

Covid-19: A virus-driven ice age

Do central banks still have any ammunition left? What is the endgame for fiscal policies? Which eurozone countries are the most vulnerable? Is this the time for a Eurobond? And what could an exit from the lockdown measures look like? Also, at some point in time, the crisis will be over. How will the world look then?

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How will the world recover from Covid-19?

ING's Carsten Brzeski outlines our four scenarios on how the world could recover from the coronavirus crisis.

[Watch video](#)

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There's seldom a straightforward return from unorthodox policies

The last few weeks have seen an unleashing of fiscal and monetary firepower that overshadows that seen during the global financial crisis. Some central banks have cut rates to levels never previously reached. Others have reverted to quantitative easing. Still others have started unorthodox measures for the first time ever. This monetary firepower is nothing though compared to the weight of fiscal stimulus measures.

These stimulus packages are growing by the day, but seem to be converging on rates equalling or in some cases, exceeding 10% of GDP. Fiscal deficits for these countries, as a proportion of GDP, will be much larger still, as tax revenues collapse along with the GDP denominator. We're mulling deficits in the 25% of GDP range for some major economies, including the US and Japan. But despite huge existing piles of debt, governments and central banks know they must spend now, and worry about the consequences later, or risk losing a huge chunk of their normally productive economies, for ever.

The experience of the global financial crisis has shown that unorthodox monetary policy is something of an “event horizon”, from which there is seldom a straightforward return. A good case in point would be the European Central Bank, which took until 2018, 10 years after the financial crisis, to stop its own quantitative easing programme, but never managed to shake off negative deposit rates and is now back on QE. Sweden’s Riksbank too has famously tried to return to normalcy, raising its repo rate to zero in December 2019. That timing looks spectacularly ill-fated now.

Japan has been in this situation since at least 2001 and there is almost no chance of them pulling away from the vicious circle of low (negative) rates and low productivity that seems to be gripping most major nations (Japanification). Only the US successfully flirted with a return to normal monetary policy in 2018, and that didn’t last long either, though they did better than most.

Fiscal policy is doing the heavy lifting in this crisis

Part of the problem here is the non-linearity and non-symmetry of monetary stimulus. At low (even positive) rates, policy stops having a beneficial impact, and indeed can become detrimental to growth. But it doesn’t seem that raising rates back again is actually beneficial, taking central banks to the 'damned if you do, damned if you don't' black hole of monetary policy. That looks likely to be the experience of many central banks currently trying to help their governments by lowering their borrowing costs as they try to spend their way out of the crisis.

Fiscal policy is no less easy a way out, though in the short-term, it provides a much bigger lift to the economy, so it is clear why so many governments are making it their principal tool given the paucity of monetary ammunition available to many of them.

What should be done with all the extra debt?

But the problem with a 10% stimulus package this year, is what to do the following year? Failure to replicate means a switch from fiscal boost to fiscal drag. And like any drug, going 'cold turkey' after a massive fiscal binge will rarely end happily. So governments tend to keep spending just to stay out of technical recession. It doesn’t take too many years of this to end up like Japan, and debt-to-GDP ratios in excess of 300% - with no credible possibility of ever conventionally returning to sub-100% levels.

The answer is monetary financing of the deficit. In its most innocuous form, this could entail a nation’s central bank converting its direct holdings of government securities purchased through quantitative easing, into non-interest bearing perpetual bonds. This is almost the same as saying that the debt has been annulled, but avoids the central bank having to write off its capital and perform yet another monetary conjuring trick of recapitalising itself with printed money. It is though, without the same fanfare, equivalent to what is otherwise called 'helicopter money'. Such policies had already been considered a likely endgame for economies such as Japan. Now, most economies will find themselves in a similar position.

So if not now, when?

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End of the world as we know it?

While all of the focus right now is on how to solve the health crisis, flatten the curve of infections and tackle the adverse economic impact from the lockdowns, there will be a time after the crisis. A time when normality returns. The question, however, is whether this is the same normality or whether we are currently witnessing the end of the world as we know it.

As discussed in other sections of our Economic Update, there will be an aftermath to the economic emergency measures. Low interest rates for even longer or maybe even forever and ballooning government balance sheets will definitely shape the post Covid-19 era. In the eurozone, heated discussions about the adverse effects of the ECB's unconventional measures, as well as tensions over debt sustainability and the right macro policy prescription, are likely to return with a vengeance. But there is more. Based on recent experiences during the Covid-19 crisis, more structural changes also look likely. Here are some of those potential changes.

1 Narrowing the wage gap

For some, getting sick means going on paid leave and retaining access to high quality healthcare services. For others, especially those with part-time contracts, it means either losing their job or having no or limited access to healthcare services. However, it wouldn't be surprising to see higher

wages for healthcare workers, as demand for their services peaks and supply shrinks, not least because of lower cross-country mobility as a result of lockdown measures. The crisis has (at least temporarily) redefined the term systemic-relevant employees. We could also see higher wages for low-wage service workers, and perhaps even larger (unconditional) basic income schemes. Gig economy workers could be hit hard though. In Italy and Germany, between 2.5 and 5% of the working population gets at least 50% of their income from the sharing economy. The gender pay gap may get worse, as women might be forced to take time off work to look after loved ones.

2 Social distancing here to stay

Pandemics often come in waves and social distancing is one of the key tools to manage the spread. These measures will remain in full force, even when this immediate outbreak is over. This could potentially have a significant impact on social life, sports and culture but also on the way we work. Just think of working in cubicles and flex desks. Will this still be possible with continued social distancing? Will the increase in people working from home reduce the demand (and prices) for office space? Will social distancing and the fear of future pandemics reverse the entire trend of the sharing economy? Will there be a renaissance of private cars? More broadly, will this be a turning point for urbanisation – at least in the developed world? These are just some of the many questions that remain to be answered in the coming weeks and months.

3 De-globalisation

We don't know if the coronavirus pandemic means the end of globalisation yet, but it is highly unlikely that we will return to business as usual. Global trade will suffer the most and perhaps even make a comeback at some point. However, since countries have been exposed to the fragilities of global supply chains (e.g. medical equipment hoarding), they'll have to learn how to cope with long periods of economic self-isolation, especially as pandemics often come in waves. Also, around the world, there have been several rather nationalistic reflexes in dealing with the crisis; be it export bans on face masks, attempts to buy foreign companies, which are trying to find a vaccine, or simply considering stopping foreign companies on domestic soil from exporting crucial materials.

4 Next steps for digitalisation

As working from home accelerates, there will be higher demand for internet bandwidth, but also higher concerns around cybersecurity, which ultimately could push authorities to boost the speed and resilience of digital infrastructure. Platforms for all kinds of experts as well as platforms to provide social services should receive more interest as a result of the crisis. Moreover, we wouldn't be surprised if consumers were to make more use of contactless payments and reduce their use of cash going forward, perhaps even in those countries where cash is king, like the US and Europe.

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Fiscal spending to the rescue!

Globally, measures taken by governments to mitigate the economic impact of the Covid-19 crisis all roughly follow similar lines.

Support has been given to keep people at work, taxes have been deferred, various forms of household income support have been granted, and liquidity and guarantees have been provided to make sure that healthy businesses do not go bankrupt in the period of restrictive economic measures and its aftermath. Differences in size are large though, with countries like Australia spending a share of GDP in double-digits, while Japan is spending just 0.1% of GDP.

It's not easy comparing these numbers as spending takes different forms over different timeframes and the lines aren't always clear between guarantees, loans and cash out fiscal stimulus.

Fiscal measures are similar around the globe, but very different in size and detail

Additional fiscal spending (everything except liquidity and guarantees) % GDP	2.3%	7.7%	6%	4.5%	1.9%	1.4%	1.4%	2.5%	2%	0.1%	0.9%	6.6%	7.5%	11.3%
Short-time working	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Tax forbearance	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Liquidity and guarantees	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Household income support	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

Monetary policy so far

Monetary policy has been quick to react to the Covid-19 outbreak, and in many cases central banks are pretty much 'all-in' with their efforts to support the economy. The table below shows what's been done so far across the major central banks, and what might still be possible.

Central bank actions compared

	Rate cuts	QE	QE assets	Commercial paper purchases	Counter-cyclical buffer cut	Targeted loans to banks	Other schemes	What's still possible?
Federal Reserve	+ 150bp	Unlimited	Treasuries, MBS	Yes	-	-	Corporate bond buying program	Extend QE to other assets (corp. bonds or equities). Negative rates not considered
European Central Bank	No	EUR1.20tn euro + EUR750bn PEPP	Euro sovereign bonds, corporate bonds	Yes	Yes	Yes, TLTROs, LTROs, dual rates	Collateral rules eased, tiering system for deposit facility, invited banks not to pay dividends	More QE, rate cuts, purchases of bank bonds, ETFs
Bank of Japan	No	No target changes, text tweaked to "active" buying	Stepped up existing ETF and J-Reit purchases	Yes, increased upper limits of CP and Corp bond purchases	Already 0%	Yes, 1-year zero interest rate loans for commercial banks	No	Debt monetization through annulling direct JGB holdings
People's Bank of China	+ 30bp	No	No	No	No	Yes - aimed at SMEs	Permitting delay of loan repayments	Counter-cyclical buffer cut
Bank of England	+ 65bp	£200bn	Gilts, corp. bonds	Yes	Yes (to 0%)	Yes - aimed at SMEs	Collateral rules eased	Negative rates ruled out. More QE possible
Bank of Canada	+ 150bp	C\$5bn/week	Government bonds	Yes	Yes	-	Purchasing mortgage bonds, banker's acceptance and provincial money market securities	Expand & extend QE to include other assets. Negative rates unlikely
Reserve Bank of Australia	+ 50bp	In pursuit of 0.25% 3Y yield target, so in principle, unlimited	Gov't bonds, semi-gov't bonds	No	Already at 0%	Yes, AUD90bn Term funding facility	Forward guidance - OCR not to be raised until inflation target met	Outright purchases of bank paper
Reserve Bank of NZ	+ 75bp	Yes, up to NZD30bn in next 12 months	Government bonds	Not outright, repo only for Asset backed CP	n/a	Not yet, term lending hinted as possible	OCR will not be raised for 12M - guidance	Mildly negative rates, interest rate swaps
Riksbank	No	SEK300bn	Gov't, municipal, covered bonds	Yes	Yes (to 0%)	Yes	Collateral rules eased	Cut repo rate into negative again
Norges Bank	+ 125bp	No	No	No	Yes (to 1%)	Yes	Threatened NOK intervention. Collateral rules eased	Negative rates & QE not viewed as feasible
Swiss National Bank	No	No	No	No	SNB has submitted a proposal requesting to reduce the buffer to 0%	-	FX interventions and a new SNB COVID-19 refinancing facility, aimed at strengthening supply of credit	QE or rate cut possible if FX interventions aren't enough to limit appreciation of the Swiss franc (not our base case)

Source: ING

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Pre-conditions for an end to the lockdown

In some countries which have not yet seen the peak in infections, there have been calls for a quick exit from the lockdown measures. The social and economic costs of the lockdown have been deemed by some as too severe to justify the strict social distancing measures. Also, as the weather improves and the Easter break arrives, it will be harder to keep people at home. Supporters of this view also cite the potential adverse impact on mental health from an indefinite lockdown period. This balancing act, between containing the virus outbreak and limiting the social-economic costs, will become more complicated and steer the debate about how and when to exit the lockdown.

Earlier this week, the Danish government was the first government in Europe to announce a possible end to the lockdown measures after Easter.

In general, before any government removes emergency measures, we would anticipate seeing the following criteria:

1. New case numbers falling for a sustained period (say 14 days).
2. Health services are able to deal with cases that require hospitalisation without recourse to emergency measures – field hospitals, military support etc.

3. In a position to fully test potential cases, trace and test their contacts, and monitor them.

A movement to a less restricted environment is likely to be a gradual process but could enable a phased move back to work for some businesses and a relaxation of social distancing measures. For bigger countries, this could be phased in regionally.

A difficult balancing act

In much the same way that countries around the world responded gradually to the Covid-19 outbreak and with a view to their own national circumstances, it is reasonable to expect that most countries will emerge from the emergency measures they have imposed at a time and a speed that is determined primarily by what is happening in their own countries, rather than what is happening at a global level.

But we can make some general assumptions:

1. **First in, first out:** The countries that were first exposed to Covid-19 are also the furthest along the pandemic curve, and will be the first to be able to remove restrictions on travel and individual movement. We are already beginning to see this in China. South Korea may follow. In time, some of Europe's current hotspots could see an infection peak before countries such as the US.
2. **Second-wave:** A second wave is always possible as restrictions are relaxed, and if imported cases are not prevented by maintaining stringent immigration controls.
3. **The global view is important:** Where countries have limited the spread of the infection with tight testing, tracing and isolating policies, along the lines recommended by the WHO (Singapore, Hong Kong), restrictions may need to remain in place longer, until either the global situation is less threatening, or effective treatment has been developed. Until then, they remain islands of potential infection.

A difficult balancing act between the desire to restrain the virus with a need to restart the economy may almost inevitably lead to some restrictions being eased prematurely. Seasonality of the virus, if this turns out to be a feature, may also encourage premature easing and second waves of infection before a sustainable easing of restrictions is possible.

Where countries see new cases begin to rise again or see a rise in non-traceable cases, they will have to re-implement restrictions. Such reversals could spur a social backlash and pushback against restrictions, which may start to be ignored and lose their effectiveness.

When will it really end?

The return to something that resembles genuine 'normality', at which point we could reasonably say the pandemic is over, will probably not take place until:

1. Such a large proportion of the population has been infected with the virus that herd immunity exists (80%+).
2. An effective vaccine has been established (consensus view is a 12-month horizon).
3. Effective treatment for the conditions caused by the infection has been established.

None of the three conditions above can be taken for granted. There is no vaccine to the common cold - another coronavirus. And immunity on the basis of prior infection may not be total, or long-lasting (as with the common cold), so herd immunity may not be a feasible or realistic goal.

There are few specific effective treatments for respiratory infections, and the best hope for treatment may rest with the family of [antivirals such as Remdesivir](#). Trials are underway. Production and licensing issues may slow take up and use.

In short, in our base case scenario, social and economic pressure will be at such high levels that some European countries will try to ease some of the lockdown measures at the end of April. It may not be until May/June before countries now suffering large-scale infections in Europe (later for the US) are in a position to ease back their restrictions on travel and movement.

It may take until the end of the year or the New Year before countries are operating closer to 'normality'.

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Source: Shutterstock

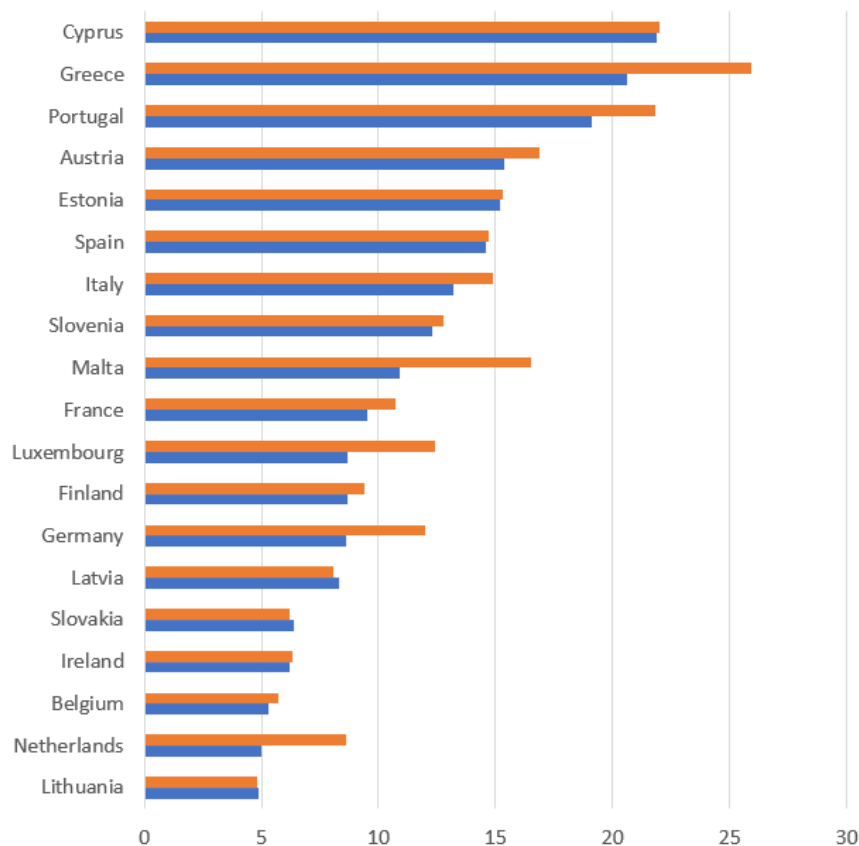
Lasting damage

The most important factor to judge the severity of this crisis is not necessarily the depth of the GDP decline but whether there is any lasting damage to the economy. The chances of a V-shaped recovery differ between eurozone countries because of factors such as company size, exposure to tourism, the share of vulnerable workers and the cushioning of automatic stabilisers.

As the lockdown measures taken to counter the virus make it impossible to travel for leisure, the immediate growth impact will be larger for countries with a large tourism and travel sector. Tourism is particularly important in Italy and Spain, accounting for at least 13% of GDP and about 15% of total employment. Within the eurozone, Cyprus, Greece and Portugal are the three countries with the largest tourism and travel sector. Even though the spread of the virus, at the moment, is relatively limited in these three countries, the growth impact will be large. As fear of travelling will probably last longer than the pandemic itself, it is difficult to expect an immediate recovery once the lockdown measures are lifted. Research from the [World Travel and Tourism Council](#) shows that the average recovery time for visitor numbers to a destination after a major

viral epidemic is about 19 months, which suggests that the recovery is unlikely to be V-shaped for the countries that heavily depend on tourism.

The importance of the tourism and travel sector in the eurozone

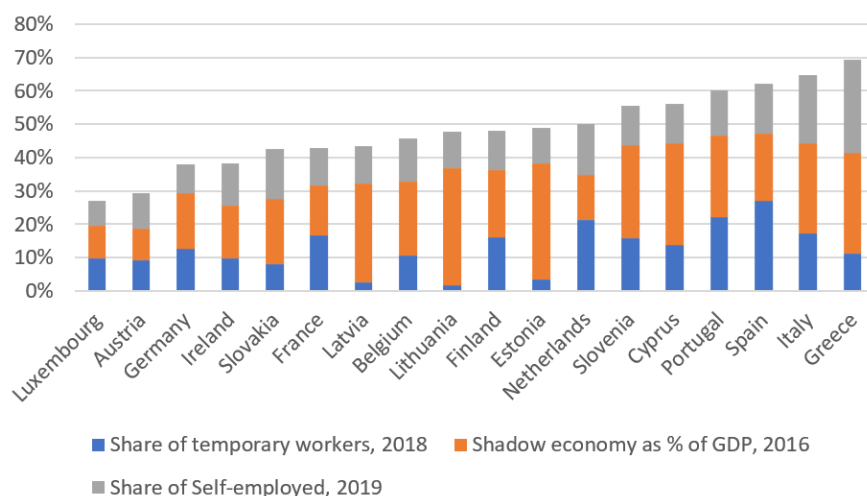


Source: World Tourism and Travel Council

The labour market

The structure of the labour market can also make a country more vulnerable to the Covid-19 shock. Workers in the informal sector have no social protection and are more difficult to reach with targeted measures, while self-employed and temporary workers generally have lower social protection. Moreover, a high share of temporary workers make the labour market more cycle-sensitive, meaning that a large number of people can become unemployed in recessions. Here too, Spain and Italy are among the countries that do not score well. These two countries are in the top four in terms of the share of self-employed and temporary workers. The Spanish experience from the Great Recession gives reason to worry. The unemployment rate rose to 26% in 2013 partly due to the high share of temporary workers pre-crisis, and even though some labour market reform has taken place, temporary workers remain vulnerable.

A high share of vulnerable workers makes a country more sensitive to the Covid-19 shock



Source: Eurostat, Kelmanson et al. (2019)

Company size and tax systems

Another interesting angle to judge the sensitivity of an economy to the Covid-19 shock is to look at the size of companies. Smaller companies generally have limited financial, managerial and technological resources. It is, for example, more difficult for small firms to respond to the crisis with technological solutions such as telework. [Academic research](#) shows that smaller and younger enterprises are more vulnerable to exogenous shocks. Here too, southern countries are in a bad position as they have a high share of small companies.

The impact of an economic shock is also dependent on the fiscal system. Tax and benefit systems cushion economic shocks, on average about 35% of the impact on household incomes is absorbed by the tax and benefit system in the EU, according to the European Commission. This differs a lot by country though. Austria sees 45% of an income shock absorbed by automatic stabilisers, closely followed by Ireland, Luxembourg, Finland and Germany. At the bottom of the list ranks Estonia, Spain and Malta, but also Greece and Slovakia have a shock absorption of under 30%. Italy ranks just above that, also below average. This indicates that the social safety net in most northern economies is more developed than in the southern economies, adding to the vulnerability.

South more vulnerable than the north

Southern eurozone economies seem to be more vulnerable to this economic shock than the northern member states. The larger exposure to tourism, smaller automatic stabilisers, larger share of vulnerable workers and higher chance of bankruptcies due to firm size all contribute to an uneven recovery once the virus retreats and restrictive measures are lifted.

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Credit, where credit is due

In the current crisis, almost all European governments have reacted much faster and more aggressively than they did during the financial crisis. Whether it has been the measures to limit the outbreak of the virus or the measures to limit the adverse effects on the economy, the policy response has been unprecedented. The fiscal rules of the Stability and Growth Pact will be suspended and almost all governments are providing guarantees and liquidity, labour market support and outright fiscal stimulus.

The eurozone's ability to tackle the crisis is – to some extent – determined by the public finances of each country

Governments were quick to act even as the European Central Bank was prevaricating, with President Christine Lagarde initially arguing that it was not the ECB's responsibility to narrow spreads between government bond yields. But while individual countries have followed similar patterns, they have not really coordinated their efforts. Looking ahead, the

lack of a pan-eurozone fiscal reaction increases the risk that the euro debt crisis will return, once the dust from the current crisis has settled.

The main problem is that the eurozone's ability to tackle the crisis is – to some extent – determined by the public finances of each country. Right now, there is undoubtedly a strong political will to allow for higher deficits and debt. But the risk is that this disappears once the crisis is over. Fiscal rules will be re-established, forcing highly indebted countries to put in place austerity, further feeding populism and anti-European sentiment.

At the same time, doubts about debt sustainability will resurface, leading to a widening of spreads. Eventually, this could lead to a return of the euro crisis.

Coronabonds, Covid-19 perpetuals, ESM credit line?

The economic discussion is often mixed with a political discussion about (the lack of) European solidarity. We don't want to go down that route and rather stick to the economics. When looking at the options for how to avoid a new crisis on the back of the current fiscal measures, a distinction between liquidity and solvency problems needs to be made, that is, if liquidity problems can eventually become solvency problems and vice versa. However, this distinction is essential in the current debate, with several options being discussed:

- **Coronabonds**

The ultimate option would be to introduce a Covid-19 perpetual Eurobond or a Coronabond. This would be a one-off Eurobond, exclusively linked to financing the fiscal policies to tackle the current crisis. It would be a common bond, which brings back the old controversy about the advantages and disadvantages of debt mutualisation. To keep it short here, we will skip a repetition of these arguments. As setting up a structure to issue common bonds would take a lot of time, a potential shortcut could be to introduce this via the European Stability Mechanism. The ESM would actually issue this Coronabond and hand over the proceeds to the member states. Another advantage is that it would probably be easier for the ECB to increase the issuer limit for a supranational entity (like the ESM) than for individual member states, which would imply that the ECB could fund this bond for the large part, if not entirely. However, barring such implicit monetisation by the ECB, a Coronabond would not necessarily improve debt sustainability, it would only make any future debt forgiveness easier as it distinguishes between Covid-19 related debt and legacy debt.

- **Covid-19 perpetuals**

A national solution which eventually could be turned into a European solution. Eurozone countries could agree to issue perpetual bonds up to a certain percentage of GDP. A Covid-19 perpetual bond. Currently, the average fiscal stimulus in eurozone countries is around 2% of GDP. The ECB could then buy these bonds to a certain extent, without risk-sharing: this means that the credit risk lies at the level of the national banks, also implying that the largest chunk of the interest income remains within the national bank of every member state. Hence, financing costs would ultimately be low. Issuing national perpetuals in a coordinated manner could be one pragmatic step away from Eurobonds, actually implying some form of monetary financing.

- **ESM credit line**

A so-called enhanced conditions credit line (ECCL) from the ESM's precautionary credit line toolkit could be another way to tackle financing problems. Such a credit line does not

require a debt sustainability analysis beforehand and would give countries access to a credit line of up to 2% of GDP. It could be crafted to only finance Covid-19 related expenditures. However, the disadvantages of an ECCL are short maturities, stigma and the inter-governmental structure of the ESM, which could complicate decision-making. Also, an ECCL would be a country-by-country solution to a common shock, adding to possible divergence across the eurozone, unless all eurozone countries decide at the same time to collectively apply for an ECCL. It would be the preferred solution of the countries opposing the common bond or some form of debt mutualisation.

No debt sustainability without debt monetisation or writedowns

To be clear, without central bank buying, all three options mainly tackle possible liquidity problems and would keep funding costs low. However, none of the options would reduce the debt burden itself, nor the deficit. Therefore, some kind of debt monetisation, such as permanent refinancing of the bond (which in the case of a perpetual means keeping it on the balance sheet forever) or eventually debt write-downs would have to take place.

Some kind of debt monetisation... would have to take place

The suspension of the fiscal rules, European Investment Bank funding and the ECB's Pandemic Emergency Purchase Programme, as well as the ESM and the ECB's Outright Monetary Transactions, are the best firefighting brigade that the current eurozone set-up has to offer in order to address the speculation about a new euro crisis.

The political willingness to take the next step of debt mutualisation is not there, yet. As a consequence, debt mutualisation through the backdoor will continue and the ECB's 'low for longer' will eventually become a 'low forever', as well as perpetual refinancing of the ECB's sovereign bond holdings.

In fact, it will eventually be a trade-off between debt mutualisation and 'low-interest rates and QE forever'.

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Countries hit most by the coronavirus value chain shock

Even before Covid-19 led to country-wide lockdowns, supply chain shocks and weak foreign demand were already taking a toll. Small open economies, such as...



The economic damage that Covid-19 inflicts on a country is not only driven by the government policies to stop the spread and 'flatten the curve' but also by disrupted supply chains and the impact on individual companies. These disruptions started even before countries went into lockdown and will continue after they are over.

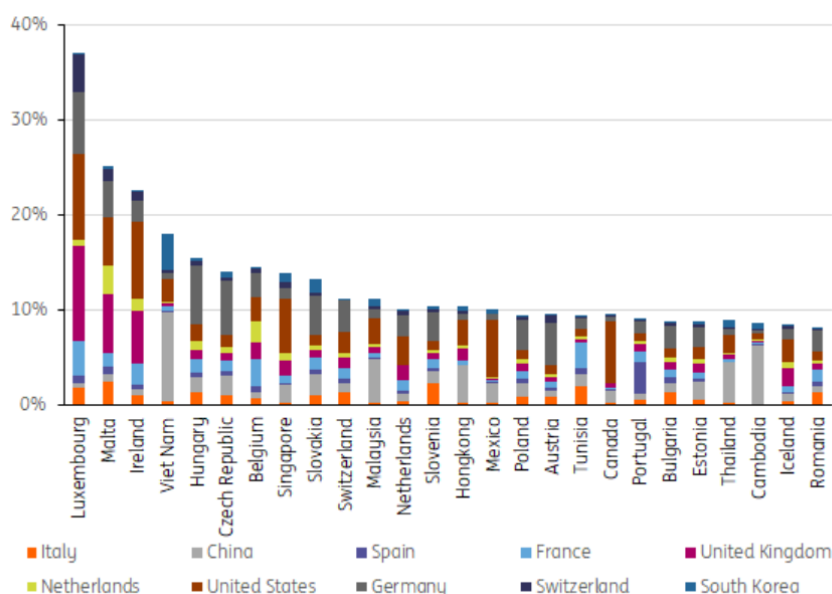
Imports

A shortage of intermediates (imported parts and materials to make products) by countries that were hit by the virus early on led to interruptions in the production process of other countries before the virus arrived. The damage will be larger, the more a country depends on the supply of intermediate goods from countries whose working population was hit hard by the virus. Chart 1 shows the dependency of countries on inputs from the top 10 countries with the highest absolute number of deaths due to the coronavirus. Since there are many countries where infections are measured incompletely, we use the number of deaths as an indicator for how much production is likely to have been shuttered in each country. We realise that this is not a completely accurate measure of production capacity that has been shut down. But more accurate indicators, like the

utilisation rates for industries are lagging too much to provide useful information at this point in time.

Chart 1 shows that countries like Vietnam and Ireland are among the top five countries that have suffered most from falling production in countries with a lot of casualties. The difference between Asian countries like Vietnam, and European countries like Ireland, is that they have been hit at different moments in time. The coronavirus crisis started in China so Vietnam and other Asian countries that are very dependent on Chinese inputs, like Singapore, Hong Kong, Malaysia, Thailand and Cambodia (see chart), were first to be hit through this value chain effect.

Chart 1: Top 25 countries most dependent on inputs from top 10 countries most hit by COVID19 (#deaths)



Source: OECD- ICIOT, ING

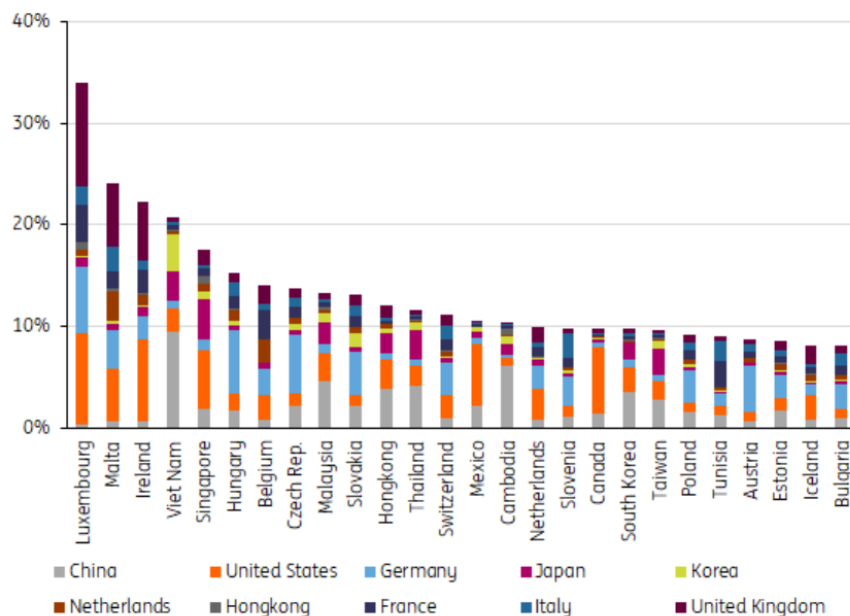
Now that the virus has spread to Europe and is increasing in the US, the chart shows that countries like Luxembourg, Ireland, Hungary, the Czech Republic and Belgium are suffering through the input side of their value chains. Currently, 10 out of the 15 countries that are most exposed to shortages of supplies are European.

The US is a relatively closed economy and therefore less hit by the lack of supply of foreign intermediate goods, but the economic fallout in the US due to the quick spread of the disease, generates significant problems for Canada, which is heavily dependent on supplies from the US (see chart 1).

The connectivity of an economy to countries with the most deaths is especially important if the latter are important suppliers of intermediate products to world markets. Chart 2 shows the 10 largest suppliers of world markets. The chart shows that eight out of the 10 largest suppliers of world markets are also in the top 10 countries that have been hit most by the virus (chart 1). By both measures, Luxembourg, Malta, Ireland, Vietnam, Singapore, the Czech Republic, Hungary and Slovakia are in the top 10 countries most affected by interruptions in the supply of intermediates of

countries hit most by the virus. Of the 10 largest economies in the world, Canada stands out again as most vulnerable.

Chart 2: Dependency on inputs of 10 largest suppliers of world markets



Source: OECD- ICIOT, ING

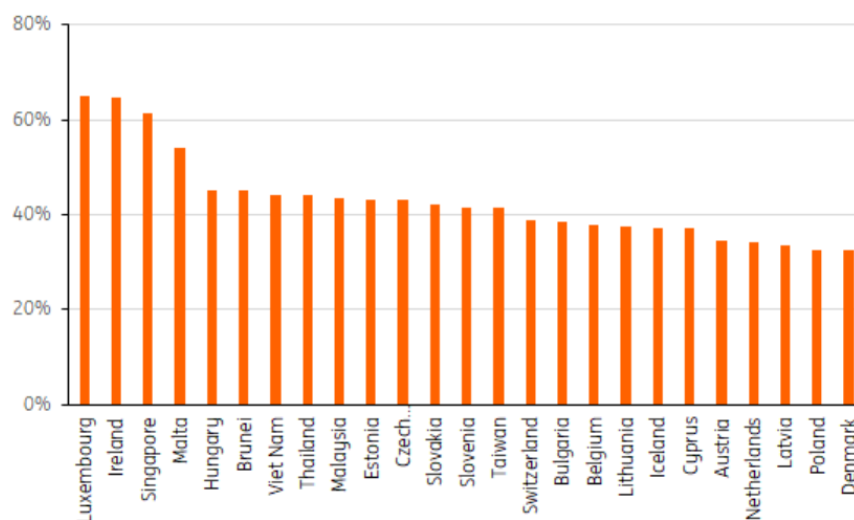
Exports

Open economies are not only seriously affected by the virus through their imports of intermediates, but also through their export channels. Even after the virus has been brought under control domestically, an open economy will continue to suffer from the virus because of falling demand in countries that are still struggling with the crisis. Figure 3 shows which countries are most dependent on exports.

Chart 3: Dependency on foreign final demand

Value added of exports as % of total value added in a country*

*Total value added in a country is a proxy of GDP, but it ignores taxes, subsidies, etc



Source: OECD- ICIOT, ING

Assuming that the virus suppresses spending around the world, countries that rely on exports will be the most heavily affected. Countries that export only a small portion of production (like the US, India and Brazil) will suffer less than countries that are very dependent on foreign demand (like Ireland, Hungary, Singapore and Vietnam). Chart 3 shows that Luxembourg, Malta and Ireland are most dependent on foreign demand, mostly driven by the services sector. For Vietnam and Hungary, the manufacturing industry is hit most by falling external demand. Of the top 10 largest economies in the world, Germany is most affected through this (export) channel of the value chain, followed by Canada.

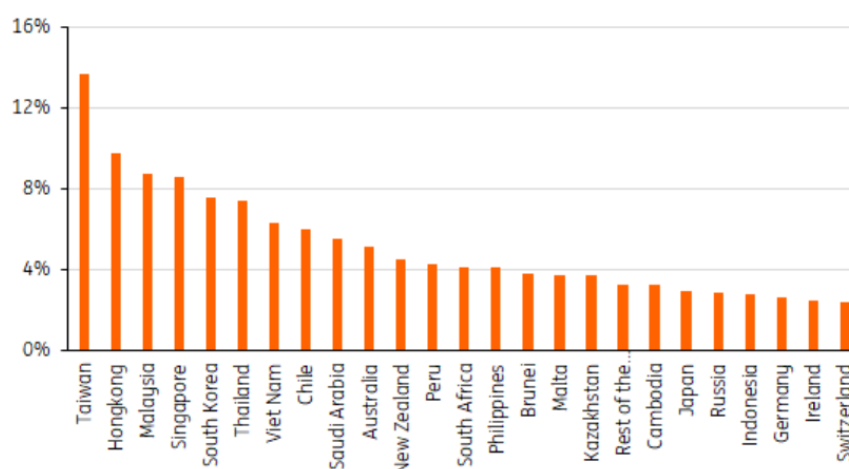
The recovery phase

Foreign demand is made up of demand from many countries. Those countries that export many goods and services to countries whose demand has been hit a lot and for a longer period of time, will suffer the most damage from the demand (read: export) side of their value chain.

So, to gauge the damage for individual countries through the export channel, it's important to know where the exports are going and at what stage of the recovery those countries are in. Take for example demand from China. We expect that Chinese demand will be one of the first countries to recover because China is ahead of most other countries in containing the virus. This will offer some relief for those countries that are relatively dependent on demand from China.

Chart 4: Countries most dependent on Chinese final demand

Value-added dependent on Chinese final demand as % of total value-added.



Source: OECD- ICIOT, ING

Due to their proximity, Asian countries are very dependent on final demand from China and benefit most from the recovery there. Of the non-Asian countries, some commodity exporters such as Saudi Arabia for oil and Chile for metals, are among the largest beneficiaries as well. In Europe, Malta, Germany, Ireland and Switzerland are most dependent on final demand from China.

Conclusion

Countries that use a lot of inputs from other countries hit by the virus early on, suffer from their openness on the input side of the economy as the virus disrupts the supply of intermediate goods that they need for their own production. Countries that produce a lot of exports suffer on the output side, as the virus suppresses spending.

Taking these two channels together, the above data shows that open economies are hurt much more through global value chains than less open economies. Open economies will suffer for a longer period of time from the supply and demand effects of the coronavirus. Luxembourg, Ireland, Singapore and Vietnam are among the most vulnerable countries.

Of the world's 10 largest economies, Canada suffers most from the fallout of foreign supplies and Germany suffers most from weaker foreign demand.

The above analysis does not mean that closed economies are better off in this crisis. Whether a country is better off depends to a large extent on the question of how much its production capacity is hit by the virus.

Article | 6 April 2020

The biggest plumbing bill, ever

The Fed has piped the financial system with a myriad of mechanisms in recent weeks. We break these down and make sense of what is on the mend, and what...



Why Libor is an important barometer of stress

The risk-free rate in the US is zero, in fact, it now peppers frequently into negative territory. In contrast, Libor is at 1.4%, which is a problem, as it flags an elevated implied bank risk. Its elevation is in part a reflection of default risks that lie ahead, and especially as the veneer of exceptional government and central bank supported is eventually lifted. Many of the Fed measures have September as a preliminary end date. When those get lifted, many businesses will find that the world has changed for them.

But the elevation in Libor is not all about default risk. It also reflects implied pressures coming from other aspects of plumbing in the financial system.

How the stress built despite the Fed's massive QE program

The Fed did two things very early at the beginning of the outbreak of the pandemic.

It slashed rates to the floor (zero) and set in motion a massive bond-buying program in play (QE). This was a blanket reaction, which slashed the cost of liquidity and showered the system with lots of it. And this is a permanent liquidity addition. The Fed buys bonds from investors and credits them with cash, which then show up as reserves in the banking system. There are no winners or

losers here. Rather there is an increase in the Fed's holdings of bonds and an increase in reserves in the system.

This is great, but there is a problem. Those reserves can in fact just sit there without being employed.

As the lockdown began to bite, many problems began to brew. Many of these problems revolved around getting access to liquidity, even though by definition there has never been as much liquidity available, ever. One of the first signs of pressure came from corporates that needed to get access to liquidity to fill gaps that had emerged due to the shutdown. They then drew on bank credit revolvers which placed some pressure on banks to supply liquidity. Typically this is not a big issue, provided there is not a call from every corporate at the same time. But there was a bit of that in play.

Many of the systemic problems revolved around getting access to liquidity, even though by definition there has never been as much liquidity available, ever

Many corporates needed more liquidity than revolvers or other sources could supply, and chose to liquidate some of their holdings in money market funds. The same logic holds here; this typically should be fine. But not if all done at once.

Money market funds then needed to find liquidity in order to meet a wider outflow trend, which would threaten a gates and fees freeze of the funds if the outflows became severe. This had to be prevented. Very easily, the dominos could have started to fall. The financial system is very interlinked, and each of these steps required attention, literally within days of the shutdown.

How the Fed began plumbing the system

Enter the Fed with a series of key facilities.

First, a backstop for money market funds where they could get access to liquidity from banks, and done in a way to minimise regulatory complications from the banks perspective. Money market funds could effectively tap into the liquidity that was being made available to the banking system, where banks could sponsor out a part of their balance sheet to be employed by money market funds that required liquidity to facilitate orderly outflows when they occur.

Complicating the picture was a virtual shutdown of other sources of liquidity, and crucially from primary market issuance of new securities to the marketplace

That available liquidity is bolstered by an ongoing Fed repo facility that allows prime banks to post

as much collateral as they like for as much liquidity they want. In addition, the Fed has made available a credit facility specifically for prime lenders, with a view to ensuring there is ample access to liquidity for the wider economy.

But just as one issue was addressed, more appeared, often simultaneously.

Complicating the picture was a virtual shutdown of other sources of liquidity, and crucially from primary market issuance of new securities to the marketplace. Critically, corporates found that they were locked out from issuing commercial paper. This is important, commercial paper programs are a corporate's easiest access to ongoing liquidity. With the commercial paper market shut, there was then additional pressure on bank revolvers and money market fund liquidations. And on it goes.

This was rapid-fire stuff from the Fed, all aimed at keeping the system afloat, while in the background equity markets were crumbling and high yield credit spreads exploding

With this in mind, the Fed set up a special purpose vehicle (SPV) to help fund issuers of commercial paper. The price of that was set at the risk-free rate plus 110bp, and 200bp for lower-rated players. Then the Fed overlaid this with a primary market corporate credit facility where a Fed SPV could either lend direct to corporates or buy corporate bonds, effectively as a private placement. And the Fed also added a secondary market element, where corporate bonds could be bought for maturities of up to five years.

This was rapid-fire stuff from the Fed, all aimed at keeping the system afloat, while in the background equity markets were crumbling and high yield credit spreads exploding.

Reasons for optimism, but stresses continue to crop up

This is a remarkable set of measures and massive but focused liquidity support. They were a big reason for the improvement in conditions seen a couple of weeks ago. Things have deteriorated since, but more on account of a changing market discount with respect to when the shutdown ends, and its long term impact.

As this played out, there were other wrinkles evident in the system. Mortgage REITs saw margin calls as mortgage-backed bonds come under widening pressure

One issue here however is that these three SPVs are not fully up and running as of yet. The knowledge that they will very soon does provide an important element of support. Until they do, however, the pressure remains elevated for both the banks and corporate credit spreads. And that in part explains why Libor has not shown a material fall (although it has at least stopped rising).

As this played out, there were other wrinkles evident in the system. Mortgage REITs saw margin calls as mortgage-backed bonds come under widening pressure, and many such REITs had to scramble for cash in order to make such calls. The Fed reacted in part by starting to buy mortgage-backed bonds, as part of their bond buying QE programme. It became increasingly evident that when the Fed came in with a new programme, there was most likely some significant stress front running this.

The off-shore dash for dollar liquidity

And there was also frantic dash for dollar liquidity from off-shore accounts in play. The dollar began to command a dramatic premium, so getting access to it became even more expensive. This manifested in an increase in the basis (extra cost) attached to \$Libor for players that wanted to swap from their own domestic currencies, like the euro or yen etc for dollars. To help ease this pressure, the Fed provided FX swap lines to other central banks so that off-shore dollar liquidity could be enhanced. This worked well.

In addition, the Fed provided a repo facility for global central banks and other monetary authorities. This helped to take the pressure off central banks that had been selling dollar reserves in order to get access to dollar liquidity. Instead, those central banks could post bonds at the Fed in exchange for dollar liquidity on a rolling 1-day basis. It also means that central banks that did not have access to the Fed's FX swap line could in the vast majority of cases have access to this repo facility.

And now we have an alphabet spaghetti of support

In addition, straight from its great financial crisis playbook, the Fed re-established support to enable the issuance of asset-backed securities backed by student loans, auto loans, credit card loans etc. In recent days, the official sector has been talking about support for the main street, and specifically the provision of credit support for small and medium-sized businesses. This last one is an important one given the stress seen in the small business sector in particular.

Phew, if you have made it this far then know that we have covered the following:

MMLF – Money Market Mutual Fund Facility

CPFF – Commercial Paper Funding Facility

PMCCF – Primary Market Corporate Credit Facility

SMCCF – Secondary Market Corporate Credit Facility

PDCF – Primary Dealer Credit Facility

TALF – Term Asset-Backed Securities Loan Facility

And on top of that are the other facilities such as the Fed's Repo window for primary dealers, the Discount window for wider financials, the Repo facility for central banks the, Fed's QE in Treasuries and mortgage-backed securities, and finally another credit aimed at main street which is imminent.

The numbers are huge

All of this should ease the pressure in the plumbing and in markets generally.

The alphabet of lending facilities above could easily end up being in the region of \$0.5trn to \$1.5trn apiece. The Fed's QE is already in excess of \$5trn and other liquidity avenues could easily cumulate to in excess of \$1trn. US GDP was \$22bn at end 2019. Contextualised against that, these are huge in size and should be effective in terms of influence. They need to be though, as they plug massive gaps left from the lockdown.

Moreover, most of these are mere plasters of the wound. The long-term healing process is far from certain.

Libor should fall, but needs some signs of stability

Cumulatively, these facilities should at the very least contain Libor, and in fact, should be enough to slowly bring it off its highs. The month of April will tell us as the Fed's SPV really kicks in.

The prognosis for high yield credit spreads is more troubled though, and that in turn is why any ease in Libor will be questioned and would be quite a tame if not pained retracement. We'd take that though.

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