BOX 1.4 Global growth scenarios

The highly uncertain evolution of the pandemic, influenced in part by government actions, social behavior, and vaccine-related developments, will play a critical role in shaping the global recovery's strength and durability. This box describes possible global growth outcomes under different pandemic assumptions. In the baseline scenario, social distancing and a gradual vaccination process allow policy makers to make significant inroads containing the pandemic. In a downside scenario, insufficient pandemic control efforts accompanied by delayed vaccination leads to persistently higher infection levels and a materially worse growth outcome. In a severe downside scenario, these disappointing epidemiological developments combine with a sharp increase in risk aversion to trigger financial crises in many countries. In contrast, in an upside scenario, effective management of the pandemic combine with rapid vaccine deployment to set the stage for stronger growth outcomes.

Introduction

With the COVID-19 pandemic still spreading across the world, and caseloads reaching record levels in many economies, the global outlook will remain heavily dependent on the pandemic's evolution. Turning the tide of the pandemic in the near term will be challenging, requiring voluntary social distancing on the part of households and the imposition of a variety of pandemic management measures by governments. The widespread deployment of effective vaccines will play a key role in halting the pandemic's progression, and is also expected to strengthen economic activity by raising confidence and improving financial market conditions. This box presents four scenarios to illustrate the implications of alternative pandemic outcomes on the global economy in 2021-22 (figure B1.4.1). These scenarios differ in their assumptions on the evolution of COVID-19 caseloads, vaccine deployment, voluntary social distancing by households, the stringency of pandemic-control policies imposed by governments, and financial market stress.

The ***baseline scenario*** assumes that voluntary and mandatory pandemic control measures are diligently maintained over the next several quarters until after widespread vaccination becomes available. From its recent increases in several major economies, the daily number of infections is assumed to decline in the first half of 2021 in most countries. In advanced economies and major EMDEs, vaccination campaigns proceed in early in 2021 and reach widespread coverage in the second half of 2021; this vaccination process would be delayed by two to four quarters in other EMDEs and LICs partly due to logistical impediments. Activity is expected to improve as the pandemic abates, vaccines are rolled out, and financial conditions remain benign, supported by exceptionally accommodative monetary policy.

The ***downside scenario*** assumes a persistently higher level of new cases in many regions throughout the forecast horizon. In advanced economies and major EMDEs, the vaccination proceeds at a much slower pace than under the baseline—with an additional delay of two to four quarters in other EMDEs and LICs—and is limited by a reluctance of a sizeable share of the population to be immunized. Activity would remain depressed as authorities struggle to contain the pandemic, while financial conditions would deteriorate markedly.

The ***severe downside scenario*** extends the downside scenario by exploring the possibility that authorities cannot contain widespread financial stress caused by a sharp rise in risk aversion after disappointing pandemic developments and widespread bankruptcies. Amid heightened financial vulnerabilities, financial crises would erupt in several countries.

In contrast, the ***upside scenario*** assumes more effective management of the pandemic, coupled with the rapid deployment of highly effective vaccines. This would trigger a faster easing of social distancing and a stronger recovery in activity.

Methodology. The global growth scenarios are developed using a combination of models and assumptions.[a] A Susceptible-Infected-Recovered (SIR) model is used to evaluate the impact of alternative vaccine assumptions on the evolution of the pandemic. Correlations based on cross-country regressions are used to project forward the stringency of pandemic-control policies conditional on caseloads. Regression estimates are then used to map the impact of voluntary social distancing—proxied by projected caseloads—and involuntary social distancing on private consumption. These consumption shocks, which

Note: This box was prepared by Justin-Damien Guénette under the supervision of Carlos Arteta, with contributions from Alain Kabundi, Hideaki Matsuoka, and Takefumi Yamazaki.

[a] The baseline and downside scenarios are an aggregation of individual country scenarios, while the upside and severe downside scenarios are model-based. The baseline and downside scenarios cover 182 countries, including 146 EMDEs. The model-based upside and severe downside scenarios are modelled as deviations from the baseline and the downside scenario, respectively.

BOX 1.4 Global growth scenarios *(continued)*

represent a mixture of voluntary and involuntary social distancing, are integrated into a macroeconometric model.[b] Scenarios are further enhanced with assumptions of financial stress, which are modeled as spikes in financial market volatility (annex 1.1).

Baseline scenario

Pandemic assumptions. In the baseline scenario, following a sharp resurgence that began toward the end of last year, many economies are able to reduce the daily number of infections in the first half of 2021. The reduction in caseloads is made possible by a combination of stringent lockdown measures as well as less costly pandemic-control policies such as social distancing guidelines and universal masking. In advanced economies and major EMDEs (including China, India, and Russia), inoculation with highly effective vaccines proceeds in the first quarter of 2021—first to vulnerable groups and subsequently to the general population—and becomes widespread in the second half of 2021 (figure B1.4.2).[c] Social distancing eases gradually through the remainder of the forecast horizon. The vaccination process is expected to be delayed by two quarters in most other EMDEs and by four quarters in LICs, owing to logistical impediments to vaccine production and distribution.

Macroeconomic channels. Activity is assumed to recover gradually as caseloads decline and social distancing efforts are relaxed, enticing households to increase their consumption of contact-intensive services. Firms grow cautiously optimistic in the face of a recovery in aggregate demand and a decline in pandemic policy uncertainty, and take advantage of historically low interest rates to modestly increase the pace of investment and boost hiring. Sustained fiscal support assists displaced workers and cash-strapped firms in major economies and many EMDEs, while EMDEs facing fiscal space constraints manage to avoid harsh austerity. The vaccine rollout, coupled with accommodative monetary policy, underpins the continuation of benign financial conditions.

Growth outcome. The baseline scenario projects a moderate expansion in global activity of 4.0 percent in 2021, following a 4.3 percent collapse in 2020 (Table 1.1). Global growth is then envisioned to slow to 3.8 percent in 2022. Despite the projected recovery in 2021 and 2022, output is expected to remain well below pre-pandemic trends at the end of the projection horizon. Growth in EMDEs is expected to bounce back to 5 percent in 2021 from a 2.6 percent contraction in 2020, before slowing to 4.2 percent in 2022. The modest rebound in EMDE growth would not be enough to restore debt sustainability in some EMDEs, with the gap between the debt-stabilizing and the actual primary balance for EMDEs remaining negative through 2022. Following a sharp contraction of 9.5 percent in 2020, global trade is expected to experience a modest pickup to an average of 5.1 percent in 2021-22. For additional details, see the Global Outlook section of chapter 1.

Downside scenario

Pandemic assumptions. Insufficient pandemic management and lax compliance with social distancing measures leads to notably higher levels of new cases in many countries in 2021, requiring longer-lasting and more stringent pandemic-control measures. Relative to the baseline scenario, vaccine deployment in advanced economies and major EMDEs is slowed by supply bottlenecks and the reluctance of a higher proportion of the population to receive vaccinations.[d] As in other scenarios, rollout in other EMDEs and LICs begins up to four quarters after rollout in advanced economies and major EMDEs owing to logistical issues. Caseloads decline only gradually through 2022, mostly due to sustained social distancing.

Macroeconomic channels. Activity remains depressed, as households fear contact-intensive services, including recreation and tourism, and grapple with stringent social distancing measures. Firms—facing pandemic-control policies, a bleak outlook for consumer demand, and elevated uncertainty—curtail investment and hiring plans.

[b] The Oxford Global Economic Model—a large-scale global semi-structural projection model—is used to conduct the simulations described here (Oxford Economics 2020). The model includes 81 individual countries (35 advanced economies and 46 EMDEs), most of which are available at a quarterly frequency, with behavioral equations governing domestic economic activity, monetary and fiscal policy, global trade, and commodity prices.

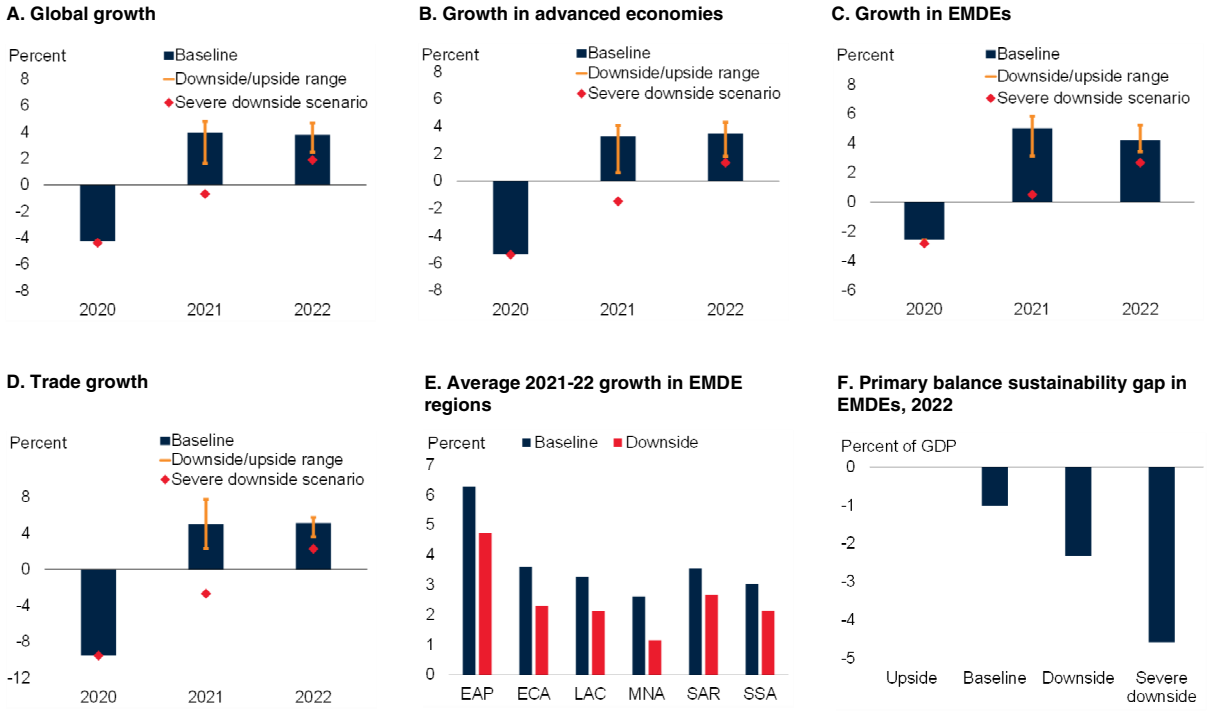
[c] In all scenarios, the effectiveness of COVID-19 vaccines is assumed to be 85 percent—slightly lower than recently reported effectiveness—to accommodate for the rollout of several vaccines of varying effectiveness (Fitch 2020; Moderna 2020; Pfizer 2020). The vaccine rollout in advanced economies and large EMDEs is assumed to proceed at a slow pace initially and accelerate quickly as logistical and supply impediments are overcome. In the baseline scenario, the share of the population amenable to inoculation is assumed to be about two-thirds based on global survey evidence (Lazarus et al. 2020).

[d] Only about half of the population in advanced economies and major EMDEs is assumed to be amenable to vaccination, a level broadly consistent with the lower bound from global survey evidence (Lazarus et al. 2020).

BOX 1.4 Global growth scenarios *(continued)*

FIGURE B1.4.1 Global growth scenarios

The recovery will depend heavily on controlling the spread of the pandemic—in part a function of vaccine outcomes. In the baseline scenario, a decline in cases, a vaccine rollout that gathers pace in early 2021, and the eventual easing of pandemic-control measures underpin a modest rebound. In the downside scenario, persistently higher caseloads, more stringent involuntary social distancing, and slow vaccine development markedly weaken the recovery. In the severe downside scenario, widespread financial stress and mounting firm bankruptcies trigger financial crises, causing a second year of global recession. In the upside scenario, effective pandemic management, coupled with prompt widespread vaccination, allows activity to recover faster.



Sources: Oxford Economics; World Bank.
Note: Aggregate growth rates calculated using GDP weights at 2010 prices and market exchange rates.
F. A negative gap indicates a primary balance that would set government debt on a rising path. Gaps calculated as in Kose, Kurlat et al. 2020.
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Financial conditions tighten markedly through 2021, as financial market sentiment continuously deteriorates in tandem with a string of unexpected vaccine delays and insufficient control of the pandemic, and as corporate and bank balance sheets deteriorate over prolonged demand weakness and forbearance requirements. While accommodative monetary policy keeps financial crises at bay, fiscal sustainability concerns limit the size of additional fiscal stimulus, leading to insufficient income support to the unemployed and struggling small- and medium-sized firms.

Growth outcome. The downside scenario features a much weaker and more protracted recovery, with global growth limited to 1.6 percent in 2021 and 2.5 percent in 2022.[e] In the downside scenario, the recovery in advanced economies is stunted, with growth averaging less than 2 percent over 2021-22. Similarly, projected output growth in EMDEs would be markedly reduced from an average of nearly 5 percent in the baseline scenario to about 3.3

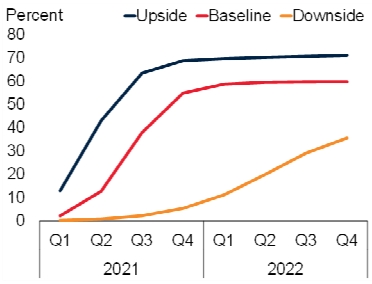
[e] Slower vaccine distribution leads to higher COVID-19 caseloads relative to the baseline, requiring additional voluntary and involuntary social distancing. On its own, the downside vaccine assumption is estimated to reduce global growth by 0.1 percentage point in 2021 and 0.8 percentage point in 2022. The remainder of the downward revision relative to the baseline scenario reflects increased involuntary social distancing brought on by persistently higher caseloads and tighter financial conditions.

BOX 1.4 Global growth scenarios *(continued)*

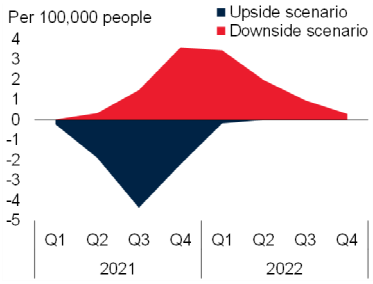
FIGURE B1.4.2 Scenario assumptions

Vaccination is assumed to begin slowly at first and then ramp up quickly as impediments are overcome. Vaccination helps reduce new cases. Social distancing and pandemic-control policies are eased as caseloads decline. Financial conditions are assumed to remain mostly benign in all scenarios other than the severe downside scenario, which envisions a sharp tightening of financial conditions. Oil prices are assumed to reflect variations in global demand across scenarios.

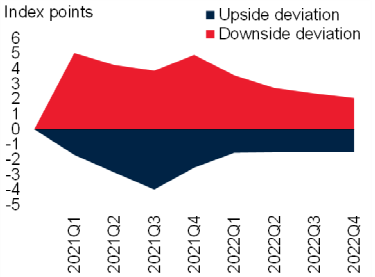
A. Assumed share of effectively vaccinated population: advanced economies and major EMDEs



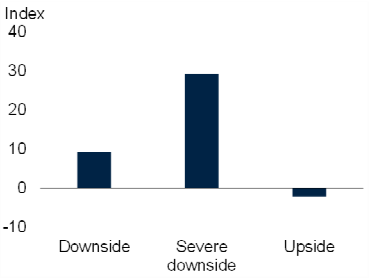
B. Impact of vaccine assumptions on number of COVID-19 cases in major economies



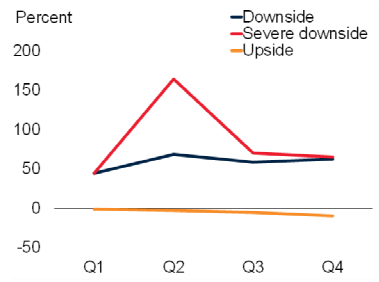
C. Impact of alternative pandemic assumptions on social distancing



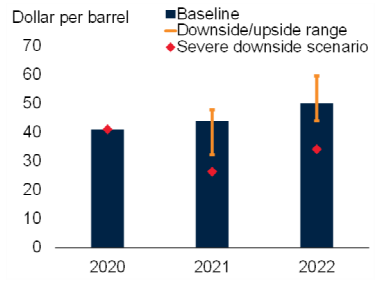
D. VIX assumptions relative to baseline for 2021



E. Corporate borrowing spread assumptions relative to baseline for 2021



F. Oil price assumptions



Sources: Oxford Economics; World Bank.

A. Solid lines are vaccine distribution assumptions for advanced economies and major EMDEs (China, India, and Russia).

B. Blue (red) areas show the difference of new daily confirmed COVID-19 cases per 100,000 individuals between the upside (downside) scenario and the baseline pandemic scenario.

C. Blue (red) areas show the difference of an index of involuntary social distancing between the upside (downside) scenario and the baseline pandemic scenario.

D. Chart shows the combined exogenous and endogenous deviation of the VIX, the Chicago Board Options Exchange's Volatility Index, from the baseline scenario in 2021.

E. Chart shows simple average of corporate borrowing spreads in the G7 (Canada, France, Germany, Italy, Japan, the United Kingdom, and the United States) and EM7 (China, India, Brazil, Mexico, Russia, Indonesia and Turkey). Corporate borrowing spread is defined as the difference between the 5-year corporate BBB bond yield and the 10-year sovereign bond yield.

F. Oil price is the simple average of Brent, Dubai, and West Texas Intermediate prices.

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percent over 2021-22. By 2022, global and EMDE output would still be 3.5 and 2.5 percent, respectively, below output in the baseline scenario. Weaker growth would worsen debt sustainability across EMDEs. Even in 2022, after two years of recovery, the gap between the debt-stabilizing and the actual primary balance for EMDEs would still be about twice as large in the downside scenario as in the baseline scenario, setting government debt on a steeper rising path. Global trade growth would recover somewhat faster than global output growth, in line with elasticities seen during past global recessions, but would remain around its modest 2010s average.

The materialization of the downside scenario would hit commodity- and tourism-dependent EMDEs particularly hard (chapter 2). Among EMDE regions, growth would be lowest in LAC, MNA and SSA, reflecting a heavy reliance on exports of oil and industrial commodities, the prices of which would be reduced by weak global demand. Moreover, a worsening of the pandemic across all regions

BOX 1.4 Global growth scenarios *(continued)*

would lead to extended travel restrictions with dire consequences for tourism-dependent economies.

Severe downside scenario

Pandemic assumptions. As in the downside scenario, the pandemic in the severe version is much more difficult to manage than in the baseline scenario, and the vaccine rollout is delayed. Longer-lasting and more stringent pandemic-control measures are needed through 2021 and beyond to achieve a sustained reduction in caseloads.

Macroeconomic channels. The severe downside scenario differs from the downside scenario's assumptions in the authorities' inability to stave off widespread financial market stress. The prolonged period of depressed consumption and investment caused by persistent social distancing erodes corporate balance sheets to an extent that triggers widespread corporate defaults and concerns about bank balance sheets. Banks, in turn, sharply curtail their lending activities at a time when sovereigns are hard-pressed to expand emergency lending programs, with fiscal space constrained by the realization of loan guarantees in advanced economies and capital flight in EMDEs. Several countries experience financial crises, which reverberate through the global economy in the form of sharply tighter financial conditions, diminished domestic and foreign demand, and plummeting commodity prices. An extended period of debt-deleveraging and subdued growth follows the initial crisis, compounding the pandemic's toll on the supply side of the economy.

Growth outcome. In this scenario, widespread financial crises, combined with a prolonged pandemic and delayed vaccination, would plunge the global economy into a second year of recession in 2021, before growth returns to a subdued rate of nearly 2 percent in 2022.[f] Advanced economies and EMDEs excluding China would experience a renewed contraction in 2021. As with global output, global trade growth would contract for a second consecutive year, followed by a subdued bounceback in 2022.

Severe output losses and rising borrowing cost would cause the gap between the debt stabilizing and the actual primary balance to balloon to almost five times that in the baseline scenario in 2022. Hence, even once the recovery starts in 2022, it would take a front-loaded fiscal consolidation of nearly 5 percent of GDP, on average in EMDEs, to stabilize debt at its long-term median.

Upside scenario

Pandemic assumptions. Following the recent upsurge in global cases, effective public education campaigns and concerted multilateral coordination efforts would ensure a high degree of compliance with pandemic-control policies around the world, allowing many economies to begin rolling back the stringency of pandemic-control measures starting in the first half of 2021. Immunization campaigns proceed promptly in advanced economies and major EMDEs at the start of 2021. Widespread vaccine deployment is achieved by mid-2021 in advanced economies and major EMDEs, and up to four quarters later in other EMDEs and LICs.

Macroeconomic channels. Activity rebounds sharply as social distancing eases and households increase their demand for services amid substantial gains in employment and wages. Simultaneously, economic uncertainty dissipates, encouraging firms to invest heavily in new equipment and technologies. Positive developments in vaccine rollout—alongside the widespread release of affordable breakthrough therapeutics—trigger a sustained surge in equity markets and more benign global financial conditions. While extraordinary monetary policy accommodation begins to wane as employment improves, fiscal policy helps support workers throughout a lengthy sectoral reallocation process. Moreover, the shared global experience of combatting COVID-19 is assumed to strengthen multilateralism, with a renewed push for global trade agreements and a rules-based international trading system contributing to stronger global trade growth.

Growth outcome. Overall, in this scenario, global growth would strengthen notably, to nearly 5 percent in 2021, with advanced economies and EMDEs growing 4.1 percent and 5.8 percent, respectively.[g] Still, world growth in 2022 would be not much stronger than the baseline,

[f] The degree of financial stress induced by the pandemic is assumed to be comparable to that during the global financial crisis, with the VIX volatility index averaging 53 points over 2021Q2 and 2021Q3, compared to an average of 52 in 2008Q4 and 2009Q1. Credit spreads increase by 420 basis points on average over 2021Q2 and 2021Q3, compared to an average increase of 426 basis points in 2008Q4 and 2009Q1.

[g] Faster vaccine deployment meaningfully reduces the projected number of COVID-19 cases relative to the baseline, allowing for a faster easing of social distancing. On its own, the upside vaccine assumption is estimated to increase global growth by 0.4 percentage point in both 2021 and 2022. The remainder of the upside revision relative to the baseline scenario reflects reduced involuntary social distancing brought on by a faster resolution of the pandemic, and improved financial conditions.

BOX 1.4 Global growth scenarios *(continued)*

with the upside to growth limited by scarring from the exceptionally severe downturn in 2020. By 2022, global and EMDE output would be only 1.7 and 1.8 percent, respectively, above the baseline scenario. Such a robust recovery might be enough to stabilize EMDE debt at its long-term median. Global trade growth would experience a strong recovery, averaging nearly 7 percent over 2021 and 2022.

rising costs for businesses, fragmentation in global economic links, and lower productivity (Antràs 2020). This could stem from the simmering trade disputes involving major economies, as well as the diminished role of global bodies in recent negotiations. In addition, many countries have signed bilateral supply agreements with vaccine manufacturers; if not properly coordinated, this could lead to an undersupply of vaccines in other countries, which would be unable to control further COVID-19 outbreaks. Similarly, some border and trade restrictions imposed to slow the spread of the pandemic could be maintained even after the health crisis dissipates.

A further erosion in global cooperation risks reducing the world's ability to deal with increasingly urgent trans-national problems, including future health crises as well as climate change and global poverty. This would be particularly damaging for countries following export-led development strategies, which become less viable when global trade is impaired.

Region-specific downside risks

Many regions remain vulnerable to civil unrest, particularly where inequality is elevated, governance is poor, and economic growth is weak—all of which could be exacerbated as a result of the pandemic. Social unrest remains at a high level in parts of LAC, ECA, and MENA, and falling per capita incomes could trigger rising discontent in SSA and elsewhere. Similarly, geopolitical risks remain an important risk, to varying degrees, across EMDE regions. Both civil and international military conflicts are associated with severe disruptions to growth.

A period of persistently low commodity prices could worsen the prospects of commodity-exporting economies and regions such as MENA. This could lead to fiscal tightening, slow their recovery from the global pandemic, and increase the risk of some countries falling back into recession should additional negative shocks occur.

Disruptions from natural disasters and weather-related events are a persistent source of severe downside risk for a host of economies, especially in LICs and island economies in East Asia and Pacific (EAP) and LAC. Many categories of extreme events are becoming more frequent as a result of climate change (Smith et al. 2020). Droughts and wildfires are making some areas uninhabitable, and potentially permanently changing ecosystems (Staal et al. 2020). Although global food stocks are elevated, food insecurity remains a concern, particularly in low-income countries, as a result of declining household incomes as well as localized price spikes in some regions.

Upside risks

Although downside risks predominate, stronger-than-expected outcomes cannot be ruled out, especially if the vaccine rollout proceeds faster than currently anticipated. As discussed in box 1.4, the pace of vaccine deployment could surpass financial market expectations, triggering a sharp rise in confidence and ushering a strong rise in domestic demand. Consumption and investment would strengthen steadily as employment recovers and pandemic-induced uncertainties dissipate, and the hardest-hit services sectors such as restaurants and tourism would experience a sharp uptick from pent-up demand.

It is also possible that the shared global experience of combatting COVID-19 ushers in a renewed move toward multilateralism. Greater support for a stable, open, and rules-based international trading system could drive a reduction in tariffs, an uptick in trade, stronger foreign investment in EMDEs and, ultimately, more robust global growth.

Over the longer-term, some of the changes in practices that took place during the pandemic may