

Healthcare
United Kingdom

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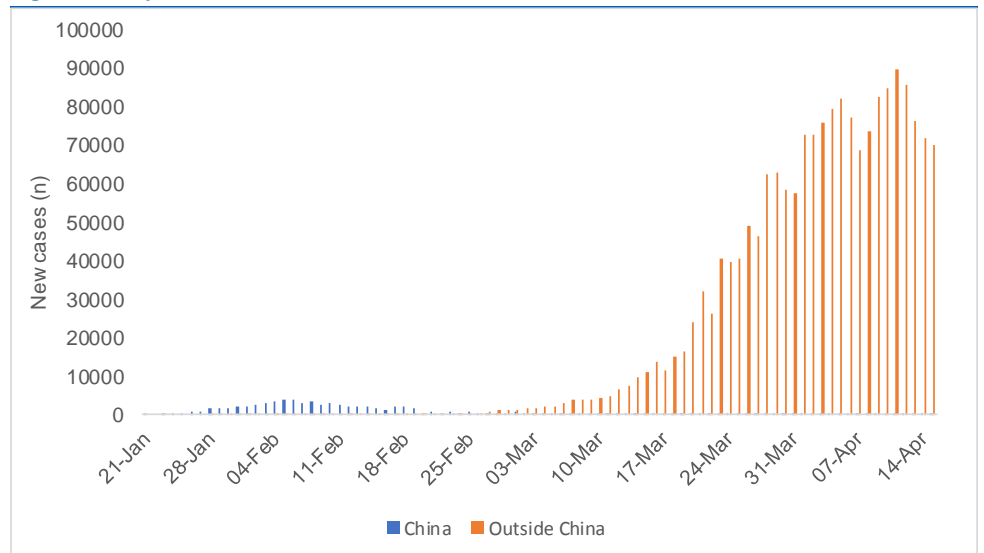
COVID-19 update

Serology update; new cases fall again

Situation Report 86 from the World Health Organisation (WHO) reported a fourth consecutive day of new cases declining, meaning growth in cumulative cases continues on a steady downward trajectory. Europe continues to show very clear evidence of progress, but we remain concerned by India, with the capital Delhi and financial centre Mumbai recently designated as “red zones” of infection. Alongside our usual review of the numbers, we also provide an update on serology (antibody) studies with some further detail on the Meleam study in Italy (after having held discussions with the company who carried out the test) and an update from the WHO on preliminary antibody data from Germany and Denmark.

Situation Report 86 from the WHO shows that new cases of COVID-19 have now reached 1,914,916 with cumulative case growth continuing to fall and being 3.8% in this most recent update (the lowest increase since 10th March). The small increase in cumulative case growth reflects four consecutive days of new case numbers declining with a 2.4% fall reported here (following a 6% decline yesterday). The decline in new cases was entirely driven by the Region of Americas, which reported c6,000 less cases than yesterday (accounting for 95% of the fall in regions that declined) and offset a c4,500 new case increase in Europe (accounting for 98% of all new cases in regions that increased).

Figure 1: Daily new cases in China and outside of China



Source: WHO Situation Reports; Shore Capital Markets

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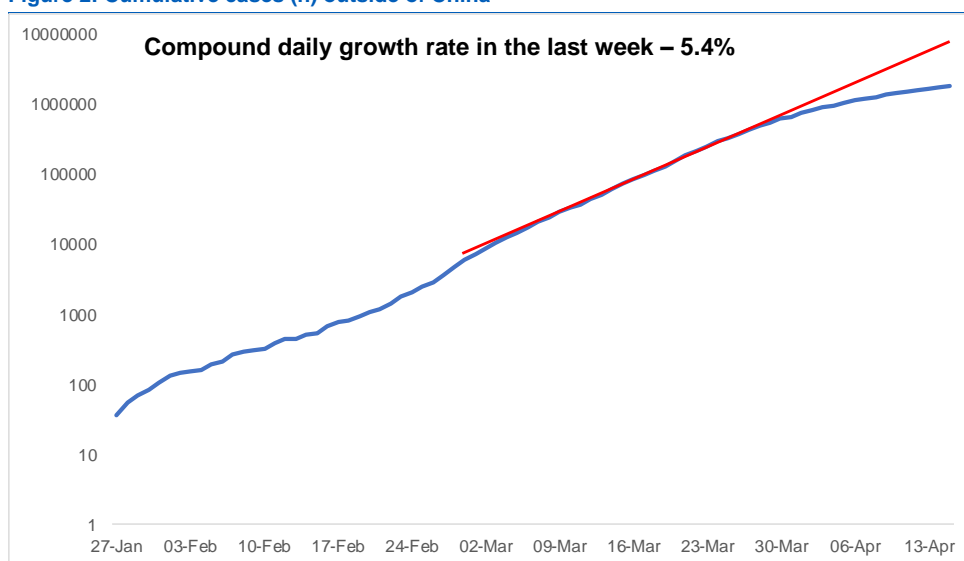
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Cumulative growth rate continues its declining pattern

Cumulative growth rate outside of China the lowest for almost two months

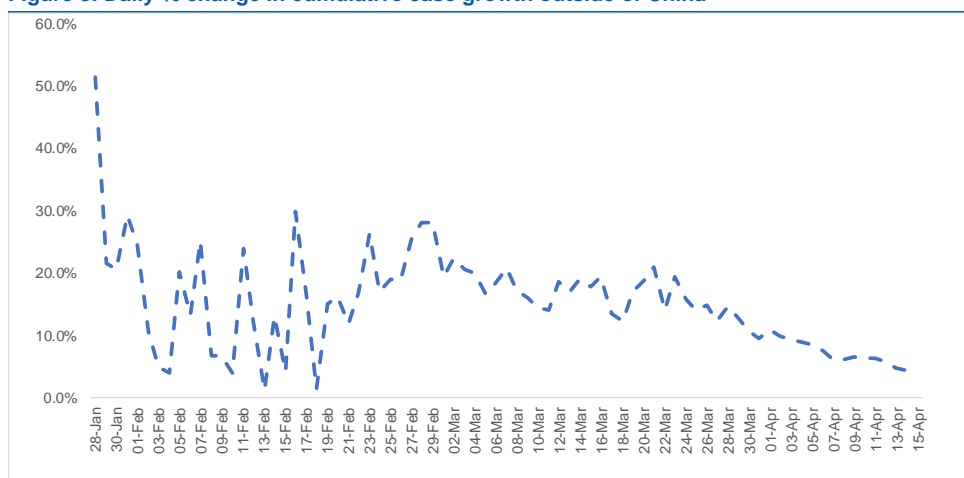
Case growth outside of China continues to show an exponential pattern (Figure 2 shows the data on a logarithmic scale) with the compound daily growth rate (CDGR) in new cases over the last week falling to 5.4% (from 5.7% yesterday). However, although cumulative case growth is still showing an exponential pattern, the rate of growth has clearly been attenuated which we have highlighted in Figure 2 with the red line showing the linear pattern (which indicates exponential growth). Daily growth in cumulative cases (which is effectively a reflection of new case growth over several days) has been on a clear downward trajectory since the end of February and it continues firmly on that path (Figure 3) **with the 4.0% increase reported in this latest update being the smallest increase since 18th February.**

Figure 2: Cumulative cases (n) outside of China



Source: WHO Situation Reports; Shore Capital Markets

Figure 3: Daily % change in cumulative case growth outside of China

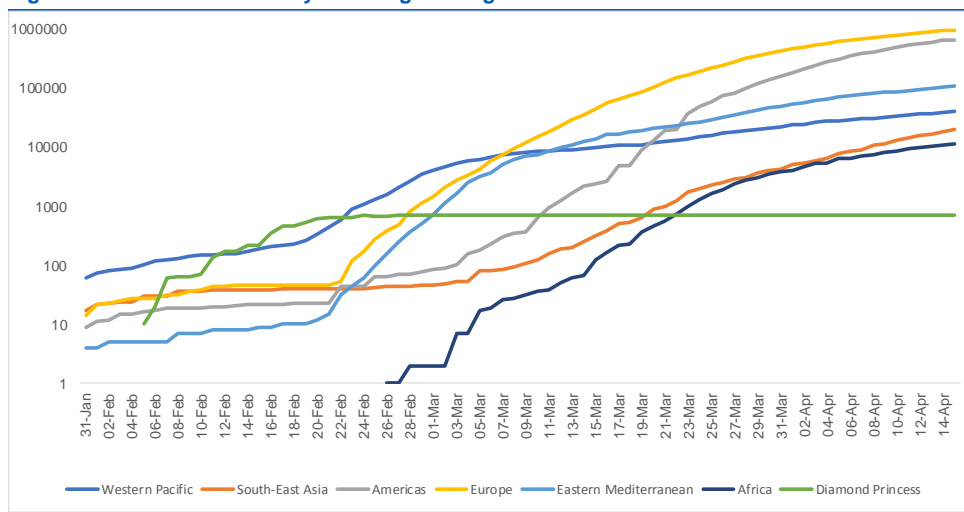


Source: WHO Situation Reports; Shore Capital Markets

South-East Asia remains a region to keep an eye on as growth in India remains a key determinant of the pandemic's trajectory

Figure 4 shows that the exponential growth across all regions has been attenuated although the reason for this is likely a combination of a slowing underlying infection rate and a lack of diagnostic capacity (impacting all regions). **However, we would highlight South-East Asia, which now has the highest 7-day growth rate (9.6%, with the Region of the Americas second at 7.1%) and recent signs of attenuation have given away to a more linear pattern (indicating more aggressive exponential growth).** This pattern has largely been driven by India and the behaviour of the virus in the country is a very important factor that will determine the overall trajectory of the pandemic.

Figure 4: Cumulative cases by WHO region - logarithmic scale

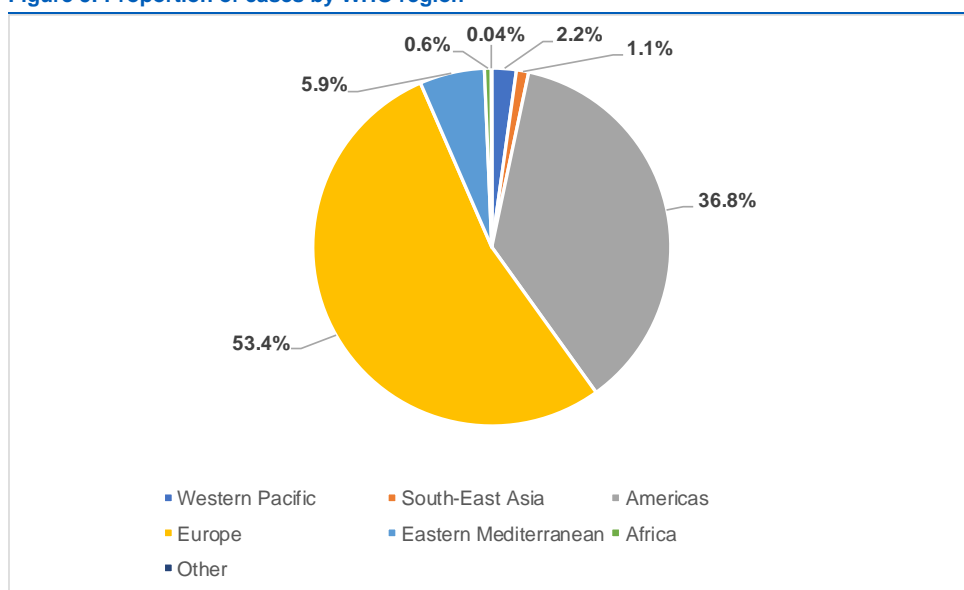


Source: WHO Situation Reports; Shore Capital Markets

Region of the Americas continues to take share outside of China

The Region of the Americas continues to take an even greater share of the cumulative case burden outside of China and now accounts for 37% of all cases.

Figure 5: Proportion of cases by WHO region



Source: WHO Situation Reports; Shore Capital Markets

One million tests to be shipped to US customers from Abbott this week, as US FDA grants an EUA to a third serology test

Region of the Americas – Abbott targets 20m antibody tests by June

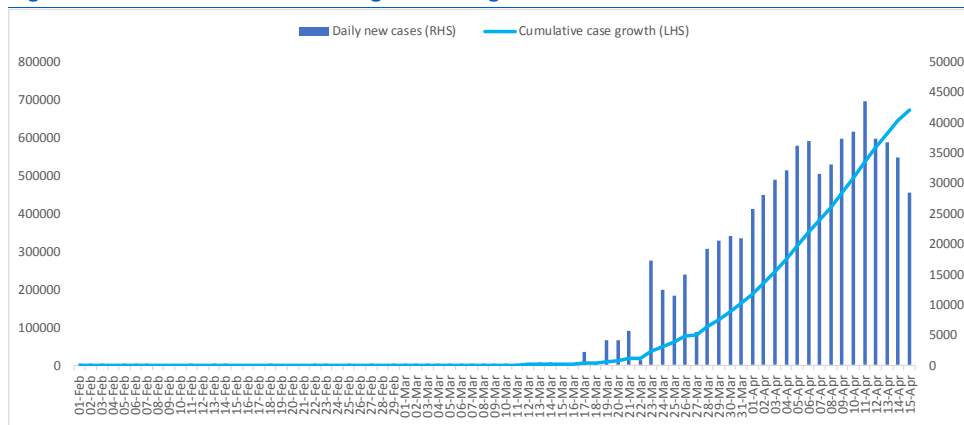
New cases in the Region of the Americas declined by 17% in the most recent update, which now means four consecutive days of new case decline (*to our knowledge, this is the first time this has happened during the outbreak*) with two of those days seeing double-digit decreases. The region continues to be dominated by the USA which accounts for 86% of both the cumulative case burden and new cases reported here.

There have also been some interesting moves in the diagnostic space. Abbott, a US medtech company, announced yesterday (15th April) that it was releasing a new antibody test to detect the presence of IgG (antibodies which appear late in infection and give a better idea of longer-term immunity). The new test is lab-based and can be run on two Abbott systems, with around 2,000 of these systems currently installed in US labs. Each system is capable of running 100-200 tests per hour. **The company expects to ship one million tests within the US this week, ramping up to a total of four million in April and ultimately rising to 20 million by June.**

Alongside this, the US Food and Drug Administration (FDA) also announced that it had issued two further emergency use authorisations (EUAs) for serology (antibody) tests (to Ortho-Clinical Diagnostics and Chembio Diagnostic Systems). This is the third serology test to be granted an EUA following the first for Cellex’s IgG/IgM test which was granted on the 1st April.

Finally, US payer Medicare has also indicated it will almost double payments (to \$100) for high throughput COVID-19 tests in an order to boost testing across the country.

Figure 6: Cumulative and new case growth - Region of the Americas



Source: WHO Situation Reports; Shore Capital Markets

Europe – Large increase in France likely reflects delayed reporting from Easter

Although cumulative cases in Europe are close to surpassing one million (977,596) evidence of progress remains very clear, although new cases in the region did increase by c15% in this latest update (albeit following two consecutive days of double-digit declines).

France records highest daily increase in new cases for two weeks

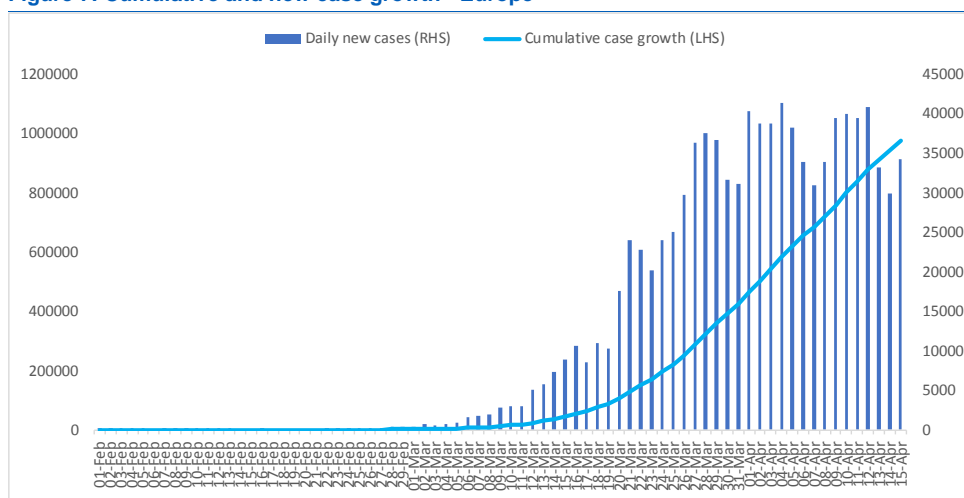
The top four countries by case burden (Italy, Spain, Germany and France) contributed 41% of new case growth in the region with France contributing the highest proportion from this group of four (16% of new cases) and reporting 5,483 new cases, which is the highest increase for two weeks. This is a noticeable jump and we believe it relates to delayed reporting from the Easter weekend.

France increases economic support and Italy turns to plasma donors to fight virus

The UK (15% of new cases) and Turkey (12% of new cases) also continue to be meaningful contributors to the overall new case burden.

Outside of the case burden, France announced that it was to increase its economic support plan from €45bn to €110bn. In Italy, the country is turning to blood plasma as a potential treatment (in the hope it contains antibodies to the virus), which is an approach that is being tested in multiple other countries (e.g. USA). Finally, European countries are now firmly focused on the steps needed to re-open economics whilst also trying to prevent second waves of infections. Most recently, Germany provided an early view of potential steps it might take including maintaining limits on large gatherings, mandatory wearing of face masks in public and rapid and widespread testing.

Figure 7: Cumulative and new case growth - Europe



Source: WHO Situation Reports; Shore Capital Markets

Japan drives new case pattern in the past few days

Japanese public reportedly feel state of emergency came too late

Malaysia purchases hydroxychloroquine

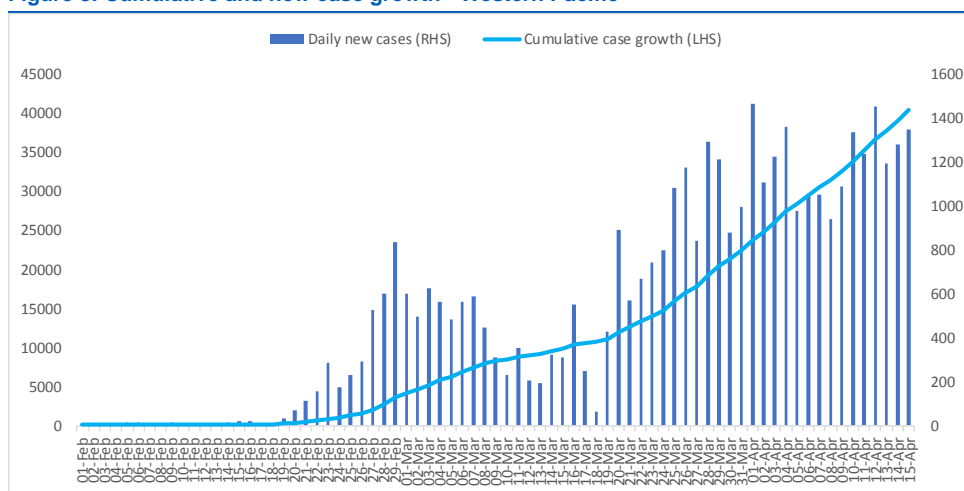
Western Pacific – Japan driving the near-term pattern

New cases increased by 5.5% in the Western Pacific, which follows a 7% increase from yesterday. The near-term pattern is currently being driven by Japan, which reported 455 new cases in this latest update (from 390 yesterday), although Malaysia also saw a small jump in cases (170 from 134).

Media reports suggest the Japanese public have lost patience with the government, with surveys indicating the majority of people think a state of emergency was declared too late and the approval rating of the government also falling.

Malaysia has agreed a deal with India to purchase hydroxychloroquine, a drug which has received widespread attention for its potential to fight the virus (although this remains unproven). India had put curbs on exports of the drug in order to maintain sufficient supply for its own population, but has eased such restrictions in a limited number of cases.

Figure 8: Cumulative and new case growth - Western Pacific



Source: WHO Situation Reports; Shore Capital Markets

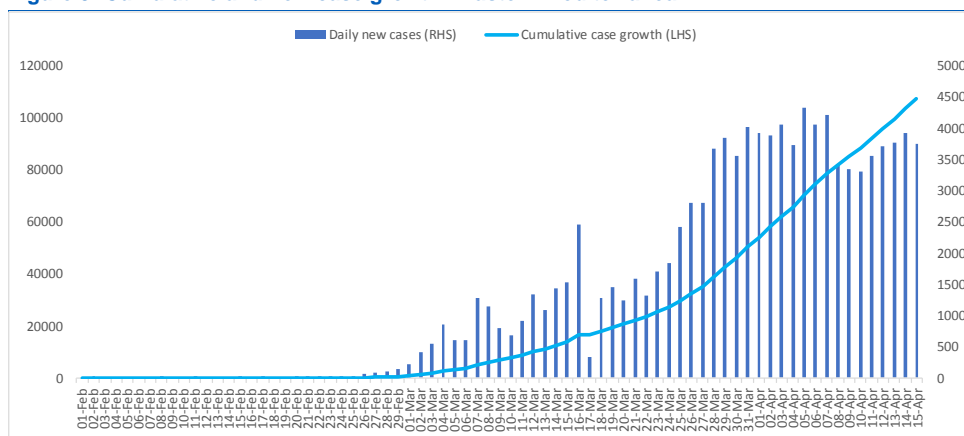
Iran's deaths also strangely consistent

Eastern Mediterranean – consistent declines in Iran look strange to us

Cases in the Eastern Mediterranean decreased by 4% in this latest update, following a 4% increase yesterday, which brings a welcome end to four consecutive days of new cases growth. Iran continues to account for the highest proportion of both cumulative (70%) and new (42%) cases in the region, although Saudi Arabia (12%) and the United Arab Emirates (11%) both had a meaningful contribution to new case growth here.

Encouragingly, Iran reported a 3% fall in new cases in the latest update, **meaning fourteen out of the last fifteen reports have now seen new cases decline**. The Iranian government has previously warned that some individuals were disobeying its lockdown measures and so such a consistent decline is very surprising to us, as well as the very consistent number of deaths that are reported each day. We continue to watch Iran closely given the potential for a much wider outbreak than is currently being reported.

Figure 9: Cumulative and new case growth - Eastern Mediterranean



Source: WHO Situation Reports; Shore Capital Markets

Trajectory of pandemic will depend on behaviour of SARS-COV-2 in countries like India

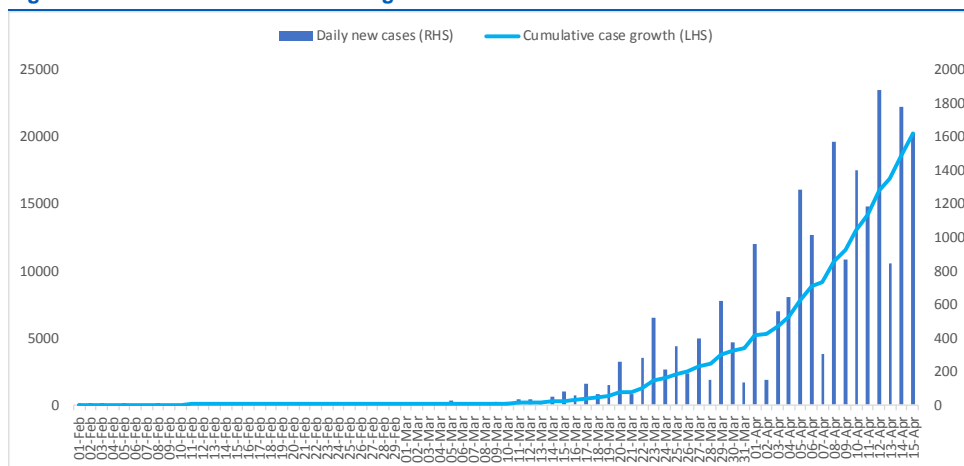
South East Asia – India reports another day of >1,000 new cases

South East Asia remains a key region to watch (along with Africa) given the potential for the virus to cause a lot of damage in underdeveloped healthcare systems. New cases declined by 9% in the most recent Situation Report, which follows a 111% increase from the previous day. This was again driven by India which reported another day of >1,000 cases, but the absolute increase was less than yesterday (1,076 from 1,211).

On Wednesday India designated a number of parts of the country as “red zones” (i.e. hotspots) of infection, with the capital Delhi and financial centre Mumbai within that list. Worryingly, no regions were deemed “green zones” which would indicate a low level of infection. However, on a more encouraging note, testing is expected to be ramped up in “red zones” which should provide greater visibility on transmission chains.

Elsewhere, Indonesia is reportedly struggling to acquire sufficient diagnostic kits to enable mass testing (as is the case with many other countries) and the World Bank recently issued a report highlighting its concerns around an impending sharp economic slump in the South East Asia region.

Figure 10: Cumulative and new case growth – South East Asia



Source: WHO Situation Reports; Shore Capital Markets

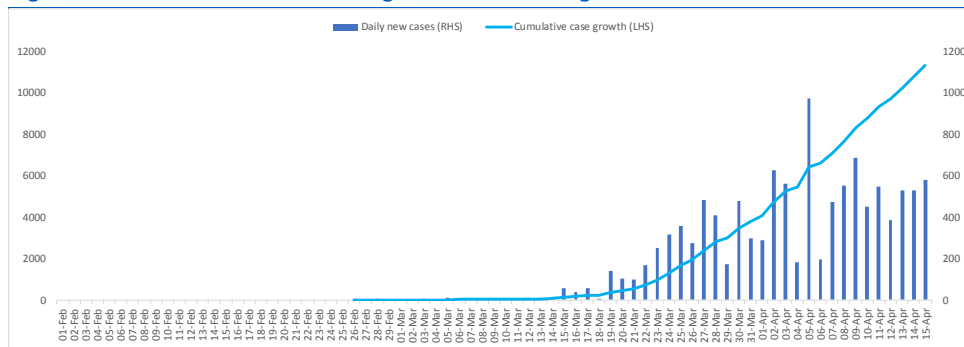
Fall in cases in South Africa reportedly coincides with increased testing

African Region – South Africa claims falling infections coincide with higher testing as it starts to plan release from lockdown

New cases in the African Region grew by 10%, which follows a flat case load yesterday. South Africa (25%), Algeria (15%) and Cameroon (9%) accounted for c50% of the increase and remain the top three regions by cumulative confirmed case burden.

In South Africa, despite concerns that decreased testing may be playing a role, the government has reiterated its belief that the social distancing measures that have been introduced have helped to flatten the infection curve. Indeed, the head of the country’s COVID-19 advisory group indicated that the fall in cases had actually coincided with more widespread testing. Despite this, there remain concerns around a second surge in cases and the country’s lockdown will only be released in slow steps, with the government suggesting transport hubs in low-transmission areas could be first and high-risk individuals (the elderly, those with compromised immunity) may be asked to stay at home indefinitely until a vaccine or effective therapy is developed. We are encouraged by South Africa’s more aggressive testing strategy which has seen over 10,000 fieldworkers enter communities and proactively screen for cases, which is an invaluable tool in suppressing the virus to manageable levels.

Figure 11: Cumulative and new case growth - African Region



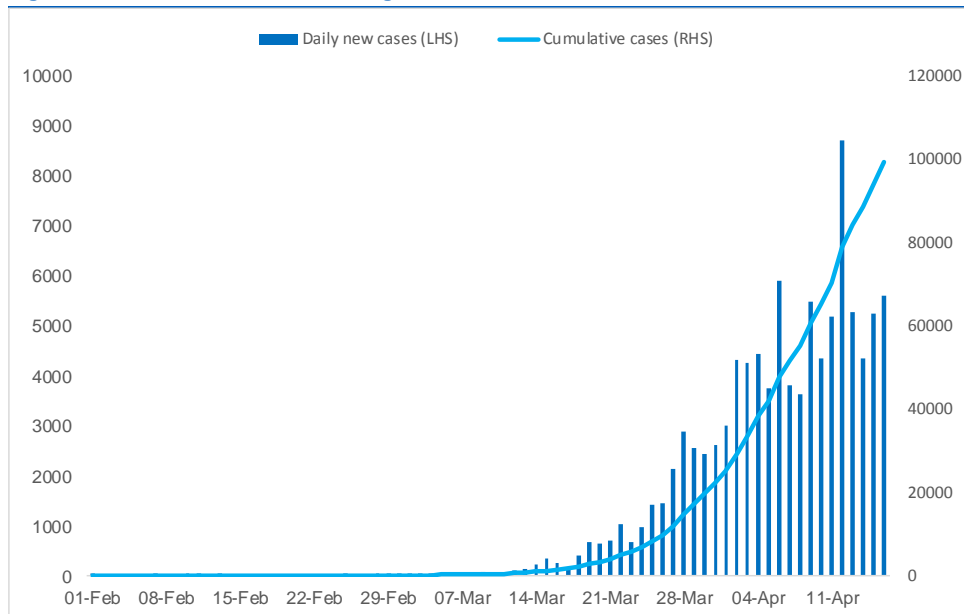
Source: WHO Situation Reports; Shore Capital Markets

Confirmed cases close to exceeding 100,000

Situation in the UK – Care homes brought into focus

Cumulative cases in the UK reached 93,877 in this most recent Situation Report (new cases increasing by 21% following an 18% decline yesterday) and are forecast to reach 99,489 on the Johns Hopkins live tracker (meaning growth of 7%). Care homes remain firmly in focus as the UK government announced plans to increase testing in these environments to provide a better view on infection levels.

Figure 12: Cumulative and new case growth – UK*



*16th April data point from Johns Hopkins

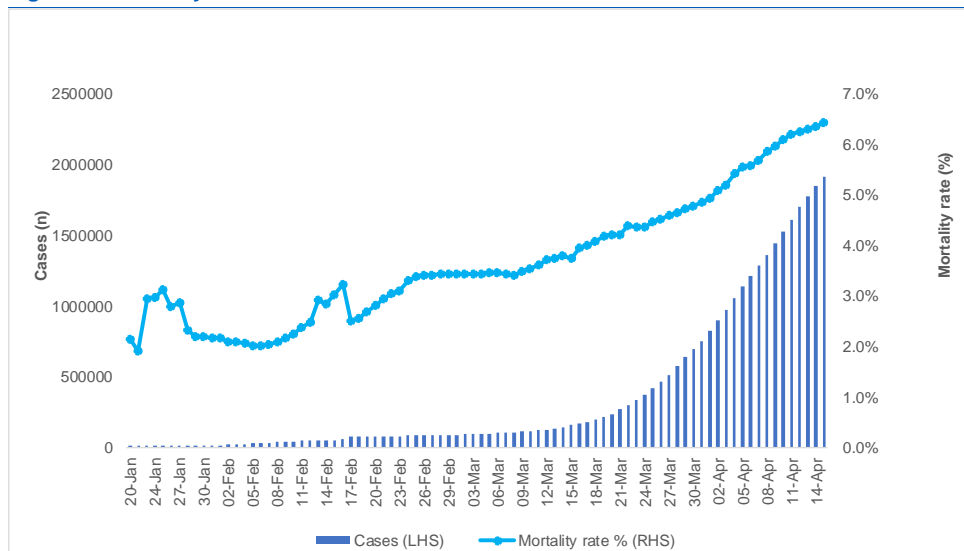
Source: WHO Situation Report; Shore Capital Markets

Mortality rate is around 6.3% using aggregate data

Mortality

The mortality rate of the virus using aggregate data is around 6.4% (Figure 18), but we continue to expect this to evolve with time and we would also caution about thinking of “the mortality rate” of the virus and instead think more of a “mortality range” which is determined by the exact situation (demographics and healthcare capacity) in which the virus finds itself.

Figure 13: Mortality rate %

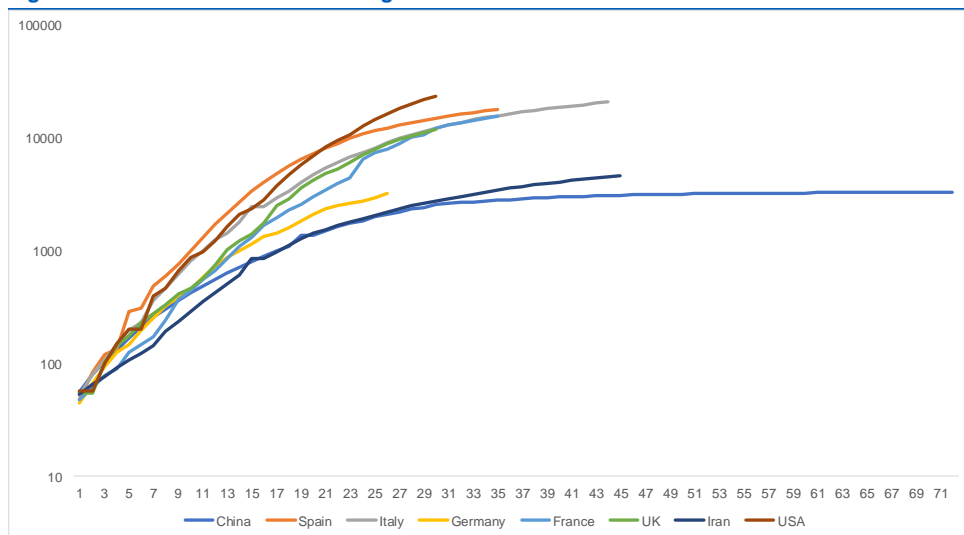


Source: WHO Situation Reports; Shore Capital Markets

UK mortality trajectory continues to bend but very close to Italy at an equivalent time point

In addition, the UK continues to show attenuation to the exponential pattern in its mortality case burden (Figure 19), however we would note it is tracking very close to Italy at an equivalent time point (largely equivalent). It is not inconceivable that the UK could exceed Italy in terms of deaths given the level of cardiovascular disease in the population, but the next two weeks will give a clearer picture of this as an expected surge in critical cases begins to manifest. The mortality rates in the countries we have focused on continue to evolve with only China having achieved a steady state (Figure 20).

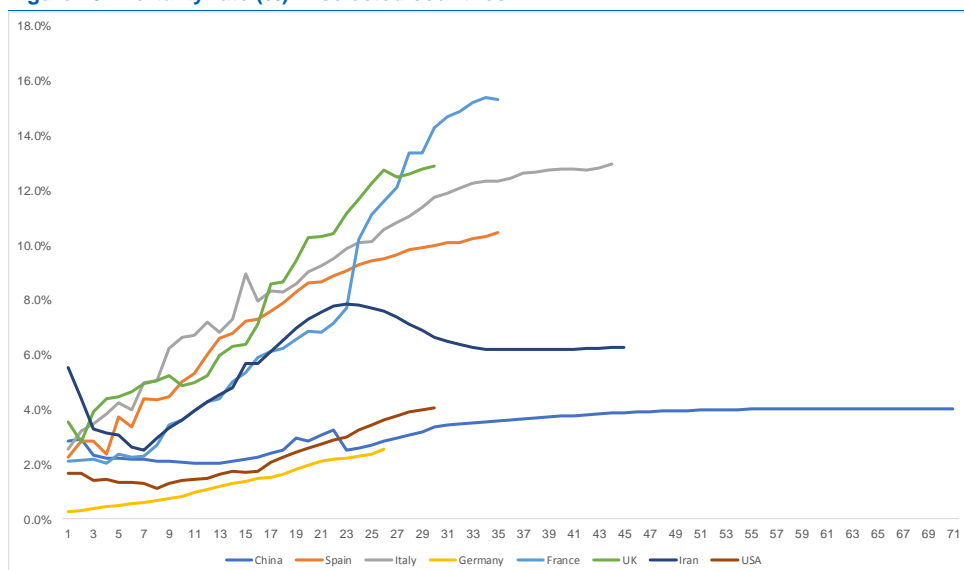
Figure 14: Cumulative deaths on a logarithmic scale in selected countries*



*x-axis is days since 50 deaths

Source: WHO Situation Report; Shore Capital Markets

Figure 15: Mortality rate (%) in selected countries*



*x-axis is days since 50 deaths

Source: WHO Situation Reports; Shore Capital Markets

Cases forecast to surpass two million

Live dashboard

As at 7am GMT on 16th April the Johns Hopkins University live tracker of the virus is showing total confirmed cases of 2,064,815, which would imply cumulative case growth of c8%. The tracker is reporting deaths of 137,078 which implies a mortality rate (on aggregate data) of 6.6%. Although note the WHO Situation Report includes cases reported by 6am Geneva time and so the numbers in the report later this evening will likely be lower than those noted here.

Further data from Meleam study in Italy

Serology update

Recent reports from Italy carried a story commenting on the results of a study from Italian lab Meleam. Data from the study suggested that around 38% of the general population in Italy could have been infected by SARS-COV-2 (the virus that causes COVID-19) but details on the methodology or sample were unclear. As such, we contacted the company for further comment on the study and it has provided the following details.

- The study was a serology test to detect antibodies, meaning it can discover who has previously been infected and not just those who are infected now.
- The first stage of the study took place between February 25th to April 2nd and involved the testing of 1,731 individuals from nine regions. Individuals were tested if they could remember having slight flu-like symptoms in the recent past but had subsequently recovered.
- The second stage of the study took place from April 3rd to April 10th and included 1,597 individuals from six regions and we believe included asymptomatic individuals, as well as those with a recollection of slight flu-like symptoms.

- In total 35% of the combined populations tested positive for antibodies.
- Study 1 reported that 38% of people tested positive.
- Study 2 reported that 30% of people tested positive.

We would make the following comments on the study results:

- It is still unclear exactly how the people were sampled and whether population-based, random sampling has been utilised is unknown.
- We believe Study 1 could overestimate the level of infection because it includes people who have a recollection of symptoms. This study is probably better thought of as trying to address the question of “what level of respiratory illness can be accounted for by COVID-19?” as opposed to “how many people in the general population have been infected?”
- Study 2 is more interesting given it includes asymptomatic individuals and we are not surprised its estimate is lower than study 1. However, without knowing how the individuals were selected or what proportion of asymptomatic people are included, it is difficult to draw strong conclusions.

So overall, it is difficult to draw firm conclusions from the study given we don't clearly understand the sampling methodology and (at least for Study 1) we believe the selection is non-random and likely to have skewed estimates upwards.

However, we thank Meleam for sharing this data given its critical importance in trying to understand the level of infection in the population.

Ranges from Germany and Denmark look small, but the sampling methodology is everything

We note comments from the WHO on its update call yesterday (Wednesday 15th April) that it had seen initial reports from antibody testing in Germany and Denmark, which gave a range of 4-15% of the population infected. The WHO noted it didn't yet understand the sampling method used (as above) and would have to clarify details. However, it did add that such estimates are lower than many people expected.

Overall, we would add that the sampling methodology used in antibody studies is the most important part of study design and so without understanding that, it is difficult to make firm conclusions on the actual level of infection in the general population. We would expect a range of estimates to appear in due course and much debate about the validity of various sampling methods. We did anticipate antibody data from the UK and the WHO in the last week, but this seemingly hasn't surfaced, with the WHO now talking about this being “weeks away”. Hopefully, such data appears soon as it's critically important to informing any exit strategy.

Finally, and most importantly, if the infection level in the population is a lot lower than previously thought then a “herd immunity” approach towards an exit strategy would clearly not be a viable option (meaning an “on/off” social distancing approach or more aggressive testing and case isolation would be the only options available prior to a vaccine arriving).

Serology tests being ramped up in the USA with mixed data from Europe so far

Conclusions

Situation Report 86 shows that new cases declined for a fourth consecutive day as hope increases that the peak of infection may have passed. The decline was driven by a fall in the Region of the Americas which offset an increase in Europe (albeit this follows two consecutive days of double-digit declines).

In the Region of the Americas, new cases declined for a fourth consecutive day, as US medtech firm Abbott announced its intention to provide 20 million serology (antibody) tests by June. Alongside this, the US FDA approved a further two serology tests and US payer Medicare announced its intention to increase payment for high throughput COVID-19 tests to encourage wider use across the country.

Europe continues to look in a good place despite an increase in new cases here (notably coming after two days of double-digit declines). A large increase in new cases in France seems to relate to delayed reporting from Easter.

Japan is currently driving the pattern in the Western Pacific as it grapples with a growing case burden and media reports suggest that approval ratings for the government have fallen amidst a perceived slow response to call a state of emergency.

Iran remarkably has reported 14 declines in new cases in the last 15 Situation Reports and such a consistent pattern looks strange to us, especially in the context of daily deaths also staying in a very consistent narrow band.

India remains an area of concern for us with another day of >1,000 cases and major cities now deemed as “red zones” of infections, however there was more promising news from South Africa which claims its recent fall in cases are a result of social distancing measures and have actually occurred in the context of more widespread testing.

In the UK, care homes are again in focus with the country’s testing strategy being widened to provide greater visibility in these settings.

Finally, recent serology data from Italian lab Meleam highlights the importance of understanding the exact sampling method used and we anticipate a wide range of estimates to appear in due course. However, if the infection in the general population is lower than previously thought, a herd immunity approach to an exit strategy would be off the table.

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