The Economics of the Coronavirus: Lives versus Livelihoods

Professor Alistair McGuire,

Department of Health Policy, LSE
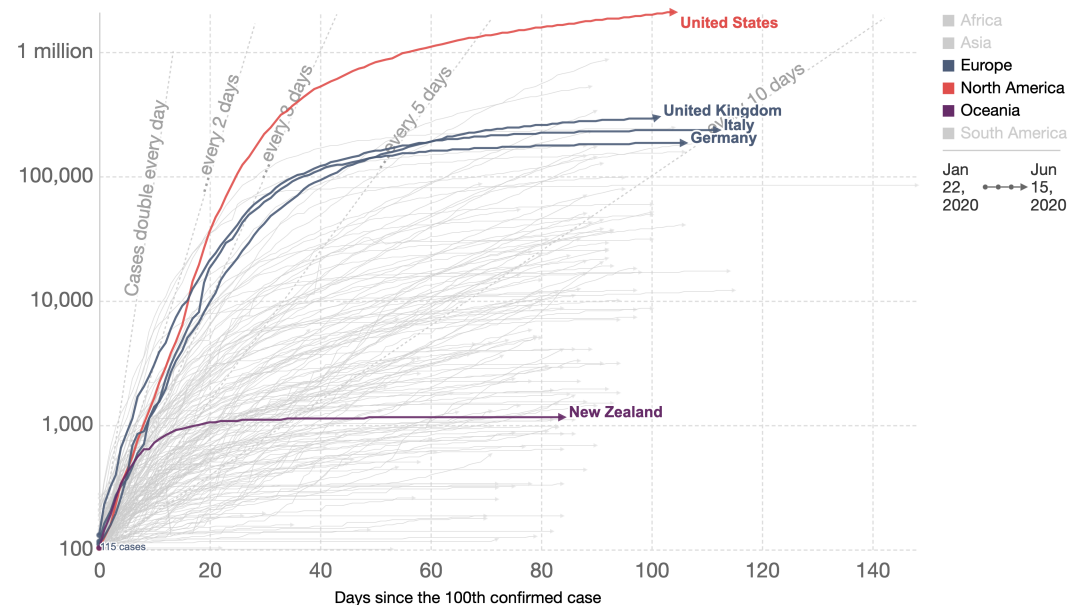
16th June 2020

LSE

Confirmed cases worldwide

Total confirmed COVID-19 cases: how rapidly are they increasing?
The number of confirmed COVID-19 cases is lower than the number of total cases. The main reason for this is limited testing.

Source: European CDC – Situation Update Worldwide – Last updated 15th June, 11:30 (London time)   OurWorldInData.org/coronavirus • CC BY

- Worldwide confirmed cases 8 million (16th June)

- Confirmed cases < actual cases due to lack of testing

- Some countries (especially in Latin America) still seeing increases

COVID-19 deaths

Daily new confirmed COVID-19 deaths

Shown is the rolling 7-day average. Limited testing and challenges in the attribution of the cause of death means that the number of confirmed deaths may not be an accurate count of the true number of deaths from COVID-19.
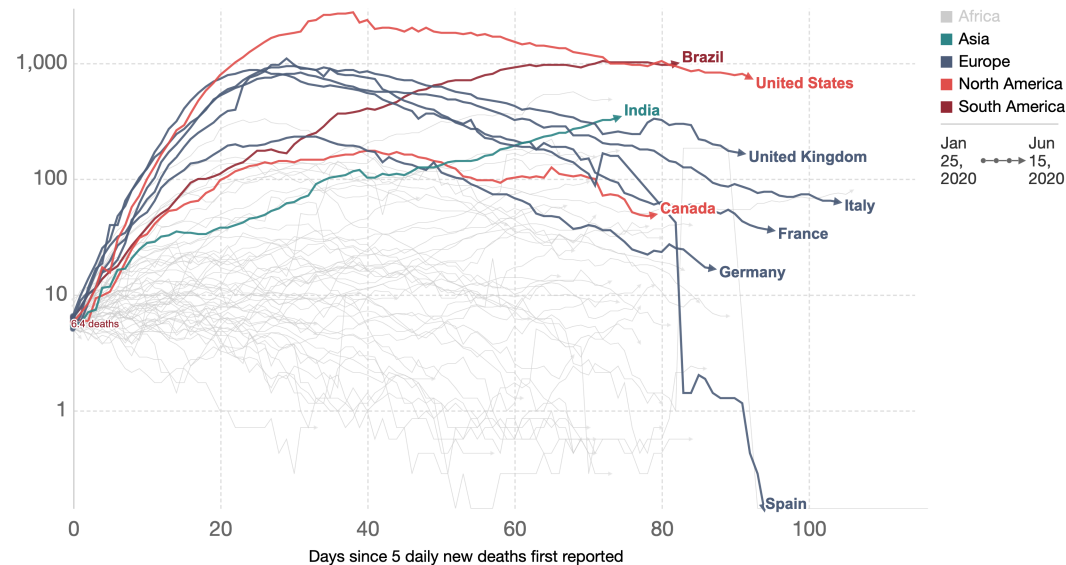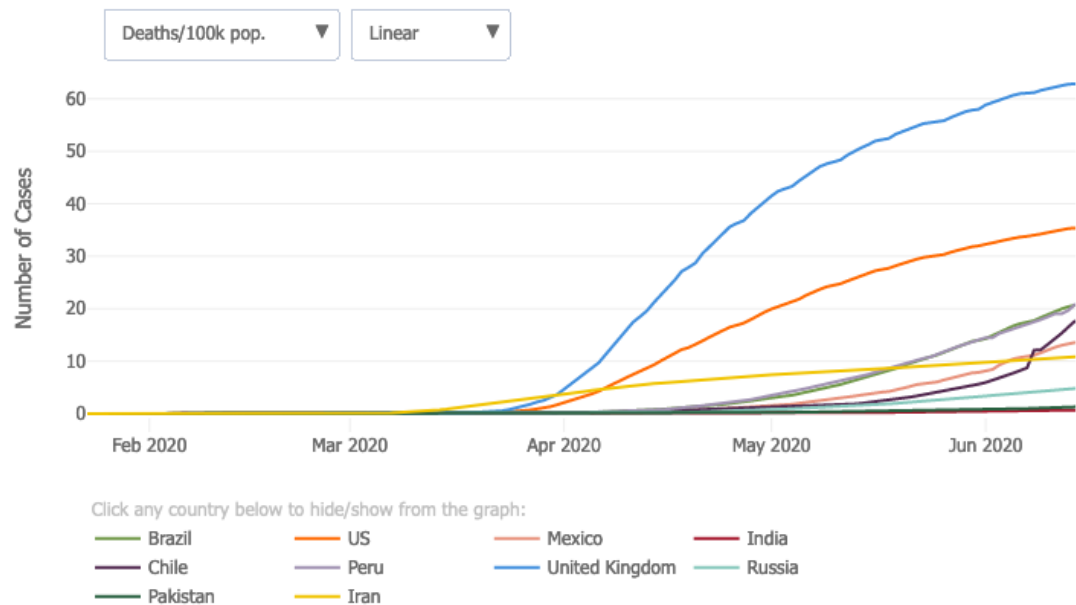
Source: European CDC – Situation Update Worldwide - Data last updated 15th Jun, 11:19 (GMT+01:00), European CDC – Situation Update Worldwide
CC BY

- Worldwide deaths over 420,000
  - USA more than 100,000 deaths
  - More deaths than occurred in Vietnam, Afghan and Iraq wars in total

- Some tracking and recording issues

Relative UK death rates (World Bank)

- UK not only has high death rate but re-allocation of health care has impacted on other care
  - Cancer assessments down 60% (79,500 April 2020; 200,000 April 2019)
  - Routine operations down 85% (41,000 April 2020; 280,000 April 2019)
  - First test & trace results (12th June) unable to contact 33% of those who tested positive and 15% of contacts
  - Tracing app introduction delayed (distance measurement was inefficient)
  - 41,200 COVID deaths (excess deaths 64,200 57% higher than av. of last 5 years)
  - Lack of integration between health sector and social care sector was a major fault

Dynamics of infections

- $\Delta Infected\ population = \beta.Susceptible\ population\ .Infected\ population - \gamma.Infected\ Population$

    - where β (contact rate) and γ (recovery rate)
    - These define the reproduction number: $R_0 = {}^{\beta}/_{\gamma}$

- The impact of a lockdown rate can be introduced as θ^2
    - So we now have

- $\Delta Infected\ population = \beta.\theta^2.Susceptible\ population\ .Infected\ population - \gamma.Infected\ Population$

- Number of aspects to note here:
    - R_0 can be calculated in different ways depending on how "time" is modelled; average duration of exposure; average duration of latent infectious state; delay between infection and diagnosis, etc (all dependent on the modelling of β and γ which are rates)
    - β is a social & economic parameter reflecting how the population interacts (population density; social integration; age at infection; migration rates; seasonality, etc)
    - θ^2 is also a social and economic parameter and reflects different "types" of lockdown (harsh versus soft); a power function to represent the "exponential" character of infection
    - Vaccination affects the susceptible population

LSE

The Global Pandemic

- Some things we do *not* know
  - The precise death rate
    - Testing has not been universal
    - Excess death rate is retrospective

  - The counterfactual of a lockdown

- The full economic impact of the Pandemic
  - But I now want to turn to this...

Was lockdown worth it?

- Is the benefit of lockdown > cost?

- Touches on notion of the value of a (statistical) life
  - Based on estimates of Willingness to Pay for changing the probability of death

- So what is the probability of death from COVID19?

- Difficult to know as we don't know the infection rate within a given population & therefore don't know the true case fatality rate

LSE

Was lockdown worth it?

- But we can make some estimates:
- Cruise ship *Diana Princess* was infected
    - 3,711 passengers & crew
    - 705 individuals affected with COVID19
    - Estimated 8 individuals died
- Approximately a 20% (severe) infection rate
- Case fatality rate 1.13%
- Strong lockdown 5 days after 1st infection all passengers confined to cabins for 2 weeks (or more)
- High infection rate (1 to 7 individuals; UK estimated to be 1 to 3 individuals)

- Of countries that had carried out 10,000 tests by April 22 the average case fatality rate was 4% (the fatality rate for those who tested positive lies between 0.1% Singapore to 14.6% Belgium)
- So assume case fatality rate approximately 1-2%

LSE

Was lockdown worth it? Applying these figures to USA & UK

USA

- USA population 328.2 million; 20% infected (65.6m); 1% die (0.656m)
- Monetary value of life used by US Environmental Agency in 2016 = $10m & by US Dept of Transport in 2016 = $9.6m
- So without lockdown monetary value of lives saved is $6.56 trillion OR $6.30 trillion (depending on VoL used) if 1% case fatality used
  - $13 trillion if 2% case fatality used
- Of course with lockdown we still have COVID deaths (115,000) so net saving in lives is 0.541m at 1% case fatality and $10m VoL
- So net monetary value of lives save is $5.41 trillion at 1% case fatality rate ($11.98 trillion at 2% case fatality rate)

UK

- UK population 66.65 million; 20% infected (13.33m); 1% die (0.133m)
- Monetary value of life used by UK Dept of Transport in 2016 = £1.8m & by revealed preference = £8.59m (Thomas, 2018)
- So without lockdown monetary value of lives saved is £0.24 trillion or £1.15 trillion (depending on VoL used) if 1% case fatality used
  - £0.4 trillion (or £2.29trillion & higher VoL) if 2% case fatality used
- Of course with lockdown we still have COVID deaths (42,000) so net saving in lives is 0.09m
- So net monetary value of lives save is £0.16 trillion at 1% case fatality rate (£2.29 trillion using 2% case fatality rate and £8.59m VoL)

*Note NO offsets from deaths incurred as health care reallocated to COVID19. Assumes these deaths occur in any case. Also no adjustment for net treatment costs saved due to lockdown.

LSE

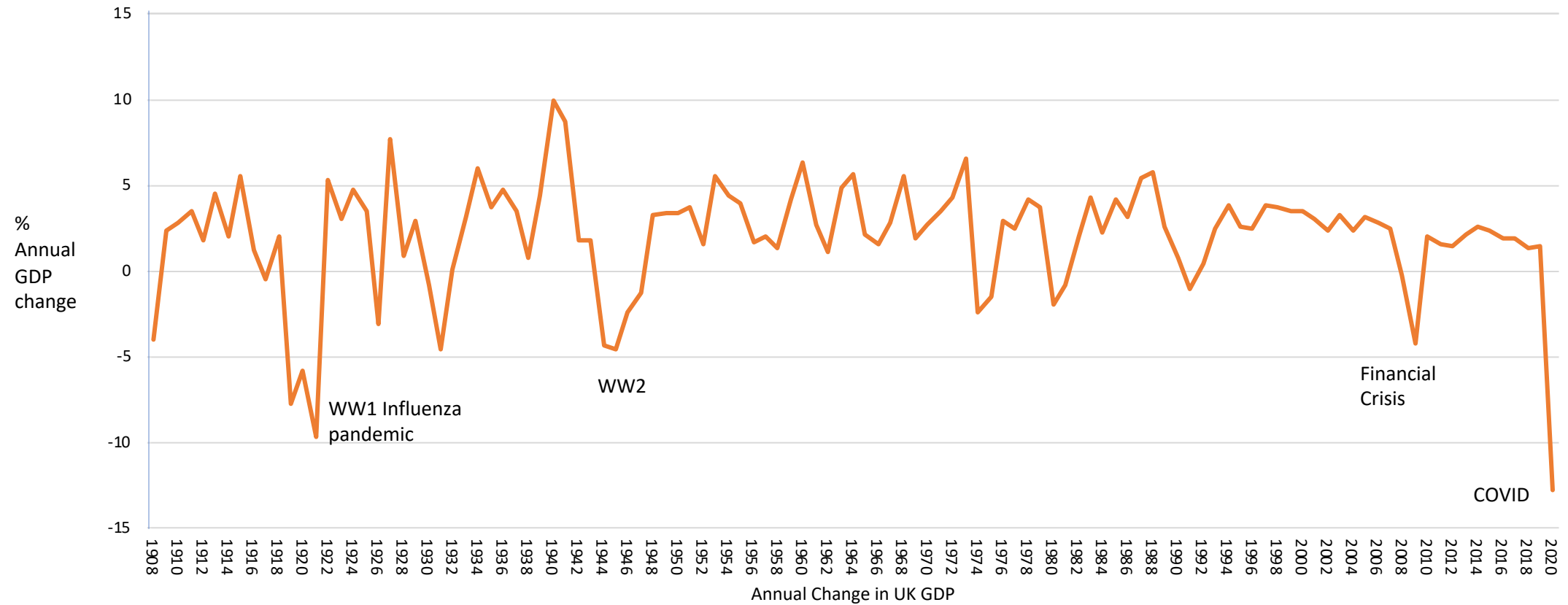# Was lockdown worth it? Applying these figures to USA & UK

USA

- GDP $21.5 trillion
- Congressional Budget Office May 2020 projections indicate a $3.9 trillion fall in annual GDP attributable to COVID-19
- Value of lives saved $5.41 trillion (or $11.98 trillion at 2% case fatality rate)
- *SO* if economic recovery after lockdown YES, WORTHWHILE
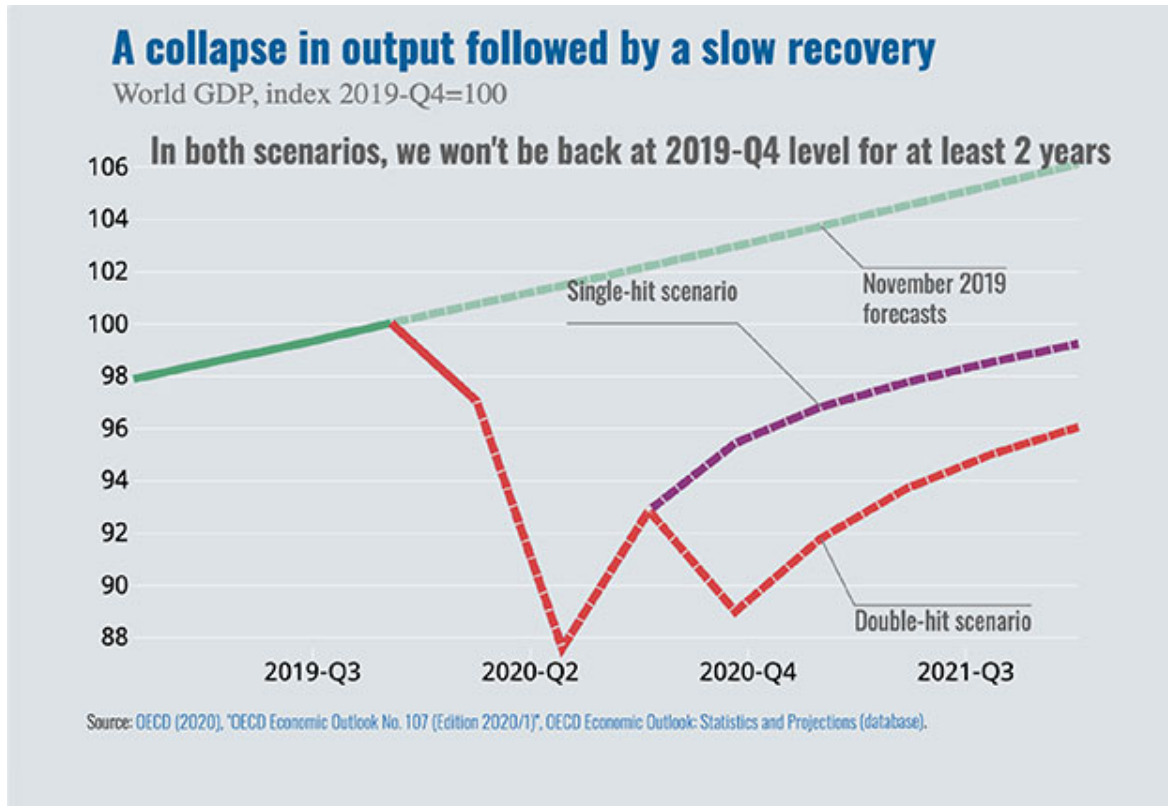 - More so if GDP fall more prolonged and greater

UK

- GDP £2.21 trillion
- OBR April 2020 projections indicate a 13% (£0.29 trillion) fall in annual GDP attributable to COVID-19
- Value of lives save is £0.16 trillion with a very low VoL estimate & 1% case fatality (£0.48 trillion at 2% case fatality) & £1.15trillion if using higher VoL figure
- *SO* if economic recovery after lockdown using a VERY low VoL & case fatality rate Vol *half* lost GDP but YES, worthwhile if using higher figures

LSE

UK fall in GDP largest in century

Optimistic outlook: "Short" Global recession
(OECD forecasts June 2020)

A collapse in output followed by a slow recovery
World GDP, index 2019-Q4=100

In both scenarios, we won't be back at 2019-Q4 level for at least 2 years

Single-hit scenario

November 2019 forecasts

Double-hit scenario

Source: OECD (2020), "OECD Economic Outlook No. 107 (Edition 2020/1)", OECD Economic Outlook: Statistics and Projections (database).

- Countries have so far spent $8trillion in rescue packages

- This may increase over time...

- Longer GDP takes to recover larger the cost of the lockdown
  - Is it fair to attribute this all to COVID-19?

# Pessimistic Outlook: Global debt has been rising for over 40 years

- One catastrophe after and other…globally economies were already fragile

- The COVID19 debt increase is against a background of general growing global debt

- Trending up since the 1970s & now around 230% of world GDP

- Both private (mainly corporate) & public debt

- Public debt particularly important since 2008/9 as growth has slowed

- Global debt
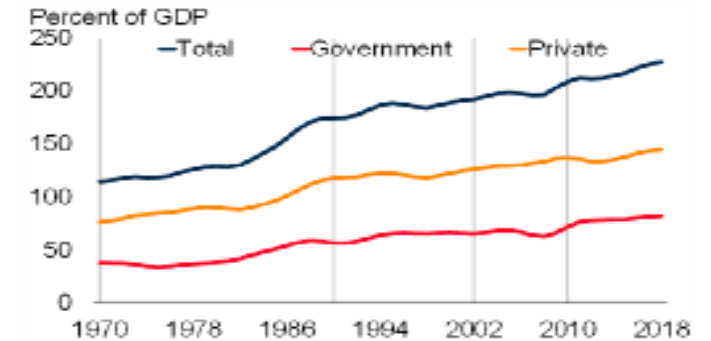
- High Income countries (% gross govt. debt to GDP 2020 before *full* effects of COVID-19)
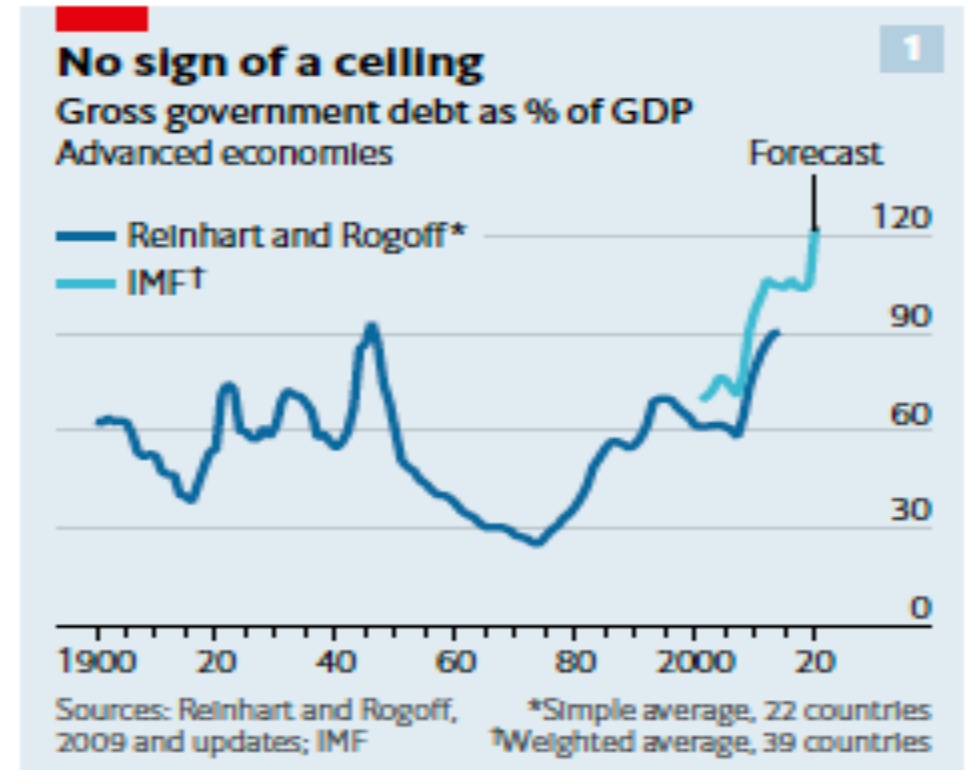
  - Japan 250%
  - Italy   155%
  - USA   131%
  - France   115%
  - Canada 109%
  - UK   95%
  - Germany 68%
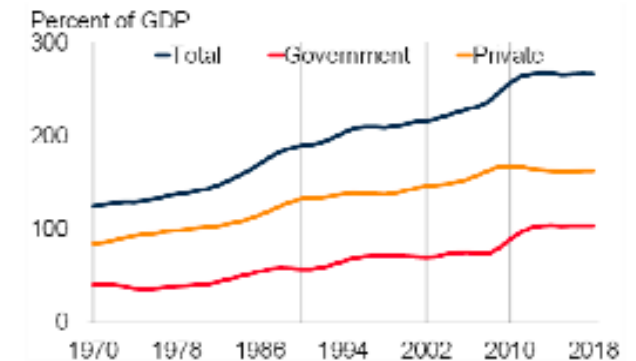
Source: World Bank; IMF

Pessimistic outlook…

- Debt balances continue to grow, private sector insolvencies grow/low investment with increased protectionism…

- Richer countries may
  - May just print money (quantitative easing)
    - Tripling of US monetary base between 2008 & 2011 had no effect on prices
  - Try Fiscal expansion (global liquidity trap renders monetary policy ineffective)
  - Try to increase tax base (wealth tax, green tax, indirect taxes on conspicuous consumption…)
  - But all this may not generate enough growth to offset growth in debt

No sign of a ceiling
Gross government debt as % of GDP
Advanced economies

Forecast

— Reinhart and Rogoff*
— IMF†

120
90
60
30
0

1900   20   40   60   80   2000   20

Sources: Reinhart and Rogoff, 2009 and updates; IMF
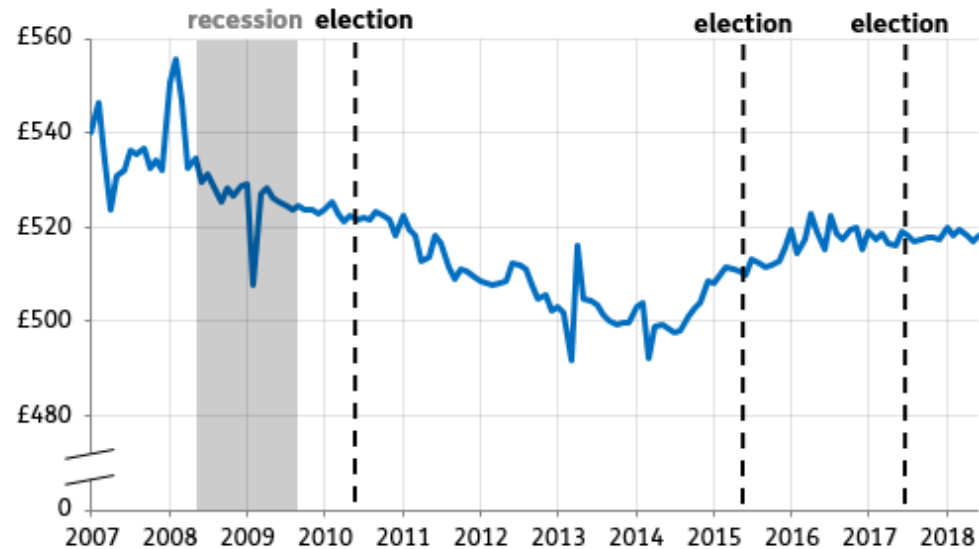*Simple average, 22 countries
†Weighted average, 39 countries

Reproduced from The Economist 25th April 2020

Pessimism outlook: debt balances growing

What wages are worth
Average weekly earnings for whole economy, adjusting for CPIH inflation

Source: ONS average weekly earnings dataset EARN01 and Consumer Price Inflation time series dataset MM23

- At a time when real wages have been falling

- Productivity has been sluggish

- Low levels of GDP growth generally

- High level of income inequalities

- Increased taxes will not be enough to offset debt…

- Positive inflation targeting might help

- But generally COVID19 has added to a liquidity trap and debt deflationary pressure

Longer term Optimism: Changes in the social contract

- Greater fiscal stimulus worldwide especially in infrastructure investment projects
  - Increasing fiscal deficit (e.g. Japan debt to GDP ratio now >200%)
  - Raising of Maastricht 3% budget deficit restriction?
  - Greater role for European Central Bank?
  - Design of bigger rewards for long-term (social) investments?
  - Introduce wealth taxes, green taxes, indirect taxes on conspicuous consumption
  - Globally coordinated monopoly taxes on IT/data processing companies?

- Greater role for international cooperation
  - Reversal of migrant policies to complement global capital flows?
  - Greater role for IMF?

- More labour market assurances (less "gigging")
  - Company Board participation for workers?
  - 4-day weeks and longer vacations (more enjoyment of relaxing rather than acquiring; accompanied by high green taxes on foreign travel; "staycations" added   benefit of reducing reliance on exports)?
  - Rising pensionable age? With buy-back for low income pensioners?

- Greater investment in health & *social care* sectors
  - More independent, non-political bodies to monitor public sector performance (OBR, but also for health sector, social care sector, etc.) to mitigate short-term political cycles?
  - Change in public sector discount rates?

- Create new public insurance fund (through specific Catastrophe Bond issue) to cover global catastrophes (Pandemics, Global Warming Damage, Earthquakes, etc.)?
  - World Bank initiated a Pandemic Emergency Financing Facility in 2017 as financial help for developing countries

- Also raises issues of how to incentivize pandemic vaccine research?
  - Timing and scale of pandemics uncertain; market failure of demand realization
  - Pre-commit public funding?

Conclusions

- Immediate responses to immediate crisis have been measured
  - Lockdowns should be supported

- Interdependencies between long-term debt crisis, 2008/9 financial crisis & COVID-19 crisis (& Brexit for the UK) still being worked through…

- Short- to medium-term responses are falling aggregate demand with higher debt economies
  - Shift to longer term perspectives?
  - Intergenerational effects?

- Change in social contract will have to wait to see if "populist" wave suffers a wipeout
  - Populism & protectionism will exacerbate falls in aggregate demand

LSE