

Centre for Supply Chain Management, April 2020

The Macroeconomics of Pandemics – This Time is Different*

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*The views herein draw on the collective wisdom of many scholars. They do not reflect those of the Financial Markets Authority or the Board of the FMA.

Roadmap

- ❖ Some implications for economic growth
- ❖ Policy responses
- ❖ Implications for supply chain management (from an outsider's perspective!!).

“The pandemic has prompted an anachronism, a revival of the walled city in an age when prosperity depends on global trade and movement of people.”

–Henry Kissinger

Implications for growth

A very sudden stop

- ❖ The ferocity and speed of the Covid-19 crisis has been unparalleled.
- ❖ The annualised rate of decline in global GDP in 2020 Q1 could approach minus 20 per cent, *triple* that recorded in the worst quarter of the GFC in 2009.
- ❖ Comparisons with the Great Depression *may not be fanciful*. Magnitude of shock on track to exceed the Depression. [Paul Romer — unemployment of 30% is plausible].
- ❖ The Germany economy is expected to shrink by almost 10 per cent in the three months to June, double the size of the biggest drop in the 2008 financial crisis.
- ❖ World trade will contract by 33%, according to the WTO (compared with 12% during GFC).

- ❖ But unlike the Great Depression, this economic downturn is unusual in that — following an initial supply shock in Wuhan — the subsequent shock to supply has not emanated from private choices.
 - ❖ it is a consequence of governments choosing to lockdown the economy so health systems can cope.
- ❖ Firms and households are not to blame for this crisis, and therefore the economic burden should be shared as widely as possible.
 - ❖ compensation via the state places the financial burden with society as a whole.

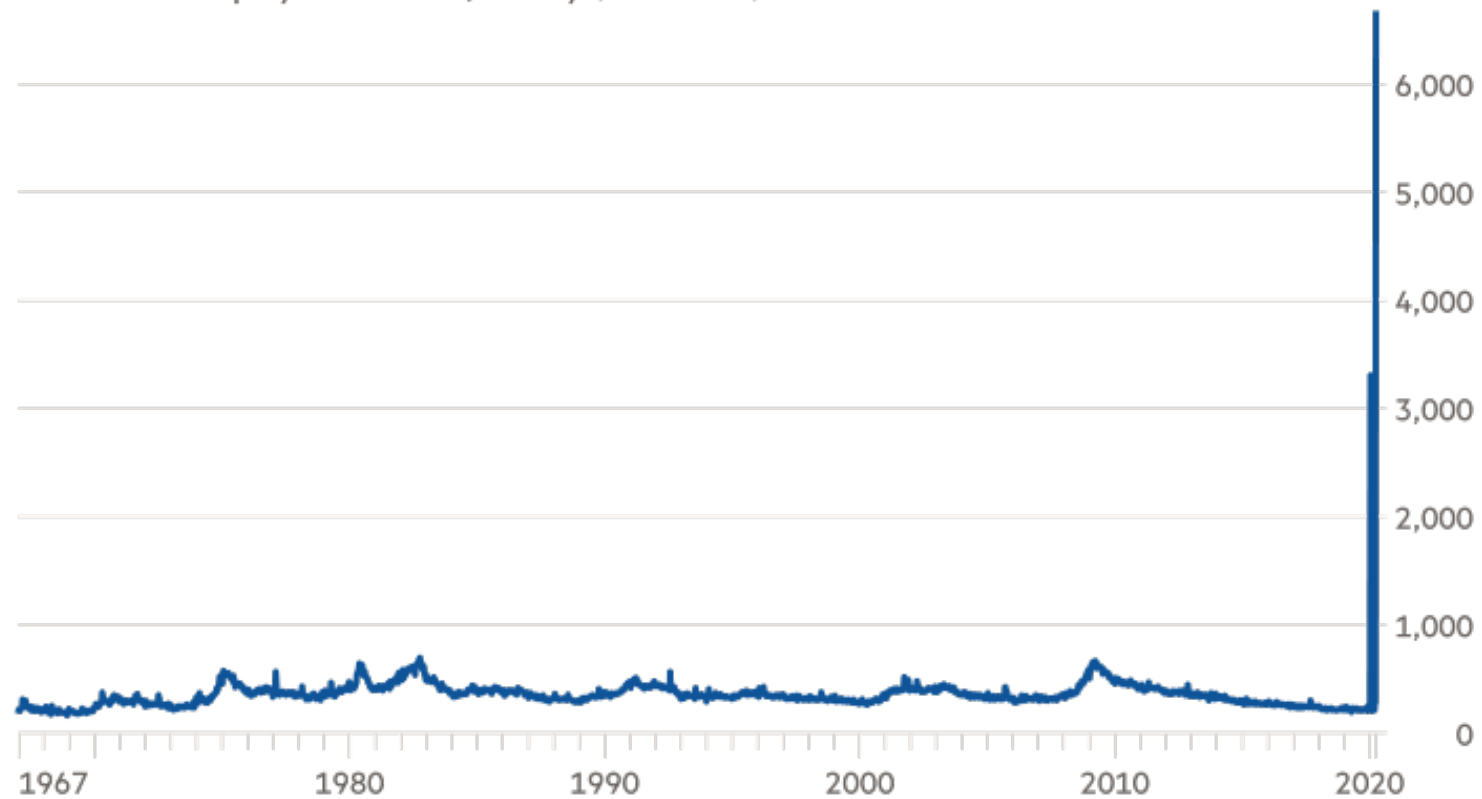
Comparison with the GFC

- ❖ The GFC lead to a *permanent* reduction in US GDP of 7.5%.
- ❖ US GDP in 2019 = \$22 trillion. So if the Covid shock is of similar size, then reduction in US output per month is $7.5\% \times \$22\text{trl} / 12 = \137 billion per month.
- ❖ But more likely to be around \$400 billion per month. (Permanent reduction could be more akin to 10-20%.)
- ❖ NZ GDP = \$300 billion. So this would be \$2-5 billion per month. [John Key — \$12billion/month].

Americans filing for first-time unemployment benefits

Almost 10m jobless claims filed in two weeks, 6.6m in most recent week

Initial US unemployment claims, weekly (thousands)



Source: Refinitiv

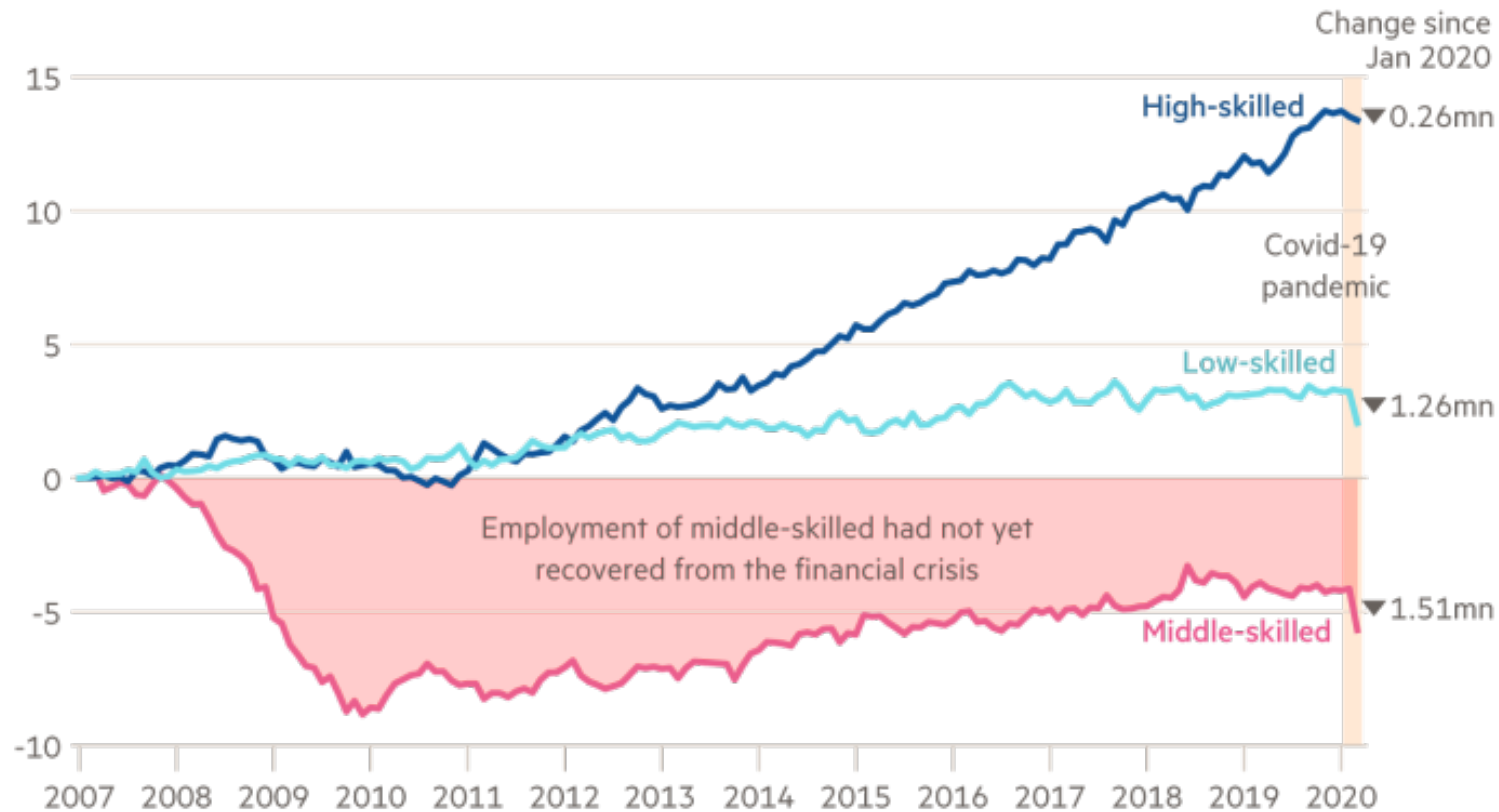
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Costs of crisis not equally shared

Coronavirus shutdowns hit middle and low-skilled jobs hardest in US

Cumulative change in jobs since Jan 2007 (millions)



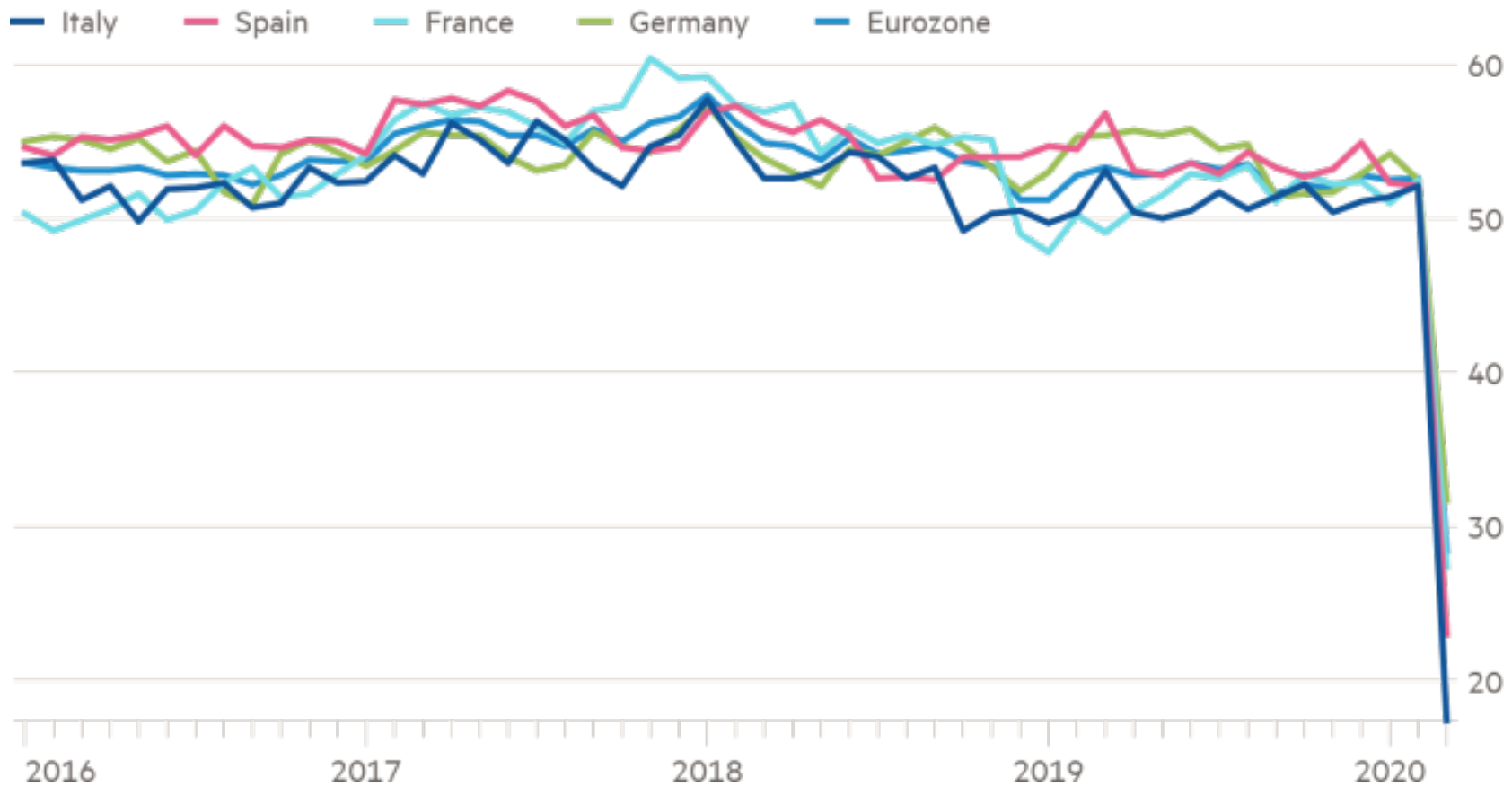
Source: Deutsche Bank Research

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Business activity in Europe

Eurozone's services activity has crashed

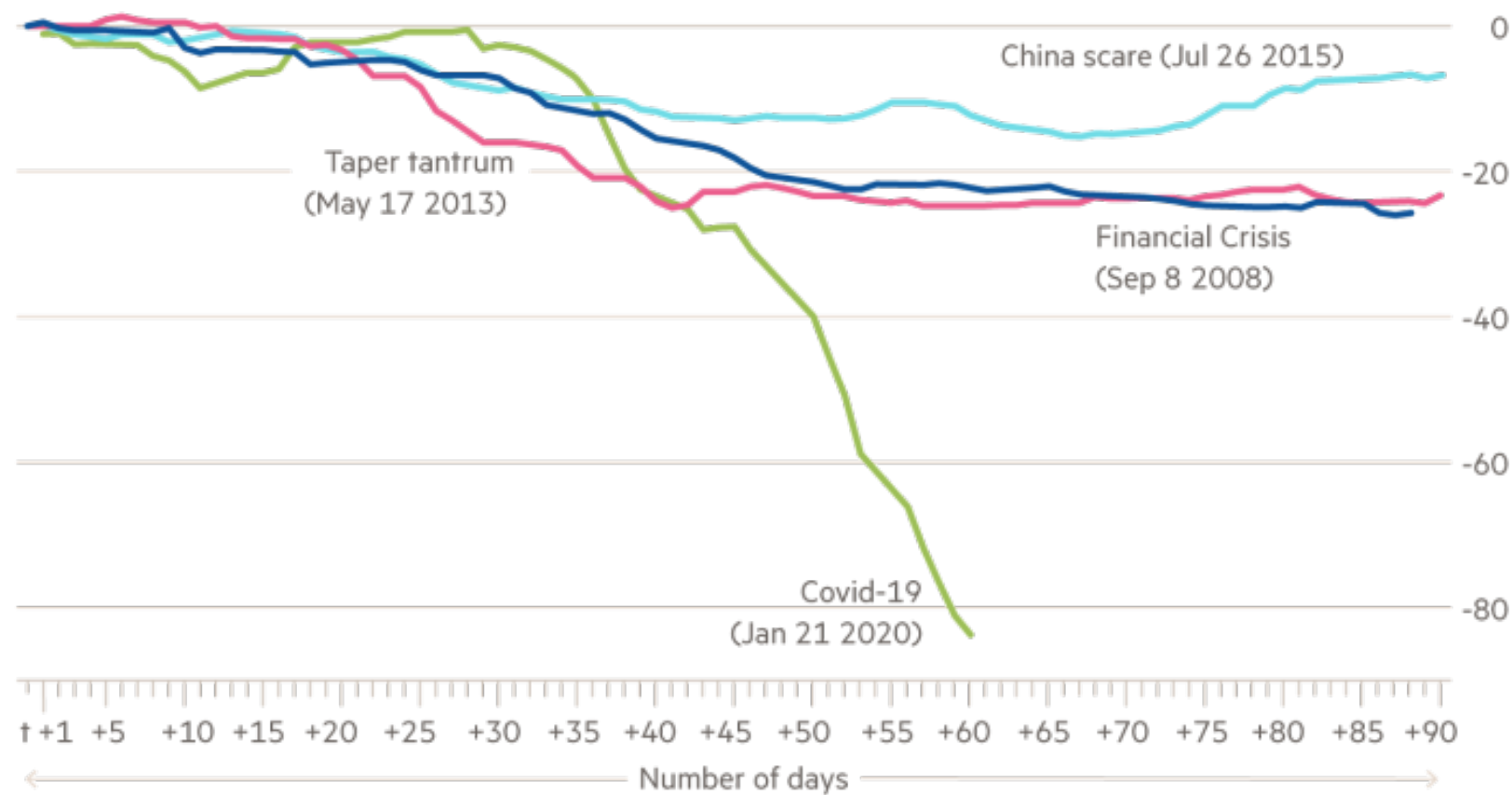
Purchasing managers' index, below 50= a majority of businesses reporting a contraction



Emerging market capital outflows

This is a horrifying financial run on emerging economies

Accumulated non-resident portfolio flows to EMs since indicated date (\$bn)

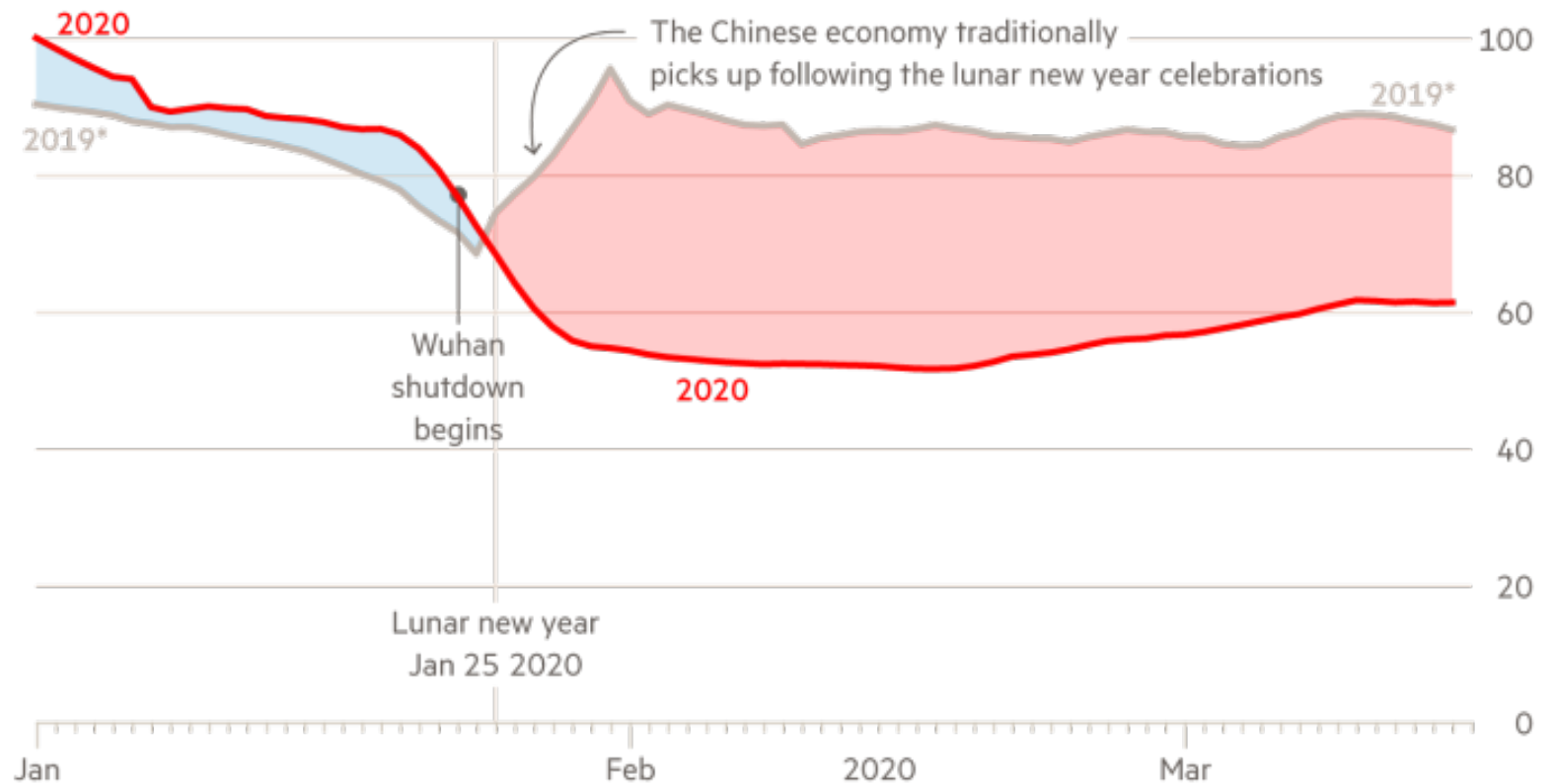


Source: IIF
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Economic recovery in China appears modest

Covid-19's impact on the Chinese economy

FT China Economic Activity Index (Jan 1 2020 = 100)



* 2019 values at same number of days before/after the lunar new year

Sources: WIND; EntGroup; FT research

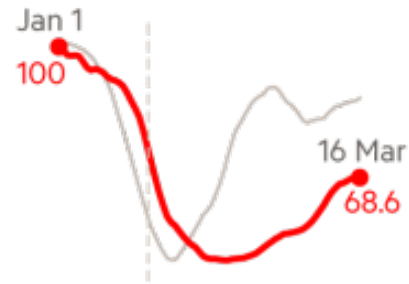
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Subindices (Jan 1 2020 = 100)

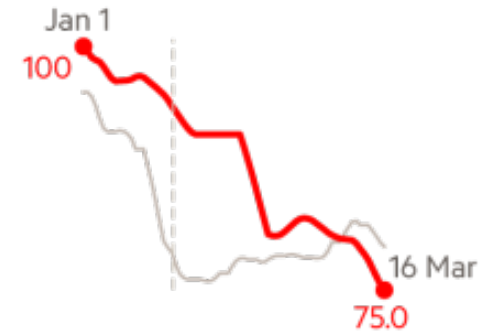
Real estate floor space sales



Power plant coal consumption



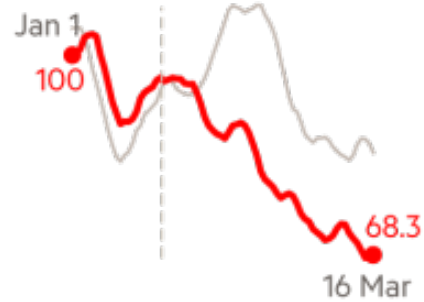
Container freight



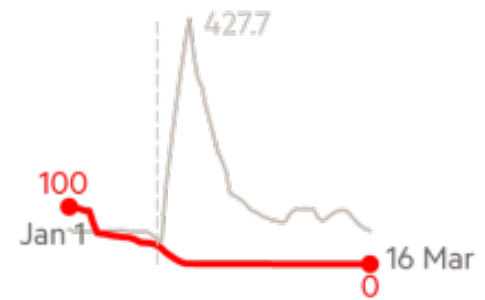
Traffic congestion



Air pollution



Box office admissions

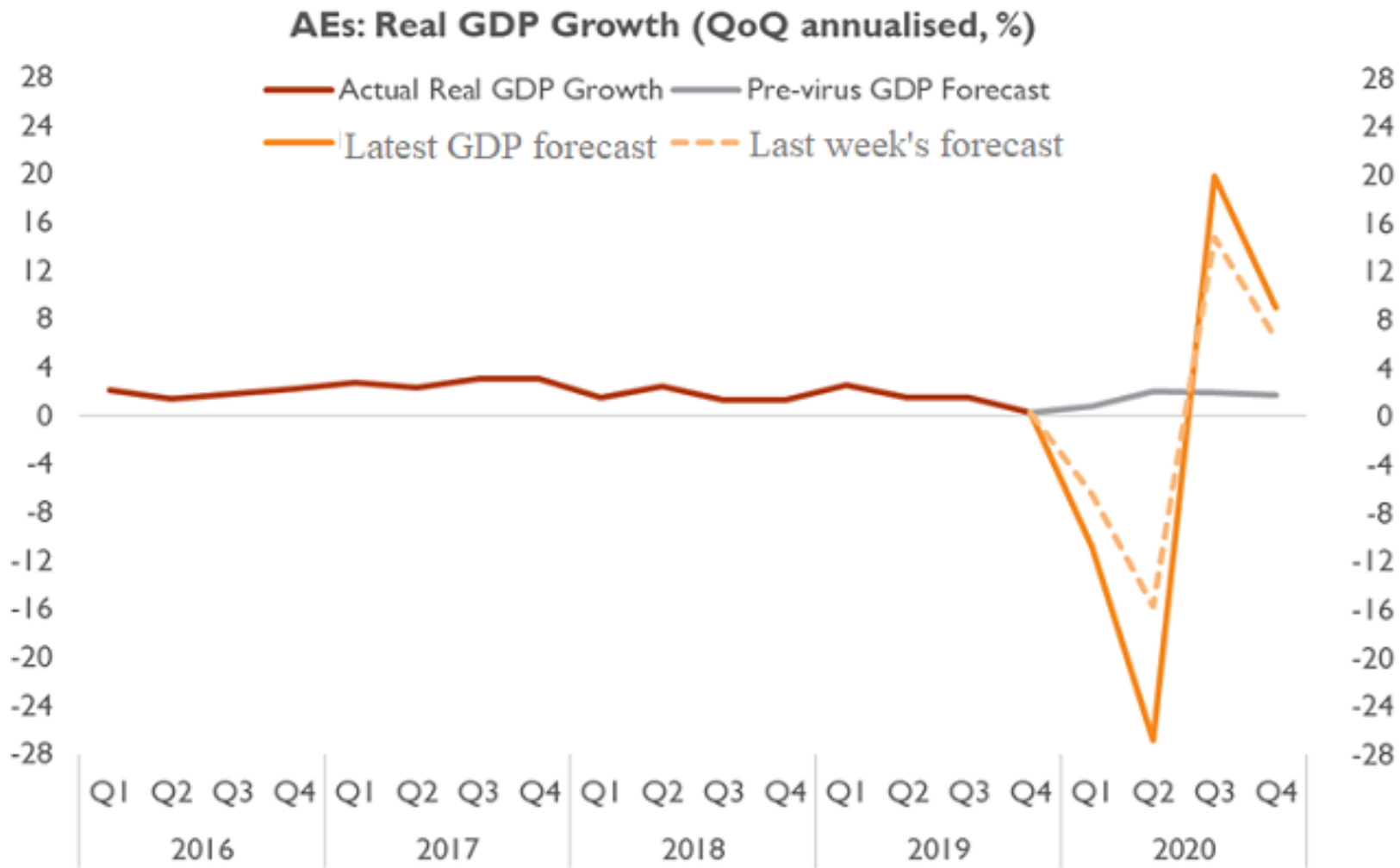


* 2019 values at same number of days before/after the lunar new year

Sources: WIND; EntGroup; FT research

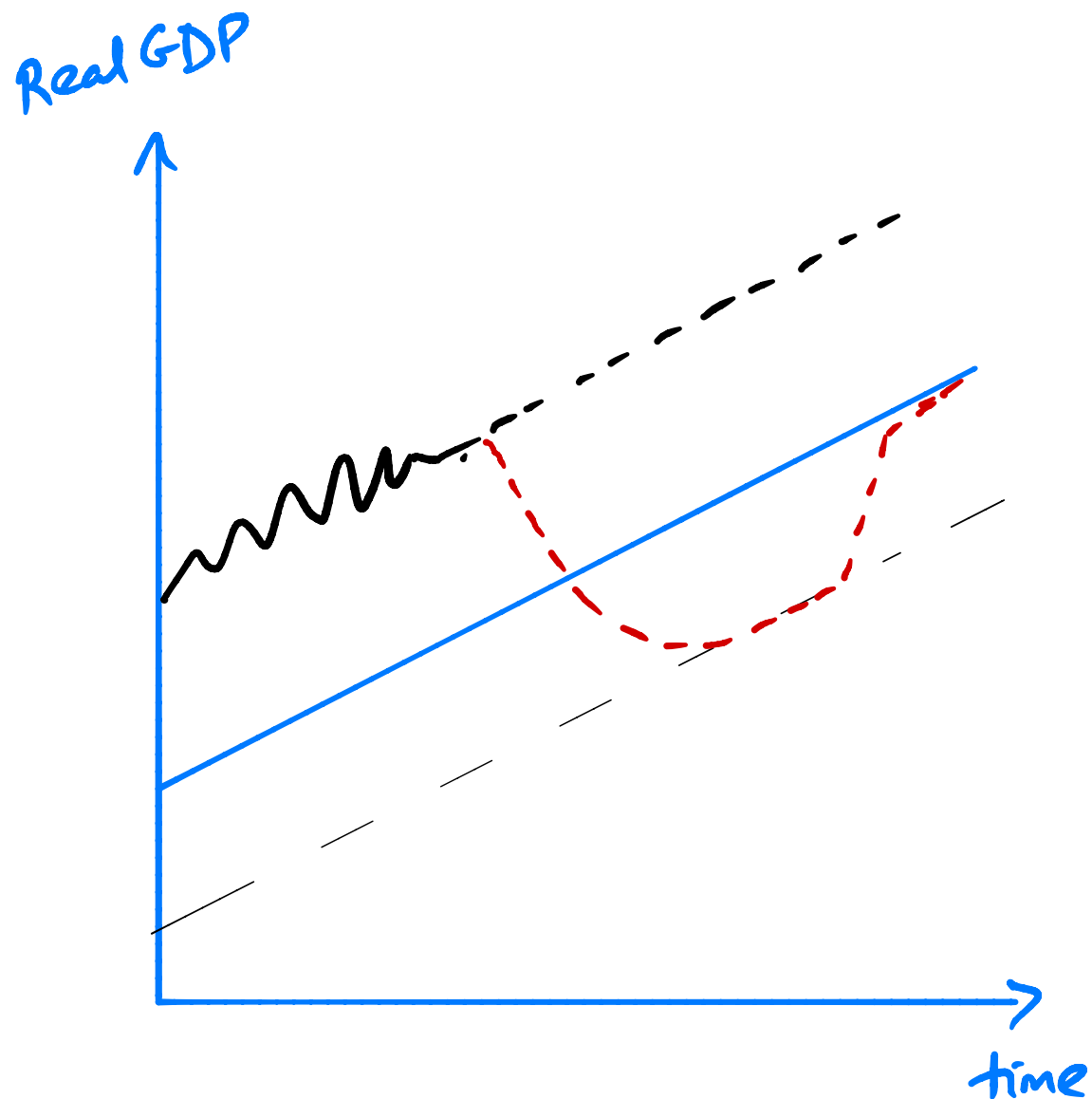
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Mainstream expectations (hope!) for economic growth

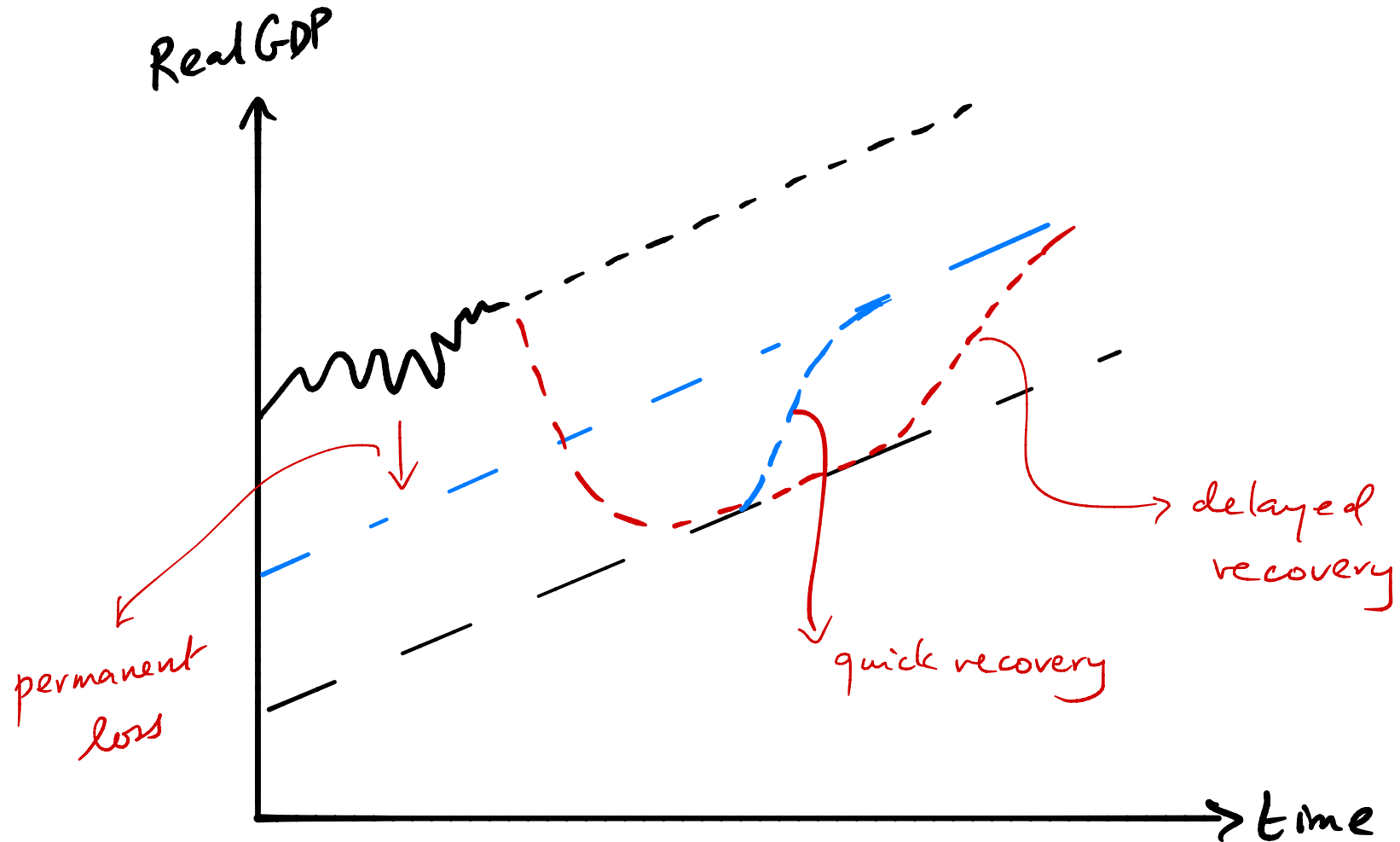


Source: Rahil Ram, Fulcrum Asset Management

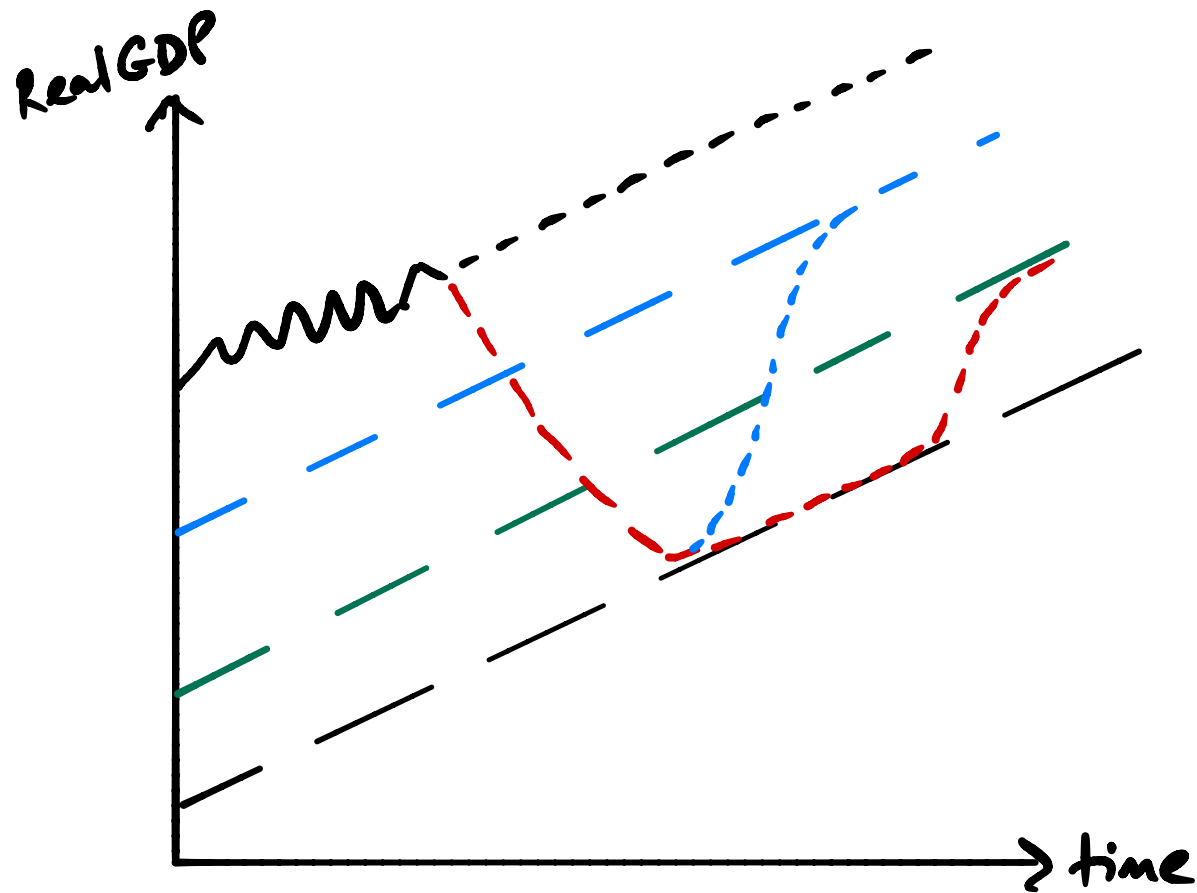
Even with full recovery, output may return to a lower trend line



Quick vs delayed recovery



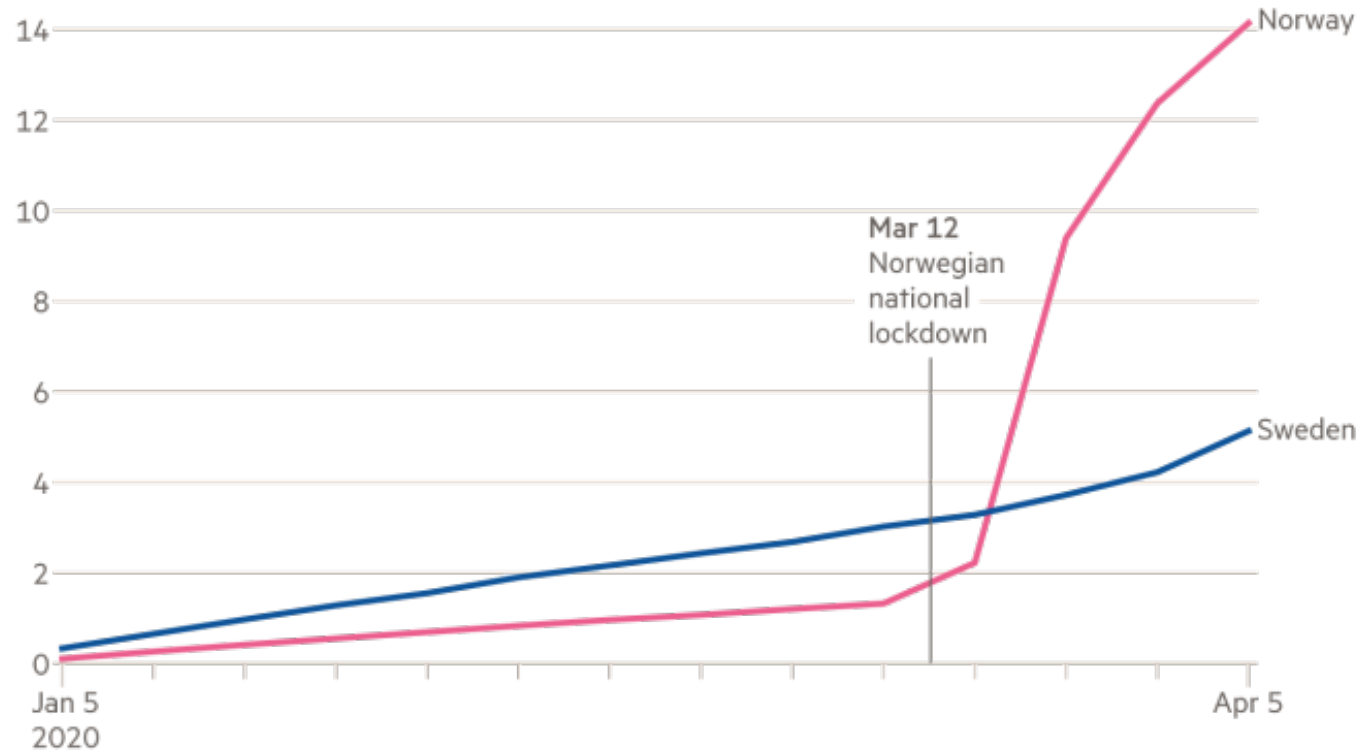
Delay/lockdown can deepen the permanent loss



The Swedish “experiment”

Sweden’s more relaxed approach means fewer are unemployed

Cumulative unemployment benefit claims (% of working age population)



Source: FT analysis of official figures
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Flattening the curves

- ❖ Measures that help solve the health crisis can make the economic crisis worse.
- ❖ The economic crisis could be of the order of 10-20% of GDP, and the scale of policy intervention needs to be of that magnitude.
- ❖ Isolation has positive externalities for the health system, but negative externalities for the economy!!

Policy responses

Intertwining of aggregate supply and demand

- ❖ The initial supply shock (from outbreak in Wuhan) has been magnified. How?
 - ❖ The lockdown of advanced country economies has served as an additional supply shock.
 - ❖ Agents rationally expect that future productivity growth (and hence future incomes will be lower), weakening aggregate demand.
 - ❖ Firms' investment decisions, in turn, depend on aggregate demand. They cut back on investment which, in turn, generates a reduction in productivity growth.
 - ❖ There is a “doom loop” as the initial supply shock is amplified*.

* Fornaro, L. and M. Wolf (2020). Covid 19 and Macroeconomic Policy — Some Analytical Notes.

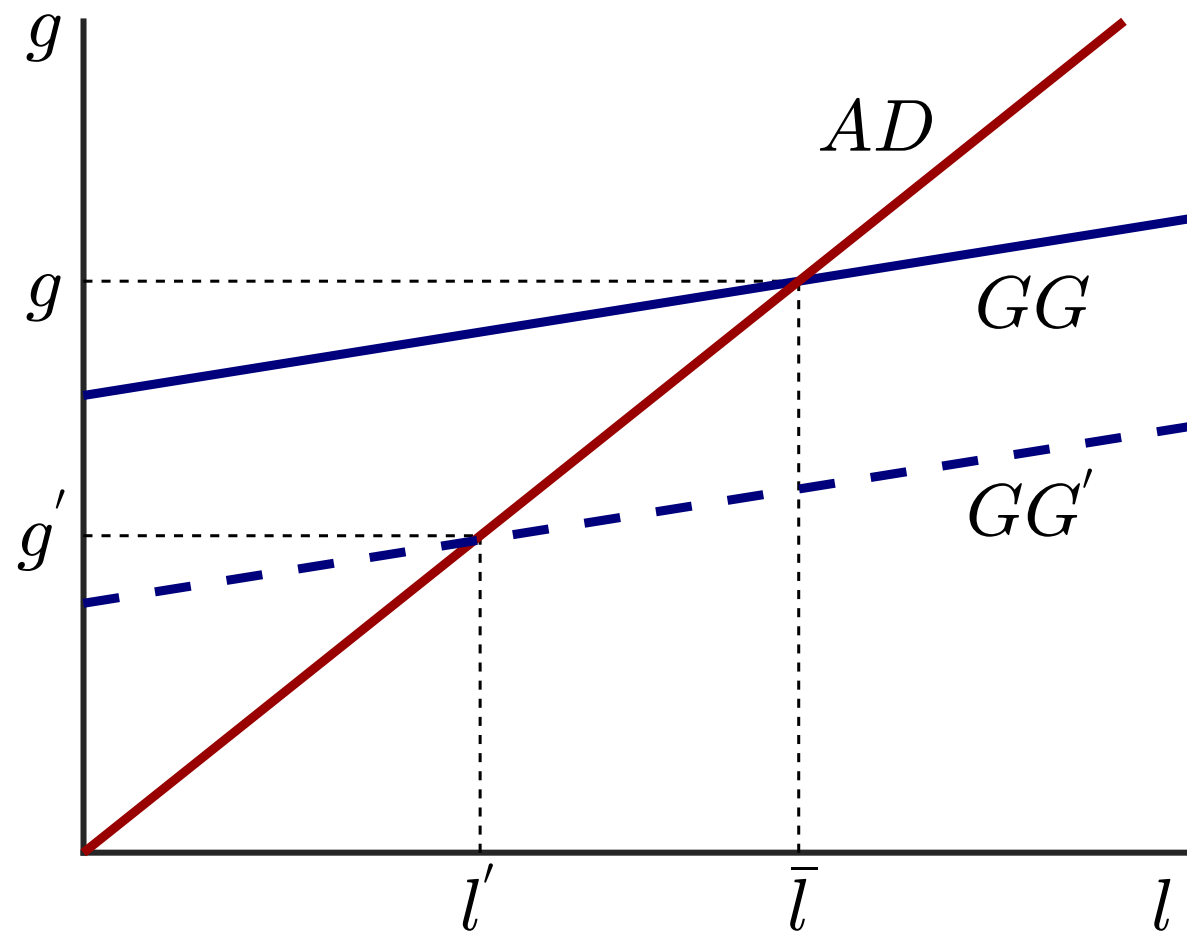


Figure 2: The supply-demand doom loop.

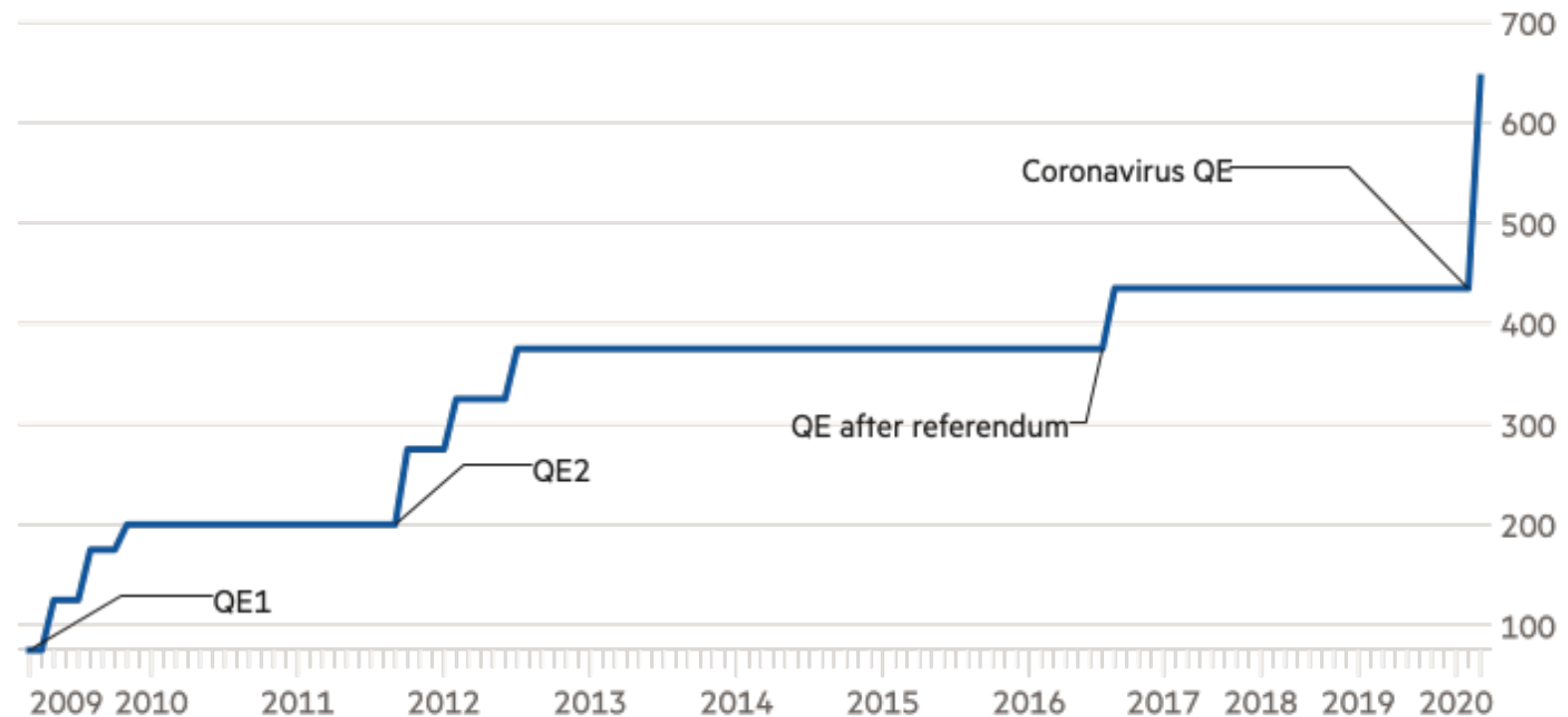
Policy responses

- ❖ Monetary policy is at the zero lower bound everywhere.
- ❖ So fiscal policy has had to do the “heavy lifting”.
- ❖ Monetary policy is now about (unlimited) quantitative easing (and monetary financing of fiscal deficits).
- ❖ Since governments have to borrow heavily to finance in this crisis, central banks will be buying bonds directly.
 - ❖ bond purchases may not be inflationary because it substitutes for deficient spending by firms and households in this crisis.
 - ❖ problem with inflation will only arise if the government determines how much money gets printed (*fiscal dominance*). And provided strong institutions (e.g. the UK’s independent MPC) can safeguard central bank independence.

QE in the UK

The BoE has never sold the gilts it has bought under quantitative easing

BoE cumulative asset purchases (£bn)



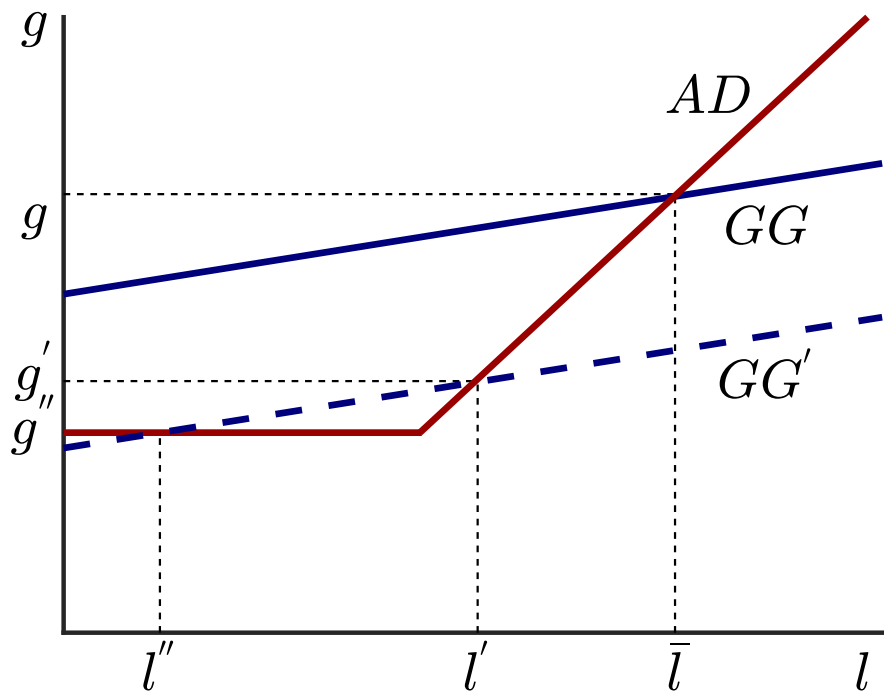
Source: Bank of England

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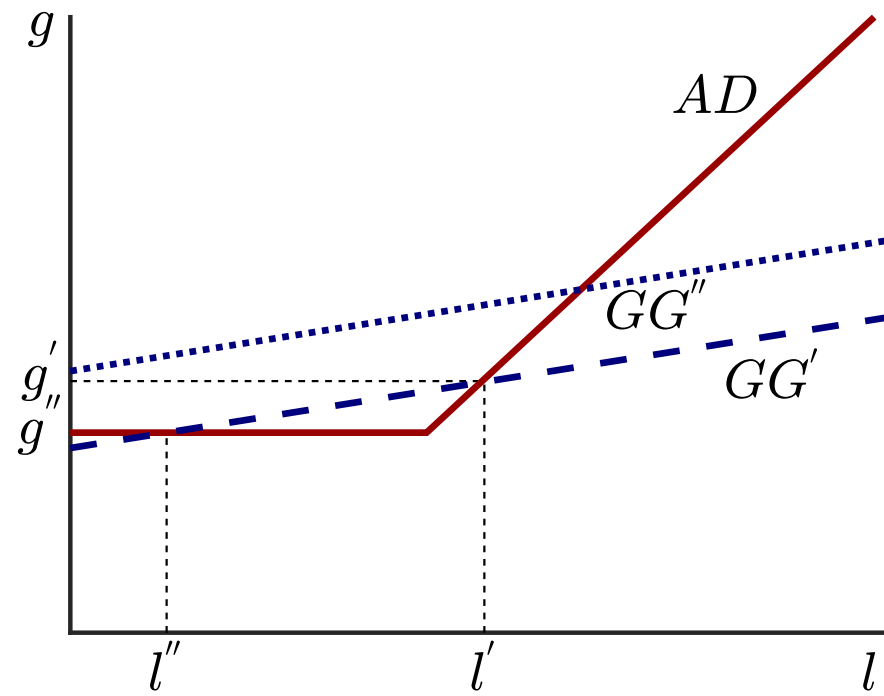


Stagnation traps

- ❖ Suppose agents are pessimistic about future productivity growth. But, because of the ZLB, the central bank cannot drop interest rates lower to counteract the drop in demand.
 - ❖ So employment and activity drop. Firms react by cutting investment, which negatively affects productivity growth.
 - ❖ The initial pessimistic expectations of weak growth become self-fulfilling.
 - ❖ The loop only happens if the fundamentals of the economy are sufficiently weak in the first place.
- ❖



(a)



(b)

Figure 3: Stagnation traps and fiscal policy.

- ❖ Since monetary policy is now constrained by the ZLB, fiscal policy has to come to the rescue. It works by sustaining (subsidising) firms' investment.
- ❖ This allows the GG curve to shift up, eliminating the bad equilibrium.
- ❖ But the intervention cannot be a timid one.
- ❖ *And, it has to be credible.*

Dread risk

- ❖ Stagnation traps can be compounded by behavioural reactions by economic agents.
- ❖ The GFC appears to have induced agents to systematically over-estimate the probability of tail risks re-occurring.
 - ❖ scarring effect on risk-taking and a race to safety.
 - ❖ firms have cut back on investment and innovation. “Paradox of Thrift”
 - ❖ The demand for safe assets has over-whelmed supply.
- ❖ Asymmetric responses of agents to news flow — good news gets banked (repairing balance sheets); bad news induces cuts in spending and risk-taking

“The aim of policy should not be to boost demand – more people shopping would just aggravate the health crisis after all – but rather to ensure that the present hiatus in economic activity does not lead to lasting damage to the supply potential of the economy and a lower level of activity that persists after the resolution of the health crisis.

That means avoiding perfectly good businesses being needlessly driven into bankruptcy, and the associated destruction of jobs and livelihoods. In essence, the state needs to play the role of ‘insurer of last resort’ ...”

–Professor Sir Charlie Bean, Former Deputy Governor of the Bank of England

- ❖ State loans or credit guarantees for firms; direct grants to firms unable to access banks.
- ❖ Bailout funds for large firms
- ❖ Tax deferrals
- ❖ Debt repayment holidays
- ❖ Income subsidies for workers. Care — we should be targeting public funds at involuntarily idle workers through the crisis (not those with salaries).

- ❖ Advanced economies have fiscal space.
 - ❖ low safe interest rates imply that higher levels of debt are sustainable and that the welfare cost of higher debt for future generations may be smaller.
 - ❖ interest rates are likely to remain low.

Precautionary saving is likely to be higher, there will be dread risk stifling risk-taking, and uncertainty will hamper investment. So the long-run neutral rate will be low for long.

Corporate credit runs and central bank backstops

- ❖ The Fed has stepped into the repo market to purchase Treasuries.
 - ❖ Repo market is a short-term borrowing market in which investors borrow cash for short periods in exchange for collateral (US Tbills).
 - ❖ By exchanging Treasuries for cash, banks are able to meet the demand of companies trying to stockpile \$US in the face of a liquidity crisis.
- ❖ But there is always a risk that a spike in downgrades and corporate defaults could transform a liquidity crisis into a solvency crisis and trigger banking problems.

Implications for EMEs

- ❖ Even a relative quick exit by China and advanced economies will not avert crises in many EMEs.
- ❖ Commodity prices have declined, FX reserves are low, and debt burdens considerable. They do not have fiscal space.
- ❖ Large scale sovereign debt reduction and restructuring, along with international versions of some of the measures being considered within advanced economies may be needed.

Lessons from epidemiology

- ❖ During an epidemic, the percentage of infectives (population who are sick and spreading the disease) follows a hump shaped pattern.
- ❖ The reproductive rate is $R_0 = \frac{\beta S}{\nu}$.
- ❖ Pathogens with high contagion (the numerator) and low recovery rates (denominator) pose the greatest threats.
- ❖ Limiting contact (lowering the numerator) via social distance, and better hygiene (increasing the denominator) limit the spread of disease and “flattens the curve”.
- ❖ If reproduction rate < 1 , the epidemic dies out. $R_0 = 1$ is the “tipping point”.

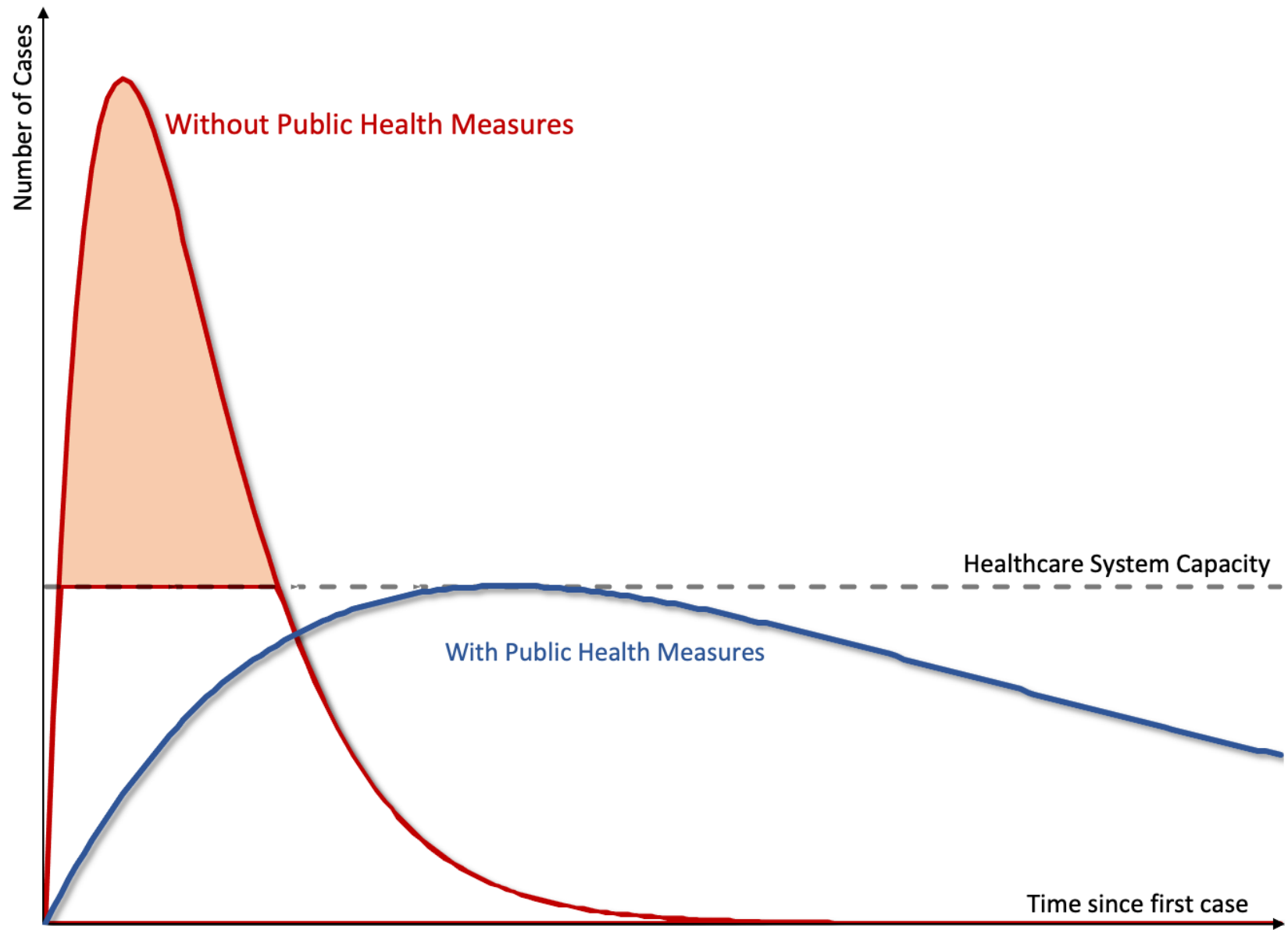


Figure 1: Flattening the Pandemic Curve

- ❖ Suppose $R_0 = 2.5$. So on average an infected person will infect 2.5 people tomorrow.
- ❖ Let ϕ be the fraction of infected people in isolation. This will directly reduce R_0 . So $R'_0 = (1 - \phi)R_0$.
- ❖ If $\phi = 0.7$ then $R'_0 = 0.75$, which is reliably below 1. So the epidemic dies out.
- ❖ How can we get $\phi = 0.7$?*

*These back of the envelope calculations are due to Paul Romer.

Testing, testing, testing

- ❖ Let t =fraction of population tested each day (*at random*)
- ❖ Let l = # days in isolation
- ❖ Let n =false negative rate, i.e. catch $1-n$ of infected people via tests.
- ❖
$$\phi = t(1 - n)l.$$
- ❖ If $t=0.07$, $n=0.3$, $l=14$, then $\phi = 0.69$.
- ❖ So we need to test 7% of population each day.
- ❖ Germany — testing 350,000 per week.

Implications for supply chain management

Nature of shock to supply chains

- ❖ In the past, shocks to supply chains have been one-off events (e.g. Japanese tsunami), viewed as a *temporary* disturbance to a well-established business model, built on the assumption that globalisation is here to stay.
- ❖ The current shock to supply chains is likely to be *persistent*. The Sino-US trade conflict and the post-Covid world could look very very different.
- ❖ Shock also highlights excessive reliance on suppliers located in China.
 - ❖ 300 of the world's top 500 companies have facilities in Wuhan.
 - ❖ This reliance was the source of the initial supply shock.

Reimagining supply chains

- ❖ Businesses may be forced to rethink their global value chains. These chains were shaped to maximise efficiency and profits.
 - ❖ Just-in-time may be the optimal way to produce a highly complex item (e.g. a car).
 - ❖ But the shock exposes the disadvantages of a system that relies on all the elements working like clockwork.
- ❖ Businesses will be forced to diversify their supplier base to hedge against disruptions to trade policy, particular regions, or particular producers.
- ❖ This means building in redundancy and moving away from holding near-zero inventories. Supply chain fragility will become a key concern, not just cost.
- ❖ Adaptation will be the name of the game.

Parallels with finance

- ❖ Supply chains in the current crisis are not so different from payment chains in the GFC.
- ❖ The real economy presumption that additional inventories can be sourced from third party wholesale suppliers at adjustable prices as and when demand dictates is akin to the banking sector's presumption that liquidity can always be sourced from wholesale markets.
 - ❖ But the real economy does not have a lender of last resort to conjure up toilet paper at the stroke of a keyboard when there are runs on resources!

Lessons from macro-prudential policy

- ❖ Just as policymakers have sought to improve the resilience of banks post-GFC by mandating changes, there may be implications for firms:
 - ❖ In many countries, energy sector is mandated to keep emergency buffer supplies on hand — equivalent of a capital buffer for banks.
 - ❖ Companies could be mandated to keep depots with additional supplies of real resources (e.g. hand sanitiser) on hand. Or mandated to keep some share of total supply chain production capability entirely domestically.
 - ❖ Manufacturers could be mandated to run adaptable production lines that can switch from non-essential to essential goods in emergencies.

“Nations cohere and flourish on the belief that their institutions can foresee calamity, arrest its impact and restore stability....

...When the Covid-19 pandemic is over, many countries' institutions will be perceived as having failed. Whether this judgment is objectively fair is irrelevant. The reality is the world will never be the same after the coronavirus....

....The historic challenge for leaders is to manage the crisis while building the future. Failure could set the world on fire.”

–Henry Kissinger

Thank you !