

coreecon

Economics for a changing world

Macroeconomics of the COVID-19 Pandemic

The CORE Team

5 February 2021



Outline

The context

The pandemic

- Logic of flattening the pandemic curve
- Policies to flatten the pandemic curve “containment” (+ student exercise)

The recession induced by the pandemic containment policy

- Nature of the macroeconomic shock
- Comparison with global financial crisis and climate crisis (+ student exercise)

The macroeconomic context for the COVID-19 crisis

Macroeconomic policy responses

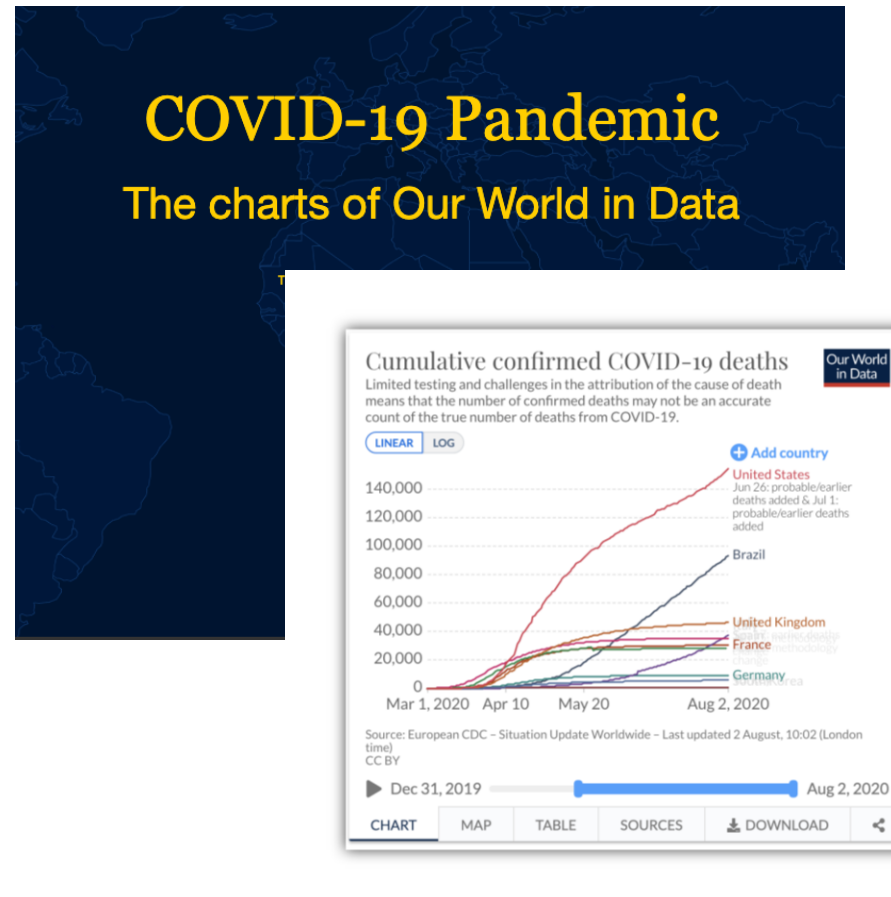
- Logic of flattening the recession curve: “continuity”
- Policies to flatten the recession curve
- 7 FAQs about macroeconomic policy responses in the pandemic
- Cross-country variations in macroeconomic policy responses (+ student exercise)
- The macroeconomics of the COVID-19 pandemic (a student exercise)

Beyond macroeconomics – plans for reopening economies in a pandemic (+ student exercise)

The context

Our World in Data – useful source

- [The COVID-19 pandemic slide deck](#)
- Offers key statistics and data about COVID-19
- Illustrates advantages and shortcomings of data

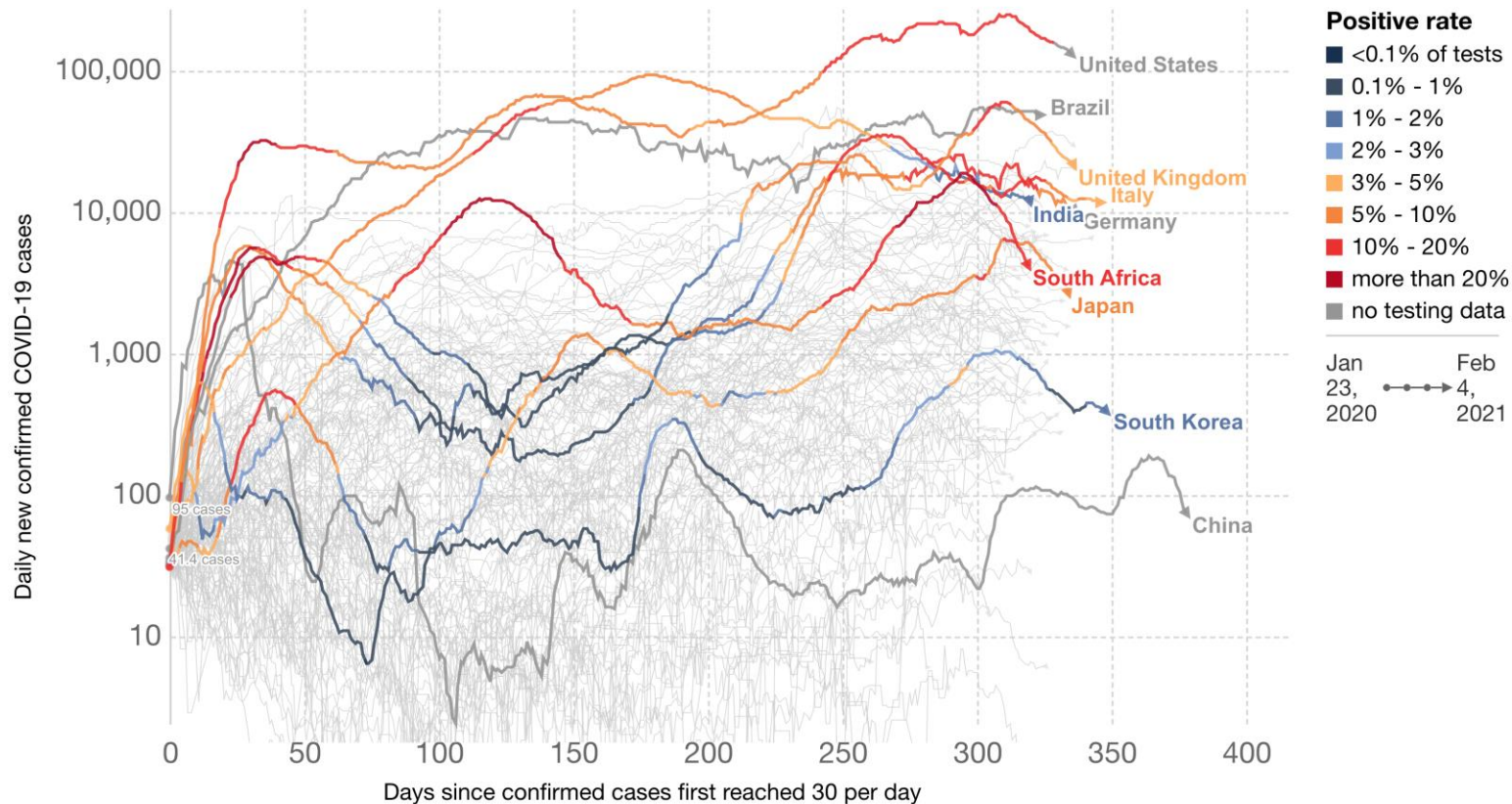


The context – epidemic curves

Daily new confirmed COVID-19 cases

Shown is the rolling 7-day average. The number of confirmed cases is lower than the number of actual cases; the main reason for that is limited testing.

Our World
in Data



Data from [Our World in Data](#)
Look at the scale and data as of 4 February 2021 (last accessed)

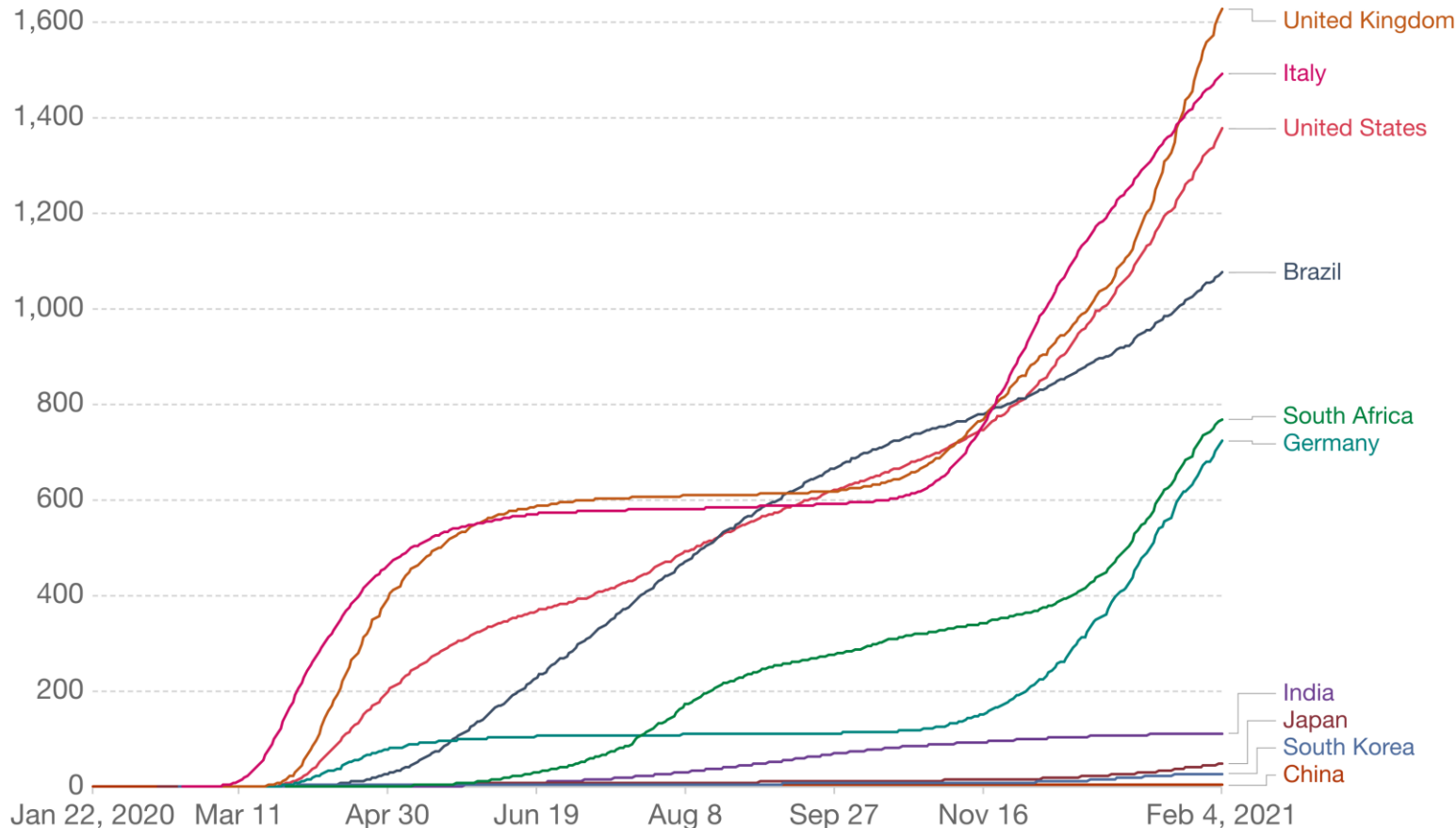
- South Korea 390.9
- China 74.6
- Germany 10,139.1
- Italy 11,705.6
- UK 21,322.6
- US 130,039.4
- Brazil 48,229.4
- South Africa 4,138.4
- India 11,791.9
- Japan 2,692.6

Source: Johns Hopkins University CSSE COVID-19 Data – Last updated 5 February, 09:02 (London time), Official data collated by Our World in Data – Last updated 3 February, 17:00 (London time)
CC BY

The context – epidemic curves

Cumulative confirmed COVID-19 deaths per million people

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: Johns Hopkins University CSSE COVID-19 Data – Last updated 5 February, 09:02 (London time)

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Data from [Our World in Data](#)
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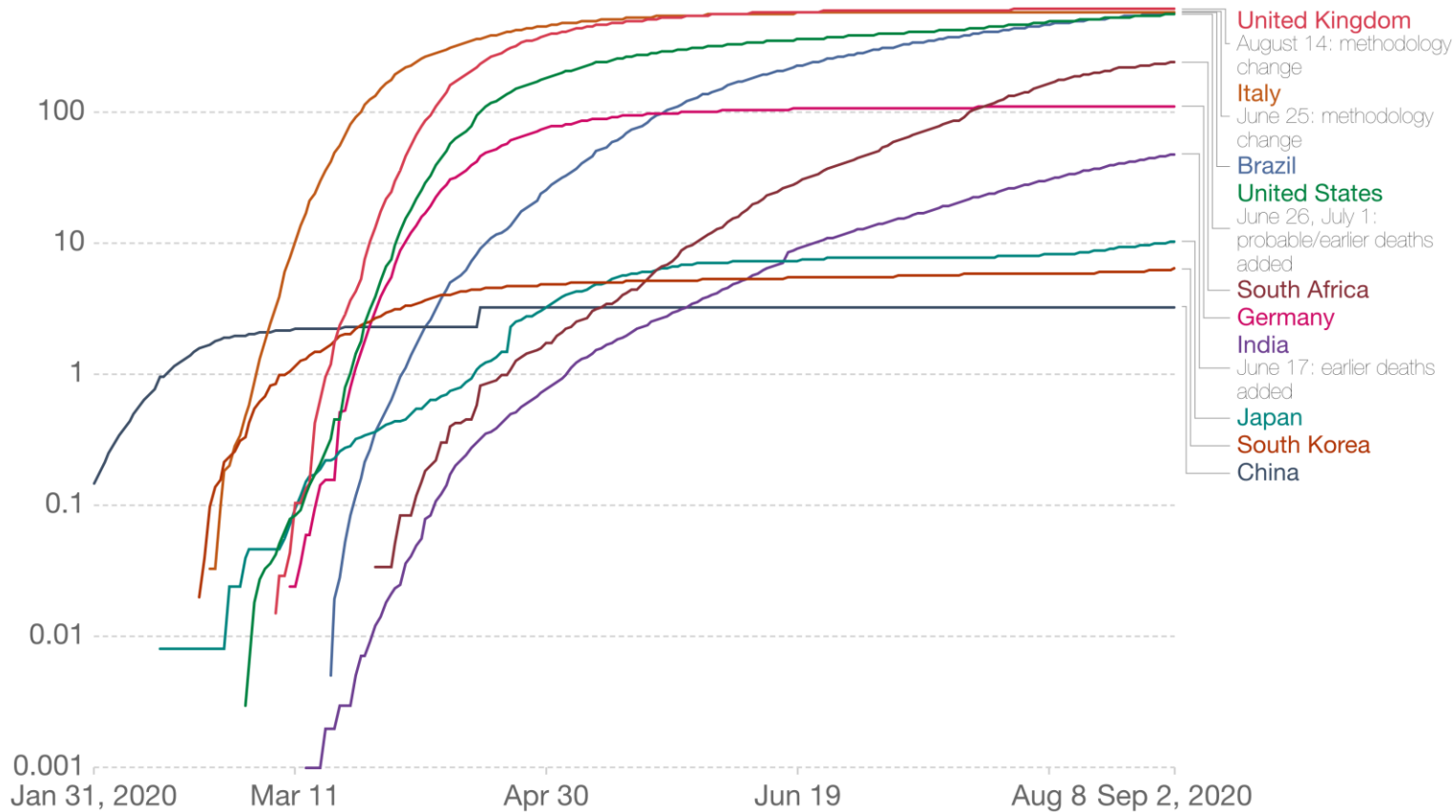
South Korea 28.46
China 3.35
Germany 723.69
Italy 1,492.53
UK 1,627.17
US 1,377.25
Brazil 1,070.59
South Africa 768.94
India 112.19
Japan 48.80

The context – epidemic curves

Total confirmed COVID-19 deaths per million people

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 total number of deaths from COVID-19.

Our World
in Data



Data from [Our World in Data](#)
Look at the scale and data as of 4 February 2021 (last accessed)

South Korea 28.46
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Japan 48.80

Source: European CDC – Situation Update Worldwide – Last updated 2 September, 10:04 (London time)
OurWorldInData.org/coronavirus • CC BY

The context – economic curves

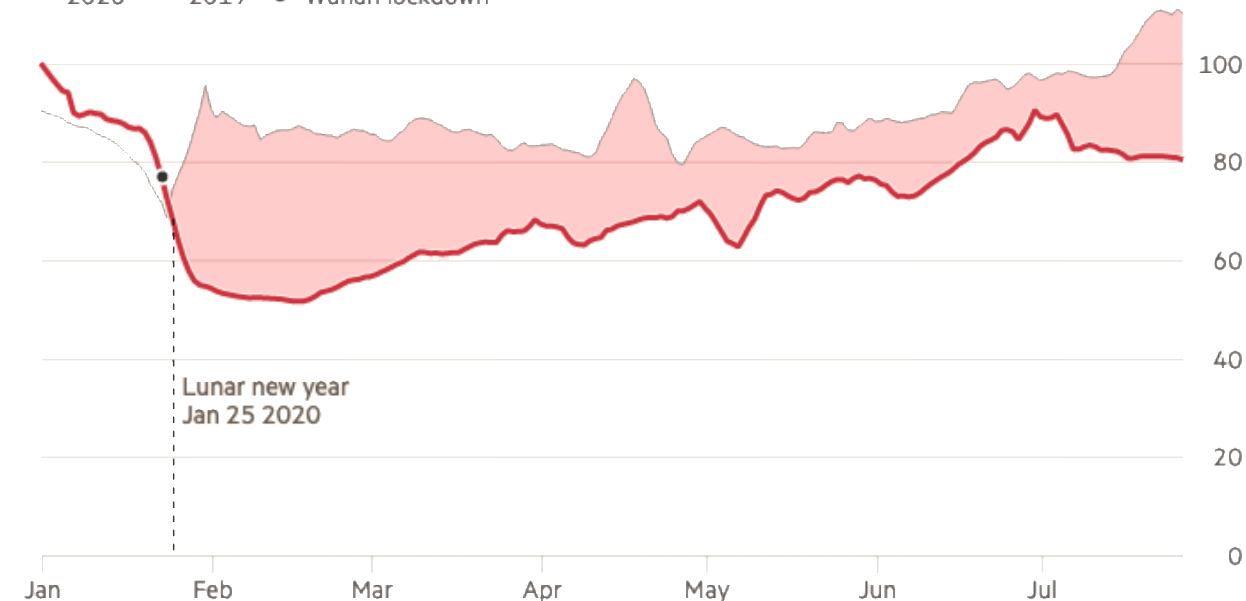
- China – index of economic activity (components on next slide)

Covid 19's impact on the Chinese economy

FT China Economic Activity Index (Jan 1 2020 = 100), last updated Jul 27

KEY

— 2020 — 2019 • Wuhan lockdown



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

Sources: WIND; EntGroup; FT research

Last accessed 2 September 2020

The context – economic curves

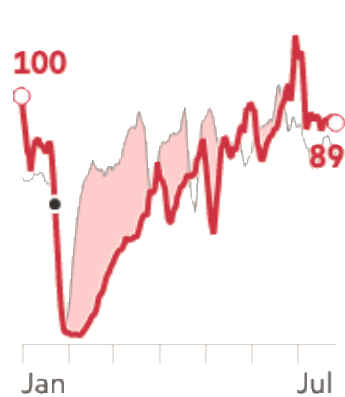
- China – components of economic activity index
- Comparison with 2019 helps account for seasonal effects

Subindices (Jan 1 2020 = 100)

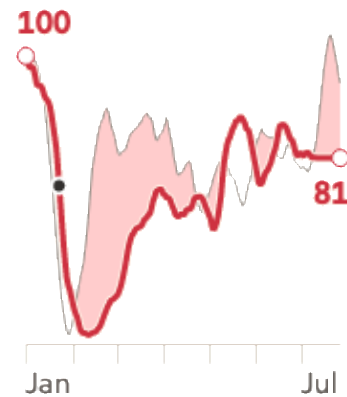
KEY

— 2020 — 2019 • Wuhan lockdown

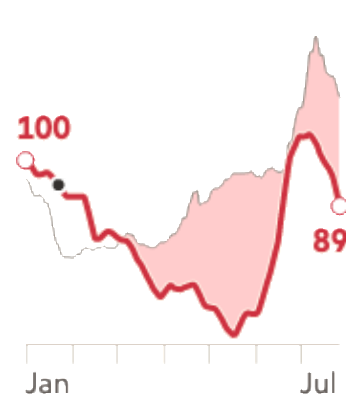
Real estate floor space sales



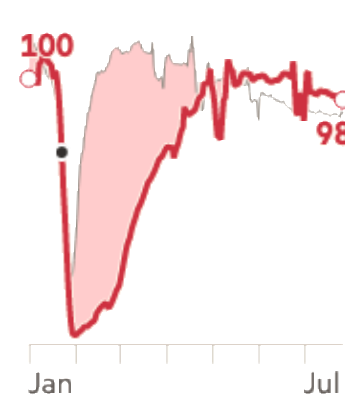
Power plant coal consumption



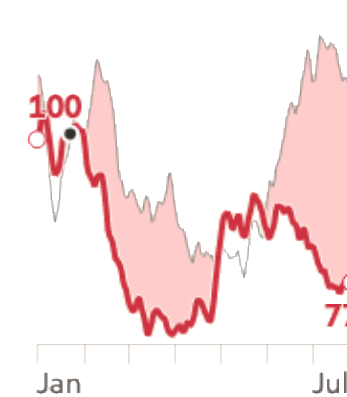
Container freight



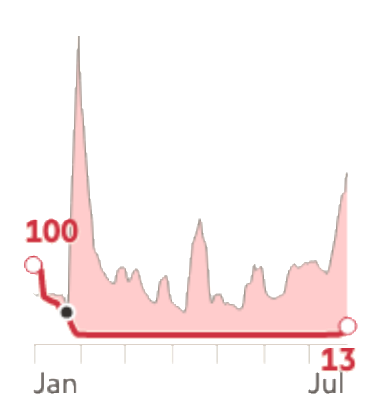
Traffic congestion



Air pollution



Box office admissions



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

Sources: WIND; EntGroup; FT research

© FT

Last accessed 2 September 2020 (last updated 27 July 2020)

The pandemic

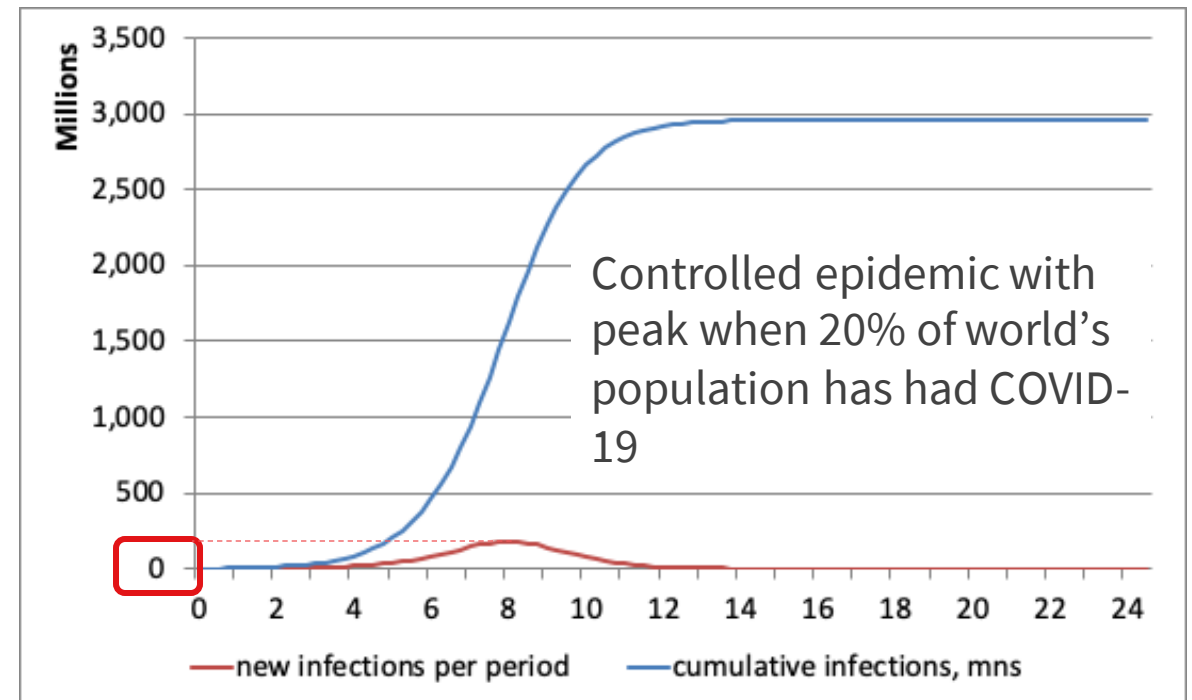
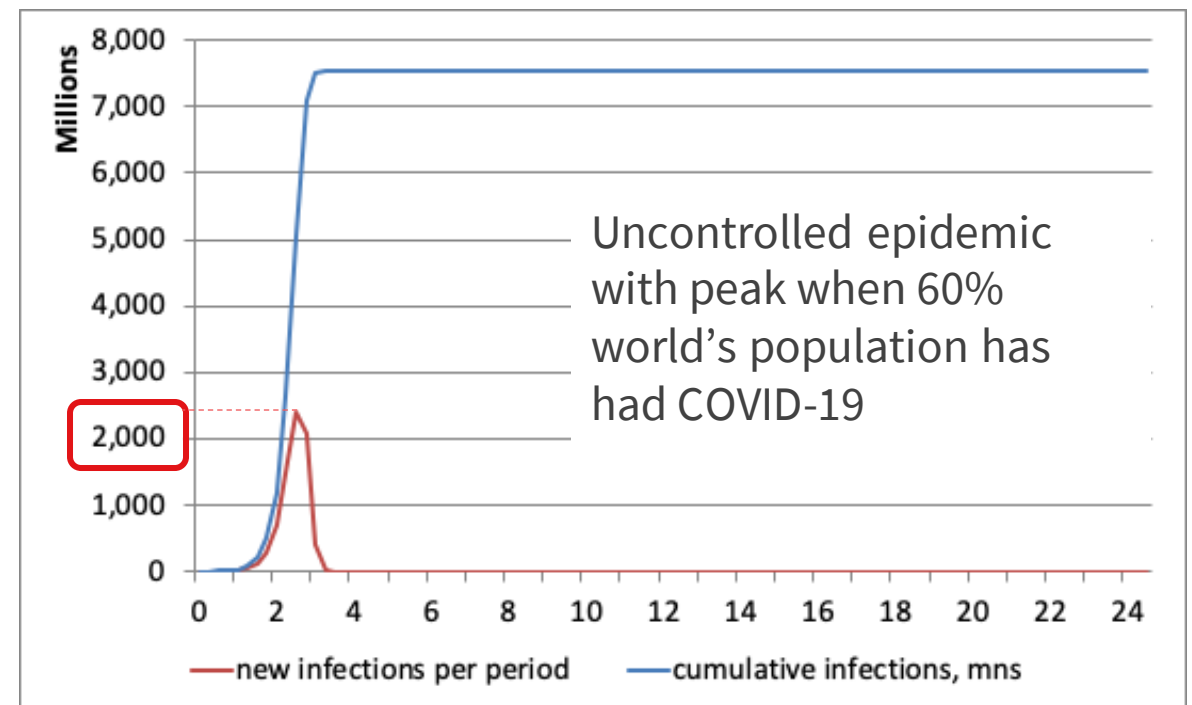
LOGIC OF FLATTENING THE PANDEMIC CURVE AND CONTAINMENT POLICIES

How far and fast will it spread?

- Model used by epidemiologists is based on “SIR model”:
S (susceptible) I (infected) R (recovered)
- Watch [Angela Merkel’s](#) explanation
- Watch the [CORE video](#) to follow the maths; the central concept is that of exponential (or compound) growth driven by R, average number of people each infected person infects each period
- Uncontrolled epidemic – exponential growth until susceptible population shrinks through death and recovery
- Containment policies to reduce R, and so flatten the curve and delay the peak

Flattening the curve, delaying the peak

- **Exercise:** Use the [CORE spreadsheet](#) to experiment with degrees of 'social distancing' as a proxy for containment policies
- Containment policies
 - Targeted
 - Testing
 - Contact tracing
 - Isolate and support the infected
 - Untargeted – social distancing



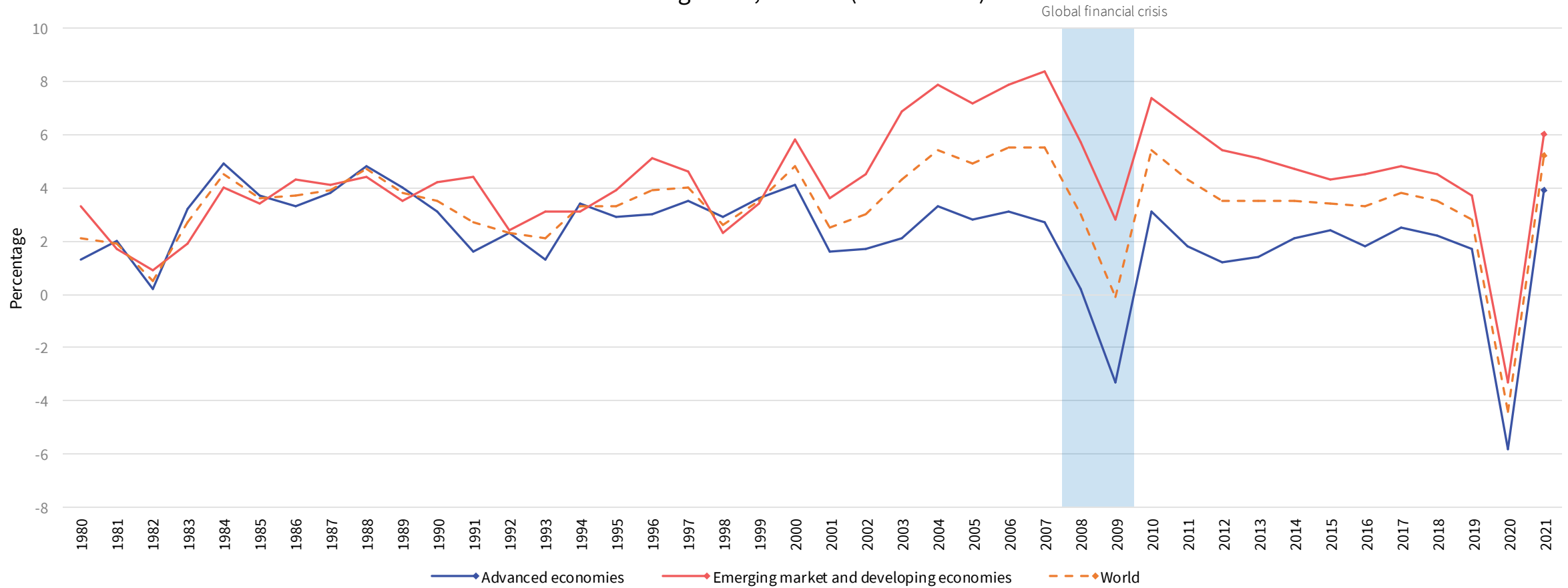
Cross-country differences in containment policies

- South Korea
 - No compulsory social distancing (even airports remain open)
 - Testing, contact-tracing, enforced isolation of infected & quarantine of contacts
 - Voluntary use of personal data through smartphone app to alert users of cases nearby and for notification of health condition
- Italy
 - Strong social distancing with zoning by geographical region
 - Followed by national lock-down, halting all non-essential economic activity

**The recession induced by the
pandemic containment policy**

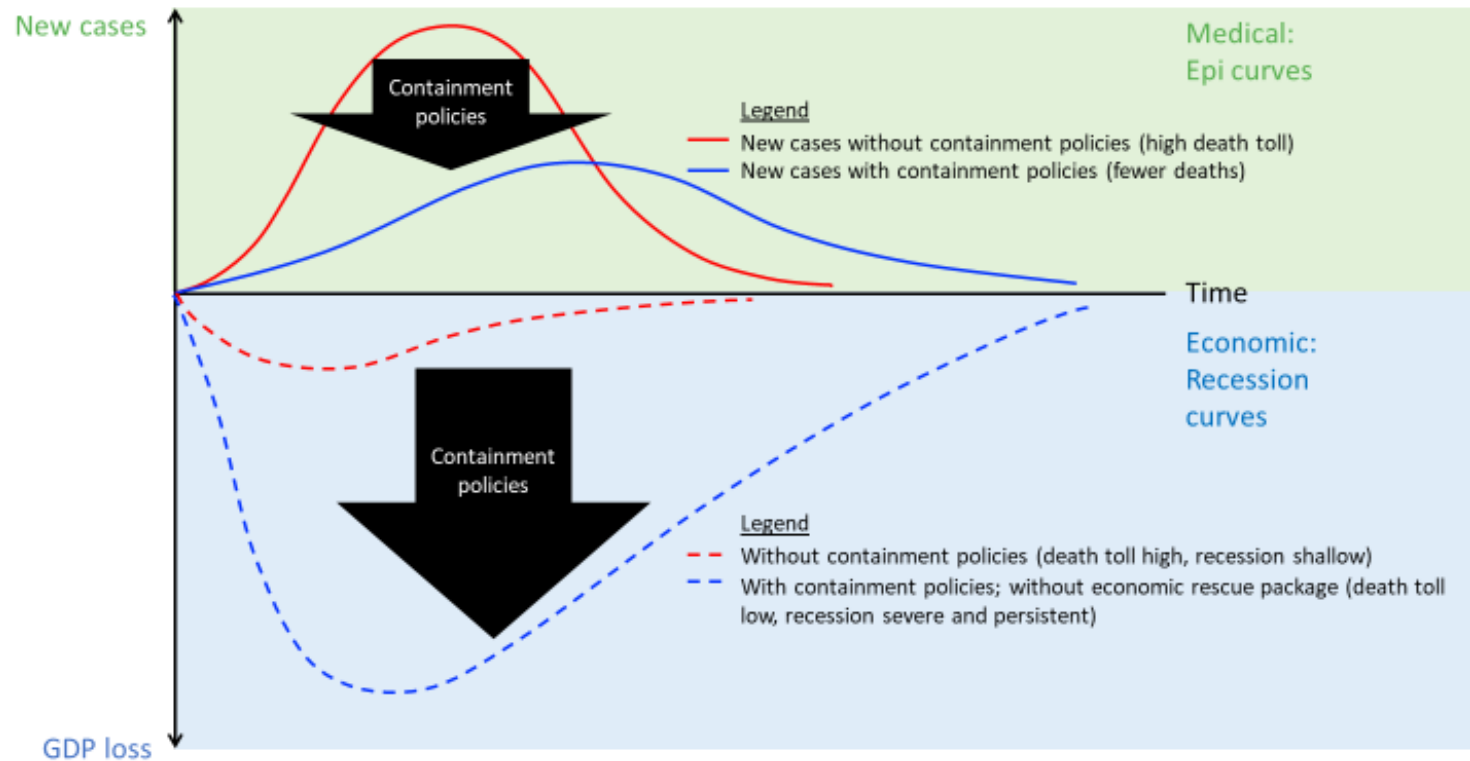
Deepest recession in four decades

Real GDP growth, annual. (Source: IMF)

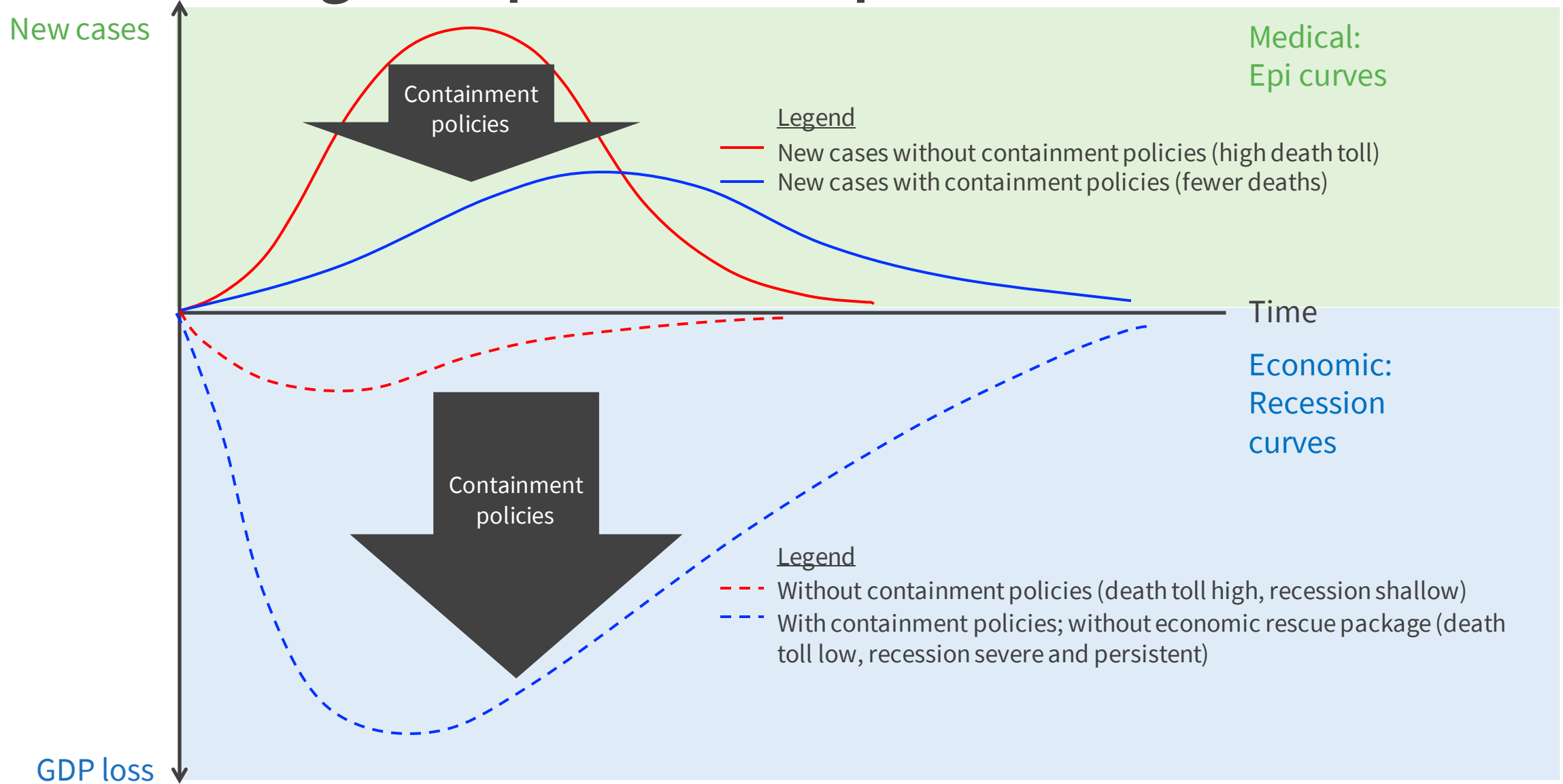


Diagnosing the nature of the macroeconomic shock

- Not a normal recession
- Not a financial crisis-induced recession
- Exogenous health cause
- Once containment becomes necessary to flatten epidemic curve, it causes a deep recession

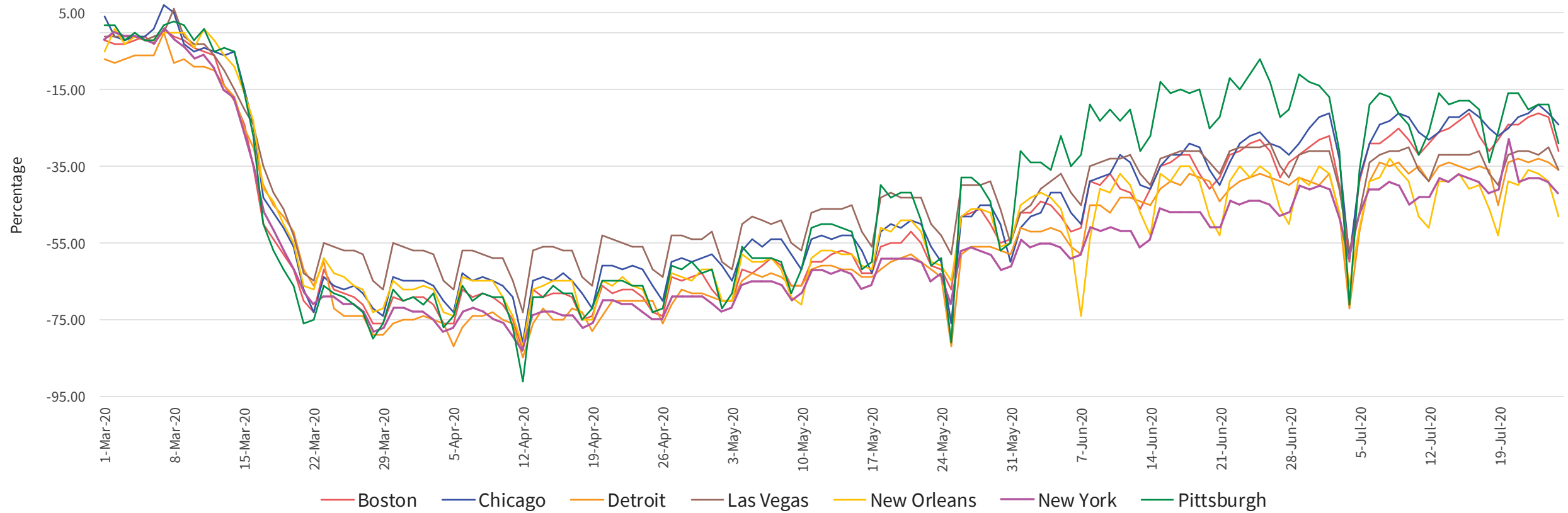


Flattening the epi-curve deepens the recession curve



Recession curve for small businesses in US cities

Percentage change in number of hours worked by hourly small and medium business employees compared to median hours worked on same weekdays in January



Source: Homebase (last accessed 28 August, data is delayed 4 weeks)

The pandemic-induced recession

- Firms: interrupted supply chains, supply of workers, revenue from sales
- Households: interrupted employment, wages and salaries, purchases
- Biosphere: lower emissions

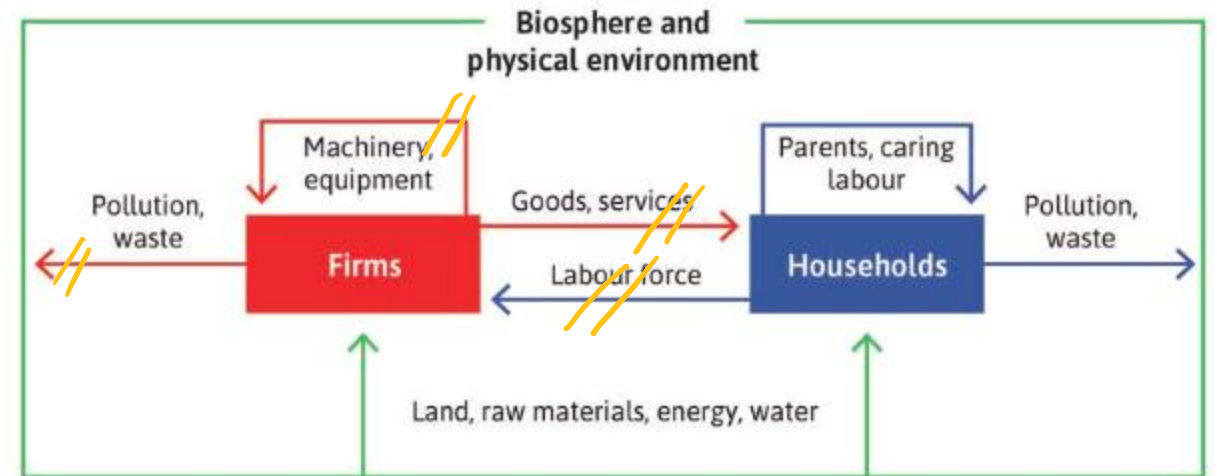
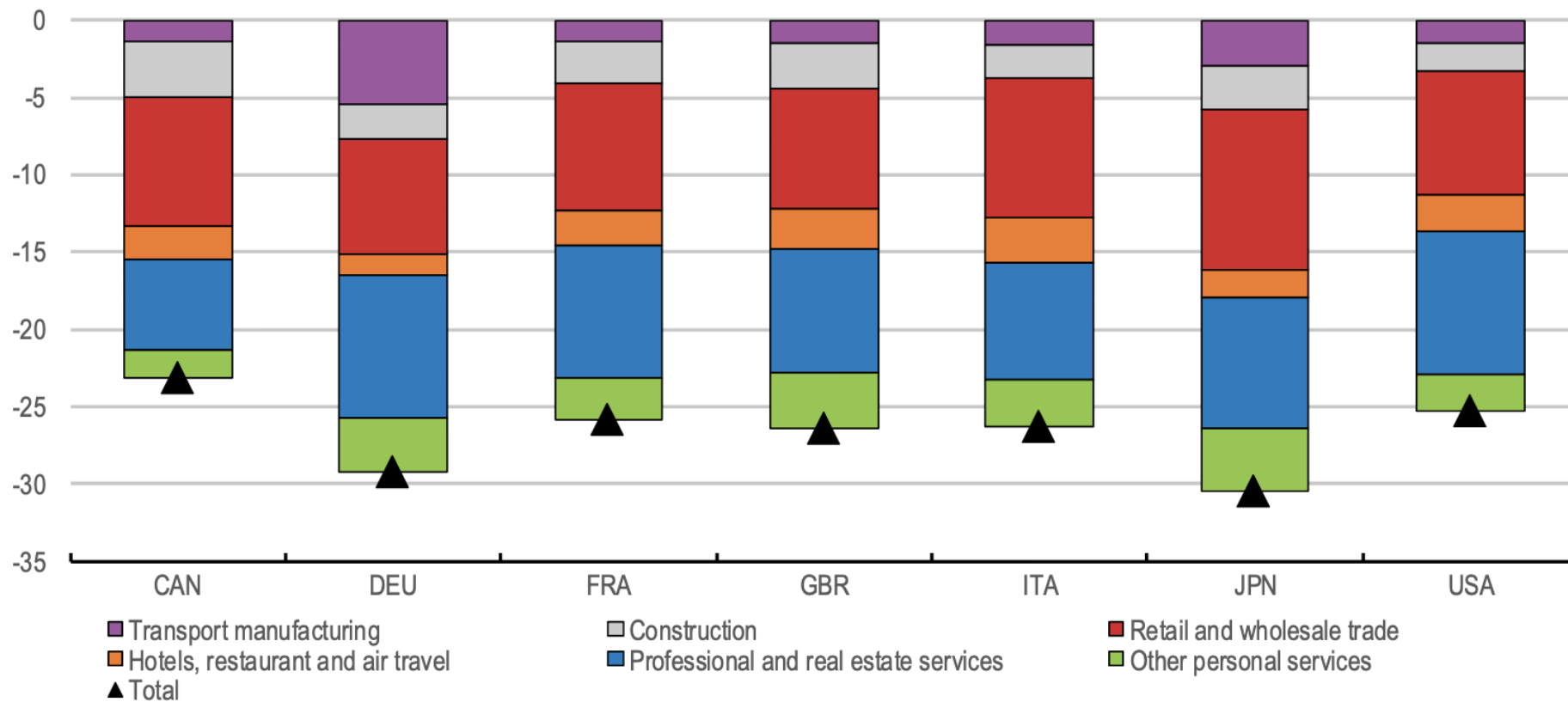


Figure 1.12 A model of the economy: Households and firms. // COVID-19 effects

Containment policies cut production by ~ 25% of GDP

Figure 1. The potential initial impact of partial or complete shutdowns on activity in the G7 economies

Per cent of GDP at constant prices

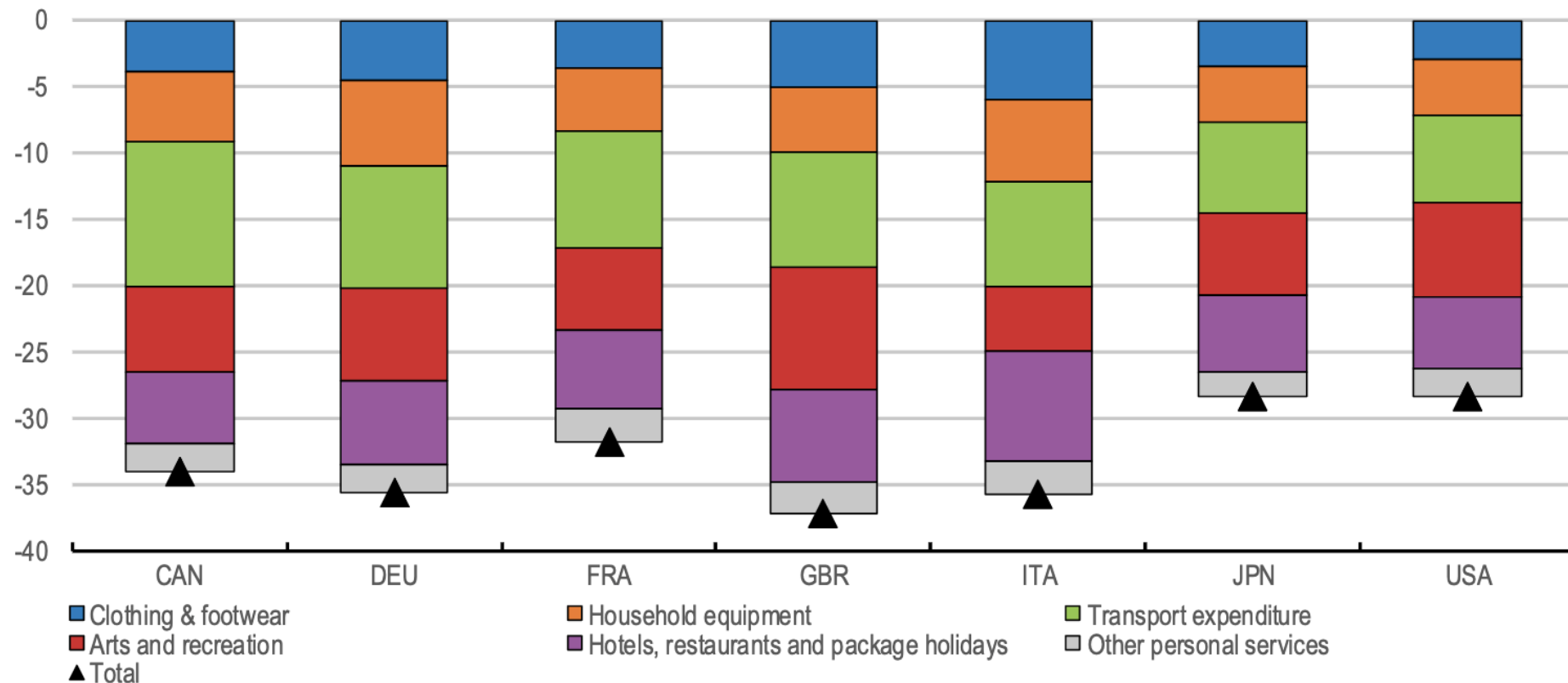


Last updated 10 June 2020

Containment policies cut household spending by ~ 1/3

Figure 2. The potential initial impact of partial or complete shutdowns on private consumption in the G7 economies

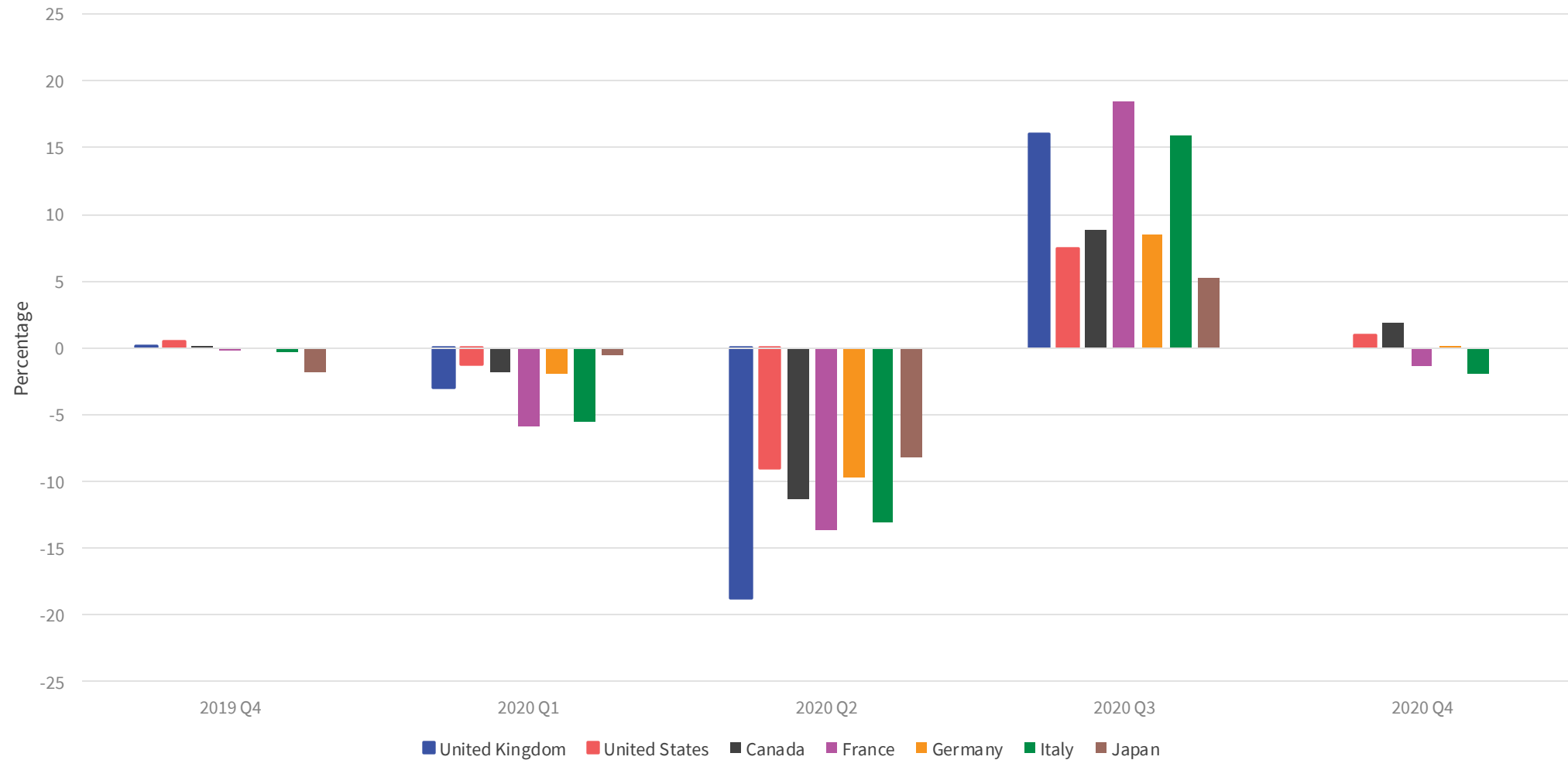
Per cent of total consumers' expenditure



Last updated 10 June 2020

Real GDP growth in G7 economies

Real GDP change, 2019 Q4 - 2020 Q4 (Source: OECD)



Last updated 5 February 2021

Nature of the macroeconomic shock using macroeconomic models Units 13-15

Pandemic containment policy shuts down economic activity →

- Productivity shock (production falls; employment falls less than proportionately) → PS curve shifts down
- Inflation shock due to shortages in supply chains → Phillips curve shifts up
- Aggregate demand shock → AD curve in multiplier diagram shifts down
 - C – households spend less
 - I – uncertainty, lower expected future profits
 - X – world trade contracts

Amplification of the AD shock

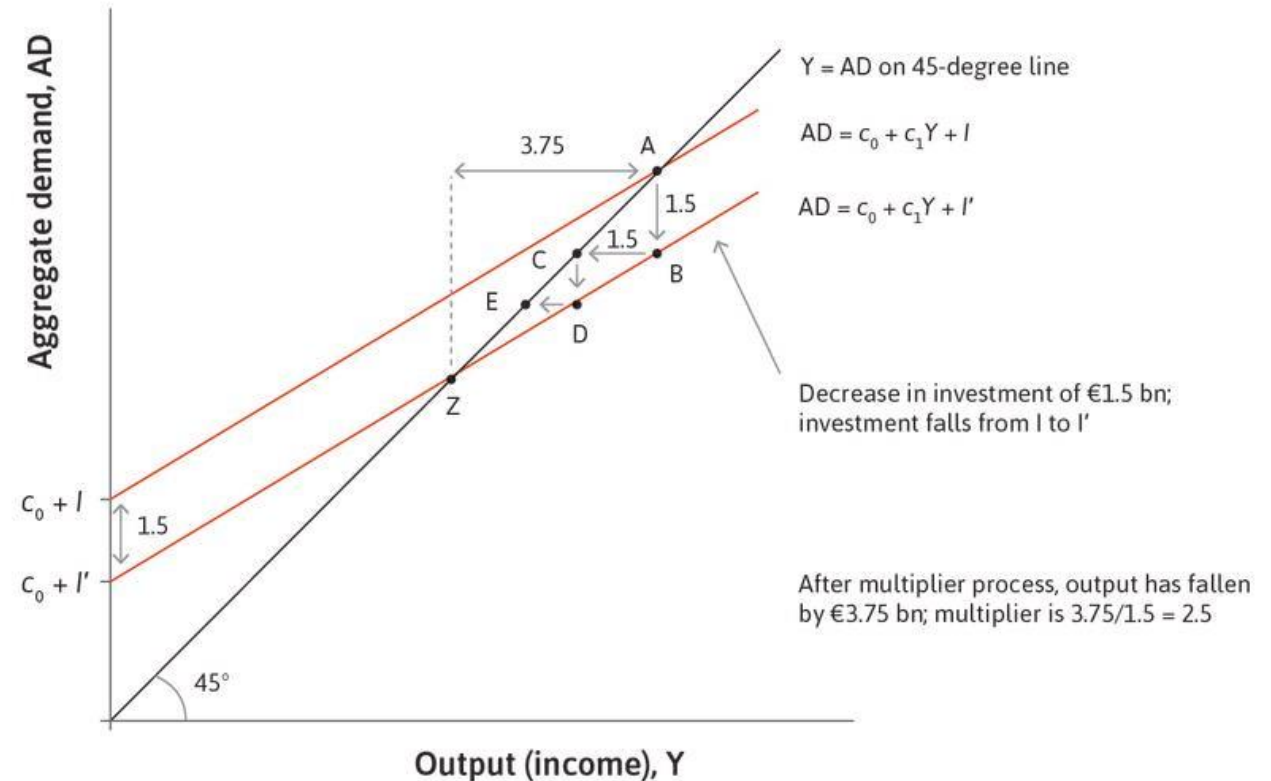
- Multiplier amplifies initial exogenous aggregate demand shock ($c_0, I(r), X$)

$$\Delta Y = k(\Delta c_0 + \Delta I + \Delta X)$$

$$k = \frac{1}{1 - c_1(1 - t) + m}$$

- Credit constraints reduce consumption smoothing → higher multiplier than in normal times

- Research suggests a multiplier as high as 2 for COVID-19



Example from Figure 14.5 The multiplier in action
<https://core-econ.org/the-economy/book/text/14.html#figure-14-5>

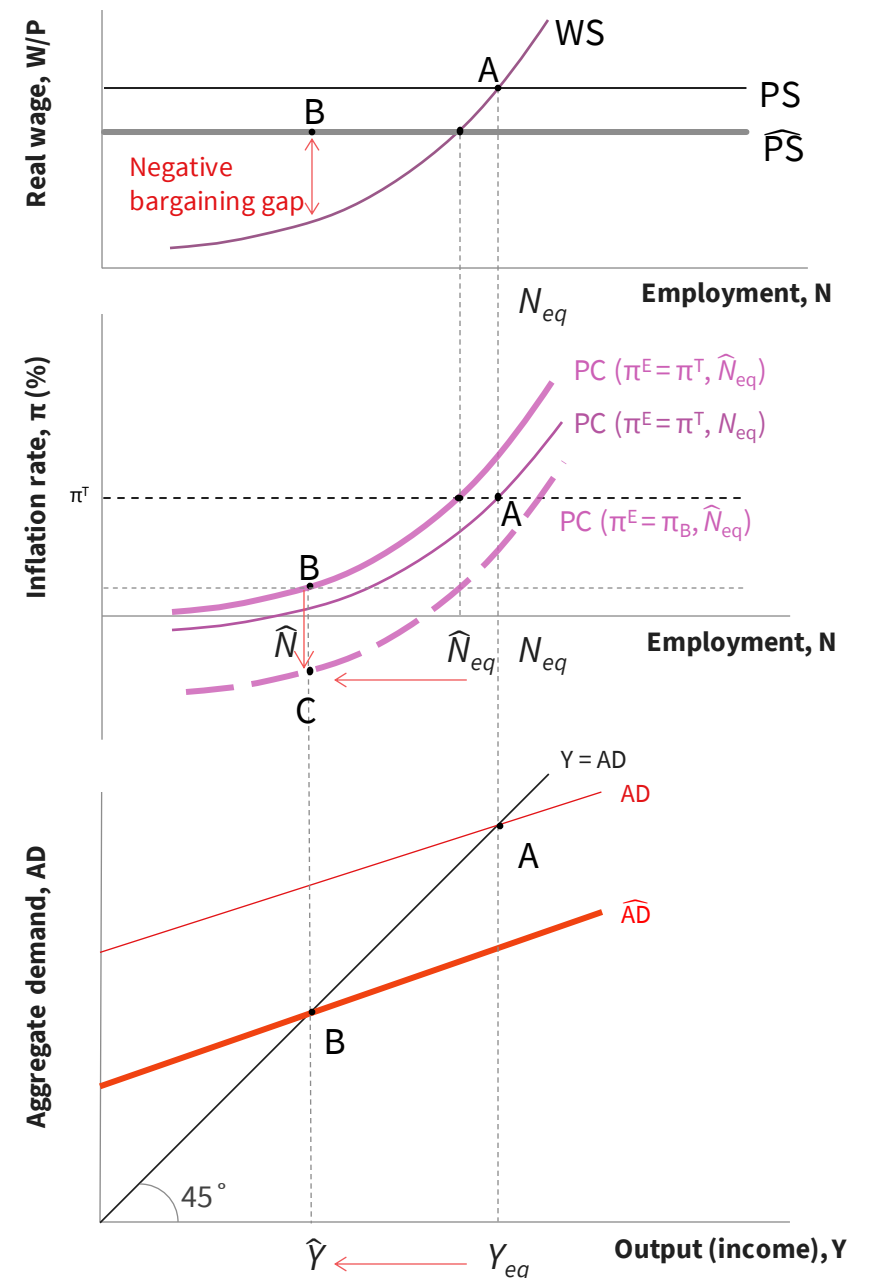
Calculating the multiplier
<https://core-econ.org/the-economy/book/text/14.html#einstein-calculating-the-multiplier>

Predicted effects of the macroeconomic shocks *cet. par.*

- Productivity shock \rightarrow PS curve shifts down
- Inflation shock \rightarrow Phillips curve shifts up
- Aggregate demand shock \rightarrow AD curve shifts down

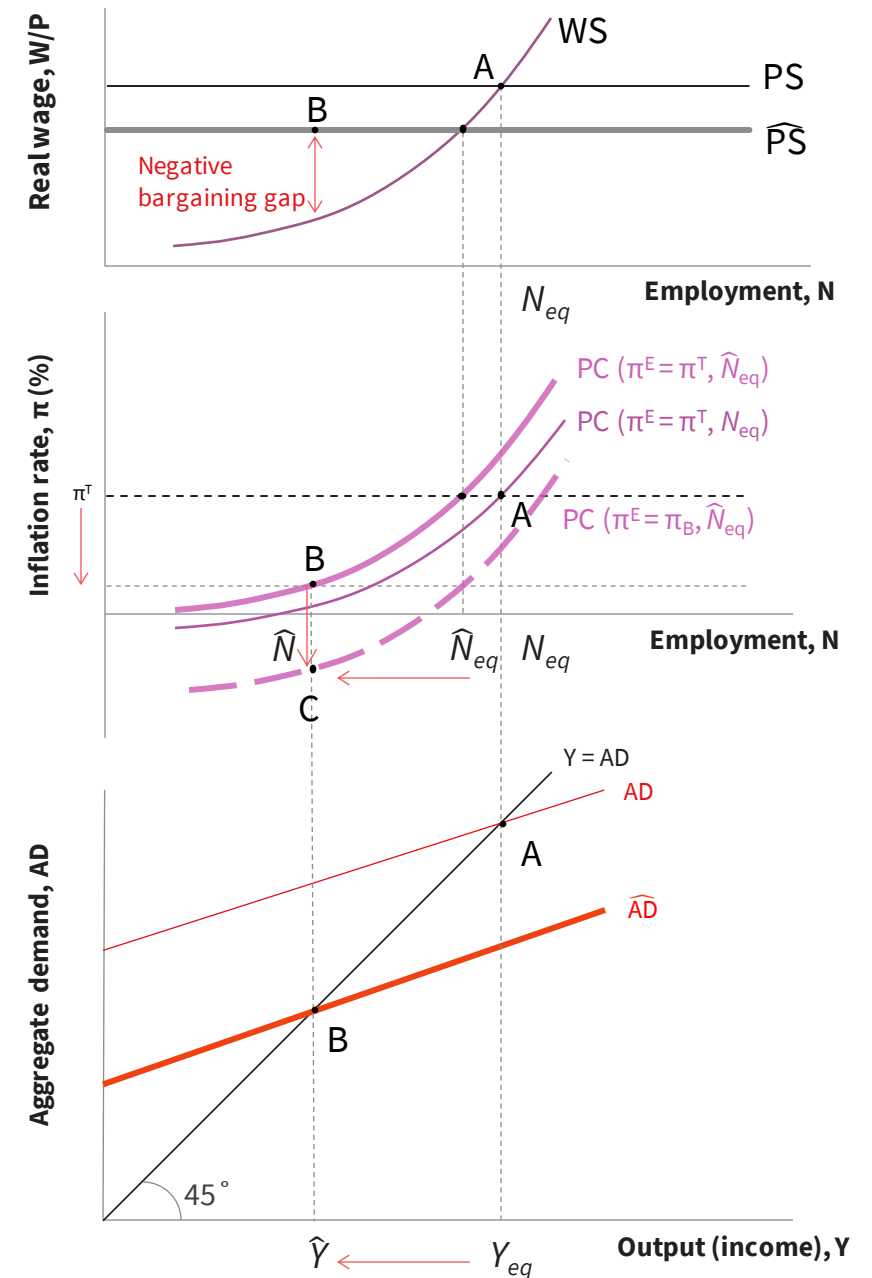
Notes: The inflation shock is not shown separately.

The AD shock is large enough to produce falls in output and employment sufficient to create a large negative bargaining gap; and inflation falls below target ($A \rightarrow B \rightarrow C$).



COVID-19 Macroeconomic shocks

- Productivity shock \rightarrow PS curve shifts down
- New equilibrium level of employment \hat{N}_{eq}
- Inflation shock \rightarrow Phillips curve shifts up
- Aggregate demand shock \rightarrow AD curve shifts down \rightarrow multiplier contraction of output
- New output \hat{Y} and employment \hat{N} are to the left of equilibrium employment \hat{N}_{eq}
- A negative bargaining gap opens up
- Inflation falls (disinflation)
- If output remains at \hat{Y} , the negative bargaining gap persists
- Phillips curve shifts down, producing deflation



Characteristics of the global financial and climate crisis shocks

Global financial crisis

- a global crisis
- sudden onset
- financial market tipping point
- caused by risk-taking behavior in financial and housing markets due to inadequate regulation
- produced an aggregate demand shock
- danger to financial stability because of insolvent banks

Climate crisis

- a global crisis
- gradual onset; long-lasting
- biosphere tipping point danger (e.g. summer Arctic sea ice) if policy response is inadequate
- caused by carbon emissions due to economic activity
- produces local weather-related crises including bush fires, long-term effects on agriculture
- danger of catastrophic rise in sea-level

Exercise:

Using the features shown on the left, compare the COVID-19 crisis with the global financial crisis or the climate crisis.

The macroeconomic context for the COVID-19 crisis

Macro context for the pandemic shock – implications for policies designed to flatten the recession curve

The post financial crisis decade of **performance**

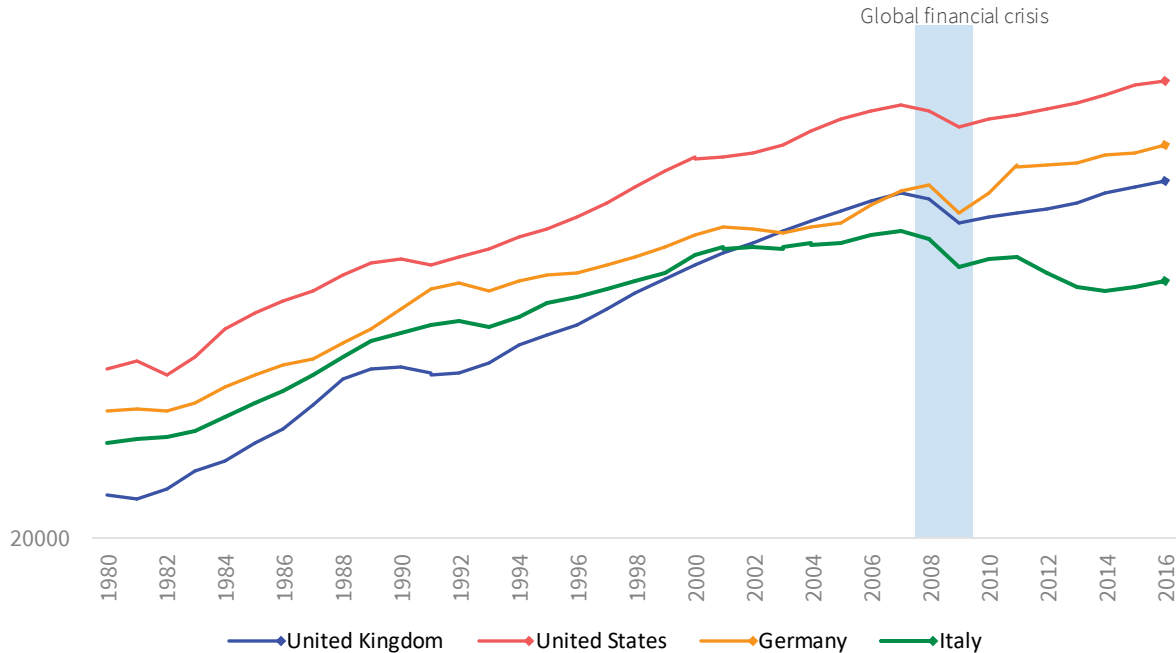
- GDP growth lower than long term trend
- inflation low; often below target of 2%
- low unemployment and high employment rates (although not everywhere)

The post financial crisis decade of **economic policy**

- nominal interest rates close to zero lower bound
- very low real interest rates
- public sector debt/GDP ratios pushed up by the financial crisis; then stabilizes

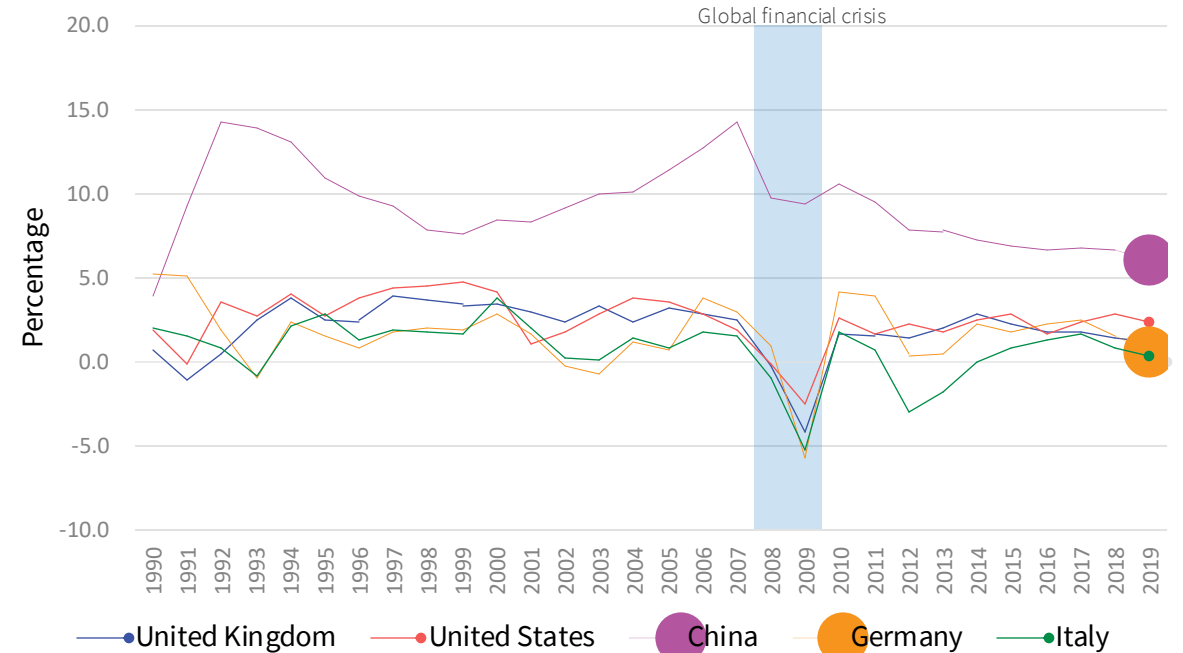
Context for COVID crisis – performance – growth

Fig. 1 Real GDP per capita, ratio scale 1980– 2016
(Source: World Bank)



On the ratio scale, the slope of the line represents the growth rate.
Apart from Germany, growth in GDP per capita did not return to trend following the financial crisis.

Fig. 2 Real GDP growth 1990 – 2019
(Source: OECD)



Note China's high relative growth rate throughout; but slowing growth since the financial crisis.
China's growth helped stabilize the world economy after the financial crisis

Context for COVID crisis – performance – inflation and unemployment

Fig. 3. Low and stable inflation close to or below 2% following the financial crisis

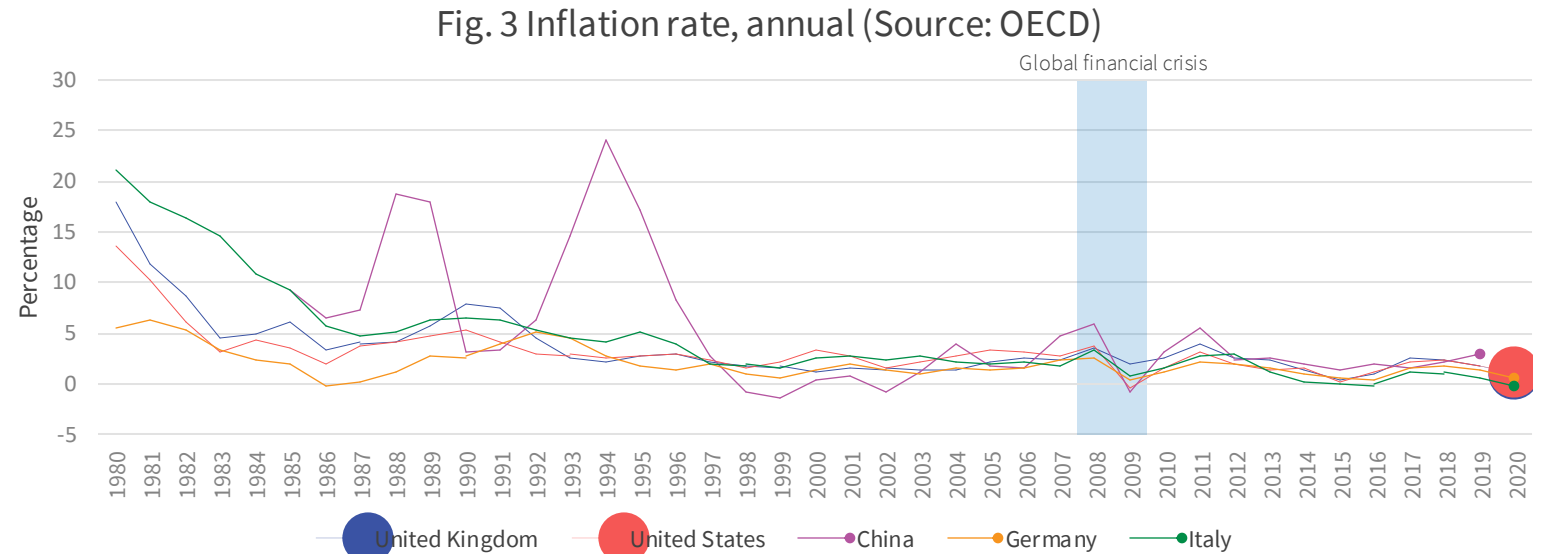
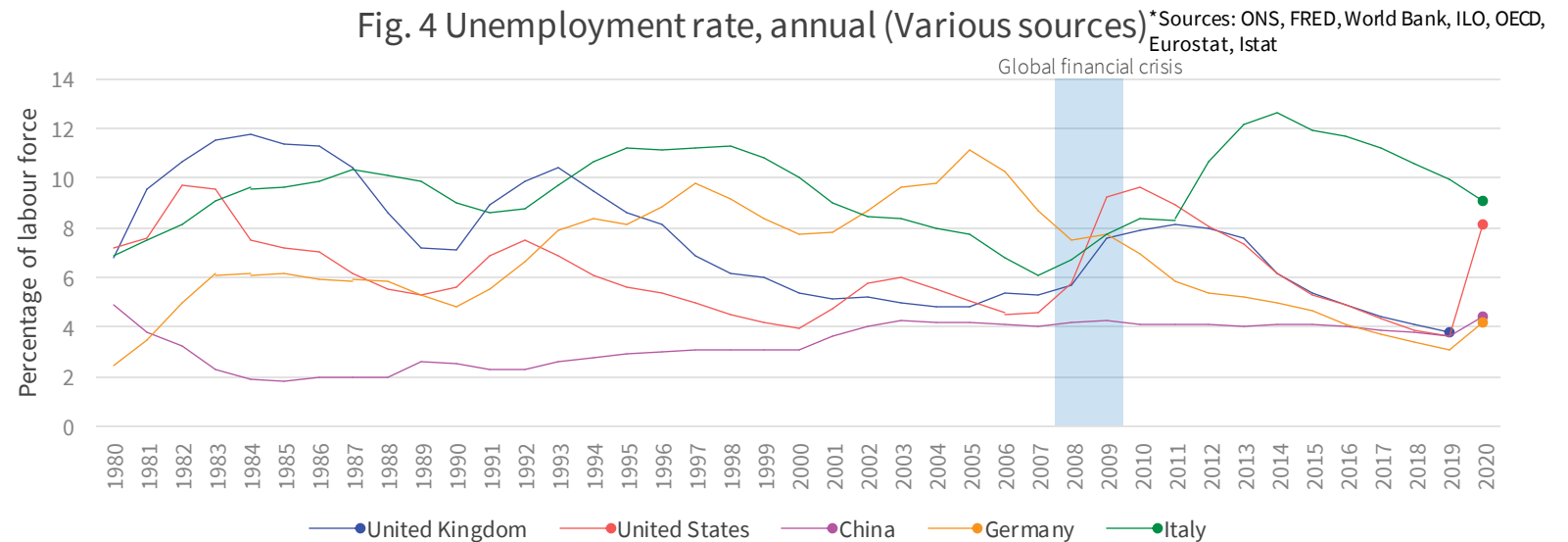
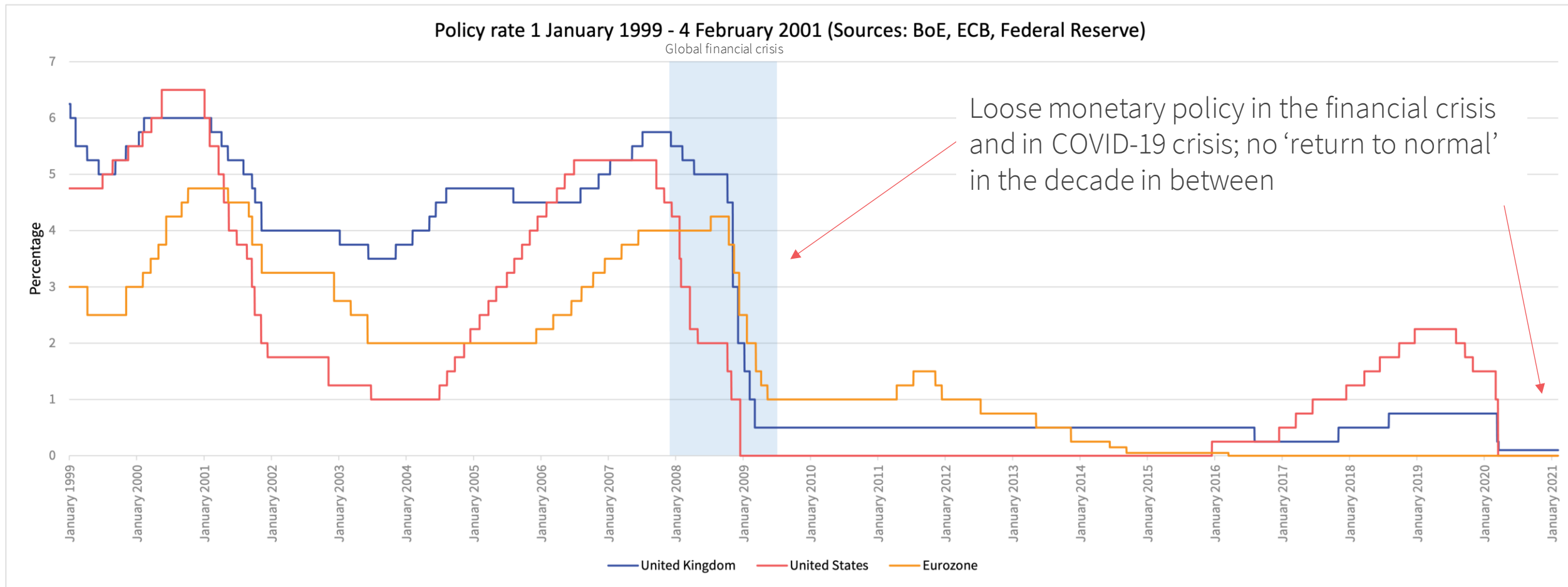


Fig. 4. Rise in unemployment in the financial crisis except in Germany and China; convergence to very low unemployment by 2019 except in Italy.



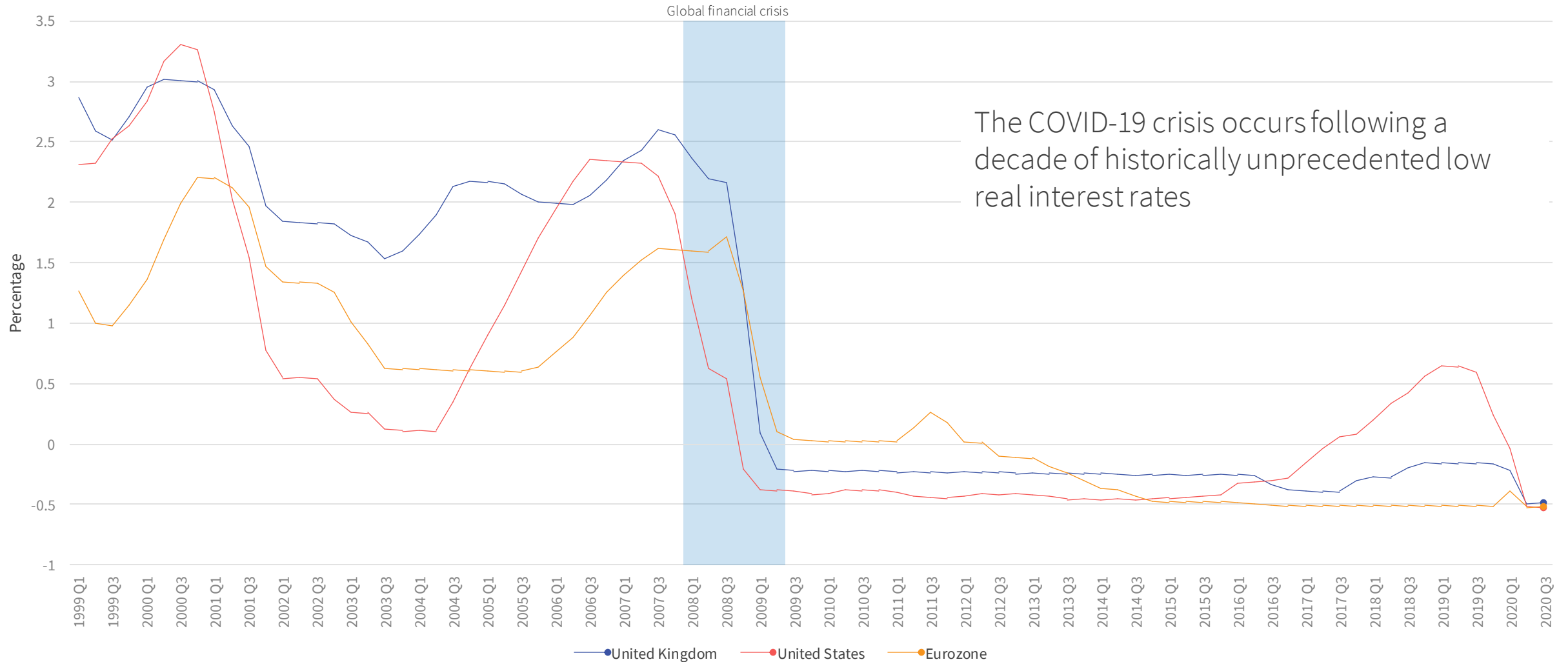
Economic policy – monetary policy, policy interest rate



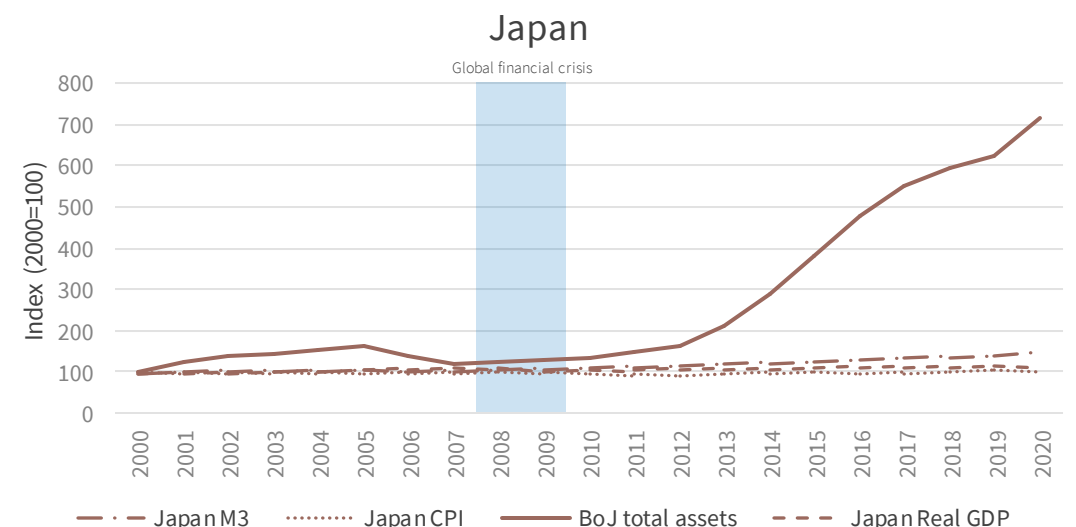
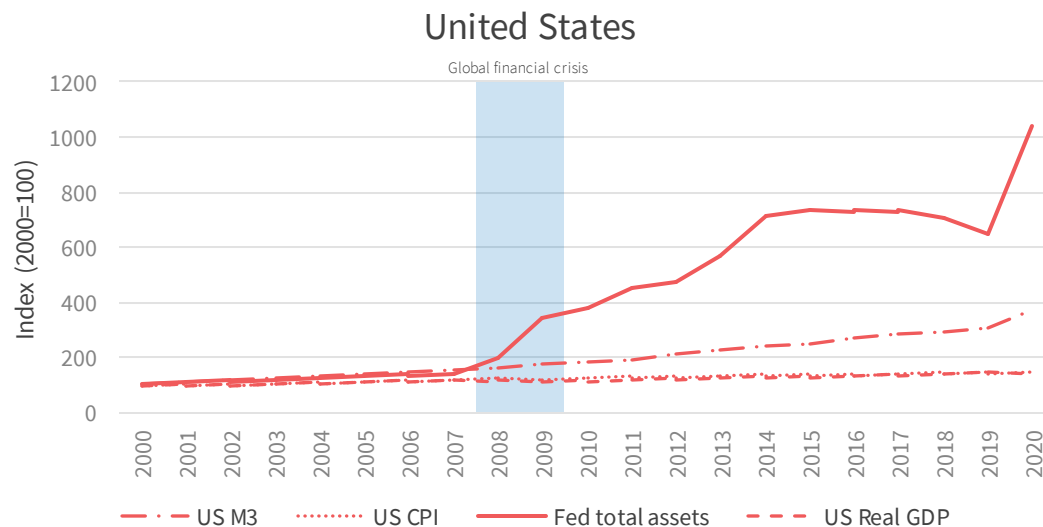
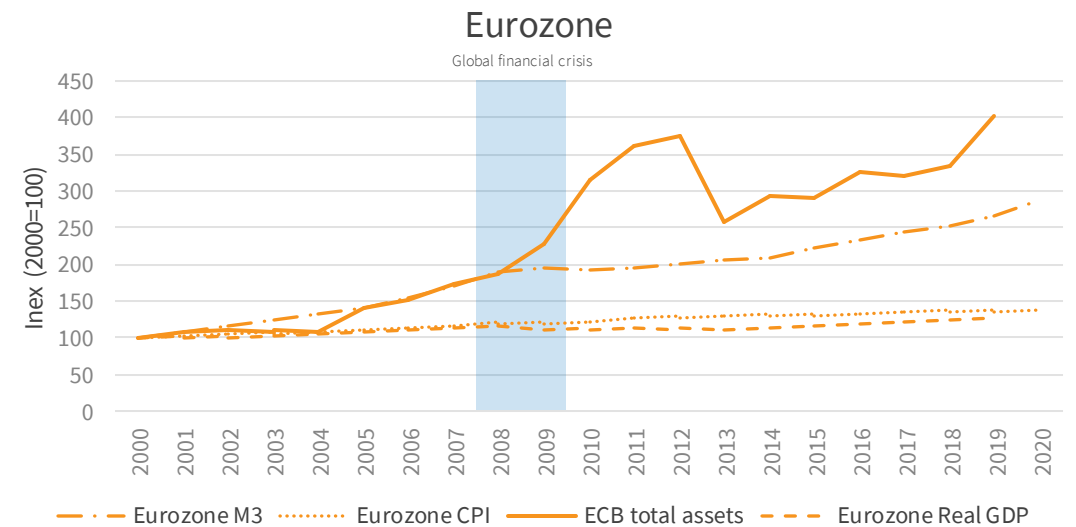
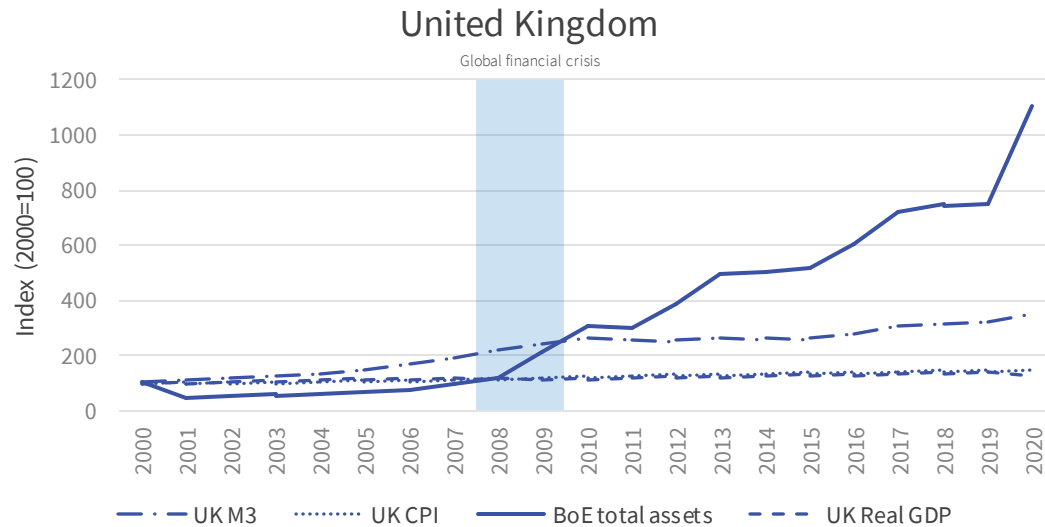
Data downloaded on 5 February 2021

Real interest rate

Real interest rate (1999 Q1- 2020 Q3) (Sources: OECD and IMF). Data downloaded 5 February 2021



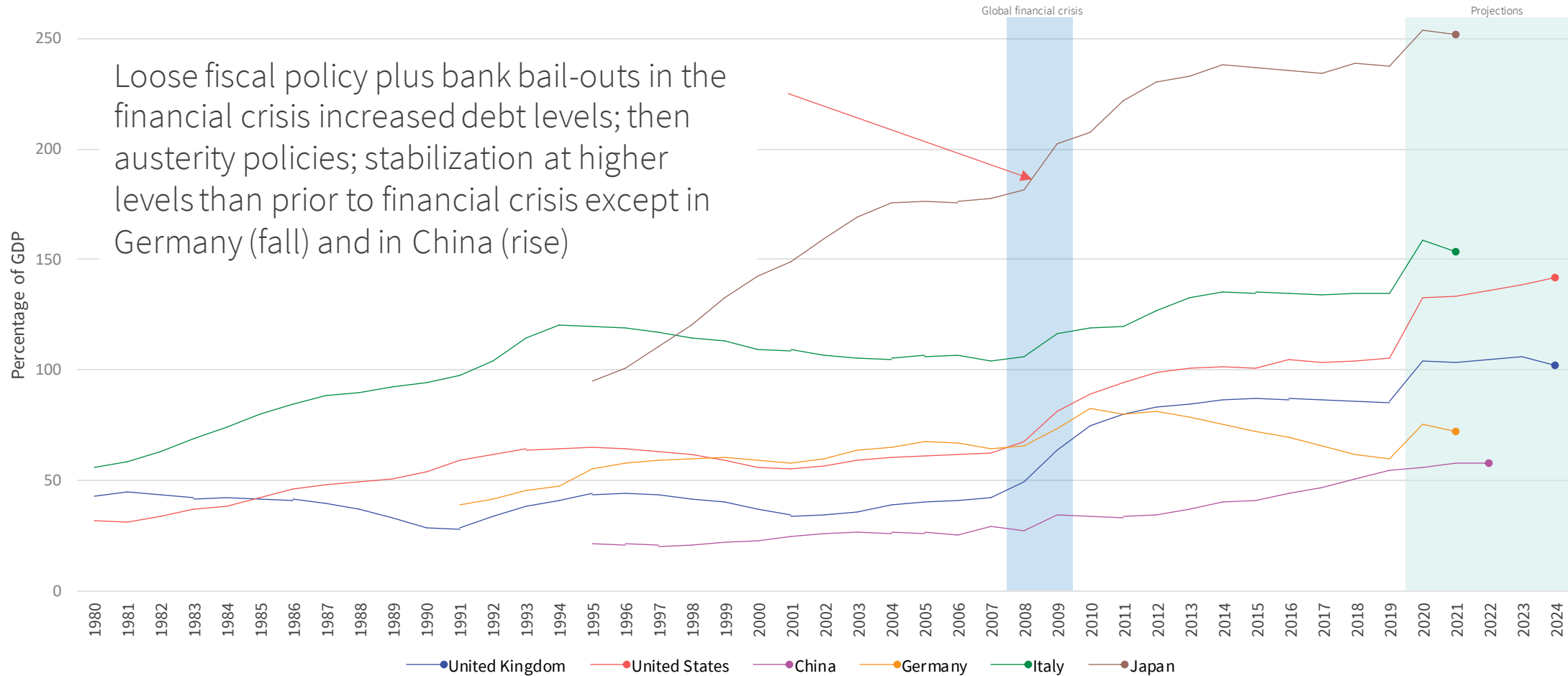
Monetary policy – Quantitative Easing (QE) expanded the central banks’ balance sheets – compare with the price level and real GDP



Sources: Bank of England, ECB, ESCOE, Federal Reserve Board of Governors, FRED, OECD

Economic policy – government debt

Government debt as percentage of GDP, 1980-2019 (and selected projections) (Various sources*)



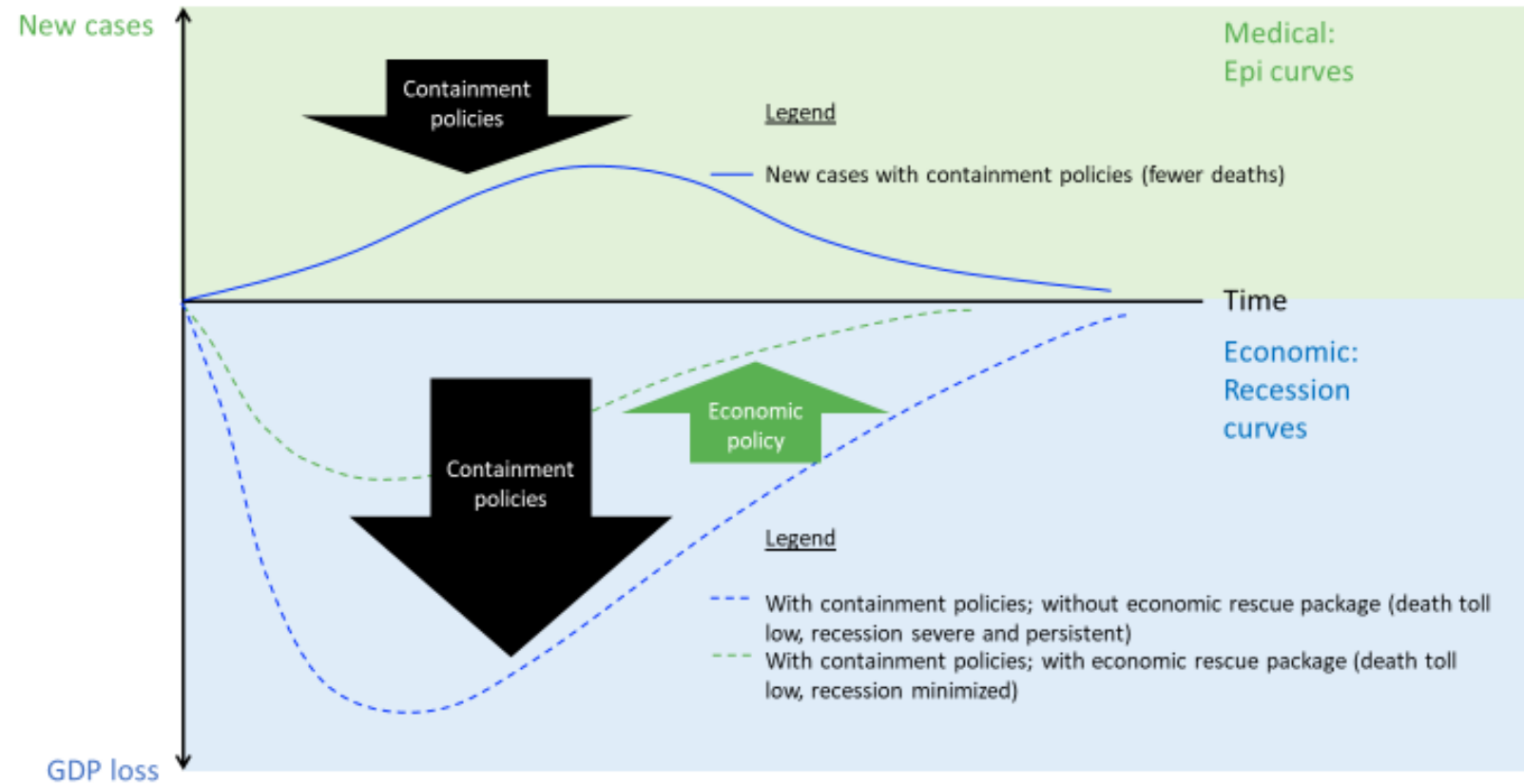
*Sources: Banca d'Italia, CBO (own calculations), European Commission, Fitch Ratings, FRED, IMF, OBR, OECD, and ONS

Macroeconomic policy responses

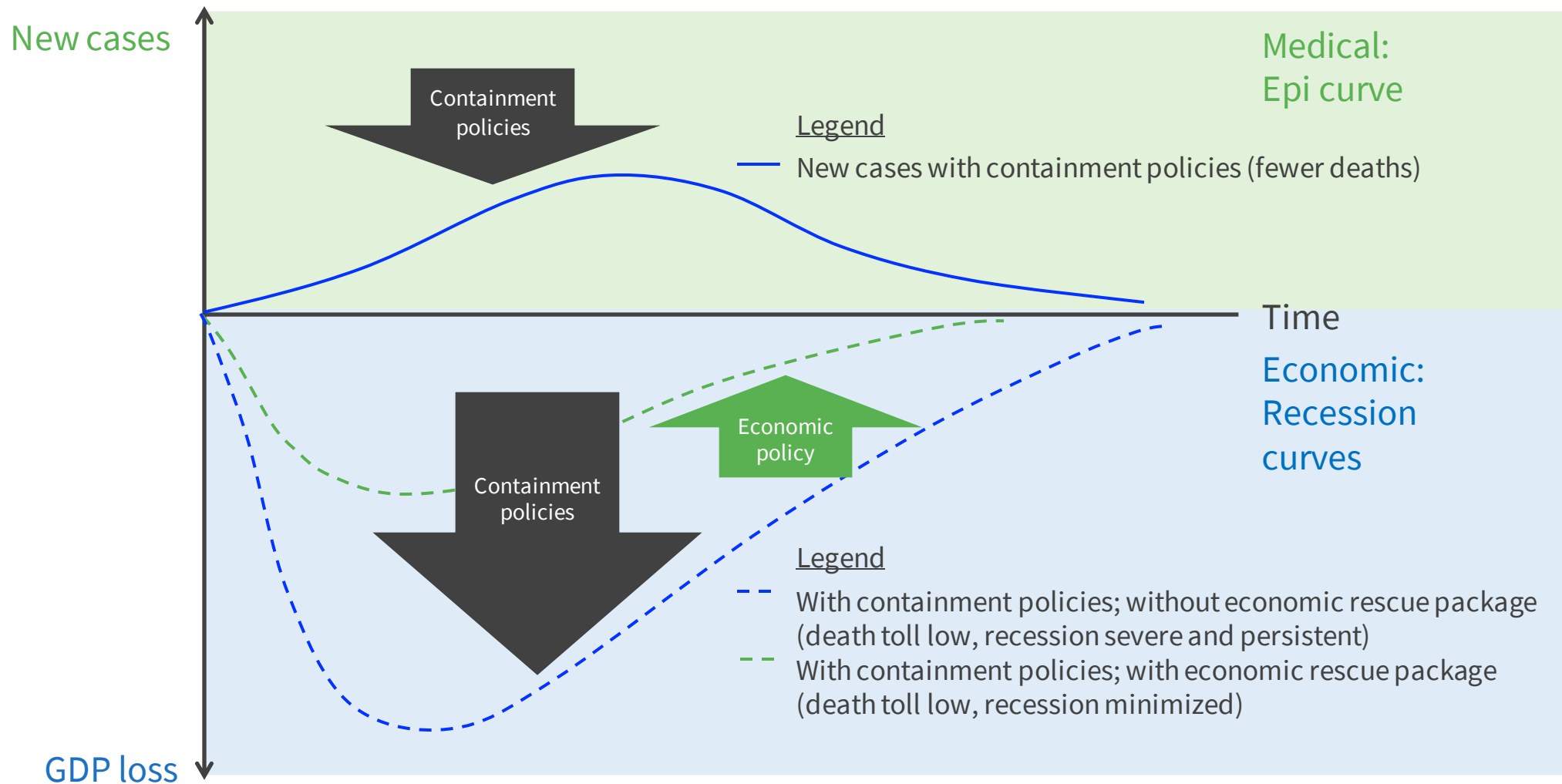
Macroeconomic policy responses – to flatten the recession curve

Policy design

- Unlike a typical recession, there is no ‘silver lining’ of weeding out failing enterprises
- Cash flow (illiquidity) and insolvency problems are not systematically related to underlying performance
- Policy aim is continuity of economic relationships



Macroeconomic policy responses – to flatten the recession curve (animated)



Logic of “continuity whilst on hold” policies – prevent long-term supply side damage

- To prevent amplification of the shock via lay-offs as firms reduce costs given reduced cash flow
- To limit scarring due to unemployment and bankruptcies, which leave a weakened supply side when recovery comes
 - Laid off workers may leave the labour force or lose skills and ability to compete → upward shift of WS curve
 - Bankruptcy of solvent firms weakens competition → downward shift of PS curve
 - Lower productivity in prolonged adjustment following shock → downward shift of PS curve→ rise in equilibrium unemployment
- Historical example of these policies: German *Kurzarbeit* (reduce hours per worker rather than employment) in the global financial crisis (*The Economy Unit 17*). Read [‘Kurzarbeit: a German export most of Europe wants to buy’](#)

Example of Denmark, 2020

- Government pays 75% of salaries = 13% of GDP in 3 months
 - “The philosophy here is that **the government wants companies to preserve their relationship with their workers**. It’s going to be harder to have a strong recovery if companies have to spend time hiring back workers that have been fired.” ...
 - “Many of these policies are made as tripartite agreements between unions, employers’ associations, and the state. That’s because, in Denmark, most labor-market regulation is done by the unions and the employers’ associations. They regulate the labor market mainly through their own collective agreements. To make all this possible, you need the unions and employers’ associations to be a part of these agreements. That is very difficult. But they succeeded rapidly. In a matter of days, this was a signed agreement.”
- Historical comparison union – employers’ association and union agreements in the golden age see *The Economy* [Unit 17](#)

Macroeconomic policies – “continuity whilst on hold”

- Policy-induced economic inactivity
- Liquidity versus solvency
- Aim to prevent bankruptcy of solvent entities, who are households, firms, banks
 - Enable deferral of payments of mortgages, rent, local, state, federal taxes
 - Provide loans and grants to firms
 - Provide wage subsidies to firms for ‘furloughed’ employees
- Transfers to self-employed, gig economy workers

Policy assignment ('who does what?') pre-COVID-19

Countries with independent central banks	Macroeconomic objectives	Policy instruments
Monetary and macro-financial policy	Business cycle stabilization around inflation target Financial stability (banks)	Policy interest rate; Quantitative Easing at the Zero Lower Bound (ZLB) Capital ratios for banks and other regulations
Fiscal policy	If economy is at ZLB, used for business cycle stabilization (e.g. global financial crisis); otherwise oriented to managing public sector debt/GDP	Government spending, taxes, transfers

Countries without their own central bank (e.g. members of the Eurozone):

- ECB stabilizes business cycle at the Eurozone-level
- National governments stabilize business cycle at country-level

Policy assignment during COVID-19 policy-induced recession

Countries with independent central banks	Macroeconomic objectives	Policy instruments
Monetary and macro-prudential policy	Survival of solvent businesses & households Financial stability (banks)	Cut policy interest rate to approx. zero QE to lower long-run interest rates Targeted access to central bank liquidity Loans
Fiscal policy	Expansion of health care Survival of solvent businesses Support for household incomes	Direct spending on health care (G) Wage subsidies (Transfers) Loans to business Income support (Transfers) Defer tax payments (T)
Combined fiscal and monetary policy	CB supports ability of government to fund its policies	Joint business loan schemes CB directly funds G 'monetary financing'

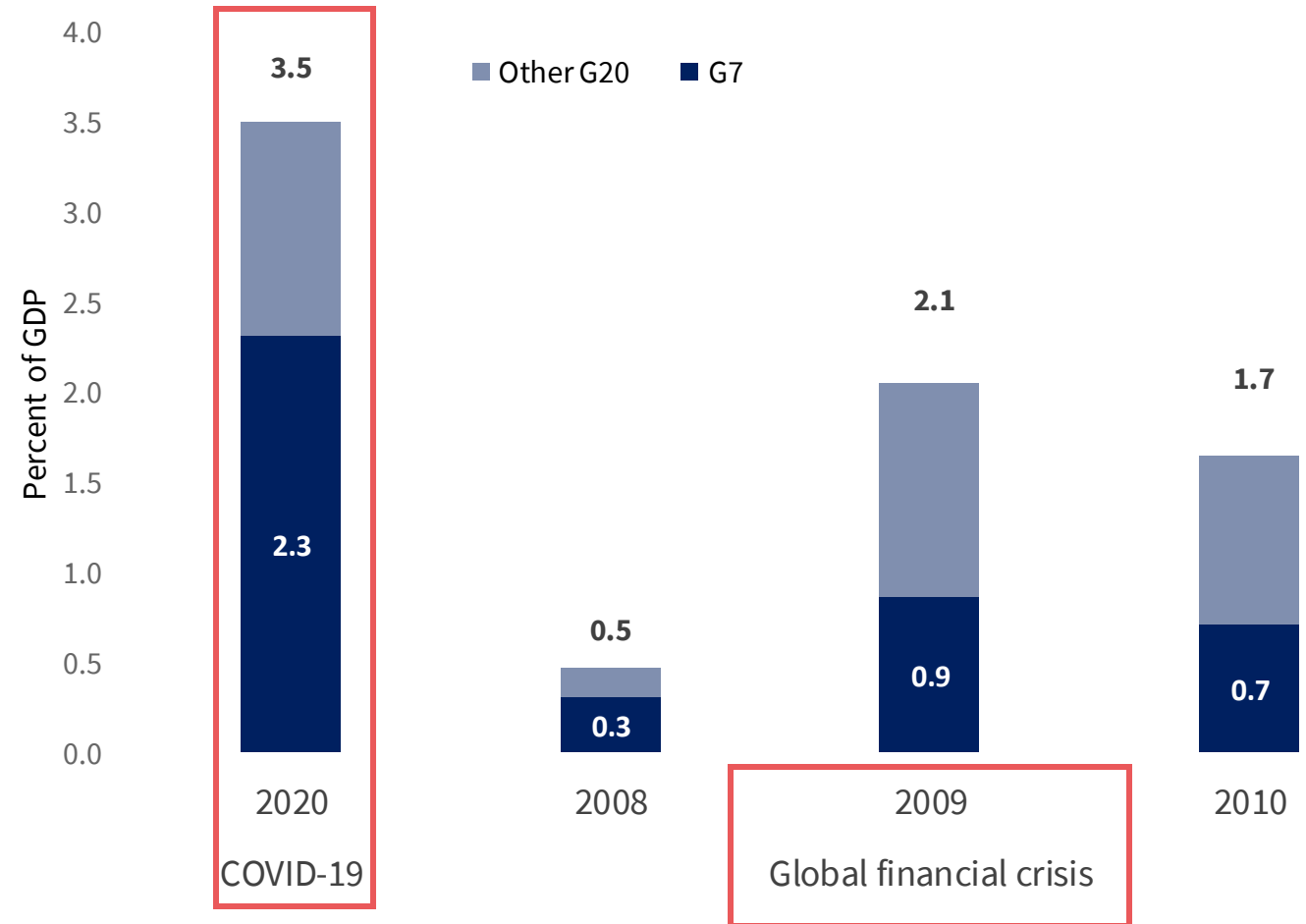
Exercise: Collect data from the IMF Policy tracker for 3 countries

- a high income country with an inflation-targeting CB
- a low income country with an inflation-targeting CB
- a member country of the Eurozone
- Compare the size of the interventions – e.g. percentage point change in the policy interest rate; amount of QE (where relevant); spending as percent of GDP

Countries with independent central banks	Macroeconomic objectives	Policy instruments
Monetary and macro-prudential policy		
Fiscal policy		
Combined fiscal and monetary policy		

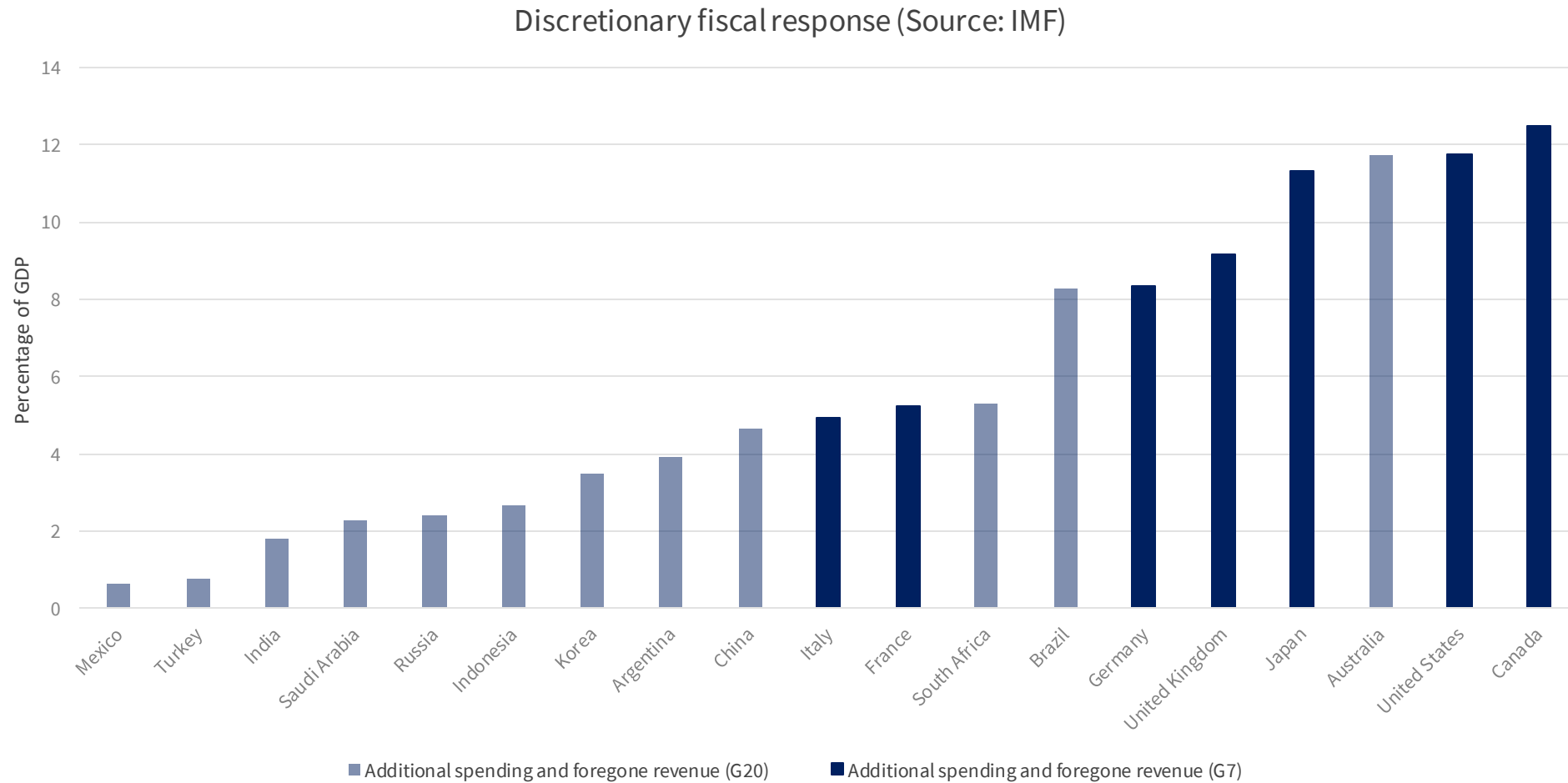
The size of the fiscal response – early IMF estimates

- Larger already for the G7 in 2020 than for 2008-2010 in global financial crisis
- Chart does not include loans or loan guarantees



Estimates released in April 2020

The size of the fiscal response – latest IMF estimates



Estimates released in October 2020

7 FAQs about macroeconomic policy responses in the pandemic

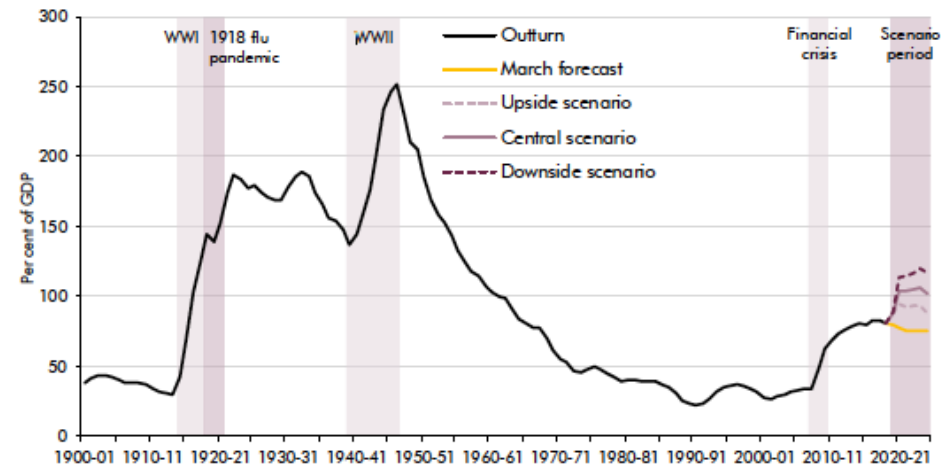
1. What is the best way of paying for the government spending needed to fight the virus?
2. How worrying are the increases in government deficits and debt?
3. What explains the willingness to allow such high government deficits and increases in government debt?
4. What is the difference between QE and the direct financing of government spending by the central bank?
5. When the central bank uses QE or directly finances government spending will this inevitably cause inflation?
6. Why is government spending not 'normally' funded by money creation?
7. Will it be a V, U, W or L-shaped recession?

1. What is the best way of paying for the government spending needed to fight the virus?

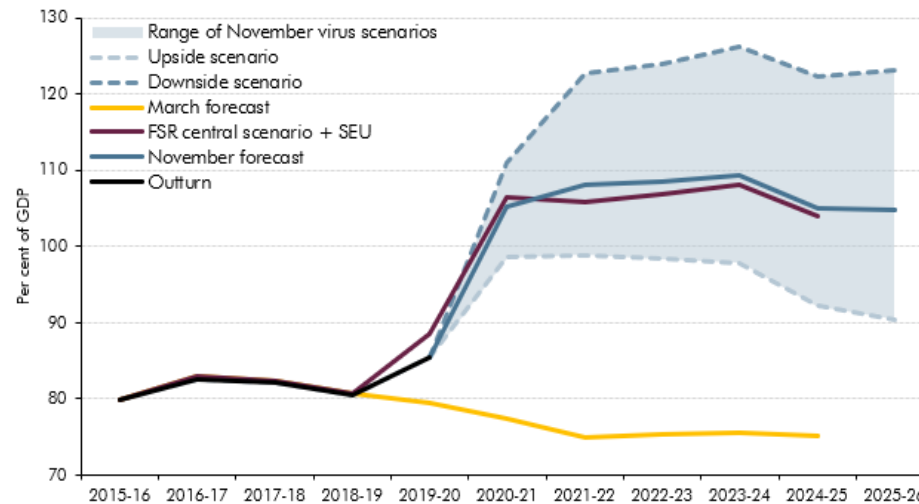
- Three ways of financing G + transfers
 - raise tax ‘**tax-finance**’ – No scope to do this during the crisis
 - sell new bonds (i.e. borrow from households and firms e.g. via pension funds) ‘**bond or debt-finance**’ – Yes, implies $G-T = \text{deficit}$ rises
 - CB creates credits on the government’s account ‘**money-finance**’ – Yes, this does not increase the deficit
- Raise tax – no scope since it counteracts the policy objective; governments are *deferring* and cutting, not raising taxes
- Sell new bonds – because the CB is buying bonds in the secondary market as part of QE, this will not push up the interest rate
- Facilitate government spending by providing credits directly (this avoids the bond market)

2. How worrying are the increases in government deficits and debt?

- Long-run historical perspective from the UK – government debt rises in wars, pandemics and financial crises
- “The UK is on track to record the largest decline in annual GDP for 300 years...[and] an unprecedented peacetime rise in borrowing” (OBR’s [Fiscal Sustainability Report](#), 14 July 2014)



Source: Bank of England, ONS, OBR



Source: ONS, OBR

UK public sector net debt as percent of GDP

In November, the OBR – the UK’s fiscal watchdog – updated its assessment of the economic impact of COVID-19 by forecasting three scenarios:

Upside: November lockdown significantly lowers infections by 2 December, effective Test Trace Isolate allows for return to equivalent of Tier 2, vaccine widely available by the spring

Central: November lockdown mildly lowers infections by 2 December, Test Trace Isolate allows for return to equivalent of Tier 3, vaccine widely available in second half of the year

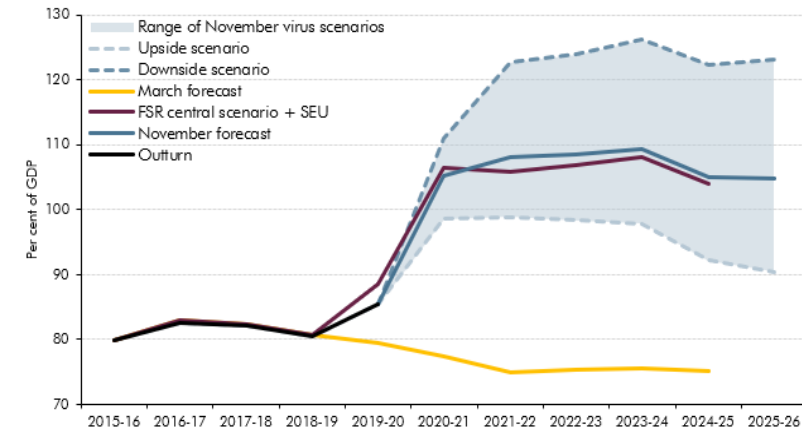
Downside: November lockdown doesn’t lower infection rates, ineffective Test Trace Isolate leads to continued public health restrictions, no effective vaccine available

2. How worrying are the increases in government deficits and debt?

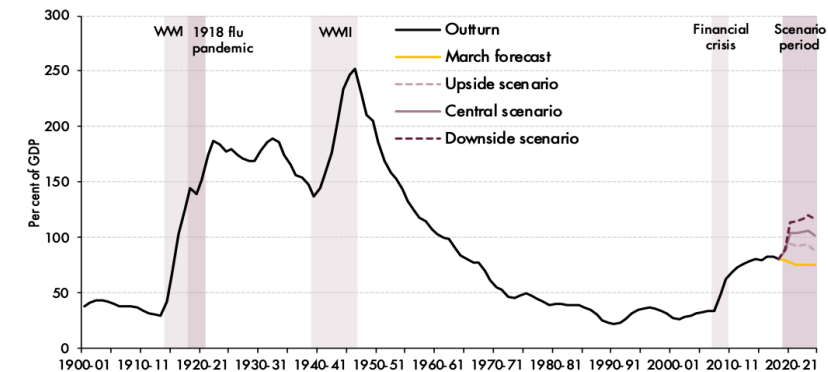
- Both are a sign of good policy in the pandemic
- Government is the ‘insurer of last resort’ for citizens & the national debt is the shock-absorber
- Government is able to borrow at low interest rates to cushion a shock because of its unique power to raise taxes later
- Government debt will rise but given the very low interest rate environment likely to continue into the future, it will not impose a heavy burden of servicing the debt
- Policies to reduce the debt by so-called austerity policies should not be started until the economy has fully recovered

3. What explains the willingness to allow such high government deficits and increases in government debt?

- Robert Chote, Head of UK's OBR: "The immediate cost [in budgetary terms] of the Government's actions may be high, but we can be confident that the cost of inaction would ultimately have been much higher."
- Inaction would make long-term scarring effects more likely, which would mean higher equilibrium unemployment and a higher structural budget deficit (lower tax revenues; higher transfers) → model on slide 21/22 would see upward shift in WS curve and downward shift in PS curve



Source: ONS, OBR



Source: Bank of England, ONS, OBR

UK public sector deficit as percent of GDP

Estimates released on 25 November 2020

4. What is the difference between QE and the direct financing of government spending by the central bank?

- Since the financial crisis, QE has become a normal monetary policy instrument for CBs for business cycle stabilization
- Why? The stimulus to AD from $i^{policy} \approx 0$ has not been large enough
- QE: CB purchases government bonds (and sometimes other assets like corporate bonds) in the secondary market where they are traded → lower long-term interest rates
$$\uparrow \text{ demand for bonds } \rightarrow \uparrow P_{Bonds} \Rightarrow \downarrow i^{long-term}$$
- Direct financing is different: the CB provides money (electronic transfer like an overdraft) directly for government to spend. Unlike QE, this *combines monetary and fiscal policy*, and FP is the ‘driver’ of the policy

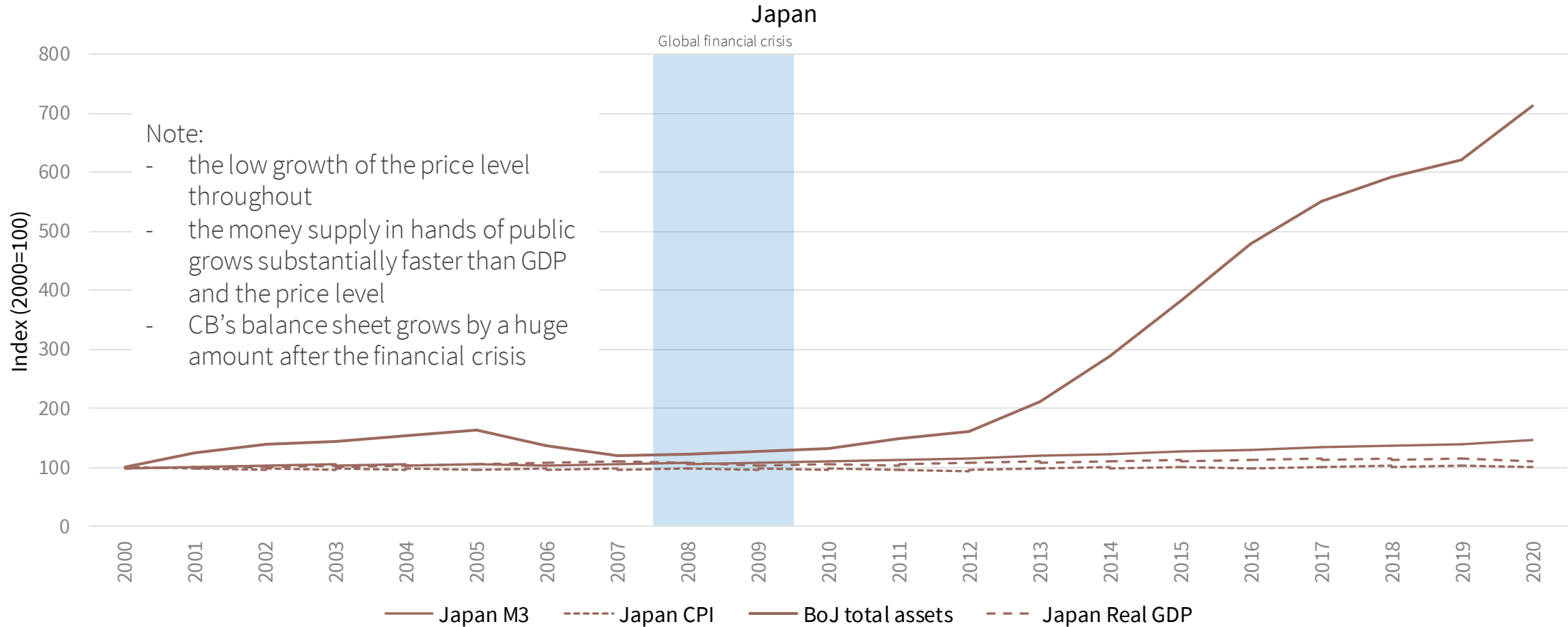
5. When the central bank directly finances government spending (or uses QE) will this inevitably cause inflation?

- Both QE (MP) and direct financing of government spending (money-financed FP) can increase the money supply (in the hands of the public)
- Some people believe that more money means ‘out of control’ inflation
- This is not impossible but to happen, requires one or both of the following:
 - more money holdings in households and firms → **more spending** so that AD rises **above** equilibrium output; the CB ignores this and continues to keep the policy interest rate low as inflation rises further and further above its target.
 - with access to monetary financing, **the government spends** so that AD rises **above** equilibrium output; the CB ignores this and continues to keep the policy interest rate low.

5. When the central bank directly finances government spending (or uses QE) will this inevitably cause inflation (cont.)?

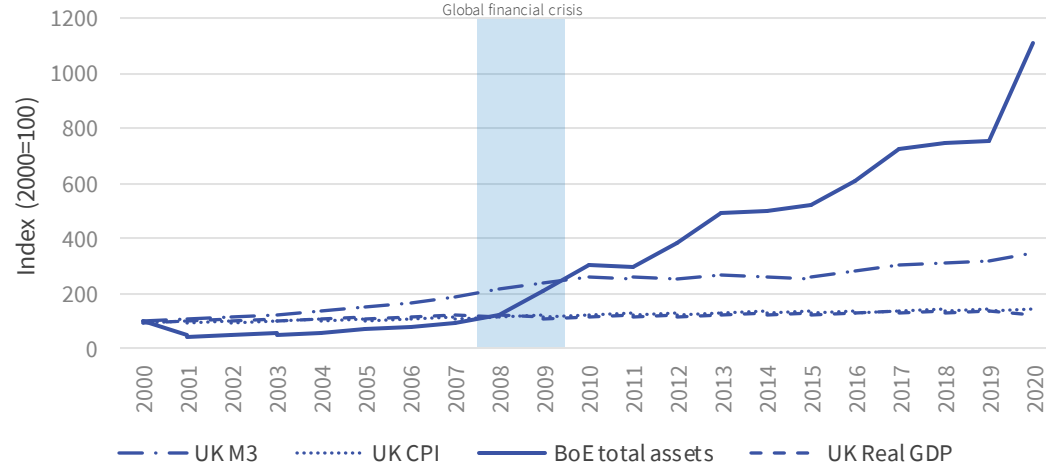
- This is not impossible but to happen, requires one or both of the following:
 - more money holdings in households and firms → more spending so that AD rises above equilibrium output; the CB ignores this and continues to keep the policy interest rate low as inflation rises further and further above its target.
 - with access to monetary financing, the government spends so that AD rises above equilibrium output; the CB ignores this and continues to keep the policy interest rate low.
- Question: why would the CB and government behave like this?
- How to answer: ask what are their objectives and the constraints they face
- Both QE and monetary financing are used in the crisis because private sector spending is too low to sustain economic activity

The central bank's balance sheet, a measure of broad money (M3), real GDP and the Consumer Price Index

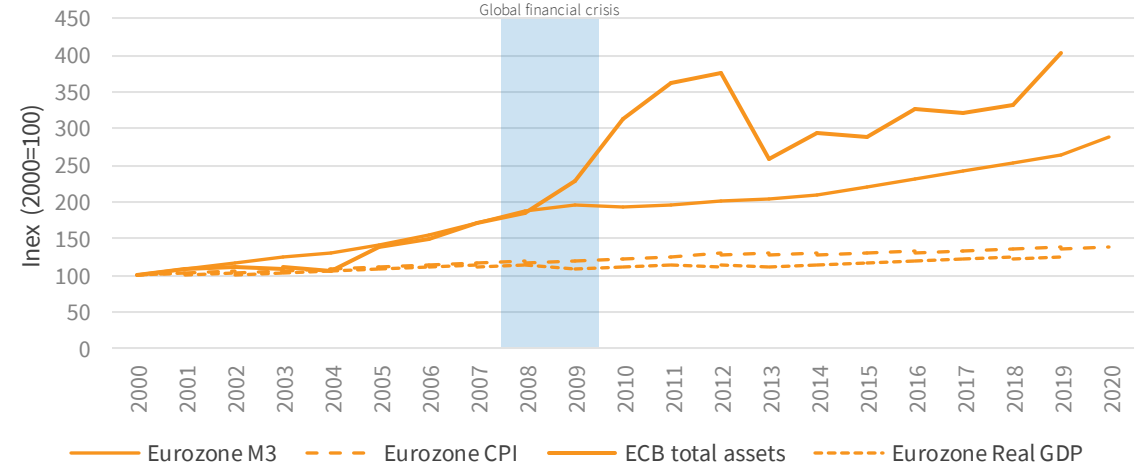


The central bank's balance sheet, a measure of broad money (M3), real GDP and the Consumer Price Index

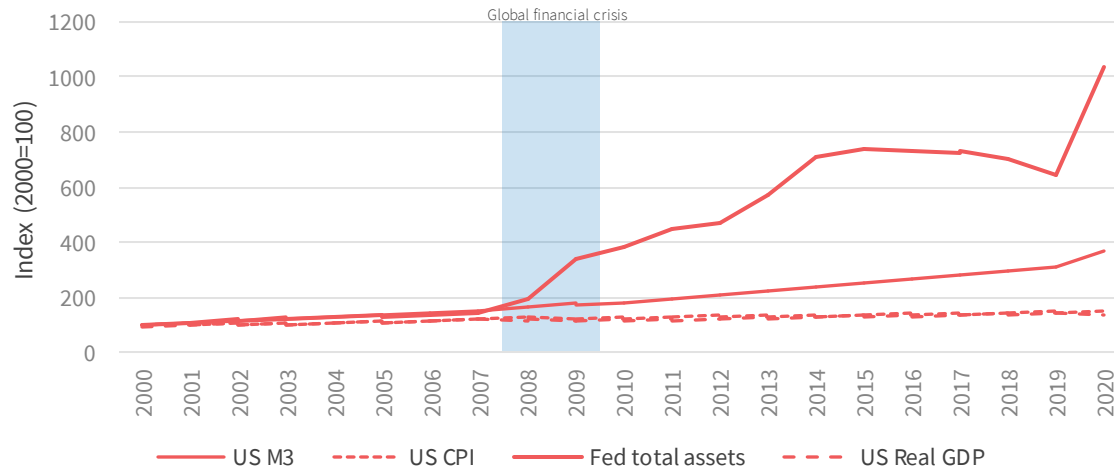
United Kingdom



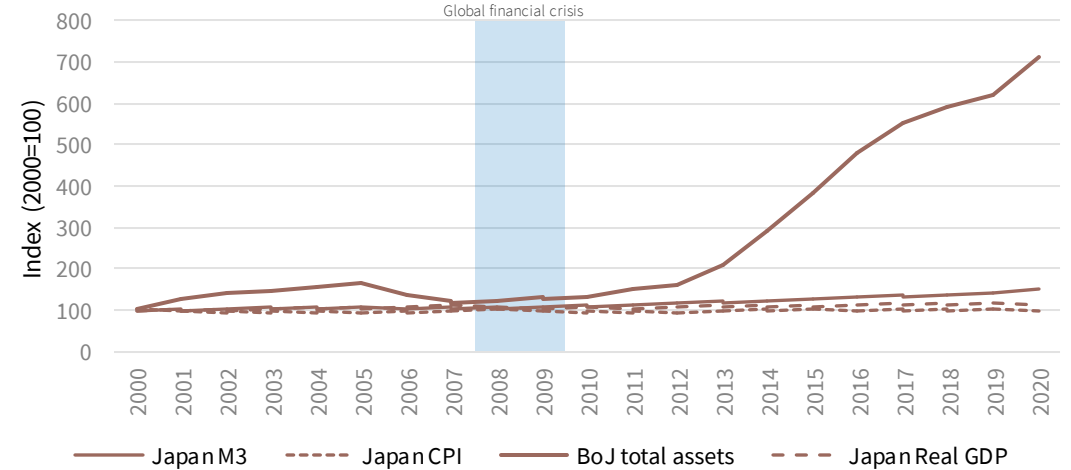
Eurozone



United States



Japan



6. Why is government spending not ‘normally’ funded by money creation?

- In ‘normal times’, the government funds its current spending by *taxation*, and it *borrow*s to finance investment
- Normal times are when the economy is close to equilibrium unemployment with inflation at the CB’s target
- For stabilization of the business cycle, monetary policy is used
- **Potential conflict between MP and FP**: using monetary financing of the deficit ($G > T$) in normal times, would mean MP cannot be used to stabilize the economy
- Example: Economy is at equilibrium U ; government increases spending **financed directly by CB**. Inflation rises because of positive bargaining gap. **CB raises interest rate** to bring inflation back toward target. These two CB policies are in conflict.
- Hence, only in crisis situations, is the government deficit funded directly by CB money creation; otherwise by borrowing

6. Why is government spending not ‘normally’ funded by money creation? Modern Monetary Theory (MMT) says it should be

- MMT proposes that a government with its own central bank (i.e. sovereign currency) can always finance expenditure by printing money
- It should manage too high aggregate demand through raising taxes and selling bonds (necessary at ‘full employment’ because otherwise inflation would rise)
- Since the CB can always create money to buy bonds (and reduce the public debt), there is no difference between bond- and money-finance of the deficit

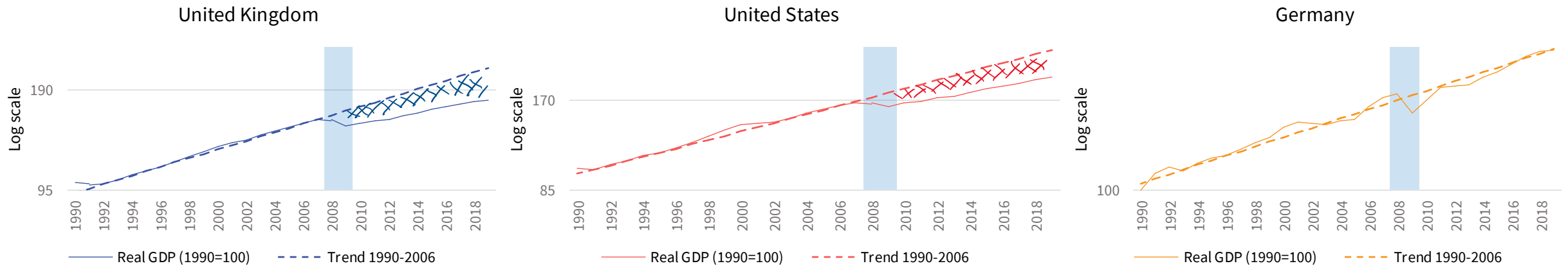
6. Why is government spending not ‘normally’ funded by money creation? Modern Monetary Theory (MMT) says it should be (cont.)

Problems

- Inflation does not suddenly arise at ‘full employment’ – see Phillips curve
- With this policy assignment as ‘normal’,
 - it may be difficult to regain control when inflation begins to rise (see potential conflict between MP and FP ... slide 54)
 - in an open economy, belief that money creation is excessive may lead to depreciation of home’s currency, which will tend to raise inflation (real wages fall and a positive bargaining gap arises)

7. Will it be a V, U, W or L-shaped recession?

Recessions following the global financial crisis (Source: OECD)



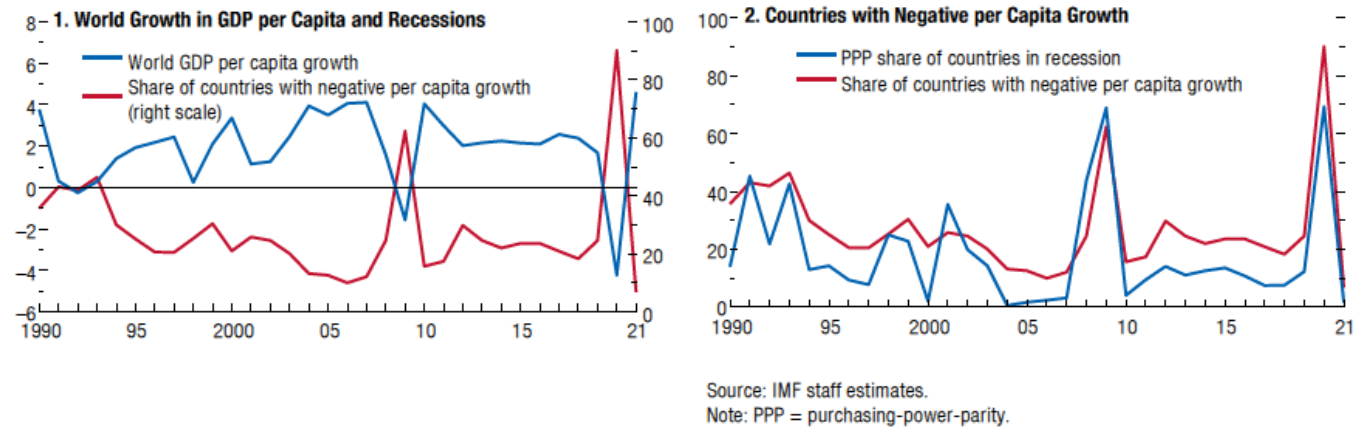
Ratio (log) scale so slope of the dashed line is trend growth rate prior to the crisis

- No-one knows. Not enough is known about the disease
- Compare US, Germany and UK following the global financial crisis
 - UK and US – L-shaped. New growth path is lower than previous: the hashed area between the trend line and actual is GDP that is lost forever in an L-shaped path
 - Germany – W-shaped. Economy returns to pre-crisis path rapidly (V-shape) and then a second shock follows (the Eurozone crisis) so W-shape

7. Forecasts for the global economy

- Fall in global GDP in 2020 will be far greater than in global financial crisis; unlike then, no offset from strong growth in China and other middle- and low-income countries
- Extreme uncertainty around size of downturn and size and shape of recovery:
 - path of pandemic & progress in vaccine
 - intensity & effect of containment policies
 - extent of supply disruption & productivity loss
 - shifts in spending & behaviour

Figure 1.5. World Growth in GDP per Capita and Recessions
(Percent)



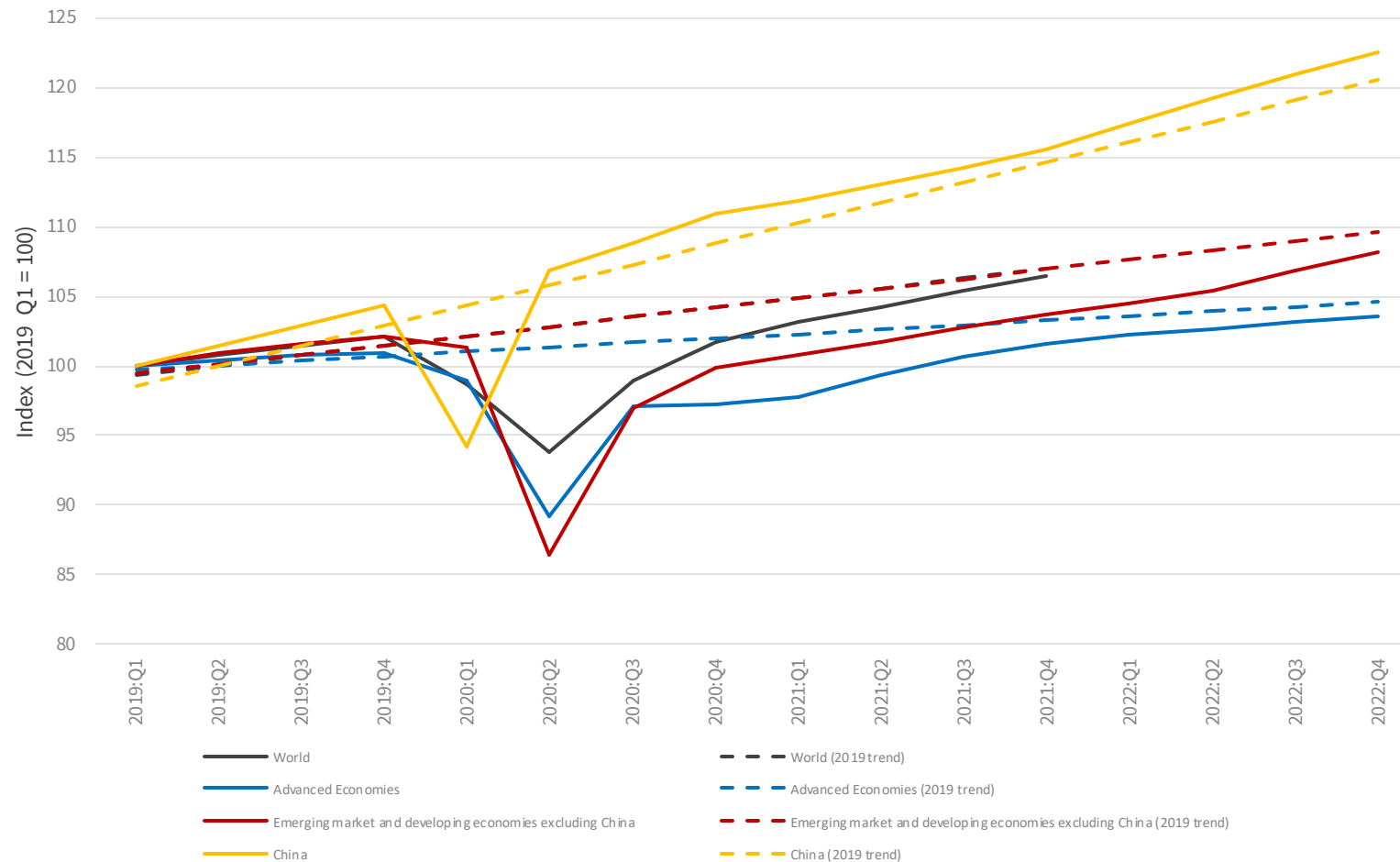
Forecasts released on 14 April 2020.

	WEO April 2020	WEO October 2020
World GDP per capita growth	-4.23%	-5.22%
PPP share of countries in recession	69.30%	74.49%
Share of countries with negative per capita growth	90.1%	84.9%

Last accessed 5 February 2021

7. Forecasts for the global economy

Quarterly World GDP (Source: IMF WEO Update January 2021)



All forecasts on slide released in January 2021, except World (June 2020)

	ESTIMATE	PROJECTIONS	
(real GDP, annual percent change)	2020	2021	2022
World Output	-3.5	5.5	4.2
Advanced Economies	-4.9	4.3	3.1
United States	-3.4	5.1	2.5
Euro Area	-7.2	4.2	3.6
Germany	-5.4	3.5	3.1
France	-9.0	5.5	4.1
Italy	-9.2	3.0	3.6
Spain	-11.1	5.9	4.7
Japan	-5.1	3.1	2.4
United Kingdom	-10.0	4.5	5.0
Canada	-5.5	3.6	4.1
Other Advanced Economies	-2.5	3.6	3.1
Emerging Markets and Developing Economies	-2.4	6.3	5.0
Emerging and Developing Asia	-1.1	8.3	5.9
China	2.3	8.1	5.6
India	-8.0	11.5	6.8
ASEAN-5	-3.7	5.2	6.0
Emerging and Developing Europe	-2.8	4.0	3.9
Russia	-3.6	3.0	3.9
Latin America and the Caribbean	-7.4	4.1	2.9
Brazil	-4.5	3.6	2.6
Mexico	-8.5	4.3	2.5
Middle East and Central Asia	-3.2	3.0	4.2
Saudi Arabia	-3.9	2.6	4.0
Sub-Saharan Africa	-2.6	3.2	3.9
Nigeria	-3.2	1.5	2.5
South Africa	-7.5	2.8	1.4
Memorandum			
Low-Income Developing Countries	-0.8	5.1	5.5

Source: IMF, World Economic Outlook Update, January 2021

Note: For India, data and forecasts are presented on a fiscal year basis, with FY 2020/2021 starting in April 2020. India's growth projections are -7.6 percent in 2020 and 11.0 percent in 2021 based on calendar year.

Assignment on the macroeconomics of COVID-19 using Units 9, and 13-15 of CORE's *The Economy*

Instructions:

- Every question links to an article – please read article and then answer the question.
- Please read questions carefully – do not forget to answer all parts of the question!
- Draw a diagram wherever specifically demanded (hint: if question asks to explain and graph) and when you think it appropriate (hint: if you are hesitating, draw a graph – it's great practice). Apart from question 2, you need to draw the diagrams yourself (either electronically or by hand which you take a photo of and insert into your word document). Copies of graphs taken from webpages or the textbook will not count.
- You always need to explain in words what is happening in your diagrams.
- Label all axes, points on the diagram and lines. Points will be deducted for each missing component.

Assignment on the macroeconomics of COVID-19 using Units 9, and 13-15 of CORE's *The Economy*

Questions:

- This Forbes article predicts that the confinement will stimulate innovation (<https://www.forbes.com/sites/kmehta/2020/03/09/why-coronavirus-will-stimulate-innovation/#5d50419b2283>). If Forbes is correct and the average product of labour increases, what will happen in the Labour Market Equilibrium?
- This BBC article talks about the rapid increase in the American unemployment rate (<https://www.bbc.com/news/business-52050426>). Using Okun's Law, explain how unemployment is correlated with GDP (a graph and words are needed here).
- This Times article talks about how the economic shutdown may lose more lives than the Corona virus (<https://www.thetimes.co.uk/article/economic-crash-could-cost-more-lives-than-coronavirus-study-warns-nxrn3bzbs>). Using the labour market equilibrium model (the supply side of the economy), show how the decrease in the labour force might shift the curve(s) in the model.
- This article in the Guardian discusses how much the Corona virus will cost the global economy (<https://www.theguardian.com/world/2020/feb/19/coronavirus-could-cost-global-economy-1tn-in-lost-output>). Using the multiplier model show how the aggregate demand function will shift. Please explain and show graphically all the variables that will be affected by the crisis. It might be worth searching online what kinds of changes we are seeing in the economy in terms of the variables in the aggregate demand function – C (c_0 & c_1), t , I , G , Y , X & M . Include links to articles providing evidence for your arguments.

Assignment on the macroeconomics of COVID-19 using Units 9, and 13-15 of CORE's *The Economy*

Questions (continued):

- This FT article lists the fiscal stimulus to mitigate the economic costs of the Corona virus across countries (<https://www.ft.com/content/26af5520-6793-11ea-800d-da70cff6e4d3>). Using the Multiplier Model, show graphically and explain how the aggregate demand function may shift with these fiscal policies. Please include an explanation of how the multiplier process will affect the results of the fiscal stimulus – using a numerical example assuming a marginal propensity to consume equal to 0.5 and a fiscal stimulus equal to 40 billion. According to the model, what is the multiplier and how much would the output increase by? Please include a list of examples of fiscal stimulus and how they affect the aggregate demand function.
- This article in the Guardian wonders whether the monetary policy by the European Central Bank (ECB) will be sufficient to prevent an economic crash in Europe (<https://www.theguardian.com/commentisfree/2020/mar/17/italy-europe-covid-economy-ecb-coronavirus>). Using the multiplier model, graphically show how the ECB's quantitative easing would shift the aggregate demand function (at least one graph and words are necessary here). Will the quantitative easing (i.e. huge increase in money supply) cause high rates of inflation in the short term? (Hint: the answer is in this podcast episode: <https://www.npr.org/2020/03/26/821787090/episode-985-where-do-we-get-2-000-000-000-000>)

Beyond macroeconomics

PLANS FOR REOPENING ECONOMIES IN A PANDEMIC

Understanding the COVID-19 crisis – requires using more than macroeconomic concepts

reallocation of labour - 20k Qantas workers hired by government as contact tracers

MACRO mandatory risk-sharing (transfers); other macro tools

Government

Compliance with state authority
Implemented by fiat and elections

Markets

Material incentives
Implemented by prices and competition

reallocation of labour - Amazon hires 100k

virus-testing

NHS call for volunteers

fast-track approval for private-sector developed virus tests

research, production and distribution of vaccine

German health care system

social distancing

Civil society

Reciprocity, altruism, fairness, sustainability, identity (including in-group)
Implemented by social norms and the exercise of private power

Exercise:

Add more aspects of the crisis that you have experienced or read about

Macroeconomics alone is not enough to plan the exit

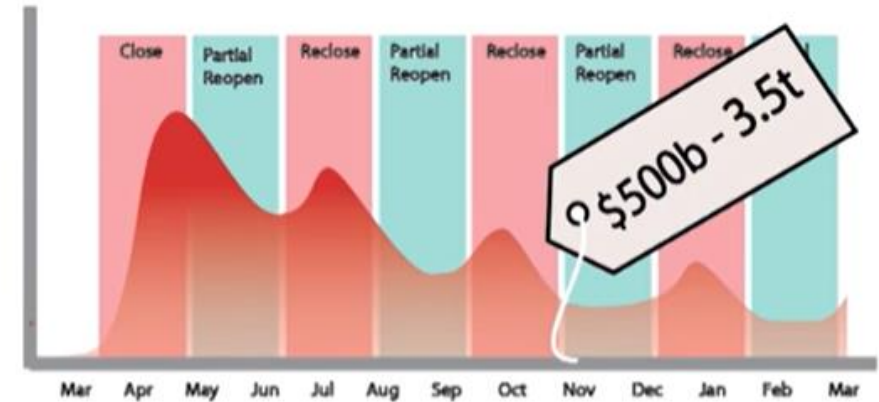
- A pandemic-induced recession is not a normal recession
- Reopening the economy risks a second wave
- Reopening requires
 - a plan to allow economic activity to gradually resume (saving the government expenditure on shutdown costs)
 - government spending on **Testing, Contact Tracing, Social Isolation** (includes retraining)
 - government spending to allow social distancing on public transport

Proposed Pandemic Response Plans

Adaptive Response

- Spreads out cases to avoid overwhelming healthcare system
- Allows people in less-affected areas out earlier, temporarily
- Cycles of closing and reopening
- Every month of shutdown costs \$100 to \$350 billion

US data



Pandemic-Resilient Response

- Open slowly and steadily
- Vastly fewer cases and deaths
- Requires massive investment in testing, tracing, and supported isolation
- \$50 to \$300b in infrastructure investments benefit long-term



These images are based on data on COVID-19 deaths in the US through April 18th 2020 and info from pandemictesting.org. Extrapolations beyond April are rough estimates; real numbers will vary greatly based on policy details and unknown factors.

WHART.CCO

Macroeconomics is not enough – a plan for re-opening the US economy

Roadmap to Pandemic Resilience

Phase 1: Stabilize Essential Sectors

- 🏠 Maintain social distancing
- 👤👤👤 Test, trace, and provide supported isolation to essential workers
- 👤👤 Retrain people to replace covid-positive essential workers
- 👤👤 Experiment with testing, tracing, and certification infrastructure



May

Phase 2: Expand Essential Workers

- 👤👤👤 Expand essential workers to include short, medium, and long-term needs
- 👤👤👤 Address continued shortages in the essential sector
- 🏠 Modify social distancing for expanded essential workers



July

Phase 3: End Collective Stay-At-Home

- 👤👤 Mobilize another 10% of workers to non-essential sectors
- 👤👤 Recruit community organizations and social service agencies to support communities of need
- 👤👤 Temporarily relax regulations to allow necessary modifications to non-essential sectors



Late July

Phase 4: Full Pandemic Resilience

- 👤👤 Return 20% of at-home workers to offices
- 👤👤 Reopen schools



August

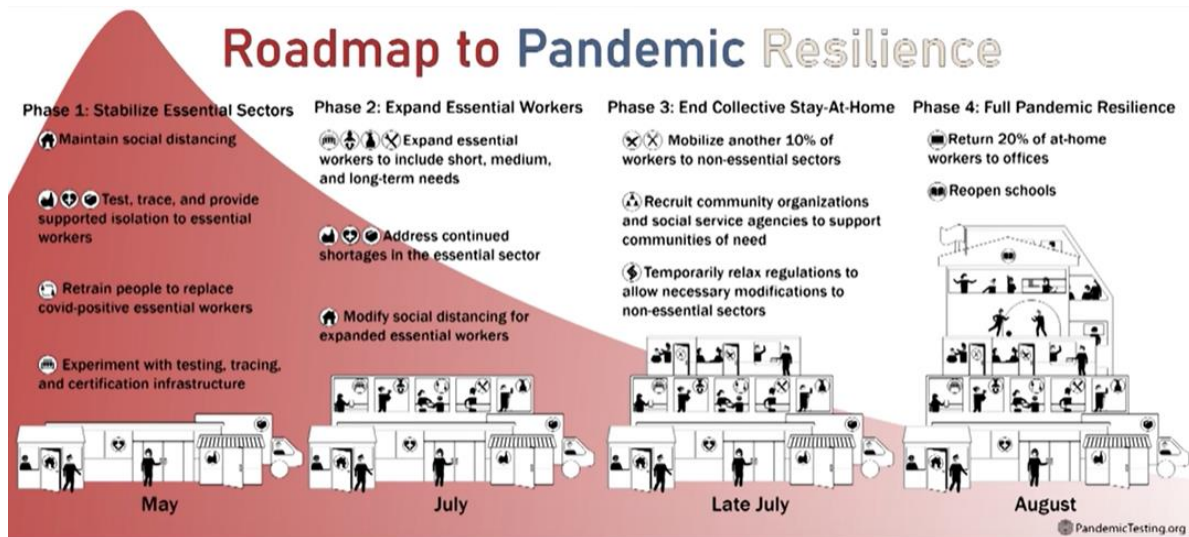
PandemicTesting.org

Opening the economy safely requires using more than macroeconomic tools – example from the *Roadmap to Pandemic Resilience*

- The role of government
- The role of business
- The role of workers
- The role of civil society

Exercise:

Read *Road to Pandemic Resilience*. Edit the following slide to place the measures proposed in the ‘Roadmap’ (the TTSI strategy) into the government, markets, civil society space. Write a 500 word commentary on your reasoning linking to at least 3 sections of *The Economy* or *ESPP*.



After the pandemic – using CORE economics

1. Will the COVID-19 crisis change our economic narrative? Will it change everyday understanding of how the economy works and how it should work?
2. Examples in *The Economy* Unit 17
 - The Great Depression and the Second World War changed the way people in high income countries talked about the economy: left to its own devices it would wreak havoc on people's lives (massive unemployment), “heedless self-interest is bad economics” (Roosevelt), and governments can effectively pursue the public good (provide economic security).
 - As the memories of that era faded along with the social solidarity and confidence in collective action that it fostered, another vernacular took over: “there is no such thing as society” (Thatcher), you get what you pay for, government is just another special interest group.
3. Is the COVID-19 crisis another opportunity for a shift in understanding about the economy and about the role of citizens, government and the market in making it work better?
4. What is the likely impact, if any, on climate crisis awareness and policies?

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Unless stated otherwise, all links have been accessed on, and were successfully working as of, 3 August 2020.