

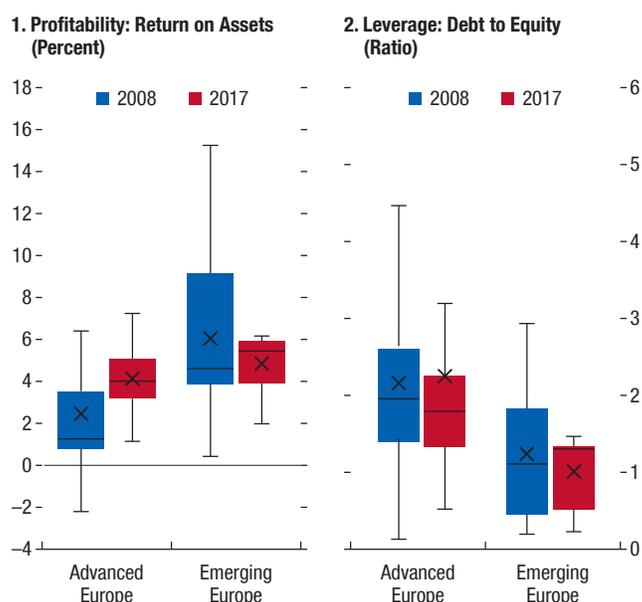
### 3. Corporate Liquidity and Solvency in Europe during the Coronavirus Disease Pandemic: The Role of Policies

*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).

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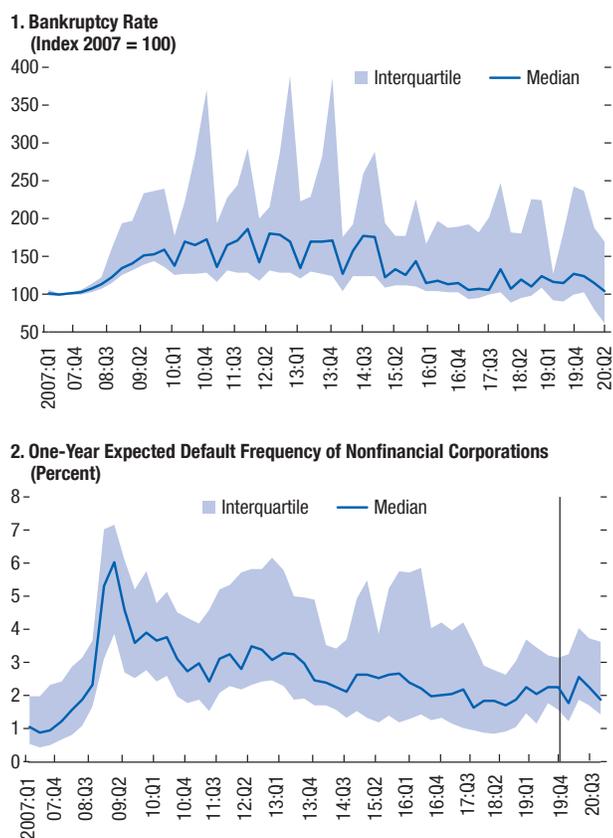
**Figure 3.1. Corporate Sector Indicators**



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.<sup>1</sup> 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.<sup>2</sup>

The analysis simulates the highly uneven effect of the COVID-19-induced shock across economic activities 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

<sup>1</sup>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).

<sup>2</sup>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).

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.

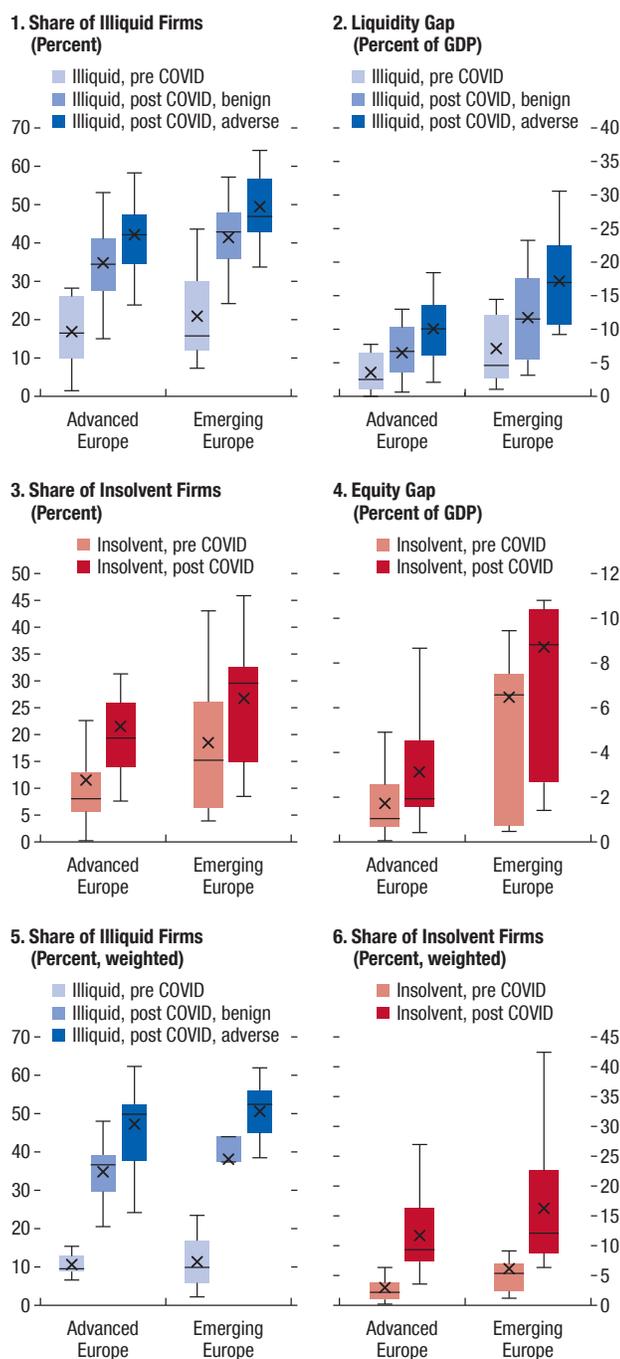
The analysis begins by simulating corporate liquidity and solvency shortfalls under different scenarios of credit market access but *without* taking into account the direct effect of targeted corporate sector measures announced by national authorities. Nevertheless, it is important to emphasize that 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

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.<sup>3</sup> 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).

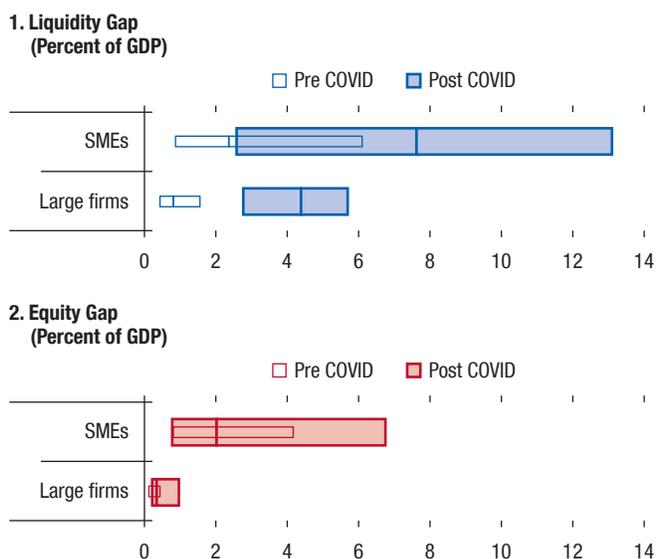
However, continued access to credit could significantly alleviate liquidity challenges, as shown in the “benign” scenario. If banks refinance outstanding loans, liquidity gaps would be two thirds as large. Extension of new credit beyond what is needed to roll over maturing debt (as is happening in several 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

<sup>3</sup>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.

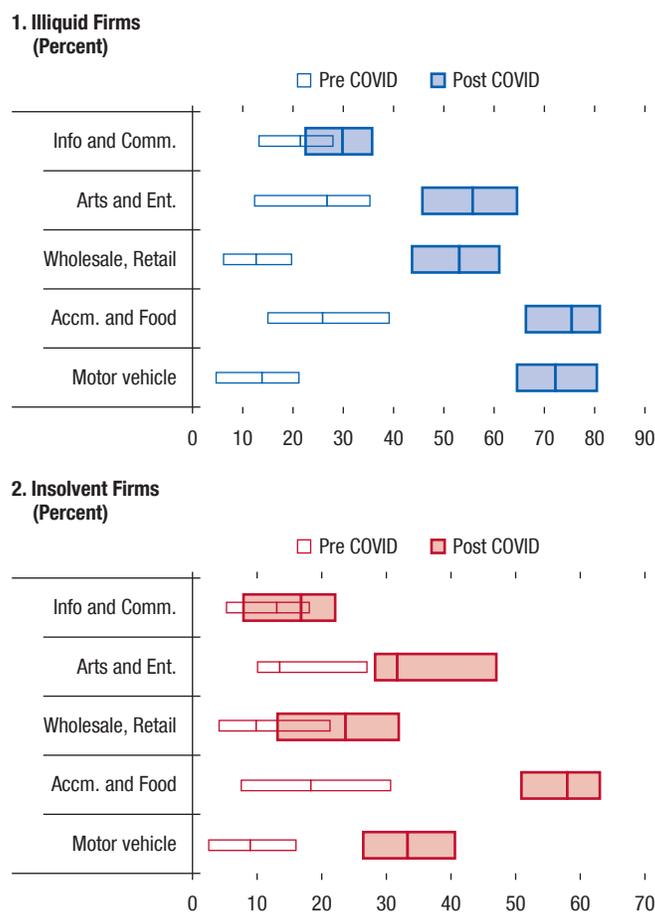
GDP at the 75th percentile compared with about 4 percentage points and less than 1 percentage point of GDP for large firms, respectively.

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

**Figure 3.5. Share of Financially Distressed Firms, by Sector**

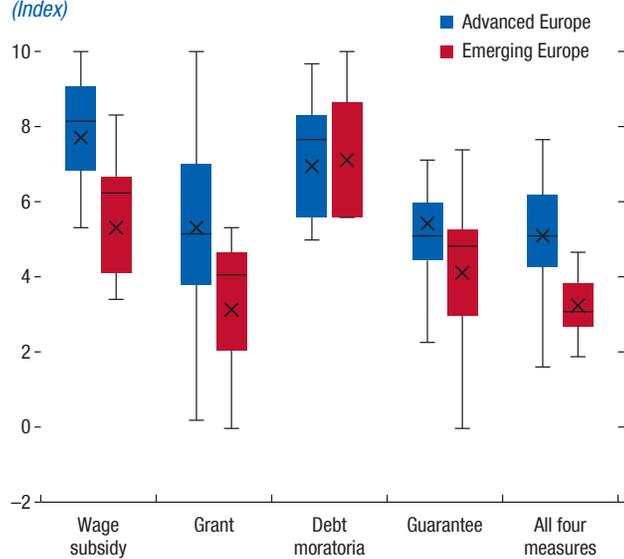


Sources: Orbis. IMF staff calculations.  
 Note: Panel 1 (Panel 2) shows the distribution of the share of illiquid (insolvent) firms post-COVID-19 (wide boxplot) relative to pre-COVID-19 values (narrow boxplot) for select economic sectors as a share of firms in their group. Boxplots include the interquartile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

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,<sup>4</sup> 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.

<sup>4</sup>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.<sup>5</sup> 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.

<sup>5</sup>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.<sup>6</sup> 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.<sup>7</sup>

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.<sup>8</sup>

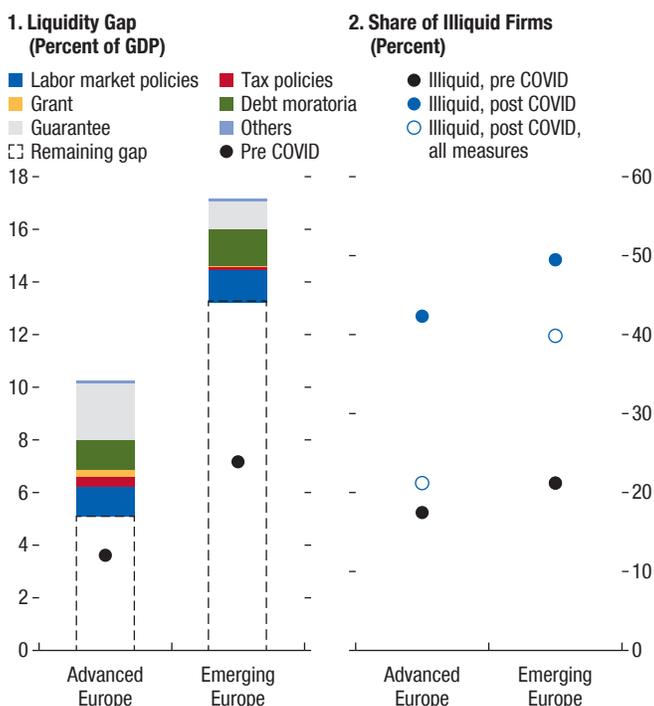
Simulation results suggest that policies—if implemented as designed—could mitigate liquidity risks by the end of 2020 substantially, particularly in advanced Europe. Figure 3.7 presents the pre- and post-COVID-19 liquidity and equity vulnerabilities, measured as (1) share of firms, and (2) size of the 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

<sup>6</sup>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.

<sup>7</sup>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.

<sup>8</sup>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.

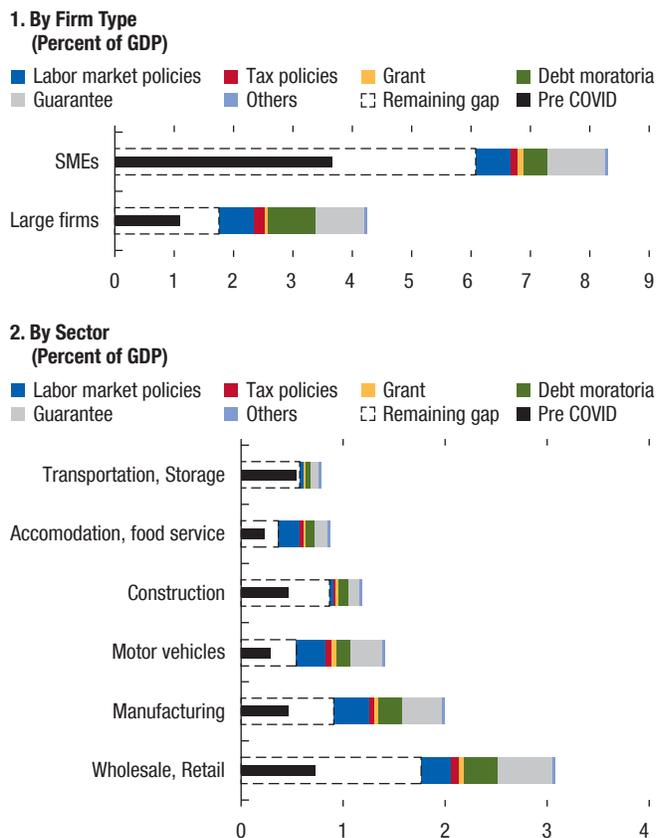
to 13 percent of GDP, almost double the pre-COVID-19 level.

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

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



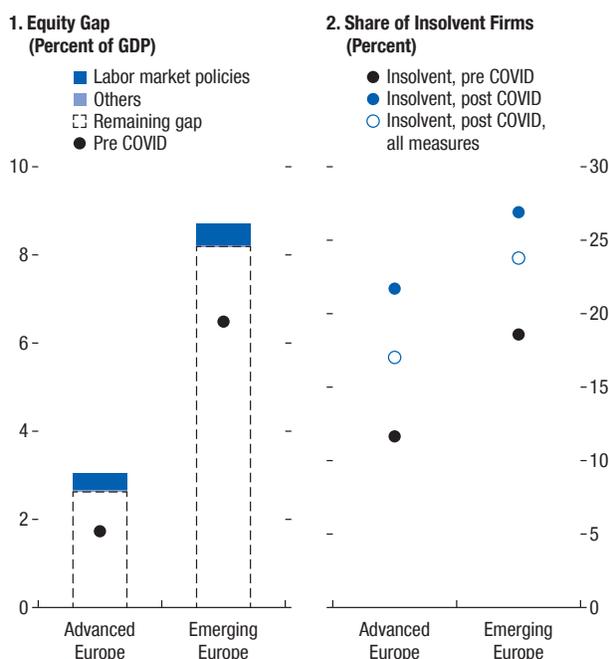
Sources: Orbis. IMF staff calculations.  
 Note: Panel 1 and 2 plot the magnitude of liquidity gaps pre- and post-COVID, as well as the gaps covered by each of the policy measures by firm type and sector, respectively. Overall liquidity gap is the overall amount of negative net cash flow, and each measure's 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.

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,

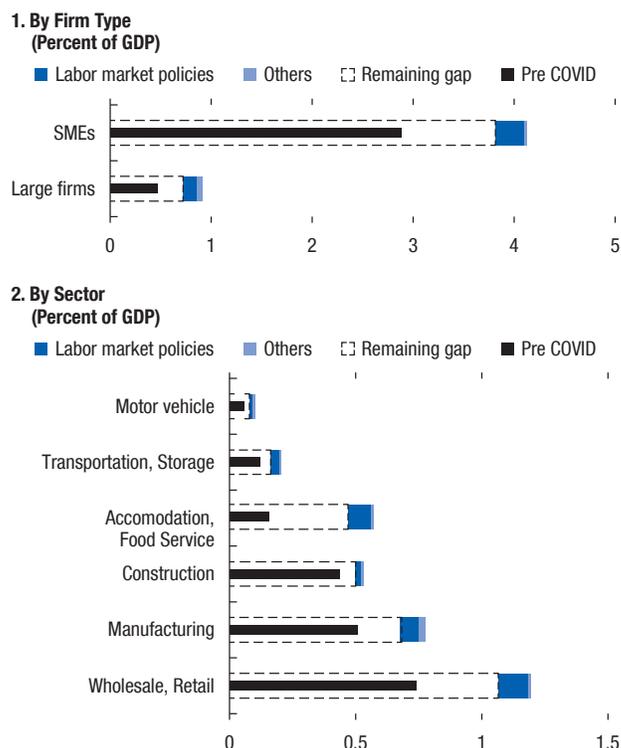
**Figure 3.9. Equity Deficits Covered by Policies**



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.

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.

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

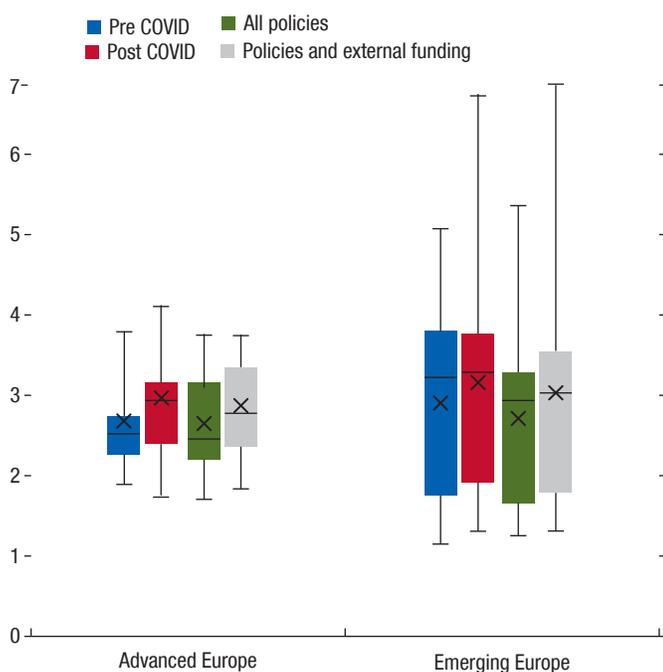


Sources: Orbis. IMF staff calculations.  
 Note: Panel 1 and 2 plot the equity gaps pre- and post-COVID, as well as the gaps covered by policy measures by firm type and sector as percent of GDP. SMEs are firms with annual turnover below 50 million euro, following the definition of the European Commission.

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.

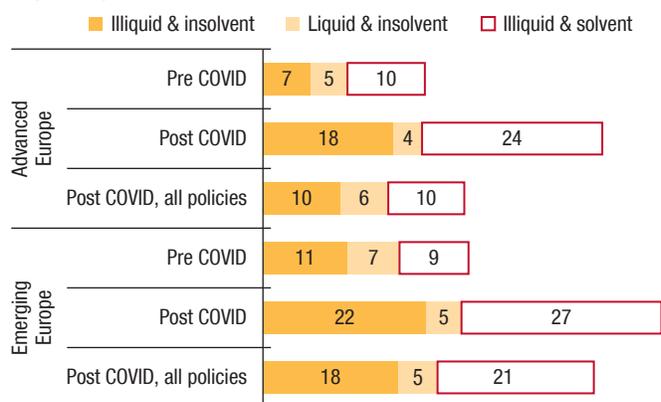
Note: Leverage is calculated as the ratio of total liability over book equity. Highly leveraged firms are the 75th percentile of all firms. Boxplots include the mean (cross), median (horizontal bar), the interquartile range, and the 10th and 90th percentiles (whiskers).

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.

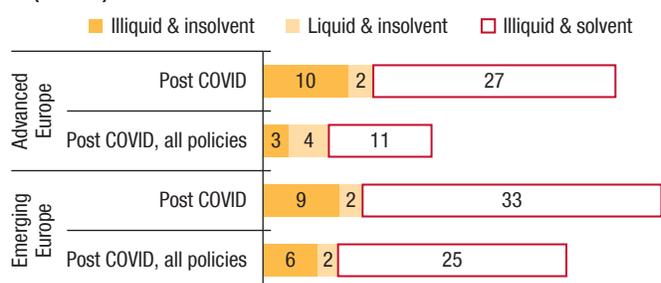
Focusing only on firms that were solvent before the pandemic, the simulations in Figure 3.12, panel 2 show that about one-quarter of such firms in emerging markets and over one-tenth of such firms in advanced economies in Europe could continue to face liquidity shortfalls, even though they remain solvent 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

**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.

to the minimum threshold above which the firm is not considered “in difficulty” is estimated at about 2 percent of GDP.<sup>9</sup>

<sup>9</sup>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 90<sup>th</sup> 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.<sup>10</sup> 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

<sup>10</sup>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.

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

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.

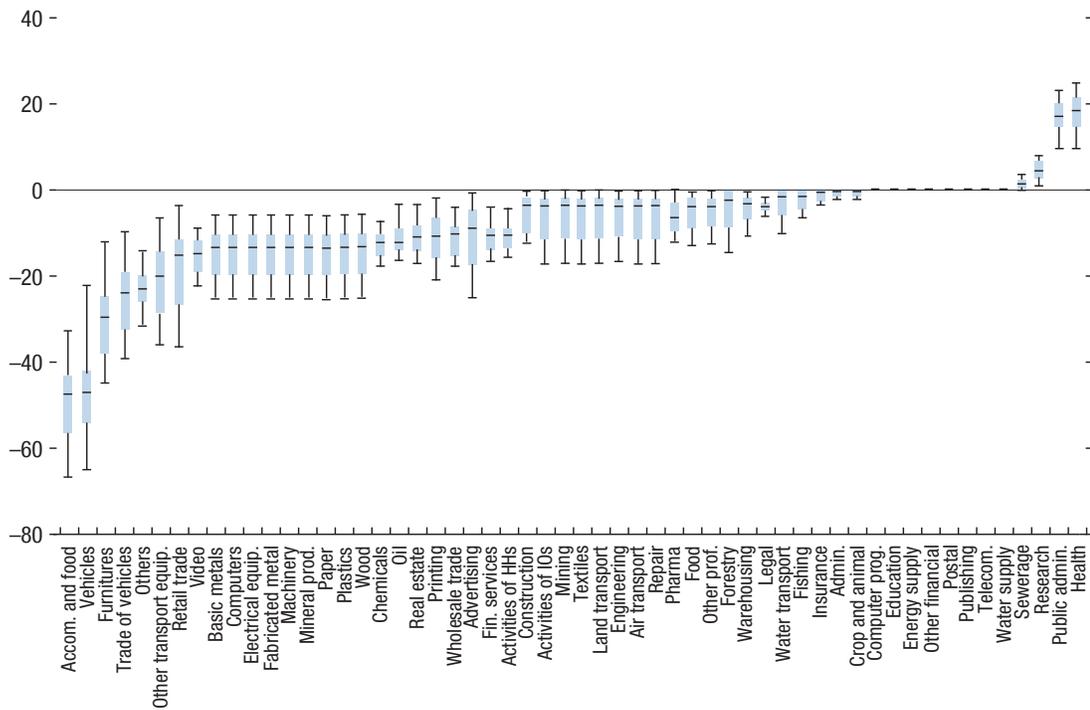
Orderly and timely debt restructurings would facilitate capital injections in firms that are viable, including after the health crisis is contained. Also, liquidation of unviable firms will be important to redeploy resources promptly to sectors that are likely to expand. Enhanced bankruptcy procedures 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

	Main Policy Measures				Other Policy Measures					External Funding	
	Wage subsidies	Grants	Debt moratorium	Guarantees	Tax deferral to 2021	Tax rebate	Equity injection	Subsidized rates	Policy rate	Bank credit	Debt Issuance
Advanced Europe	Austria	High intensity	Medium intensity	Low intensity			✓			✓	✓
	Belgium	High intensity	Medium intensity	Low intensity						✓	✓
	Czech Republic	High intensity	Medium intensity	Low intensity		✓			✓	✓	✓
	Denmark	High intensity	Medium intensity	Low intensity						✓	✓
	Finland	High intensity	Medium intensity	Low intensity	✓	✓	✓			✓	✓
	France	High intensity	Medium intensity	Low intensity	✓	✓	✓			✓	✓
	Germany	High intensity	Medium intensity	Low intensity		✓	✓			✓	✓
	Greece	High intensity	Medium intensity	Low intensity				✓		✓	✓
	Ireland	High intensity	Medium intensity	Low intensity	✓					✓	✓
	Italy	High intensity	Medium intensity	Low intensity			✓			✓	✓
	Latvia	High intensity	Medium intensity	Low intensity			✓			✓	✓
	Portugal	High intensity	Medium intensity	Low intensity	✓	✓		✓		✓	✓
	Slovak Republic	High intensity	Medium intensity	Low intensity	✓			✓		✓	✓
	Slovenia	High intensity	Medium intensity	Low intensity	✓					✓	✓
	Spain	High intensity	Medium intensity	Low intensity		✓	✓			✓	✓
	Sweden	High intensity	Medium intensity	Low intensity	✓		✓			✓	✓
	Emerging Europe	United Kingdom	High intensity	Medium intensity	Low intensity	✓	✓			✓	✓
Bulgaria		High intensity	Medium intensity	Low intensity	✓		✓			✓	✓
Croatia		High intensity	Medium intensity	Low intensity	✓	✓		✓		✓	✓
Hungary		High intensity	Medium intensity	Low intensity		✓	✓			✓	✓
Poland		High intensity	Medium intensity	Low intensity	✓	✓	✓		✓	✓	✓
Romania		High intensity	Medium intensity	Low intensity					✓	✓	✓
Russia		High intensity	Medium intensity	Low intensity	✓	✓		✓	✓	✓	✓
Serbia		High intensity	Medium intensity	Low intensity	✓				✓	✓	✓
Turkey		High intensity	Medium intensity	Low intensity			✓		✓	✓	✓
Ukraine		High intensity	Medium intensity	Low intensity				✓	✓	✓	✓

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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