

COVID-19 Update

More positive vaccine news from Pfizer and Moderna

Overall – current thinking

While the situation in Europe is still serious, we see more rays of light. Many countries now see a turnaround in new infections and this week France joined the club with a big decline in new cases. In the Nordics, Finland has also achieved stabilisation, while new cases keep rising in Norway and Sweden. Italy is finally showing signs of stabilisation but the level of new cases is still high and pressure on hospitals significant. Looking ahead, we believe restrictions will be with us for a long time. Especially as we head into the winter and the Christmas season, there is a clear risk that the virus will spread faster again. The virus survives better in cold temperatures, we are more indoors and we see more people around Christmas. Hence, the need for vigilance will be with us through the whole winter.

In the US, the situation is worsening fast with an acceleration in new infections and record-high hospitalisation rates. As we have argued for some time, more and more states are tightening restrictions and more are still likely to follow suit. The economy will thus face renewed headwinds over the coming months.

We have received plenty of good vaccine news over the last couple of weeks. Both Pfizer and Moderna have showed an efficacy around 95% and both will soon seek an Emergency Use Authorisation. AstraZeneca is expected to release its late stage phase 3 results very soon and Johnson & Johnson is expected to have results ready no later than February. While a vaccine will not alter the fact that it will be a long winter with many restrictions, a vaccine rolled out early next year should limit the need for restrictions next autumn.

Details

Virus, treatment and vaccine news

- **The week started with the interim late stage phase 3 trial data by Moderna, see [press release](#).** The results showed a vaccine efficacy of 94.5% (90 out of 95 cases were in the placebo group) and that the vaccine also seems to protect people against severe COVID-19 (all 11 severe cases were in the placebo group). As Moderna's vaccine is based on the same technology as Pfizer, the results also make Pfizer's results more credible (as they do not seem to be a statistical coincidence). **One major advantage of the Moderna vaccine compared to Pfizer's is that it can be maintained at much higher temperatures** making distribution easier (-20 Celsius degrees from factories to distribution sites, still stable at plus 2-8 Celsius degrees (i.e. in a normal fridge) for 30 days versus -75 Celsius degrees for Pfizer).
- **The European Medicines Agency has begun a rolling review of Moderna's vaccine candidate, see [press release](#).**

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EU and the UK

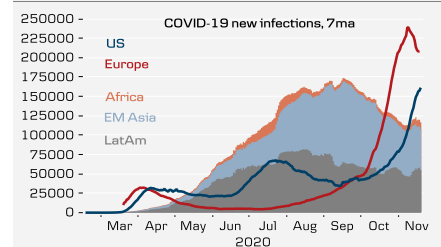
Nordic countries

China, Japan and South Korea

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Emerging markets/developing countries

Europe turns the corner while the US keeps worsening



Sources: ECDC, Macrobond Financial

Senior Analyst
Mikael Olai Milhøj
+45 45 12 76 07
milh@danskebank.dk

Chief Analyst
Allan von Mehren
+45 45 12 80 55
alvo@danskebank.dk

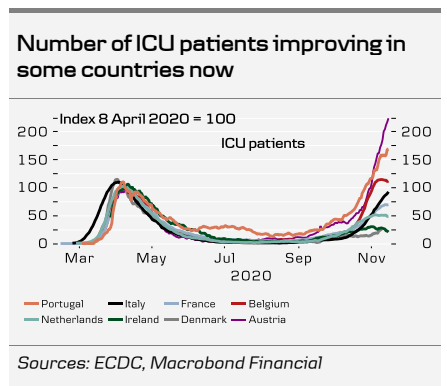
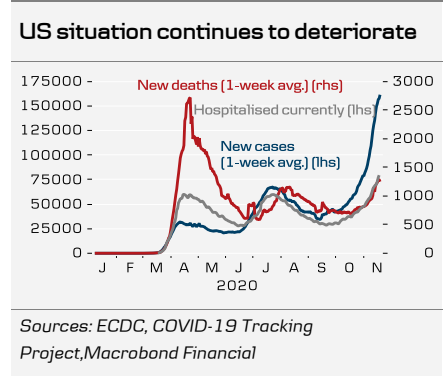
- We want to flag this very interesting *Bloomberg “The Tape” podcast* with Moderna’s CEO Stéphane Bancel (first 12-13 minutes). He mentions that while the study results show whether people get sick with symptoms or not (and not whether they get infected), **Moderna is also testing whether the vaccine will also prevent infection, something the company has shown in monkeys (but not in humans yet) previously**. There have been a lot of discussions about mink and potential dangerous virus mutations, but **Bancel mentions in the podcast that in case the vaccine becomes ineffective due to mutations, it will only take up to a month to change the vaccine** when the new virus sequence is known.
- **Yesterday, Pfizer and BioNTech published their final late stage phase 3 trial data showing an efficacy of 95%** (162 confirmed COVID-19 cases in the placebo out of a total of 170). According to Pfizer, ‘*efficacy was consistent across age, gender, race and ethnicity demographics*’ with efficacy in adults over 65 years over 94%. Only 1 out of 10 severe COVID-19 cases was in the vaccinated group. **Pfizer and BioNTech plan to submit a request within days to the US Food & Drug Administration for an Emergency Use Authorisation**, as they now have two months of follow-up safety data. We think the approval process will take no longer than a month.
- BioNTech’s CEO Ugur Sahin has said that he is ‘very confident that transmission between people will be reduced by such a highly effective vaccine – maybe not 90% but maybe 50%’.
- **AstraZeneca’s CEO has said that late stage phase 3 trial data are ‘days to weeks’ away**. We are looking forward to the data, as AstraZeneca’s vaccine candidate is based on a different technology from Moderna’s and Pfizer’s (although targeting the same spike protein) and since many countries have ordered a lot of doses.
- **Johnson & Johnson expects late stage phase 3 trial data for US authorisation of COVID-19 vaccine by February**, see *Reuters*.
- Preliminary phase 1/2 trial results for Sinovac’s vaccine candidate shows a quick immune response but the level of antibodies produced was lower than in people who had recovered from COVID-19, see *Reuters*. Phase 3 trials will determine whether the candidate will provide sufficient protection.
- **A new study (Dan et al (2020)) finds that people, who have recovered from COVID-19, have enough immune cells to fight the disease eight months after getting sick suggesting a long-lasting impact**. For a popular version see *NY Times*.
- CureVac’s CEO Franz-Werner Hass has said that there will be enough capacity to vaccinate the world by the end of next year.
- COVAX, a programme that aims to supply low- and middle-income countries with vaccines, has now raised more than USD2bn.
- **At least in Denmark, a big study on the effectiveness of face masks has attracted a lot of attention**. The study shows there is marginal to no protection from getting infected by COVID-19 by wearing mask. A major problem for the study was that it was conducted while the number of cases in Denmark was relatively low (remember one reason why vaccine development has been fast-tracked is that it is easier to get results when you test on people in high-transmission areas). The study, however, does not analyse ‘source control’, i.e. whether wearing a mask protects you from infecting others, which is considered the primary reason for wearing a mask. The *CDC* recently came up with a different conclusion on masks’ ability to protect the wearer.

US

- **New cases in the US continue to rise** and we are seeing new record-high reports nearly every day with the 7-day rolling average now above 150,000. While the two first waves were ‘regionalised’, we are seeing increasing numbers of new cases in most parts of the country right now and especially mid/northern states are hard hit right now. Hospitalisations nationwide have also reached a new record-high above 75,000 and new deaths have started to accelerate, with soon 1,500 deaths per day.
- **Bloomberg writes that the US health system has enough freezers to roll out the vaccine when approved.** The federal government will have 40m doses (i.e. enough doses for 20m people) ready by end of December if both Pfizer and Moderna get emergency use authorisation. The shots are ready to be distributed 24 hours after approval.
- **Since last week, we have seen more US states tightening restrictions.** Illinois has closed casinos, museums, indoor dining and reduced retailers’ capacity to 25%, Pennsylvania is requiring a negative COVID-19 test for travellers entering the state (and Philadelphia, the state’s largest city, has closed schools, ended indoor dining etc.), Ohio has imposed a night curfew for the next three weeks, New Jersey has tightened gathering limits and New York City has closed schools, just to mention some. **Near-term, we expect tighter restrictions are more likely than not although it remains an open question how many states are willing to impose European-style lockdowns at this point.**
- This article from *Twin Cities* tells something about the pressure on hospitals. Over 900 clinic staff at Mayo Clinic have contracted COVID-19 and 93% of them have contracted the virus in community, not at work. This puts a lot of pressure on hospital capacity due to staff shortages.

EU and UK

- **We continue to see improvement in Europe with more countries having a lower number of new cases.** France has seen a big improvement over the past week and Germany also seems to have turned the corner. Restrictions are in place in most countries and many of the measures will likely have to be extended into the winter as colder weather and social gatherings over Christmas bring new risks of another wave. The probability of much tougher lockdowns has gone down for many countries, though, which is positive.
- **In Germany, the number of new infections has stabilized over the past week.** This is good news as some hospitals report significant strain on capacity. Chancellor Angela Merkel prefers more restrictions as the level of new cases is too high in her opinion. Earlier this week she said ‘we still have a long way to go’. But a meeting on Monday with state leaders resulted in the status quo on restrictive measures with the issue being revisited again next week, see *DW*.
- **France has witnessed a significant improvement** over the past week and joined the club of countries with declines in new cases.
- **Spain has managed to turn the corner as well with new cases declining.** The country has mainly seen regional restrictions but not a national lockdown strategy during the latest wave.
- **Italy finally sees signs of stabilisation but the level is still high** and the pressure on hospitals is even higher than seen in March. More regions have been added to the ‘high-risk’ red zones. A study by Italian researchers said COVID-19 had been circulating in



Italy since September raising new question marks about the origins of the virus, see *Reuters*.

- **The UK has seen a stabilisation in new infections over the past week** as the results of the now one week long national lockdown are starting to kick in. A rise in new infections seen earlier this week coincided with a big increase in tests and is hence unlikely to be a sign of a new pick-up, see *The Guardian*.
- **The big decline in infections in Belgium has continued** and is now down to 25% of the peak level. **In the Netherlands the decline has slowed** in recent days. The government eased some restrictions on Wednesday but still has a partial lockdown in place, see *DutchNews*.
- **Austria on Tuesday started a new strict lockdown** as hospital occupancy has increased further. New infections show tentative signs of stabilisation at a high level. The country plans mass testing before the lockdown measures expire on 6 December.
- **Poland finally sees some respite as new cases turned lower this week.** The level is still high, though. Restrictions were implemented on 24 October. **The Czech Republic continues to see a sharp decline** after hitting very high levels three weeks ago.

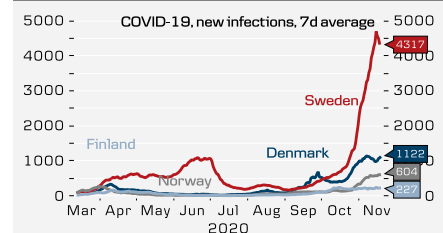
Nordic countries

- In **Denmark**, the number of new cases has started to increase again with the reproduction number (R) above 1. The Danish PM Mette Frederiksen has said that further restrictions may be needed in the capital region.
- In **Sweden**, as highlighted over the past two weeks, the government is moving away from only giving recommendations on tighter restrictions. The Swedish government announced Monday that the cap for public gatherings is lowered to eight people (previously 50 and in some regions 300). This is a prohibition by law and is effective from 24 November and for four weeks. It may be extended further. The government emphasized that this should be seen as a norm also for activities that cannot be legally restricted such as private parties, non-essential shopping etc. Yesterday, the Minister of Education stated that schools strive to be kept open, but that upper secondary schools ('gymnasia') could be 'allowed' to use distance-learning tools if they cannot guarantee enough social distancing on the school premises.
- In **Finland**, new cases are moving sideways and hence there have not been any new restrictions.
- In **Norway**, new infections are now flattening out on the national level, but are still increasing in Oslo. Oslo has tightened restrictions for 'indoor leisure activities' for young people (13-19 years)

China, Japan and South Korea

- **Singapore, Hong Kong, Taiwan and China** continue to look fine with a very low number of new infections.
- New infections in **Japan** keep climbing higher and have put the government on maximum alert. Tokyo moved to 'high alert' level yesterday. **South Korea** has seen a further rise in new infections and on Thursday imposed some mild restrictions, see *Channelnewsasia*.

Mixed picture in the Nordics but overall level low outside Sweden



Sources: ECDC, Macrobond Financial

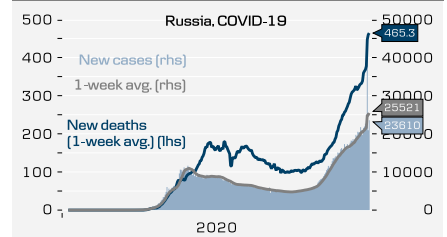
Australia and New Zealand

- There is not much to report in **Australia** and **New Zealand**, where the situation seems under control (besides a small outbreak in South Australia, which is now being contained). It also helps that it is getting warmer.

Emerging markets/developing countries/others

- In **India**, the number of new cases resumed its decline after a short halt in the improvement last week. In **Brazil**, new infections have started to turn higher again after a long period of improvement.
- The situation in **Russia** continues to be very worrisome as new deaths and infections continue to rise and hospitals are under severe pressure, see [BBC](#).

Russia keeps seeing higher levels of new cases and deaths

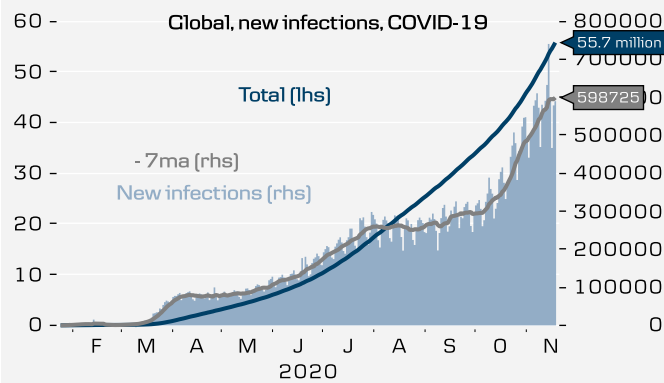


Source: ECDC, Macrobond Financial

COVID-19 charts

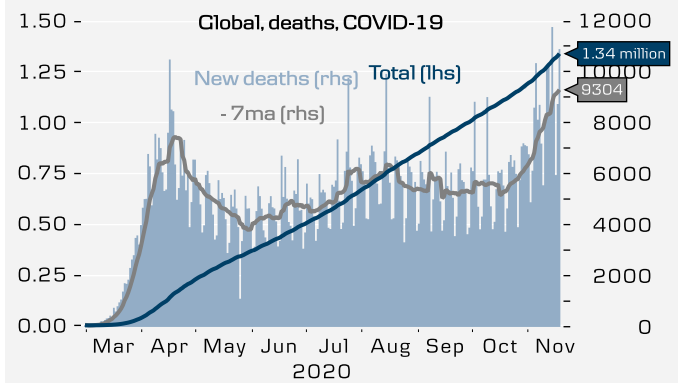
Global

Global new cases show signs of stabilisation



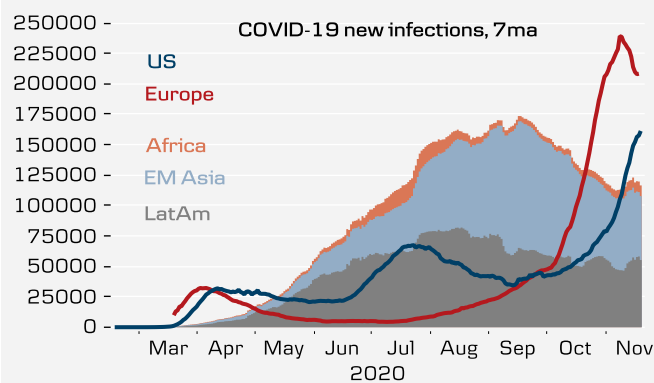
Source: ECDC, Macrobond Financial, Danske Bank

Global deaths still on a rising path



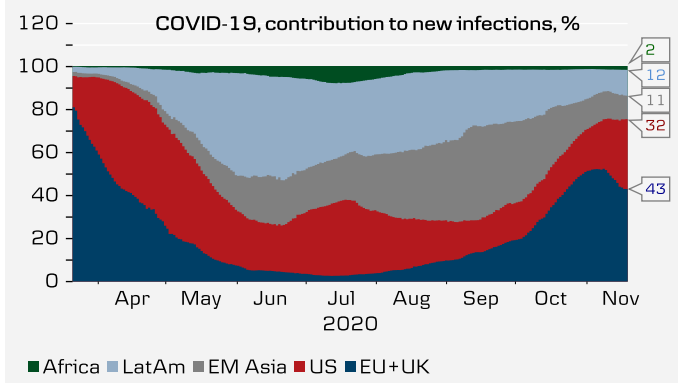
Source: ECDC, Macrobond Financial, Danske Bank

New cases by region: Europe better, US worse



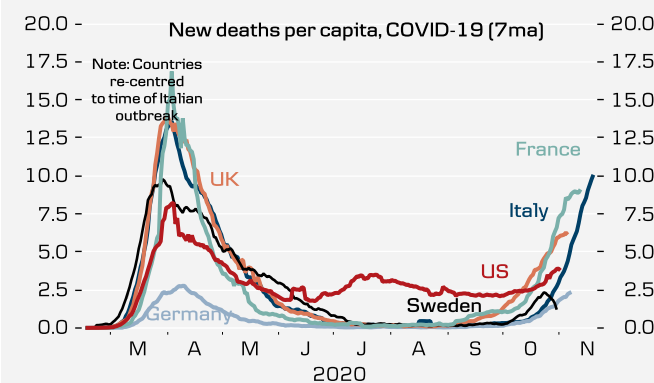
Source: ECDC, Macrobond Financial, Danske Bank

US and Europe account for more than 75% of all cases



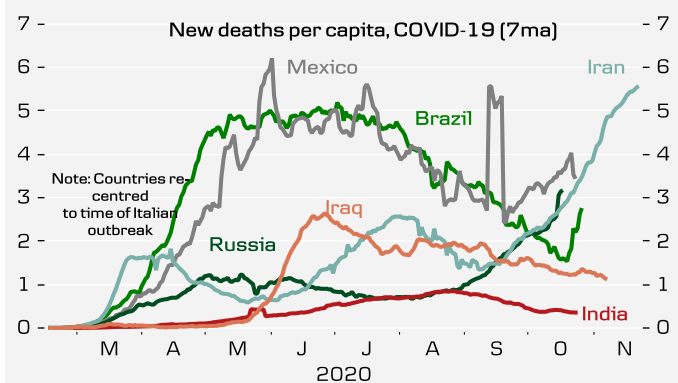
Source: ECDC, Macrobond Financial, Danske Bank

Signs of new deaths peaking in Europe



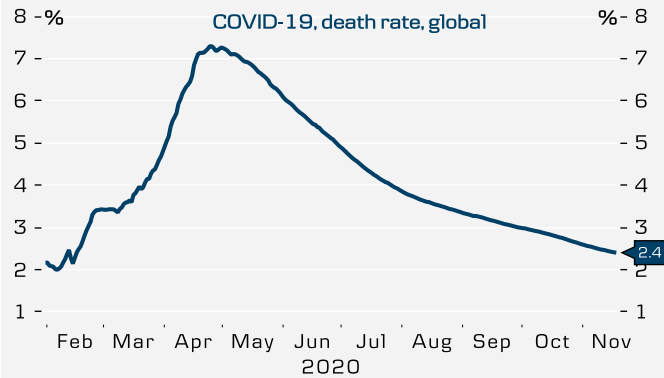
Source: ECDC, Macrobond Financial, Danske Bank

Mixed picture in Emerging Markets



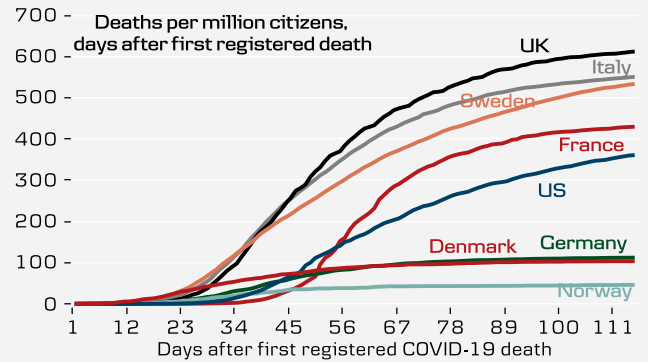
Source: ECDC, Macrobond Financial, Danske Bank

Global death rate now below 2½% – more tests push it down but this could also be a reflection of lower mortality due to use of new drugs, ‘learning by doing’, earlier detection and more young people being infected



Source: ECDC, Macrobond Financial, Danske Bank

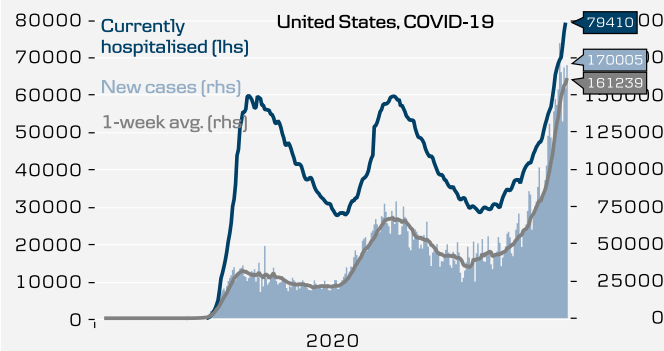
Deaths per capita across countries



Source: ECDC, Macrobond Financial, Danske Bank

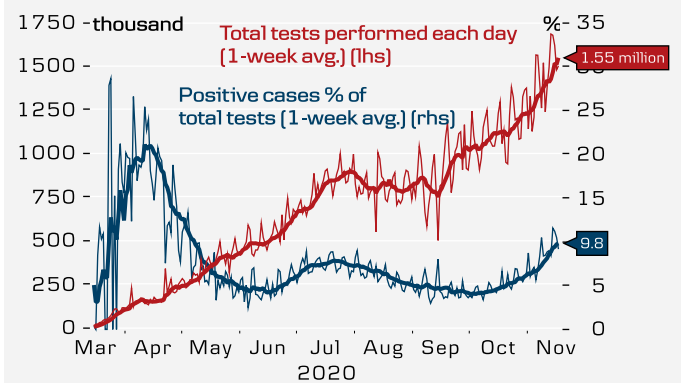
United States

US: Hospitalisation at new highs



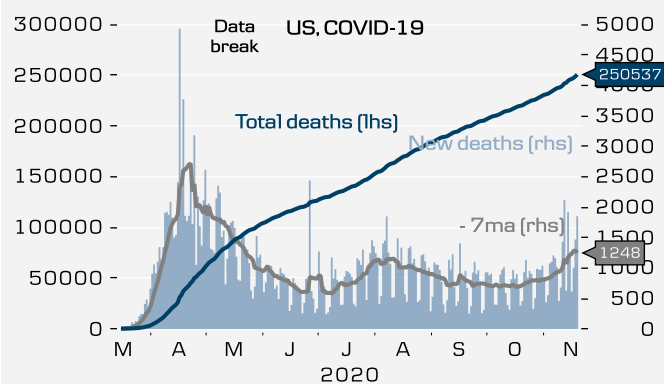
Source: ECDC, Macrobond Financial, Danske Bank

US: Positive cases now close to 10%



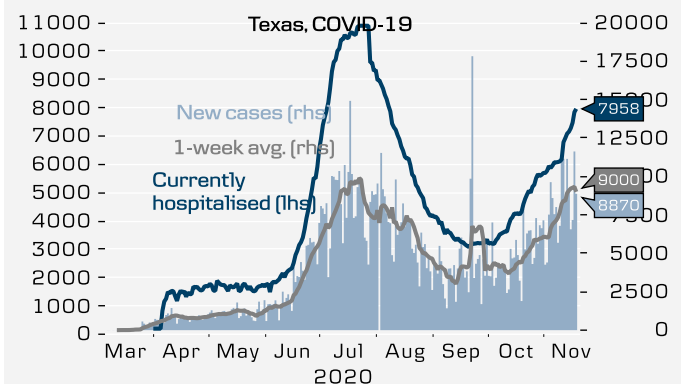
Source: COVID Tracking Project, Macrobond Financial, Danske Bank

US: New deaths moving higher



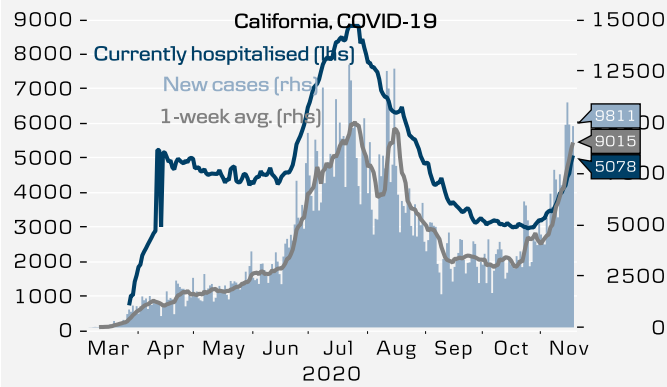
Source: ECDC, Macrobond Financial, Danske Bank

US: Second wave in Texas



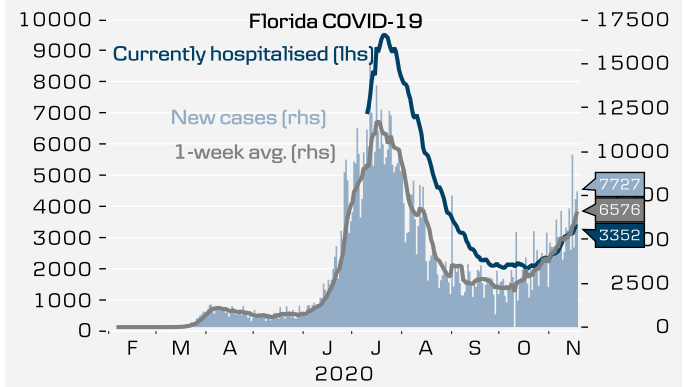
Source: COVID Tracking Project, Macrobond Financial, Danske Bank

US: California has accelerated recently



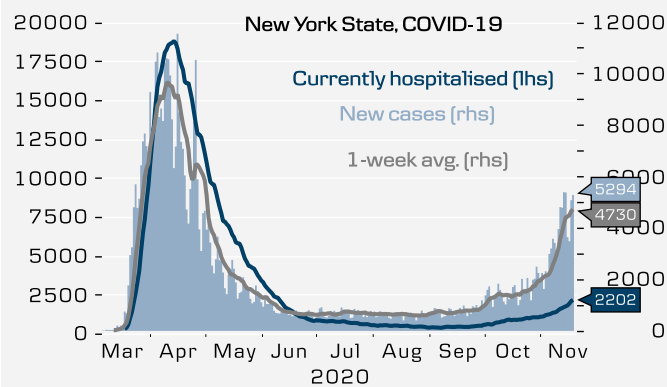
Source: COVID Tracking Project, Macrobond Financial, Danske Bank

US: Florida is in the early phase of its second wave



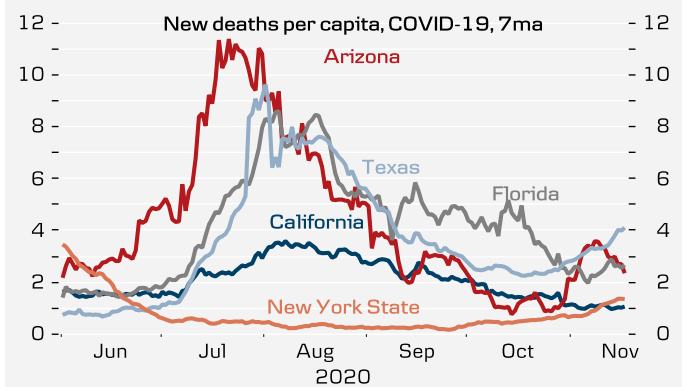
Source: COVID Tracking Project, Macrobond Financial, Danske Bank

US: New York State cases rising



Source: COVID Tracking Project, Macrobond Financial, Danske Bank

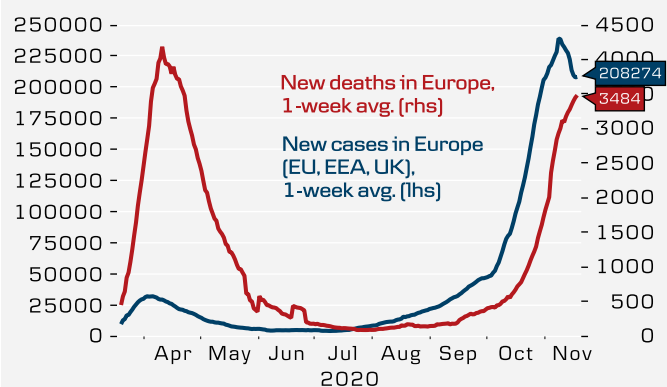
US: New deaths still low overall but may not last



Source: COVID Tracking Project, Macrobond Financial, Danske Bank

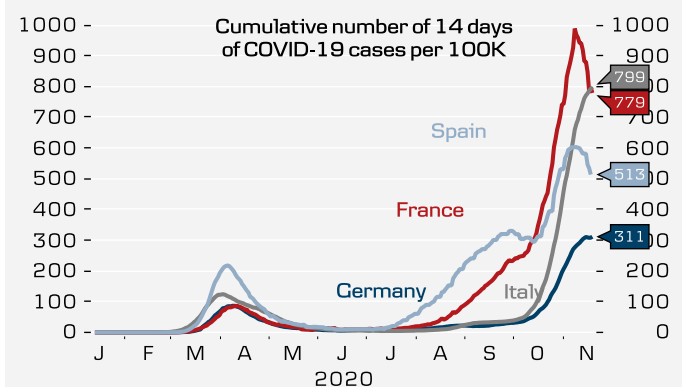
EU and UK

Europe: New infections rolling over, deaths should fall soon



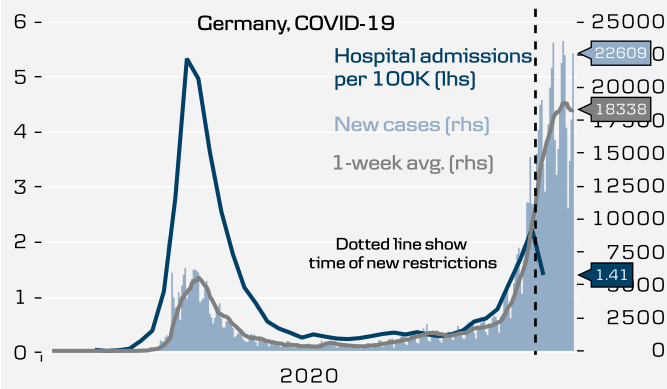
Source: ECDC, Macrobond Financial, Danske Bank

Europe: Most countries peaking



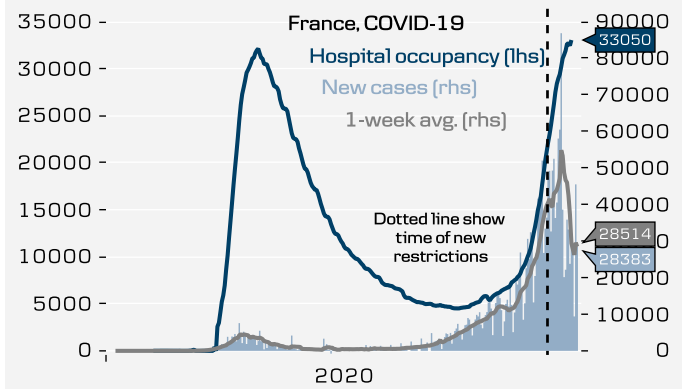
Source: ECDC, Macrobond Financial, Danske Bank

Germany: Signs of a turnaround



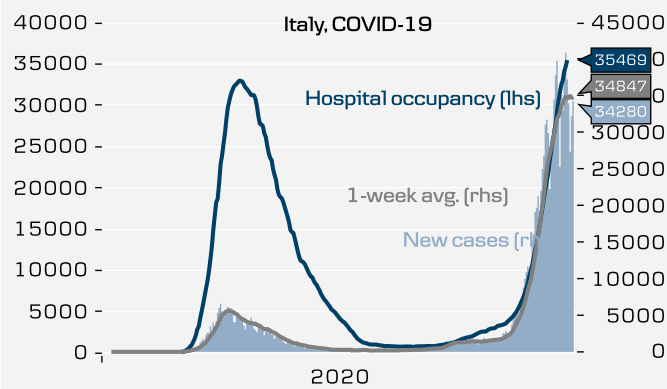
Source: ECDC, Macrobond Financial, Danske Bank

France: Big drop in new infections



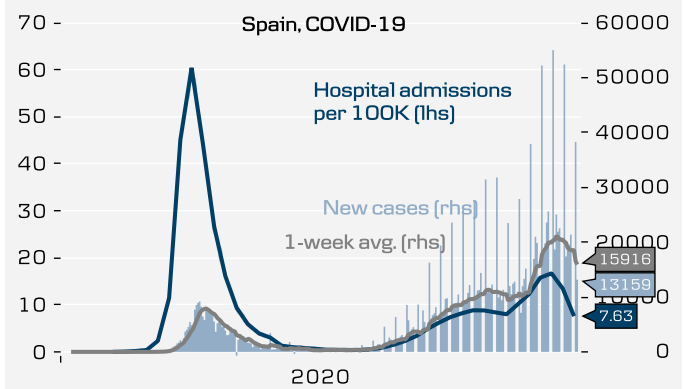
Source: ECDC, Macrobond Financial, Danske Bank

Italy: Finally signs of stabilisation



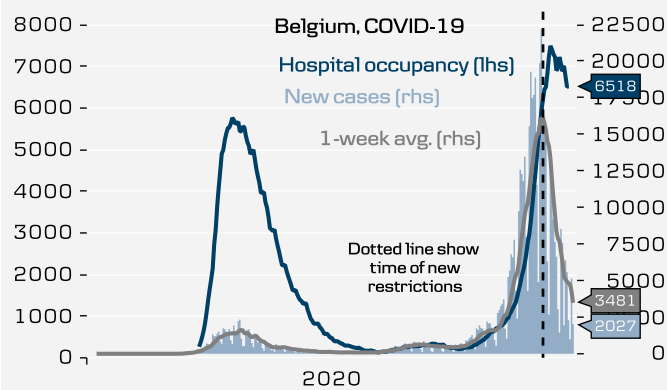
Source: ECDC, Macrobond Financial, Danske Bank

Spain: Easing pressure



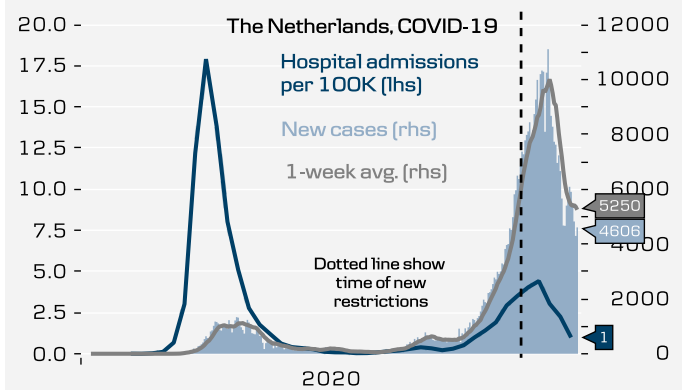
Source: ECDC, Macrobond Financial, Danske Bank

Belgium: Big decline in new cases



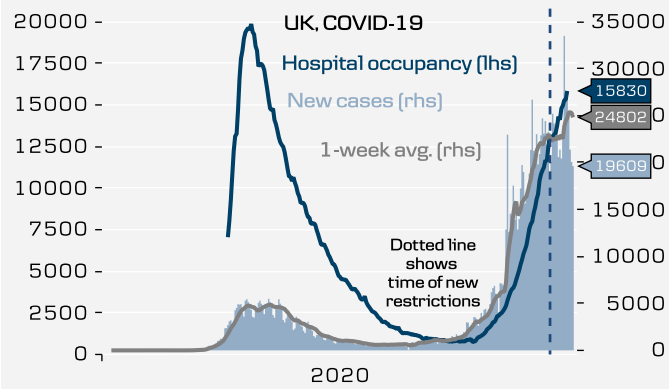
Source: ECDC, Macrobond Financial, Danske Bank

The Netherlands: New cases are still coming down



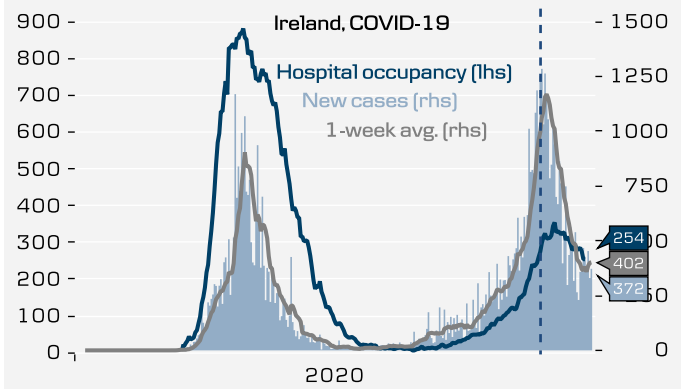
Source: ECDC, Macrobond Financial, Danske Bank

UK: Tentative signs of stabilisation



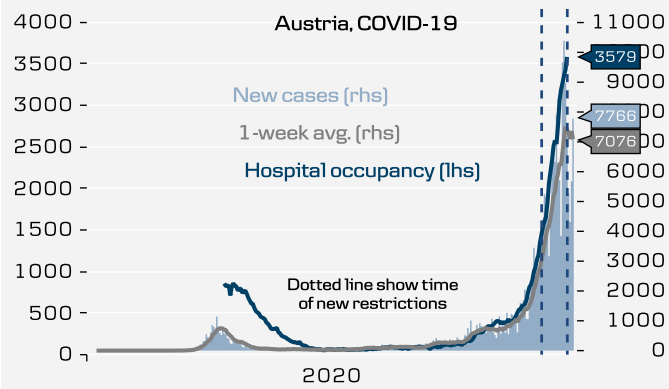
Source: ECDC, Macrobond Financial, Danske Bank

Ireland: Decline has slowed down lately



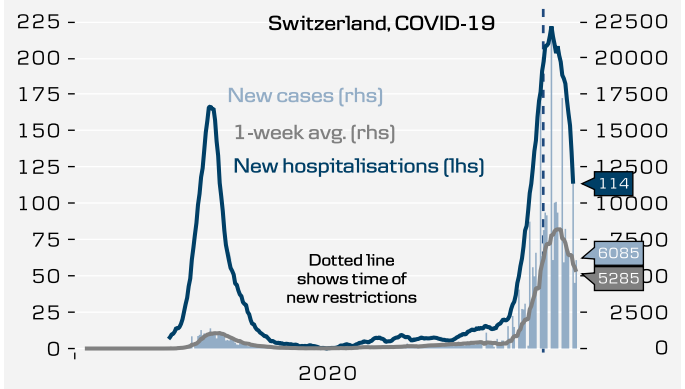
Source: ECDC, Macrobond Financial, Danske Bank

Austria: High hospitalisation has triggered new restrictions



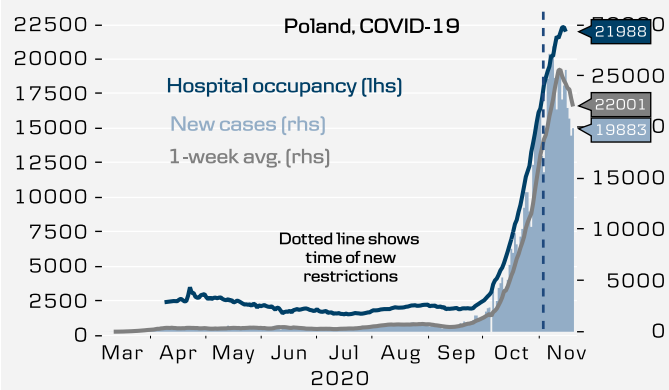
Source: ECDC, Macrobond Financial, Danske Bank

Switzerland: Sharp decline lately



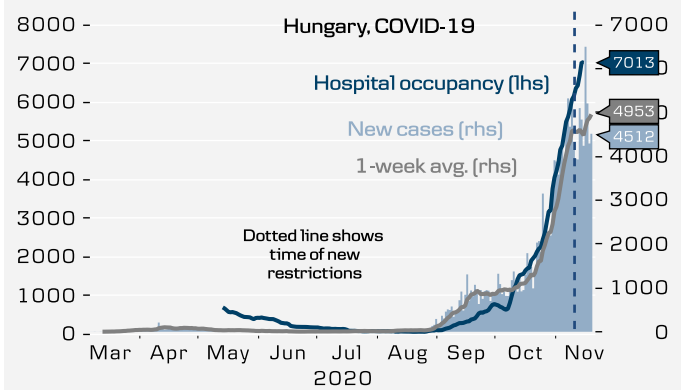
Source: ECDC, Macrobond Financial, Danske Bank

Poland: New cases have finally peaked



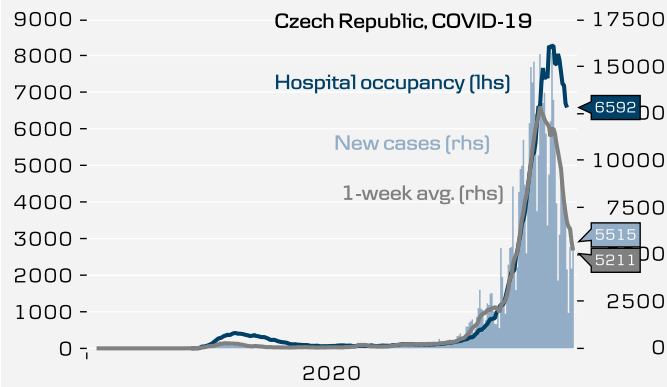
Source: ECDC, Macrobond Financial, Danske Bank

Hungary: Stabilisation



Source: ECDC, Macrobond Financial, Danske Bank

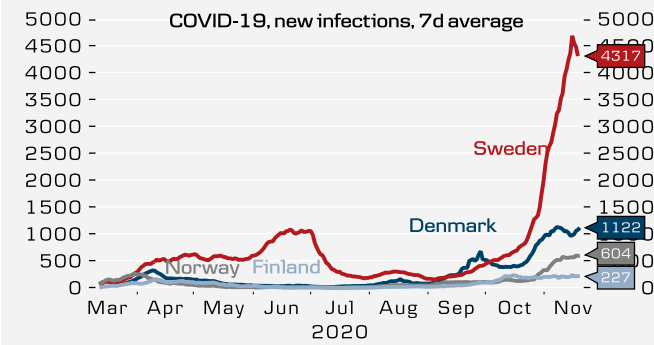
Czech Republic: Decline continues



Source: ECDC, Macrobond Financial, Danske Bank

Nordic countries

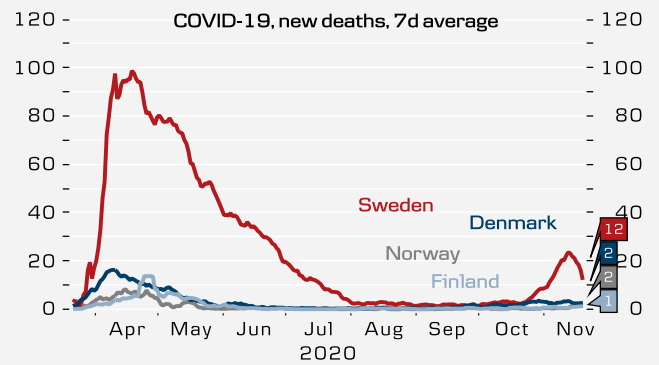
Nordic region: A mixed bag but signs of stabilisation



Sources: ECDC, Macrobond Financial

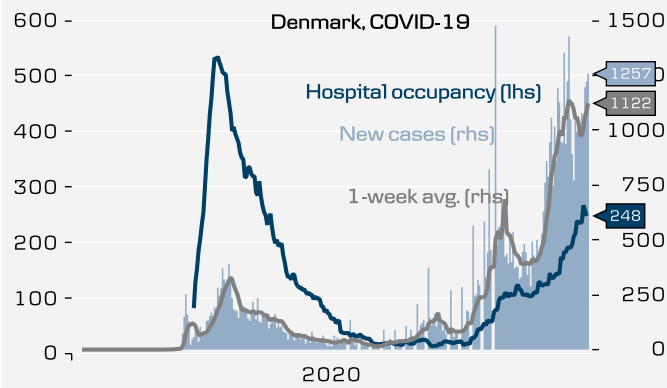
Source: ECDC, Macrobond Financial, Danske Bank

Nordic region: Deaths rising in Sweden (most recent data are often revised higher later)



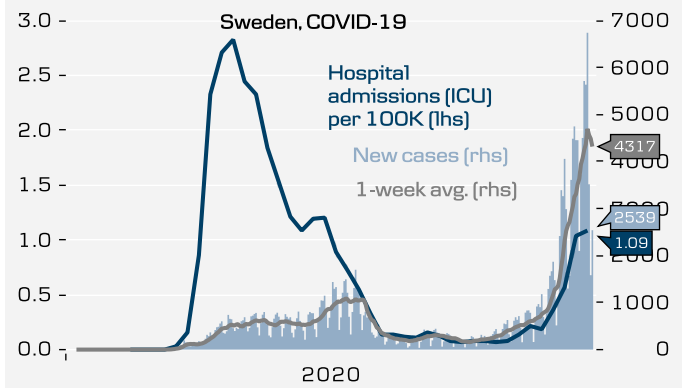
Source: ECDC, Macrobond Financial, Danske Bank

Denmark: New cases fluctuate, hospitalization still on the rise



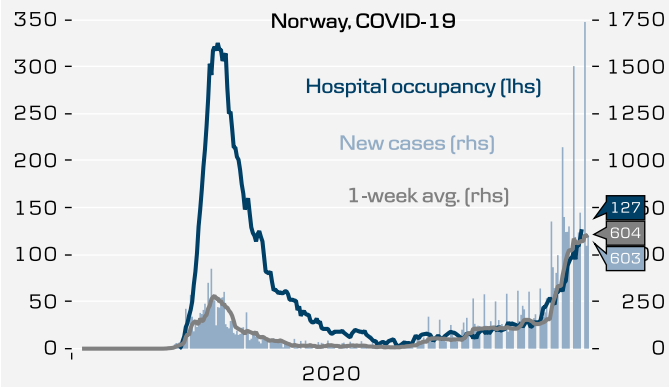
Source: ECDC, Statens Serum Institut, Macrobond Financial, Danske Bank

Sweden: number of new cases is rising quickly still



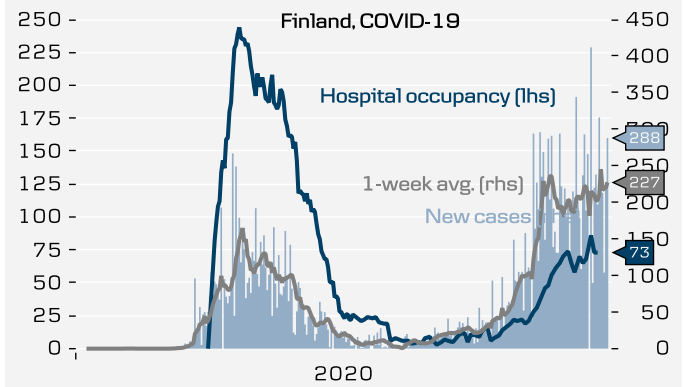
Source: ECDC, health authorities, Macrobond Financial, Danske Bank

Norway: New cases are moving higher and so are hospitalisations



Source: ECDC, Macrobond Financial, Danske Bank

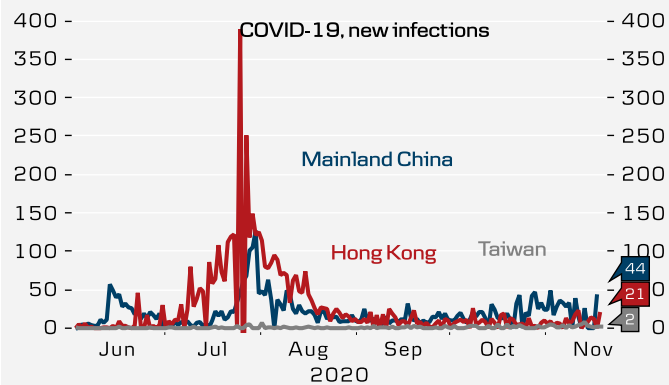
Finland: Stabilisation



Source: ECDC, health authorities, Macrobond Financial, Danske Bank

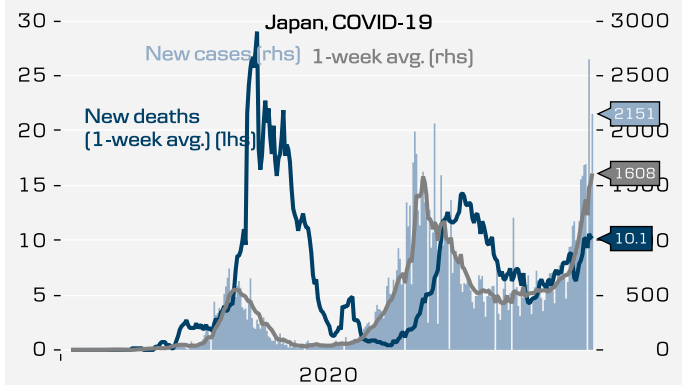
China, Japan, South Korea and Singapore

China, Hong Kong and Taiwan: under control



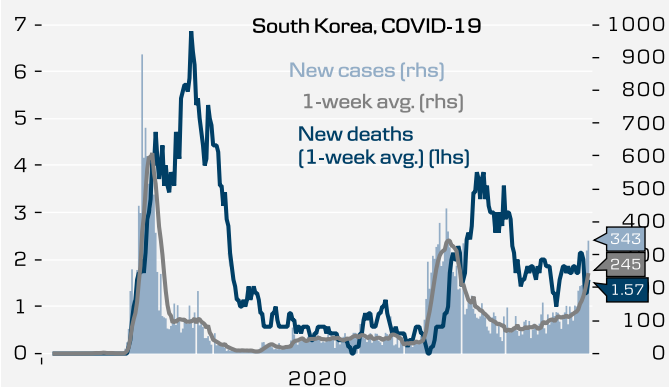
Source: ECDC, China National Health Commission, DXY, Macrobond Financial, Danske Bank

Japan: Increase picking up speed



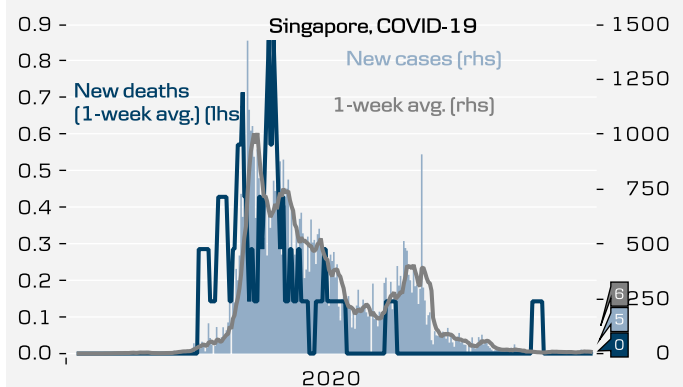
Source: ECDC, Macrobond Financial, Danske Bank

South Korea: Increase has also gained pace lately



Source: ECDC, Macrobond Financial, Danske Bank

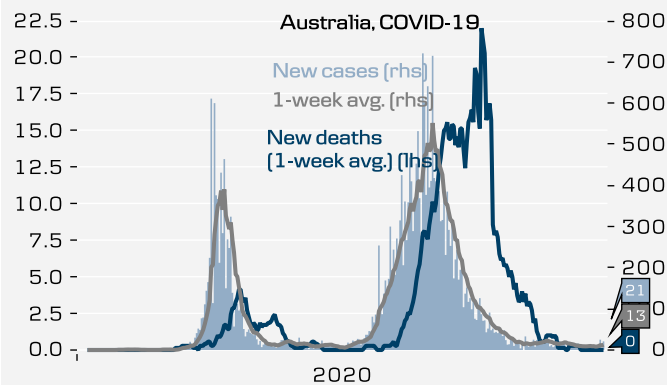
Singapore: Under control



Source: ECDC, Macrobond Financial, Danske Bank

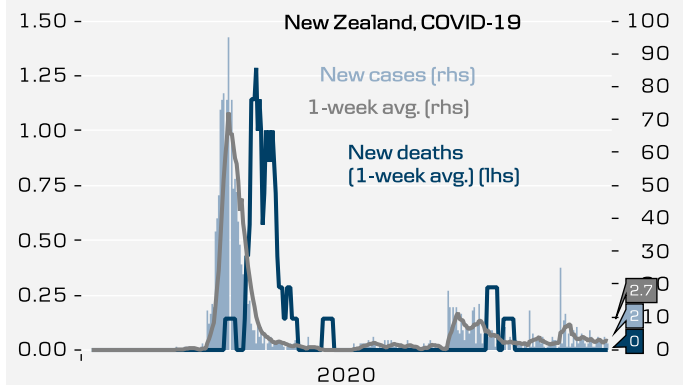
Australia and New Zealand

Australia: Under control



Source: ECDC, Macrobond Financial, Danske Bank

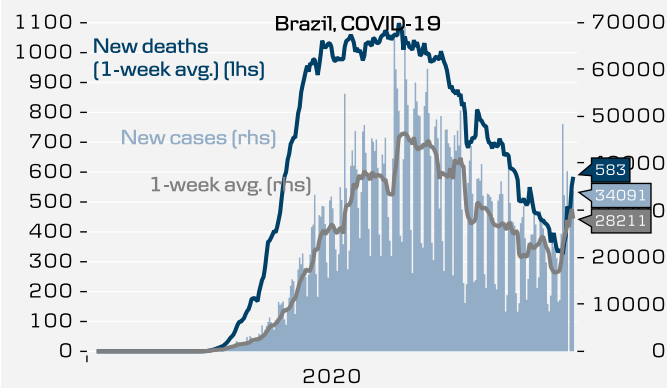
New Zealand: Situation under control



Source: ECDC, Macrobond Financial, Danske Bank

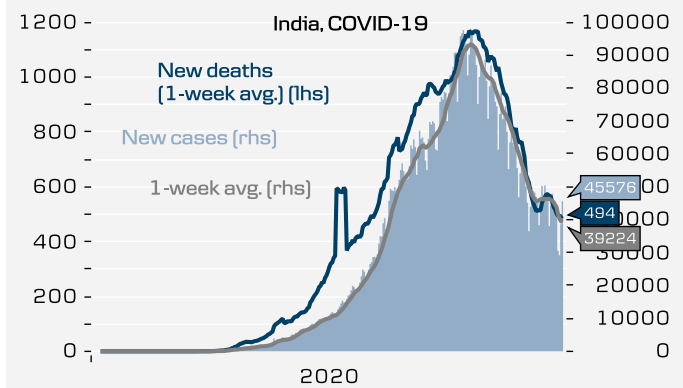
Other countries (emerging markets/developing countries)

Brazil: A sharp move higher again lately



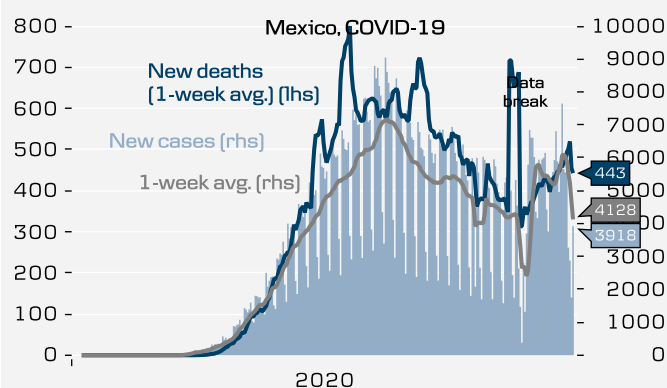
Source: ECDC, Macrobond Financial, Danske Bank

India: Decline continuing again after a small pause



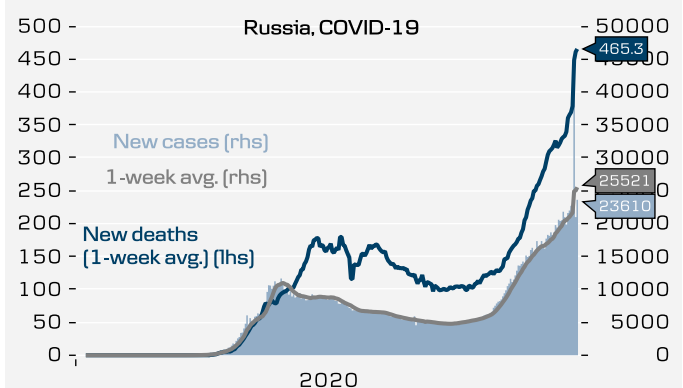
Source: ECDC, Macrobond Financial, Danske Bank

Mexico: Still close to 500 deaths per day



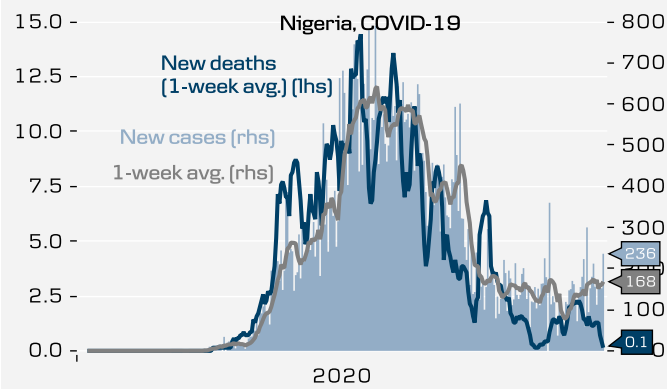
Source: ECDC, Macrobond Financial, Danske Bank

Russia: Alarming development in both infections and deaths



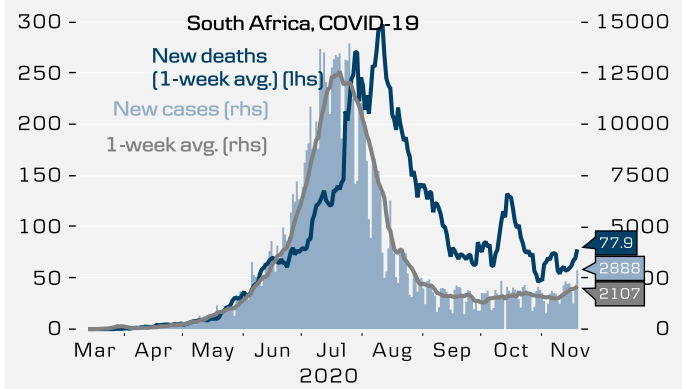
Source: ECDC, Macrobond Financial, Danske Bank

Nigeria: Sideways at low level, very few deaths



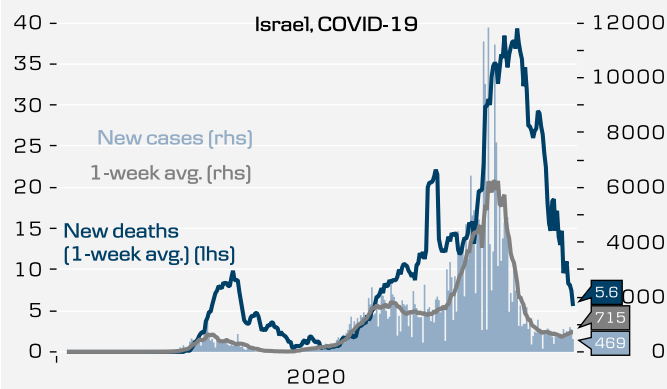
Source: ECDC, Macrobond Financial, Danske Bank

South Africa: Sideways



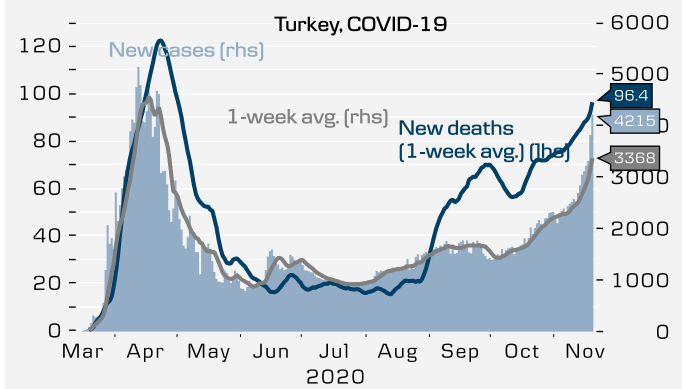
Source: ECDC, Macrobond Financial, Danske Bank

Israel: Number of new cases and deaths have come down a lot



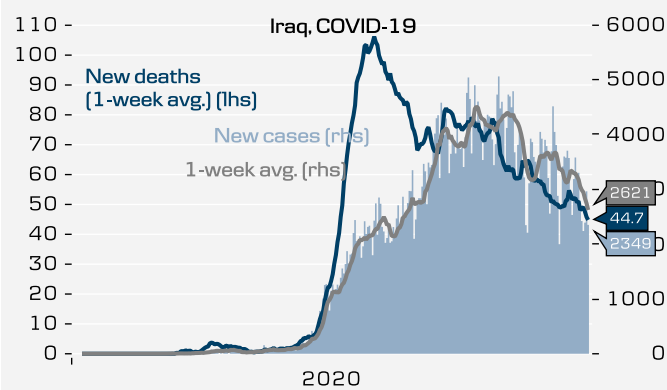
Source: ECDC, Macrobond Financial, Danske Bank

Turkey: Increase is picking up speed



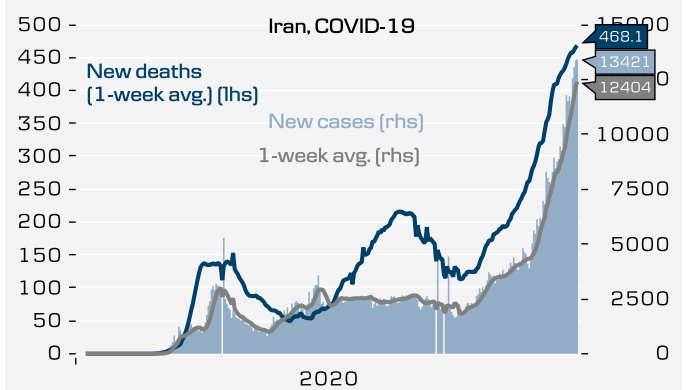
Source: ECDC, Macrobond Financial, Danske Bank

Iraq: Moving lower



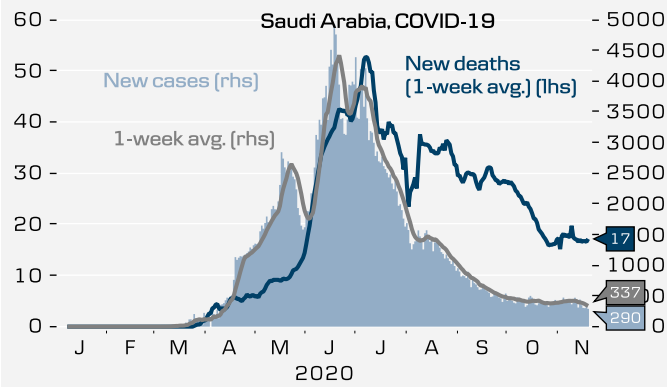
Source: ECDC, Macrobond Financial, Danske Bank

Iran: New cases and deaths moving sharply higher



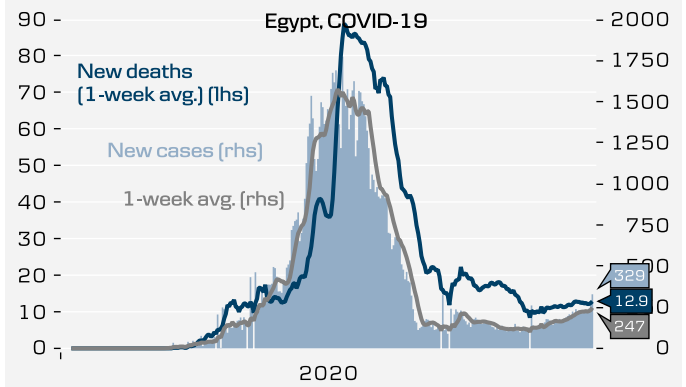
Source: ECDC, Macrobond Financial, Danske Bank

Saudi Arabia: Moving sideways



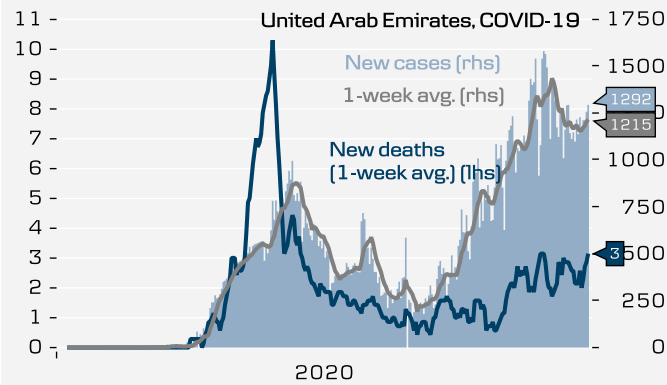
Source: ECDC, Macrobond Financial, Danske Bank

Egypt: Slight increase



Source: ECDC, Macrobond Financial, Danske Bank

United Arab Emirates: Decline in new cases slowing



Source: ECDC, Macrobond Financial, Danske Bank

Developed economies - vaccine agreements

Company	Phase	Type of vaccine	Number of doses	US	EU	UK	Japan	Others
BioNTech/Pfizer	2/3	mRNA	2 Day 0 & 28	100m (+500m)	200m (+100m)	30m	120m	Australia: 10m Canada: 20m
AstraZeneca / Oxford	2/3	Adenovirus	2 Day 0 & 28	300m	300m (+100m)	100m	120m	Australia: 84.8m Canada: 20m
Johnson & Johnson	3	Adenovirus	2 Day 0 & 56	100m (+200m)	200m (+200m)	30m		Canada: 38m
Moderna	3	mRNA	2 Day 0 & 28	100m (+400m)	80m (+80m)*		50m	Canada: 56m
Novavax	3	Protein + adjuvant	2 Day 0 & 21	100m		60m	250m	Australia: 40m Canada: 72m
CureVac	2	mRNA	2 Day 0 & 28		225m (+180m)			
Sanofi / GSK	Preclinical	Protein + adjuvant	2 Day 0 & 21	100m (+500m)	300m	60m		
Valneva	Preclinical	Inactivated virus	(2)			60m (+130m)		
Sum				800m (+1.6 bn)	1.305 bn (+660m)	340m (+130m)	540m	Australia: 134.8m Canada: 206m
Vaccines per capita				1.22 (+2.43)	1.27 (+0.64)	2.55 (+0.97)	2.14	Australia: 2.63 Canada: 2.72

* Indicates that deals aren't finalized.

Numbers in parentheses are optional additional purchases.

Vaccines per capita takes required number of shots into account.

Sources: Various national news media and press releases

Emerging Market - vaccine agreements

Company	Mexico	Indonesia	Thailand	Brazil	Russia	China	South Africa	Malaysia	Colombia	Peru	Chile	Turkey
BioNTech/Pfizer	34.4m			Negotiating						9.9m	10m	Negotiating
AstraZeneca / Oxford	77.4m	100m	26m	100m								
Johnson & Johnson							Deal to manufacture					
Moderna				Negotiating?								
Novavax												
CureVac												
Sanofi / GSK												
Sputnik V	32m			50m	Own production							
CanSino Biologics	35m	20m				Own production						
Sinovac		50m		46m		Own production					20m	(20m)*
Sinopharm		50m				Own production						
Participating in COVAX?		Yes										

Sources: Various national news media and press releases

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This research report has been prepared by Danske Bank A/S ('Danske Bank'). The authors of this research report are Mikael Olai Milhøj, Senior Analyst, and Allan von Mehren, Chief Analyst.

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Expected updates

Each Monday and Thursday.

Date of first publication

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Report completed: 19 November 2020, 12:43 CET

Report first disseminated: 19 November 2020, 13:55 CET