Box 1.1: The impact and recovery from COVID-19: a model-based scenario analysis

The road out of the crisis remains highly uncertain…

In addition to its impact on human health, COVID-19 has spurred a worldwide contraction of economic activity of speed and size unprecedented in peacetime. Entire sectors of the economy, such as air transport or entertainment, all but stopped operating. Consumers, both out of fear and lack of opportunity, cut spending; companies reduced production levels due to administrative restrictions, supply-chain disruption and reduced demand.

Real-time or 'fast' data has broken some ground in offering insights into the magnitude of the shock. While more standard indicators have since become available, high uncertainty still surrounds the future course of the pandemic and its impact on the economy. Model-based analysis can offer some orientation in such uncharted territory.

This Box sheds some light on the likely impact of three different trajectories of the pandemic on the EU economy. It builds on and updates the model simulations presented in the European Commission's Spring 2020 Forecast. ([1]) Compared to the previous analysis, the new baseline scenario extends the length of the 'lockdown' (strict containment and social distancing measures) from six to eight weeks, consistent with available information. ([2]) As a result, the disruptions observed over the first half of the year are proportionally larger than assumed before. Moreover, targeted containment measures and demand shortfalls are assumed to extend further into 2021. The simulation also includes an additional deterioration outside the EU due to the differentiated geographical spread of the pandemic and its impact on international trade. Finally, the scenario pencils in additional discretionary policy measures that have been announced by national authorities since the cut-off date of the spring forecast. By design, the projection of the 'baseline' scenario is in line with the GDP growth in this summer interim forecast.

([1]) See Special Issue 'How the pandemic shaped the forecast' on European Commission (DG ECFIN) (2020). 'European Economic Forecast: Spring 2020'. *Institutional Paper* 125, pp. 65-72.

([2]) Based on the number of weeks the GDP-weighted Oxford COVID-19 Government Response Tracker remained above 70 – a threshold which indicates widespread lockdowns.

…highlighting the value of alternative scenarios…

Building on this baseline, the 'slower recovery' scenario assesses potentially more persistent effects of the current crisis. It assumes that precautionary savings behaviour of households will have an even longer-lasting effect on the recovery from the second half of the year onwards. The 'second wave' scenario considers a potential resurgence of the pandemic in the last quarter of 2020 requiring additional confinement measures later in the year and in early 2021, with an average length similar to the one experienced in the first half of 2020. The renewed lockdown in this scenario, however, is assumed to cause smaller economic disruptions compared to the initial wave, provided that acquired experience and testing infrastructure allow for smaller and more targeted restrictions. ([3])

…which build on several shocks to simulate the impact of the pandemic…

The scenario analysis uses DG ECFIN's structural macro model QUEST. ([4]) This multi-region model has been adjusted to account for the novel type of economic disruptions caused by the pandemic and the associated containment strategies. ([5]) The scenarios distinguish a series of transmission channels. *Demand* and *supply* shocks distort households' consumption-savings decisions and dampen production, depressing consumer spending and the supply of goods and services. The assumed profile and size of the shocks follow a sector-by-sector assessment, which aims to capture the asymmetric effects across economic activities. These are further amplified in the 'second-wave' scenario, due to renewed tightening of restrictions and precautionary behaviour. Additional *risk premia shocks* reflect heightened uncertainty in the

([3]) The scenario assumes that demand and supply disruptions are around 50% lower than in March and April 2020. Reinstatement or introduction of measures could be considered at a local or regional level, or for specific population groups. See ECDC (2020). 'Coronavirus disease 2019 (COVID-19) in the EU/EEA and the UK'. 11 June.

([4]) See Burgert et al. (2020), 'A Global Economy Version of QUEST: Simulation Properties', *European Economy Discussion Paper* 126.

([5]) See Pfeiffer, P., Roeger, W. and in 't Veld, J., (2020), 'The COVID19 pandemic in the EU: Macroeconomic transmission and economic policy response', *Covid Economics*: *Vetted and Real-Time Papers*, Issue 30, 2020, 120-145.

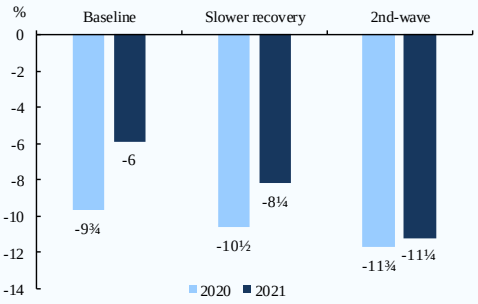
(Continued on the next page)

Box (continued)

current context. The model illustrates the dynamic adjustment of the economy to these transitory shocks. ([6]) In particular, firm *liquidity constraints* amplify the impact of cash flow shortages on investment, production, and employment. By contrast, *policy measures* through direct fiscal stimulus and liquidity support prevent a sharper output loss. ([7])

The 'baseline' scenario illustrates the massive detrimental economic impact on the EU economy from the crisis. The combined effect of the above channels amounts to an output loss of 9¾% relative to the growth path expected prior to the pandemic (see Graph 1). ([8]) This corresponds to a GDP contraction of around 8¼% in 2020.

Graph 1: **GDP deviations from pre-pandemic path**



Note: Deviation from the GDP growth path expected in the winter 2020 interim forecast.

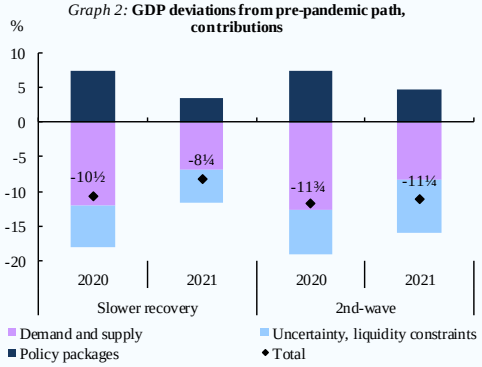
…in a situation where risks remain tilted to the downside.

Were consumption patterns to revert only very gradually to normality, output losses could grow substantially bigger. In the 'slower recovery' scenario, GDP falls around ¾ pps. and 2¼ pps. further below the baseline projection in 2020 and 2021, respectively. The slower recovery also implies increased adverse effects coming from firm liquidity constraints, which can only partially be stabilised by guarantees and liquidity support to firms.

A 'second-wave', even if under less stringent containment, could renew liquidity shortages via further contractions in private consumption, restrictions on production and new spikes in uncertainty. The more fragile financial position of firms following the initial pandemic shock diminishes their resilience when faced with a renewed outbreak, risking a further tightening of liquidity constraints. Further to this, scarring effects would likely take hold, impairing capital accumulation and hence the economy's productive potential. The simulated output loss amounts to 11¾% and 11¼% in 2020 and 2021, respectively.

In all scenarios, most of the contraction is associated with demand and supply disruptions (see Graph 2). In addition, firm liquidity constraints and uncertainty substantially prolong the slump, leading to a more 'U-shaped' recovery. As a result, output in 2021 remains still markedly below its expected pre-pandemic path. The simulations also show that timely discretionary fiscal policy and liquidity support help cushion more than one-third of the economic fallout.

Graph 2: **GDP deviations from pre-pandemic path, contributions**



Note: Deviation from the GDP growth path expected in the winter 2020 interim forecast.

Finally, besides the significant downside risks considered here, further policy action remains an upside factor. A coordinated policy response at the EU level as recently proposed by the Commission's 'Next Generation EU: A recovery plan for Europe' could substantially support the recovery. ([9])

([6]) All shocks are applied to all regions in the model.

([7]) The discretionary fiscal stimulus includes national and EU-level (non-health related) government expenditure (4.9% of EU GDP) and tax cuts (0.8% of EU GDP). Liquidity support (50% of GDP, excluding ECB measures in 2020 and 2021) is assumed to offset about half of the amplification coming from firms liquidity constraints. All scenarios feature automatic stabilisers.

([8]) Before the pandemic, EU GDP was forecast to grow by 1.4% in 2020 and 2021, which is taken as the 'pre-pandemic path'. See 'European Economic Forecast: Winter 2020'. *Institutional Paper* 121.

([9]) See European Commission (2020), 'Identifying Europe's recovery needs', *Staff Working Document* (2020) 98.