

PANDENOMICS 2020

Athenaeum Webinar

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16 April 2020

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— & ASSOCIATES —

Agenda

- ✓ **Stylised Facts of Past Pandemics**
- ✓ **Covid19: What Do We Know to Date**
- ✓ **Economic Effects of Covid19**
- ✓ **Covid19: Priorities & Policy Responses**
- ✓ **Planning for the Recovery Phase**
- ✓ **Will a New Post-Covid Normal Emerge?**

The Red Map of COVID19



COVID-19 Dashboard by the Center for Systems Science and Engineering (CSSE) at Johns Hopkins ...

Total Confirmed

2,081,969

Confirmed Cases by
Country/Region/Sovereignty

639,733 US

182,816 Spain

165,155 Italy

134,753 Germany

134,598 France

60,546 United Kingdom

Admin0



Cumulative Confirmed Cases

Esri, FAO, NOAA

Total Deaths

138,487

21,645 deaths
Italy

19,130 deaths
Spain

17,167 deaths
France

Deaths

Total Tested in the US

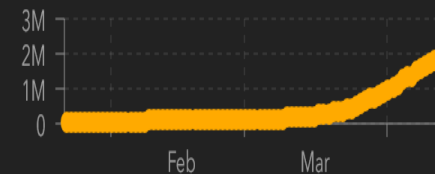
3,262,920

526,012 tested
New York US

227,600 tested
California US

213,896 tested
Florida US

US Tested



Confirmed

Logarithmic

Daily Cases

185

countries/regions

Lancet Inf Dis Article: [Here](#). Mobile Version: [Here](#).

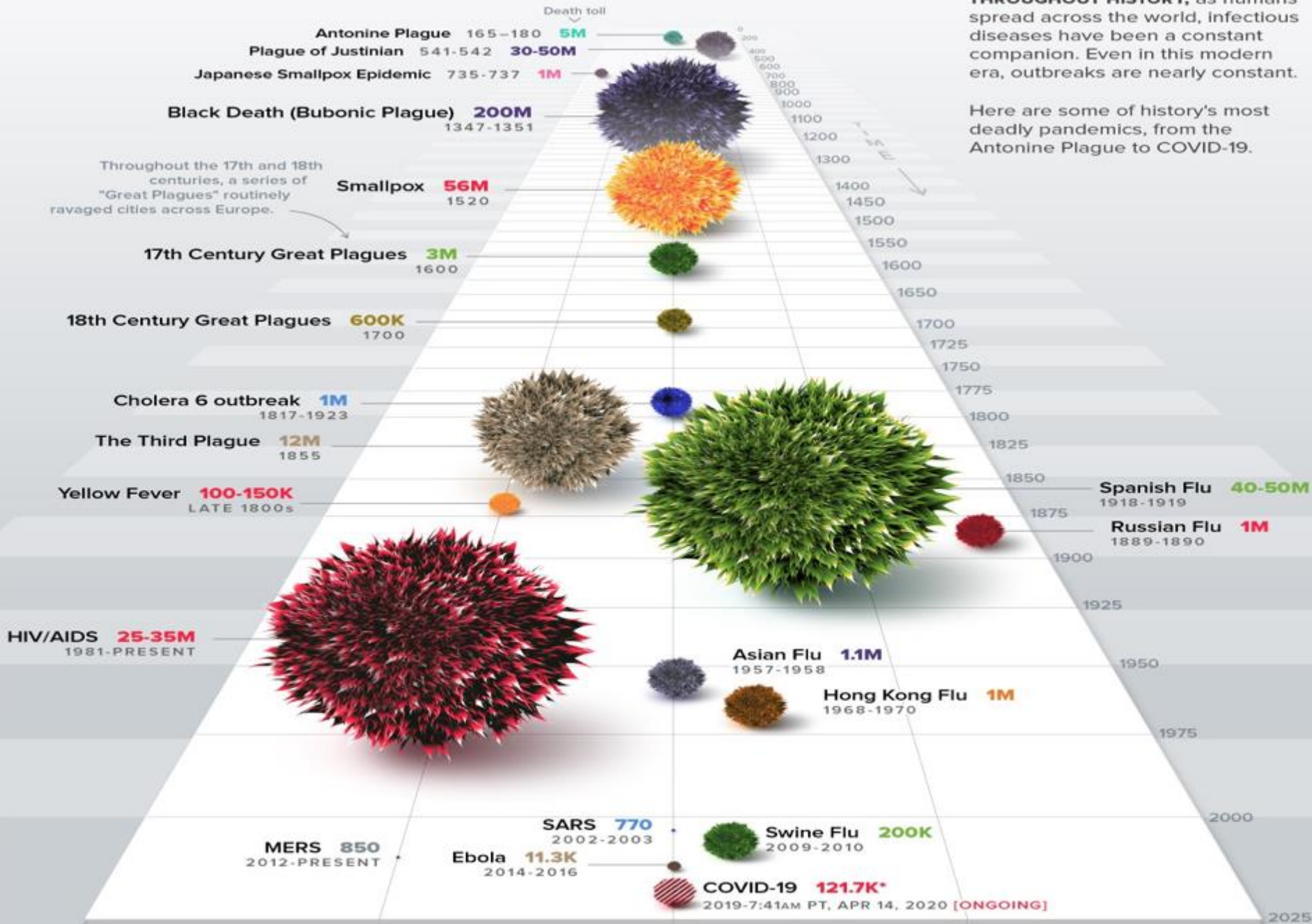
Lead by [IHU CSSE](#). Automation Support: [Esri Living Atlas team](#) and [IHU](#)

Last Updated at (MM/YYYY)

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THROUGHOUT HISTORY, as humans spread across the world, infectious diseases have been a constant companion. Even in this modern era, outbreaks are nearly constant.

Here are some of history's most deadly pandemics, from the Antonine Plague to COVID-19.

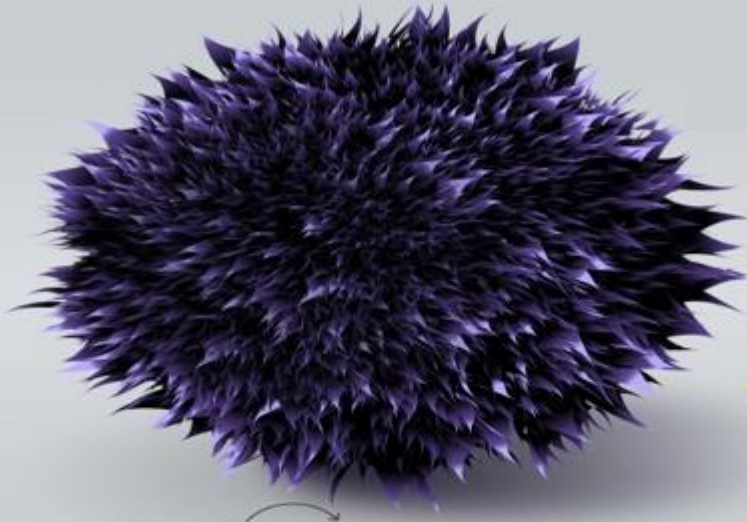


Source: VisualCapitalist.com; <https://www.visualcapitalist.com/history-of-pandemics-deadliest/>

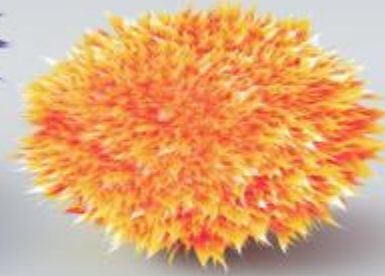
WHO officially declared COVID-19 a pandemic on Mar 11, 2020.

History of Pandemics - Death Tolls

200M
Black Death (Bubonic Plague)
 1347-1351



56M
Smallpox
 1520



40-50M
Spanish Flu
 1918-1919



30-50M
Plague of Justinian
 541-542



The plague originated in rats and spread to humans via infected fleas.

The outbreak wiped out 30-50% of Europe's population. It took more than 200 years for the continent's population to recover.

Smallpox killed an estimated 90% of Native Americans. In Europe during the 1800s, an estimated 400,000 people were being killed by smallpox annually. The first ever vaccine was created to ward off smallpox.

The death toll of this plague is still under debate as new evidence is uncovered, but many think it may have helped hasten the fall of the Roman Empire.



25-35M
HIV/AIDS
 1981-PRESENT



12M
The Third Plague
 1855



5M
Antonine Plague
 165-180



3M
17th Century Great Plagues
 1600



1.1M
Asian Flu
 1957-1958



1M
Russian Flu
 1889-1890



1M
Hong Kong Flu
 1968-1970



1M
Cholera 6 outbreak
 1817-1923

A series of Cholera outbreaks spread around the world in the 1800s killing millions of people. There is no solid consensus on death tolls.



1M
Japanese Smallpox Epidemic
 735-737



600K
18th Century Great Plagues
 1700



200K
Swine Flu
 2009-2010



100-150K
Yellow Fever
 LATE 1800s



121.7K*
COVID-19



11.3K
Ebola
 2014-2016



850
MERS
 2012-PRESENT



770
SARS
 2002-2003

2019-7:41AM PT, APR 14, 2020 [ONGOING]

*Johns Hopkins University estimates

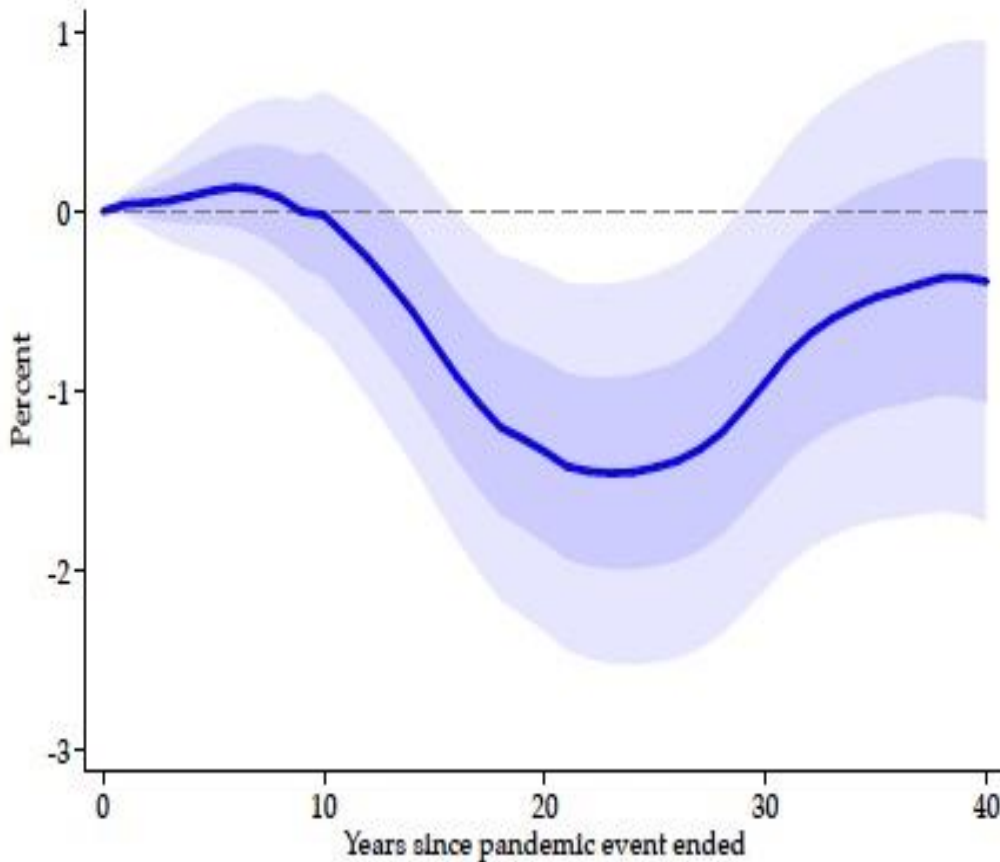
Disasters, epidemics, pandemics, wars.

Some stylised facts.

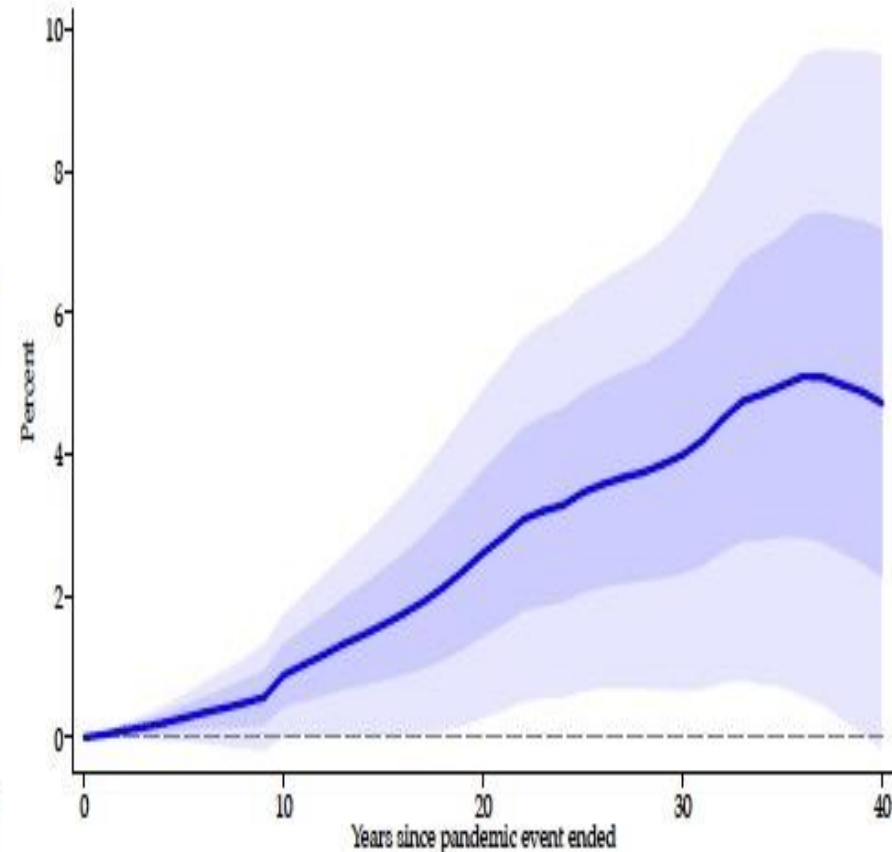
- An epidemic has both aggregate demand & aggregate supply effects
- Pandemics => dip in GDP + higher dip in private consumption + short-term declines in real returns on stocks & short-term government bonds + higher inflation
- Pandemics result in shifts in Labour/Land, Labour/Capital ratios resulting in higher wage/rental ratios, and a shift to greater precautionary savings
- Real wages gradually increase until about 3 decades after the pandemic, where the cumulative deviation in the real wage peaks at about 5%
- Pandemics vs. Wars: Both pandemics and wars have large death tolls. Significant macroeconomic after-effects of the pandemics persist for 40 years, with real rates of return substantially depressed. However, wars have no such effect.

Long-run Economic Consequence of Pandemics: Natural Real Rate & Real Wages , 1315-2018

Response of European real natural rate of interest post-pandemics



Response of real wages in Europe following pandemics



Source: Jorda, Singh & Taylor (2020) "Longer-run economic consequences of pandemics", NBER Working Paper

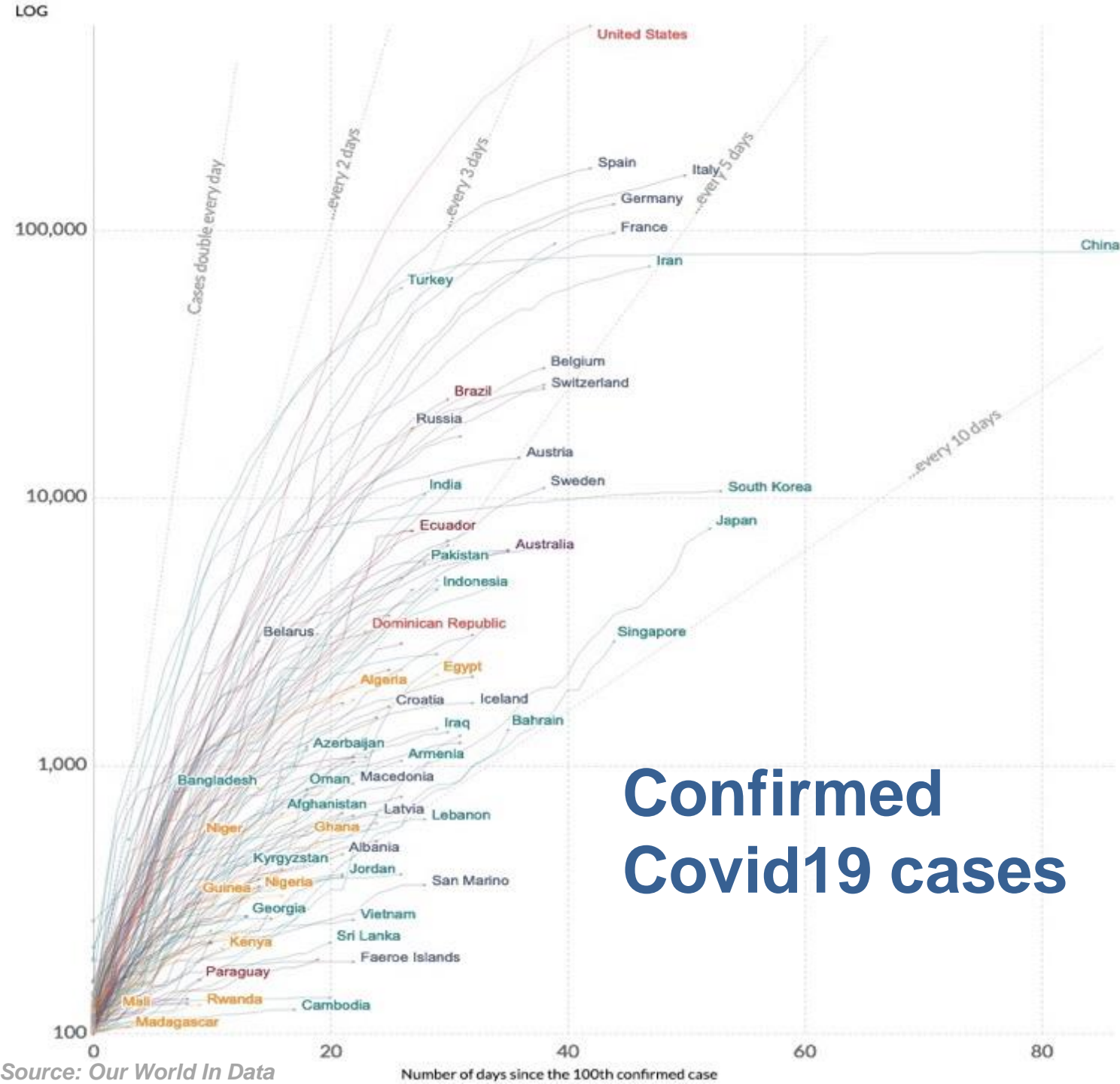
The Price of Pandemics

Epidemic	Severity of the loss	Costs to the economy
Black Death (1348-1350)	Killed between 75-200mn persons	Cumulative GDP fall of 29%
1918 flu	killed 50-100mn people in a global population of less than 2bn	\$ 4trn++ i.e. entire GDP of Japan; economic effects mostly short-term
1968 flu pandemic	Mild case	Cost 0.7% of GDP
1968 flu pandemic	Moderate case	Cost 3.1% of GDP
SARS outbreak	813 killed out of the 8k infected	Cost ~USD 54bn; China's losses USD 14.8bn

World Bank (2013): recommended that **investments of USD 3.4bn annually would bring developing countries' capacities up to intl standards.** The expected benefit is at least USD 37bn annually from avoided pandemics and other major outbreaks

Covid19: what do we know to date?

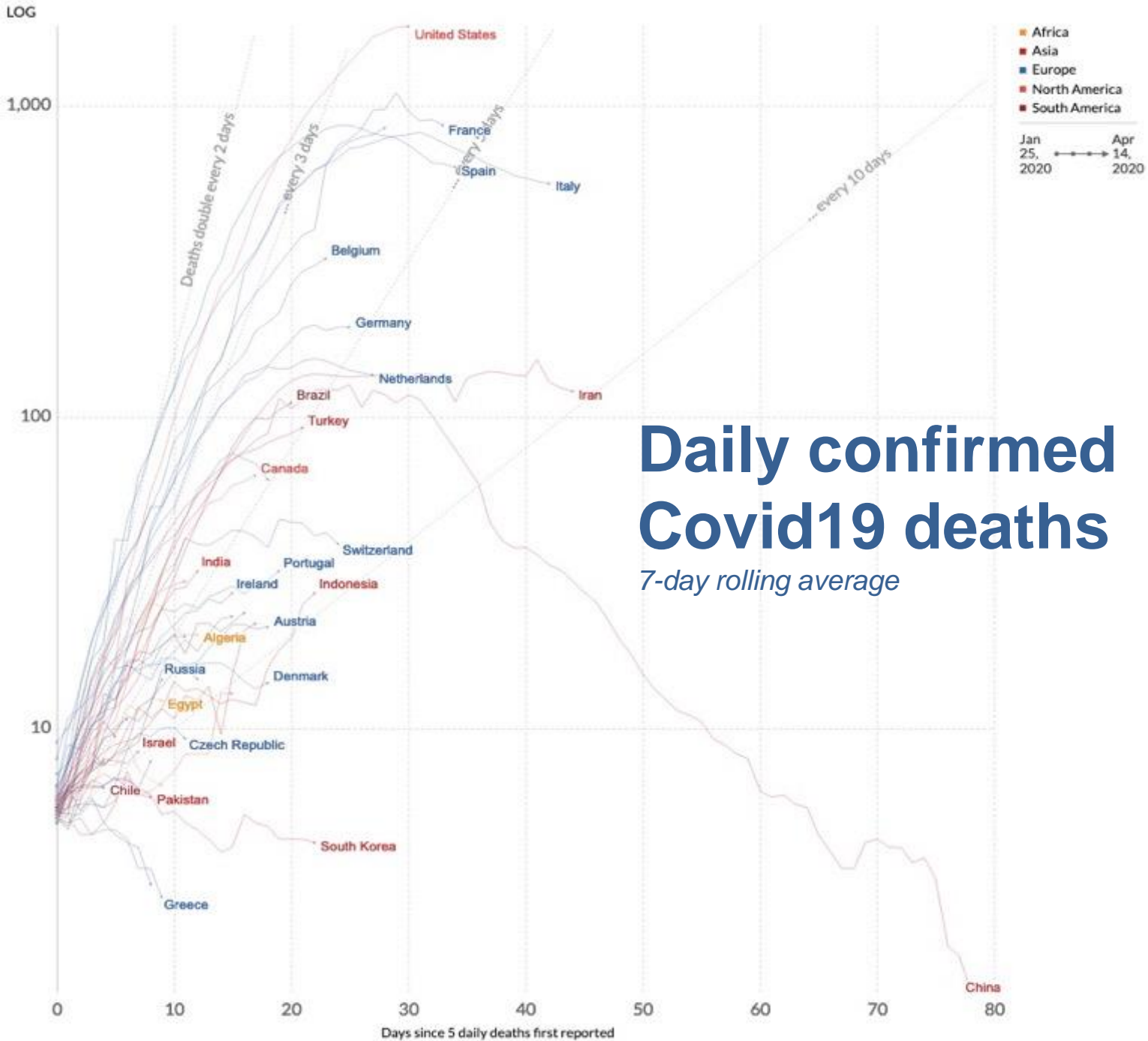
- Difference in contagion patterns across nations: Why? Those that rolled out social distancing policies early on managed to physically disrupt the contagion
- East vs. West: does policy matter? East seem to have handled the outbreak better, given preparedness for such epidemics (given SARS in early 2000s)
- Do differences in capacity affect contagion rates, mortality rates and effectiveness of response?
 - Mortality rate is a function of both the severity of disease that the virus can cause and treatment.
 - Older people, and people with underlying conditions, are much more likely to die of Covid-19 than younger people.
 - However, in all age groups, Covid-19 can present with a huge range of severity. Some clues as to what puts someone more at risk than another.
- Epidemics, pandemics result in an excess demand for health services, in particular - public health systems.
- Developing countries are especially vulnerable



Spain & US had particularly rapid outbreaks Within 2.5 weeks, the number of confirmed cases reached 10k & cont'd to rapidly rise after that

In South Korea the speed of the outbreak was much slower, after 6 weeks there were 10k confirmed cases + growth rate stayed slow even then

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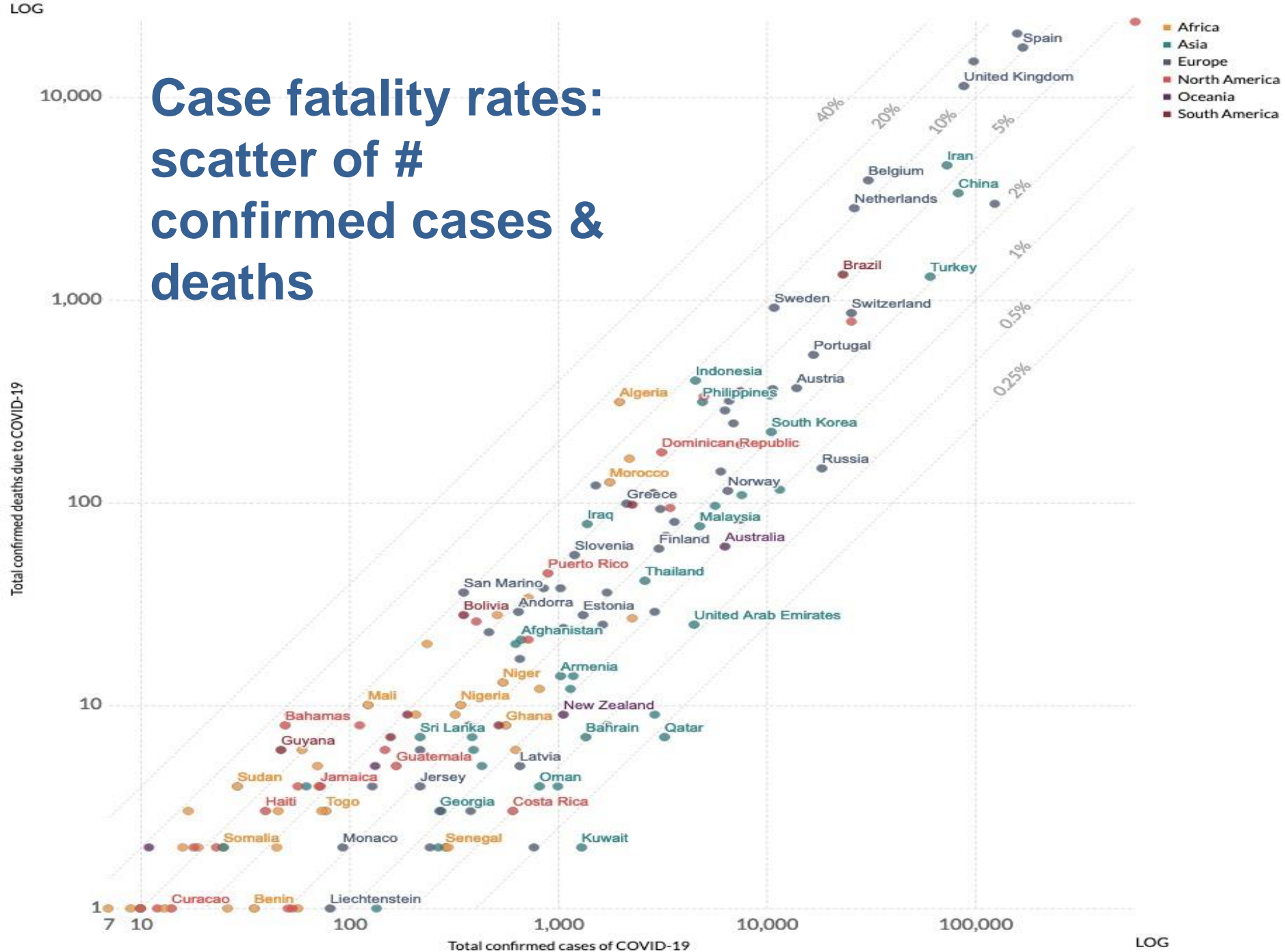


Countries that responded well to the pandemic have a lower death count e.g. South Korea

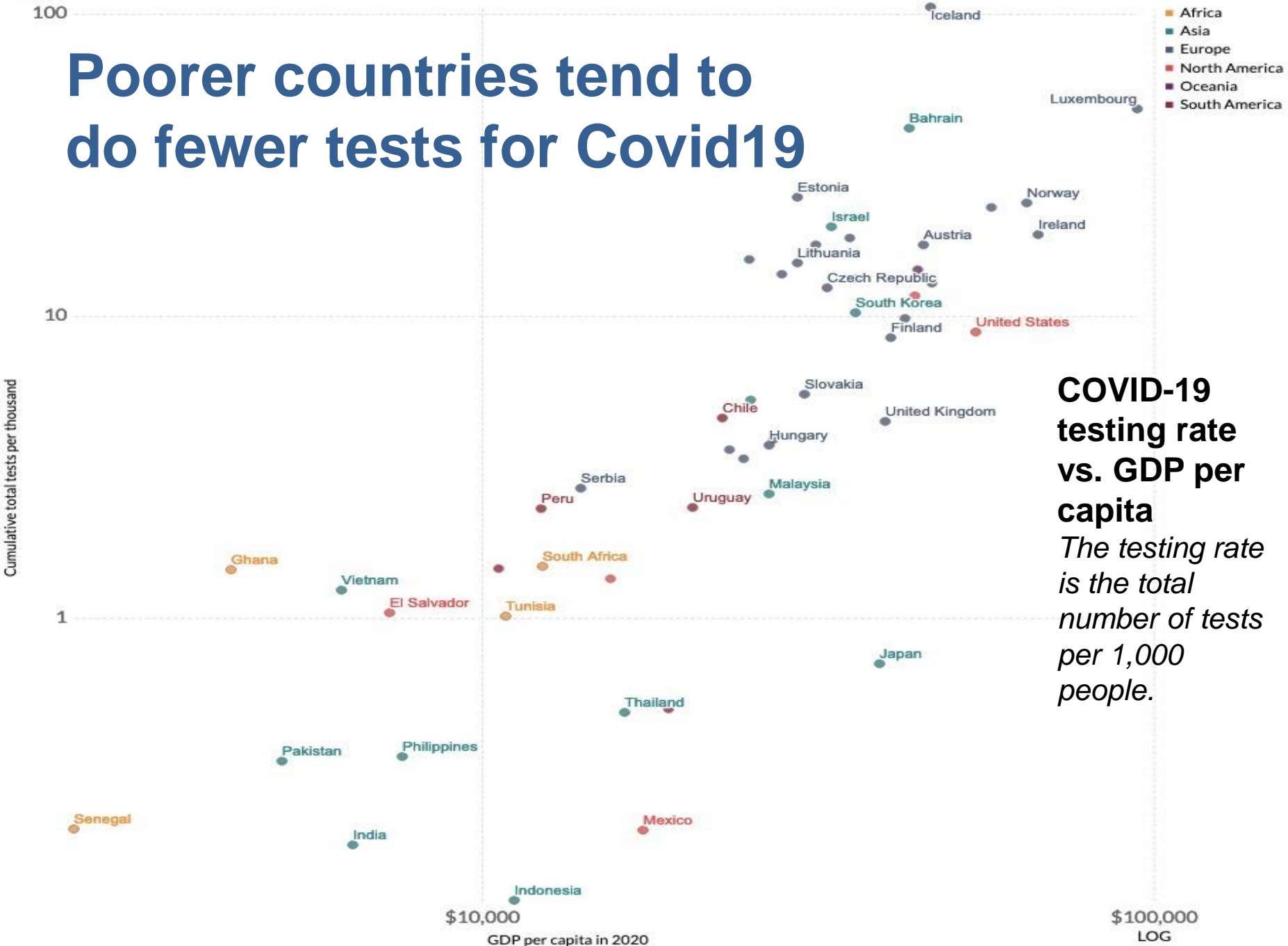
In others – e.g. Italy, Spain, US – the number of confirmed deaths increased very rapidly for several weeks before the growth rate declined

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Case fatality rates: scatter of # confirmed cases & deaths



Poorer countries tend to do fewer tests for Covid19



COVID-19 testing rate vs. GDP per capita
The testing rate is the total number of tests per 1,000 people.

Developing economies more vulnerable, face higher risks from COVID19

In Africa, South Asia and to a lesser extent Latin America:

- Much lower health system capacity (e.g. fewer ICUs & ventilators).
- Weak or absent Social Safety Nets
- People have less possibility to wash their hands with soap frequently.
- Underlying health conditions can pose additional risks (25m + Africans with HIV), or can be exacerbated as attention is drawn from current outbreaks to preventing Covid-19.
- Challenges for governments to enact social distancing in crowded communities where many family members share same room to sleep and staying at home means close quarters and no paycheck
- More exposed to the world trade cycle because their goods (and services) are highly dependent on advanced economies demand
- Limited buying power as scarce pandemic-fighting supplies are rerouted or priced at a premium
- Far less access to the internet and therefore working from home will have far more disruptions and unprecedented economic costs than the already very large and heterogeneous costs that it will have in advanced economies

Covid19: What Next? Many Unknowns

- Another wave of infections remains a real possibility: some resurgence in HK, Singapore
- Virus' properties are not fully understood and could change.
- Role of asymptomatic patients is still imperfectly understood.
- True rates of infection and immunity are therefore uncertain, especially where testing is limited.
- Policy responses are uneven, often delayed, and there will be missteps.
- The reactions of firms and households are uncertain.

**=> What will be the shape of a recovery: a V, U, L, W or tick shape?
More unconventionally, the Arabic letter Baa' ب**

World to face the Worst Economic Downturn Since the Great Depression

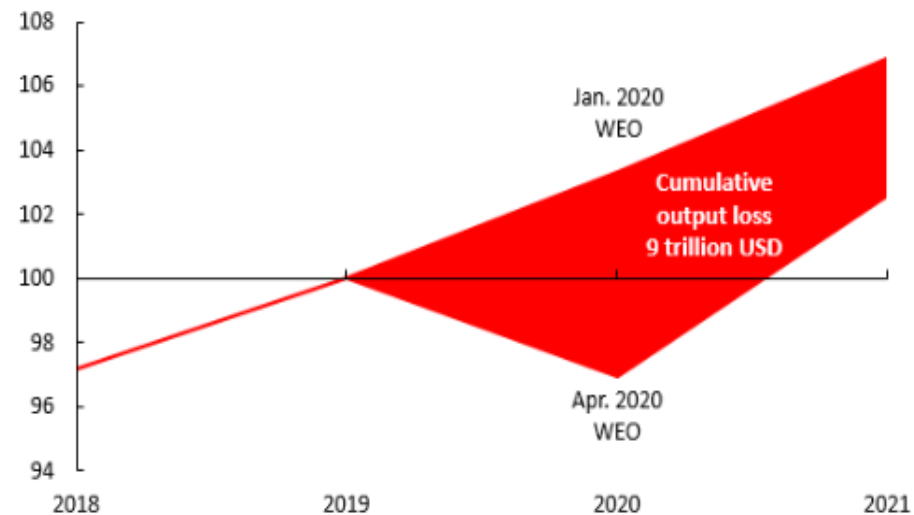
IMF: most countries should expect their economies to be 5% smaller than planned even after a sharp recovery in 2021



Output losses

The cumulative output loss over 2020 and 2021 from the pandemic crisis could be around 9 trillion dollars.

(global real GDP level, index)

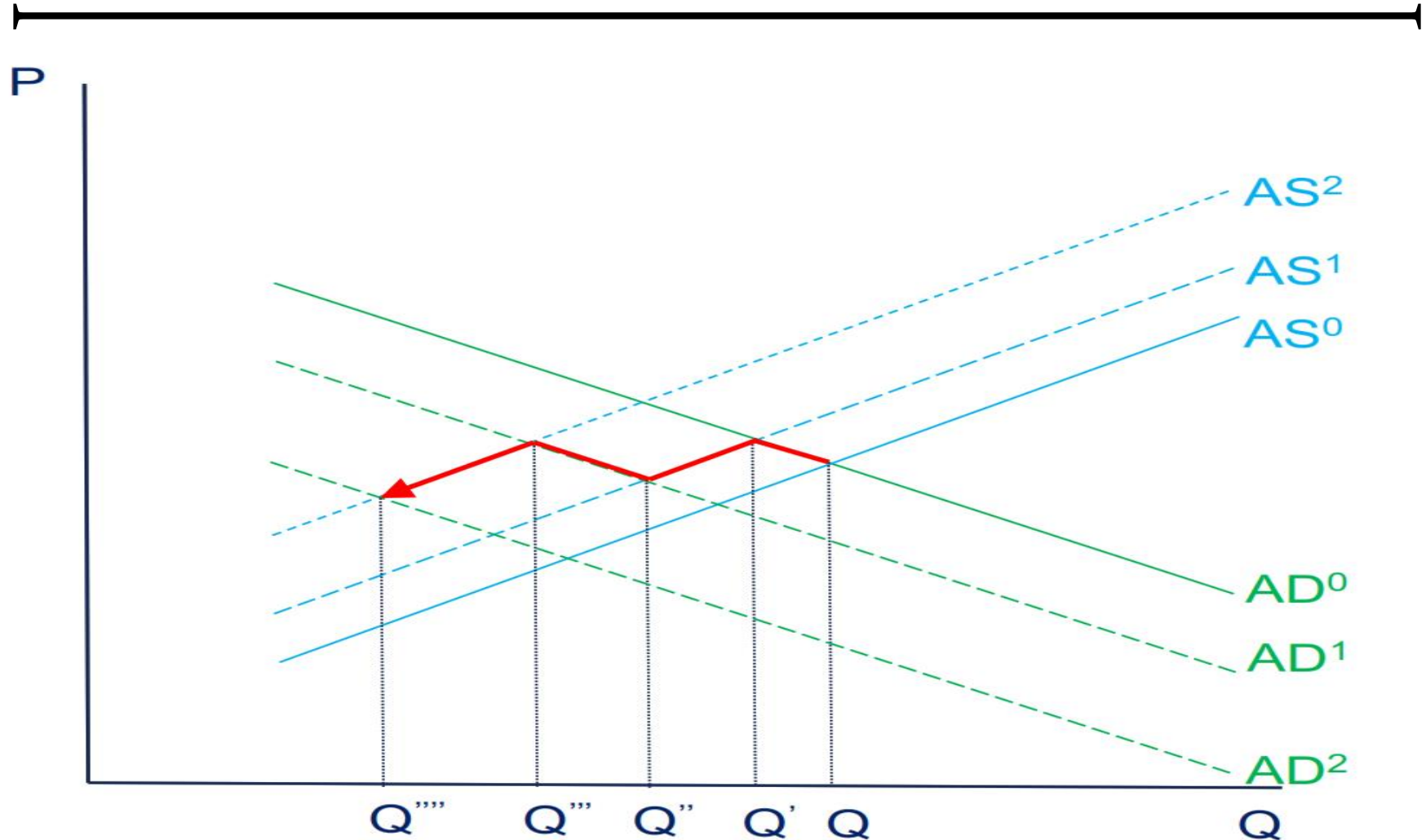


Economic Effects of Covid19: Overview

Macroeconomic	Uneven incidence of lockdowns on firms	Effects on households
<ul style="list-style-type: none">• Sharp fall in GDP; cripple investments• Massive declines in production & consumption• Increase in public & private indebtedness• Renewed financial instability• Flight-to-safety investment strategy	<ul style="list-style-type: none">• Direct effects on key sectors• Aviation• Tourism• Hospitality/Leisure• Some gains in healthcare, industries supplying it with equipment, consumables• Corporate cash flows dry up• Companies with heavy overheads could exhaust their working capital and face insolvency	<ul style="list-style-type: none">• Reduction in labour force (due to mortality & illness)• Deterioration in physical & mental health• Job losses; scarcity of alternative jobs• Fall in consumption• Payments for rents, utilities in jeopardy• Drop in consumer sentiment, given uncertainties

Main challenges for the medium and longer term: exiting ‘economic hibernation’; mitigating the ensuing macroeconomic fallout; and limiting the damage to the worst affected sectors and to households

COVID: Supply & Demand Shocks with Feedback Loops

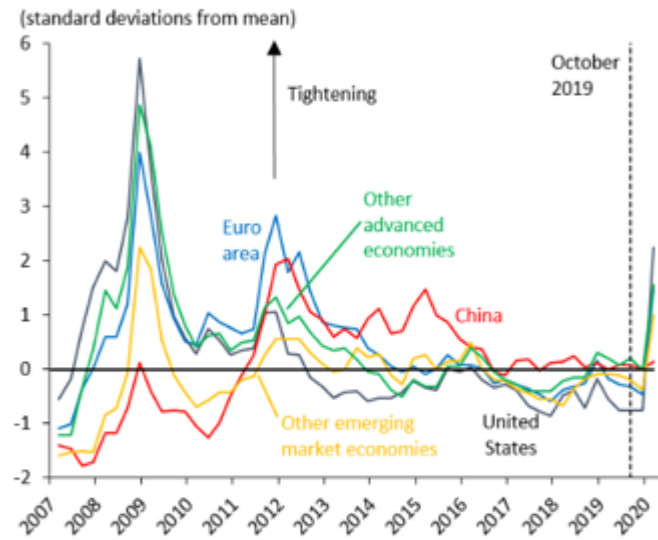


Covid19 crisis presents a serious threat to stability of the Global Financial System

Dangers: High levels of corporate indebtedness (companies entered the Covid19 crisis carrying more debt than they did at the start of 2008 financial crisis) + Potential weaknesses in the investment industry + Likely EME debt crises

Sharp tightening of financial conditions

The speed at which global financial conditions have tightened is unprecedented.

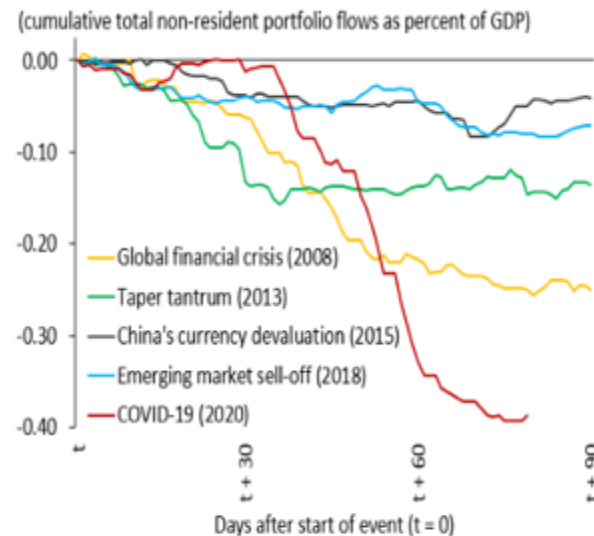


Sources: Bank for International Settlements; Bloomberg Finance L.P.; Haver Analytics; IMF, International Financial Statistics database; and IMF staff calculations.

Note: "Other advanced economies" comprises Australia, Canada, Denmark, Hong Kong SAR, Japan, Korea, Norway, Singapore, Sweden, Switzerland, and the United Kingdom. "Other emerging market economies" comprises Brazil, India, Mexico, Poland, Russia, and Turkey.

Unprecedented outflows

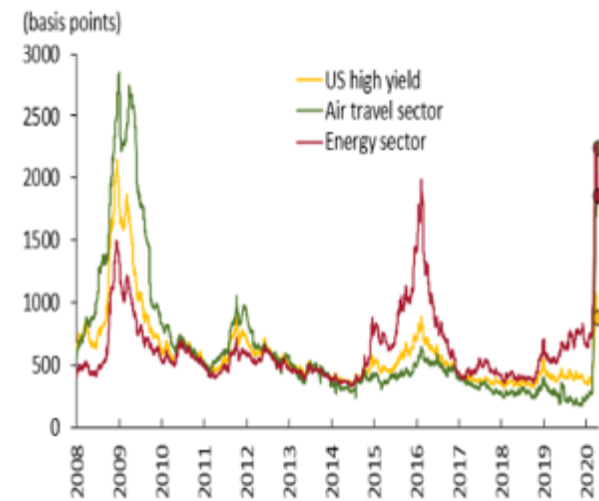
Emerging markets saw unprecedented portfolio outflows in terms of both size and speed.



Sources: Bloomberg Finance L.P.; EPFR Global; Haver Analytics; Institute of International Finance; and IMF staff calculations.

Skyrocketing spreads

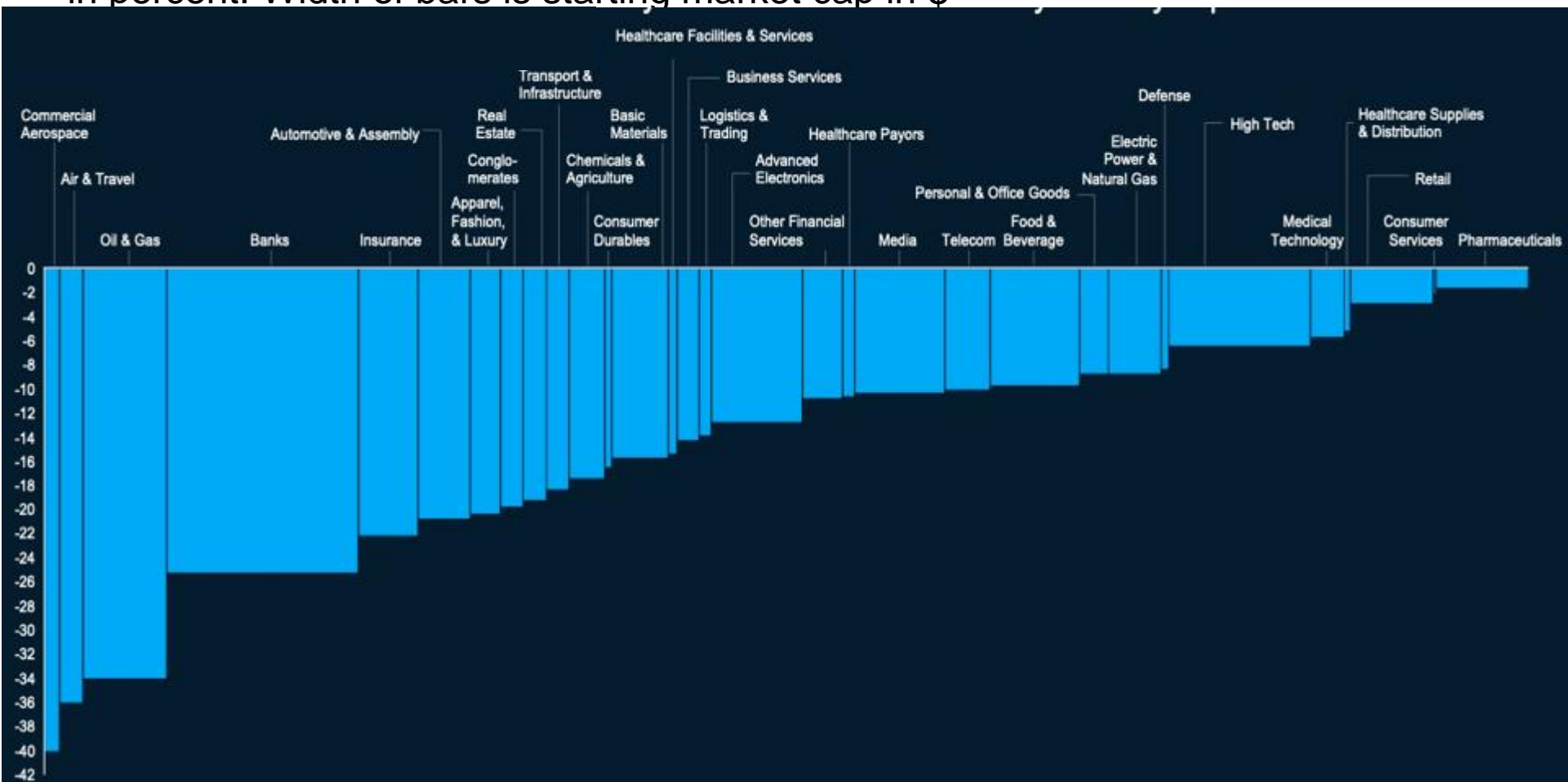
In the segment of markets where borrowers have lower credit ratings, borrowing costs have risen sharply.



Sources: Bank of America, Bloomberg Finance L.P., and IMF staff calculations.
Note: US high yield refers to spreads of high yield-rated bonds (BB+ rating and below).

Market capitalization declines across sectors; significant variation to extent of the decline

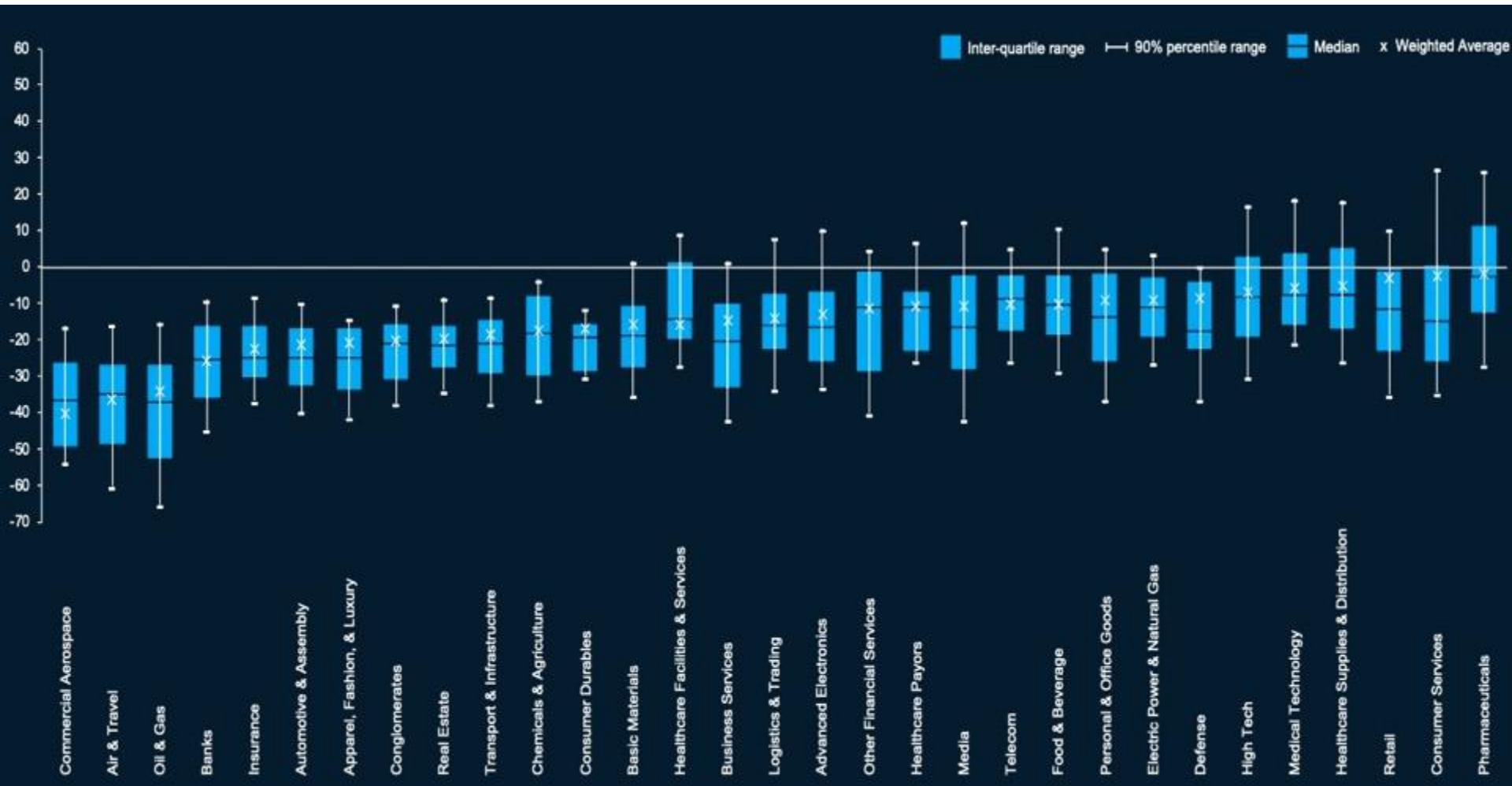
Weighted average year-to-date local currency total shareholder returns by industry in percent. Width of bars is starting market cap in \$



Source: McKinsey, 13 Apr 2020. Data set includes global top 3000 companies by market cap in 2019, excluding some subsidiaries, holding companies, companies with very small free float and companies that have delisted since.

Even within sectors, there is significant variance between companies

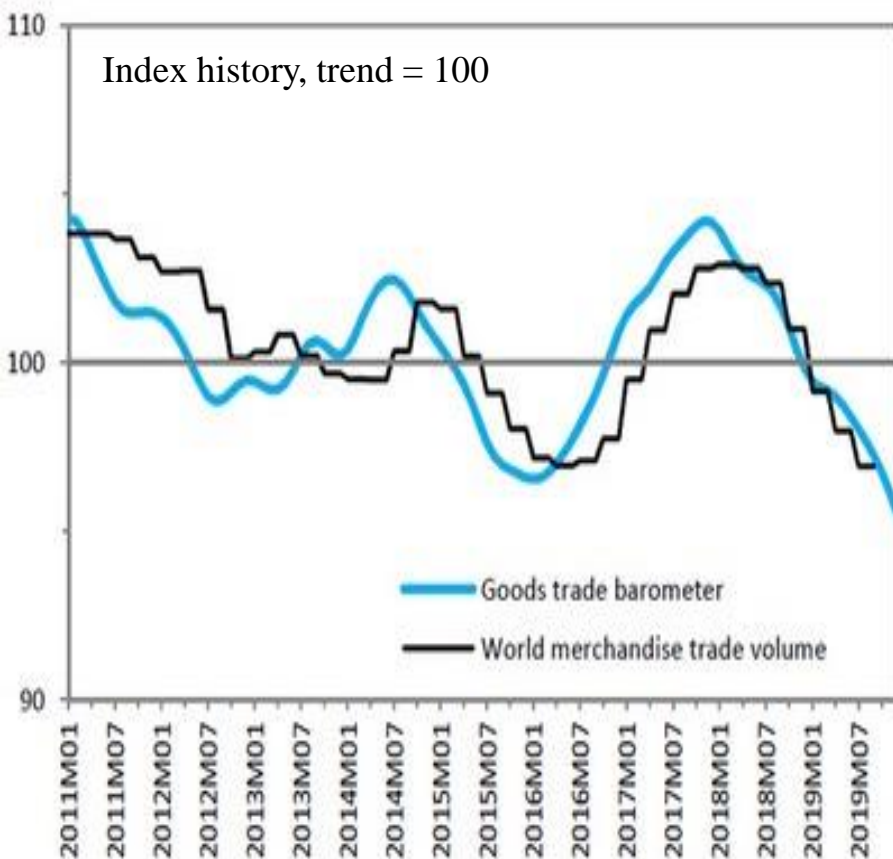
Distribution of year-to-date total shareholder returns by industry percent



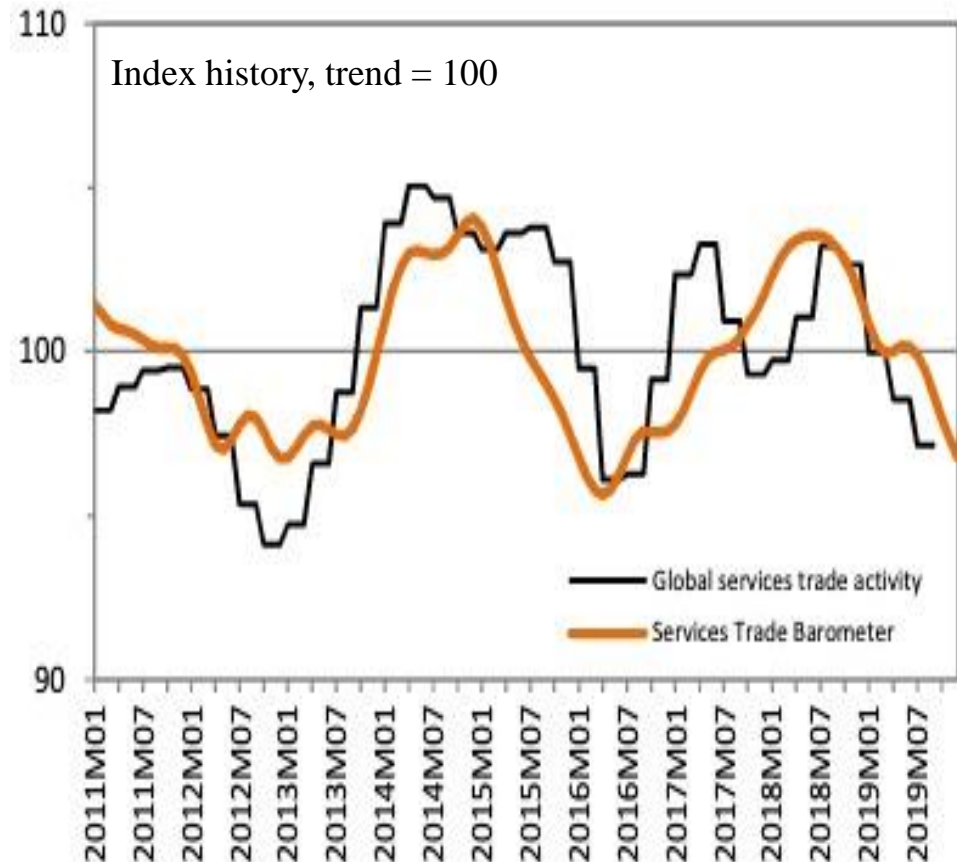
Source: McKinsey, 13 Apr 2020. Data set includes global top 3000 companies by market cap in 2019, excluding some subsidiaries, holding companies, companies with very small free float and companies that have delisted since.

World merchandise trade growth to remain weak: forecast to decline by 13-32% in 2020

Goods barometer signals further weakening of trade in Q1 2020

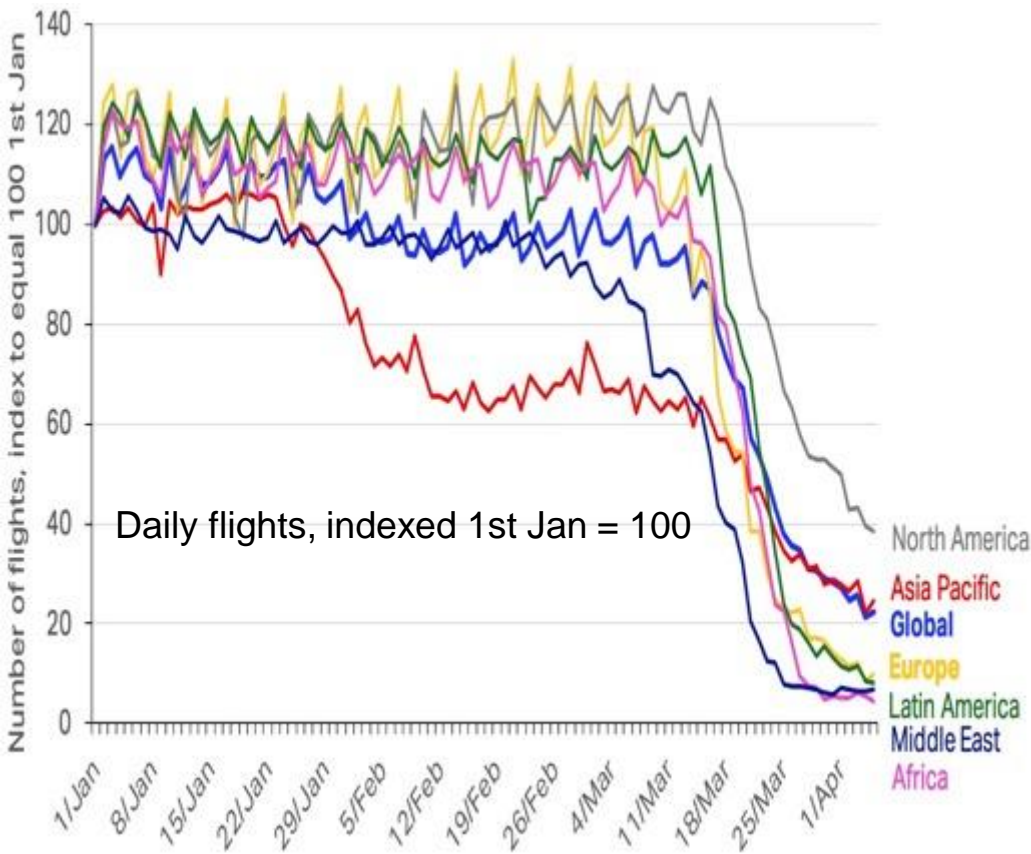


Services trade growth weakens as COVID-19 crisis hits global economy



Travel Restrictions Hit Travel & Tourism Sector

Worldwide flights now down almost 80% by early April



World Travel and Tourism Council:

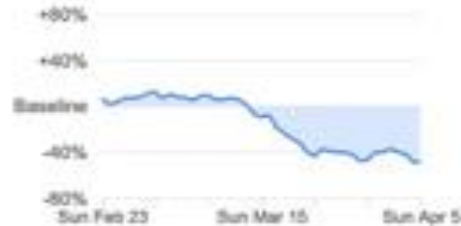
- COVID-19 could cut **50-75mn jobs worldwide** in the travel & tourism industry (30m+ in Asia)
- Intl travel could be adversely affected by upto 25% this year = equivalent to a **loss of 3 months of travel**
- **Cruise companies** have lost \$750mn in revenue since Jan
- Asia likely to be worst affected
- Once the outbreak is over, **it could take up to 10 months for the industry to recover**

Google Mobility Reports show the impact of lockdowns in the US

Retail & recreation

-49%

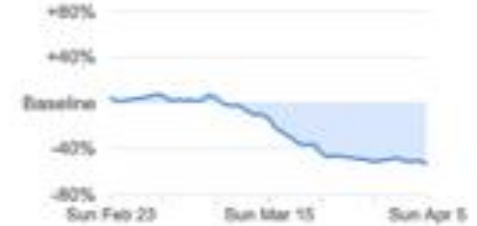
compared to baseline



Transit stations

-54%

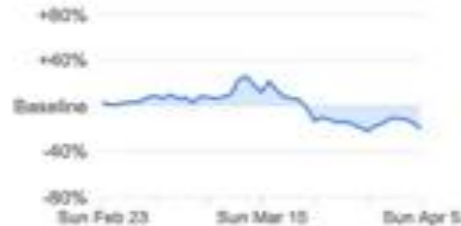
compared to baseline



Grocery & pharmacy

-20%

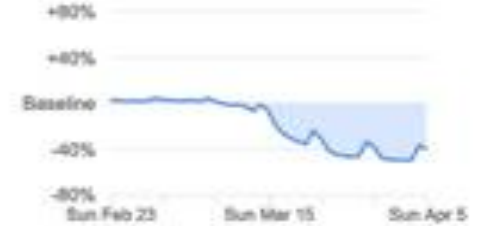
compared to baseline



Workplaces

-40%

compared to baseline



Parks

-20%

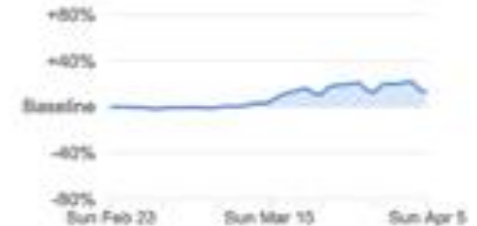
compared to baseline



Residential

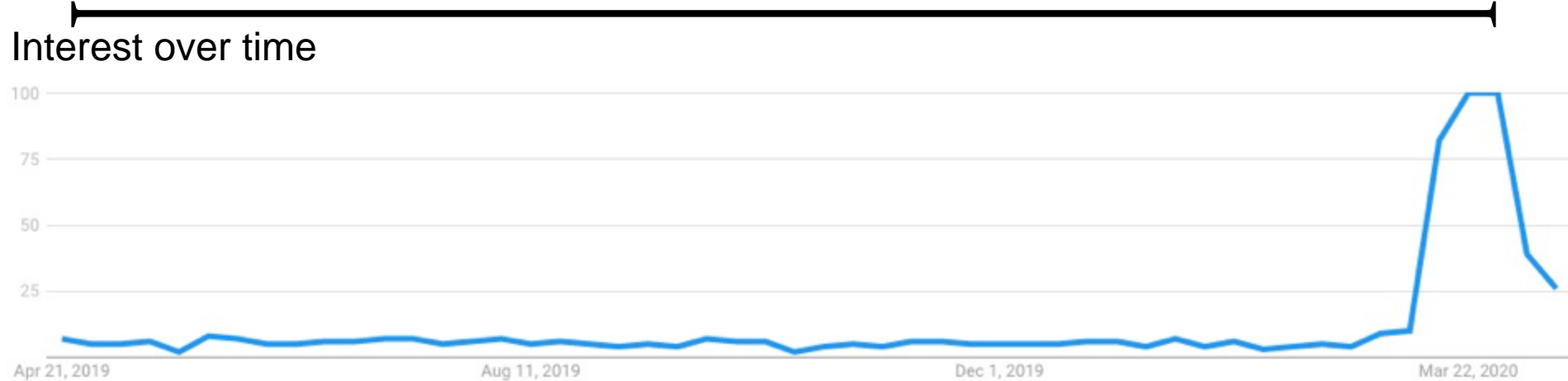
+13%

compared to baseline



US: More than 95% Americans are currently under stay-at-home orders & an estimated 29% of the economy has been shut down because of the virus outbreak

Insight from Google Trends: “Unable to pay rent” (worldwide results)



Interest by region



1	United Kingdom	100	
2	New Zealand	89	
3	Australia	80	
4	United States	75	
5	Ireland	68	

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Movie theatre audiences vanish

Year-on-year change in box office revenues (%)

US: seven day rolling average



Rest of the world: four-weekend rolling average



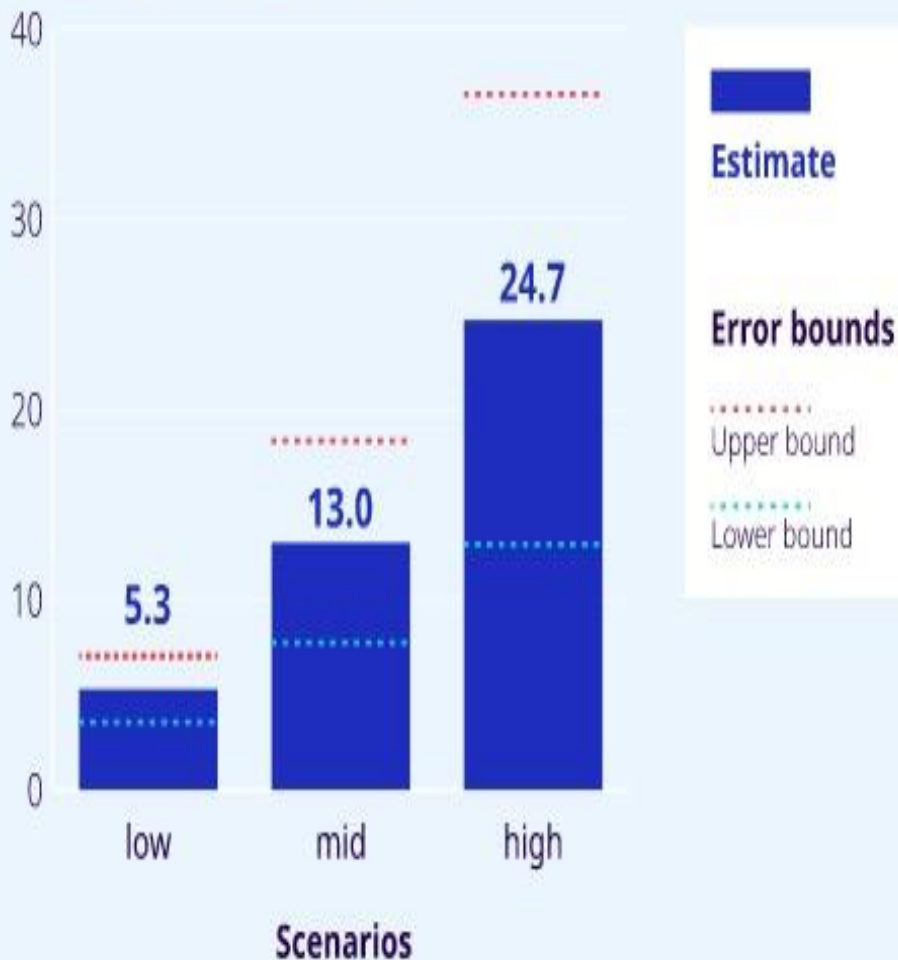
FT graphic: John Burn-Murdoch / @burnmurdoch

Source: Box Office Mojo

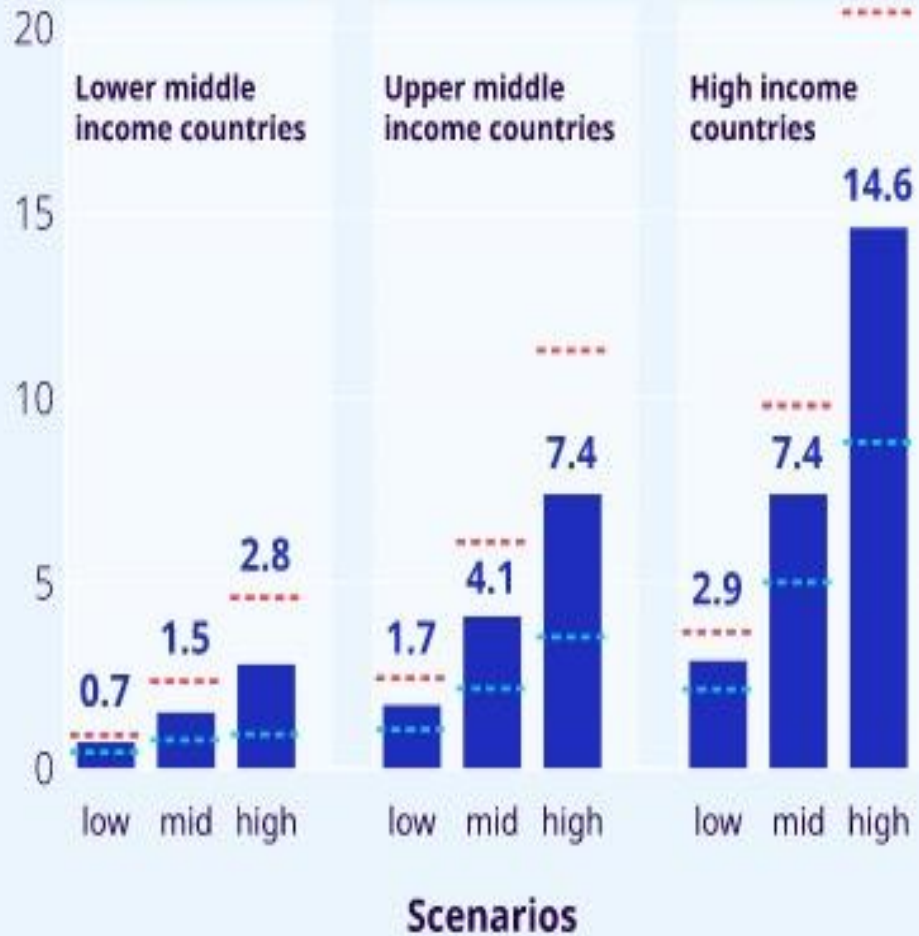
© FT

Impact on global unemployment and underemployment

Millions of unemployed people



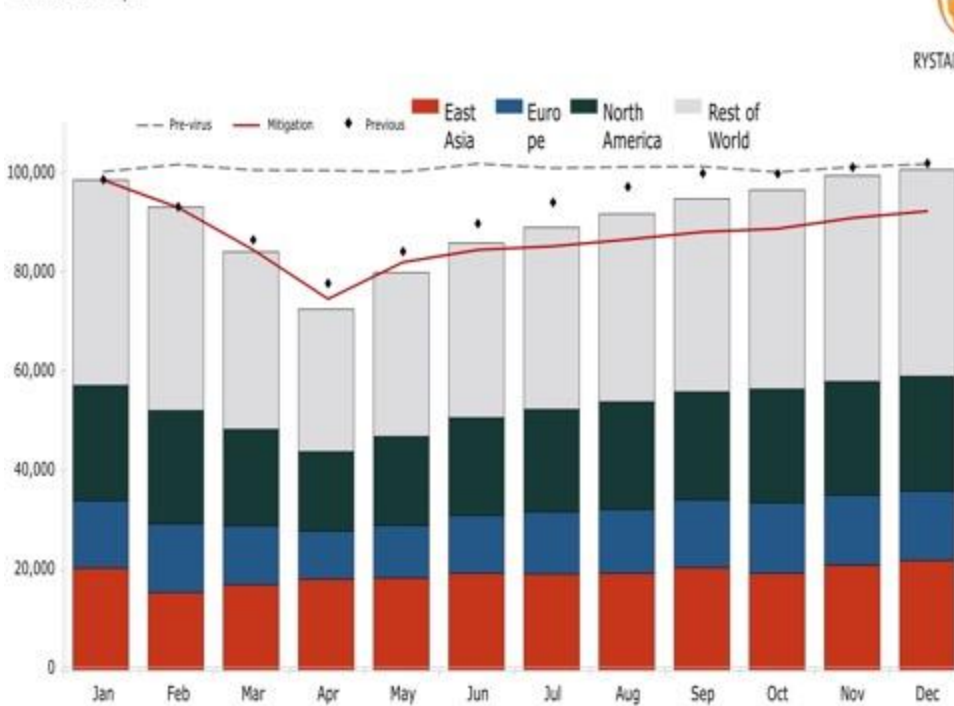
Millions of unemployed people



Energy demand & Oil prices slump

Global oil demand impact analysis Covid-19 in effective prevention scenario

Thousand bpd

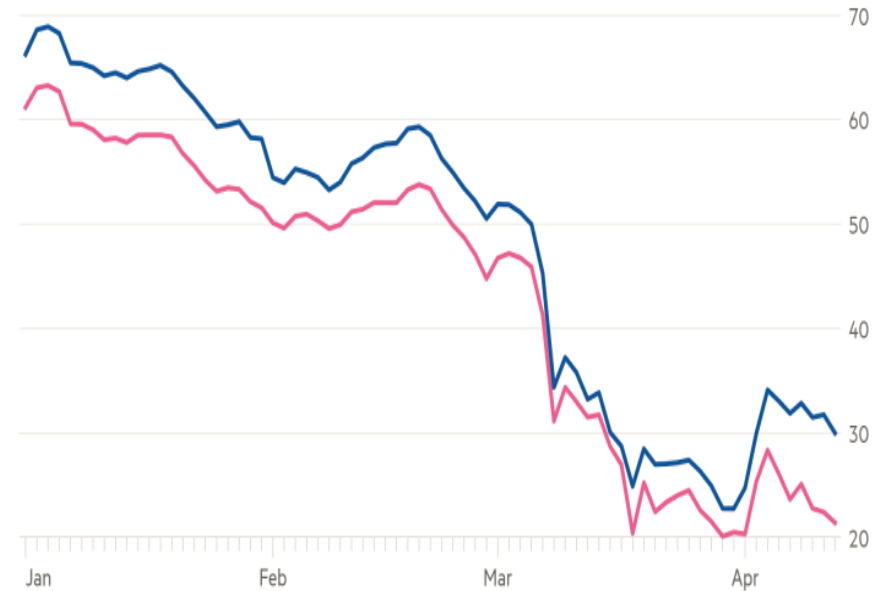


Source: Rystad Energy Research and Analysis

Oil slides despite global producers agreeing output cuts

\$ per barrel

— Brent crude — West Texas Intermediate



Source: Refinitiv © FT

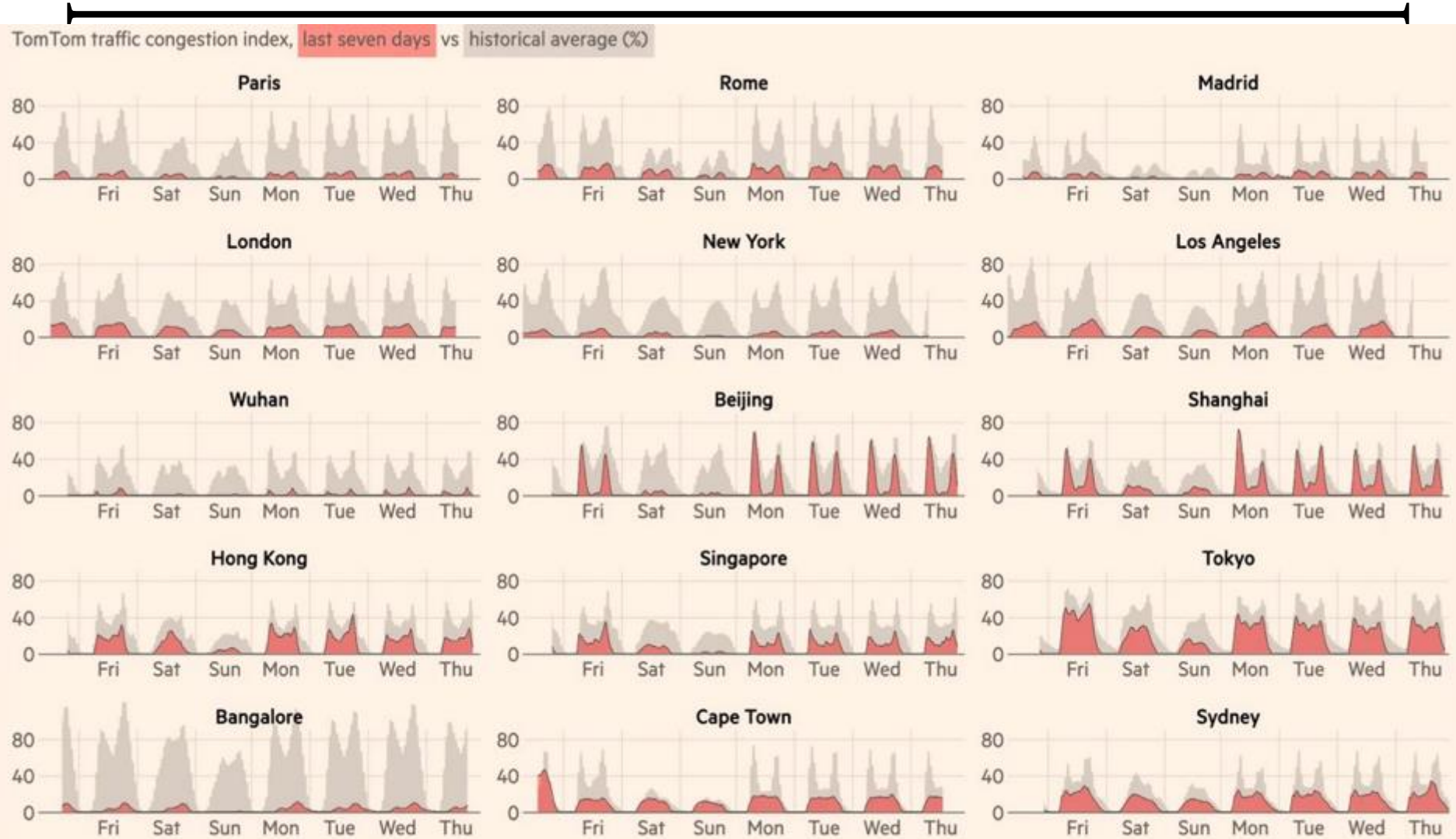
Although oil prices have rallied 35% from the Mar low, they are down 50%+ this year
OPEC+ cuts: too little, too late

Cuts are still not big enough to avoid a huge global stock build in Q2 (oil demand is expected to dip by 27.5mn bpd (Rystad) to 35mn bpd (Trafigura Grp))

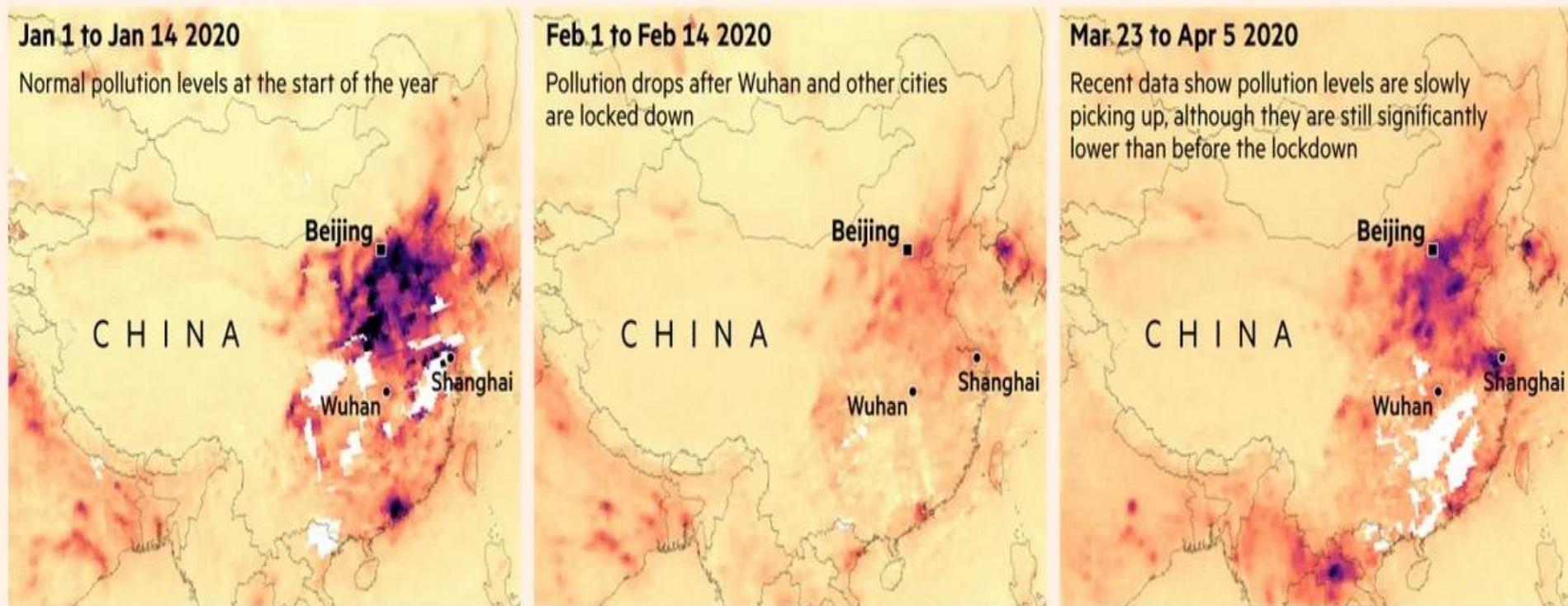
Saudi continues discounting its crude into Asia + raised official selling prices to US

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Environmental silver lining? Cleaner air as roads empty across the world as lockdowns go into effect

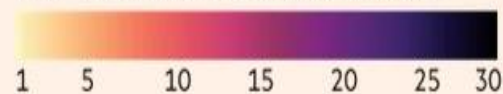


However, China's pollution levels are on the rise as lockdown restrictions ease



NO2 pollution levels

$\times 10^{15}$ molecules/cm² (30% cloud screened)*

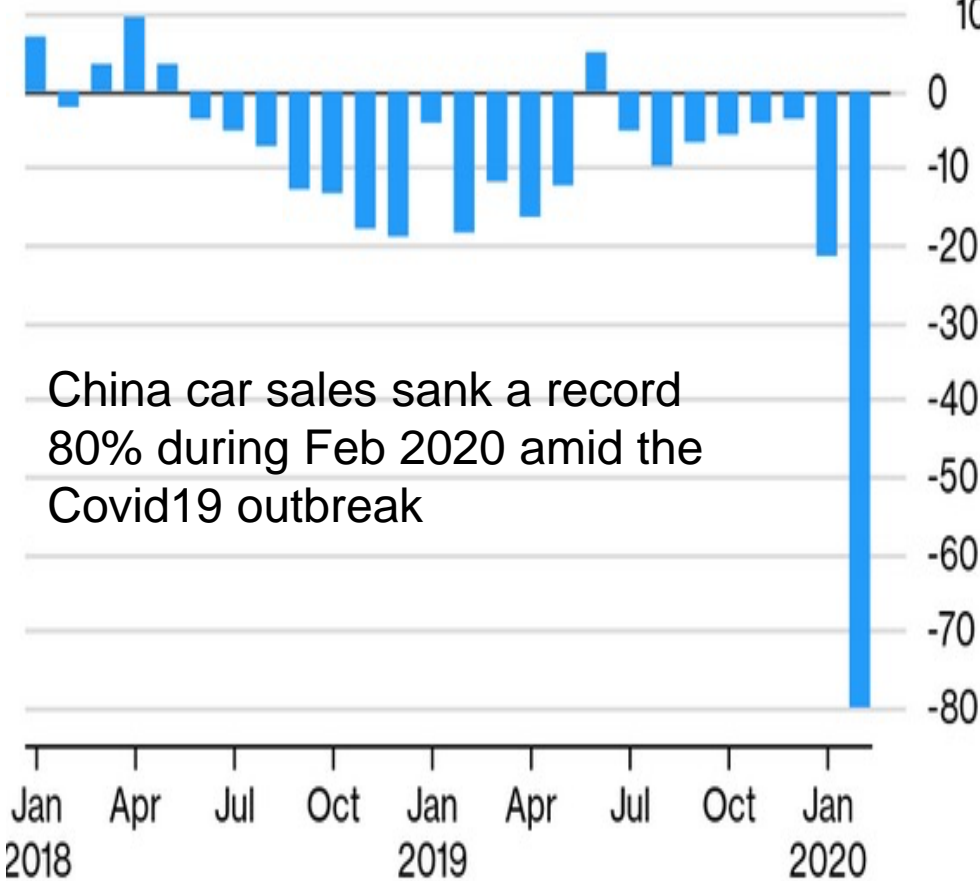


*Two-week rolling average

Retail sales in China dipped sharply during Covid19, but..

An Hermès Boutique in China Made \$2.7 Million in One Day After It Reopened

■ Year-on-year change in China passenger vehicle sales

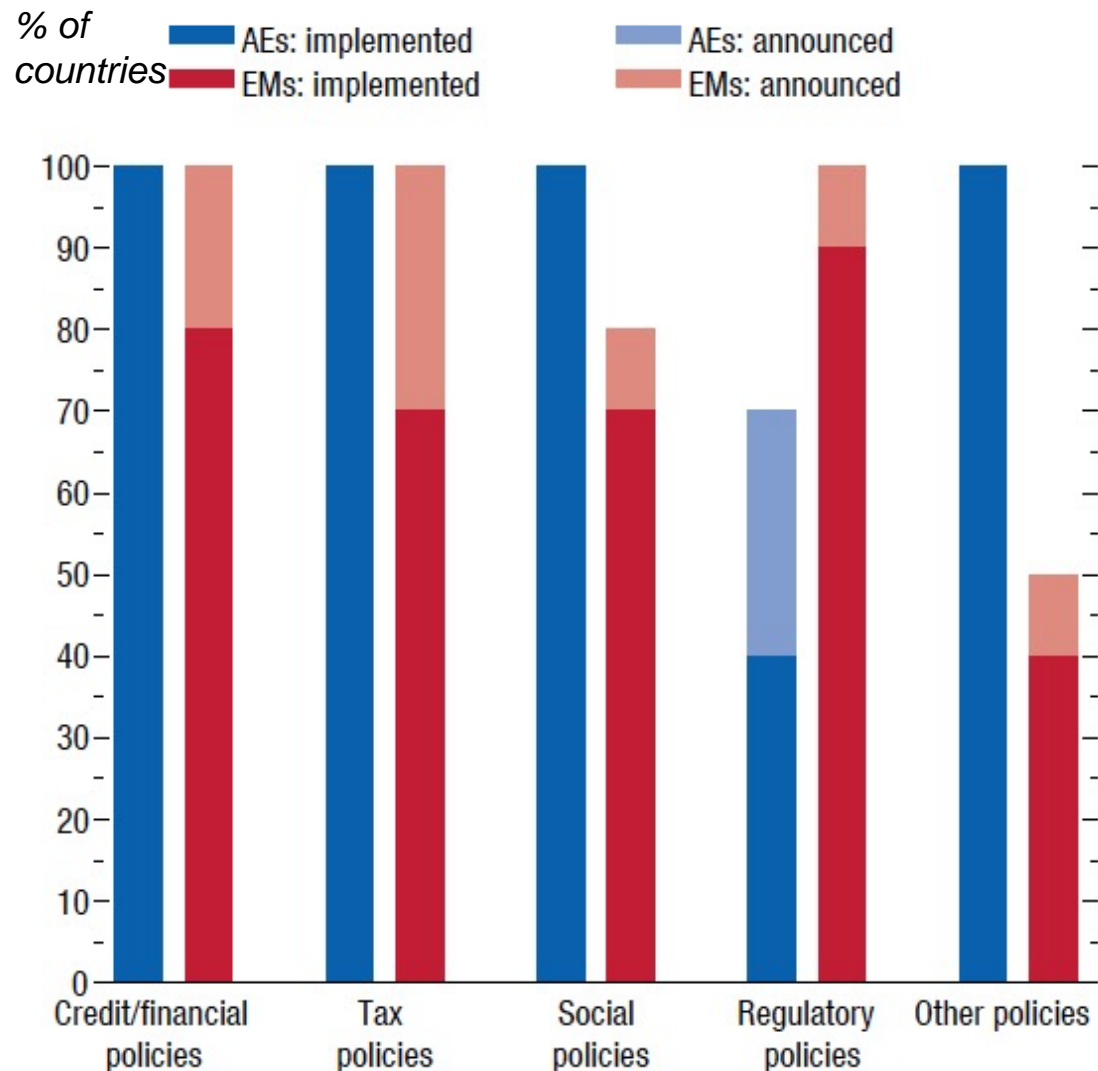


China car sales sank a record 80% during Feb 2020 amid the Covid19 outbreak



Strong rebound of luxury consumption post Covid19: customers documented their shopping foray across Chinese social media, such as Weibo & Xiaohongshu

G20+: Economic Policy Responses to Covid-19



- Priority 1.** Resources should be made available for health care systems to cope with the surging need for their services i.e. expand public spending
- Priority 2.** Limit the propagation of the health crisis to economic activity
- Advanced economies have relatively stronger health care capacity, better access to intl liquidity, and comparatively lower borrowing costs
 - EMEs resources more constrained + tighter financial conditions & borrowing constraints + might have to reprioritize existing spending

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What have been the Common Policy Responses?

- **Sizable targeted fiscal measures.** Objective is twofold: (a) cushion the impact on the most-exposed households & businesses; (b) preserve economic relationships (particularly by reducing firm closures) for the post-crisis era
- **Provision of liquidity & credit guarantees.** Govts could offer temporary, targeted credit guarantees/ direct loans for near-term liquidity needs of SMEs
- **Loan restructuring.** banks should absorb the cost of restructuring loans by drawing on their capital conservation buffer or, where activated, by releasing their countercyclical capital buffer. Monitor bank asset quality.
- **Steps to temporarily suspend bankruptcy procedures.** France, Germany, Spain, UK, Australia, India have introduced such suspensions
- **Broader stimulus.** Synchronised conventional interest rate cuts + asset purchase programs + CB Swap lines
- **External sector policies.** Countries with flexible exchange rates should allow them to adjust as needed
- **Coordinated, Multilateral Cooperation to Assist Constrained Countries**
- **However, it is critical that policymakers recognize the limits of their interventions.** No tax rebate, low-interest loan, or cheap mortgage refinancing will convince people to resume normal economic activity if they still fear for their own health

Potential Policies for the Recovery Phase

- **Suspend Emerging and Developing Economies' Debt Payments.** IMF should act now to **head off the coming wave of sovereign defaults** by coordinating a broad temporary debt moratorium.
- **Global cooperation to support trade and investment.** Reduce tariffs & NTBs, improve global health care infrastructure (including cross-border transfers of essential medical supplies)
- Lifting of containment likely to be gradual. So, normalization will take time i.e. ongoing uncertainty. **Clear communication policies essential.**
- Broad **monetary & fiscal stimulus to boost spending in recovery phase.** e.g. hiring subsidies, worker retraining programs, social safety nets
- Govts can design a **post-crisis restart procedure**, whereby distressed firms and all other creditors agree on a formula for reducing the debt burden on businesses.
- **Scaling back targeted measures.** removing credit guarantees for firms affected by the shutdown, rolling back wage subsidies and reduced worktime programs, and unwinding equity stakes in corporations
- **Balance sheet repair, debt restructuring.** Encourage early and proactive recognition of NPLs, distressed debts.

Will a New Post-Covid Normal emerge?

- Arguments arise for strengthening the state + reinforce notions of deglobalisation, nationalism, authoritarianism, nationalist economic policies and disruption of global supply chains
- Will it accelerate the shift in power & influence from West to East? A more China-centric globalization?
- Global cooperation to face pandemics and other threats (e.g. fighting cybercrime): common reporting systems, shared controls, common contingency plans;
- Mass surveillance & arguments about privacy (e.g. phone tracking), data privacy risks
- Boost to telecommuting & e-learning policies; Increased inequality
- Digitalization gains speed: including e-government services;
- If vaccine is not discovered soon, social distancing may become norm;
- Investment in public health systems
- Food security: Investment in domestic food supply chains

Select References

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