INTERNATIONAL MONETARY FUND

REGIONAL ECONOMIC OUTLOOK

EUROPE

Whatever It Takes:
Europe's Response to COVID-19

2020
OCT

World Economic and Financial Surveys

Regional Economic Outlook

Europe

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Cataloging-in-Publication Data

Names: International Monetary Fund, publisher.
Title: Regional economic outlook. Europe : whatever it takes : Europe's response to COVID-19.
Other titles: Europe : whatever it takes : Europe's response to COVID-19. | World economic and financial surveys.
Description: Washington, DC : International Monetary Fund, 2020. | World economic and financial surveys, 0258-7440. | Oct. 20. | Includes bibliographical references.
Identifiers: ISBN 9781513558233 (English Paper)
9781513558240 (English ePub)
9781513558257 (English Web PDF)
9781513558417 (French Paper)
9781513558424 (French ePub)
9781513558431 (French Web PDF)
9781513558455 (Russian Paper)
9781513558462 (Russian ePub)
9781513558479 (Russian Web PDF)
Subjects: LCSH: Economic development—Europe. | Economic forecasting—Europe. | Banks and banking—Europe.
Classification: LCC HC240.R44 2020

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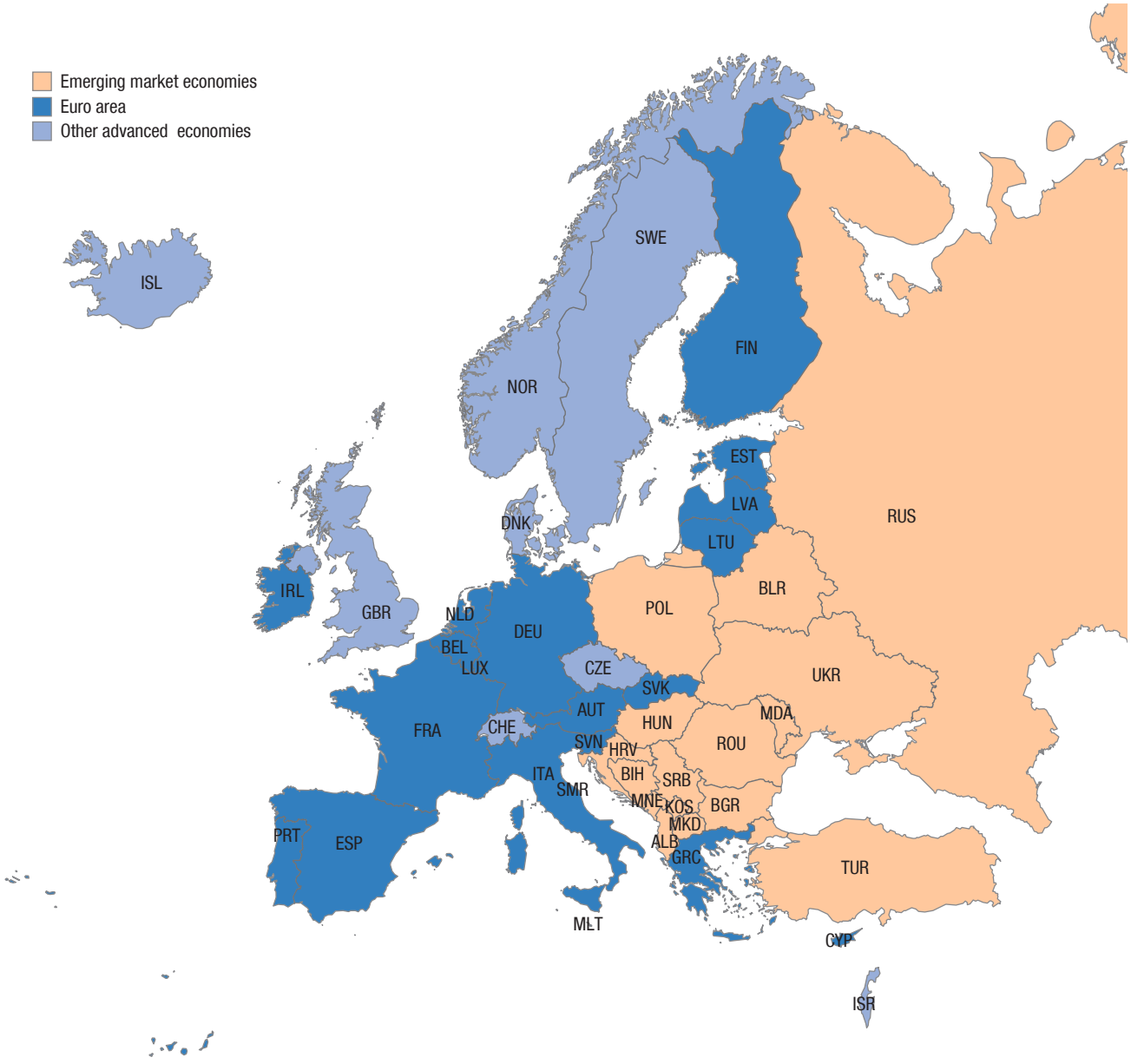


Executive Summary

The coronavirus disease (COVID-19) pandemic is exacting a severe social and economic toll on Europe. By mid-October 2020, more than 240,000 people have lost their lives in Europe, while nearly 7 million people are estimated to have been infected with the virus. Early spring lockdowns, voluntary social distancing, and associated disruptions in supply chains and lower demand led to a record collapse in economic activity. Real GDP fell by about 40 percent in the second quarter of 2020 (annualized quarter-over-quarter), with deeper contraction in advanced Europe, where the virus spread first, relative to emerging Europe.

The pandemic's toll on Europe could have been much larger without the unprecedentedly strong and multifaceted response to the crisis. Across Europe, governments deployed large fiscal packages to support households and firms, with job retention programs preserving at least 54 million jobs. Central banks embarked on substantial monetary easing through both conventional and unconventional means, to support the flow of credit and prevent financial market disruptions. Macroprudential measures were also eased to cushion the impact of the crisis on both banks and borrowers. The European Union relaxed existing rules to accommodate increasing fiscal deficits and support to households and firms. In a strong display of solidarity, it is also mobilizing supranational resources to finance new anti-pandemic facilities and complement national fiscal policies.

Nevertheless, the outlook for 2020 remains bleak and the recovery will be protracted and uneven. The European economy is projected to contract by 7 percent in 2020 and rebound by 4.7 percent in 2021. Headline inflation is projected to soften to 2 percent in 2020—1 percentage point below its 2019 level—before edging up to 2.4 percent in 2021.

The outlook is exceptionally uncertain. The ongoing resurgence of infections across Europe presents perhaps the greatest downside risk at this stage. A no-deal Brexit would also imply an additional and potentially sizable shock to activity amid the pandemic.

A key challenge facing policy makers in the near term will be to calibrate containment measures to minimize the immediate social and economic damage. It will be imperative to maintain policy support until the recovery is fully entrenched. A premature scaling back of supportive policies could drag countries back into recession, undoing much of what has been achieved so far. Support to viable jobs and businesses should be maintained, including through job retention programs. Continuation of accommodative monetary policies is warranted by the muted inflation outlook and considerable economic slack. Banking supervision authorities should continue to exercise prudential flexibility in order not to jeopardize the flow of credit.

Chapter 2 explores how differences in reopening policies among European countries affected economic activity and subsequent infections. In countries that started reopening earlier on the infection curve or that opened all sectors at a fast pace in a relatively short time, the reopening is associated with a higher wave of infections. However, the recent increase in infections has been associated with lower fatality rates than the first wave.

Chapter 3 seeks to quantify the potential impact of the coronavirus crisis on corporate liquidity and solvency risks in Europe and examine the extent to which announced policy measures could dampen

these risks in 2020. The combination of job-retention programs, debt moratoria, grants, and loan guarantees can be effective in addressing corporate liquidity needs, especially in advanced European economies. At the same time, the ability of the announced policy measures to curb the increase in solvency risks appears more limited. The chapter concludes that careful policy calibration will be needed to better support companies that are deemed viable in the longer term and to facilitate the orderly exit of firms that are unlikely to succeed in the post-pandemic economy.

Policies should also attend to medium-term challenges, as economies move from recession to recovery. This crisis has compounded pre-existing challenges and created new ones. Challenges that predate the pandemic include low productivity growth, climate change, the digital transition, ageing and increasing inequality. In addition, the crisis brought about damage to supply potential, the buildup of debt, and a setback to human capital accumulation. It is imperative that policies address all these challenges, thereby facilitating recovery, reducing medium-term scars of the crisis, and helping Europe transform into a more resilient, green, and smart economy in the post-pandemic future.

1. The Crucial Role of Policies in Cushioning the Pandemic's Impact

The coronavirus disease (COVID-19) pandemic has caused dramatic loss of life and major damage to the European economy, but thanks to an exceptionally strong policy response, more devastating outcomes have been avoided. European real GDP is now projected to contract by 7 percent in 2020, its biggest decline since World War II, followed by a rebound of 4.7 percent in 2021. But the recovery's strength will depend crucially on the course of the pandemic, people's behavior, and the degree of continued economic policy support. While the lifting of lockdowns led to a major rebound of the European economy, it also led to a new surge in infections, posing the risk of a virulent second wave that could dampen the recovery. As long as the recovery is not entrenched and prospects for a vaccine continue to improve, there is a good case for continuing with the various policies that subsidize jobs. These programs are estimated to have reached at least 54 million jobs and scaling them back prematurely could lead to a wave of bankruptcies and widespread social hardship. But over time, support will need to shift increasingly to people and public goods, to foster structural transformation and the required reallocation of resources away from contact-intensive activities. To sustain the recovery from the pandemic, policies should try to address long-lasting challenges, such as low productivity growth, transition to a low-carbon economy, and increasing inequality.

This chapter was prepared by Kamil Dybczak, Carlos Mulas Granados, and Ezgi Ozturk with inputs from Vizhdan Boranova, Karim Foda, Keiko Honjo, Raju Huidrom, Nemanja Jovanovic and Svitlana Maslova, under the supervision of Jörg Decressin and the guidance of Gabriel Di Bella. Jaewoo Lee and Petia Topalova provided useful advice and comments. Nomelie Veluz provided administrative support. This chapter reflects data and developments as of September 28, 2020.

Recent Developments

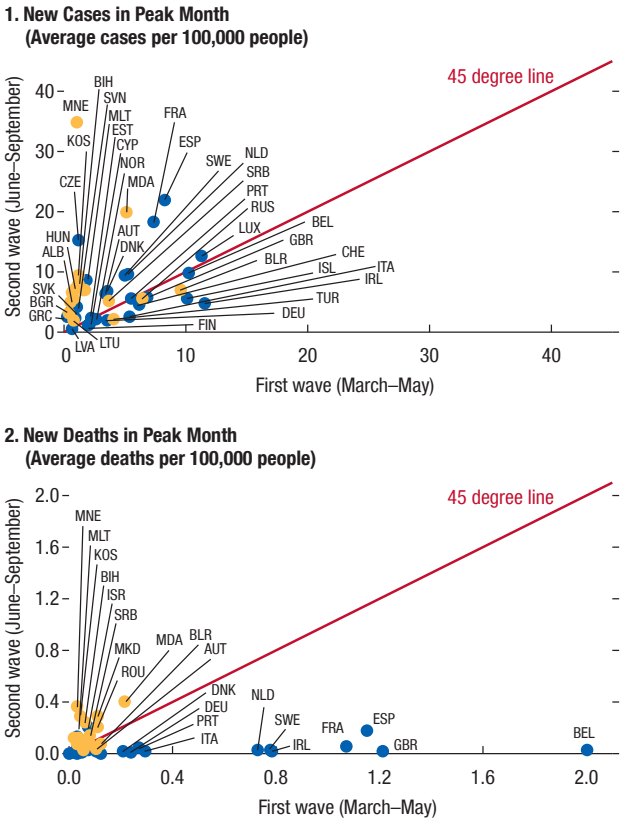
Mobility and Infections Return with Reopening

Despite a surge in infections lately, most European countries have chosen not to fully reinstate the stringent measures of earlier in the year. Strict social distancing measures and the shutdown of non-essential parts of the economy from March to May led to a decline in the pace of infections and hospital intensive care occupancy rates. However, after restrictions were gradually relaxed, infections resurged to varying degrees. In *France* and *Spain*, for example, daily new cases jumped back to levels not seen since April. In the *Western Balkans*, this second wave hit much harder than the first. Nevertheless, hospitalization and death rates have generally stayed much lower than during the first wave, and most countries reinstated only targeted containment measures (Figure 1.1).[1] However, *Israel* reinstated a full lockdown, while several countries (*the Czech Republic, France, Spain, and the United Kingdom*) have put in or are considering stronger restrictions than those in place at the end of September.

Mobility bounced back quickly with the relaxation of lockdowns and has not retreated appreciably since then. Some of the initial mandatory containment measures included shelter-in-place orders and closures of schools, workplaces, and international borders. These measures lowered the number of new cases by halting people's mobility. With their gradual relaxation, *de facto* mobility for grocery stores and retail trade rebounded to pre-pandemic levels, whereas the recovery for transit and workplaces has been more muted, though this may also reflect seasonal factors

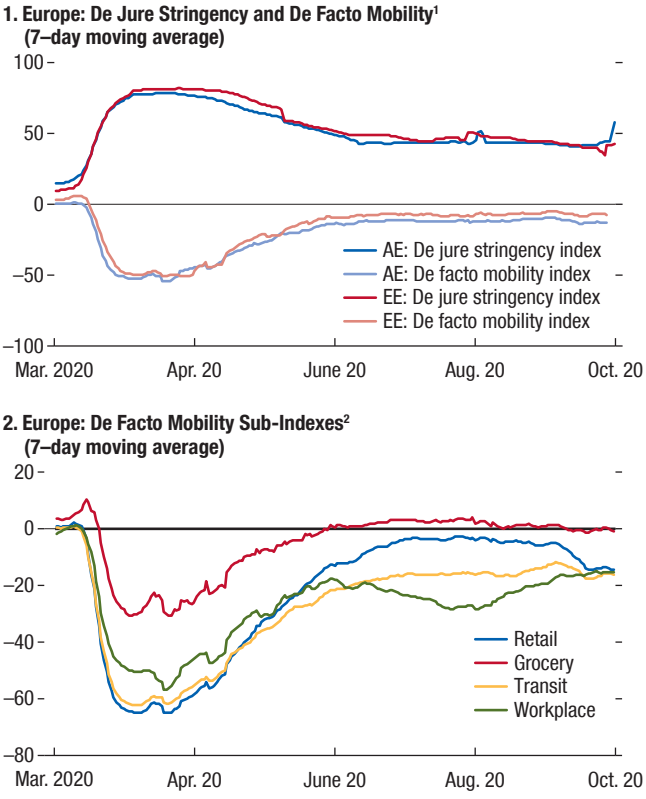
[1]The positivity rate (i.e., the ratio of number of cases to number of tests), also suggests that the second wave hit several European countries harder than the first wave.

Figure 1.1. The Pandemic in Europe: First versus Second Wave



Sources: Bloomberg Finance L.P.; and IMF staff calculations.
Note: Country abbreviations are International Organization for Standardization country codes.

Figure 1.2. Mobility: de Jure versus de Facto Indicators



Sources: Oxford Covid-19 Government Response Tracker; Google Covid-19 Mobility Report; and IMF staff calculations.
[1]To reflect quickly evolving developments, this chart includes data on stringency indices as of October 12, 2020, and data on mobility indices as of October 9, 2020.
[2]To reflect quickly evolving developments, this chart includes data as of October 9, 2020.
Note: AE = advanced economies; EE = emerging market economies.

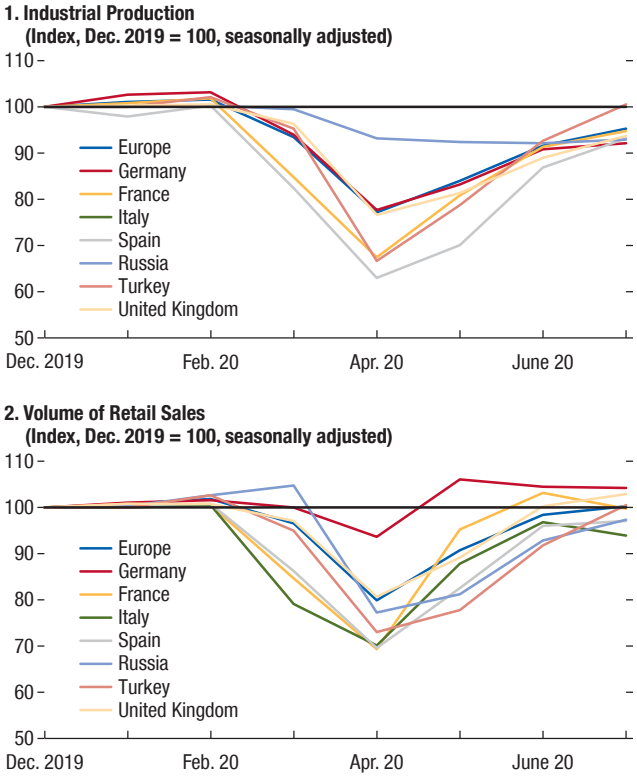
(Figure 1.2; see also Chapter 2). So far, the second wave has not had a major impact on these mobility indicators.

Economic Activity Has Begun Recovering

With the reopening of Europe, retail sales and industrial production rebounded. European retail sales increased by 15 and 6 percent (month-over-month) in May and June, respectively, reaching 95 percent of the (pre-pandemic) level of February by the end of June. Industrial production has also rebounded and is estimated to have reached 91 percent of the pre-pandemic level by the end of June (Figure 1.3). However, purchasing managers' index levels show that the recovery appears to have lost steam lately, after a sharp bounce-back in May–June.

The rebound occurs amid a recession that is much deeper than the one during the global financial crisis (GFC), while a much stronger policy response limited the damage to labor markets. The March–April lockdowns and voluntary social distancing caused real GDP in Europe to fall by about 40 percent in the second quarter of 2020 (annualized quarter-over-quarter), three times deeper than during the GFC.[2] *Advanced economies* (AE) experienced a much deeper fall in activity than *emerging market economies* (EE), which were caught later by the pandemic and reacted more quickly. Because of the strong policy response, the drop in employment and rise in unemployment

Figure 1.3. The Pandemic's Impact on Activity and Recent Recovery



Source: Haver Analytics.

rates—relative to the contraction in output—have been appreciably less than they were during the GFC, although the pandemic's full impact on labor markets will likely appear with some delay. Nonetheless, immediate job and income losses would have been much larger without the job-retention programs that subsidized wages and shorter work hours. In the euro area, for example, employment in the second quarter of 2020 was 2.9 percent lower than in the second quarter of 2019, while hours worked dropped by more than 16 percent.

Contact-intensive sectors (hospitality, travel, and tourism) and those with complex value chains (electronics and automobiles) suffered the most. Restricted cross-border mobility has lowered hotel occupancy rates to 40 percent through August, suggesting that countries where tourism accounts for a sizable share of GDP (for example, *Croatia, Italy, Montenegro, and Spain)* are exposed to larger economic damage. In the automobile sector, factory shutdowns led to a decline of 27 percent (year-over-year) of European auto production in the first half of 2020 and affected nearly one half of the workers directly employed, imposing a heavy blow on countries where the sector commands a large share of industrial production (for example, the *Czech Republic* and the *Slovak Republic*). The impact of the crisis has been particularly damaging for small and medium sized enterprises, which dominate some of the most contact-intensive sectors and account for more than one-half of total output and around two-thirds of employment in Europe.

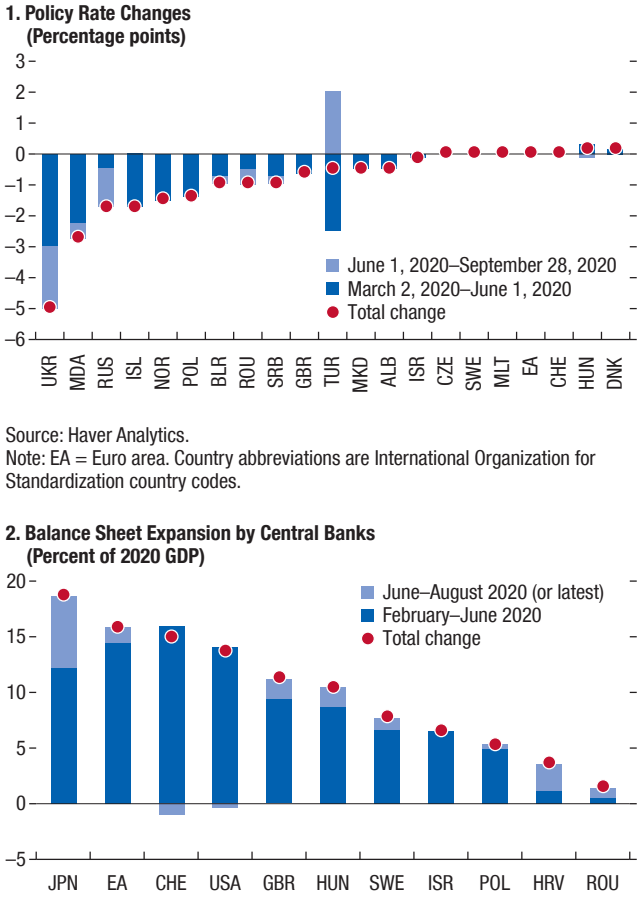
The fall in commodity prices and the decline in demand are pushing inflation down, more than offsetting the upward pressures from supply disruptions. In AE, where pre-COVID-19 inflation was already running below target in many economies, the great lockdown pushed it into negative territory. In EE, inflation has generally remained contained, although some large emerging market economies (*Turkey* and to a lesser extent *Russia*) are experiencing an uptick in inflation as currency depreciations more than offset the impact of weaker demand and lower commodity prices. Since June, inflation has ticked up in all countries after the rebound in oil prices and demand. But inflation expectations have remained stable, as these upticks are expected to be temporary in a context of widespread demand weakness.

The Policy Response: Unprecedented and Multifaceted

Europe's policy response to the pandemic has been unprecedentedly strong and multifaceted.[3] Governments across Europe simultaneously deployed large fiscal packages to support vulnerable households and firms, eased monetary

[3]The IMF has also helped combat the adverse health and economic fallouts from the COVID-19 pandemic through providing financing, policy advice, and technical support to several European countries.

Figure 1.4. Monetary Easing through Conventional and Unconventional Measures



Source: Haver Analytics.
Note: EA = Euro area. Country abbreviations are International Organization for Standardization country codes.

Sources: Central banks; Haver Analytics; and IMF, *World Economic Outlook*.
Note: EA = Euro area. Total expansion is calculated as the difference between central banks' assets value in latest available month and February 2020. The data include valuation changes. Country abbreviations correspond to the International Organization for Standardization country codes.

policy to support the flow of credit and tackle financial market disruptions, and adopted macroprudential measures that cushioned the impact of the crisis on both banks and borrowers. The objective was twofold: supporting demand; and protecting supply, by avoiding a string of potentially disruptive bankruptcies of individuals, corporations, and banks.

Monetary Policy Rate Cuts and Unconventional Responses

Central banks across Europe have embarked on substantial monetary easing. Policy rates were cut significantly in many economies (e.g. *Iceland, Norway, Poland, Romania, Russia, Serbia, United Kingdom*) and when they were close to the effective lower bound, deposit rates were moved into negative territory (Figure 1.4). Moreover, central banks across the region also resorted to unconventional monetary policy (UMP). Expansionary monetary policies in AE and other reserve currency economies greatly facilitated the policy response in EE by easing global financial conditions. The latter stands in sharp contrast with the tightening during the GFC and meant that initial exchange rate pressures in a variety of EE quickly receded.

- In the *euro area*, the European Central Bank (ECB) did not change policy rates, but it expanded its balance sheet by about 16 percent of euro area GDP between March and August, and provided liquidity to the financial sector through targeted and untargeted long-term financing operations. The new Pandemic Emergency Purchase Program (PEPP) has helped contain sovereign spreads and reduced financial market stress, thereby enabling a substantial relaxation in the monetary policy stance. Staff expect ECB's sovereign bonds purchases over 2020–21 to represent about 85 percent of the euro area's projected fiscal deficit of about €1.7 trillion. The ECB also strengthened its support to central banks of non-euro area countries with new bilateral swap lines (*Bulgaria, Croatia*) and repo lines (*Albania, Hungary, North Macedonia, Romania, Serbia*).
- Central banks in EE engaged in policy rate cuts and secondary market asset purchases of government (or government guaranteed) securities. Asset purchases (which have been significant in *Croatia* and *Poland*) have aimed to stabilize domestic government bond markets during the pandemic-induced

sell-off and to enhance monetary policy transmission. In most cases, the central banks' balance sheets did not expand in proportion to asset purchases, because they were sterilized (*Croatia*) or dwarfed by liquidity assistance to banks. UMP has not led to significant currency pressures so far, while globally easy financial conditions and some use of foreign currency reserves have limited currency depreciation in *Croatia*, *Romania* and *Turkey*. Uncertainty at the start of the pandemic had led to an increase in sovereign spreads and capital outflows from EE, but this also reversed quickly as monetary and financial easing in reserve currency economies contained financial stress and stabilized emerging markets. Exchange rates have thus broadly returned to pre-crisis levels, except in *Russia* and *Turkey*.

Macroprudential Easing and Regulatory Forbearance

The swift implementation of macroprudential policies has provided capital and liquidity relief for banks to strengthen their capacity to absorb losses and maintain the flow of credit, thereby supporting the easing of monetary conditions. In the *euro area*, the ECB Banking Supervision allowed banks to operate temporarily below both the level and quality of capital required under "Pillar 2." The ECB also allowed flexibility in the classification and provisioning of loans backed by public support measures. These temporary measures have been enhanced by the appropriate relaxation of macroprudential requirements, with national authorities either releasing countercyclical capital buffers or revoking previously announced increases. Together with the restrictions on dividend distribution and share buybacks, this has helped cushion the impact of the crisis on banks and supported lending,

Governments across Europe also approved borrower relief measures to mitigate economic disruptions, avert a dislocation in financial markets, and preserve financial stability.

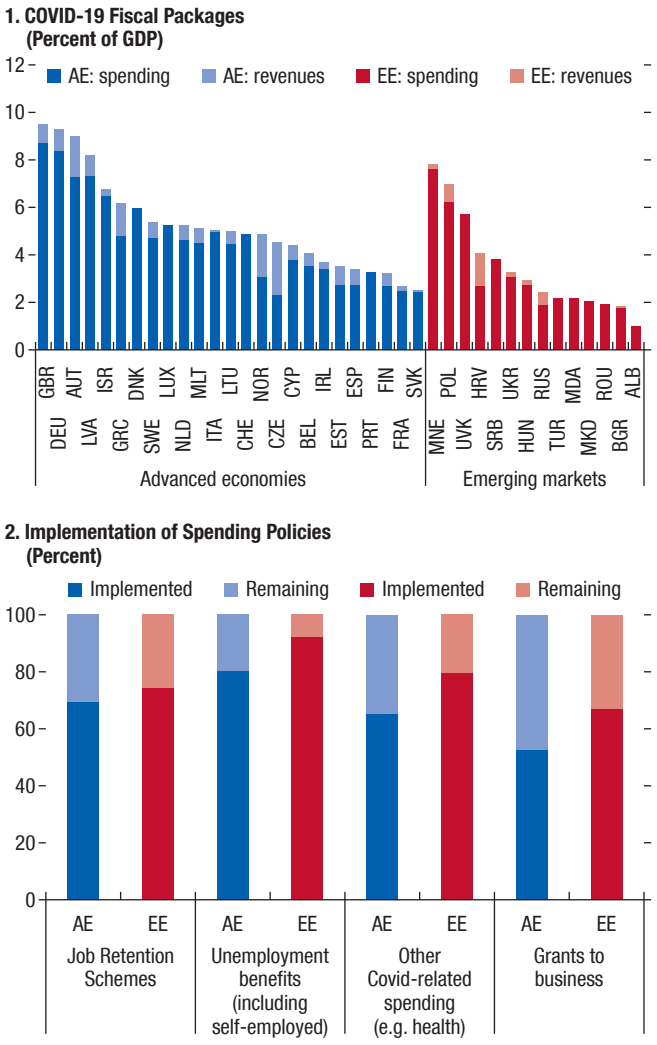
Temporary moratoria were introduced in many countries (*Albania, Bulgaria, Germany, Hungary, Italy, Kosovo, Montenegro, Serbia, Slovenia, and Spain*), allowing the suspension or postponement of bank payments (for example, for 3–18 months), while regulatory forbearance allowed banks to postpone provisioning of reprogrammed loans. Most countries tried to target these measures to borrowers severely affected by the pandemic. Banks were also encouraged to provide relief on a case-by-case basis through debt rescheduling and restructuring, reduced payments, or a temporary switch to interest-only payments.

Fiscal Policy: Unprecedented and Impactful

National authorities have deployed unprecedented fiscal support. Sizable discretionary fiscal packages added to large automatic stabilizers, with each accounting for about half of the average decline in fiscal balances in 2020. The average size of discretionary fiscal measures for AE (6.2 percent of GDP) was larger than that for EE (3.1 percent of GDP; Figure 1.5). Among AE, countries with more fiscal space before COVID-19 have generally been able to provide more support. The relationship between fiscal space and the size of policy response is less evident among EE, when space is measured by public debt.

- **To protect jobs and support workers**, governments expanded health spending, provided direct income assistance, subsidized jobs, and strengthened unemployment insurance. Several economies expanded job-retention programs, helping firms to retain their workers by using public funds to pay up to 70–80 percent of gross wages for hours not worked, or by providing relief on nonwage labor costs. The coverage of unemployment benefits was also expanded. Planned fiscal spending in 2020 averages 1 percent of GDP on job retention programs and about 0.4 percent of GDP on additional unemployment benefits.

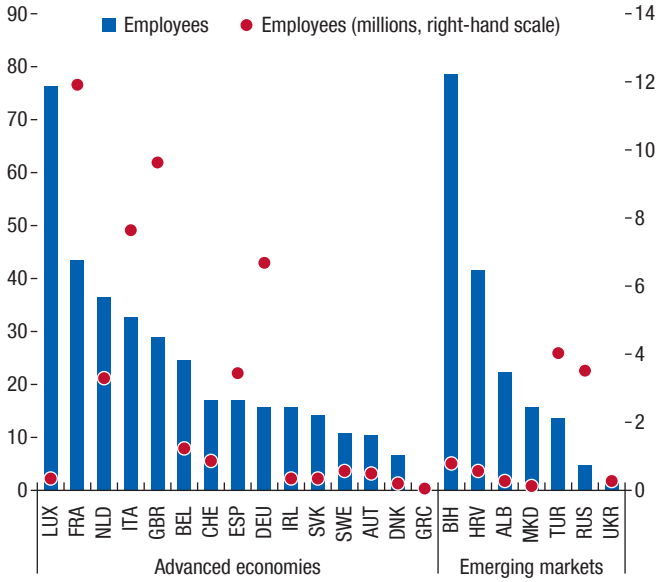
Figure 1.5. Fiscal Policy Support: New Spending Measures and Tax Deferrals



Sources: National authorities; and IMF staff calculations.
Note: AE = advanced economies; EE = emerging market economies. COVID-19 = coronavirus disease. Country abbreviations follow those of the International Organization for Standardization country codes. Country compositions varies by group. Advanced economies—job retention schemes: Austria, Belgium, Czech Republic, Denmark, France, Germany, Greece, Ireland, Italy, Lithuania, Luxembourg, Malta, Netherlands, Portugal, Slovak Republic, Spain, Sweden, Switzerland, United Kingdom. Unemployment benefits (including self-employed): Austria, Belgium, Estonia, Finland, France, Greece, Ireland, Israel, Italy, Lithuania, Malta, Portugal, Spain, Switzerland, United Kingdom. Other COVID-related spending (health, other benefits): Austria, Czech Republic, France, Germany, Greece, Ireland, Italy, Lithuania, Malta, Portugal, Slovak Republic, Spain, United Kingdom. Grants to business: Austria, Belgium, Czech Republic, Denmark, Finland, France, Germany, Greece, Ireland, Israel, Italy, Lithuania, Luxembourg, Malta, United Kingdom. Emerging market economies—short-term work programs: Albania, Bosnia and Herzegovina, Bulgaria, Croatia, Hungary, Kosovo, Moldova, Montenegro, North Macedonia, Poland, Romania, Russia, Ukraine. Unemployment benefits (including self-employed): Albania, Kosovo, Moldova, Montenegro, North Macedonia, Poland, Russia, Ukraine. Other COVID-related spending (health, other benefits): Bosnia and Herzegovina, Croatia, Hungary, Kosovo, Moldova, North Macedonia, Poland, Romania, Russia, and Ukraine. Grants to business: Croatia, Kosovo, Moldova, North Macedonia, Poland, Russia.

Figure 1.6. Labor Market Support: Job Retention Programs

(Percent of employees, 2020)



Sources: National authorities; and IMF staff calculations.
Note: Country abbreviations are International Organization for Standardization country codes.

- **To support businesses,** governments approved tax deferrals, loan guarantees (with coverage ratios of 70–100 percent), and direct equity injections. The size of announced guarantee programs varies greatly (1–25 percent of GDP) but their take-up through August is estimated at about half of the maximum envelope, with considerable cross-country variation. Staff analysis shows that government support programs could be effective in addressing a large part of corporate liquidity needs, especially in AE, although much less so as far as equity needs are concerned (Chapter 3).

The degree of policy implementation has been high, including in job-retention schemes. The execution rate of spending programs through August varied from 50 to 80 percent of planned envelopes and was especially high (more than 70 percent of announced support) for job-retention programs, reaching an estimated 54 million workers (Figure 1.6). On revenues, staff

estimate that much of the announced tax relief will become foregone revenue.

The cost of the policy response combined with falling revenues will lead to a surge in budget deficits. Staff estimate that in 2020, primary balances will decline by 9.9 percentage points of GDP in AE and by 6 percentage points of GDP in EE. The large increases of household savings and declines in private investment expanded the room for the massive fiscal stimulus to operate (even in more vulnerable economies) without creating excess demand pressures. Improved external market conditions allowed most EE to cover their fiscal and external 2020 financing needs. Several EE sovereigns returned to the Eurobond market and secured financing for the whole of 2020 at favorable terms.[4]

European Union-Wide Responses Created Additional Policy Space

The European Union (EU) relaxed existing rules to accommodate increased fiscal deficits and larger support to firms. The general escape clause in the EU fiscal rule was activated to allow countries to temporarily deviate from fiscal limits in a coordinated manner. The European Commission (EC) also swiftly relaxed EU State Aid rules, so that governments could subsidize key national companies; this resulted in the approval of €2 trillion of budgeted state aid, with *Germany* accounting for more than half.

The EU also mobilized supranational resources to finance new facilities and complement national fiscal policies.

- **In April, EU leaders approved an assistance package of €540 billion.** This comprises €100 billion in loans to help protect jobs through job-retention programs (the Support to mitigate Unemployment Risks in an Emergency program); a €200 billion pan-European guarantee fund, enabling the European Investment Bank to increase support to firms; and a €240 billion European Stability Mechanism precautionary credit line, to cover COVID-19-related healthcare costs (for up to 2 percent of GDP per state).
- **In July, EU leaders agreed on the "Next Generation EU" package for €750 billion.** The funds will provide a one-off augmentation of the EU's Multiannual Financial Framework for 2021–27 through a joint EU bond issuance during 2021–23, with €390 billion to be distributed as grants. The EC is encouraging countries to submit national recovery plans for 2021–23, specifying their reform and investment agenda for strengthening growth potential, job creation and social resilience. These plans are also required to contribute to the green and digital transition.

National fiscal packages together with expected disbursements from the "Next Generation EU" package can have a meaningful impact on growth over 2020–25. Staff analysis using the "Flexible System of Global Models" shows that output losses in 2020 could have been about 4 percentage points larger without the timely and sizable fiscal support. The analysis further shows that over the medium-term, grants from the "Next Generation EU" package can have a sizable positive impact on the pace of recovery, while easing the pressure on public debt accumulation. Assuming that grants are distributed according to the new allocation key, the impact on output will be higher in new member states and in highly indebted countries, including in AE (Box 1.1). However, the growth impact will depend on the quality of spending and the speed at which programs are implemented.

The Outlook: The Recovery Depends on the Pandemic's Course

Europe's projected economic contraction of 7 percent in 2020 will be the largest since World

[4]Eurobond issuance in May–June were generally 4–5 times over-subscribed, at long maturities (5–15 years) and at relatively favorable interest rates.

War II. This is down from an expected 8.5 percent contraction in the June's *World Economic Outlook Update,* reflecting better-than-anticipated outturns in the second quarter of 2020 as lockdowns were scaled back. Economic activity is forecast to rebound by 4.7 percent in 2021, though the strength of the recovery will crucially depend on the pandemic's course in the second half of 2020 (Annex Table 1.1.1). In this regard, the second wave of infections is raising some major concerns.

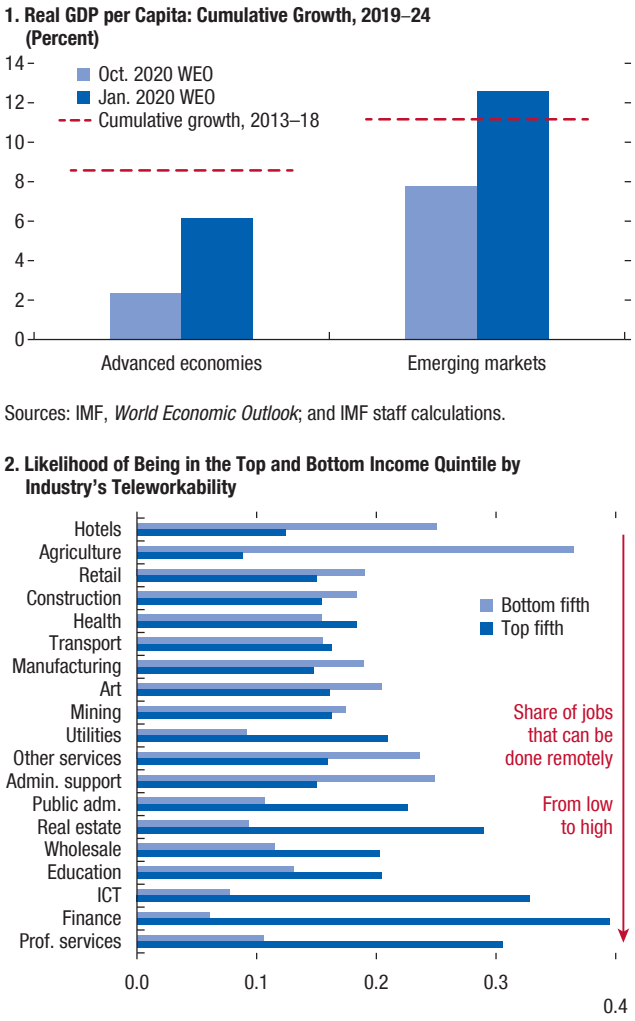
- *AE* are expected to be hit harder by the crisis. On average, these economies are projected to contract by 8.1 percent in 2020. Among the hardest hit in this group are *France, Italy, Portugal, San Marino, Spain*, and the *United Kingdom* where activity is forecast to plunge by about 10 percent. On the other side of the spectrum, *Finland, Ireland, Lithuania, and Norway* are forecast to suffer less, with GDP declining by 4 percent at most. Growth in AE is forecast to reach 5.2 percent in 2021 and to hover around 3 percent over the medium-term.
- Activity in *EE* is forecast to shrink by 4.6 in 2020, with growth returning to 3.9 percent in 2021. While substantially larger output losses (of about 10 percent) are forecast for 2020 in *Croatia and Montenegro*, growth is projected to drop by about 3 percent in *Belarus* and *Serbia*.

Inflation pressures are projected to abate further, despite some counteracting forces. Lower energy prices combined with greater economic slack and weaker private demand are forecast to outweigh the impact of negative supply shocks, leading to a decline of headline inflation to 2 percent in 2020, 1 percentage point below 2019. Inflation is forecast to weaken both in AE and EE, though within the latter group it is expected to hold in countries where exchange rates have depreciated. With a projected revival in economic activity, inflation in Europe is forecast to pick up to 2.4 percent in 2021 (Annex Table 1.1.2).

Beyond its short-term impact, the recession is likely to leave lasting scars. Lower investment and trade, erosion of job skills in the unemployed, and disruptions of global value chains will have negative implications for potential growth and labor productivity over the longer horizon, leading to permanent output losses. Inequality is also likely to rise as workers in contact-intensive sectors tend to be poorer and more vulnerable (Figure 1.7).

However, the extent of these losses is difficult to determine at this stage, and depends, among other things, on how sustained and effective the policy response will be and how people deal with the virus.

Figure 1.7. The Crisis Will Leave Long-Lasting Scars and Deepen Inequality



Risks to the Outlook: Tilted to the Downside

The forecast is surrounded by much more than the usual uncertainty and the ongoing resurgence of infections in various European economies presents perhaps the greatest downside risk at this stage. The baseline projection assumes no pervasive lockdowns in Europe, even without widespread availability of safe and effective vaccines during the forecast horizon. However, uncertainty will remain elevated until improved therapeutics and (or) an effective vaccine is developed and widely distributed.

- *On the downside*, more voluntary social distancing, a need for restoring stricter measures or even lockdowns in the face of the ongoing second wave or new waves of infections could result in greater scarring and a weaker recovery. Spillovers from soft global demand and tourism would strike a hard blow to export-oriented European economies. Although buoyant financial markets have mitigated financing risks so far, these could suddenly unwind and cause an abrupt fall in risk appetite, creating troubles for several EE that rely on the Eurobond market for fiscal financing. With only two months left until the end of the Brexit transition period (following the June 2016 United Kingdom referendum result in favor of leaving the European Union) and no significant progress in negotiations, the risks of no-deal Brexit are high, implying an additional and potentially sizable shock to activity in the United Kingdom and the EU.
- *On the upside*, a faster-than-expected vaccine availability and (or) improved therapeutics could accelerate the reopening, pushing mobility and economic activity upwards; in addition, the impact of policy measures may become stronger than projected.

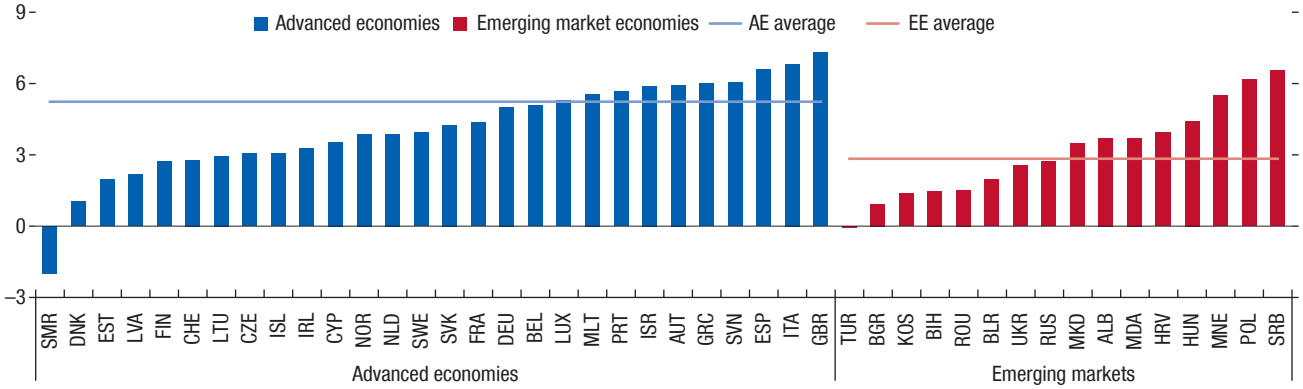
Policy Requirements: Calibrating the Reopening while Sustaining the Policy Effort

A key challenge facing policy makers in the near term will be to continue calibrating the speed and extent of the reopening and the lifting of other restrictions. This calibration should also factor in the likely need to reimpose containment measures not to overwhelm the health system. The ongoing second wave of infections illustrates how difficult it is to bring the pandemic under control. Staff analysis shows that during the first round of the reopening, countries that lifted restrictions more gradually observed a similar improvement in economic activity but at a lower cost in terms of infections compared with those that reopened faster and earlier (Chapter 2). With losses to economic activity broadly "linear" and infections "exponential" functions with respect to time, there could be a premium on early actions in response to new surges. Furthermore, the cross-country experience suggests that containment measures can be targeted and fine-tuned in a way that can change the trajectory of infections, while minimizing disruptions to economic activity. In this regard, enforcing social distancing (for example, avoiding large gatherings) is important for keeping mobility from resulting in spiraling new infections.

The nature of the pandemic shock calls for a continuation of the extraordinary policy response. In countries where infections are rising again, the foremost priority is to contain the pandemic and prevent a deeper downturn. In countries that appear to have gone past peak infection rates, policies should prioritize supporting the recovery and facilitating resource reallocation by gradually shifting spending from economic support to investment in social and economic infrastructure. For all countries, depending on the pandemic's evolution and its impact on activity, adjusting the policy strategy and efficiently using the remaining policy space will be the main challenges in the near term.

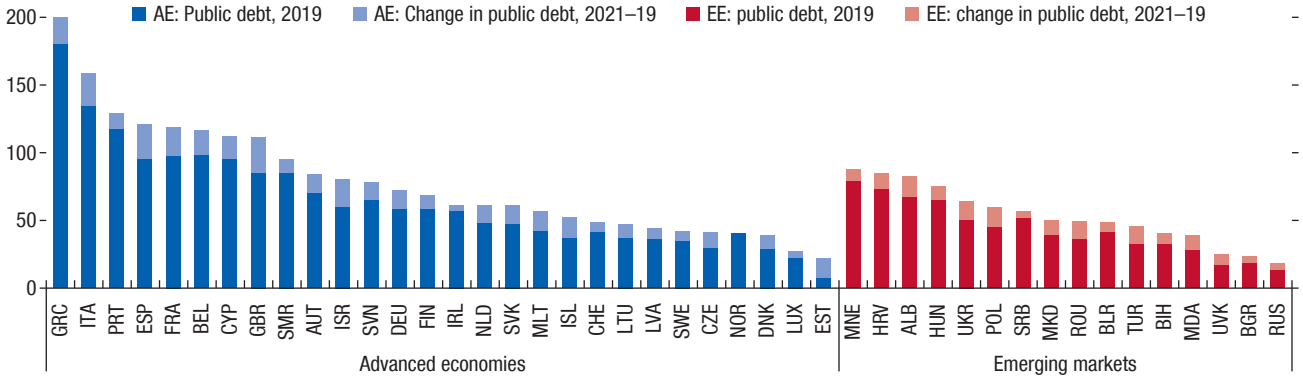
Figure 1.8. Large Consolidation of Fiscal Policy Should be Avoided

1. Europe: General Government Net Lending and Borrowing, 2021–20
(Percent of GDP)



Sources: IMF, *World Economic Outlook*; and IMF staff calculations.
Note: AE = advanced economies; EE = emerging market economies. Country abbreviations are International Organization for Standardization country codes.

2. Europe: General Government Public Debt, 2021–20
(Percent of GDP)



Sources: IMF, *World Economic Outlook*; and IMF staff calculations.
Note: AE = advanced economies; EE = emerging market economies. Change of public debt, 2021–19, for Norway is negative and not displayed on the chart for presentational purposes. Country abbreviations are International Organization for Standardization country codes.

Short-Term Macroeconomic Policy Mix

Fiscal Policy Support Must Remain in Place as a Backstop of the Recovery

The envisioned reduction in fiscal deficits will need to be kept under close review. On present policies, the October *World Economic Outlook* foresees a reduction in deficits by about 5 percentage points of GDP in AE and 3 percentage points of GDP in EE (Figure 1.8). These forecasts are subject to large uncertainty, because the final costs of ongoing support programs in several countries are still unknown. A reduction in fiscal imbalances because of the growth rebound is clearly desirable, but policy support should remain largely in place. Concerns about subsidizing zombie firms under an extended policy support are understandable. But as long as prospects for a vaccine improve, so will the prospects for contact intensive activities. This argues for their continued support, at least over much of the forthcoming year, while the programs could be fine-tuned to better avoid moral hazard. For example, support could be targeted to facilitate take-up by firms that are expected to remain viable in the longer term (Chapter 3).

A premature scaling back of fiscal support risks dragging countries back into recession, undoing

much of what has been achieved so far. For example, abruptly ending job-retention programs would be highly damaging for the millions of workers and families that have benefited from them. Fiscal support must continue to focus on healthcare provision, vulnerable households, viable but liquidity-constrained firms, and public investment, including on green and digital projects. Countries with fiscal space can continue providing broad-based stimulus, but those that are more constrained will face difficult choices that, in some cases, external support could alleviate. The "Next Generation EU" initiative should help EU states (especially its newer members) expand their policy space for securing the recovery and boosting investment in areas that would place these economies on a path of higher productivity and faster emission reduction.

The extraordinary policy support needs to be anchored by credible consolidation plans to be implemented once the recovery has taken hold. The timely and large fiscal support has successfully preserved a large share of economic activity and thereby forestalled a much larger and destructive accumulation of bad debts. But together with the subdued medium-term outlook, this means that public debt ratios will remain much more elevated than before the crisis. Even if borrowing costs remain low for a long time, this could potentially pose risks to debt sustainability for several countries. Public debt ratios in 2021 are forecast to reach 96 and 39 percent of GDP in AE and EE respectively, almost 20 and 10 percentage points above their 2019 level. Guarantee programs (widely used during the crisis) pose additional risks that if materialized could push debt ratios up further. Governments must do all they can to mitigate the deep downturn, but they should begin considering strategies for a gradual consolidation path after the crisis abates. For many economies, notably in EE, this will mean mobilizing more revenue, by either tax rate increases or tax base broadening; because measures take time to prepare, the analysis of these issues should begin now.

Below Target Inflation Calls for a Continuation of Accommodative Monetary Policies

Anchored inflation expectations and wide output gaps suggest that central banks should keep accommodative monetary policies in place to support the recovery. In the short term, key policy rates should remain at their current levels to keep borrowing costs low and credit conditions supportive. Asset purchase programs should continue to reinforce the accommodative impact of low policy rates, but their size and composition will need to be tailored to protect the credibility of monetary policy frameworks and anchor inflation expectations. Specifically, for the *euro area*, further monetary policy accommodation may be needed to counteract the pandemic's disinflationary impact, including via PEPP expansion and adjustment of TLTRO terms.

Macroprudential Measures: Allowing Banks to Gradually Absorb the Shock

Banking supervision authorities should continue applying regulatory flexibility in order not to jeopardize the flow of credit. Although a weakening of capital and provisioning standards needs to be avoided and the true state of banks closely monitored, existing gaps between required and actual provisions should be tolerated and their subsequent closure should be pursued at a suitably gradual pace. If rising private sector debt levels and corporate insolvencies impact banks as policy support is gradually withdrawn (Chapter 3), the authorities will need to address the increasing fragility of bank balance sheets and adjust the pace of unwinding banks' capital relief measures. Uncertainty on the damage to credit quality suggests that supervision authorities may need to adapt their plans as data arrives, taking into consideration that the crisis may affect different banks (including some of systemic importance) differently.

Medium-Term Policy Priorities: Addressing New and Pre-Existing Challenges

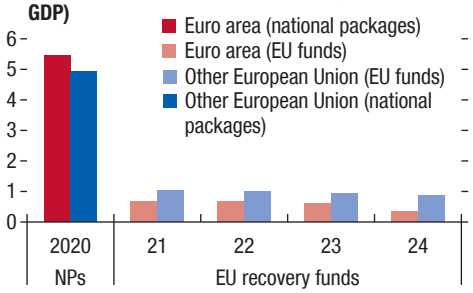
The current crisis has compounded pre-existing challenges and created new ones. As economies move from recession to recovery, it is imperative that support programs also address the challenges that predate the pandemic (for example, low productivity growth, the transition to a low-carbon economy, ageing and increasing inequality), along with the new ones (for example, damage to supply potential, the buildup of debt, and the setback to human capital accumulation).

- To keep economic ties alive, policies that prevent bankruptcies and limit discouraged workers from exiting the labor force will play a key role. *Active labor market policies* will facilitate retraining workers and helping them find new jobs to prevent the loss of firm-specific human capital, which can be costly over the medium term. Where needed, *temporary credit guarantees,* and loan restructuring can help solvent-but-illiquid firms remain afloat and preserve employment relationships, helping them to remain viable after the pandemic fades (Chapter 3).
- Once fiscal resources are freed from temporary support to households and companies, they should be redeployed to public investment that will support the recovery and make headways in tackling long-term challenges, like climate change, infrastructure gaps, and the digital transition (Box 1.2). Stimulating productive green investment could help achieve the ambitious EU emission goals while maintaining dynamic growth.
- To recover and further raise potential output, boost resilience, and strengthen inclusive growth, accelerated completion of *structural reforms* — the need for which often predates the pandemic — will be essential (for example, improving human capital, implementing effective bankruptcy procedures and out-of-court restructuring mechanisms, diminishing barriers to firm entry and exit, and measures to incentivize investment in new areas). Governments will also need to strengthen the mechanisms to prepare for, prevent, and respond to a new pandemic.

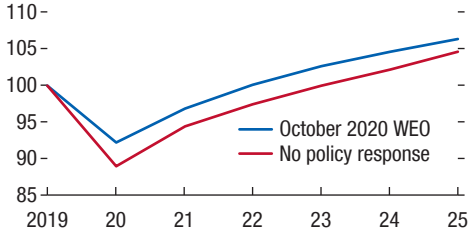
Box 1.1. How Much Are Fiscal Policies Contributing to Activity in Europe: A Model-Based Assessment

Figure 1.1.1. National and EU Packages: Size and Economic Imapct

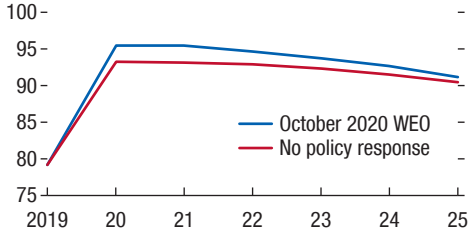
1. 2020 National Programs and 2021–24 EU Recovery Funds
(Deviations from baseline, percentage points of GDP)



2. Impact on Real GDP, EU27 Real GDP Level
(Index, 2019 = 100)



3. Impact on Public Debt, EU27 General Government Debt
(Percent of GDP)



Sources: European Commission; IMF, *World Economic Outlook*; and IMF staff calculations.
Note: NP = national program; WEO = World Economic Outlook. The no policy response scenario (Figures panels 2 and 3) represents a hypothetical situation assuming that no policy measures from Figure panel 1 are implemeted. Public debt in Figure 3—October 2020 WEO scenario—has been quantified as a weighted average of debt ratios of EU27 countries plus the size of expected debt accumulation by the EU27 in order to finance Next Generation EU grants.

The pandemic has taken a sizable toll on European economies. Because the region is expected to contract by about 7 percent in 2020, national governments deployed fiscal packages of an unprecedented size to mitigate the impact of the crisis and prevent long-term scarring. Staff analysis using the "Flexible System of Global Models shows that short-term output losses would have been significantly larger—by about 4 percent of GDP—without the swift fiscal support; and, over the medium-term, the "Next Generation EU" grants will have a positive impact on the pace of the recovery and on the dynamics of public debt.

Analysis using the "Flexible System of Global Models" suggests that deployed and prospective national and supranational fiscal support can have a significant impact on European growth. The analysis considers national fiscal measures, which in line with policy announcements amount to about 5 percent of GDP on average (Figure 1.1.1, top). It further considers that the size of the stimulus measures has been larger in advanced European countries (for example, the announced size of fiscal packages in Austria, Germany, and the United Kingdom is in the 8–11 percent of GDP range) and that about three-quarters of the measures affect expenditures. The analysis considers only above-the-line revenue and expenditure measures (for example, spending on health services and unemployment benefits, grants and transfers as well as tax cuts or other relief) and does not reflect below-the-line measures (such as loans and equity injections) and government guarantees.

For the medium-term, the analysis considers the recently approved €750 billion "Next Generation EU" recovery package, especially its €390 billion grant component. On average, EU members are projected to receive 0.6 percent of GDP per year in grants over 2021–23 (Figure 1.1.1, top). However, in the case of Bulgaria, Croatia, Greece, and Portugal, disbursements are forecast to reach at least 2 percent of GDP. The funds are projected to be spent during 2021–24, with the peak usage in 2022–23. The analysis assumes that about one half of these funds will boost public investment projects under national recovery and reform plans, and about one-fourth will finance current

Prepared by Kamil Dybczak and Keiko Honjo.

Box 1.1 *(continued)*

spending. The remaining one-fourth will be used to fund already existing projects.

The analysis suggests that fiscal stimulus —as currently envisioned for 2020—will have a significant impact on European economic activity (Figure 1.1.1, middle). Without fiscal stimulus, economic activity would have dropped by 3–4 percentage points more than in the baseline for 2020 (that is, a contraction larger than 10 percent). At the same time, the large fiscal packages will translate to higher fiscal deficits and public debt ratios at the end of 2020 (Figure 1.1.1, bottom).

Beyond 2020, the analysis suggests that the strength of the recovery will partly depend on the delivery and absorption of "Next Generation EU" funds. The impact of these grants would be twofold. First, because it is assumed that grants will finance public investment, their growth dividend will be larger given the higher public investment multiplier, and because higher investment should boost productivity. Second, because about one-fourth of the grants are assumed to finance already existing projects, this would contribute to stabilization of deficits and a faster decline in public debt ratios from 2022 onwards. While public debt ratios reach a comparable level in both scenarios by 2025 (Figure 1.1.1, bottom), income losses are significantly lower in the scenario with national fiscal packages and Next Generation EU.

To support the near-term recovery, national fiscal policies are assumed to be complemented by accommodative monetary policy through the end of 2025. While the continued fiscal support will translate into larger deficits, the assumed monetary accommodation eases financial conditions, simplifies public deficit financing, and strengthens the effect of fiscal measures on activity.

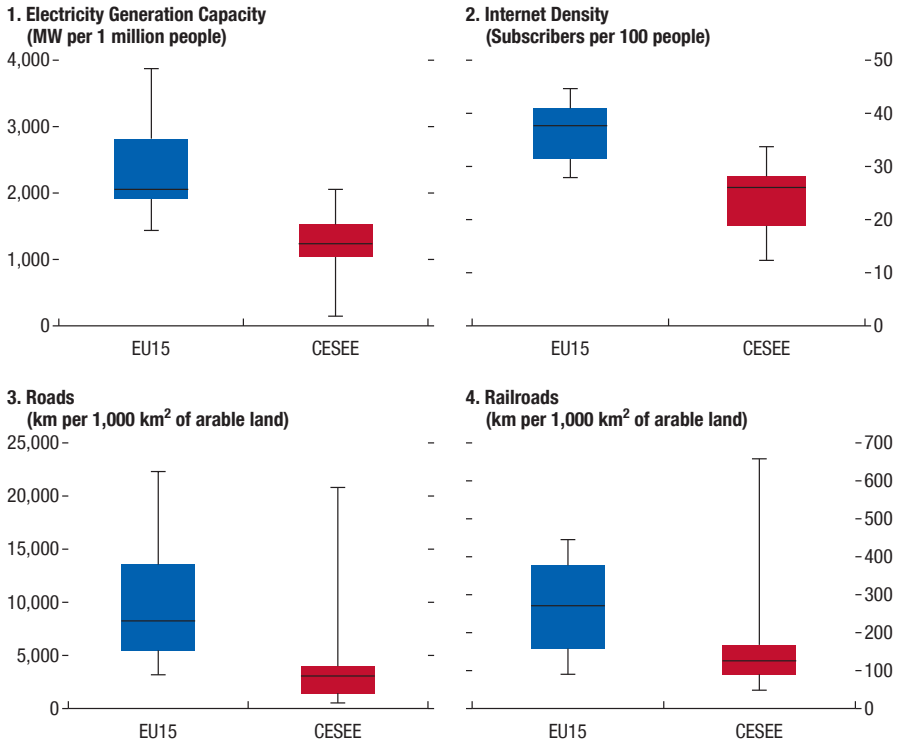
Box 1.2. Infrastructure Push in Central, Eastern, and Southeastern Europe

The coronavirus disease crisis has substantially worsened the outlook for Central, Eastern, and Southeastern Europe (CESEE). Infrastructure investment, with its high multiplier effects, can support the recovery, besides speeding up the region's convergence. With the crisis stretching budgets, making the most of infrastructure investment, while also accelerating the green and digital transitions, will be essential in the coming years.

As in many countries around the world, the coronavirus disease pandemic has hit CESEE hard, erasing almost [three] years of economic progress and further slowing the process of income convergence. With the region set to receive significant resources in the context of the recently approved Next Generation EU Recovery Fund, scaling-up infrastructure investment can be an important tool to support activity in the recovery phase. It can also increase the region's productive capacity in the longer term and accelerate the green and digital transitions (Ari and others 2020).

Although there is significant cross-country variation, CESEE lags the EU15—the more advanced European countries—in the quantity of infrastructure, both traditional (such as transportation and electricity) and digital (Figure 1.2.1). The quality of the region's infrastructure and within-region connectivity are also significantly lower than in the rest of Europe. CESEE's infrastructure needs are sizable. In a new study, Ari

Figure 1.2.1. Infrastructure Gaps in Central, Eastern, and Southeastern Europe



Sources: Eurostat; national sources; World Bank, *World Development Indicators*; and IMF staff calculations.
Note: CESEE = Central, Eastern, and Southeastern Europe; km = kilometers; MW = megawatts. The EU15 comprises Austria, Belgium, Denmark, Finland, France, Germany, Greece, Ireland, Italy, Luxembourg, Netherlands, Portugal, Spain, Sweden, and the United Kingdom. The box denotes the 75th and 25th percentile, and the lines represent the median, minimum, and maximum within the sample.

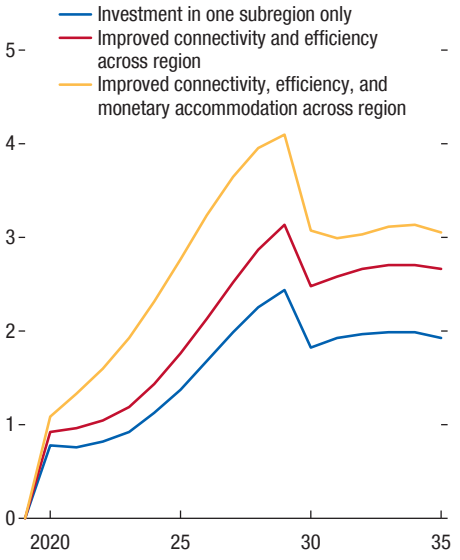
Raju Huidrom prepared this box.

Box 1.2 *(continued)*

and others (2020) estimate that closing just 50 percent of the infrastructure gap with the EU15 by 2030 would cost between 3 and 8 percent of GDP per year and even more to make the infrastructure stock climate resilient and green.

Empirical analysis and model-based simulations suggest that narrowing these infrastructure gaps could yield significant dividends in CESEE. For each percent of GDP spent on infrastructure, output can increase by 0.5 to 0.75 percent in the short run and by 2 to 2.5 percent in the long term. With considerable slack in the economy, the stimulus effect of investment in infrastructure could be even larger. Strong governance of infrastructure projects—which improves public investment efficiency—and a focus on projects that improve regional connectivity and lower trade costs, such as those envisioned by the Three Seas Initiative, could also magnify the benefits (Figure 1.2.2).

Figure 1.2.2. Impact of Infrastructure Investment in Central, Eastern, and Southeastern Europe
(GDF, percent difference)



Source: IMF staff calculations.

However, infrastructure investment brings significant challenges and risks. New survey evidence from CESEE country authorities reveals that as in other countries, infrastructure projects suffer from implementation delays and cost overruns, manifestations of weaker infrastructure governance. Hence, strengthening infrastructure governance—to achieve more effective and integrated public investment and risk management—is critical to get the most out of public investment. It would also help mobilize private sector involvement, including public private Partnerships, and attract greater private financing.

The pandemic poses additional challenges to scaling up infrastructure investment, given the stress on current infrastructure projects, stretched public sector balance sheets, and highly uncertain future demand. Achieving value for money will be even more relevant in these circumstances and in light of the sizable transfers that the CESEE region is set to receive from EU initiatives. Policy efforts to strengthen the recovery from the pandemic present an opportunity to accelerate the transformation of the region's economies in line with future needs by scaling up public investment in digital and green infrastructure.

References

Ari, Anil, and others. 2020. "Infrastructure in Central, Eastern, and Southeastern Europe: Benchmarking, Macroeconomic Impact, and Policy Issues." Departmental Paper, IMF.

Annex Table 1.1.1. Real GDP Growth

(Year-over-year percent change)

		October 2020 WEO			June 2020 WEO			Difference		
	2019	2020	2021	2022	2020	2021	2022	2020	2021	2022
Europe	1.6	−7.0	4.7	3.2	−8.5	5.4	3.3	1.5	−0.7	−0.1
Advanced European Economies	1.4	−8.1	5.2	3.2	−9.8	5.9	3.3	1.7	−0.7	−0.1
Euro Area	1.3	−8.3	5.2	3.1	−10.2	6.0	3.3	1.9	−0.8	−0.2
Austria	1.6	−6.7	4.6	2.1	−7.5	4.5	1.6	0.8	0.1	0.5
Belgium	1.4	−8.3	5.4	2.7	−10.4	6.0	2.5	2.1	−0.6	0.2
Cyprus	3.2	−6.4	4.7	3.6	−7.8	6.0	3.0	1.4	−1.3	0.6
Estonia	5.0	−5.2	4.5	3.7	−7.5	5.0	3.0	2.3	−0.5	0.7
Finland	1.1	−4.0	3.6	2.0	−7.5	5.0	1.3	3.5	−1.4	0.7
France	1.5	−9.8	6.0	2.9	−12.5	7.3	3.4	2.7	−1.3	−0.5
Germany	0.6	−6.0	4.2	3.1	−7.8	5.4	3.4	1.8	−1.2	−0.3
Greece	1.9	−9.5	4.1	5.6	−11.7	5.1	5.0	2.2	−1.0	0.6
Ireland	5.9	−3.0	4.9	4.3	−7.0	6.7	6.1	4.0	−1.8	−1.8
Italy	0.3	−10.6	5.2	2.6	−12.8	6.3	2.9	2.2	−1.1	−0.3
Latvia	2.2	−6.0	5.2	5.1	−8.6	5.0	2.7	2.6	0.2	2.4
Lithuania	3.9	−1.8	4.1	3.7	−8.1	8.2	5.1	6.3	−4.1	−1.4
Luxembourg	2.3	−5.8	5.9	3.8	−7.8	5.7	3.6	2.0	0.2	0.2
Malta	4.9	−7.9	4.8	5.5	−7.9	4.7	5.2	0.0	0.1	0.3
Netherlands	1.7	−5.4	4.0	2.0	−7.7	5.0	2.0	2.3	−1.0	0.0
Portugal	2.2	−10.0	6.5	4.8	−9.5	5.5	3.5	−0.5	1.0	1.3
Slovak Republic	2.4	−7.1	6.9	4.8	−9.4	6.9	4.0	2.3	0.0	0.8
Slovenia	2.4	−6.7	5.2	3.4	−9.5	5.5	3.4	2.8	−0.3	0.0
Spain	2.0	−12.8	7.2	4.5	−12.8	6.3	3.8	0.0	0.9	0.7
Nordic Economies	1.5	−4.2	3.5	2.8	−5.6	4.6	3.2	1.4	−1.1	−0.4
Denmark	2.3	−4.5	3.5	2.5	−7.0	6.0	3.5	2.5	−2.5	−1.0
Iceland	1.9	−7.2	4.1	2.7	−8.8	5.1	2.9	1.6	−1.0	−0.2
Norway	1.2	−2.8	3.6	3.0	−3.9	3.9	3.1	1.1	−0.3	−0.1
Sweden	1.3	−4.7	3.5	2.9	−5.9	4.2	3.0	1.2	−0.7	−0.1
Other European Advanced Economies	1.7	−8.5	5.4	3.3	−9.5	5.9	3.4	1.0	−0.5	−0.1
Czech Republic	2.3	−6.5	5.1	4.3	−8.8	5.0	3.4	2.3	0.1	0.9
Israel	3.4	−5.9	4.9	4.6	−6.8	5.8	5.0	0.9	−0.9	−0.4
San Marino	1.1	−11.0	5.7	2.9	−15.3	5.9	3.3	4.3	−0.2	−0.4
Switzerland	1.2	−5.3	3.6	2.1	−7.5	4.5	1.8	2.2	−0.9	0.3
United Kingdom	1.5	−9.8	5.9	3.2	−10.2	6.3	3.5	0.4	−0.4	−0.3
Emerging European Economies	2.1	−4.6	3.9	3.4	−5.8	4.3	3.4	1.2	−0.4	0.0
Central Europe	4.3	−4.1	4.5	4.4	−4.6	4.3	3.6	0.5	0.2	0.8
Hungary	4.9	−6.1	3.9	4.0	−4.5	4.5	3.1	−1.6	−0.6	0.9
Poland	4.5	−3.6	4.6	4.5	−4.6	4.2	3.7	1.0	0.4	0.8
Eastern Europe	1.6	−4.4	2.8	2.4	−6.7	3.9	3.0	2.3	−1.1	−0.6
Belarus	1.2	−3.0	2.2	2.0	−5.0	3.1	1.7	2.0	−0.9	0.3
Moldova	3.6	−4.5	4.1	4.0	−3.0	4.1	3.8	−1.5	0.0	0.2
Russia	1.3	−4.1	2.8	2.3	−6.6	4.1	3.0	2.5	−1.3	−0.7
Ukraine	3.2	−7.2	3.0	3.2	−8.2	1.1	3.0	1.0	1.9	0.2
Southeastern European EU Member States	3.8	−5.2	4.7	3.9	−5.3	4.1	3.3	0.1	0.6	0.6
Bulgaria	3.4	−4.0	4.1	3.7	−4.0	4.0	3.6	0.0	0.1	0.1
Croatia	2.9	−9.0	6.0	4.4	−9.0	4.9	4.0	0.0	1.1	0.4
Romania	4.1	−4.8	4.6	3.9	−5.0	3.9	3.0	0.2	0.7	0.9
Southeastern European Non-EU Member States	3.5	−5.0	5.5	5.2	−5.4	5.8	5.2	0.4	−0.3	0.0
Albania	2.2	−7.5	6.1	5.8	−7.5	6.1	5.8	0.0	0.0	0.0
Bosnia and Herzegovina	2.7	−6.5	5.0	4.0	−8.0	5.0	4.0	1.5	0.0	0.0
Kosovo	4.0	−7.5	6.0	3.7	−6.5	5.8	3.7	−1.0	0.2	0.0
North Macedonia	3.6	−5.4	5.5	4.5	−6.5	5.7	4.5	1.1	−0.2	0.0
Montenegro	3.6	−12.0	5.5	4.2	−9.0	6.5	4.5	−3.0	−1.0	−0.3
Serbia	4.2	−2.5	5.5	6.0	−3.0	6.0	6.0	0.5	−0.5	0.0
Turkey	0.9	−5.0	5.0	4.0	−5.0	5.0	4.0	0.0	0.0	0.0
Memorandum										
World	2.8	−4.4	5.2	4.2	−4.9	5.4	4.3	0.5	−0.2	−0.1
Advanced Economies	1.7	−5.8	3.9	2.9	−8.0	4.8	3.0	2.2	−0.9	−0.1
Emerging Market and Developing Economies	3.7	−3.3	6.0	5.1	−3.0	5.9	5.2	−0.3	0.1	−0.1
Emerging and Developing Europe	2.1	−4.6	3.9	3.4	−5.8	4.3	3.4	1.2	−0.4	0.0
Emerging Europe Excl. Russia and Turkey	3.8	−4.8	4.3	4.1	−5.2	3.9	3.5	0.4	0.4	0.6
European Union	1.7	−7.6	5.0	3.3	−9.3	5.7	3.3	1.7	−0.7	0.0
United States	2.2	−4.3	3.1	2.9	−8.0	4.5	3.1	3.7	−1.4	−0.2
China	6.1	1.9	8.2	5.8	1.0	8.2	5.7	0.9	0.0	0.1
Japan	0.7	−5.3	2.3	1.7	−5.8	2.4	2.0	0.5	−0.1	−0.3

Sources: IMF, *World Economic Outlook;* and IMF staff calculations.
Note: WEO = World Economic Outlook.

Annex Table 1.1.2. Headline Inflation

(Year-over-year percent change)

		October 2020 WEO			June 2020 WEO			Difference		
	2019	2020	2021	2022	2020	2021	2022	2020	2021	2022
Europe	3.0	2.0	2.4	2.5	1.9	2.3	2.6	0.1	0.1	−0.1
Advanced European Economies	1.3	0.5	1.0	1.3	0.3	1.0	1.4	0.2	0.0	−0.1
Euro Area	1.2	0.4	0.9	1.2	0.2	0.9	1.3	0.2	0.0	−0.1
Austria	1.5	1.2	1.8	1.8	0.8	1.6	1.8	0.4	0.2	0.0
Belgium	1.2	0.6	1.2	1.4	0.2	1.1	1.4	0.4	0.1	0.0
Cyprus	0.6	−0.6	1.0	1.0	0.1	0.4	0.8	−0.7	0.6	0.2
Estonia	2.3	0.2	1.4	2.2	0.5	2.0	2.1	−0.3	−0.6	0.1
Finland	1.1	0.7	1.3	1.5	0.6	1.1	1.5	0.1	0.2	0.0
France	1.3	0.5	0.6	1.0	0.2	0.7	1.0	0.3	−0.1	0.0
Germany	1.3	0.5	1.1	1.3	0.4	1.4	1.5	0.1	−0.3	−0.2
Greece	0.5	−0.6	0.7	0.9	−0.7	0.0	0.8	0.1	0.7	0.1
Ireland	0.9	−0.2	0.6	1.9	0.0	0.4	1.9	−0.2	0.2	0.0
Italy	0.6	0.1	0.6	0.9	0.1	0.6	1.0	0.0	0.0	−0.1
Latvia	2.7	0.6	1.8	2.2	−0.3	2.5	2.3	0.9	−0.7	−0.1
Lithuania	2.2	1.3	1.7	1.9	0.5	1.8	2.1	0.8	−0.1	−0.2
Luxembourg	1.7	0.4	1.4	1.8	0.3	1.4	1.8	0.1	0.0	0.0
Malta	1.5	0.8	1.1	1.4	0.7	1.1	1.4	0.1	0.0	0.0
Netherlands	2.7	1.2	1.5	1.5	0.5	1.2	1.4	0.7	0.3	0.1
Portugal	0.3	0.0	1.1	1.2	−0.1	1.2	1.5	0.1	−0.1	−0.3
Slovak Republic	2.8	1.5	1.5	1.9	1.5	1.4	1.7	0.0	0.1	0.2
Slovenia	1.6	0.5	1.8	1.7	0.4	1.6	1.6	0.1	0.2	0.1
Spain	0.7	−0.2	0.8	1.4	−0.5	0.5	1.2	0.3	0.3	0.2
Nordic Economies	1.6	0.9	1.8	1.5	0.8	1.8	1.7	0.1	0.0	−0.2
Denmark	0.7	0.4	0.9	1.2	0.6	0.9	1.2	−0.2	0.0	0.0
Iceland	3.0	2.7	2.8	2.5	2.3	2.5	2.5	0.4	0.3	0.0
Norway	2.2	1.4	3.3	1.8	1.2	2.8	2.3	0.2	0.5	−0.5
Sweden	1.6	0.8	1.4	1.5	0.6	1.5	1.5	0.2	−0.1	0.0
Other European Advanced Economies	1.6	0.7	1.1	1.5	0.5	0.7	1.5	0.2	0.4	0.0
Czech Republic	2.9	3.3	2.4	2.2	2.7	2.4	2.0	0.6	0.0	0.2
Israel	0.8	−0.5	0.2	0.5	−0.5	0.3	1.0	0.0	−0.1	−0.5
San Marino	1.0	0.5	0.8	0.9	0.1	1.2	1.3	0.4	−0.4	−0.4
Switzerland	0.4	−0.8	0.0	0.3	−1.0	−0.1	0.3	0.2	0.1	0.0
United Kingdom	1.8	0.8	1.2	1.7	0.7	0.7	1.8	0.1	0.5	−0.1
Emerging European Economies	6.8	5.2	5.3	5.1	5.2	5.0	5.0	0.0	0.3	0.1
Central Europe	2.5	3.4	2.5	2.1	3.3	2.5	2.6	0.1	0.0	−0.5
Hungary	3.4	3.6	3.4	3.0	3.3	3.2	3.0	0.3	0.2	0.0
Poland	2.3	3.3	2.3	1.9	3.3	2.4	2.5	0.0	−0.1	−0.6
Eastern Europe	4.9	3.3	3.6	3.6	3.4	3.2	3.4	−0.1	0.4	0.2
Belarus	5.6	5.1	5.1	5.0	5.6	5.1	5.0	−0.5	0.0	0.0
Moldova	4.8	2.8	2.3	5.5	2.8	2.3	5.5	0.0	0.0	0.0
Russia	4.5	3.2	3.2	3.2	3.2	2.8	3.1	0.0	0.4	0.1
Ukraine	7.9	3.2	6.0	5.7	4.5	7.2	5.6	−1.3	−1.2	0.1
Southeastern European EU Member States	3.2	2.2	2.1	2.4	1.7	1.5	2.1	0.5	0.6	0.3
Bulgaria	2.5	1.2	1.7	2.1	1.0	1.9	2.1	0.2	−0.2	0.0
Croatia	0.8	0.3	0.8	1.1	0.3	0.9	1.2	0.0	−0.1	−0.1
Romania	3.8	2.9	2.5	2.7	2.2	1.5	2.3	0.7	1.0	0.4
Southeastern European Non-EU Member States	1.4	0.9	1.5	1.9	0.7	1.6	2.0	0.2	−0.1	−0.1
Albania	1.4	1.4	1.7	2.3	1.3	1.7	2.2	0.1	0.0	0.1
Bosnia and Herzegovina	0.6	−0.8	0.4	1.2	−1.1	1.3	1.6	0.3	−0.9	−0.4
Kosovo	2.7	0.8	1.2	1.7	1.1	1.5	1.7	−0.3	−0.3	0.0
North Macedonia	0.8	0.9	1.3	1.6	−0.5	1.0	1.4	1.4	0.3	0.2
Montenegro	0.4	−0.1	0.7	1.1	0.7	0.9	1.4	−0.8	−0.2	−0.3
Serbia	1.9	1.5	1.9	2.3	1.4	1.9	2.3	0.1	0.0	0.0
Turkey	15.2	11.9	11.9	11.4	12.0	12.0	11.4	−0.1	−0.1	0.0
Memorandum										
World	3.5	3.2	3.4	3.2	2.8	3.2	3.2	0.4	0.2	0.0
Advanced Economies	1.4	0.8	1.6	1.6	0.3	1.1	1.6	0.5	0.5	0.0
Emerging Market and Developing Economies	5.1	5.0	4.7	4.3	4.4	4.5	4.3	0.6	0.2	0.0
Emerging and Developing Europe	6.6	5.2	5.2	5.0	5.1	4.9	5.0	0.1	0.3	0.0
Emerging Europe Excl. Russia and Turkey	3.6	2.9	3.0	2.9	2.9	2.9	2.9	0.0	0.1	0.0
European Union	1.4	0.8	1.2	1.4	0.6	1.2	1.5	0.2	0.0	−0.1
United States	1.8	1.5	2.8	2.1	0.5	1.5	2.2	1.0	1.3	−0.1
China	2.9	2.9	2.7	2.6	2.8	3.0	2.6	0.1	−0.3	0.0
Japan	0.5	−0.1	0.3	0.7	−0.1	0.3	0.7	0.0	0.0	0.0

Sources: IMF, *World Economic Outlook*; and IMF staff calculations.
Note: WEO = World Economic Outlook.

2. Europe's Exit from Lockdowns: Early Lessons from the First Wave

Europe was among the regions most severely affected by corona virus (COVID-19) in the early months of 2020. Countries responded with stringent lockdown measures designed to reduce transmission and flatten the infection curve in the face of overburdened care facilities. As the first wave of disease ebbed and the outbreak appeared controlled, most European countries started to reopen their economies. This chapter documents the different exit strategies followed across Europe and explores how reopening policies affected economic activity and subsequent infections. It finds that reopening measures led to a recovery in mobility but at the cost of some uptick in infections—an uncomfortable trade-off already documented in studies of lockdowns. However, the experience with reopening points to some novel dimensions of this trade-off. First, the increase in COVID-19 infections after reopening appears less severe in fatality rates. Second, a given reopening step is associated with a worse reinfection outcome in countries that started reopening earlier on the infection curve or that opened all sectors at a fast pace in a relatively short time.

Europe experienced a severe COVID-19 outbreak, with cumulative cases and fatalities reaching close to 5.5 million and 231,000, respectively, by the end of September. The escalation of cases during the first wave of the pandemic led governments to introduce stringent lockdown measures in order to slow the spread of the virus and avoid overwhelming the health sector. As the first wave of infection curves flattened and the outbreak appeared controlled, most European countries started to reopen their economies to alleviate the unprecedented economic contraction generated by the lockdown (see Chapter 1). The strategies adopted to reopen the economy while containing the virus outbreak differed significantly across countries in their timing, pace, and sequencing of sectoral reopening. For example, many countries took sectoral reopening measures over several weeks, while others chose to open several sectors simultaneously. The timing of exits from lockdown also varied across countries—some countries waited until the infection curve had flattened, while others chose to exit near the peak of the infection curve.

As reopening plans evolved and economic activity started to normalize, several countries experienced an uptick in their infection curves (Figure 2.1), though with different pace and intensity. Given that authorities will need to continuously adjust their containment policies as the pandemic evolves, understanding the trade-offs of alternative reopening strategies is of the utmost importance.

Against this backdrop, this chapter seeks to answer the following questions:

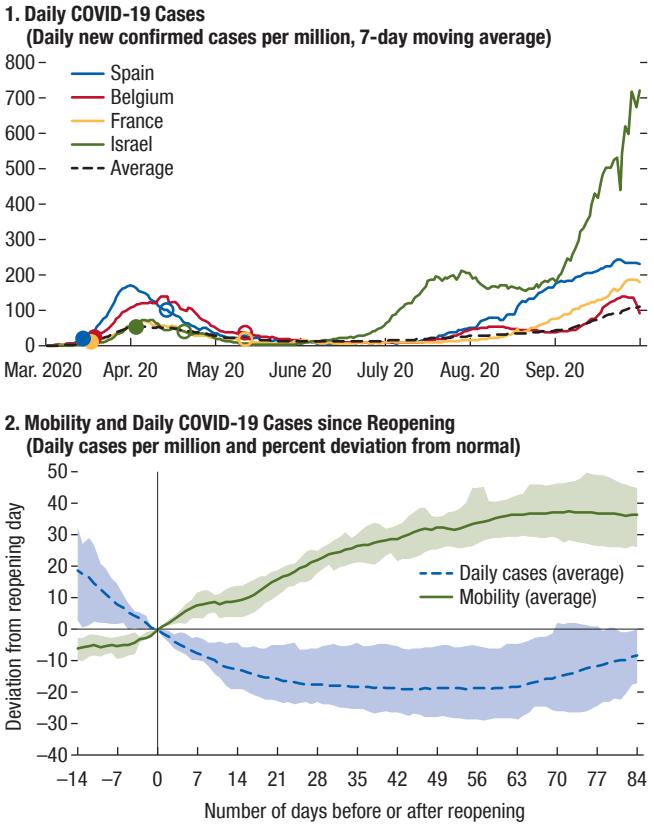
- How do reopening strategies compare across countries in their timing, pace, and sectoral sequencing?
- How do official reopening measures translate into actual improvements in activity and influence the subsequent evolution of COVID-19 infections?
- What early lessons can be drawn from the reopening experiences? Were some strategies associated with lower reinfection risks than others and, if so, at what cost in reduced activity?

Diverse Reopening Plans

To document the reopening strategies used by European countries, the chapter builds a novel daily database that captures the sector, timing, and intensity of reopening measures taken by country

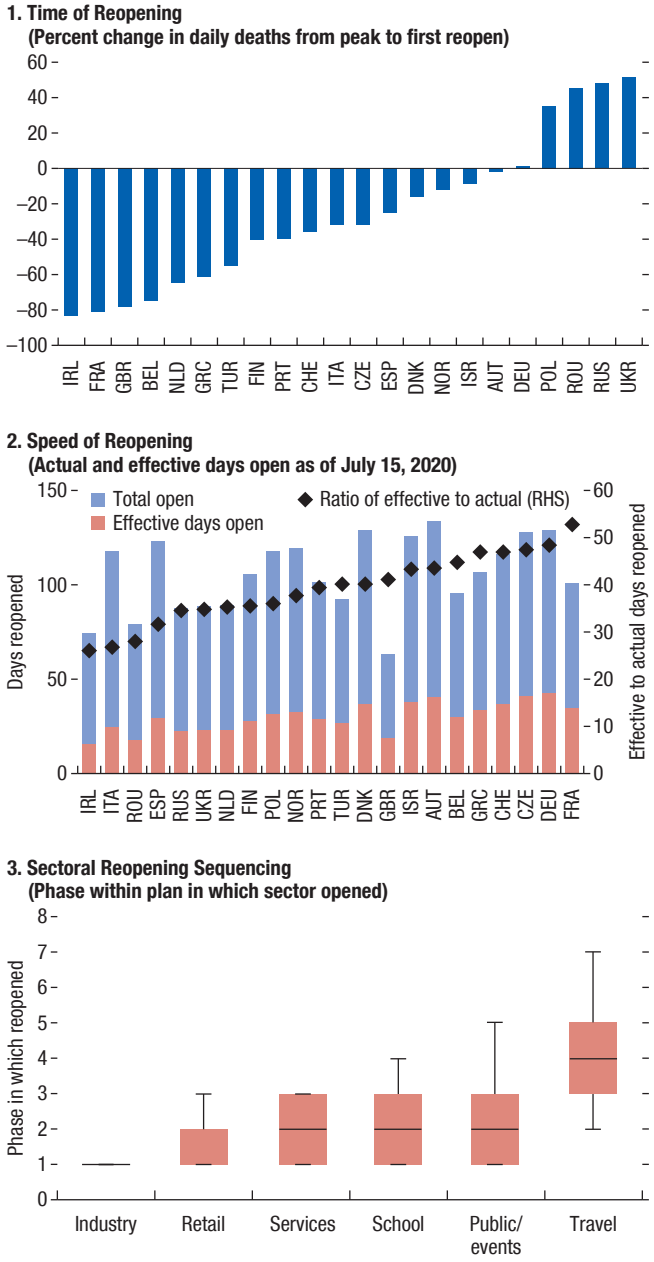
Bertrand Gruss (co-lead), Carlos Mulas-Granados, Manasa Patnam (co-lead), and Sebastian Weber prepared this chapter under the supervision of Enrica Detragiache and the guidance of Jeffrey Franks. Zan Jin provided excellent research support.

Figure 2.1. Infections and Activity



Sources: Google; Our World in Data; European Centre for Disease Prevention and Control; and IMF staff calculations.
Note: Solid (hollow) markers in panel 1 denote lockdown start (end) dates. Mobility in panel 2 denotes the seven-day moving average of Google mobility (expressed as percentage point difference from pre-COVID baseline) around retail stores, workplaces, and transportation hubs. Interpretation of reported values: 70 days after reopening, the mobility index was (daily cases per million were) on average 40 percentage points higher (20 cases less) than on the day the first reopening action was taken. Shaded areas denote interquartile range. Sample of countries shown in footnote 1.

Figure 2.2. Heterogeneous Timing, Speed, and Sectoral Sequencing of Reopening Strategies



Sources: Authorities announcements; Our World in Data, European Centre for Disease Prevention and Control; and IMF staff calculations.
Note: In panel 1, the seven-day moving average of daily deaths is used; the sign is reversed for countries that opened before the series peaked. Panel 2 plots the number of days since reopening; the shaded area shows the number of effective days open (see Online Annex 2.1). Panel 3 plots the cross-country distribution of the phase within the overall reopening plan in which each sector covered in the database opened. The horizontal line inside each box represents the median; the upper and lower edges of each box show the top and bottom quartiles; and the markers denote the top and bottom deciles. Country abbreviations are International Organization for Standardizatoin country codes.

authorities.[1] The database reveals that reopening plans differed significantly across countries:

- A first clear difference relates to the *timing* of the first reopening measures in relation to the epidemiological situation in the country (Figure 2.2, panel 1). Using the evolution

[1]The countries in the database include Austria, Belgium, the Czech Republic, Denmark, Finland, France, Germany, Greece, Ireland, Israel, Italy, the Netherlands, Norway, Poland, Portugal, Romania, Russia, Spain, Switzerland, Turkey, Ukraine, and the United Kingdom. The intensity of a sector's reopening is coded based on the extent of easing its containment status (fully closed; partially open; open with restrictions; and open). See Online Annex 2.1 for further details.

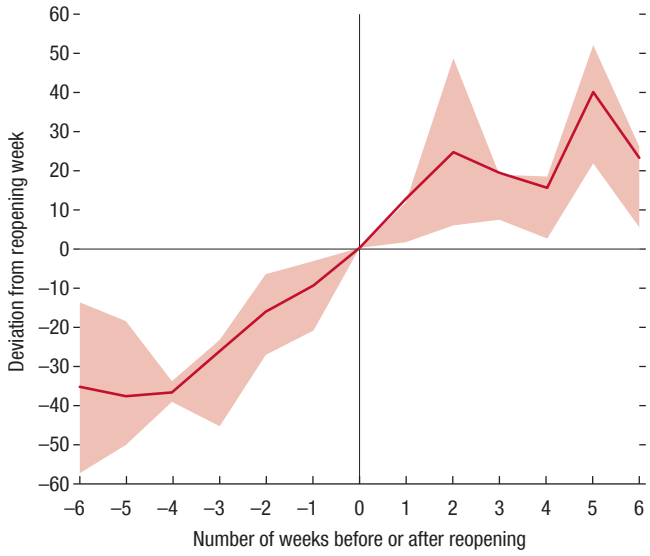
of daily fatalities as an indication of the pandemic's stage, the data reveal that some countries (for example, *Belgium*, *France*) started opening only when the number of daily deaths had declined substantially with respect to the peak. Other countries opened at about the time that fatalities started to decline (for example, *Austria*, *Germany*), or even when they were still on the rise (for example, *Poland*, *Russia*).

- Another key difference across plans relates to the *speed* or pace of sectoral reopening actions once they started opening (Figure 2.2, panel 2). One way of capturing the difference in speed is to compute, for a given sector and at a given date after reopening, the ratio of effective days of reopening to total days of reopening, where effective days are adjusted to take into account the extent of the reopening.[2] As of mid-July, when reopening plans had plateaued, this metric ranged from about 30 percent (for example, in *Italy* and *Spain*, which followed a gradual approach) to above 50 percent (for example, in *France*, which opened later but at a fast pace).
- A final key distinction relates to how sectors were *sequenced* to reopen (Figure 2.2, panel 3), which varied significantly across countries. For example, retail was among the first sectors, with the median country reopening it in phase 2 of its overall plan. There has been more variability in the case of schools. *Austria* and *Denmark,* for example, introduced easing actions among its first opening measures, but in other countries, such as *Italy* and *Spain,* easing actions for schools were in the last phase.

In many countries, reopening steps were accompanied by additional health-related measures, such as the recommendation or mandates to use face masks in some public places (public transportation, for example), the launch of contact tracing applications, and an expansion of testing. Some survey-based evidence shows that the use of face masks continued to increase after countries started to reopen (Figure 2.3). The chapter does not explore the effect of such health-related measures because of data limitations.

The tracked reopening actions are used to construct country-specific and country sector-specific daily reopening indices. The next sections explore how the official aggregate reopening measures translate into actual improvements in activity and how they affect infections; and how different reopening strategies may affect the trade-off between more economic activity and a lower risk of new infections.

Figure 2.3. Face Mask Usage since Reopening
(Mask-wearing intensity, percent deviation from reopening week)



Sources: Imperial College; and IMF staff calculations.
Note: The chart plots the percent deviation of average responses regarding the use of face masks per country from the day of reopening. The solid line shows the mean percent deviation across countries, and the shaded area denotes the interquartile range. Respondents were asked how often they wore face masks outside their homes during the past 7 days, ranging from 0 (never) to 4 (always).

[2]For example, if a country reopened schools for four days by 50 percent and then by 100 percent for one day, the effective days reopened for schools over those five days is three. Taking equal weights across sectors, the analysis aggregated and obtained the total number of effective days for each country. Actual days open are the number of days passed since the first reopening. See Online Annex 2.1 for further details.

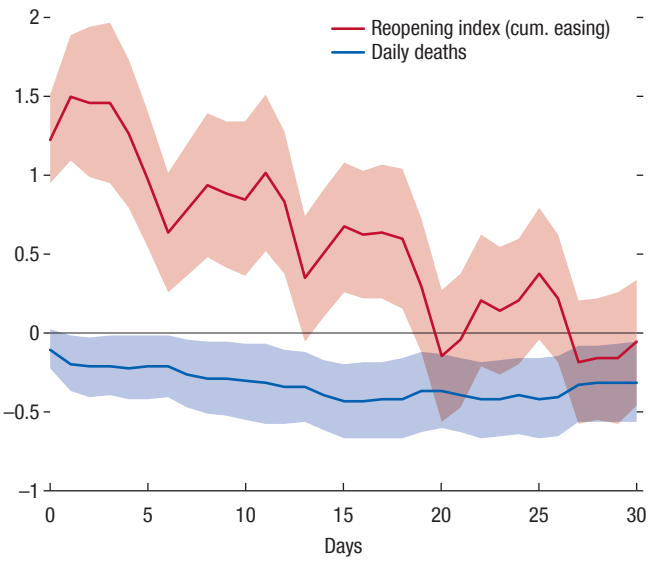
Back in Business: Reopening and Activity

This chapter examines the effect of reopening measures on activity using daily data and a panel regression model, in which a proxy of economic activity is regressed on the reopening index and a set of control variables.[3] The analysis uses the mobility variables compiled by Google to proxy for economic activity due to a lack of readily available official daily data. These variables correlate well with GDP growth for European countries, with an estimated correlation coefficient of about 0.5 in Q2 explaining over 80 percent of GDP variability (see Franks and others 2020).

The main explanatory variable is the aggregate reopening index, which measures the cumulated easing actions in each country at a given point of time.[4] The regression controls for country and time fixed effects (to capture common trends and time-invariant country characteristics such as demographics), lagged mobility, lagged infection incidence, a dummy that indicates the time elapsed since the first reopening action (to control for the endogeneity related to the timing of the exit from lockdown), and country-specific infection time trends.

The results suggest that a marginal change in the reopening index (e.g, moving from fully closed to partially open in one of the sectors) is associated, on average, with an initial increase in mobility of 1 to 1.5 percentage points (Figure 2.4, red line).[5]

Figure 2.4. Effect of Reopening Measures and Voluntary Social Distancing on Mobility
(Percentage point change)



Sources: Google; Our World in Data; European Centre for Disease Prevention and Control; and IMF staff calculations.
Note: The graph shows point estimates (solid line) of reopening measures and lagged daily deaths on mobility with 90 percent confidence intervals (shaded area).

The effect declines gradually over time but remains statistically significant for almost two weeks.[6]

The Role of Voluntary Social Distancing

Changes in mobility can reflect not just the effect of reopening policies but also voluntary social distancing, as people may reduce activity because of fear of infection even when restrictions are relaxed. If voluntary social distancing is a function of the severity of the epidemic, then the coefficient of lagged infections in the regression (measured as the average number of daily deaths over the preceding week) can be used to assess the effect

[3]The regression analyses in this chapter rely on local projection methods (Jordà 2005), which can easily accommodate nonlinearities in the lagged response of the dependent variable.

[4]The analysis considers policy actions taken between April 10 and July 15. The reintroduction of restrictions after that time is not included. For the mobility analysis, the period is restricted up to July 15, excluding the time around summer vacations to avoid confounding the decline in mobility with changes in reopening policies or infections. The analysis on infections incorporates data up to the end of August. See Online Annex 2.1 for definition of variables and data sources.

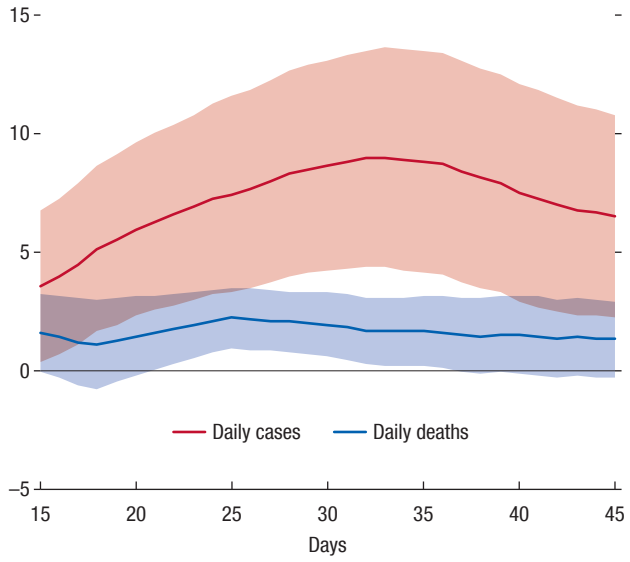
[5]Evidence from surveys conducted by Imperial College, London, also shows an increase in the number of social contacts by respondents in line with an increase in mobility as countries reopened (Franks and others 2020).

[6]Exploring the effect of containment policies is potentially subject to endogeneity concerns, and the estimates could be biased if time-varying unobservables affect both mobility and reopening plans. Including lagged infections in the baseline specification attenuates this concern but may not be sufficient. In a robustness exercise, the sectoral variation inherent in both the mobility and policy measures is exploited to difference out time-varying country unobservable factors; the results are qualitatively similar (Franks and others 2020).

of voluntary social distancing on mobility. The results show that a unit increase in per capita daily deaths is associated with a statistically significant and persistent decline in mobility of up to 0.5 percentage point (Figure 2.4, blue line).

The results also suggest that reopening policies explain a larger fraction of the increase in mobility than voluntary social distancing, although the latter effect is more persistent.[7] For instance, an increase in the reopening index of one standard deviation leads to a rise in mobility of 0.2 standard deviation, while a decline in daily deaths of one standard deviation is associated with an increase in mobility of only 0.05 standard deviation. In the same vein, about 40 percent of the variability in mobility explained by the model (60 percent in total) is attributed to the reopening policies. Lagged infections or voluntary social distancing explains a much smaller fraction (about 14 percent).[8]

Figure 2.5. Effect of Reopening Measures on Infections
(Percent change)



Sources: Google; Our World in Data; European Centre for Disease Prevention and Control; and IMF staff calculations.
Note: The graph shows point estimates (solid line) of reopening measures on daily cases and deaths with 90 percent confidence intervals (shaded area).

Fever on the Rise: Reopening and Reinfections

A key question to assess the success of reopening strategies is whether they lead to a significant resurgence in infections. To explore whether the uptick in cases observed in many European countries can be attributed to the reopening measures adopted, a similar regression analysis is conducted, but with the log of daily COVID-19 cases or, alternatively, fatalities per million inhabitants replacing mobility as the dependent variable. The analysis starts by exploring the response of the epidemic to movements in the overall reopening index, while continuing to control for other factors.[9]

The results suggest that a unit easing in the reopening index is associated, on average, with a significant increase of about 4 percent in daily cases after two weeks and close to 8 percent after one month (Figure 2.5). The effect for fatalities is also statistically significant but quantitatively smaller: daily deaths increase by about 2 percent one month after each unit of easing.

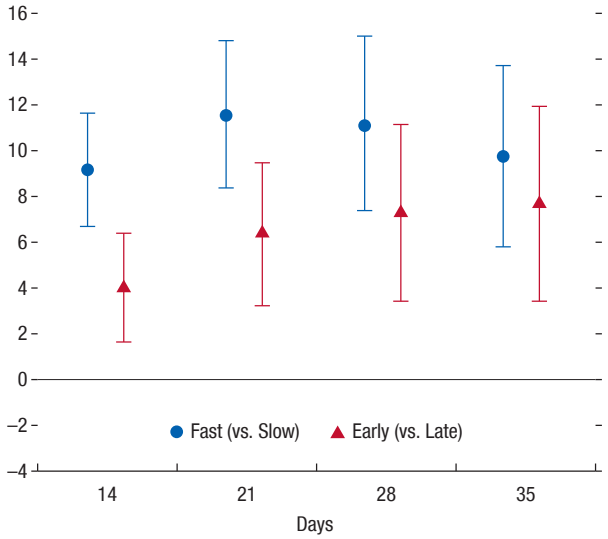
In contrast to studies that focused on lockdown measures (see, for example, Chapter 2 of the October 2020 *World Economic Outlook*; Jinjarak and others 2020), the analysis finds a much lower effect of containment policies on deaths. The smaller response of fatalities during reopening compared with that experienced during lockdowns

[7]One caveat to this result is that lagged deaths is, at best, only a proxy for voluntary social distancing and other factors, such as changing cultural norms due to the extent of the pandemic, could have additional effects.

[8]The result that voluntary social distancing matters less than the easing of restrictions differs with earlier findings for lockdowns (for example, Chapter 2 of the October 2020 *World Economic Outlook* finds that lockdowns and voluntary social distancing played a nearly comparable role). This asymmetry is broadly in line with the evidence for the introduction and lifting of stay-at-home orders in US states and cities in Glaeser and others (2020). They propose a model to show that easing restrictions can signal that going out has become safer. Government actions, therefore, have both a direct effect (preventing people who want to go out from doing so) and an indirect effect (signaling to people when it is safe to go out again).

[9]The control variables include country and time fixed effects, lagged mobility, lagged infection incidence, a dummy indicating the period since the first reopening action (to control for the endogeneity related to the timing of the exit from lockdown), and country-specific infection time trends.

Figure 2.6. Differential Effect of Fast versus Slow and Early versus Late Reopening Strategies on Daily Cases
(Percent difference)



Sources: Google; Our World in Data; European Centre for Disease Prevention and Control; and IMF staff calculations.
Note: The graph shows the percentage difference in the response of infections (daily cases) to one unit of reopening between fast (early) and slow (late) reopeners in blue (red). Vertical lines denote 90 percent confidence intervals.

could reflect, among other factors, a shift in the demographics of the infected population toward lower-risk groups, such as the young (ECDC 2020), a weakening of the virus, seasonal factors, or better medical therapies. An expansion in testing may also have led to increased detection of asymptomatic or mild cases, but additional analysis suggests that this is not the key driving factor of the lower fatality rate.[10] A comprehensive analysis of the drivers of the lower fatality rate is beyond the scope of the chapter.

In sum, while reopening measures have a welcome effect on mobility and economic activity, they also result, on average, in an unwelcome uptick in infections. But can any lessons be extracted from the different strategies adopted by European countries to reduce this negative side effect? The next section examines whether the effects of reopening on daily cases vary depending on how early countries reopened and how fast they reopened.

Timing and Pace of Reopening Plans

Some countries waited until the infection rate was well past its peak before taking the first reopening steps, while others opened when daily fatalities were still rising (Figure 2.2). Another key difference between the country reopening plans was the speed or pace of sectoral reopening actions, with some countries taking gradual actions while others fully opened all sectors in a matter of days. Were these diverse reopening approaches associated with differential outcomes?

To tackle this question, the regression analysis for infections is extended to allow the effect of reopening to differ by whether countries opened early or late (in relation to their daily fatality curve), and whether countries opened fast or slow (based on the speed of reopening, that is, the share of effective to actual reopening days shown in Figure 2.2).[11]

The results suggest that for any given reopening step, opening at an earlier stage is associated with larger reinfection risk (Figure 2.6). Early reopeners suffered significantly higher daily cases per unit of easing of about 4 percent at a 14-day horizon and about 7 percent after one month.[12]

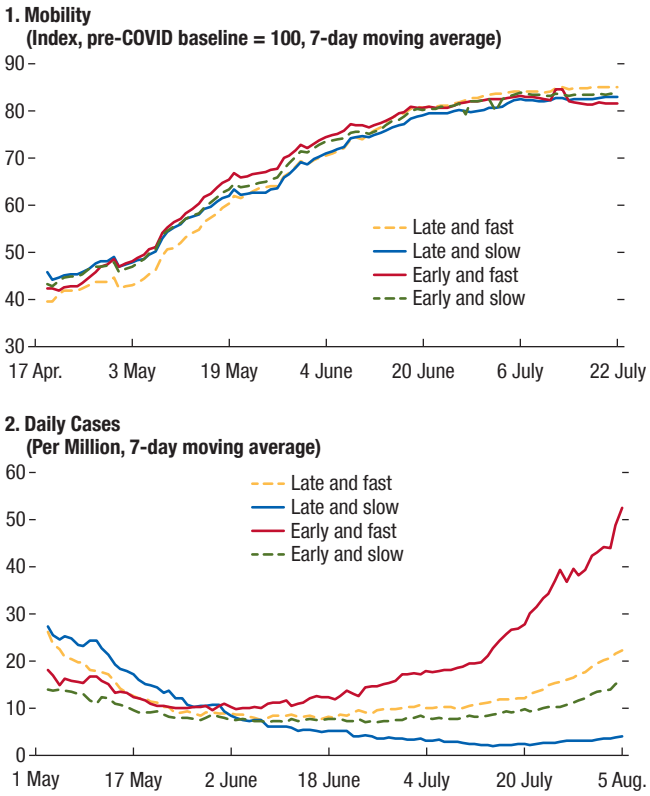
The results also point to a statistically significantly larger response in daily cases per reopening step, on average, for countries that reopened fast versus those that reopened slowly (Figure 2.6). The response of daily cases per unit of easing is about 8 percent higher for countries that reopened fast

[10]Using a smaller sample because of data limitation, an additional regression specification was run, controlling for daily tests per capita as well as self-reported compliance with other non-pharmaceutical interventions such as mask mandates and social distance guidelines. This regression yields similar results as the baseline model (see Franks and others 2020).

[11]The extended regression includes two dummy variables interacted with the reopening index. The first dummy indicates that a country is an early opener when the reduction in daily deaths (relative to the peak attained) it had registered before taking the first reopening action is below the median across countries. For countries that registered more than one wave in daily deaths, the first wave is considered. The second dummy indicates that a country opened fast when its effective-to-actual days open metric is above the sample median.

[12]The difference in responses is statistically significant at a 90 percent confidence at all horizons between two and six weeks.

Figure 2.7. Alternative Reopening Strategies: Predicted Paths by Reopening Strategies



Sources: Google; Our World in Data; European Centre for Disease Prevention and Control; and IMF staff calculations.
Note: The figures show in-sample fitted values using parameter estimates from Equation (2) in Online Annex 2.2 at a one-week horizon for mobility (panel 1) and a three-week horizon for daily cases (panel 2) and mean covariate values (including for reopening) for all four country groups.

at a 14-day horizon and about 12 percent higher after one month.[13]

Taken together, these results indicate that the effect of reopening on infections differs based on the strategy being pursued. This likely reflects the very nonlinear nature of contagion. For instance, a given easing of restrictions is likely to lead to a larger increase in infections when many people are still infected (that is, when reopening happens early). Similarly, reopening twice as fast is likely to lead to a more-than-proportional increase in infections. This suggests that reopening strategies in which partial restrictions remain in place during a transition period and are removed only slowly are more favorable in lowering the risk of infection.

When it comes to the recovery in mobility and hence economic activity, on the other hand, no difference is found between countries that reopened late or early or between countries that reopened fast or slowly.[14] That is, the benfit in terms of increased mobility per unit of easing is not statistically different across strategies.

One way to illustrate the contrast in the results for mobility and infections is to compare the model predictions for these variables under different strategies. The results indicate that alternative reopening strategies produced marked differences in the trajectory of infections but only minor differences with respect to mobility (Figure 2.7). In other words, easing containment restrictions by one unit delivers similar economic effects, as proxied by mobility, regardless of how and when a country exits, but it generates a much smaller increase in new infections if reopening is pursued in a late and slow manner.

These results do not mean that the effect on activity is inconsequential, because postponing or slowing the reopening actions implies that full reopening is delayed. But the results suggest that the economic gain of rapid and early strategies is not disproportionately larger, while the reinfection risk appears to be so.

Conclusions and Policy Implications

The need to calibrate containment policies to keep COVID-19 in check will keep policymakers busy until a vaccine or an effective treatment becomes widely available. This fine-tuning

[13]As before, one concern is whether the larger effect found for countries opening faster or earlier reported in Figure 2.6 may be reflecting increased testing capacity in those countries. An additional specification controlling for daily tests (using a smaller sample given data limitations) yields similar results, suggesting this is not the case. See Franks and others (2020).

[14]To examine this question, additional analysis regresses mobility on the reopening strategies using the same framework as used for the infection regressions. The results are reported in Franks and others (2020).

involves uncomfortable trade-offs: the results in this chapter show that reopening measures have led to a much-needed recovery in economic activity but at the cost of an uptick in infections already under way at the end of August.

Although this result is consistent with studies on the effect of lockdowns, the findings in this chapter point to some novel dimensions of the trade-off between economic activity and the spread of the pandemic during the reopening phase. First (and fortunately), the unwelcome increase in COVID-19 cases soon after the reopening phase appears less severe regarding fatalities than what the earlier findings for lockdowns would have suggested. This likely reflects a shift in the demographics of the infected population toward lower-risk groups but also that better medical care for severe cases may have been developed. Nonetheless, as the resurgence in infections has gained strength in several countries in recent weeks, authorities have had to reintroduce containment measures to avoid overwhelming the health system.

Second, the results suggest that the reinfection risk increases disproportionally under certain reopening strategies. In particular, a given reopening measure appears to have a larger effect on subsequent infections if the country starts opening when the circulation of the virus is still pervasive and infection rates are growing or if the reopening measures are not sufficiently gradual. Although opening later or slower is associated with a delayed recovery in mobility (because a fully reopened stage is postponed further), the incremental cost is not disproportionally larger. Taken together, these findings suggest some merit in reopening gradually and beginning at a late stage in the infection cycle.

Certainly, the overall success in dealing with the pandemic as economies reopen will depend on not only the general principles regarding the timing and pace of measures outlined here but also, crucially, on the population's collective behavior. As activity continues to resume, making it more difficult to maintain social distancing, some evidence of more widespread use of face masks is encouraging, but it may not be sufficient to keep new large outbreaks in check.

Annex 2.1. Description of Reopening Database

Most European economies have followed a phased-in approach, opening sectors differentially and in a gradual manner. The database constructed for this chapter compiles measures taken by European authorities to reopen the economy based on the (i) sector, (ii) timing, (iii) phase and (iv) intensity of reopening.[1] For each country and date, the chapter defines the reopening measures as follows:

(i) *Sector of reopening*: Sectors are classified as schools, industry, retail, services (e.g., hotels, restaurants, hairdressers etc.), events/ public-places, and international travel (including intra-European).[2]

(ii) *Timing of reopening:* The date in which a country opened a specific sector.

(iii) *Phase of reopening:* The phase within the overall exit plan in which a sector's first reopening measure was taken.

(iv) *Intensity of reopening*: Change in the opening status of a particular sector. Opening status is coded as 0 (open), 1 (open with restrictions/ guidelines), 2 (partially open with only a subset of the sector allowed to function) and 3 (closed).

These indicators are constructed based on authorities' reopening measures from official and other news sources. The chapter also uses supplemental information from the Oxford Covid-19 Government Response Tracker, the European Commission measures dashboard, and the ACAPS government measures dataset.

Two related metrics built from the reopening database are used in the chapter to characterize the overall reopening plan for each country: the *speed* and *timing* of reopening plans.

- The *timing* of a country reopening strategy is calculated as the percentage change in daily deaths between the peak of the infection-death curve and the day the first reopening measure is introduced. The infection curve that was used refers to deaths rather than cases as it is a more robust benchmark (cases could be under-detected, for instance depending on the testing capacity). In addition, policymakers were more likely to monitor deaths, at least in the first wave, as they are more closely linked to hospital capacity issues.
- The *speed* or pace at which countries reopened is computed as the ratio of effective to actual days since the first reopening measure is introduced. The effective days open is defined, at the sector level, by the cumulative extent of each sector's reopening each day. For instance, if a country reopened schools for four days by 50 percent and subsequently by 100 percent for one day, the effective days reopened for schools is three. The aggregate effective days open is the sum of the effective days open across all sectors.

[1]The countries in the database include Austria, Belgium, Czech Republic, Germany, Denmark, Finland, France, Greece, Ireland, Israel, Italy, Netherlands, Norway, Poland, Portugal, Romania, Russia, Spain, Switzerland, Turkey, Ukraine, and United Kingdom. Sweden does not feature in our database as it is not possible to comprehensively characterize its reopening given that it did not have a full lockdown.

[2]The analysis does not make a distinction between essential and non-essential lines of work within each sector, and mostly follows authorities' announcements of how the economy was planned to reopen. In principle, many countries left essential businesses to operate even under lockdown. Further it should be noted that despite the sectoral reopening announced by authorities, many workplaces encouraged (and continued to) telework both during lockdown and the reopening phases and the database does not collect information on its application.

Annex 2.2. Empirical Methodology

The chapter estimates the effect of reopening on activity (reported in Figure 2.4) and on infection related variables (reported in Figure 2.5) using local projections methods (Jordà, 2005) and panel data of daily observations for 22 countries:

$$Y_{i,t+h} = \alpha_i^h + \eta_t^h + \beta^h . Reopening_{i,t} + \lambda_1^h . Deaths_{i,t-1} + \lambda_2^h . Cases_{i,t-1} + \mu^h . Mobility_{i,t-1} + \theta^h . \mathbf{X}_{i,t} + u_{i,t} \quad (1)$$

The main outcome variables, $Y_{i,t+h}$, are a mobility index ($Mobility_{i,t}$) and COVID-19 infections ($Deaths_{i,t}$, $Cases_{i,t}$). The mobility data is taken from Google and realigned in index form, where 100 corresponds to pre-COVID-19 baseline (normal) mobility (average of retail, workplace, and transport) and with values below 100 indicating the percentage mobility below normal. The data for infections (daily cases and deaths per million) are obtained from the ECDC. $Deaths_{i,t}$ and $Cases_{i,t}$ are then defined as the log of the seven-day moving average of daily deaths and daily cases per million, respectively.[1] $Reopening_{i,t}$ is the aggregate cumulative easing of restrictions constructed from the database described in Annex 2.1. Specifically, it is the cumulative of the i*ntensity of reopening* variable which measures the daily change in the sectoral opening status, aggregated across all sectors. $\mathbf{X}_{i,t}$ is a vector of covariates including a control for the first reopening, country infection trends and day of the week effects. All specifications also include a full set of country and time fixed effects (α_i and η_t). Equation (1) is estimated by OLS for each daily horizon $h = 1, \ldots, H$. For inference, the coefficient standard errors are adjusted for heteroskedasticity and serial correlation (using a bandwidth of 7 days). The variance decompositions reported in the chapter (section on the role of voluntary distancing) are derived by decomposing the share of explained variance of the model in Equation (1) into contributions of regressor variables using the Shapley value method.

To explore the heterogeneity in average effects by reopening strategies (reported in Figure 2.6), the baseline regression (1) is extended to include two indicator variable classifying each country into whether they were fast ($Fast_i$) reopeners (versus late) and whether they were early ($Early_i$) reopeners (versus late). These variables are then interacted with the main variable of interest, the reopening policy ($Reopening_{i,t}$), to retrieve the differential effects (γ_1^h, γ_2^h). Standard errors are robust to heteroskedasticity and serial correlation (using a bandwidth of 7 days).

$$Y_{i,t+h} = \alpha_i^h + \eta_t^h + \beta^h . Reopening_{i,t} + y_1^h . Reopening_{i,t} * Fast_i + y_2^h . Reopening_{i,t} * Early_i + \lambda_1^h . Deaths_{i,t-1} + \lambda_2^h . Cases_{i,t-1} + \mu^h . Mobility_{i,t-1} + \theta^h . \mathbf{X}_{i,t} + u_{i.,t} \quad (2)$$

The results shown in Figure 2.7 are in-sample fitted values using parameter estimates from Equation (2) at a one-week horizon for mobility and a three-week horizon for daily cases and mean covariate values (including for reopening) for all four country groups: fast and early, fast and late, slow and early, and slow and late.

[1]The data on daily cases and deaths is from the European Centre for Disease Prevention and Control (ECDC), as reported by Our World in Data (https://ourworldindata.org/coronavirus).

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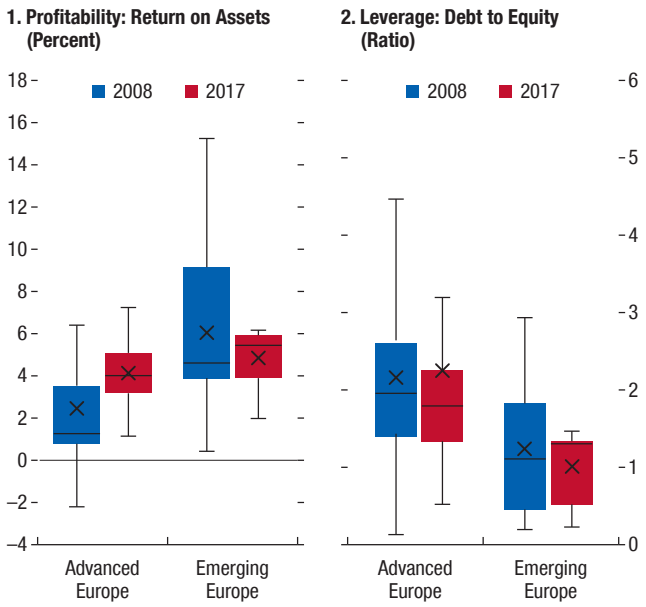
3. Corporate Liquidity and Solvency in Europe during the Coronavirus Disease Pandemic: The Role of Policies

European firms are facing an unprecedented shock, but the policy response has also been unprecedented. This chapter seeks to quantify the potential impact of the coronavirus disease (COVID-19) crisis on corporate liquidity and solvency risks in Europe and examine the extent to which policy measures—as designed—could dampen these risks in 2020. Using detailed balance sheet and income statement data for millions of European companies, the chapter finds that job-retention programs, debt moratoria, grants, and loan guarantees could be effective in addressing corporate liquidity needs, especially in advanced European economies. At the same time, the ability of the announced policy measures to curb the increase in solvency risks appears more limited, especially for small and medium enterprises (SMEs), amid a projected rise in corporate indebtedness. Careful policy calibration will be needed to better support companies that are deemed viable in the longer term and to facilitate the orderly exit of firms that are unlikely to succeed in the post-pandemic economy.

The spread of COVID-19, containment measures to reduce it, and general uncertainty led to a sharp reduction in activity in the first half of 2020. Europe has been hit particularly hard—the economic contraction in 2020 is projected to be among the largest in the world—calling in question the ability of its nonfinancial corporations to withstand the shock. A wave of corporate bankruptcies would generate a loss of wealth, productive capacity, and firm-specific human capital. With many SMEs in Europe relying largely on the banking sector for external finance, stress in the corporate sector could easily translate into pressures in the banking system (Aiyar and others, forthcoming).

Christian Ebeke (co-lead), Nemanja Jovanovic, Svitlana Maslova, Francisco Parodi, Laura Valderrama (co-lead), Svetlana Vtyurina, and Jing Zhou prepared this chapter under the supervision of Mahmood Pradhan and the guidance of Laura Papi and Petia Topalova. Jörg Decressin provided useful advice and comments. Jankeesh Sandhu provided outstanding research assistance, and Nomelie Veluz was expertly in charge of administrative support.

Figure 3.1. Corporate Sector Indicators

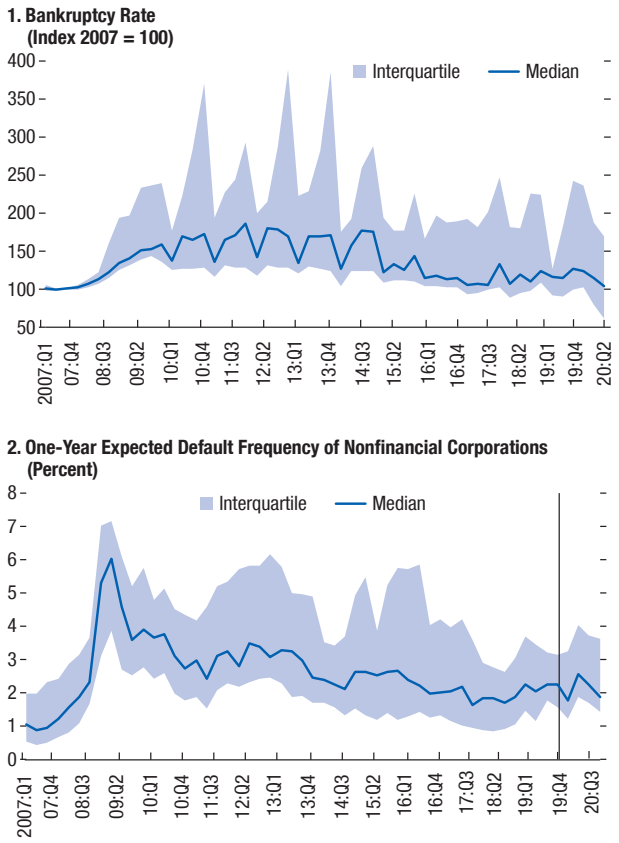


Source: Orbis; and IMF staff calculations.
Note: Panels 1 and 2 show the distribution of country-level turnover-weighted firm-level return on assets and debt-to-equity ratios computed from the Orbis database across advanced and emerging market economies in Europe. Boxplots include the mean (cross), median (horizontal bar), the interquartile range, and the minimum and maximum values excluding outliers (whiskers).

Before the pandemic, financial vulnerabilities of the corporate sector in a number of large European economies were deemed relatively low from a cross-regional perspective (Chapter 1 of the October 2020 *Global Financial Stability Report*). Although improvements in aggregate corporate health had been uneven across countries, corporate profitability had generally strengthened, indebtedness had fallen, and the share of European firms with potential difficulties servicing their debt had dropped since the global financial and European debt crises (Figure 3.1).

Despite the very sharp decline in economic activity caused by the pandemic, large-scale firm bankruptcies have yet to materialize (Figure 3.2, panel 1). After a spike in mid-March, the median expected default frequency for European firms in

Figure 3.2. Corporate Insolvency in Europe



Source: OECD Timely Indicators of Entrepreneurship; Moody's Analytics; and IMF staff calculations.
Note: Panel 1 shows the bankruptcy rate of nonfinancial corporates (NFCs) in Europe, not seasonally adjusted. Countries included are Belgium, Germany, France, Netherlands, Norway, Sweden and United Kingdom ("incorporated" enterprises) and Denmark, Finland, Iceland, Italy, and Spain (all legal forms). Panel 2 shows the one-year average expected default frequency of listed NFCs for the twenty-five European countries covered by Moody's Analytics (excluding Luxembourg, Monaco, and Virgin Islands). In both panels, the shaded area shows the interquartile range, while the solid line plots the median value.

September 2020 was only slightly above the levels at the end of 2019 (Figure 3.2, panel 2). This is in contrast to the persistent rise in expected default frequency observed shortly after the onset of the global financial crisis.

Two tightly interrelated factors have likely limited the rise in bankruptcy rates so far. First, the exceptional policy response has supported the corporate sector through numerous channels: by easing financial conditions and facilitating access to credit through monetary policy actions, prudential measures that enhance banks' lending capacity, corporate lending programs, and bank and market funding facilities; by reducing firms' wage expenditures and other costs while protecting employment; by providing grants and supporting firms' revenue; by mitigating firms' liquidity pressures through debt moratoria and tax deferrals; and more broadly by lifting sentiment and supporting demand. Temporary changes in national insolvency laws to defer legal action against insolvent debtors, together with the summer judicial recess observed in many countries, have also shielded firms.

Second, corporate financing has remained resilient, an outcome of the exceptional policy support measures. As discussed in the October 2020 *Global Financial Stability Report*, firms have been able to address liquidity needs by tapping bank credit and issuing corporate bonds. In several European countries, the flow of new credit to nonfinancial corporations has registered double-digit growth since March, and debt issuance has risen sharply since March–April. This relatively sanguine period may not last, however, when the exceptional policy support is unwound.

In this context, this chapter aims to assess the liquidity needs and solvency risks of the corporate sector in response to the COVID-19 pandemic in a large sample of European economies in 2020. It documents how prevailing financial conditions shape these risks, and quantifies the extent to which key measures announced by governments have potentially dampened liquidity and solvency risks in 2020. The analysis provides insights into the near-term outlook for the corporate sector in Europe and informs the debate about policies, complementing the findings of Chapter 1 in the October 2020 *World Economic Outlook* and in the October 2020 *Global Financial Stability Report*.

Simulation Approach

To capture the potential impact of the COVID-19 crisis on corporate sector vulnerability, the chapter focuses on the concepts of firm liquidity and solvency. A company is considered illiquid if its liquid assets (cash and financial investments) are

insufficient to cover operational net cash outflows and debt repayments. A company is considered insolvent if the book value of debt exceeds the value of assets, i.e. if it has negative equity.[1] While neither a liquidity gap nor negative equity necessarily implies the opening of insolvency proceedings, it increases the likelihood of future bankruptcy (Davydenko and Franks 2008). Creditors, policymakers, and researchers often focus on these concepts to assess firms' health and target policy support (see, for example, Gilson, John and Lang 1990, European Commission 2014, Bank of England 2020, Gourinchas and others 2020).

The chapter uses a structural approach to simulate the impact of the COVID-19 shock on corporate liquidity and solvency based on balance sheet and income statements data from more than 4 million companies in 17 advanced and 9 emerging market European economies as of 2017/18. The turnover of firms covered in the analysis amounted to about 80 percent of aggregate national turnover, with SMEs comprising 99 percent of firms and one-quarter of the turnover.[2]

The analysis simulates the highly uneven effect of the COVID-19-induced shock across economic activitities in 2020, by assuming differential impacts on firms' sales across 70 sectors. The sectoral shocks to turnover are calibrated to be consistent with country-level growth forecast in the October 2020 *World Economic Outlook,* leading to significant cross-sectoral and cross-country variation (see Annex Figure 3.1). To calculate cash flows, the analysis assumes that firms can adjust their material costs in proportion to the reduction in sales, but continue to pay other obligations, such as wages, fixed costs, interest expenses, and debt repayments. The analysis also assumes that the pandemic renders firms' inventories illiquid.

The analysis begins by simulating corporate liquidity and solvency shortfalls under different scenarios of credit market access but *without* taking into account the direct effect of targeted corporate sector measures announced by national authorities. Nevertheless, it is important to emphasize that the effect of policies is partially captured in the aggregate macroeconomic projections that underpin the simulations. The analysis is then broadened to assess the adequacy of the announced policy packages in directly fending off corporate liquidity and solvency pressures.

Liquidity and Solvency Gaps

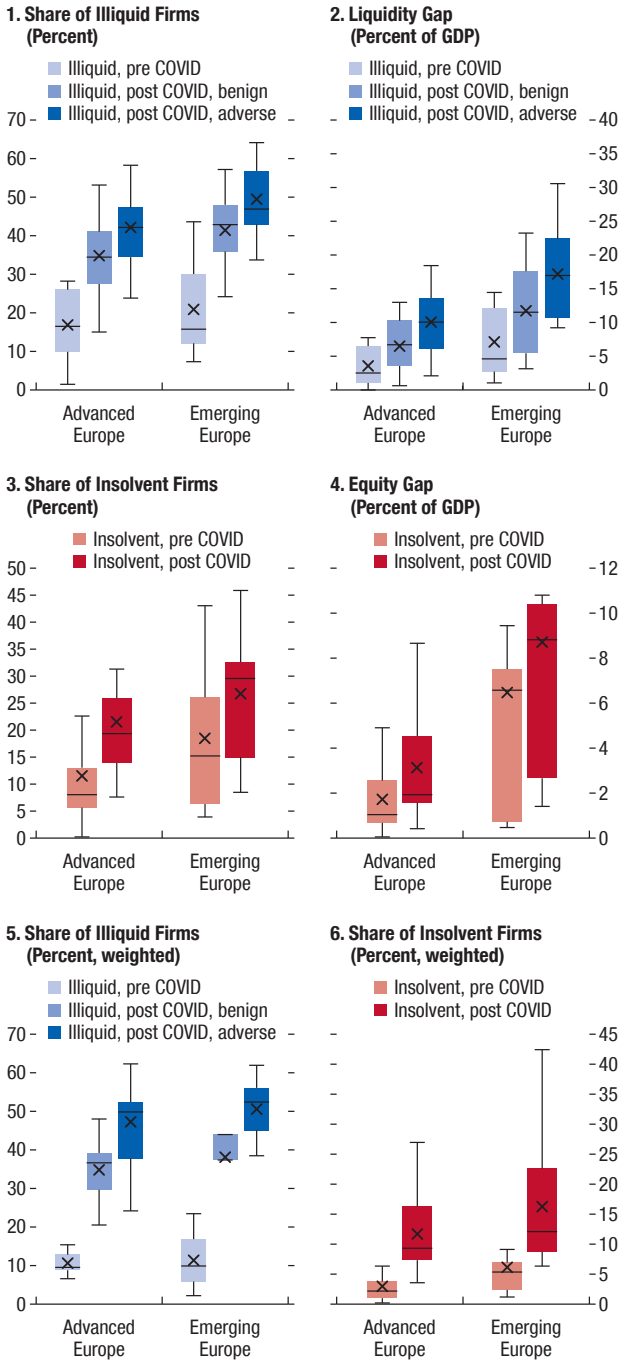
The COVID-19 crisis could substantially impair corporate cash flows. However, the damage it inflicts on firms' liquidity depends critically on the assumed access to bank credit during the pandemic. To illustrate this point, Figure 3.3, panels 1 and 2, present the share of illiquid firms and the size of the liquidity gaps as a share of GDP, respectively, before and after the COVID-19 shock under two alternative stylized scenarios. In the "benign" scenario, firms are able to roll over maturing bank debt (depicted in light blue). In the "adverse" scenario, firms are unable to roll over maturing bank debt because of a freeze in credit markets (depicted in dark blue). Under both scenarios, firms are assumed to be able to rollover "trade payables."

Under the "adverse" scenario, the share of illiquid firms and the magnitude of the liquidity gaps as a share of GDP could almost triple relative to pre-pandemic levels, when firms had full access to

[1]The reliance on the book value of equity has the advantage of expanding the coverage of the analysis beyond the narrow group of listed firms. The analysis does not consider temporary amendments to countries' bankruptcy laws to narrow creditors' rights to pursue debtors during the COVID-19 crisis by, for instance, demanding a longer duration of "illiquidity" (Finland) or suspending equity-based triggers of insolvency (Austria).

[2]The data are sourced from the Orbis database. The analysis relies on 2017/18 data because these correspond to the latest widely available corporate accounts in Orbis. Because of limited reporting requirements, microfirms are underrepresented. To ensure country representativeness, results are adjusted using national sectoral shares of firms' turnover, following Kalemli-Ozcan and others (2015). The advanced economies included in the sample comprise Austria, Belgium, the Czech Republic, Denmark, Finland, France, Germany, Greece, Ireland, Italy, Latvia, Portugal, the Slovak Republic, Slovenia, Spain, Sweden, and the United Kingdom. The following emerging European market economies are included in the analysis: Bulgaria, Croatia, Hungary, Poland, Romania, Russia, Serbia, Turkey, and Ukraine. For further details on the data, methodology, and results, see Ebeke and others (forthcoming).

Figure 3.3. Liquidity and Solvency Projections



Source: Orbis; and IMF staff calculations.
Note: Panels 1 and 3 show the distribution of illiquid and insolvent firms, respectively, as a share of all firms under each alternative scenario. Panels 2 and 4 show the distribution of the aggregate cash-flow deficit and equity shortfall, respectively, under each alternative scenario as a share of GDP. Panel 2 sums negative cash-flows across illiquid firms, while panel 4 sums negative equity values across insolvent firms. Panels 5 and 6 show the distribution of illiquid and insolvent firms, respectively, as a share of firms weighted by turnover, under each alternative scenario. Boxplots include the mean (cross), median (horizontal bar), the interquartile range, and the minimum and maximum values excluding outliers (whiskers).

credit markets. The share of value added generated by illiquid firms would quadruple. Although we lack data to compute precisely the potential job destruction, suggestive estimates indicate that the share of jobs at risk would rise fivefold.[3] The widening of the liquidity gaps is particularly pronounced in emerging markets. For the median emerging market economy in our sample, the liquidity shortfalls as a share of GDP could almost quadruple relative to pre-COVID-19 levels (Figure 3.3, panel 2).

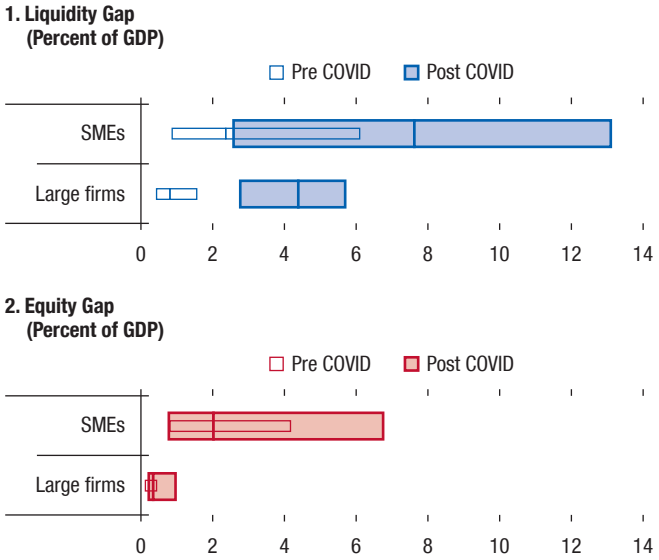
However, continued access to credit could significantly alleviate liquidity challenges, as shown in the "benign" scenario. If banks refinance outstanding loans, liquidity gaps would be two thirds as large. Extension of new credit beyond what is needed to roll over maturing debt (as is happening in several countries) would further reduce liquidity needs as quantified in the next section.

The COVID-19 shock could also erode firms' capital (Figure 3.3, panels 3 and 4). The share of insolvent firms could rise by 11 percentage points to 20 percent in the median advanced economy and by 14 percentage points to 30 percent in the median emerging market economy. The firms that may turn insolvent because of the pandemic account for a sizable share of value added, with the average value added at risk rising fourfold.

The simulated impact of the COVID-19 shock varies across different types of firms (Figure 3.4). SMEs account for a larger share of the widening liquidity gaps, reflecting their prevalence in the corporate sector and greater financial constraints (Berger and Udell 1998; Muelier, Schoors, and Merlevede 2016; Blanco and others 2020). The liquidity and equity gaps of SMEs could rise by 6 percentage points and 2.5 percentage points of

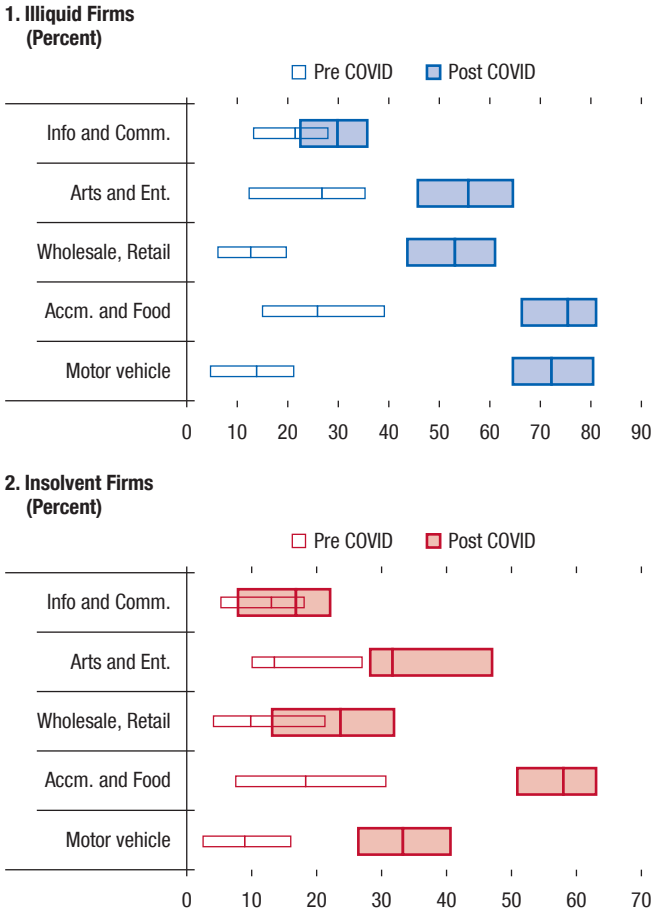
[3]Orbis does not include the full population of firms. Moreover, not all firms covered in Orbis report employment or value added. The analysis proceeds in two stages. First, employees or value added are apportioned to each firm in-sample in line with turnover at the sector or type of firm (SME, large) level. Second, out-of-sample projections are performed applying the simulated paths for illiquidity or insolvency at the sector or type of firm level to the remaining firms in the population using national statistics. The granularity at the sectoral or type of firm level allows accounting for differences in job or value-added intensity across sectors and type of firms.

Figure 3.4. Liquidity and Equity Gaps, by Firm Type



Sources: Orbis. IMF staff calculations.
Note: Panel 1 (Panel 2) shows the distribution of the aggregate liquidity (equity) gap post-COVID-19 (wide boxplot) relative to pre-COVID-19 values (narrow boxplot) by firm type. Panel 1 sums negative cash-flows across illiquid firms. Panel 2 sums negative equity values across insolvent firms. Nominal values are shown as percent of GDP. Boxplots include the interquartile range (with the horizontal bar indicating the median). SMEs are firms with annual turnover below 50 million euro, following the definition of the European Commission.

Figure 3.5. Share of Financially Distressed Firms, by Sector



Sources: Orbis. IMF staff calculations.
Note: Panel 1 (Panel 2) shows the distribution of the share of illiquid (insolvent) firms post-COVID-19 (wide boxplot) relative to pre-COVID-19 values (narrow boxplot) for select economic sectors as a share of firms in their group. Boxplots include the interquartile range (with the horizontal bar indicating the median).

GDP at the 75th percentile compared with about 4 percentage points and less than 1 percentage point of GDP for large firms, respectively.

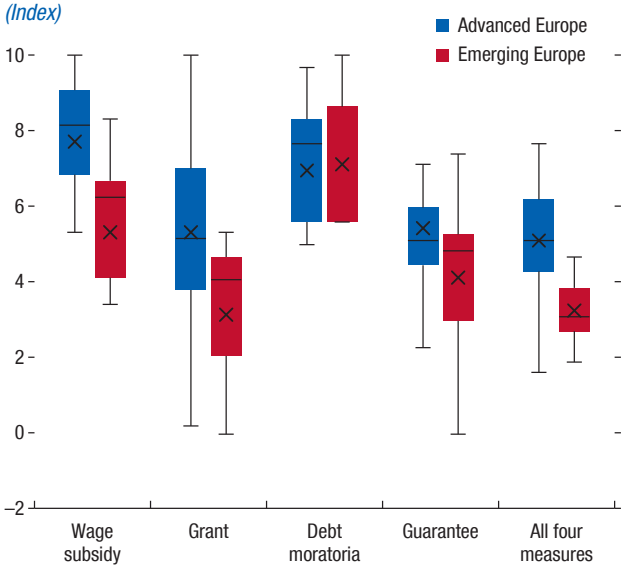
Certain production sectors are also likely to be affected more than others (Figure 3.5). As documented in other studies (European Commission, 2020), firms in contact-intensive sectors (such as accommodation and food services, trade) and in complex production networks (such as motor vehicles) would suffer more from the COVID-19 shock than firms in less contact-intensive sectors (such as information and communication).

The Policy Response

Given the pandemic's potentially devastating impacts, European authorities enacted decisive policies. As discussed in Chapter 1, the policy response was unprecedented in its size and breadth. Central banks cut policy rates and engaged in asset purchases, which helped contain interest expenses and averted fire sales. Various initiatives at the European Union (EU) level, including the full flexibility in the EU fiscal rules, the adoption of a temporary state aid framework, and the prospects of an ambitious EU recovery fund, also helped countries deploy needed support.

Countries used an array of tools to support the corporate sector. Some measures provide liquidity relief directly by reducing firms' costs or boosting their revenues. For example,

Figure 3.6. Intensity of Policy Measures
(Index)



Sources: IMF staff calculations.
Note: The intensity of policy measures is computed as the principal component of each policy measure, taking into account information on the size of the budgetary envelope, the duration of the measure, and the coverage of firms. The bar represents the interquartile range, median (horizontal dash), mean (cross), and the minimum and maximum values excluding outliers (whiskers).

government-sponsored job retention programs allow firms to adjust working hours and reduce their wage bill. Tax deferrals or reduced tax rates for particularly hard-hit sectors or types of firms were also widely adopted, as were debt moratoria to reduce cash outflows. On the revenue side, grants were typically used for smaller firms and the self-employed. Other measures indirectly support firms' credit access by incentivizing banks to continue providing credit (for example, credit guarantee programs). For strategic sectors, solvency support measures were also used, such as equity injections in national airlines (France, Germany). These policy responses, including both measures with immediate fiscal implications and liquidity support that may incur below-the-line fiscal costs,[4] are estimated to amount to about 23 percent of EU GDP based on information available up to June 2020. Annex Figure 3.2 shows the key policy measures incorporated in the simulations.

[4]These are quasi-fiscal measures such as loan guarantees that may have noticeable effect on fiscal expenses in future periods.

Since measures differ significantly in scope, size, and conditions, a simple analytical approach is used to compare policy announcements across countries. The intensity of announced measures is computed as the principal component of the measure's budgetary envelope (as share of GDP), its duration, and sectoral coverage (turnover of the covered sectors as share of total turnover in the economy). This approach reveals substantial heterogeneity in the intensity of announced measures across countries (Figure 3.6). First, advanced economies responded more forcefully than emerging markets in Europe to the risk of stress in the corporate sector. Second, advanced economies relied to a greater extent on measures with direct or indirect fiscal costs, such as wage subsidies, grants, and loan guarantees. Emerging markets, on the other hand, leaned more heavily on debt moratoria to cushion the impact of the liquidity shock. These important cross-country differences may reflect preferences and existing policy space—with some emerging markets facing limited fiscal space and large (though short-lived) capital outflows and currency depreciations in the beginning of the pandemic.

The actual take-up rates of the various measures are also vastly different, both across countries and from the headline announcements (OECD 2020; Anderson, Papadia, and Véron 2020; S&P Global 2020). Although it is still too early to identify the main drivers behind this variability, anecdotal evidence points to differences in announcement dates, implementation lags, firms' demand, program conditionality, pricing, administrative capacity, and the size of the programs' envelope.[5] While take-up rates have been lower than expected in some cases, the announced measures may still provide important support to activity by boosting confidence and overall credit supply.

[5]For guaranteed loans, the loan amount is typically limited to the specific liquidity needs of the beneficiary. Thus, take-up rates would reflect differences in firms' liquidity deficits. Other factors behind cross-country heterogeneity in take-up rates include differences in the administrative capacity of the public sector and banks to process guaranteed loan applications, and supervisory moral suasion. The take-up rate is mechanically lower for large programs, such as the guarantee programs in Germany and Italy.

The Effectiveness of Announced Policies

This section seeks to quantify the extent to which policies—as designed—can dampen corporate liquidity and solvency risks. Using highly-detailed data on the key corporate support measures announced in each of the 26 countries in the study, the analysis projects firms' liquidity needs and solvency gaps, assuming that firms take maximum advantage of the measures they are eligible for.[6] This approach does not use information on the actual take-up rates of the various programs, given the limited data so far. Should program implementation or other constraints lead to low take-up, our findings may overestimate the ability of policies to mitigate liquidity and solvency risks. The simulations thus assess the potential effectiveness of the policy packages as *designed* (rather than as *implemented*) by policymakers, assuming that companies apply for and obtain support from the programs for which they are eligible.[7]

A unique contribution of this study is to carefully incorporate the key country-specific measures announced as of the end of August 2020, modeling in detail all conditions and eligibility criteria in the legal basis of the measures. The support received by firms is simulated, taking into account conditions related to firm size, financial position, corporate type, economic sector, and turnover loss. Eligibility criteria are also applied to determine the amount of compensation received. When the simulated demand for a specific program exceeds the announced budget envelope, the amounts are recalibrated at the firm level to satisfy the aggregate cost of the measure.

The analysis quantifies the effects of measures in the form of wage schemes, grants, tax rebates, subsidized lending rates, cuts to policy rates, and asset purchase programs, as well as changes to firms' cash outflows due to debt moratoria and tax deferral programs.

In addition to internal financing, the simulations quantify firms' access to external financing to address cash-flow deficits, following Cont, Kotlicki, and Valderrama (2020). The analysis assumes that firms that were not in financial difficulty before the pandemic—defined as those with negative equity or subject to collective insolvency proceedings—can receive *guaranteed* working capital loans, whether provided directly by government-sponsored entities or through commercial banks, subject to the conditionalities of the programs, such as beneficiary type, permissible operation, or maximum loan size. The simulations also assume that firms with a pre-COVID-19 solvent position can refinance 80 percent of maturing loans, access new loans for an amount linked to turnover, and issue corporate bonds, consistent with the observed volumes in the first half of 2020.[8]

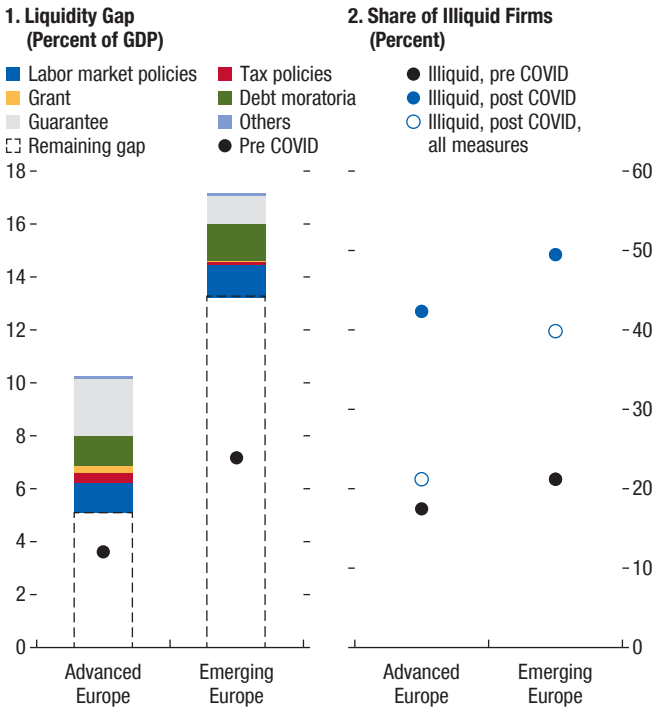
Simulation results suggest that policies—if implemented as designed—could mitigate liquidity risks by the end of 2020 substantially, particularly in advanced Europe. Figure 3.7 presents the pre- and post-COVID-19 liquidity and equity vulnerabilities, measured as (1) share of firms, and (2) size of the gap in percent of GDP. It also depicts the extent to which policy measures could reduce these vulnerabilities, relative to the "adverse" post-COVID-19 scenario of partial credit market freeze. The announced policy packages in advanced economies could reduce the pandemic-induced liquidity gap by four-fifths to about 5 percent of GDP, slightly higher than the 3.6 percent of GDP pre-COVID-19 gap. The overall impact of policies in emerging markets is smaller, reducing liquidity gaps by two-fifths

[6]Simulations do not include firms' optimization behavior across multiple funding options (some of which come with strings attached) and ignore operational risk in implementation of corporate programs.

[7]In our simulations, some policy packages are not exhausted because of strict eligibility criteria at the firm level, related to type of beneficiary and maximum amounts.

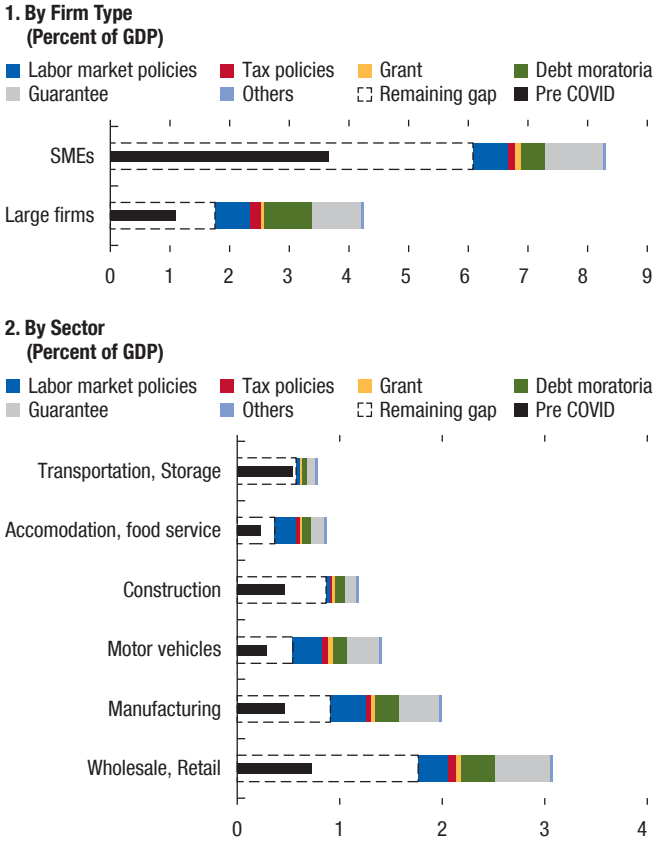
[8]The assumptions on external finance are in line with the empirical literature (Schneider and Waschiczek 2018). Credit supply is limited by the aggregate credit forecast in the *World Economic Outlook.* Banks prioritize working capital over investment loans. Firms finance their liquidity deficits through guaranteed loans first. If insufficient, they access non-guaranteed credit subject to banks' underwriting standards and aggregate credit projections.

Figure 3.7. Liquidity Deficits Covered by Policies



Sources: Orbis. IMF staff calculations.
Note: Panel 1 plots the magnitude of liquidity gaps pre- and post-COVID, and the gaps covered by each of the policy measures, as share of GDP. Panel 2 plots the share of illiquid firms—firms with negative net cash flow—pre-, post-COVID, and after all policy measures are accounted for.

Figure 3.8. Liquidity Gaps Covered by Policies by Firm Type and Sector



Sources: Orbis. IMF staff calculations.
Note: Panel 1 and 2 plot the magnitude of liquidity gaps pre- and post-COVID, as well as the gaps covered by each of the policy measures by firm type and sector, respectively. Overall liquidity gap is the overall amount of negative net cash flow, and each measure's contribution is the total funds received by firms under each policy program, as share of GDP. SMEs are firms with annual turnover below 50 million euro, according to the definition of the European Commission.

to 13 percent of GDP, almost double the pre-COVID-19 level.

Policies could also help mitigate job losses and output destruction. Focusing on employment and value added by firms that would have become illiquid but did not due to the policy support, our simulations suggest that, on aggregate, policies could save 15 percent of employment and almost a quarter of value added in Europe.

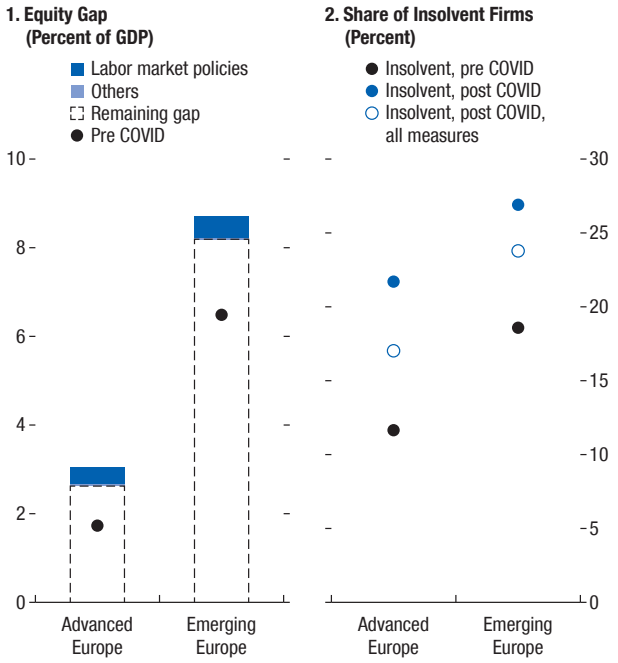
Among the policy measures, guaranteed loans, job-retention programs, and debt moratoria contribute the most to lowering the liquidity gap. This reflects their large size and broad coverage.

However, the capacity of policies to address liquidity gaps across types of firms and sectors varies. Whereas policies would help reduce the number of firms with a liquidity deficit by around two-thirds (both for large firms and SMEs), they could mitigate only half of the rise in liquidity shortfalls attributed to SMEs but about three quarters of the rise in large firms (Figure 3.8, panel 1).

Even after accounting for policy support, liquidity shortfalls are concentrated in the wholesale and retail trade sector and manufacturing—among the sectors most disrupted by lockdowns and supply-chain interruptions (Figure 3.8, panel 2).

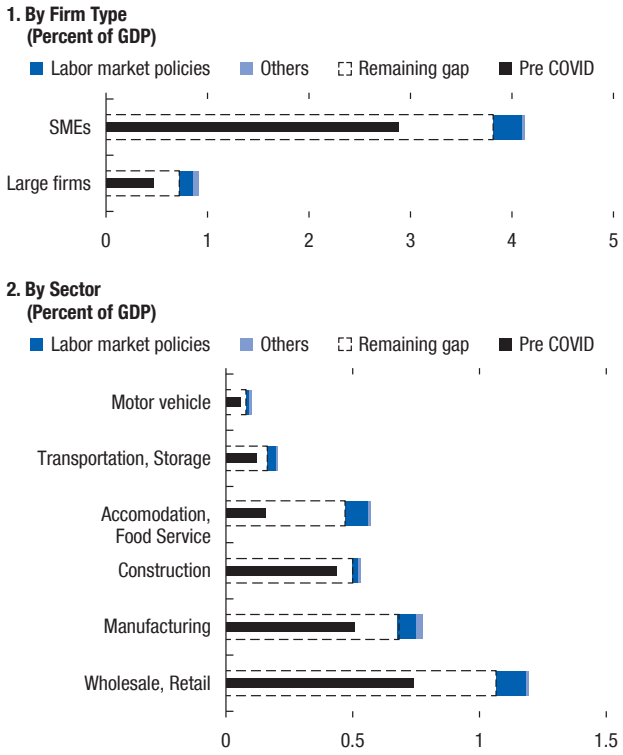
Policies appear less effective in addressing solvency risks (Figure 3.9). This is not surprising as many of the announced policy measures, such as debt moratoria, tax deferrals, and guaranteed loans,

Figure 3.9. Equity Deficits Covered by Policies



Sources: Orbis. IMF staff calculations.
Note: Panel 1 plots the equity gaps pre- and post-COVID, as well as the gaps covered by policy measures as percent of GDP. Panel 2 plots the share of insolvent firms pre- and post-COVID, and after all the policy measures are accounted for.

Figure 3.10. Equity Gaps Covered by Policies by Firm Type and Sector



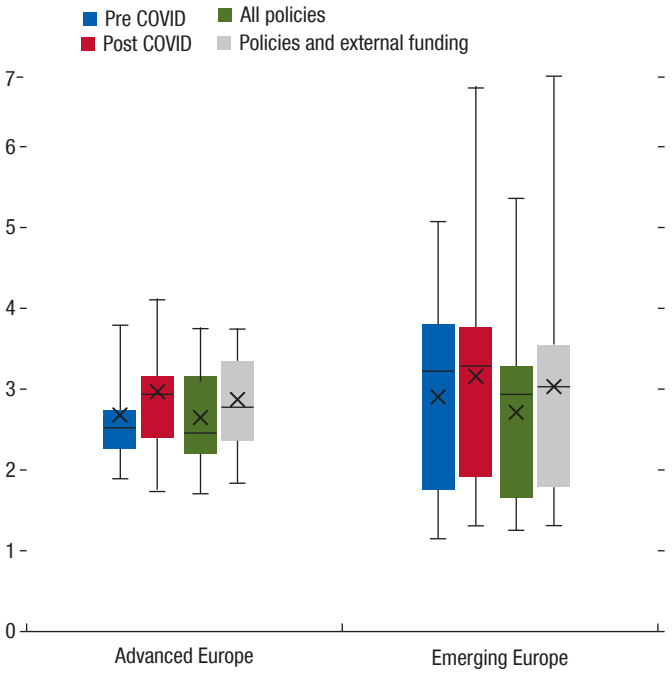
Sources: Orbis. IMF staff calculations.
Note: Panel 1 and 2 plot the equity gaps pre- and post-COVID, as well as the gaps covered by policy measures by firm type and sector as percent of GDP. SMEs are firms with annual turnover below 50 million euro, following the definition of the European Commission.

address only liquidity strains. In advanced economies, one-third of the increase in the solvency gap is estimated to be covered by policies (versus four-fifths for liquidity gaps). Similarly, in emerging market economies in Europe, about a quarter of the solvency gaps are estimated to be covered by policies (versus two-fifths for liquidity gaps). As a result, even with the policies implemented as designed, the share of insolvent firms would increase by 5 percentage points to 17 percent in advanced economies and by 5 percentage points to 24 percent in emerging economies. The effectiveness of policies differs across type of firms and sectors (Figure 3.10). Whereas policies could offset over two-fifths of the increase in the equity shortfall of large firms, they could absorb only one quarter of the rise in equity shortfalls of SMEs. Across sectors, equity gaps are concentrated in the wholesale and retail trade sector and manufacturing.

Although announced policies could help firms cope with liquidity shortages, the resulting increase in indebtedness raises concerns for solvency risks and investment prospects in the future. The simulations suggest that leverage ratios in the corporate sector could rise substantially, especially in advanced economies and for the already highly levered firms (Figure 3.11). After all policies are accounted for, the share of liquid but insolvent firms could also increase in advanced economies because of the financial costs of the newly-taken credit (Figure 3.12, panel 1).

Pockets of liquidity-constrained firms could remain among firms that were financially sound pre-COVID-19 (in many schemes, aid is granted to firms that were not in difficulty as of December 2019) and would appear solvent even after the

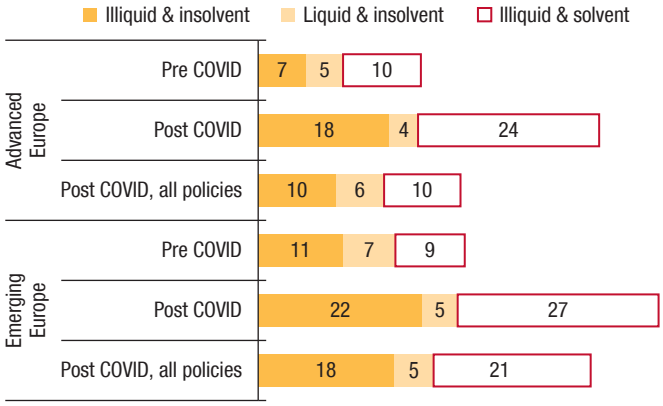
Figure 3.11. Leverage Ratio of Pre-COVID-19 Highly Leveraged Firms



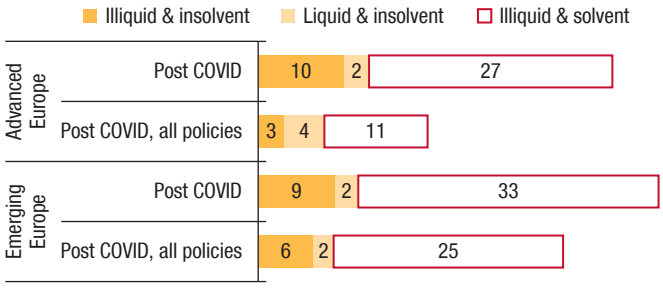
Sources: Orbis; and IMF staff calculations.
Note: Leverage is calculated as the ratio of total liability over book equity. Highly leveraged firms are the 75th percentile of all firms. Boxplots include the mean (cross), median (horizontal bar), the interquartile range, and the 10th and 90th percentiles (whiskers).

Figure 3.12. Distribution of Firms by Liquidity and Solvency Stance

1. All firms; unconditional distribution post-COVID-19 (Percent)



2. Pool of firms that were solvent pre-COVID-19; conditional distribution post-COVID-19 (Percent)



Sources: Orbis; and IMF staff calculations.
Note: Panel 1 plots the ex-post distribution of firms post-COVID-19, irrespective of their financial vulnerability pre-COVID-19 (unconditional distribution). Panel 2 plots the ex-post distribution of those firms that were solvent pre-COVID-19 (conditional distribution). It then isolates the effect of the COVID-19 shock on solvent firms pre-COVID-19. Panel 1 shows the distribution for pre-, post-COVID, and after all policy measures accounted for. Panel 2 shows the distribution for post-COVID, and after all policy measures accounted for.

pandemic – this is the set of firms that is generally targeted by the announced measures. In other words, the current set of policies is insufficient to cover the liquidity needs of all firms that face difficulties because of the COVID-19 pandemic.

Focusing only on firms that were solvent before the pandemic, the simulations in Figure 3.12, panel 2 show that about one-quarter of such firms in emerging markets and over one-tenth of such firms in advanced economies in Europe could continue to face liquidity shortfalls, even though they remain solvent after the pandemic and even if they avail themselves of all policy measures. At the same time, the pandemic, despite all of the policies, would turn 7 percent and 8 percent of firms in advanced and emerging market economies in Europe, respectively, insolvent despite being solvent pre-COVID-19. Under current policies, the equity injection needed to bring firms' equity to the minimum threshold above which the firm is not considered "in difficulty" is estimated at about 2 percent of GDP.[9]

[9]The analysis defines firms "in difficulty" following Article 2(18) of the Commission Regulation (EU) No 651/2014 (European Commission, 2014). This implies that, for each solvent firm pre-COVID-19 which turns to be "in difficulty" due to the outbreak, the equity injection ensures that the following two conditions hold (i) its cumulative losses projected in the end of 2020 balance sheet do not exceed half of its subscribed share capital; and, (ii) its end of 2020 book debt to equity ratio is not greater than 7.5. Results are robust to a book debt to equity ratio equal to the 90th percentile ratio in the median country in the sample.

Without greater visibility of the structural transformations that will be needed in the post-COVID-19 future, assessing the implications of these findings is not straightforward. However, the results are suggestive of the need to recalibrate the budget, duration, and conditionality criteria of measures to take into account both the financial soundness of firms before the shock (as currently stipulated in many countries) and a forward-looking assessment of firms' position.

While in normal times, government support should benefit illiquid but solvent firms, such a criterion is likely to generate a number of bankruptcies well beyond what is socially desirable in the current situation (Blanchard, Philippon, and Pisani-Ferry, 2020). Hence, firms' viability—including after the health crisis is contained—will have to be taken into account and public support extended to viable but currently vulnerable firms.[10] Nevertheless, it will be difficult for governments to undertake such a viability assessment for a large number of firms, so private creditors and financial intermediaries may need to have a primary role.

Policy Implications and Conclusion

The simulations presented in this chapter suggest that the COVID-19 shock could result in sizable liquidity and equity shortfalls in Europe's corporate sector by the end of 2020. The extent of the damage, however, depends crucially on firms' ability to access policy programs put in place by the authorities, and to tap credit markets. In that regard, the resilience of corporate financing so far, supported by strong policy actions, has provided an important cushion for firms in most European countries.

The results suggest that policies announced by country authorities, if fully implemented as designed, could significantly lower liquidity risks. In advanced economies, in particular, announced policy measures could potentially reduce COVID-19-induced liquidity shortfalls by four-fifths on average. In emerging market economies, the simulations reveal sizable remaining liquidity shortfalls.

The ability of policy measures implemented so far to curb the increase in solvency risks appears more limited. In advanced economies, policy effectiveness to reduce solvency risk is, on average, less than half of that to mitigate liquidity risk, and solvency gaps are even larger for emerging market economies. The COVID-19 outbreak could put at risk the jobs of workers in insolvent firms amounting to more than 8 percent of the workforce in the region. Moreover, the projected rise in corporate indebtedness raises concerns about solvency and investment in the future.

Even accounting for all policies, the simulation results reveal that liquidity and solvency gaps could be particularly prominent in certain sectors. Liquidity shortfalls in SMEs could remain quite large, as could shortfalls in sectors characterized by contact-intensive business models and complex value chains, namely wholesale and retail trade and manufacturing.

As the simulations suggest, 8 percent of companies (or almost 3 million firms) that were solvent pre-COVID would become insolvent in 2020 even if all available policy measures were implemented. Under the crude assumption that these are viable firms in the post-pandemic future, an estimated equity injection of about 2 percent of GDP would be required in addition to all the policy support already provided just to bring firms' equity to the threshold above which they would not be considered "in difficulty" in the current year.

It is important to emphasize that the results should be interpreted with caution, given data limitations on the coverage of firms and the assumption that all firms will rely on available programs in full. Moreover, liquidity and solvency risks do not necessarily imply the opening of insolvency

[10]In this discussion, we adopt the Blanchard, Philippon and Pisani-Ferry (2020) definition of viability. A firm is considered viable if the present value of its profits exceeds its recovery value. A firm is considered solvent if the present value of profits (i.e. its equity) exceeds its debt.

proceedings, although they increase the likelihood of bankruptcy. The analysis is also limited to 2020, given the sizable uncertainty surrounding the economic forecast for 2021 and the policy outlook upon the expiration of current measures.

It is likely that more support will be needed to address solvency risks, which have risen significantly. Where fiscal space is available, support for systemic firms could take the form of direct but temporary equity injections (or junior claims), with appropriate conditionality and safeguards to limit moral hazard. In the case of SMEs, taking equity stakes by the government is more challenging because of the large number of SMEs, and the difficulties related to implementation and governance. Consideration could be given to strengthen SMEs' capital structure with the use of hybrid capital (i.e. preferred capital, subordinated loans) and debt restructuring (including the conversion of an amount of guaranteed loans). Other proposals envision grants to SMEs matched by higher future taxes (Blanchard, Philippon, and Pisani-Ferry 2020). Such an approach would require a strong tax culture to be successful.

Looking ahead, policymakers will face complex trade-offs between delivering support to firms to minimize unwarranted bankruptcies, containing fiscal costs, and encouraging resource reallocation. Continued policy support will be needed during the highly uncertain and possibly incomplete recovery to limit mass bankruptcies and associated economic scarring, and to avoid the cliff effects that a sudden withdrawal of measures may precipitate. However, public resources are limited in several countries, and the pandemic will likely lead to long-lasting changes in the structure of the economy that are still difficult to predict. A delayed economic recovery will make these trade-offs even more difficult to navigate. These considerations call for a more targeted approach that focuses on firms that are viable in the longer term.

It will be important thus to rely on a more forward-looking approach, help foster agreements with private creditors to restructure the debt of those firms that can be saved, and to facilitate the orderly exit of firms that are unlikely to succeed in the post-pandemic economy.

Targeting policy support in practice, however, may be very challenging to design and implement given the sheer number of firms and political economy constraints. Strong incentives will need to be put in place to encourage firms with solid pandemic-proofed business plans to take advantage of policy support while discouraging the uptake by firms that are on a structural path to failure or those that could manage on their own—especially when fiscal room to maneuver is thin. Financial intermediaries could play an important role in the delivery of such support.

It will be crucial that targeted support be delivered in a transparent and accountable manner. Systems and procedures should be put in place to carefully monitor the implementation of measures and assess their effectiveness. Using a data-driven approach would enable policymakers to adapt strategies promptly if necessary, while transparency and clear communication to stakeholders could help maintain political support for interventions that will have clear winners and losers. Understanding the reasons behind the relatively low take-up of certain measures to date can deliver important insights to policymakers and inform the design of more effective support in the future.

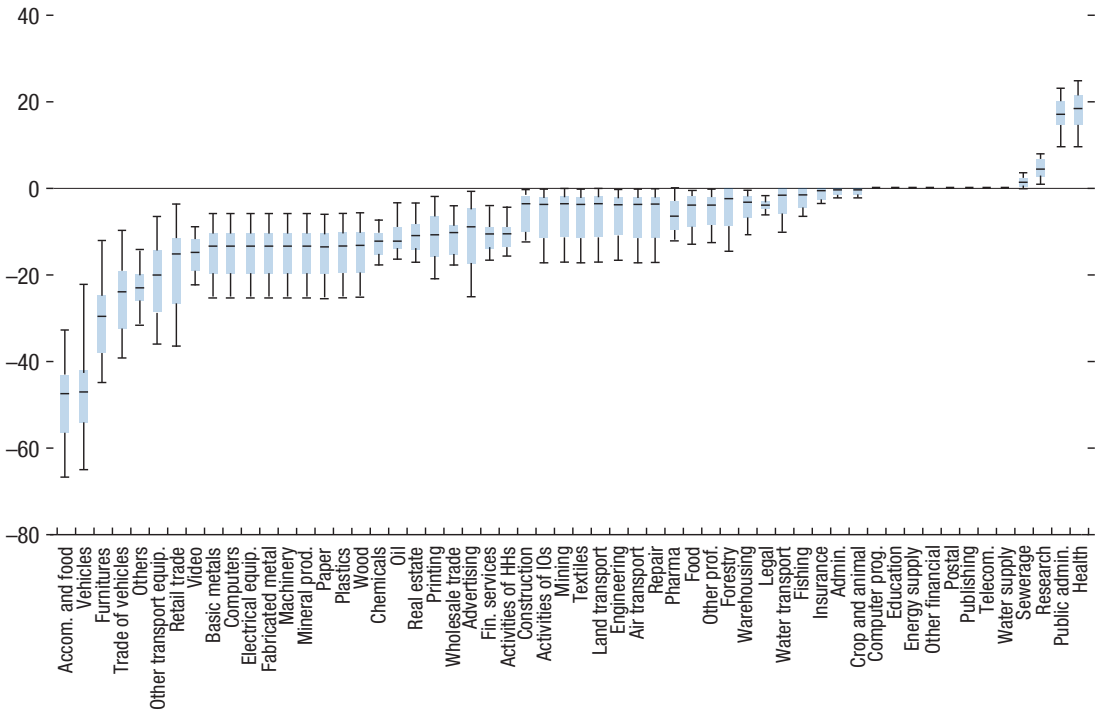
Orderly and timely debt restructurings would facilitate capital injections in firms that are viable, including after the health crisis is contained. Also, liquidation of unviable firms will be important to redeploy resources promptly to sectors that are likely to expand. Enhanced bankruptcy procedures and out-of-court restructurings will facilitate the process. In summary, the design of effective, efficient, and affordable policies to support firms will remain a key challenge for policymakers in the coming years.

Annex 3.1. Sectoral Shocks and Policy Measures in the Analysis

Annex Figure 3.1 shows the distribution of sectoral shocks across countries using NACE-2 digit sectors. Annex Figure 3.2 illustrates the policy measures included in the simulations and the coverage of external funding.

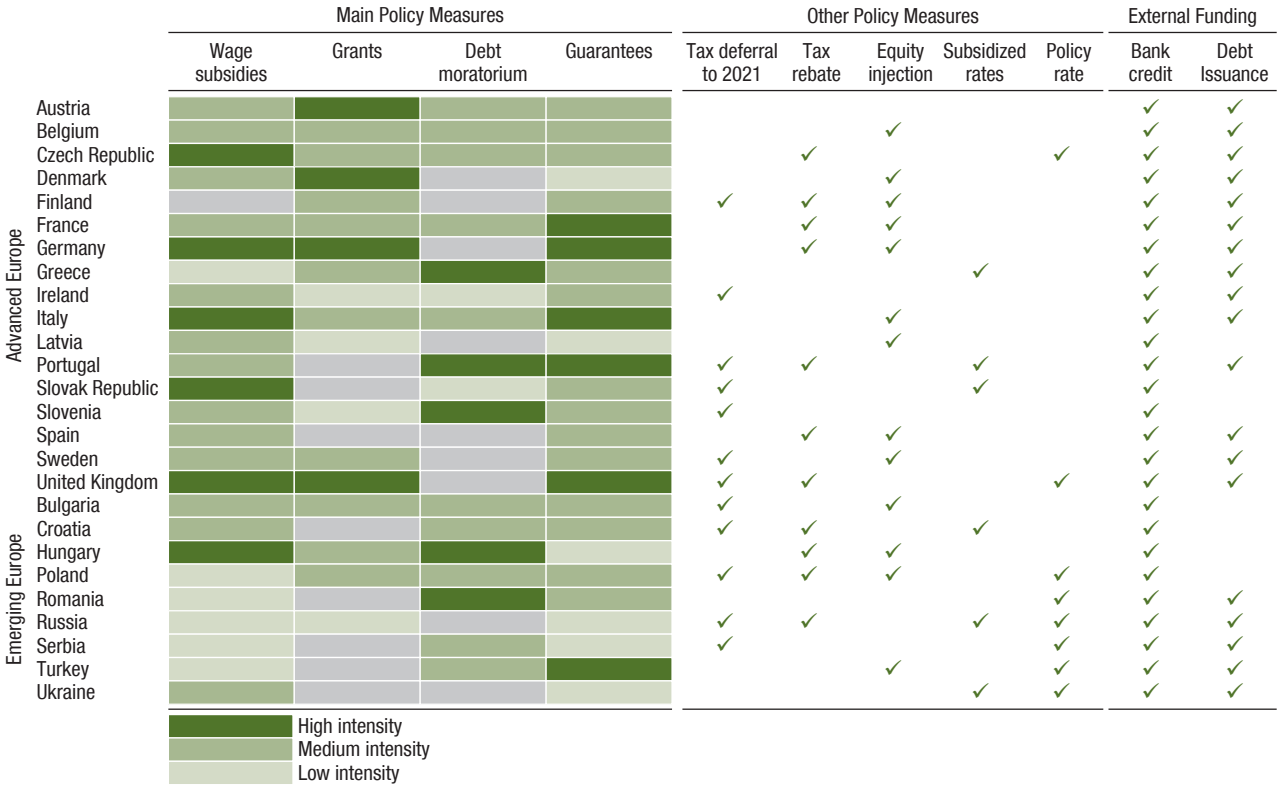
Annex Figure 3.1. Sectoral Shocks across Countries

Distribution of Output Growth across Sectors, in 2020
(Percent)



Source: IMF staff calculations.
Note: The boxes and whiskers show the dispersion of growth in each sector across countries.

Annex Figure 3.2. Policy Measures Incorporated in the Simulations



Source: IMF staff calculations.
Note: The first four columns are color-coded to reflect policy intensity taking into account granular information on budget, duration, and firm coverage, relative to peer countries. The left nine columns reference the form of the aid under each scheme, i.e. wage subsidies (contribution to wage costs to avoid layoffs), grants (direct compensation for loss in revenues), debt moratorium (moratorium on bank loan repayments), guarantees (guarantees on loans channeled through financial institutions as well as official loans), tax deferral (ability to defer tax obligations to 2021) tax rebates (decrease/exemption on VAT, corporate income tax, business rates, or payroll tax), equity injections (common equity or hybrid instruments), subsidized rates (on new loans), and policy rates (effective pass-through of policy rate cuts to lending rates). The right two columns refer to external funding sources included in the simulation, i.e. non-guaranteed bank loans (all firms) and corporate debt issuance (large firms).

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