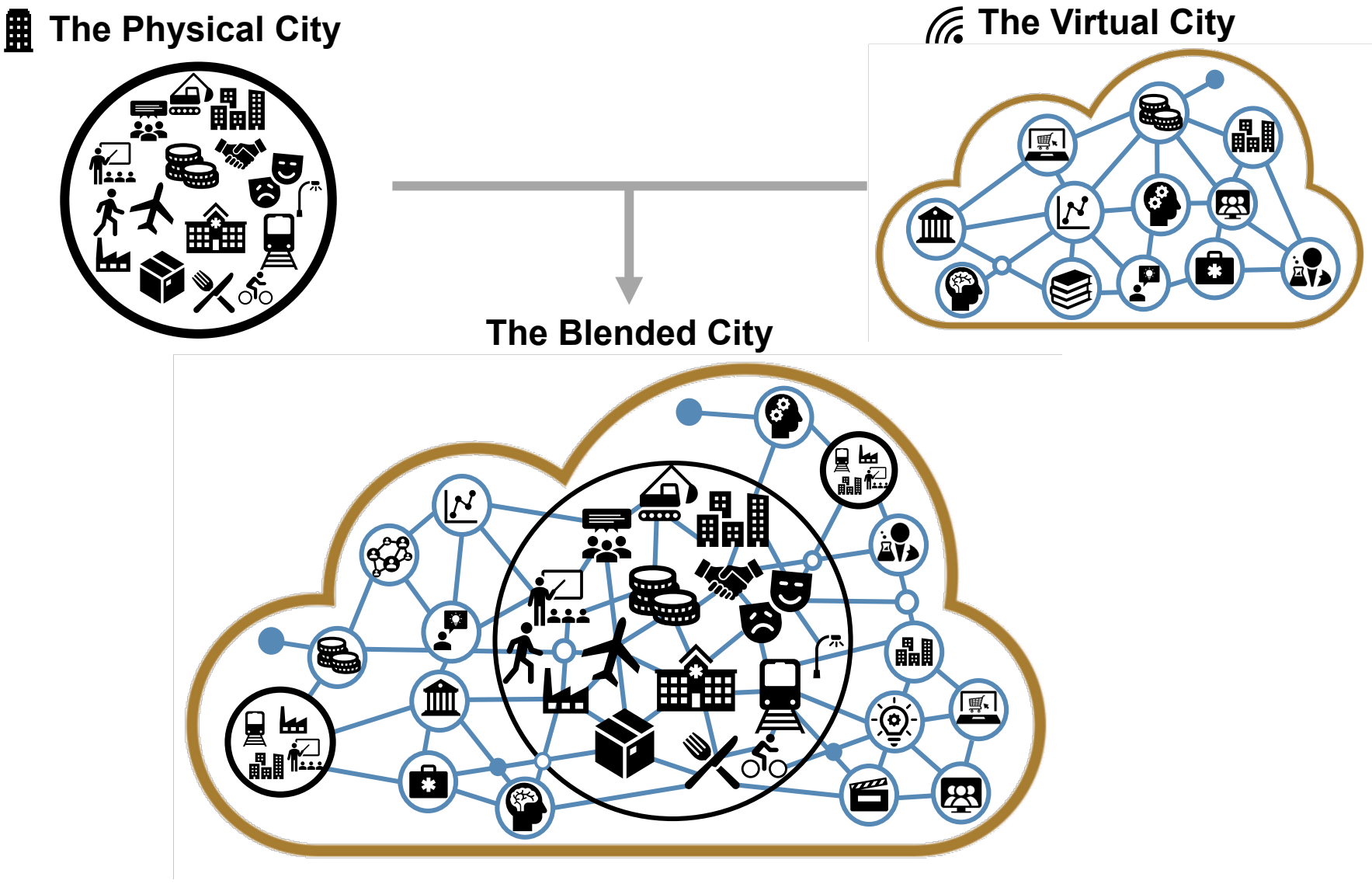
The blended city?

- Distributed urbanisation – benefits of proximity combine with larger effective scale
- Specialisations continue to concentrate while working patterns become flexible
- The competitive city-region has very strong physical and spatial platform to drive agglomeration plus discretion to gather virtually and flexibly
- Rise of the networked-region, with strong localisation effects in specific industries

The centripetal city

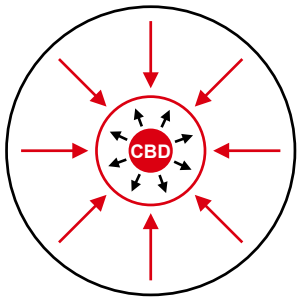
- Momentum continues towards re-urbanisation and densification, just marginally interrupted
- COVID-19 sorts for value-creating industries that are even more dependent on face-to-face, trust and co-ordination
- The scale and pulling power and city-regions, and costs of de-concentration, sees demand for prime metropolitan locations intensify further
- The Single-Centre Metropolis

The Blended City?

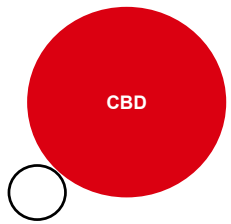


Distributed urbanisation?

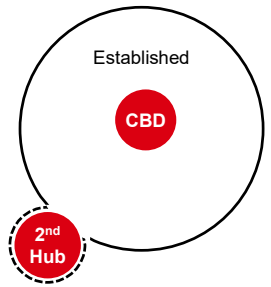
Densifying Cities



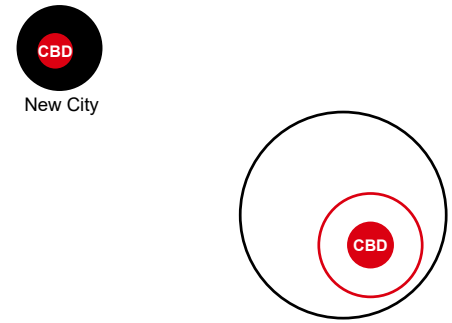
Single City with New Central Hubs



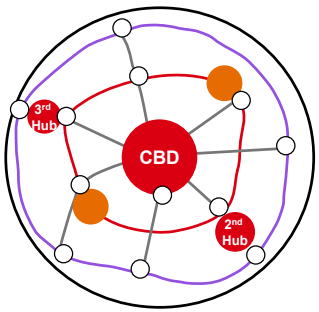
New Districts



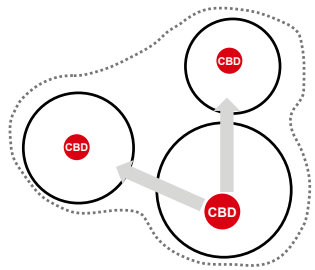
New Cities



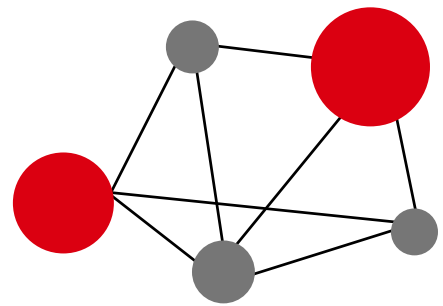
Metropolitan Areas



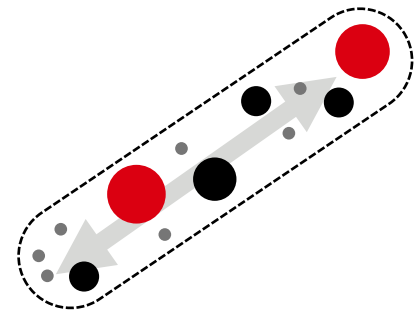
Expanding Metropolitan Regions



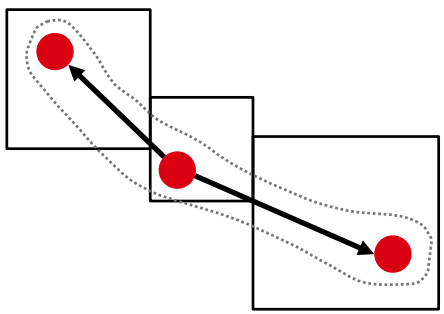
City Clusters/Mega Regions



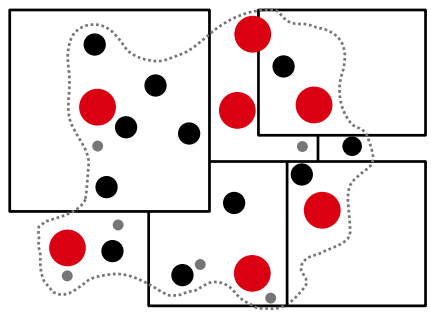
Corridors



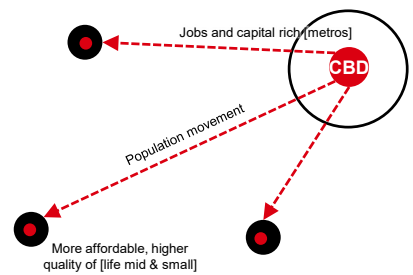
Cross Border Regions



Macro Regions



Reurbanisation of 3rd and 4th tier cities



Renewed Hemispherical City Networks

Sources: HSBC analysis

Appendix I
Global health crisis – Geographical disparities and potential solutions

Pandemic and global spread

A major pandemic affecting all the countries around the globe

The first case of someone suffering from COVID-19 can be traced back to 17-Nov-19 in Wuhan in the Chinese province of Hubei

First contained in China, the virus has spread around the world, the WHO declaring it a “pandemic” on 11-Mar-20

Thanks to lockdown and mass testing and tracing measures, Asian countries contained the virus spread; Europe and the US have become the focal points of COVID-19 since March

As of beginning of May, the daily death tolls in the majority of Western countries are in the low hundreds, and in all but a few cases those numbers are decreasing

Governments have shut down entire economic sectors in an attempt to curb the spread of the virus, which has lead to one of the most important socio-economic shocks of the century

Europe and the US are the worst affected regions

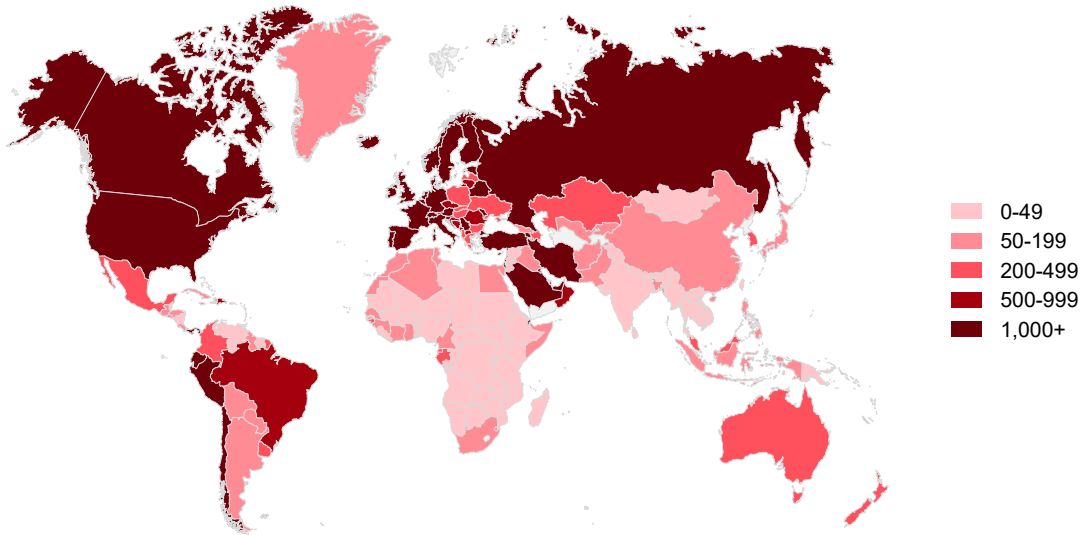
(cases per 1m people)

4,024,737
Confirmed

1,375,854
Recovered

279,313
Fatalities

6.9%
Mortality rate



Location	Confirmed	Recovered	Fatalities
US	1,343,937	201,293	79,696
EU (27)	1,016,285	524,205	115,039
Spain	223,578	133,952	26,478
Italy	218,268	103,031	30,395
UK	215,260	—	31,587
Russia	198,676	31,916	1,827
Germany	171,324	138,330	7,549

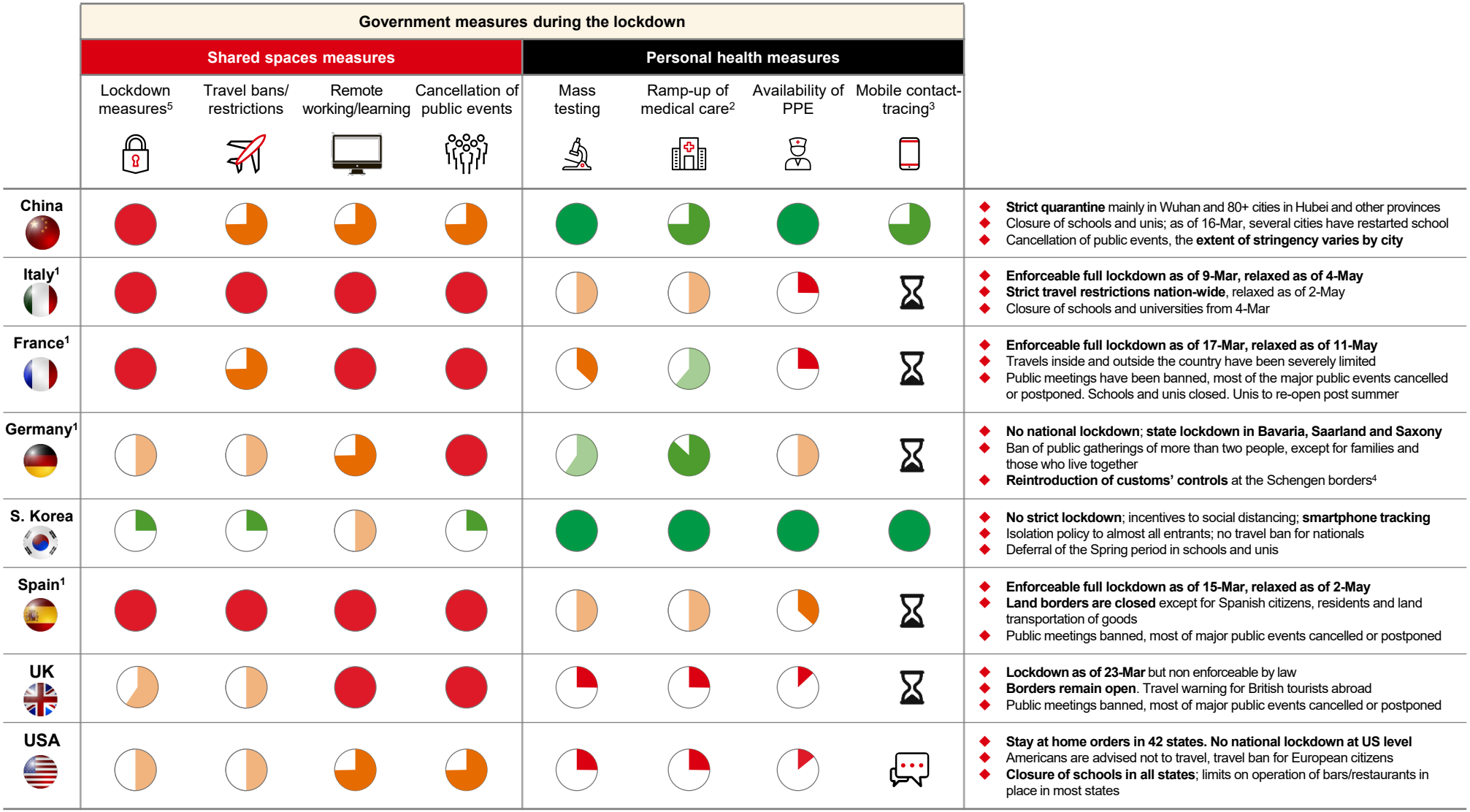
Location	Confirmed	Recovered	Fatalities
Brazil	156,061	61,685	10,656
France	138,854	56,038	26,310
Turkey	137,115	89,480	3,739
Iran	106,220	86,064	6,589
China	82,901	78,120	4,633
Canada	67,702	31,249	4,693
Peru	65,015	20,246	1,814

Location	Confirmed	Recovered	Fatalities
India	62,939	19,358	2,109
Belgium	52,596	13,411	8,581
Netherlands	42,382	—	5,422
KSA	37,136	10,144	239
Mexico	33,460	17,781	3,353
Switzerland	30,231	26,400	1,532
Pakistan	29,465	8,023	639

- Some countries incl. Spain, Italy, Germany and China have started to de-confine and reopened gradually their economies
- As of 10-May-20, **c.4.0m cases have been confirmed and more than 279k fatalities globally reported** with the US, the UK and Italy being the most severely affected

Sources: Johns Hopkins University – CSSE, Press articles, WHO, Worldometers
Notes: Data as of 10-May-20; Fatality rates may be under- or over-estimated depending on countries’ capacity of mass testing

Different containment approaches across the world



Countries are taking different approaches to counter the pandemic, however most countries have gone into lockdown to a large extent

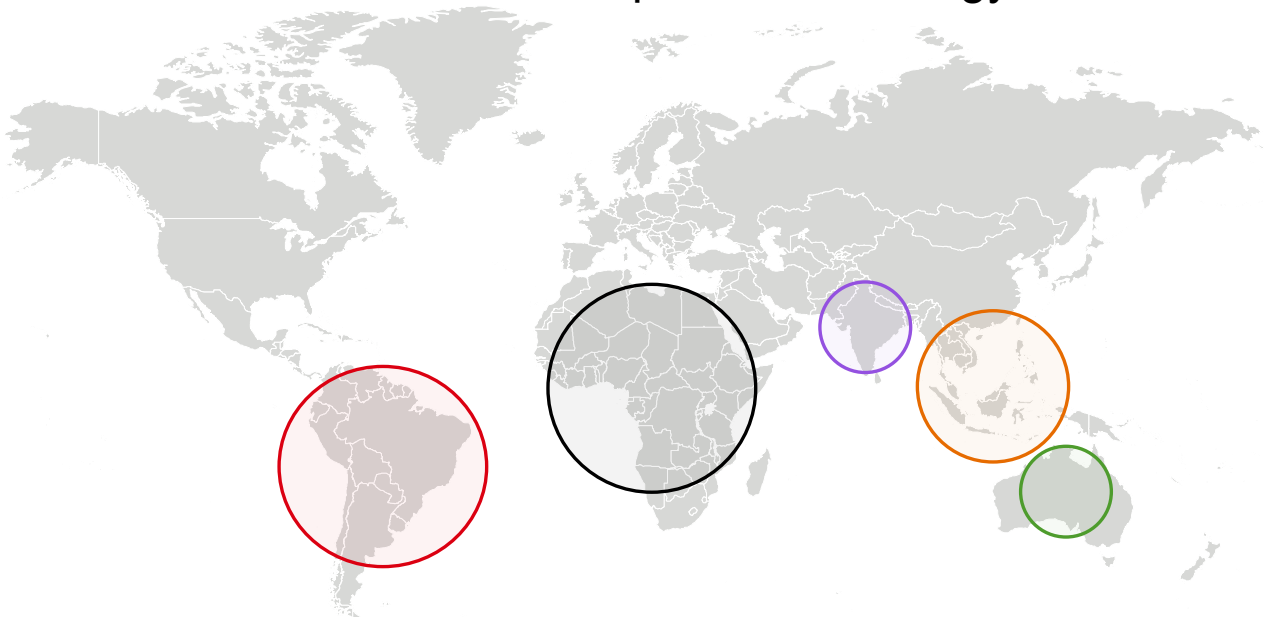
Sources: Governments' official communication, OECD
Notes: Data as of 10-May-20

In development In debate

1. Potential travel restrictions outside Schengen area until summer
2. Ramp-up of medical care includes access to universal care, number of ICUs, number of ventilators and respirators, national vs regional healthcare management, air/train patient transfer between regions, temporary hospitals, healthcare crisis management, etc.
3. Data privacy to be ensured through: open-source algorithm code; data to be stored only on smartphones; anonymised; encrypted, downloadable if required only on health authorities' servers, removed in mid-term (c. 6 months), etc.
4. France, Luxembourg, Switzerland, Denmark, Italy, Spain and Austria
5. Incl. restrictive nature of lockdown, citizen acceptance, and enforceable nature of the measures (e.g. fines)

Delayed spread in the Southern hemisphere

Introduction of social distancing and strict lockdown measures is being observed in spite of limited COVID-19 cases as a proactive strategy to contain the spread



	Confirmed	Fatalities	Mortality rate
	354,579	19,566	5.5%
	55,792	2,072	3.7%
	62,939	2,109	3.4%
	57,080	1,854	3.2%
	6,846	93	1.4%

LatAm and Caribbean[2]

- Latin America and the Caribbean suffer from a **paucity of testing**: 9 of the 20 countries conducting the fewest tests per million in the world are in this region
- Peru's President Martin Vizcarra is trying to organise a **c.USD15bn line of credit** from the Inter-American Development Bank to fight COVID-19 in coordination with Bolivia, Chile, Colombia, Ecuador and Paraguay

Africa

- Most African countries imposed **social distancing and strict lockdown measures**[1]
- Most countries have **very fragile healthcare systems**, e.g. South Africa has only c.1,000 ICUs in public and private hospitals for a population of c.57m people
- A number of conditions, such as malnutrition and difficult access to correct hygiene poses a considerable risk of widespread infection

India

- The government mandated a **21-day lockdown until 17-May-20** to prevent a burden on its fragile healthcare system
- India has one of **lowest testing rates in the world**, having local diagnostic companies gearing up to scale up testing capacity
- The country has extremely limited capacity to face the epidemic peak due to its **low number of ICU ventilators**, totalling only c.20,000 machines

Southeast Asia[3]

- Brunei **banned nationals and foreigners from leaving the country**
- Cambodian **forbid travel across provinces and districts**
- Indonesia **closed its borders** and **shut down schools and workplaces** in the capital
- Thailand is **under lockdown** and **face masks are mandatory**
- Philippines **mandated arrest for lockdown violation**

Australia

- The two largest states, New South Wales and Victoria, have introduced **lockdown measures** for all but essential services
- All Australians must practice **social distancing** and **stay home** unless going out for essentials or exercise
- All **foreign takeover and investment proposals** would be **scrutinised** by the foreign investment review board

The spread in the Southern hemisphere, particularly vulnerable to the pandemic, could lead to a critical humanitarian crisis amid poverty, high urban density, inexistent social safety nets, fragile healthcare systems, and food insecurity in a number of countries

Sources: Johns Hopkins University – CSSE, Press articles, WHO, Worldometers

Notes: Data as of 10-May-20; Fatality rates may be under- or over-estimated depending on countries' capacity of mass testing

1. Incl. school closures, bans on social gatherings and travel restriction
2. Includes Argentina, Bolivia, Brazil, Chile, Colombia, Costa Rica, Cuba, Dominican Republic, Ecuador, Guatemala, Honduras, Mexico, Panama, Paraguay, Peru, Uruguay and Venezuela
3. Includes Brunei, Cambodia, Indonesia, Laos, Malaysia, Myanmar (Burma), Philippines, Singapore, Thailand, Timor-Leste and Vietnam

Potential pandemic evolution pattern

	Stage 1: Virus discovery *Emergence of first infections*	**Stage 2: Outbreak** *First geographical localised virus clusters*	**Stage 3: Epidemic** *Acceleration of virus spread outside of local clusters*	**Stage 4: Pandemic** *Wide and regional/global spread of the virus*	**Stage 5: Return to normal** *Gradual disappearance of the virus*
Epidemiological indicators	◆ Small number of cases identified within specific locations or regions (e.g. first cases in Wuhan) ◆ No sustained local transmission	◆ Disease spread and sustained local transmission ◆ Virus spread in geographical clusters (e.g. Lombardy in Mar-20)	◆ Disease spread widely and sustained local transmission	◆ Case growth and stretched health systems ◆ Strong focus on virus, deferral of other non-essential clinical operations	◆ New cases drop, while surveillance continues to monitor subsequent waves ◆ Gradual development of herd immunity among population
Economic indicators	◆ No significant economic impact	◆ Minor impact, primarily on supply side ◆ Global trade slowly being affected ◆ First market reactions mainly in exposed countries	◆ Government interventions are instituted, impacting consumption ◆ Lockdowns impacting production in non-vital sectors (e.g. airlines, leisure activities)	◆ Consumption slump and inventory "whiplash" due to quarantine measures ◆ Inventory hoarding due to uncoordinated actors exacerbating supply chain	◆ Consumption begins to rise, as quarantine begins to be rolled back ◆ Production restarting gradually at a low pace due to new social distancing and other restriction measures
Social indicators	◆ Activity remains normal	◆ Governments may begin coordinating containment activities ◆ Activity remains mostly normal	◆ Shifts in public behaviour begin in response government actions ◆ Social distancing measures implemented	◆ Larger number of citizens remain at home in response to the implementation of government contingency plans ◆ Cancellation of public gatherings and events	◆ Social activity begins to resume ◆ Progressive return to normalcy

Source: McKinsey

Pandemic management of Eastern Asian countries

Lessons learnt from SARS, H1N1, MERS and H7N9 over the last two decades

Disease	Key figures	Overview	Lessons learnt
SARS[1,2] *Nov-02*	◆ **8,000+ cases** ◆ **c.800 fatalities** ◆ **c.19 months** ◆ **Mainly China**	◆ Many of those infected went from having flu-like symptoms to severe pneumonia within days ◆ China was criticised by the UN's global health body for concealing the scale of the outbreak	◆ Collaboration with other countries: It took months for the scale of China's crisis to be exposed, whilst it is essential to contain the outbreak ◆ Sharing genetic information: Health officials may allow faster diagnoses at a global level by releasing virus' genetic sequences ◆ Medical response improvement: China's health spending rose after the crisis, involving the creation of a **centralised case reporting system**
H1N1 *Mar-09*	◆ **6,724,149 cases** ◆ **18,449 fatalities** ◆ **c.16 months** ◆ **Mainly Asia**	◆ In Mar-09, the first case of a novel H1N1 influenza virus infection, also known as swine flu, was documented in Mexico and rapidly spread through the US ◆ It ended on 10-Aug-10	◆ Social distancing: **School closings, sick leave, partial lockdown** and community mitigation strategies are powerful instruments in blocking the spread of the virus ◆ Hospital surge capacity: Improving the ability for health providers to manage a **massive influx of patients** ◆ Effective infection control: Widespread **use of face masks** and **hand-hygiene sanitizers** may result in a lower transmission risk
MERS[2,3] *Sep-12*	◆ **2,494 cases** ◆ **912 fatalities** ◆ **c.35 months** ◆ **Mainly Middle East**	◆ MERS is a viral respiratory disease that was first identified in Saudi Arabia in Sep-12 ◆ The source of the virus remains unknown, but the pattern of transmission and virological studies point toward dromedary camels in the Middle East	◆ Surveillance system and registration: **Primary healthcare system** has to be developed, especially in developing countries, in order to overcome diseases in a long-time period ◆ Research investment: There is no current vaccine for MERS CorV, highlighting the **need of public and private spending in terms of research**
H7N9 *Mar-13*	◆ **1,567 cases** ◆ **c.615 fatalities** ◆ **c.70 months** ◆ **China only**	◆ Avian influenza H7N9 is a subtype of influenza viruses that have been detected in birds. This virus had not previously been seen in either animals or people until Mar-13 in China ◆ There have been 6 epidemics related to the virus. The largest number was registered in 2017 with 759 cases	◆ Massive testing: **Ramping up testing capacity** helps to limit infection ◆ Infrastructure strengthening: Increase preparedness to respond to potential emerging and incoming disease threats ◆ Tracking: A number of countries started tracking infected people's phones to geographically monitor the spread of the virus

COVID-19 appears to have spread faster and to be more contagious than the previous viruses diagnosed over the last years

Sources: Press articles, US National Library of Medicine, WHO

Notes:
1. Severe Acute Respiratory Syndrome
2. SARS and MERS outbreaks are both caused by human forms of coronavirus
3. Middle East Respiratory Syndrome

Potential care solutions

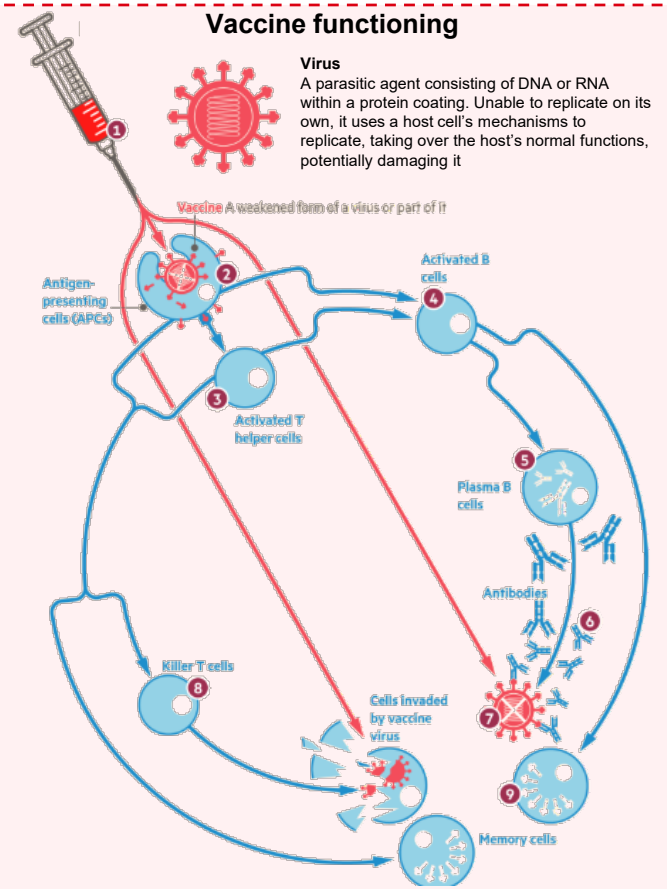
Multiple treatments offer relative relief at different stages of the disease, while vaccines remain the only real proactive measure

Available / capacity to ramp up

Type	Solution	Efficacy	Overview
Reactive care	Anti-inflammatory drugs and antibiotics		• Antibiotics fight potential bacterial injections while anti-inflammatories help reducing lung inflammations • Specific **inhibitors** are being studied, as they help **lowering** the production of **inflammatory proteins** • **Useful in case of severe health complications** when patients may suffer from respiratory distress syndromes
	Intensive care		• Respiratory machines designed to **push oxygen into the lungs of patients** with acute breathing difficulties • Ventilators are **critical for the survival** of patients **at risk for acute respiratory failure** • Such machines are extremely useful in the case of an over-inflammatory response of the body putting patients in respiratory distress risk
Treatment care (6 months)	Antiviral drugs[1]		• Antivirals **stop coronavirus replication** by interfering with enzymes that help it copy itself and spread • Several clinical trials are ongoing to test a number of existing molecules (e.g. hydroxychloroquine and Azithromycin) • Other drugs designed for treatment of the Ebola virus, HIV, flu and malaria are being considered • **Useful mainly in early stages** of the disease
Passive approach (12 months[2])	Herd immunity[3]		• The **virus would stop spreading when enough people have become resistant** since they have been already infected • May be obtained when enough people are immune (>50% of the population). **Infected people would theoretically have much less viral load and would be therefore less able to pass on the disease** • Risky approach with a potential high number of fatalities and an extreme pressure on care systems
Preventive care (12-18 months)	Vaccines[4]		• Produced using a weakened form of the virus, which may be derived from COVID-19 patients' immune response • **Reproduce patients' antibodies** to support people with less robust responses, but **may require long time to pharma groups** • Memory cells retain recognition of vaccine antigens, having a **faster and stronger response to the real virus** • **A number of vaccines are already under development[4]**

Vaccine functioning

Virus
A parasitic agent consisting of DNA or RNA within a protein coating. Unable to replicate on its own, it uses a host cell's mechanisms to replicate, taking over the host's normal functions, potentially damaging it



1. The vaccine is injected
2. Antigen-presenting cells (APCs) absorb immunity-stimulating components
3. Antigens activate T cells, which alert other cells
4. T-helper cells or antigens activate B cells, which recognize the antigen as a threat
5. Some B cells mature into plasma b cells…
6. … producing antibodies
7. Antibodies can hinder or prevent antigens' operation
8. APCs and T-helper cells also activate killer T cells, which destroy virus-invaded cells
9. Memory cells retain recognition of the vaccine antigens

Sources: CEPI, Moderna, Press articles, The College of Physicians of Philadelphia, FT Research, Inserm, WHO, OECD Research, Pasteur Institute, Sanofi, GSK

Notes:
1. A number of clinical trials is ongoing globally to investigate different potential therapies (e.g. 'Discovery' clinical trial in Europe)
2. To be developed
3. According to WHO, very little signs of possible herd immunity/immunity passport given new waves in a number of countries (e.g. Singapore) and new infections relapse among recovered people (virus reanimation and/or antibodies issue)
4. A number of clinical trials are expected to commence in Q2 20' to test potential vaccines on humans (e.g. candidate vaccines being developed by Pasteur Institute, Sanofi and GSK)

Appendix II
Market reaction and possible recovery scenarios

Indices have recovered part of their decline from the trough in end of Mar-20…

… whilst the debt market has seen investors move funds into safer high rated/sovereign bonds

US: S&P 500 index down 13% vs. the peak with greater exposure to corporates and financials

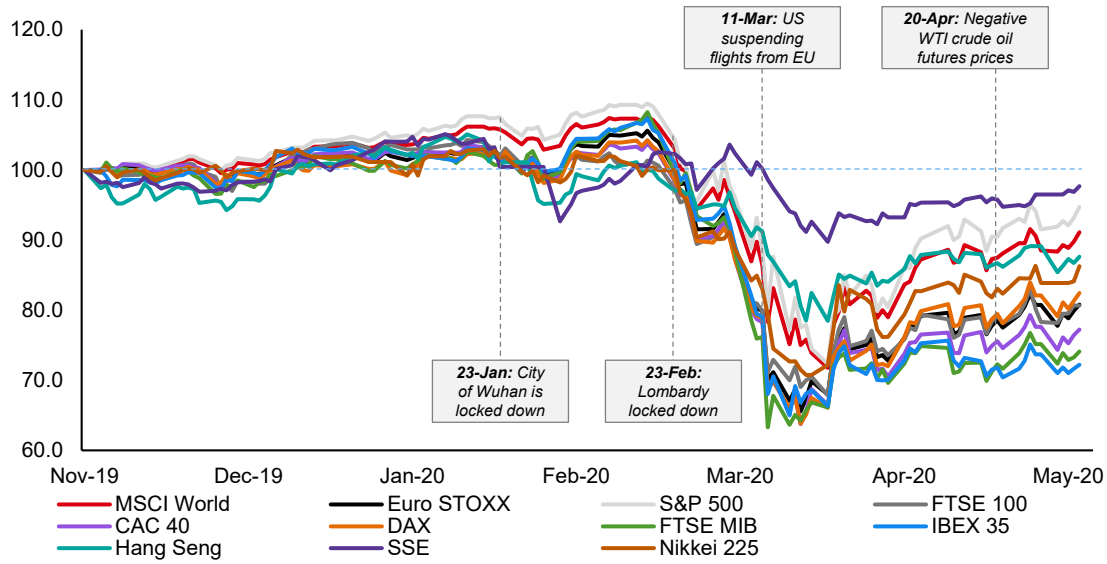
Europe: European indices hit harder than Asian and US indices to date with decline of c.25% (and c.25-35% since the peak)

Hong Kong and China: Indices have shown resilience to the COVID-19 pandemic

The COVID-19 spread has led to a severe equity sell-off, as a result safe havens (government bonds) are trading at record low yield

Volatility indices are now trading at very elevated levels compared to long-term average, though decreasing vs. previous peak levels

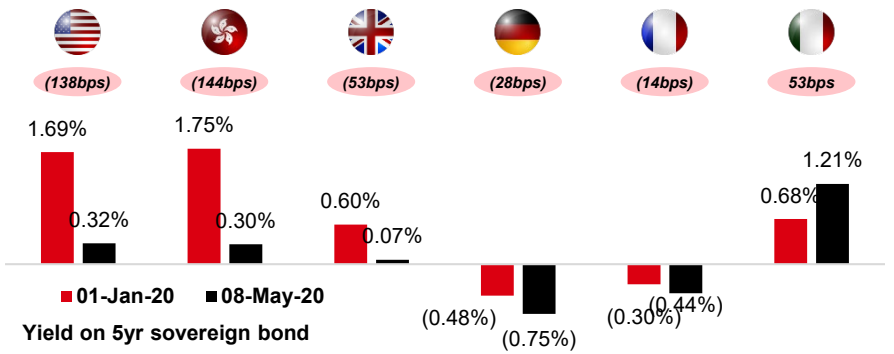
Equity indices *(rebased to 100)*



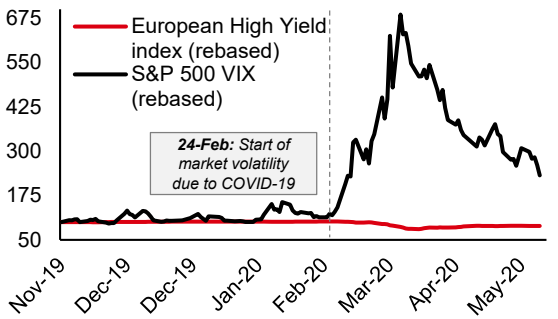
	Δ since peak	Δ since trough	Δ last 6 months
MSCI World	(15%)	27%	(9%)
Euro STOXX	(23%)	23%	(19%)
S&P 500	(13%)	31%	(5%)
FTSE 100	(23%)	19%	(19%)
CAC 40	(26%)	21%	(23%)
DAX	(21%)	29%	(18%)
FTSE MIB	(32%)	17%	(26%)
IBEX 35	(33%)	11%	(28%)
Hang Seng	(17%)	12%	(12%)
SSE	(7%)	9%	(2%)
Nikkei 225	(16%)	22%	(14%)

Debt markets

Central banks lowering interest rates and investors seeking safe havens have resulted in lower yields…



… whilst investors are selling off high yield and leveraged loans in an extreme volatile market

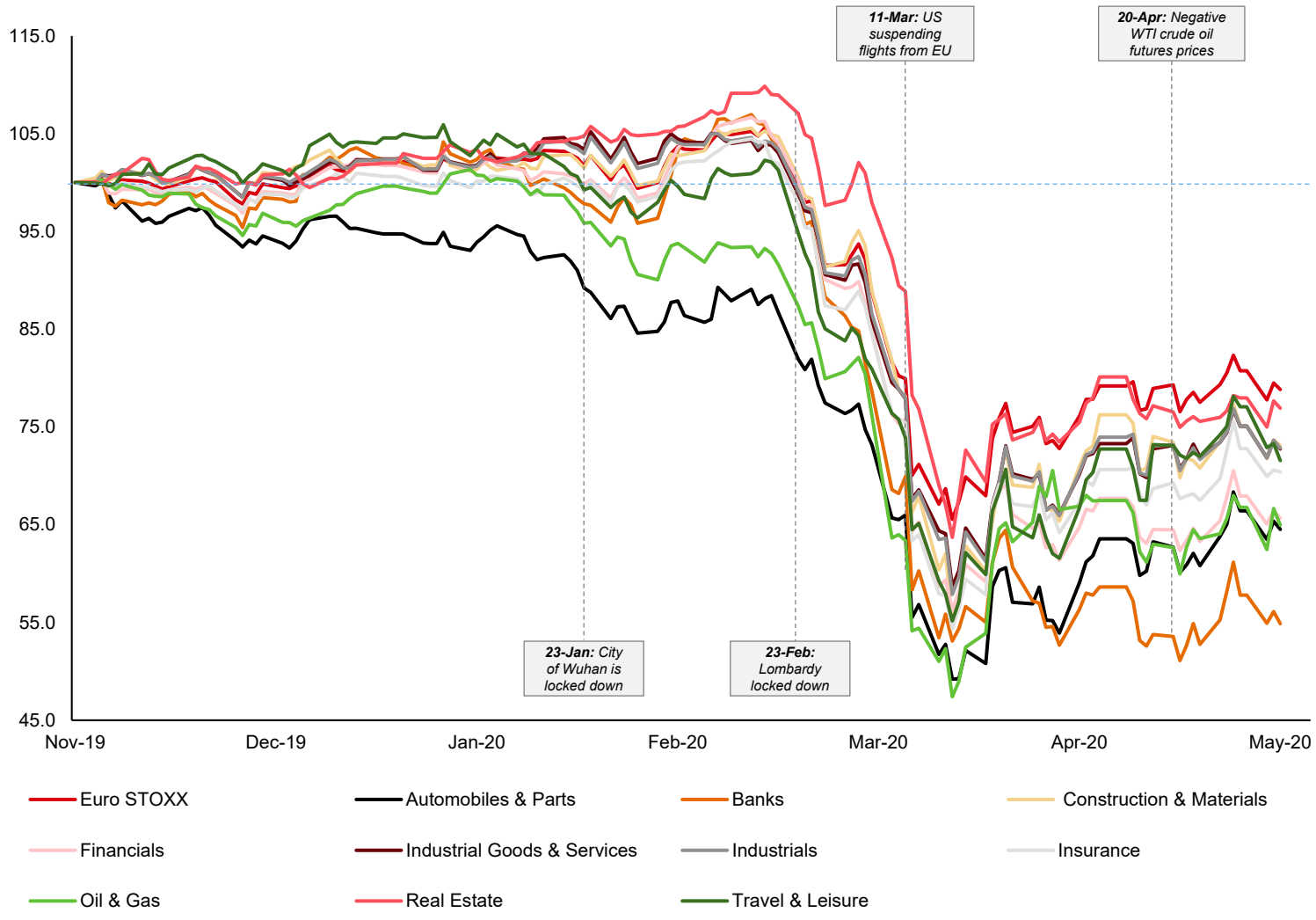


Source: FactSet as of 8-May-20

Banks and Financials, O&G, Automotive, Insurance and Travel & Leisure sectors have been hardest hit by the COVID-19 pandemic…

	Δ since peak	Δ since trough	Δ last 6 months
Euro STOXX	(25%)	20%	(21%)
Banks	(49%)	7%	(45%)
Financials	(38%)	17%	(34%)
Oil & Gas	(36%)	37%	(35%)
Automobiles & Parts	(35%)	31%	(35%)
Insurance	(33%)	29%	(30%)
Travel & Leisure	(32%)	30%	(28%)
Industrial Goods & Services	(31%)	24%	(27%)
Construction & Materials	(31%)	33%	(27%)
Industrials	(31%)	26%	(27%)
Real Estate	(30%)	21%	(23%)

Sector Eurostoxx indices *(rebased to 100)*

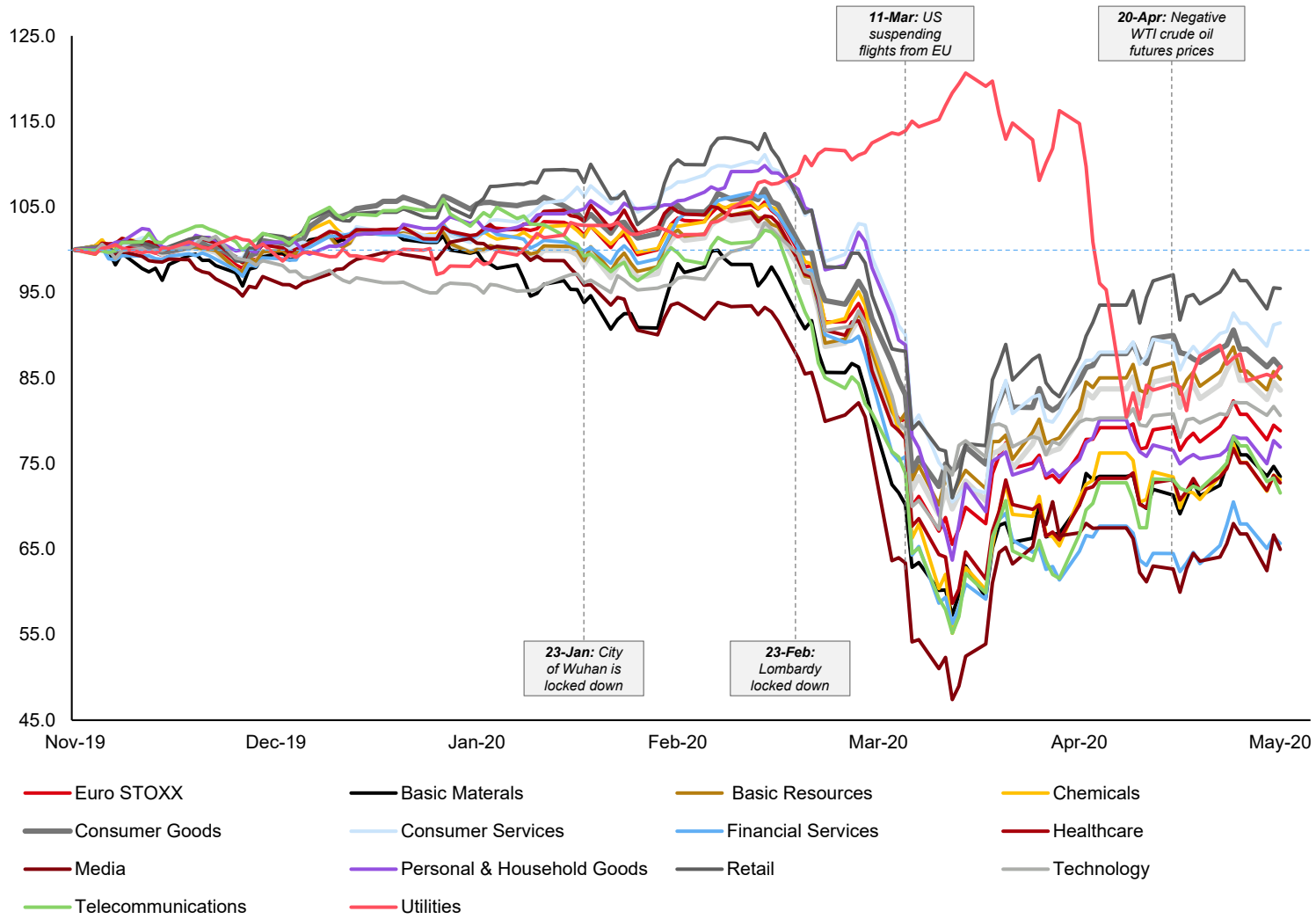


Source: FactSet as of 8-May-20

… whilst other sectors such as Healthcare and Technology have seen a more limited impact from the outbreak. The Retail and non-essential sector has been hit by the pandemic but supermarkets and online ecommerce continue to do well

	Δ since peak	Δ since trough	Δ last 6 months
Euro STOXX	(25%)	20%	(21%)
Basic Resources	(28%)	28%	(27%)
Utilities	(27%)	10%	(11%)
Consumer Goods	(25%)	15%	(24%)
Media	(24%)	15%	(24%)
Telecoms	(22%)	20%	(19%)
Personal & Household Goods	(20%)	14%	(15%)
Basic Materials	(20%)	21%	(16%)
Consumer Services	(19%)	19%	(14%)
Chemicals	(19%)	21%	(15%)
Financial Services	(18%)	30%	(9%)
Technology	(16%)	34%	(5%)
Retail[1]	(16%)	21%	(5%)
Healthcare	(10%)	25%	(0%)

Sector Eurostoxx indices *(rebased to 100)*



Source: FactSet as of 8-May-20

Note:

1. Large component of EUROSTOXX Retail index is grocery businesses

Scenarios for the economic impact of the COVID-19 crisis

GDP impact of COVID-19 spread, public health response, and economic policies

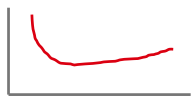
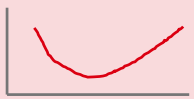
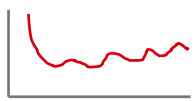
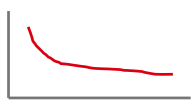
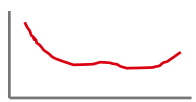
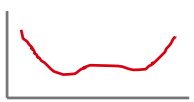
Virus spread and public health response

Effectiveness of the public health response in controlling the spread and human impact of COVID-19

Rapid and effective control of virus spread
Strong public health response succeeds in controlling spread in each country within 2-3 months

Effective response, but (regional) virus resurgence
Public health response initially succeeds but measures are not sufficient to prevent viral resurgence so social distancing continues (regionally) for several months

Broad failure of public health interventions
Public health response fails to control the spread of the virus for an extended period of time (e.g. until vaccines are available)

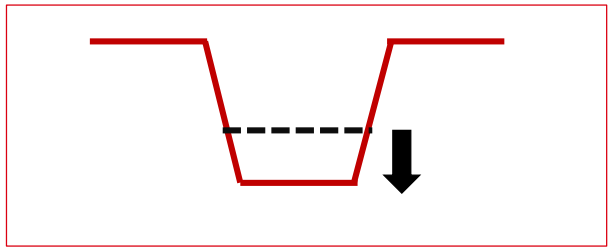
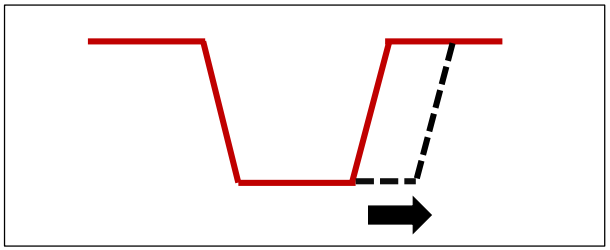
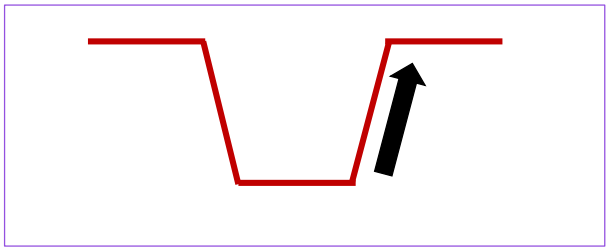
Ineffective interventions	Partially effective Interventions	Highly effective interventions
Self-reinforcing recession dynamics kick-in; widespread bankruptcies and credit defaults; potential banking crisis	Policy responses partially offset economic damage; banking crisis is avoided; recovery levels muted	Strong policy responses prevent structural damage; recovery to pre-crisis fundamentals and momentum
Virus contained, but sector Damage; lower long-term trend growth 	**Virus contained, slow recovery** 	**Virus contained, Strong growth rebound** 
Virus resurgence; slow long-term growth 	**Virus resurgence; slow long-term growth** **Muted world recovery** 	**Virus resurgence; return to trend growth** **Strong world rebound** 
Pandemic escalation; Prolonged downturn without economic recovery 	**Pandemic escalation; slow progression towards economic recovery** 	**Pandemic escalation; delayed but full economic recovery** 

Knock-on effects and economic policy response
Speed and strength of recovery depends on whether policy moves can mitigate self-reinforcing recessionary dynamics (e.g. corporate defaults, credit crunch) of COVID-19

Sources: Safeguarding our lives and our livelihoods: The imperative of our time," Sven Smit, Martin Hirt, Kevin Buehler, Susan Lund, Ezra Greenberg, and Arvind Govindarajan McKinsey & Company

Items to look for in the coming weeks

Questions on the recovery

	Depth of disruption	Length of disruption	Shape of recovery
	How deep are the demand reductions?	How long could the disruption last?	What shape could recovery take
			
Indicators – Epidemiological	◆ Time to **implement social distancing** after community transmission confirmed ◆ Number of cases – absolute (expect surge as testing expands) ◆ **Geographic distribution** of cases relative to economic contribution	◆ Rate of **change of cases** ◆ Evidence of **virus seasonality** ◆ **Test count** per million people ◆ % of cases treated at home ◆ % utilisation of **hospital beds** (overstretched system recovers slower) ◆ Availability of **therapies** ◆ Case **fatality ratio** vs. other countries	◆ Effective **integration of public health measures with economic activity** (e.g. rapid testing as pre-requisite for flying) ◆ Potential for different disease characteristics over time (e.g. mutation, reinfection)
Indicators – Economic	◆ Cuts in spending on durable goods (e.g. cars, appliances) ◆ **Extent of behaviour shift** (e.g. restaurant spend, gym, other leisure activities) ◆ Extent of **travel reduction** (% flight cancellations, travel bans)	◆ **Late payments/credit defaults** ◆ **Stock market volatility** ◆ Drastic **drop in consumption** index ◆ Initial **claims for unemployment**	◆ **Bounce-back in economic activity** in countries that were exposed early in pandemic ◆ Early private and **public sector actions** during the pandemic to ensure economic restart

Source: McKinsey

Overview of measures taken by selected countries

“Whatever it takes in Eurozone and the US”

Overall	◆ Emergency spending bill of over **USD116bn** ◆ CARES Act cost of **USD2tr** (c.9% of GDP)	◆ Frontloading of infrastructure projects ◆ Launching of new projects locally	◆ **GBP402bn** fiscal package (c.18% of GDP) ◆ **Additional GBP42bn** fiscal measures (incl. GBP5nbn to support NHS)	◆ Fiscal measures and fund of over **EUR1tr** for support ◆ Investment package of **EUR3bn** p.a. over 2021-24	◆ State guarantee for new liquidity loans to companies registered in France (limit of **EUR300bn**[3])	◆ Stimulus package of **JPY26tr (i.e. EUR213bn[4])** ◆ Emergency Economic Measure of **JPY108tr (i.e. EUR885bn[4])**
People specific	◆ USD1,200 per adult and USD500 per child support ◆ Unemployment insurance payment of USD600 p/w	◆ VAT exemptions ◆ Social welfare subsidies & temporary living allowance for migrant workers	◆ Coronavirus Job Retention Scheme (80% salary up to GBP2.5k) and self-employed income support scheme	◆ Social benefits for job-seekers ◆ Child allowance for parents with loss of income	◆ Short time worker scheme with 70% of gross salary ◆ Solidarity fund for self-employed and entrepreneurs	◆ Employment adjustment subsidy for SME and large corporates ◆ Deferral of tax payments ◆ JPY300k per household
Company specific	◆ **USD221bn** tax reduction and deferral ◆ **USD500bn** exchange stabilization fund ◆ EUR50bn for loans to small businesses	◆ SME exempt from social security contributions (and large firms 50%) ◆ Specific CIT incentives	◆ **GBP330bn** State loans and guarantees ◆ **GBP750m** grants and loans for SMEs focused on R&D	◆ New loans 25% of 2019 sales guaranteed by KfW ◆ Short time working schemes	◆ Postponing tax and social security payments ◆ **EUR4bn** fund to support start-ups	◆ **JPY1.7tr (i.e. EUR14bn[4])** emergency loans and credit guarantees ◆ Deferral of tax payments
Monetary policy	◆ The FOMC lowered interest rates 100 basis points to 0-0.25% ◆ Asset, treasury securities and MBS purchases ◆ Funding facilities for CP, primary dealers and money market funds ◆ Intervening in bond markets ◆ New programme lending to SMEs	◆ 1 and 5-year benchmark rate lowered by 10bp in February, but unchanged in March ◆ **CNY300bn (i.e. EUR39bn[2])** to lend to SMEs ◆ **CNY135bn (i.e. EUR17bn[2])** bonds for affected firms ◆ Cut reserve requirement ratios further for smaller banks to increased lending to SMEs	◆ Policy rate from 0.75% to 0.1% ◆ Buying up to **GBP200bn** government and corporate bonds ◆ Commercial paper programme ◆ Direct BoE financing of government debt through lifting of the **GBP370m**	◆ BaFin declared its intention to reduce the countercyclical capital buffer from 0.25 % to 0 % as of 1-Apr-20 ◆ Reinforcement of asset purchase programmes ◆ EU **EUR500bn** rescue package ➢ ESM **EUR240bn** to support indebted countries ➢ **EUR200bn** in guarantees from the European Investment Bank and a European Commission project for national short-time working schemes	◆ The French High Council for Financial Stability has decided to fully release banks’ countercyclical capital buffer on 18-Mar-20 ◆ There is wider access to Banque de France refinancing for SMEs	◆ Purchasing ETFs up to **JPY12tr (i.e. EUR98bn[4])** and J-REITs up to **JPY180bn (i.e. EUR1.5bn[4])** ◆ Purchasing CB and corporate bonds for **JPY2tr (i.e. EUR16bn[4])** and providing loans <1 year against corporate debt collateral ◆ Purchasing JGBs

Sources: IMF, National governments, OECD

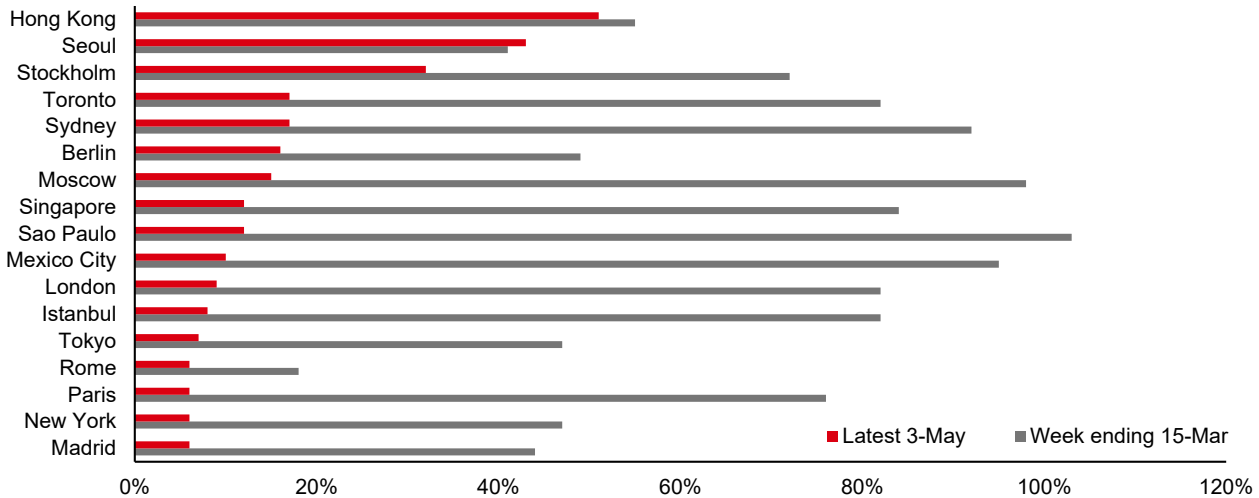
Note:

1. State-guaranteed treasury loan of up to 25% of annual turnover or 2 years of payroll for newly created or innovative companies. No repayment will be required in the first year; the company may choose to amortize the loan over a maximum period of five years
2. 2019 average: EUR1.00 = CNY7.74
3. Scheme enabling the State to guarantee EUR300bn in cash loans. The guarantee may cover 70 to 90% of the amount of the loan, depending on the size of the company
4. 2019 average: EUR1.00 = JPY122.01

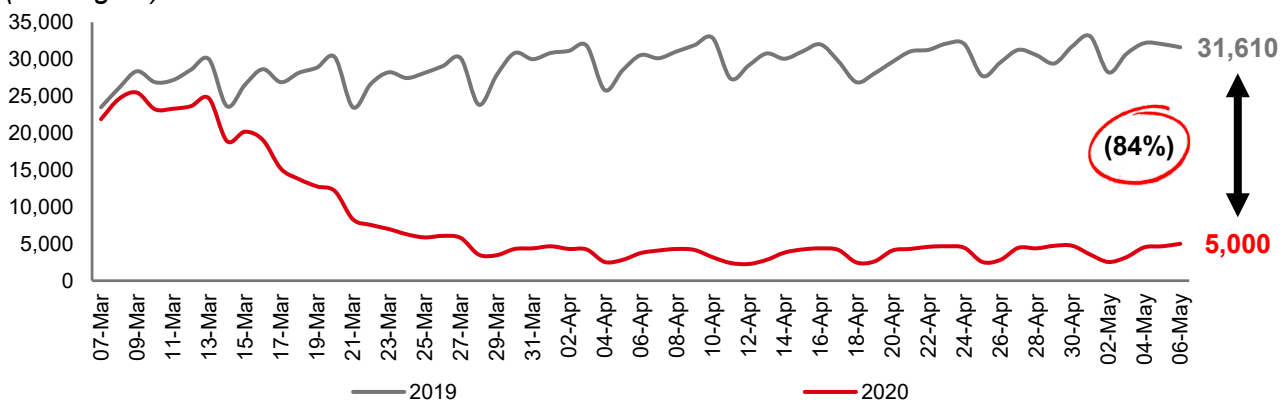
Appendix III
Further changes in consumer behaviour

Government lockdown restrictions on human movements may impact flows of people post crisis

Traffic is less than 20% of usual levels across major cities…
(Citymapper Mobility Index[1] - % of city moving vs. normal)



… and international travel has been significantly reduced on y-o-y basis
(# of flights)



Potential impacts on long term human movements post COVID-19

- **Reduced international business travel with video conferencing technology replacing selected face-to-face meetings**
- **International leisure travel impacted due to safety concerns**
- **Impact on migration of international employees and students**
- **Increased awareness for responsible travel and implied ecological footprint**
- **Major cities need to risk-adjust mass transit, shared spaces, dense buildings and public areas until an efficient long-term medical response is widely available and used**
- **Potential frictions with other sustainability objectives such as carbon reduction and air quality**
- **Potential mid-term impact leading to adjustments in land uses e.g. de-concentration of CBDs[2] and potential drop in population in the largest cities**

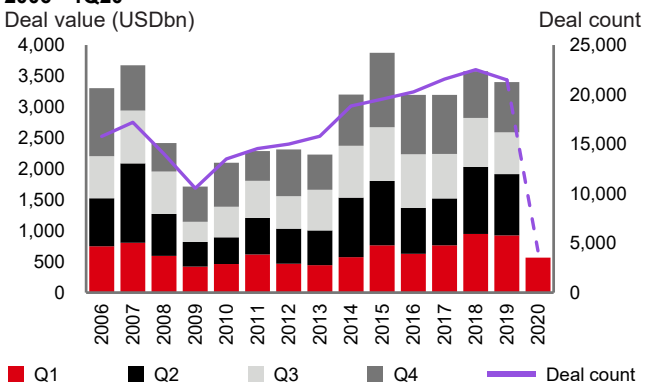
Sources: Citymapper, Eurocontrol as of 6-May-20
Note:
1. Calculated by comparing trips planned in the Citymapper app to a recent typical usage period
2. Central Business District

Appendix IV
Transactional environment

The M&A market has seen a significant downturn with deals announced pre-COVID-19 in general progressing towards completion, however limited new deals announced so far

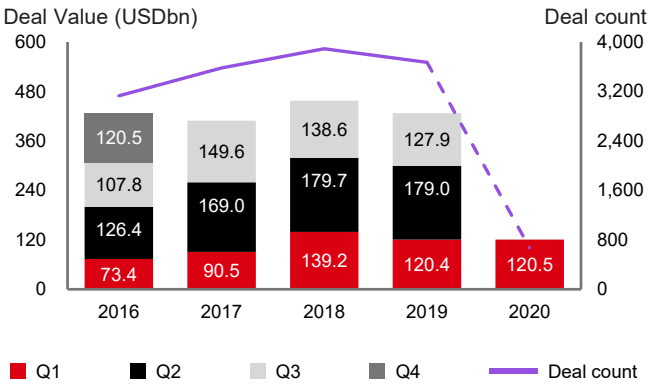
Value of global M&A in 1Q20, down 39.1% q-o-q

Global Quarterly Breakdown Trend
2006 - 1Q20



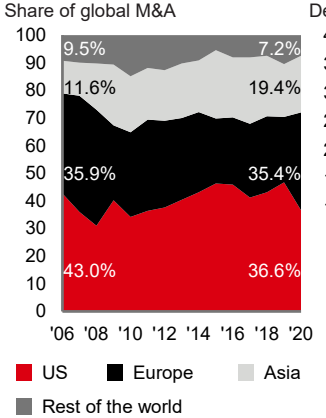
Buy-outs down q-o-q, however significant PE dry powder driving resurgence post crisis

Buyout – Quarterly breakdown (2016-1Q20)



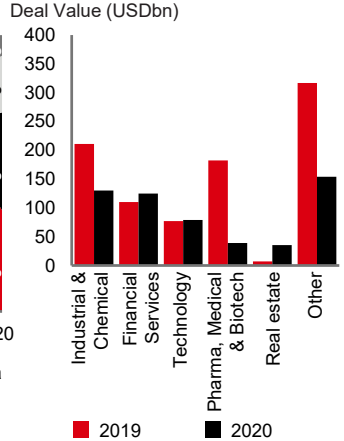
Regional share of global M&A by value

2006 - 1Q20



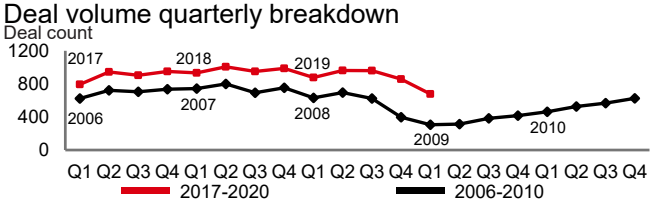
Global sector breakdown trend

1Q19 - 1Q20



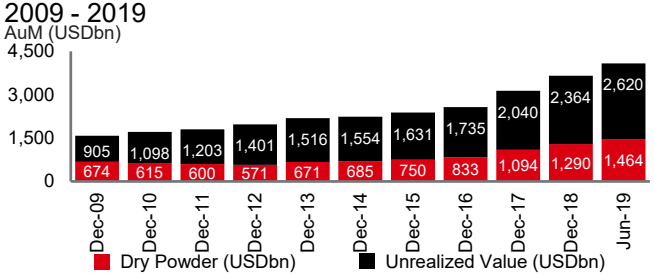
Global buyout activity

Deal volume quarterly breakdown



PE: Assets under Management

2009 - 2019



Key opportunities in M&A given current market conditions

- **P2P / take-private transactions**
- **Stock mergers (all or majority share based)**
- **Cost-rationalization driven deals, disposals of non-core activities and restructuring transactions**
- **Strategic acquisitions by companies with strong balance sheet in resilient sectors**
- **Investments of minority stakes for new private capital**
- **Financial Sponsors acquisitions[1] using available dry powder[2]**
- **Corporates preparing for 'the new world' post COVID-19**

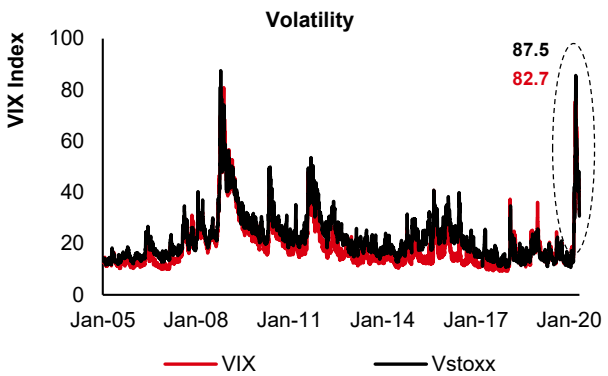
Sources: Mergermarket, Prequin

Notes:

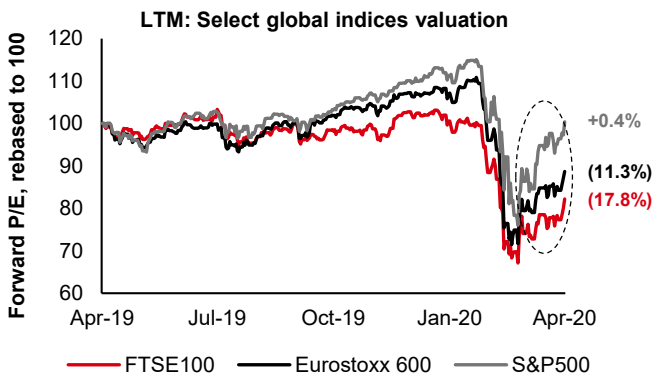
1. PE firms would be likely to focus more on business resilience vs growth potential
2. Some deals may be subject to credit market conditions

Equity markets down significantly, however significant transaction volume as companies look to secure additional liquidity

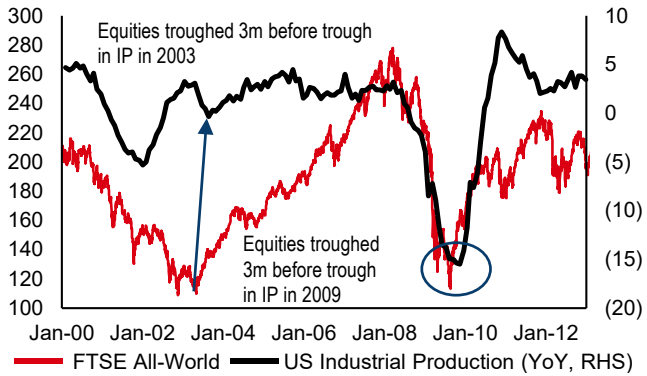
VIX Index has been at an all time high



Speed and severity of correction a function of elevated valuations



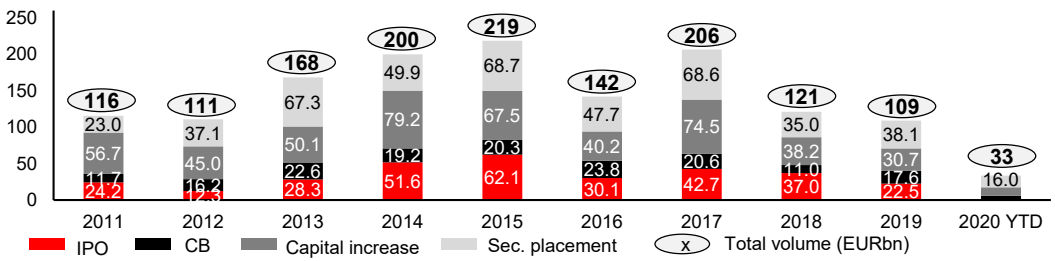
Historically, equities have usually troughed three months before the trough in economic data



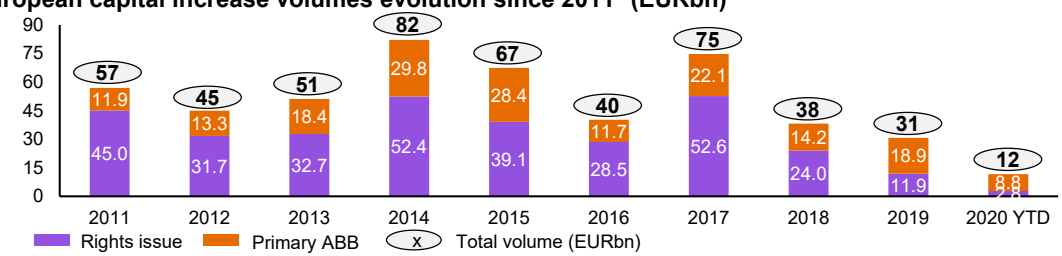
European equity volumes grew at a faster pace in 2020YTD compared to 2019YTD

Issuances expected to pickup once the virus is contained, due to enhanced liquidity needs

European ECM volumes evolution since 2011 (EURbn)

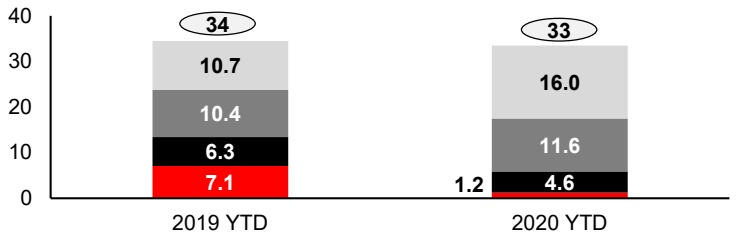


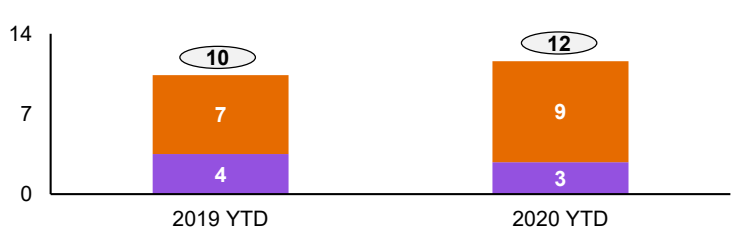
European capital increase volumes evolution since 2011[1] (EURbn)



Comparison of y-o-y deal volumes on a YTD basis (EURbn)

(Q1-19 vs Q1-20)





Source: Dealogic as of 6-May-20

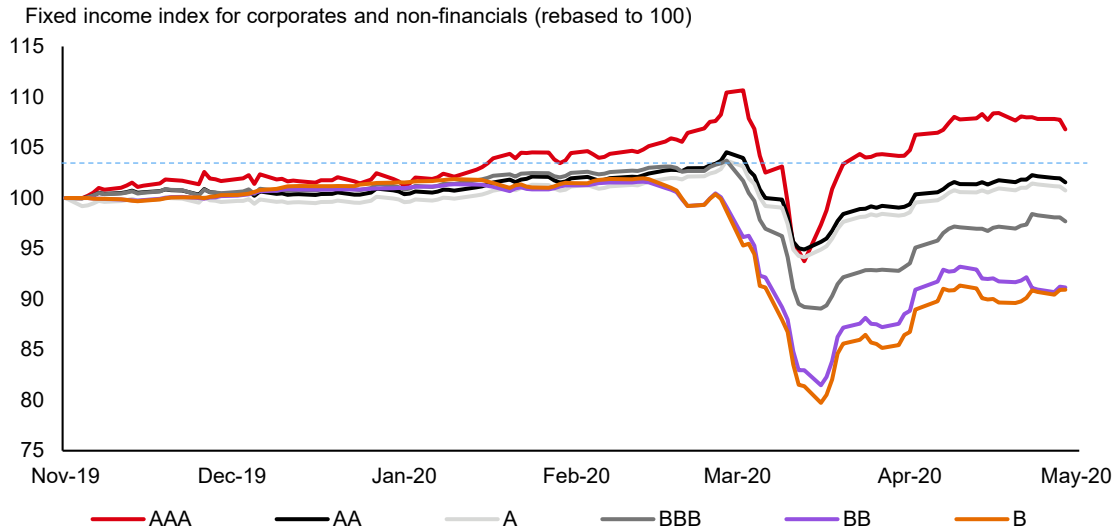
Note:

1. Includes rights issue and primary ABB

HY businesses have been hit harder, however DCM market open for right credits

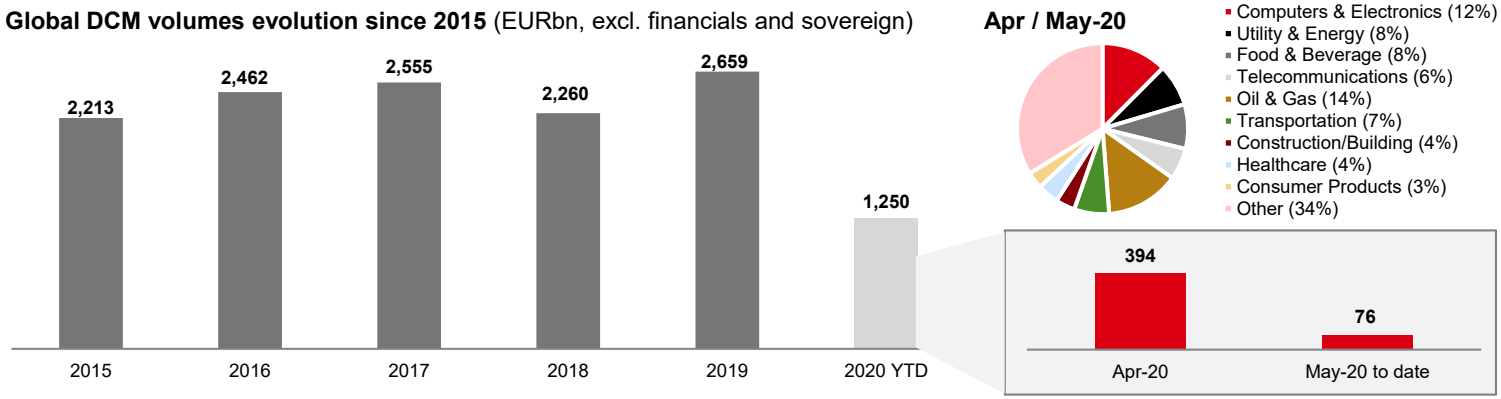
Companies focused on cash preservation and liquidity to weather COVID-19 pandemic

Lower rated corporates have been harder hit by the COVID-19 pandemic



	Δ since peak	Δ since trough	Δ last 6 months
AAA	(3.5%)	13.9%	6.8%
AA	(2.8%)	7.0%	1.6%
A	(2.8%)	7.0%	0.7%
BBB	(5.8%)	9.7%	(2.3%)
BB	(10.3%)	11.9%	(8.9%)
B	(10.8%)	14.1%	(9.1%)

… however markets remain open to the right credits and there are significant volumes across all sectors



Sources: Dealogic as of 7-May-20, FactSet as of 6-May-20

Companies focused on cash preservations and liquidity

- **New capital raised in debt and equity capital markets**
- **Drawing of liquidity lines and RCFs**
- **Reduction in capital expenditure**
- **Cancellation / delay of capital returns** (dividend / SBB)
- **Reduction of operating expenses**
- **Focus on NWC**
- **Use governmental support where available**
- **Holiday on rental payments in the retail / rental sector**

Appendix V
Potential new urbanisation trends

New

Two customer segments need to be closely monitored in the post COVID-19 world: over-50s and Chinese "young free spenders"

Over-50s are a driving customer segment to be tapped for growth mainly in developed countries…

Key considerations

- **Baby boomers**, born between 1946 and 1964, and **part of generation X**, born between 1965 and 1979, represent a **hotspot for growth**, boosted by **increasing life expectancy** and a **raising retirement age**
- Their relevance mainly derives from their relatively better conditions: they are **better off than Millennials** as the latter group endured an **exponential student debt** growth over the last two decades and **entered the workforce during recession times**
- These customers' age range spans from experienced professionals to early retirees and they all share a **considerable amount of wealth and savings** which have been set aside during their career

Select benefitting sectors

- **Healthy lifestyle**: they are concerned about their health and take actions to improve their life quality by **eating healthy and exercising**
- **Healthcare**: they are either already under medical treatment or will be needing it in the near future, implying that some **stress** would be put **on healthcare systems** in terms of available capacity and **quality of care**
- **Restaurants and hotels**: they attach high importance to comfort, quality services, and living a memorable experience
- **Travel and leisure**: over-50s allocate high importance for travels and **enjoying free time**, **especially once they retire**

… but an emerging market consumer segment is capturing attention: Chinese "young free spenders"

Key considerations

- The **post-reform Chinese "young free spenders"** (YFSs) are young **digital natives** who reside predominantly in **top tier Chinese cities**
- They embody the **new baby boomers**: they are skilled, are in better health and have significantly more disposable income than their parents at their age
- These consumers constitute **c.25% of the Chinese population** but accounted for **c.60% of total spending growth** in the period 2017-18
- They are characterised by a **considerable purchase power** and are not concerned about spending, whilst **not being particularly worried about saving** for the future

Select benefitting sectors

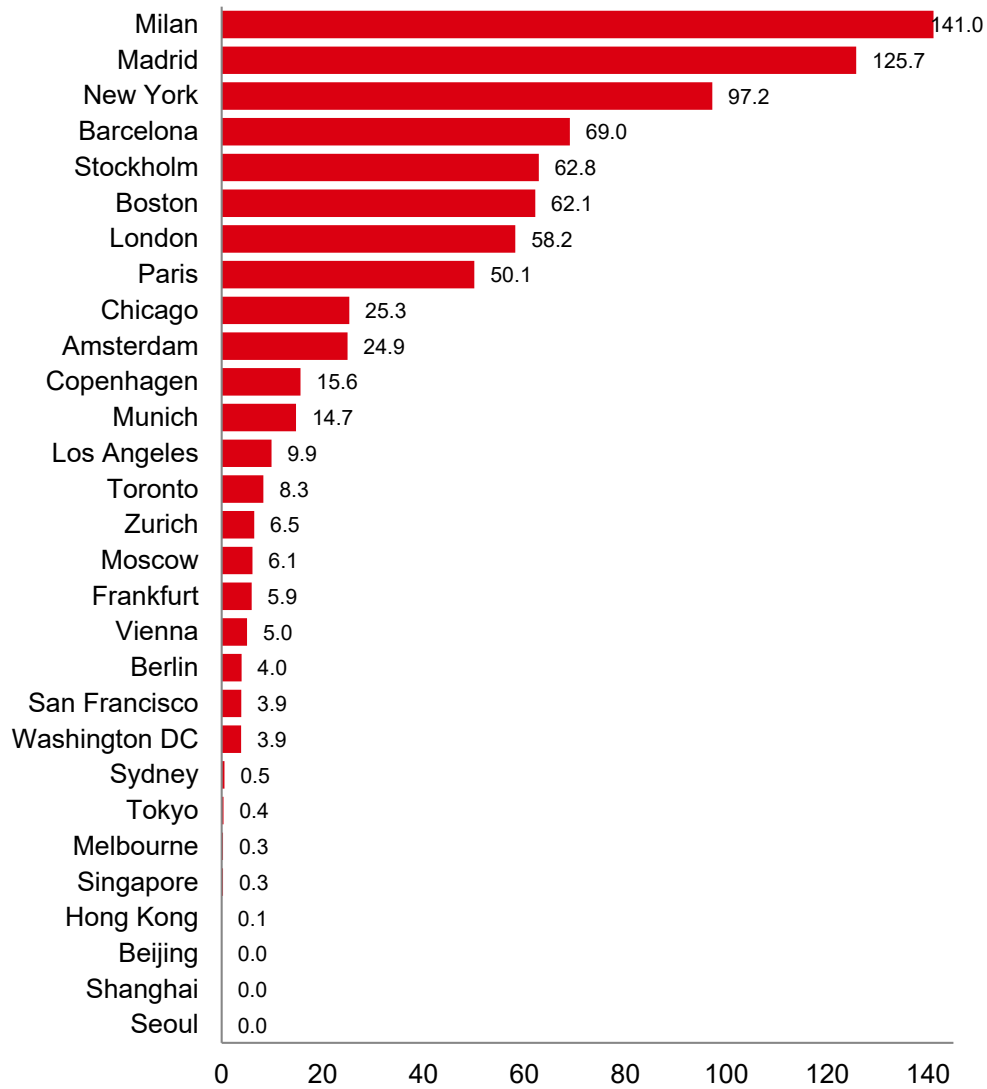
- **Apparel**: both luxury and non-luxury apparel and footwear are concerned, as they **value status and lifestyle**
- **Restaurants and hotels**: they **enjoy company** and spending time with friends in social gatherings
- **Travel and leisure**: YFSs appreciate **unique experiences** and sharing them on **social media**, looking for **peer approval**
- **Tech**: they chase the **latest and trendiest tech devices** and are inclined to spend significant amounts of money to buy them

Sources: Centre for Policy on Ageing, Deloitte, Euromonitor International, IBIS World, McKinsey, Press releases

COVID-19 and resulting impacts on cities and new urbanisation trends

- COVID-19 has emerged just as we enter the **5th decade of the century of cities**. We are on the way from 40% urbanisation in 1980 to 80% urbanisation in 2080
- COVID-19 **emerged in Wuhan**, the **largest city in Central China**
- **Cities have been at the epicentre of the contagion** due to the high levels of proximity and interaction, their greater exposure to international travellers and their connections with other cities with high infection
- Concentration effects in many cities tend to **congregate people with similar socio-economic profiles**, accelerating infection rates
- Although all countries have different patterns, **infection is more highly concentrated in cities** than in other locations
- **Cities** have been the **focus of lockdown measures**. For many cities the lockdown has been associated with the rise in digital transformation, home deliveries and 'as a service' business models, remote working, home schooling as well as a 'low-touch' economy
- It has also seen a **reduction in pollution** and the return of cleaner air and more visible wild life. This has raised many questions about the future of urban services, the built environment and gathering places.
- We are already in a major cycle of **urban-tech and smart system development for cities** with the use of IoT, AI, robotics, supporting cleaner urban growth
- **New Zero Carbon strategies** for cities have been emerging that emphasises the role of the built environment and mobility, along with energy, industry, food and consumption
- New behaviours and **changes in work and learning patterns** adopted during lockdown **may carry over into the recovery phase and next cycle**, changing the way that our cities work and the services, amenities, buildings and systems they need. The exact new patterns will vary with the speed and effectiveness of medical systems coupled with the willingness and appetite of citizens and governments to return to previous patterns or embrace change

Top 30 global cities by death rate per 100,000 population[1]



Note:
1. As of 3-May-20

New

Various sectors of the urban economy are facing different scale challenges and consumer behavioural changes in the post COVID-19 environment

	Large gatherings are essential	Close human interaction is essential	Hygiene, or perception thereof, is critical	Dependant on travel (business and leisure)	Non postponable / expendable service / product	Impact analysis
Tourism and hospitality						
Restaurants and pubs						
Culture (cinemas, festivals, theatres, etc.)						
Sports and gaming						
Automotive						
Retail (non-food)						
Beverages (incl. alcohol)						
Education						
Pharmaceuticals						

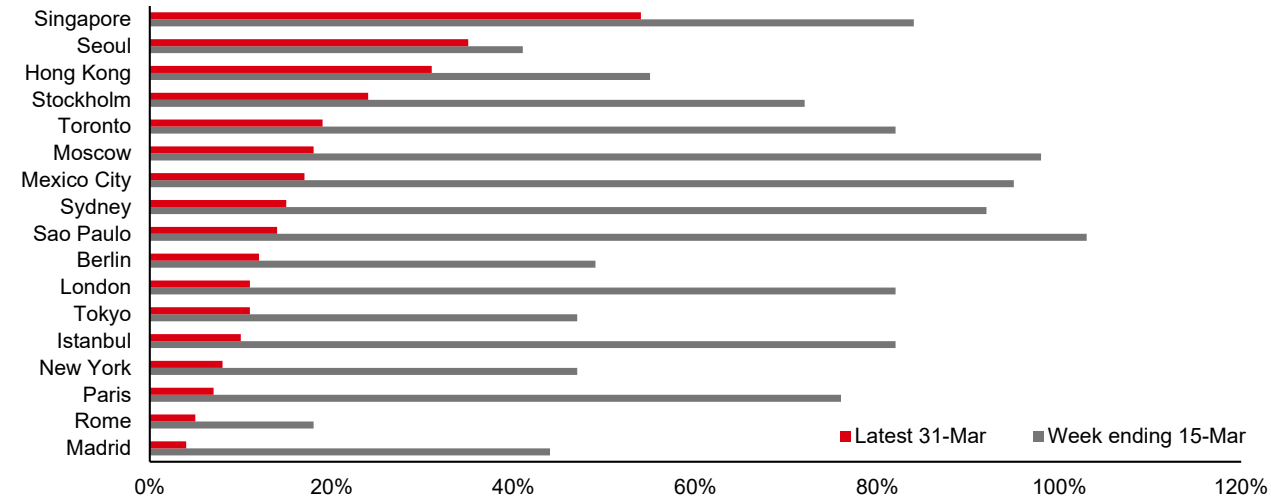
New social behaviours towards social distancing, health and hygiene and sense of prioritisation of goods and services will have a significant impact in securing sustained revenue and margin streams for various sectors

Sources: Companies information, press articles, Board of Innovation

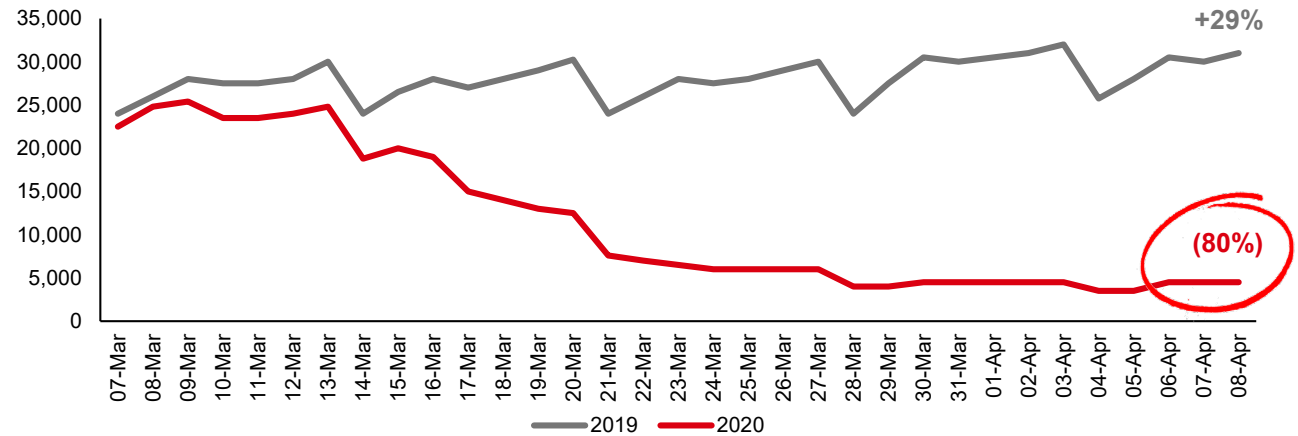
To be updated

Government lockdown restrictions on human movements may impact flows of people post crisis

Traffic is less than 20% of usual levels across major cities…
(Citymapper Mobility Index[1] - % of city moving vs. normal)



… and international travel has been significantly reduced on y-o-y basis
(# of flights)



Potential impacts on long term human movements post COVID-19

- **Reduced international business travel with video conferencing technology replacing selected face-to-face meetings**
- **International leisure travel impacted due to safety concerns**
- **Impact on migration of international employees and students**
- **Increased awareness for responsible travel and implied ecological footprint**
- **Major Issues for Cities**

Sources: Citymapper, Eurocontrol
Note:
1. Calculated by comparing trips planned in the Citymapper app to a recent typical usage period

Cities interdependencies between mobility and built environment

Major cities need to risk adjust transit, public space, and dense buildings until vaccine is widely used.

This will involve: adjusting transit ridership and finances, staggered journey times, and optimising flexibility on modes and amounts of travel.

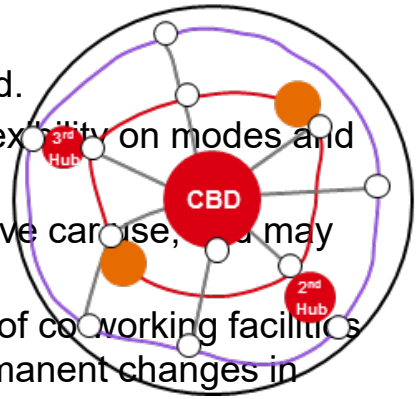
Friction with other goals such as carbon reduction and air quality will lead to efforts to avoid excessive car use, and may instead spawn acceleration in walking, cycling, e-vehicles, and other sustainable transport modes.

Patterns of flexible working, eg combined home-working/office working, split shifts, and localisation of co-working facilities in sectors where this is feasible are likely to be sustained after the pandemic, resulting in some permanent changes in travel and land use patterns.

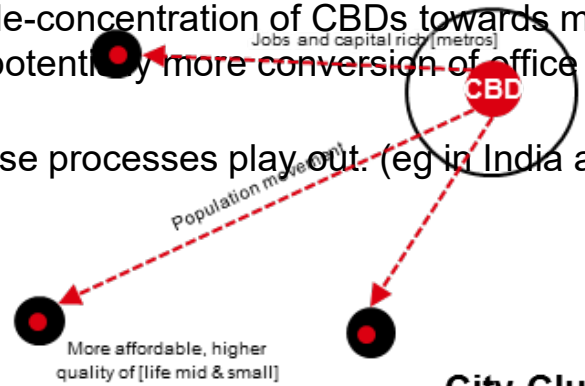
In the medium term this may influence adjustments in land uses, de-concentration of CBDs towards more polycentric cities, increased population spread in 2nd and 3rd tier cities, and potentially more conversion of office buildings to residential and other uses.

Larger cities in some markets may see a drop in population as these processes play out. (eg in India and China)

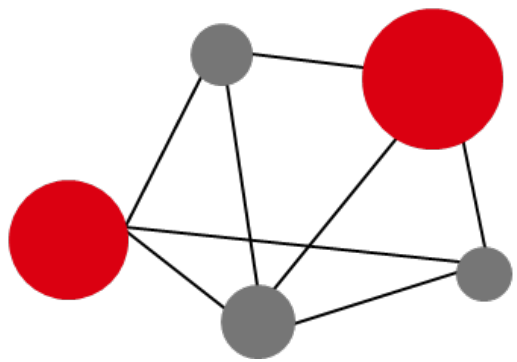
Metropolitan Areas

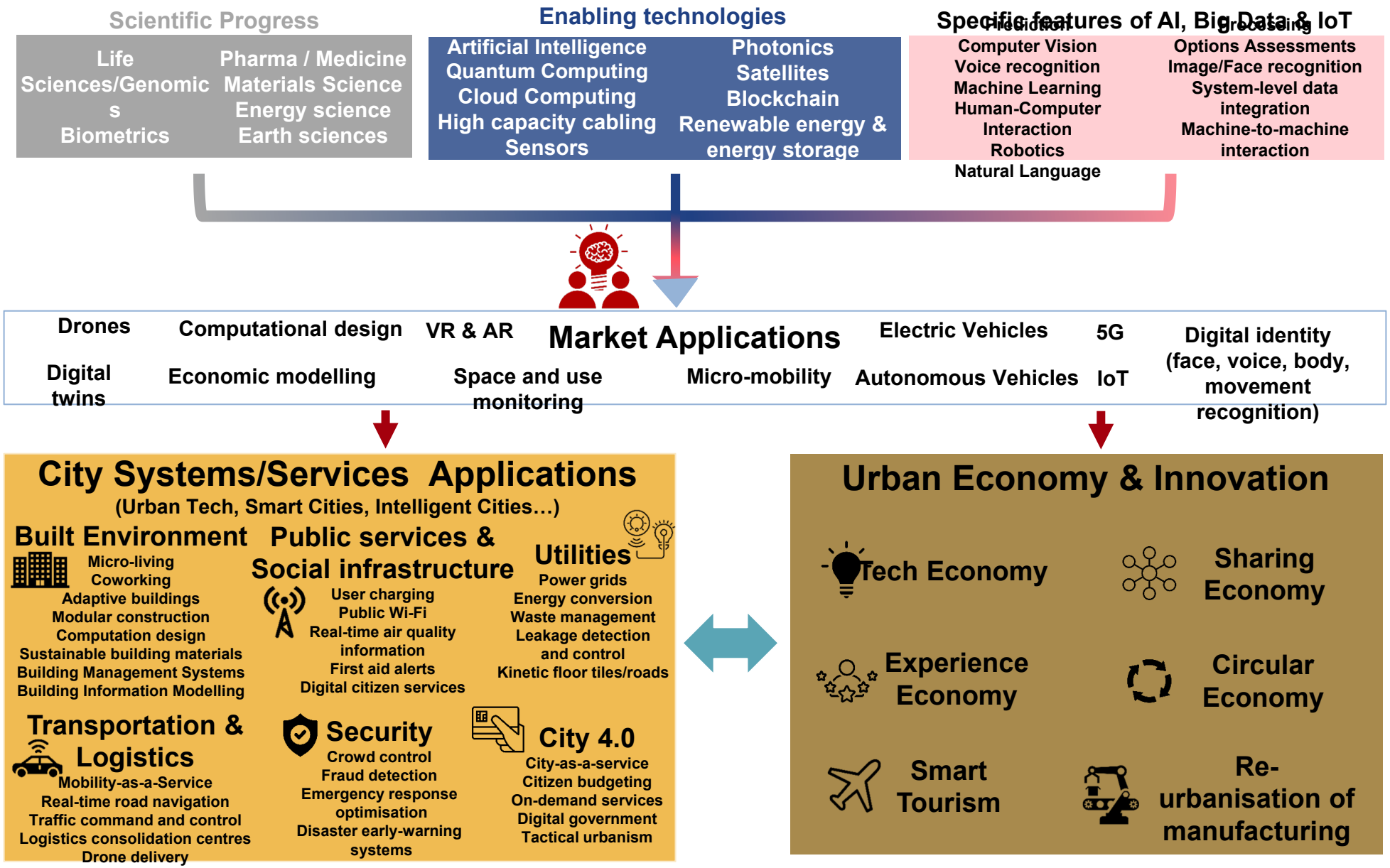


Reurbanisation of 3rd and 4th tier cities

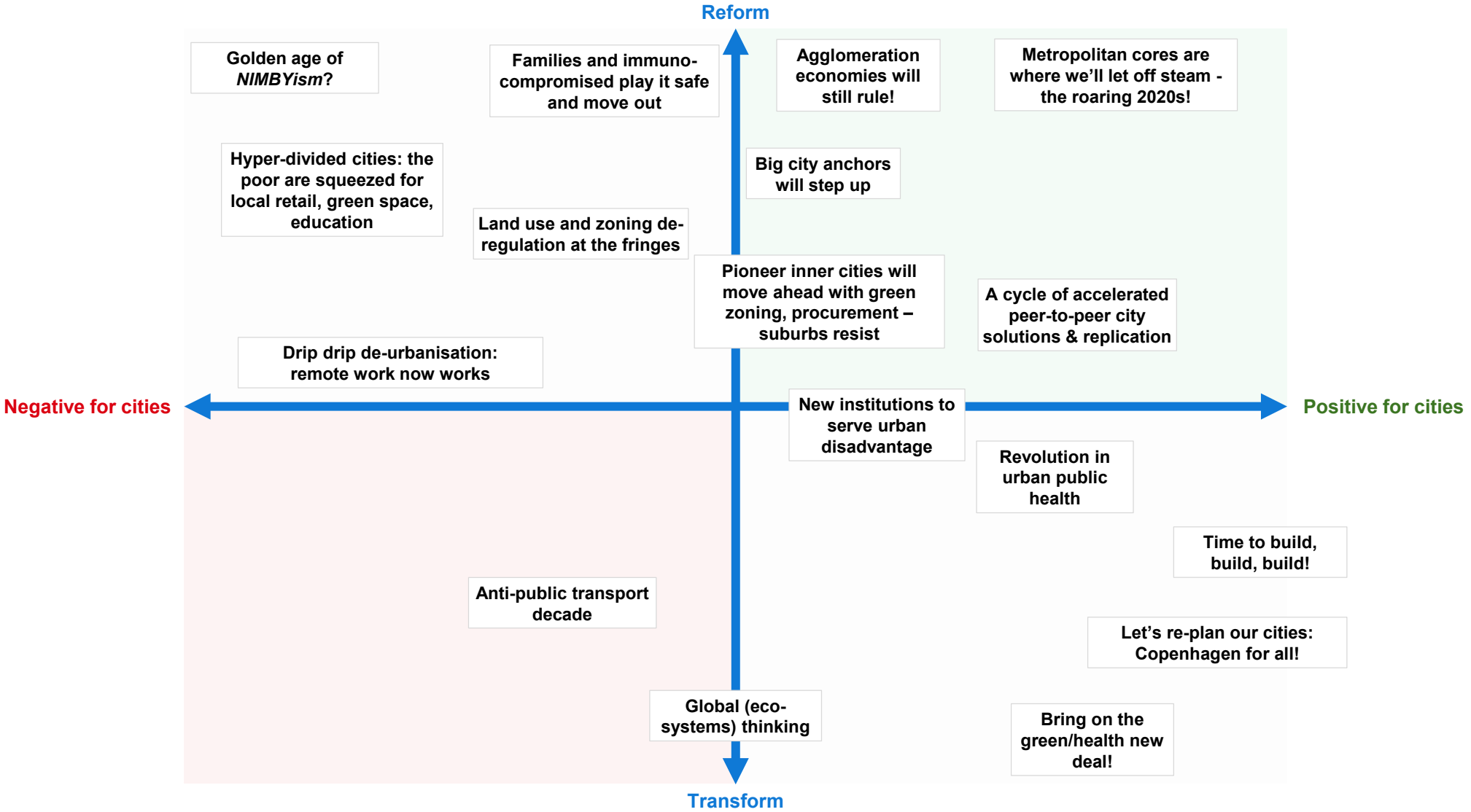


City Clusters/Mega Regions




Scientific Progress
Life Sciences/Genomics
Biometrics
Pharma / Medicine
Materials Science
Energy science
Earth sciences
Enabling technologies
Artificial Intelligence
Quantum Computing
Cloud Computing
High capacity cabling
Sensors
Photonics
Satellites
Blockchain
Renewable energy & energy storage
Specific features of AI, Big Data & IoT
Prediction
Computer Vision
Voice recognition
Machine Learning
Human-Computer Interaction
Robotics
Natural Language
Processing
Options Assessments
Image/Face recognition
System-level data integration
Machine-to-machine interaction
Market Applications
Drones
Computational design
VR & AR
Electric Vehicles
5G
Digital identity (face, voice, body, movement recognition)
Digital twins
Economic modelling
Space and use monitoring
Micro-mobility
Autonomous Vehicles
IoT
City Systems/Services Applications
(Urban Tech, Smart Cities, Intelligent Cities…)
Built Environment
Micro-living
Coworking
Adaptive buildings
Modular construction
Computation design
Sustainable building materials
Building Management Systems
Building Information Modelling
Public services & Social infrastructure
User charging
Public Wi-Fi
Real-time air quality information
First aid alerts
Digital citizen services
Utilities
Power grids
Energy conversion
Waste management
Leakage detection and control
Kinetic floor tiles/roads
Transportation & Logistics
Mobility-as-a-Service
Real-time road navigation
Traffic command and control
Logistics consolidation centres
Drone delivery
Security
Crowd control
Fraud detection
Emergency response optimisation
Disaster early-warning systems
City 4.0
City-as-a-service
Citizen budgeting
On-demand services
Digital government
Tactical urbanism
Urban Economy & Innovation
Tech Economy
Sharing Economy
Experience Economy
Circular Economy
Smart Tourism
Re-urbanisation of manufacturing

Geo-spatial: range of potential urbanisation impacts for global cities eco-system post COVID-19



Source: HSBC analysis

The Unbundled City v The Centripetal City

The unbundled city	V	The centripetal city
◆ De-centralisation from the big city due to diseconomies, attitudes, technologies, public policies and demographics		◆ Momentum continues towards re-urbanisation and densification, just marginally interrupted
◆ Acceleration of internet, AI, VR and autonomous transport allow clusters to disperse beyond big cities efficiently		◆ COVID-19 sorts for value-creating industries that are even more dependent on face-to-face, trust and co-ordination
◆ City-regions, especially large expensive ones, lose their competitive edge. Second cities and rural areas prosper		◆ The scale and pulling power and city-regions, and costs of de-concentration, sees demand for prime metropolitan locations intensify further
◆ Flat Earth		◆ The Single-Centre Metropolis

Potential new urban equilibrium towards the blended city pattern

The unbundled city

- De-centralisation from the big city due to diseconomies, attitudes, technologies, public policies and demographics
- Acceleration of internet, AI, VR and autonomous transport allow clusters to disperse beyond big cities efficiently
- City-regions, especially large expensive ones, lose their competitive edge. Second cities and rural areas prosper
- Flat Earth

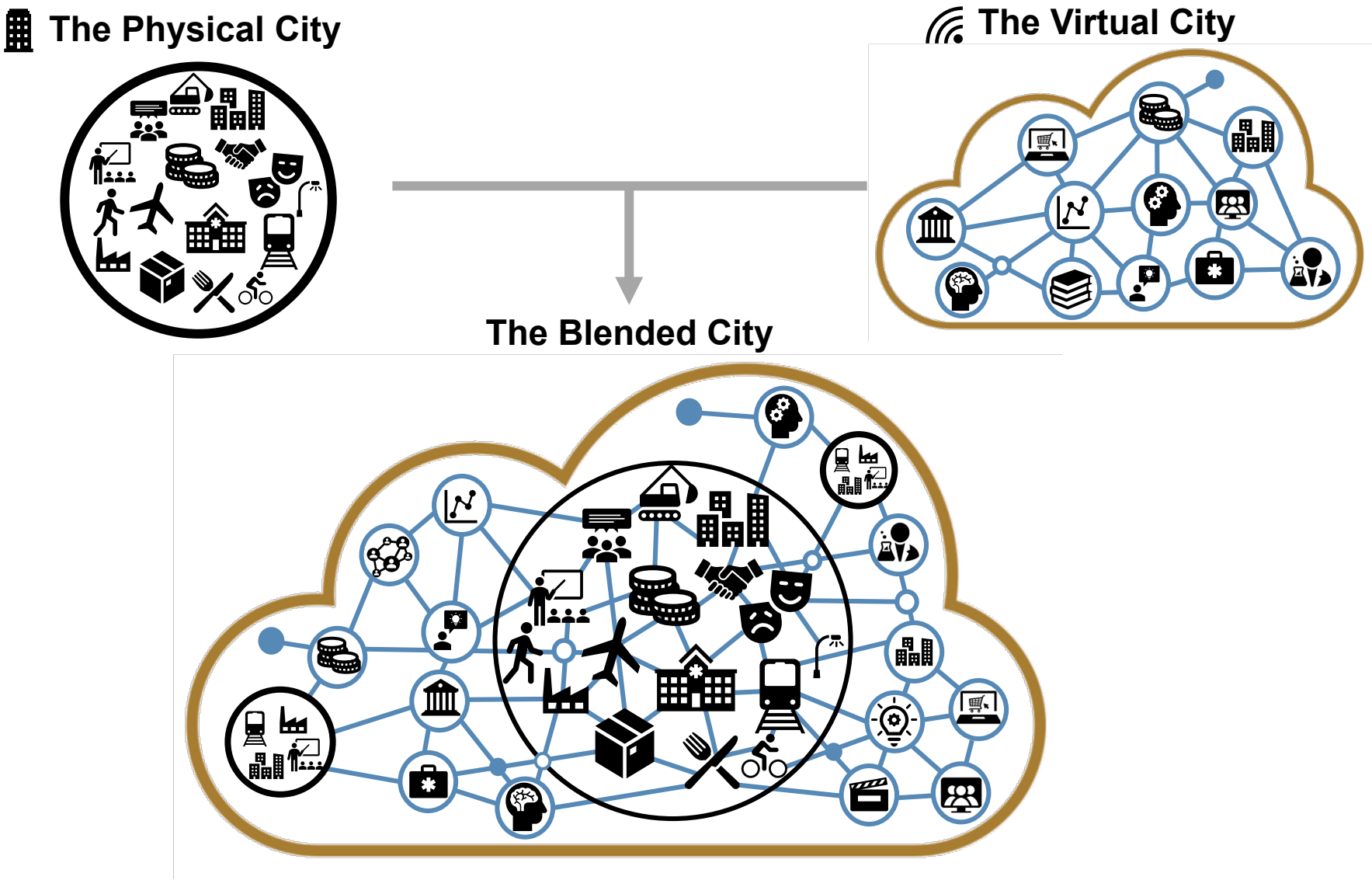
The blended city?

- Distributed urbanisation – benefits of proximity combine with larger effective scale
- Specialisations continue to concentrate while working patterns become flexible
- The competitive city-region has very strong physical and spatial platform to drive agglomeration plus discretion to gather virtually and flexibly
- Rise of the networked-region, with strong localisation effects in specific industries

The centripetal city

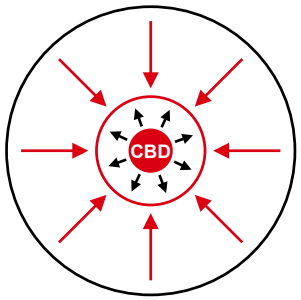
- Momentum continues towards re-urbanisation and densification, just marginally interrupted
- COVID-19 sorts for value-creating industries that are even more dependent on face-to-face, trust and co-ordination
- The scale and pulling power and city-regions, and costs of de-concentration, sees demand for prime metropolitan locations intensify further
- The Single-Centre Metropolis

The Blended City?

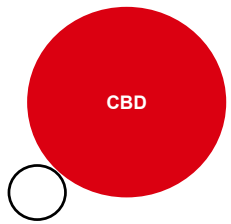


Distributed urbanisation?

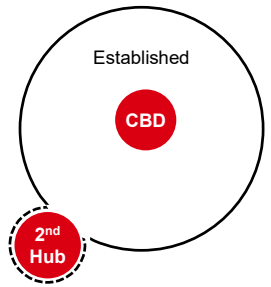
Densifying Cities



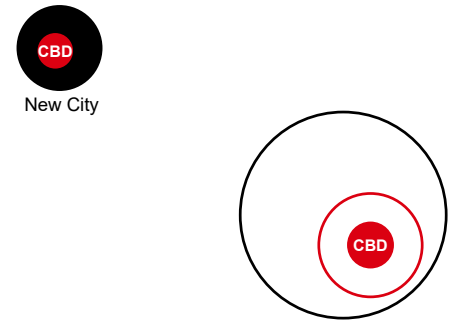
Single City with New Central Hubs



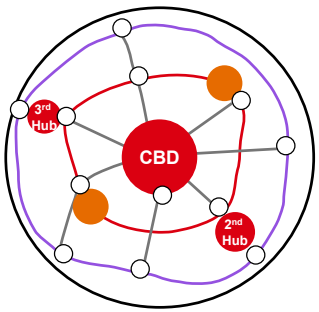
New Districts



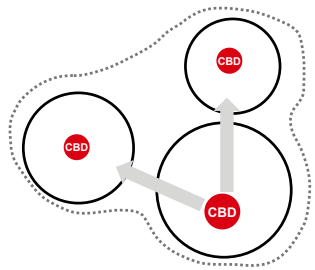
New Cities



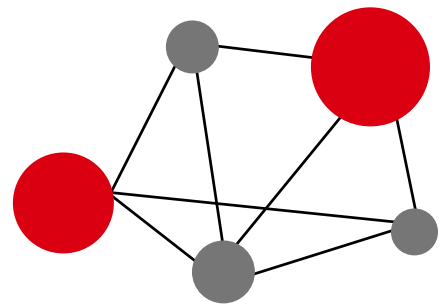
Metropolitan Areas



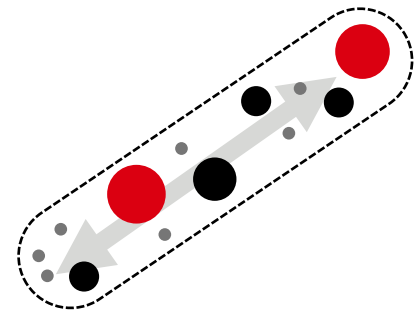
Expanding Metropolitan Regions



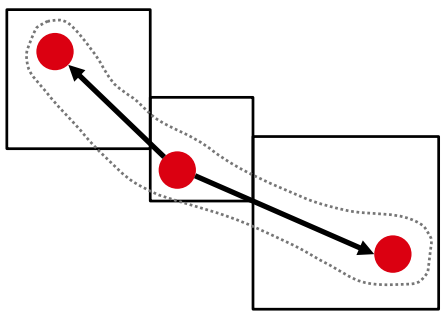
City Clusters/Mega Regions



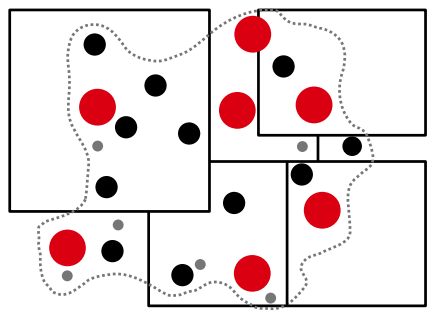
Corridors



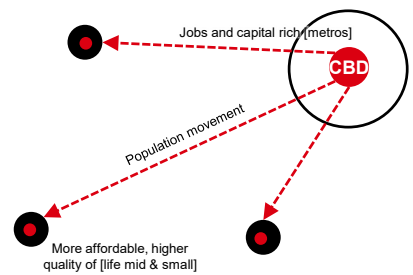
Cross Border Regions



Macro Regions



Reurbanisation of 3rd and 4th tier cities



Renewed Hemispherical City Networks

Sources: HSBC analysis

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Global Banking MiFID II

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HSBC offers a universal approach to banking where we aim to be able to provide our clients with a wide range of financing products. Although the types of financing are client and transaction specific, they fit broadly into the categories identified in the table below. Depending on your circumstances, we note that not all the options below may be applicable to you.
The below table includes an indication of typical fee structures on relevant transactions. Fees may vary depending on client credit rating, transaction structures, timing and other factors. In due course we will discuss fees in detail with you and the below is not a binding statement as to fees. The below also does not take into account fees for any other services or advice we may provide or fees that other banks or parties may charge, for example where we form part of a syndicate or the transaction involves other advisers.

Financing type	Indication of typical fee structure
Issue of debt securities	A debt issue will often involve an underwriting fee and / or a placing fee
Issue of equity securities (including but not limited to initial public offerings, rights issues and / or private placements)	An equities issue will often involve an underwriting fee and/or a placing fee
Issue of convertible / exchangeable securities	An issue of convertible / exchangeable securities will often involve an underwriting fee and / or a placing fee
Loan financing (including but not limited to term loans and credit facilities)	Depending on the nature of the loan, financing of this nature may involve an arrangement fee, a commitment fee, a utilisation fee, and/or involve break fees
Structured financing (including but not limited to securitisations)	Depending on the nature of the structure, financing of this nature may involve a structuring fee, an arrangement fee, fees for service providers such as account banks and liquidity providers, an underwriting fee and / or a placing fee
Financing through existing reserves / cash, or by way of an asset-swap	HSBC would not assist with these methods of financing other than providing corporate finance advice, which may itself entail fees

Timing and process when undertaking an offer of securities
The following is a high level overview of our typical services on a typical mandate, and is subject to any other agreement with you as to the nature and extent of our services.
Where we act for you on the offering of securities, our services will typically cover (among other things) the following:

- Pricing of the offer: we will discuss with you the market conditions for your offering taking into account your target investors, the issuance size, and other relevant factors. We may also undertake market soundings in order to inform this discussion subject to your approval.
- Placing of the offer: we will discuss with you the types of investors who we expect to target for your offer based on your preferred investor base, market conditions and the size of your offering.

These discussions will be ongoing; in a typical transaction we would expect to have initial discussions to identify the process and the types of investor we would propose to target, leading to a final meeting or call with you where we discuss with you the investors who have indicated an interest in the securities and our view as to the price at which the securities would find an appropriate amount of interest. This discussion is intended to help you decide the allocation and pricing of your securities offering.

Target investors: we will work with you to determine the appropriate target investor base for your offering. We will discuss with you your preferred target investors (which might, for example, be pension funds if you wished to target long-term institutional investors) and in accordance with our mandate we will seek to target those investors in connection with your offering.

Managing conflicts of interest / Allocation of securities: HSBC has various arrangements in place to prevent or manage conflicts of interest which may arise where we place financial instruments with our investment clients, or with our own proprietary book. Further details on our conflicts of interest policy is available on our website. We will provide you with our allocations policy which describes how we seek to ensure that our work on the placing of your securities is performed fairly and in your best interests.

Your deal team: when we are mandated on a securities offering we allocate members of staff to that transaction, and give you key deal team contact names. In general, however, the following teams may be involved in discussions with you regarding the pricing and allocation of your securities:

Type of offering	Teams that may be involved	Key team members that may be involved
Debt securities	Debt Capital Markets Origination / Execution	The transaction will typically be led by a Managing Director from this team
	Debt Capital Markets Syndicate	In addition, the Debt Capital Markets Syndicate team will be involved in key discussions around investor engagement, pricing and allocation
Equity securities	Equity Capital Markets Origination/ Execution	The transaction will typically be led by a Managing Director from this team
	Equity Capital Markets Syndicate	In addition, the Equity Capital Markets Syndicate team will be involved in key discussions around investor engagement, pricing and allocation