

## European Daily: A Q&A on Delta Variant Risks (Dacic)

- We have recently argued that the delta variant poses a manageable risk to the reopening and our constructive view on the European recovery. With continued investor focus on the pandemic developments in Europe, we stress-test our view in Q&A format.
- First, it looks like new case growth has peaked for now in the countries exposed early to the delta variant (including the UK and Spain), but will continue to rise elsewhere (including Germany and Italy). Second, our analysis confirms that vaccinations have been a key factor that has kept hospitalisations low. Third, while we find some effects from high infections on consumer behaviour, we see limited evidence so far of a persistent contribution to labour shortages. Finally, we continue to expect a gradual relaxation of remaining restrictions over coming months across Europe in view of manageable delta variant risks.

**Sven Jari Stehn**

+44(20)7774-8061 | jari.stehn@gs.com  
Goldman Sachs International

**Steffan Ball**

+44(20)7774-0471 | steffan.ball@gs.com  
Goldman Sachs International

**Alain Durre**

+33(1)4212-1127 | alain.durre@gs.com  
Goldman Sachs Paris Inc. et Cie

**Soeren Radde**

+44(20)7774-1105 |  
soeren.radde@gs.com  
Goldman Sachs International

**Filippo Taddei**

+44(20)7774-5458 |  
filippo.taddei@gs.com  
Goldman Sachs International

**Christian Schnittker**

+44(20)7774-2269 |  
christian.schnittker@gs.com  
Goldman Sachs International

**Nikola Dacic**

+44(20)7774-1633 |  
nikola.dacic@gs.com  
Goldman Sachs International

**Ibrahim Quadri**

+44(20)7774-5864 |  
ibrahim.quadri@gs.com  
Goldman Sachs International

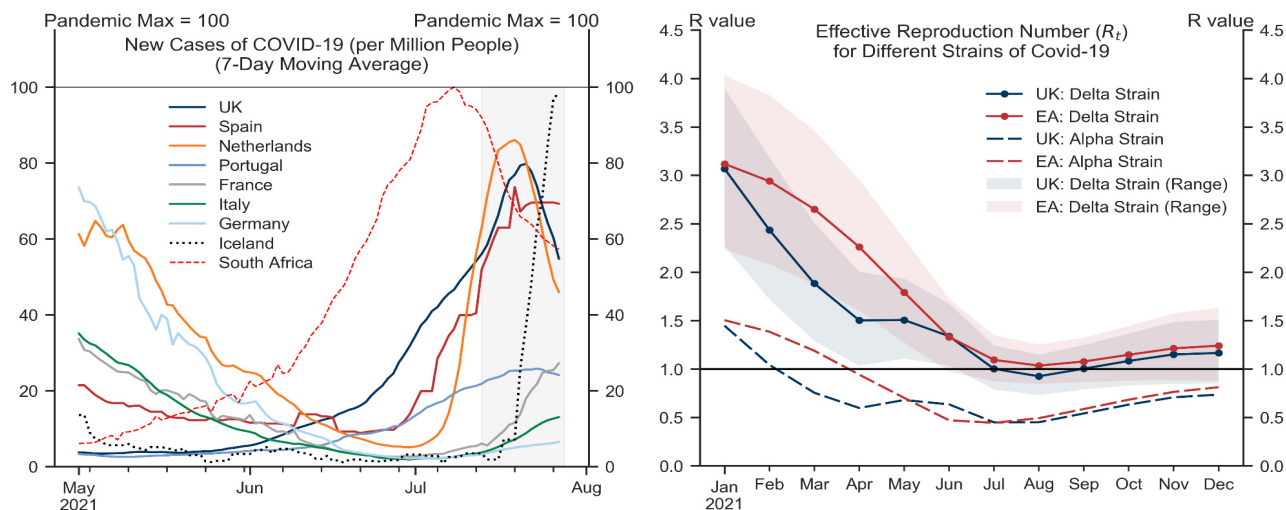
## A Q&A on Delta Variant Risks

One month ago, we argued that the delta variant posed a manageable risk to the reopening and our constructive view on the European recovery. With continued investor focus on the pandemic developments in Europe, we stress-test our view in Q&A format.

### Q1. Have new cases peaked?

*A: Possibly in countries that were exposed early to the delta variant (including the UK and Spain), but continued upward pressure is likely elsewhere. Moreover, cases might rise again later in the year.*

The latest data shows a slowdown in new cases across much of Europe, especially in countries which had seen a surge in infections in recent weeks such as the UK, Netherlands, and Spain (Exhibit 1, left). Continued progress in vaccinations, rising natural immunity from prior infections, fewer crowded mass events following the end of the Euros, warmer weather, school closures during the summer, and a renewed closure of night clubs (e.g., in the Netherlands) have all likely contributed to this trend. New cases are nonetheless still rising in parts of Europe, most notably in France and to a lesser extent Italy and Germany.

**Exhibit 1: Early Signs of the Delta Wave Peaking in Some Countries, Pointing to an R Below 1**

For details behind the right panel, see Nikola Dacic, "The Delta Variant—A Manageable Risk", European Daily, 25 June 2021. To construct the ranges shown, we vary the basic reproduction number by  $\pm 0.5$ , immunity levels by  $\pm 2\text{pp}$ , and the scale of weather effects from none to twice as large as assumed in the baseline scenario.

Source: Goldman Sachs Global Investment Research, OurWorldInData.org, Haver Analytics

The risk of renewed or continued increases in infections is intrinsically related to the prevailing reproduction (or 'R') number of the virus. While subject to estimation uncertainty and affected by a host of factors, our [analysis](#) suggests that while the R in the UK may have fallen below 1 currently—consistent with slowing new cases—the combination of remaining containment measures being gradually lifted along with colder weather may push the R of the delta strain back up above the crucial value of 1 in coming months, pointing to a risk of infections rising again later in the year (Exhibit 1, right). Intuitively, the highly transmissible nature of the delta strain has raised the bar for 'collective immunity', likely to at least 80-85% in order to ensure the R number remains below 1.<sup>1</sup> Our expected [vaccination timelines](#)<sup>2</sup>, along with (fairly conservative) assumptions on immunity from past infections, suggest both the UK and Euro area may *not* reach this threshold by year-end, but continued testing, some limits on mass events, and behavioural factors (e.g., voluntary mask wearing) could still lower R and help to contain rapid outbreaks.

## **Q2. Has mass vaccination been a key factor in keeping hospitalisations relatively low in Europe?**

A: Yes.

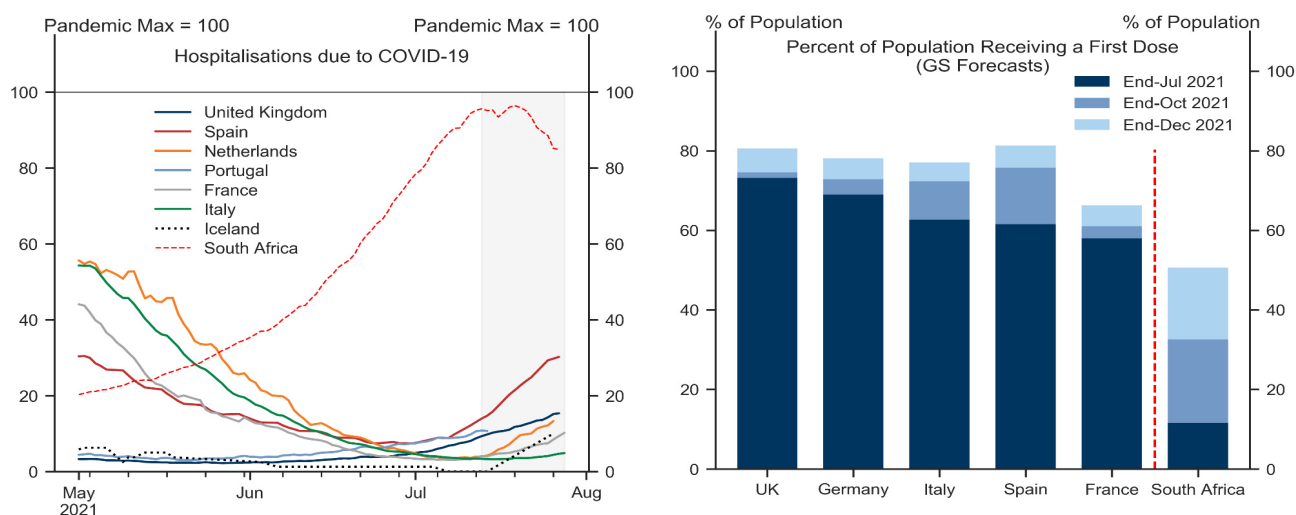
One of the most striking and consistent patterns in Europe over recent weeks has been the disproportionately low level of hospital admissions relative to new cases (Exhibit 2,

<sup>1</sup> The 80-85% requirement follows by assuming the *effective* reproduction number is solely a function of (i) the *basic* reproduction number of the virus, and (ii) the non-immune share of the population. Assuming a basic reproduction number of the delta strain of around 5.0-5.5 (in line with existing estimates) implies that (at least) 80-85% of the population would need to be immune to ensure R stays below 1. For details, see Nikola Dacic, "The Delta Variant—A Manageable Risk", European Daily, 25 June 2021.

<sup>2</sup> See also Sid Bhushan, Dan Milo, and Daan Struyven, "The End Game: Overcoming Vaccine Hesitancy", Global Economics Analyst, 1 June 2021.

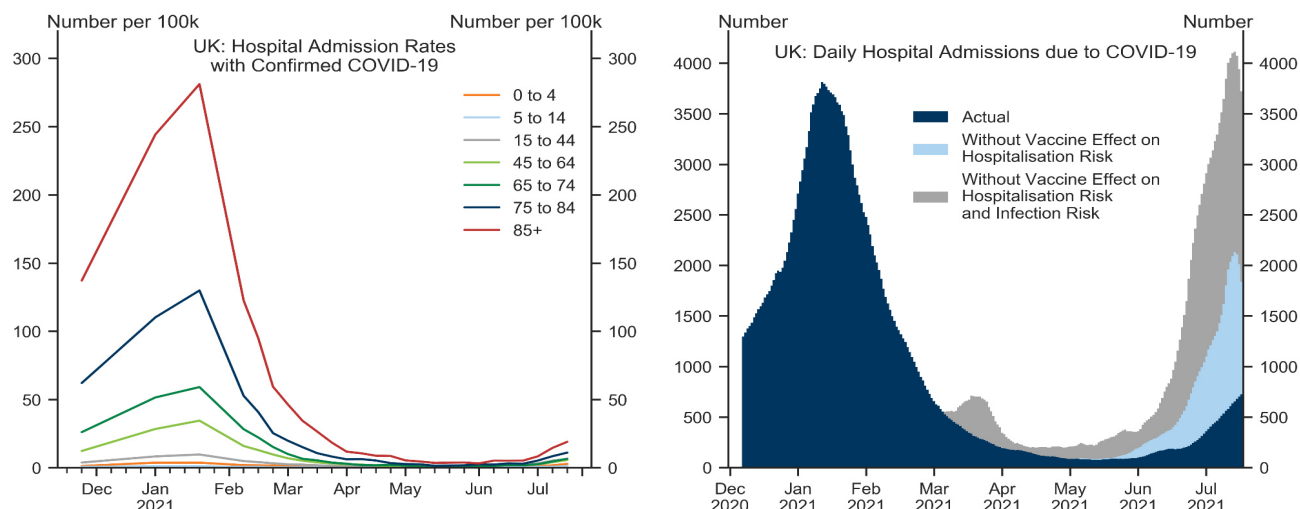
left). Although hospitalisations have risen somewhat over recent weeks, the ratio of hospitalisations-to-infections has remained stable at record low levels. The available evidence overwhelmingly suggests a key role for vaccinations in explaining these dynamics. Across countries, this divergence is most pronounced across developed and emerging economies, with hospitalisations rising sharply in a number of low-vaccination emerging economies (including South Africa), as our Global Team has [shown](#). By contrast, the relatively similar experience across European countries is consistent with comparably high levels of population that have been vaccinated (Exhibit 2, right).

**Exhibit 2: Vaccinations-Led Protection Against Hospitalisations Evident Across Countries...**



Source: Goldman Sachs Global Investment Research, OurWorldInData.org, Haver Analytics, National Health Ministries

Within Europe, there is clear evidence of an effect of vaccinations on hospitalisation risk. For example, UK data shows a sharp reduction in rates of hospitalisations across age groups, with particularly large and frontloaded reductions for older age groups consistent with (i) higher *pre-vaccine* hospitalisation rates for these groups, and (ii) the prioritisation of older groups in the initial distribution of vaccines (Exhibit 3, left). Importantly, vaccines have had a twofold effect on observed hospitalisations: first, by lowering *infection risk*, and second, by lowering *hospitalisation risk* conditional on an infection (especially for the elderly). We can parse out the relative importance of these two effects by (i) taking as given the observed new infections across age groups, but assuming *pre-vaccine* hospitalisation probabilities across age groups, and (ii) allowing cases to evolve without the dampening effect of vaccines on infection risk. We implement (i) by using hospitalisation probabilities from late November last year, and (ii) by assuming the *ratio* of new cases for all age groups *other than* 0-14 years of age evolves in constant *pre-vaccine* proportions to new cases among the youngest (which have had the lowest vaccination rate). Our results suggest that overall hospitalisations would have already exceeded the January peak—when nearly 90% hospital beds in England were [reportedly](#) full—without the benefit from vaccinations in terms of lower infection and hospitalisation risks (Exhibit 3, right).

**Exhibit 3: ... and Age Groups**

Source: Goldman Sachs Global Investment Research, GOV.UK, Public Health England, ONS

In Iceland, where over 85% of the 16+ population have received full doses—one of the highest shares globally—hospitalisations have only risen to around 10% of the historical peak, even though new cases have already reached an all-time peak after all restrictions on social contact were lifted at end-June. This pattern is also consistent with higher protection against hospitalisation than symptomatic infection, especially for non-mRNA vaccines (which have an overall share of around 43% in Iceland)—see ‘Efficacy of Vaccines Against Variants’ in our [Tracker](#).

### **Q3. Has there been a behavioural response from consumers to rising delta-variant cases?**

*A: Possibly some, but it appears modest so far.*

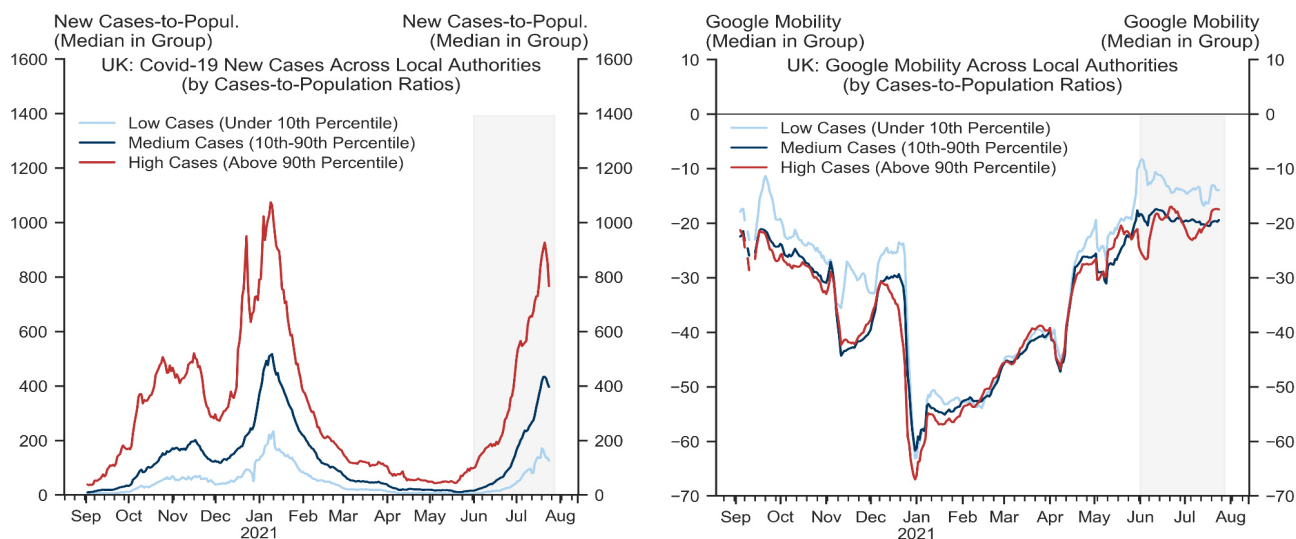
Although hospitalisations have remained disproportionately low relative to cases, it appears likely that the renewed outbreaks may have prompted consumers to voluntarily adjust their behaviour to reduce exposure to a potential infection. Such adjustments could come with economic costs, for instance if consumers reduce their spending on consumer-facing service activities (such as retail or hospitality). To analyse the potential magnitude of these effects, we consider two approaches and focus on the UK where the ongoing delta wave has been most advanced in Europe.

First, we make use of regional data on new infections and Google retail, transit, and workplace mobility for 152 local/regional authorities in the UK. We classify authorities on each date into three categories—‘low’, ‘medium’, and ‘high’—based on new infections relative to local population size. Exhibit 4 (left) shows the median cases-to-population ratio for each category. We find that regions with lower case growth have typically seen higher mobility, although these differences were negligible during the spring nationwide lockdown (Exhibit 4, right).<sup>3</sup> Over recent weeks, mobility has remained at higher levels in

<sup>3</sup> More formally, we find statistically significant effects (at the 1% level) of cases on mobility in a panel regression controlling for region and period fixed effects.

areas with lower cases, although the recent plateauing appears broad-based across all regions.

#### Exhibit 4: Some Drag on Mobility from Very High Cases



In the right panel, the data shown are 7-day moving averages. The full source for the mobility data is as follows: Google LLC "Google COVID-19 Community Mobility Reports". <https://www.google.com/covid19/mobility/> Accessed: 29 July 2021.

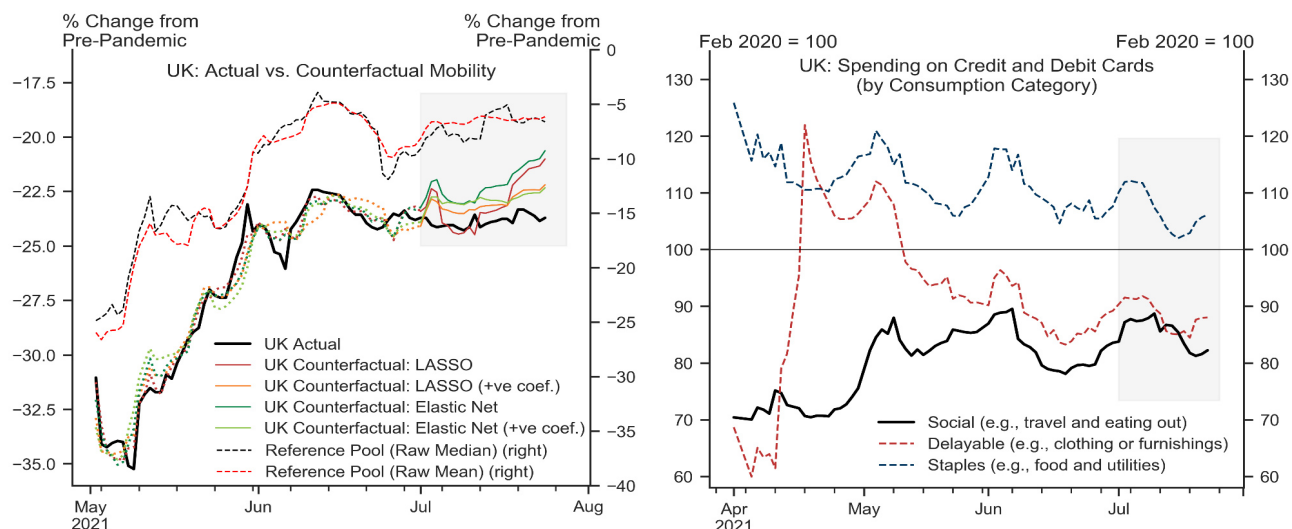
Source: Goldman Sachs Global Investment Research, Public Health England, Google LLC "Google COVID-19 Community Mobility Reports"

Second, to uncover whether the recent stagnation in some high-frequency UK metrics (including mobility) is UK-specific, we consider a set of 18 European countries which have *not* seen a significant increase in new cases since May—at least not large enough to potentially trigger a behavioural response—as a ‘counterfactual reference pool’ for the UK.<sup>4</sup> We then use statistical methods to match UK’s actual mobility data using that from these countries between 1 May and 1 July (at which point the UK’s outbreak became more severe).<sup>5</sup> Using the estimated coefficients, we then construct a counterfactual path for UK mobility after 1 July based on the mobility dynamics in the ‘low-delta’ reference pool, where the pace of mobility increases has also slowed in recent weeks. Our results nonetheless point to a moderate degree of UK underperformance relative to the counterfactual, suggesting scope for some behavioural effects (Exhibit 5, left).<sup>6</sup> This appears consistent with the material downside surprise in the UK flash composite PMI for July.

<sup>4</sup> The countries included are Austria, Belgium, Bulgaria, Croatia, Czech Republic, Estonia, Germany, Hungary, Ireland, Italy, Lithuania, Norway, Poland, Romania, Slovenia, Slovakia, Sweden, and Switzerland.

<sup>5</sup> Instead of using synthetic control methods (which attempt to match a number of ‘pre-treatment’ characteristics across the affected unit and the reference pool), we proceed by using regularised LASSO and Elastic Net regressions which allow for a large number of multicollinear regressors (as is the case in our application given strong co-movement of mobility across countries). Our estimation sample ranges from 1 May-1 July 2021. We show two versions: one with unconstrained LASSO/Elastic Net parameters, and another in which (as part of the estimation) we impose a non-negativity constraint on all coefficients.

<sup>6</sup> Importantly, there hasn’t been a further tightening of restrictions in the ‘low-delta’ reference pool of countries we consider over recent weeks. Otherwise, that could attenuate the implied scale of any behavioural effects due to high infections in the UK towards zero, as the slowing the pace of mobility improvements in the reference pool would then be partly restrictions-driven. We do not think this is the case given our choice of countries in the reference pool.

**Exhibit 5: Recent Slowing in UK Momentum Somewhat Larger Than Elsewhere, But Behavioural Effects Not Visible Across Spending Types**

In the left panel, the data shown are 7-day moving averages. The full source for the mobility data is as follows: Google LLC "Google COVID-19 Community Mobility Reports". <https://www.google.com/covid19/mobility/> Accessed: 29 July 2021.

Source: Goldman Sachs Global Investment Research, Haver Analytics, ONS

We also look at high-frequency data on credit and debit card spending in the UK, which does not seem to indicate significant behavioural effects due to rising cases, as the recovery in household spending on 'low-risk' categories (such as staples) and 'high-risk' social categories (such as restaurants) has stagnated in tandem over recent weeks, albeit at different levels (Exhibit 5, right).

Overall, while we do find evidence of some UK underperformance relative to 'low-infections' countries since early July, the recent flattening of mobility data even in areas of the UK with low cases and for 'low-contact' types of spending suggests other possible reasons—such as a moderation in sentiment following an initial overshoot—may also be contributing to the recent slowing in UK high-frequency data. We expect this slowing to reverse given the further easing of restrictions since 19 July and now-moderating case growth.

**Q4. Has the spread of the delta variant contributed to labour shortages?**

*A: Not in the Euro area (yet), and yes in the UK according to anecdotal evidence, but macroeconomic effects likely small and largely transient so far.*

A large number of anecdotal reports from the UK over recent weeks have suggested significant labour shortages as a result of those infected or their close contacts being asked to self-isolate. Recent reports showed that around 520k people were 'pinged' by the NHS Test and Trace App in the week ending 18 July.<sup>7</sup> Relatedly, the British Retail Consortium has reportedly warned that around 20% of shop workers have had to isolate. This was echoed in the weaker-than-expected flash PMIs for July, where "shortages of labour availability were made worse as many staff self-isolated".

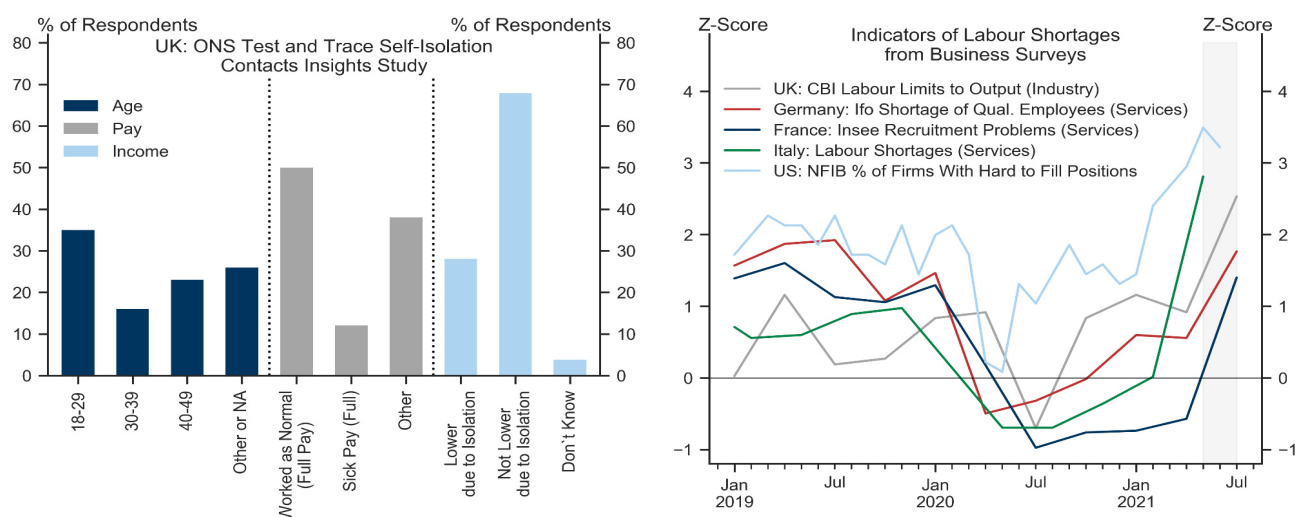
<sup>7</sup> Approaches to contact tracing vary across countries. See, for example, here for an overview of the contact tracing apps: <https://www.liberties.eu/en/stories/trackerhub1-mainpage/43437>.



How significant are these effects for the macroeconomy? First, data from the UK suggests that the majority of those in self-isolation were under the age of 40 (with 35% aged 18-29), consistent with the skew in infections towards younger age groups (Exhibit 6, left). ONS [survey data](#) suggests less than 30% of those asked to self-isolate have reported some loss of income, and 50% of those employed pre-isolation still continued to work as normal. On one hand, the combination of (i) infections and self-isolations skewed toward younger age groups which have lower employment rates, (ii) continued fiscal support (e.g., via furlough/short-time work schemes), (iii) higher teleworkability than pre-pandemic, and (iv) [plans](#) to end self-isolation for double-vaccinated workers from mid-August, suggests the impact of widespread new infections and the ensuing rise in absenteeism from work may be smaller than headline figures could suggest (e.g., 520k people in self-isolation vs. 1.5m on furlough). On the other hand, the planned phase-out of fiscal support (e.g., furlough in the UK) and scope for continued upward pressure on cases could continue to disrupt labour supply and hamper the normalisation of activity.

The latest data from business surveys does suggest an increasing degree of labour shortages from previous quarters, but the cross-country data does not point to a clear difference between countries with higher cases (e.g., the UK and France) and those with lower cases (e.g., Germany and Italy) (Exhibit 6, right). With activity levels well-below normal (especially in services) and a large number of workers still under furlough/short-time work schemes, rising labour shortages could be a concern.<sup>8</sup> While we do expect some upward pressure on unemployment rates in the [UK](#) and [Euro area](#) over coming quarters, we think the labour market consequences of the delta variant are likely to be largely transient, although some sectors (e.g., hospitality) could still be somewhat more affected temporarily.

**Exhibit 6: Self-Isolation and Labour Shortages**



Source: Goldman Sachs Global Investment Research, ONS, Haver Analytics

<sup>8</sup> One example is the UK's industrial sector, where manufacturing output remains around 3% below pre-pandemic but the CBI survey points to record-highs in labour shortages.

## Q5. Has the delta variant increased the risk of renewed restrictions over coming months?

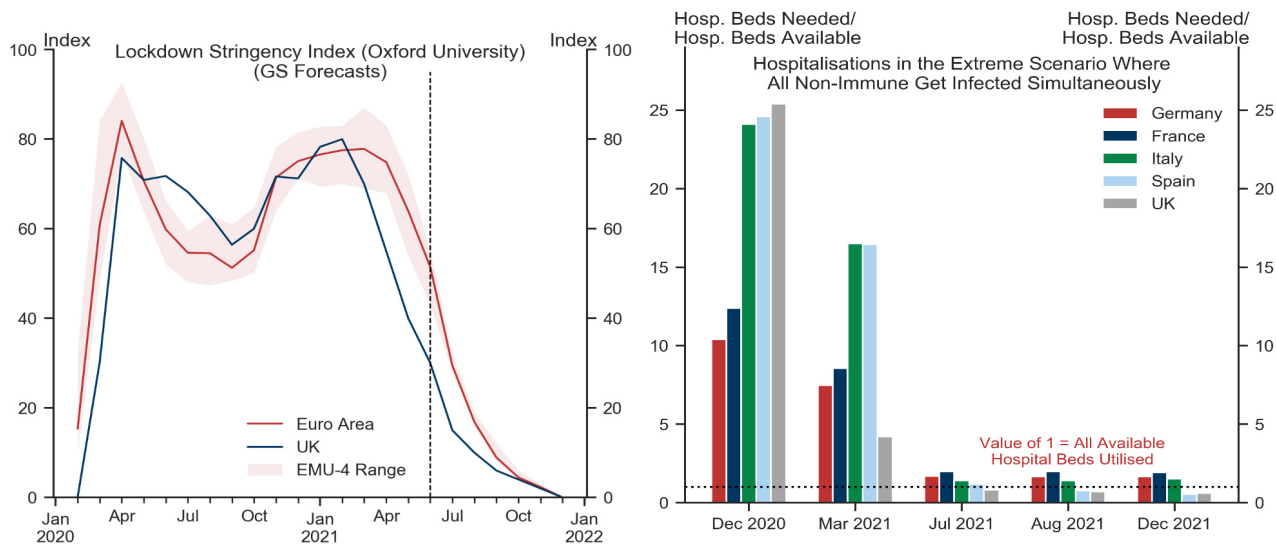
A: *Not significantly, and we think it poses a manageable risk overall.*

We continue to expect a gradual relaxation of the remaining containment measures by year-end, with Euro area governments in aggregate proceeding with some delay relative to the UK (Exhibit 7, left). We think the risk of renewed restrictions will ultimately depend on:

1. **Cases:** As we had argued above, we do see a risk of infections rising again in coming months, both in the UK and Euro area. That said, our analysis above points to limited evidence of significant persistent effects on consumer behaviour or labour availability from infections reaching levels we have seen in Europe over recent weeks. These effects could become larger if infections were to rise to much higher levels, in which case we would see scope for some targeted measures to be reimposed (e.g., limits on public gatherings or mass events, mask-wearing, or international travel), likely entailing only a modest economic cost.
2. **Hospitalisations and/or fatalities:** Our analysis suggests that even in a very severe and very unlikely scenario where each non-immune person was to become *simultaneously* infected, the pressure on hospitals would only modestly exceed available capacity.<sup>9</sup> Modelled scenarios by the UK's SAGE Institute also project hospitalisation outcomes that are well below (or no worse) than those from the winter wave, including in severe downside scenarios. We therefore think the risk of hospital overflow or elevated fatalities from here on is vastly lower than at any point since February 2020.
3. **New variants:** The potential emergence of new variants could take two forms. First, if a new highly-transmissible variant against which existing vaccines are nonetheless highly effective was to appear, its spread across Europe could cause some further delay to the recovery (depending on overall immunity levels at the point of its arrival). Second, if a new sufficiently-transmissible variant that is *vaccine-resistant* was to emerge, that could derail the recovery and remains the most severe downside risk in our view.

<sup>9</sup> Recent data from the UK suggests some increases in hospitalisation rates (number of admissions per confirmed case) even among the elderly groups with very high vaccination rates (e.g., rising from around 2% to around 3% over the last few weeks in the over 50s). That said, the absolute numbers remain low and—relatedly—the sampling variation makes it more difficult to ascertain whether this is a trend increase and how persistent it could be (in case infections were to rise further). In any case, these hospitalisation rates remain far below those from the winter wave.



**Exhibit 7: Lockdown Easing Under Manageable Risks**

For further details on Oxford University's Stringency Index, please see Hale, Thomas, Sam Webster, Anna Petherick, Toby Phillips, and Beatriz Kira (2020). Oxford COVID-19 Government Response Tracker, Blavatnik School of Government. The right chart is based a slight recalibration of its version first shown in "The Delta Variant—A Manageable Risk", European Daily, 25 June 2021, consistent with "Delta, Virus Resurgence, and Global Growth", Global Economics Analyst, 6 July 2021.

Source: Data compiled by Goldman Sachs Global Investment Research, Oxford COVID-19 Government Response Tracker, Blavatnik School of Government (University of Oxford)

Ultimately, on our baseline, we think neither the potential upward pressure on cases nor a much more moderate increase in hospitalisations by year-end are likely to trigger economically meaningful renewed restrictions while more targeted, less economically-costly measures (such as those in the Netherlands or Iceland recently) are possible. Continued vaccine efficacy against all strains is a crucial element of our assessment.

**Nikola Dacic**

# Disclosure Appendix

## Reg AC

We, Sven Jari Stehn, Steffan Ball, Alain Durre, Soeren Radde, Filippo Taddei, Christian Schnittker, Nikola Dacic and Ibrahim Quadri, hereby certify that all of the views expressed in this report accurately reflect our personal views, which have not been influenced by considerations of the firm's business or client relationships.

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