

LIQUIDITY STRAINS CUSHIONED BY A POWERFUL SET OF POLICIES

Chapter 3 at a Glance

- In the Group of Seven (G7) economies, nonfinancial corporate borrowing surged in March and during the second quarter of 2020, benefiting from unprecedented policy support as a consequence of the coronavirus disease (COVID-19) crisis.
- Credit supply conditions across the G7 were generally favorable during the second quarter, yet the buoyancy of the bond market in the United States stood in sharp contrast to tighter loan market lending standards in that country.
- Among listed firms, those vulnerable to liquidity shocks suffered relatively more financial stress in the early stages of the COVID-19 crisis, and residual signs of strain remained as of the end of June.
- Premature withdrawal of policy support could jeopardize the success achieved so far in broadly meeting the nonfinancial corporate sector's liquidity and funding needs.

The COVID-19 pandemic has adversely affected non-financial corporate sector cash flows, generating liquidity and solvency pressures. In the G7 economies—Canada, France, Germany, Italy, Japan, the United Kingdom, and the United States—corporate borrowing surged in March and into the second quarter of 2020, thanks to credit line drawdowns and unprecedented policy support. This allowed firms to build cash buffers to cope with a period of reduced cash flow and high uncertainty. In the United States, the bond market has been buoyant since the end of March, but credit supply conditions for bank loans and the syndicated loan market have tightened. In other G7 economies, credit supply conditions eased somewhat across markets during the second quarter. Among listed firms, entities with weaker solvency or liquidity positions before the onset of COVID-19, as well as smaller firms, suffered relatively more financial stress in some economies in the early stages of the crisis. However, residual signs of strain remained as of the end of June, when the stock market underperformance of French, UK, and US firms with pre-COVID-19 liquidity vulnerabilities ranged between 4 and 10 percentage points. Policy interventions, especially those directly targeting the

corporate sector, had a beneficial effect overall. Looking ahead, premature withdrawal of policy support could jeopardize the success achieved so far in broadly meeting the nonfinancial corporate sector's funding needs.

Introduction

The COVID-19 pandemic has triggered a deep global economic crisis. Closures and restrictions imposed by governments to contain the spread of the virus, as well as social distancing, have severely disrupted business activity and clouded the economic outlook amid heightened uncertainty. Corporate cash flows have been heavily impaired in many industries, with adverse implications for corporate liquidity and solvency.

In the major advanced economies, severe disruptions to corporate funding markets became apparent amid a sharp tightening of financial conditions early in the year following the onset of the COVID-19 crisis, as corporate bond funds, loan funds, and prime money market funds faced large outflows. This led to a collapse in the issuance of nonfinancial corporate bonds, syndicated loans, and commercial paper, and to a jump in corporate spreads. Many firms turned to their existing credit lines to secure funds in a “dash for cash.”

In response, policymakers in these economies quickly announced a wide range of powerful policy measures to support markets and address corporate

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funding needs (see Online Box 3.1 for a brief description of the key measures and their timing). Some of these measures were unprecedented; one example is the new Federal Reserve facilities to support corporate credit. The combination of these fiscal, monetary, and financial policy measures helped normalize financial conditions during the second quarter, as discussed in the June 2020 *Global Financial Stability Report* (GFSR) *Update* and Chapter 1 of this current report. However, corporate spreads remain wider than at the beginning of the year, especially in the high-yield segment, pointing to remaining concerns about default risk.¹

The degree of eventual economic scarring from the COVID-19 crisis will depend a great deal on how well the financial system—supported to an exceptionally large extent by policies to date—is able to meet the corporate sector’s demand for liquidity during the crisis. This means preventing still-solvent firms facing liquidity strains from turning into insolvent entities or being forced to significantly curtail their activities.²

Against this backdrop, this chapter assesses whether corporate liquidity needs were met for listed firms in the G7 economies during the first few months of the crisis (from the beginning of February to the end of June).³ Given the rise in corporate sector leverage in several G7 economies during the period preceding COVID-19, as documented in recent issues of the GFSR, the chapter also examines the impact of high corporate indebtedness on firms’ financial stress during the crisis. While the COVID-19 crisis has severely hurt a very large number of unlisted small and medium-sized enterprises, which traditionally face difficulties accessing external financing, lack of recent publicly available data for these firms prevents a thorough analysis of their funding situation during the pandemic.⁴

¹As of September 10, 2020, US investment-grade (high-yield) credit spreads had widened 33 basis points (125 basis points) since the beginning of the year. In Europe, investment-grade (high-yield) spreads had widened 9 basis points (101 basis points) on a net basis. Yet with US government bond yields having fallen significantly during the crisis, junk bond yields were at, or close to, record lows.

²Several studies on the global financial crisis have documented reductions in credit supply’s adverse consequences on employment, investment, and total factor productivity growth (Duchin, Ozbas, and Senoy 2010; Chodorow-Reich 2014; Duval, Hong, and Timmer 2020).

³The focus on G7 economies is dictated by these economies’ global systemic relevance and their relatively better data availability.

⁴Chapter 1 of the October 2020 *World Economic Outlook* discusses a model-based analysis of the impact of the COVID-19 crisis on small and medium-sized enterprises, building on work by Gourinchas and others (forthcoming).

The chapter seeks to address four broad sets of issues. First, it analyzes the impact of the COVID-19 crisis on aggregate credit volumes in several segments of the corporate debt market as well as the effects of the subsequent policy response on the debt financing choices of large firms. Second, it discusses the evolution of aggregate conditions in credit markets and seeks to quantify the credit supply shocks in these markets. Third, it examines the extent to which ease of access to external finance, or liquidity position, had an impact on firm-level financial performance in the early stages of the crisis, potentially signaling the presence of tighter credit conditions.⁵ Acknowledging that such an analysis is a very challenging task, the chapter turns to an examination of the effect of key policy announcements and tries to gauge the impact of various types of policy responses on the supply of corporate credit during the containment phase of the pandemic.⁶

The chapter finds that drawdowns of existing credit lines and unprecedented policy support helped maintain the flow of credit to firms, and that corporate borrowing surged in March and the second quarter of 2020. As a result, firms managed to build cash buffers to cope with a period of reduced cash flow and high uncertainty. Since the end of March, the bond market has been buoyant in the United States, but credit supply conditions for bank loans and syndicated loans have tightened. In Japan, bank lending standards have eased, but bond market supply conditions have tightened somewhat despite a solid year-on-year increase in issuance. In other G7 economies, credit supply conditions have evolved in a more homogeneous manner across markets, with somewhat easier conditions prevailing, on average, during the second quarter. Among listed firms, entities with weaker solvency or liquidity positions before COVID-19, as well as smaller firms, suffered relatively more financial stress in some economies during the early stages of the crisis, and residual signs of strain remained as of the end of June. Policy interventions, especially those directly targeting the corporate sector,

⁵The chapter does not aim to project liquidity gaps at the firm level (see Banerjee and others 2020); rather, it aims to provide a quantification of the challenges firms face in accessing debt financing during the containment phase of the COVID-19 crisis. Similarly, the chapter does not aim to provide an account of differences in performance across industries but controls for the heterogeneous effect of the crisis across industries in the empirical analysis.

⁶Data sources and variables used in this chapter are described in Online Annex 3.1. All annexes are available at www.imf.org/en/Publications/GFSR.

had a beneficial effect, on average. These findings can help inform ongoing discussions about the appropriate level of policy support as the global economy moves toward the recovery phase. While trade-offs with other policy objectives need to be considered, especially in a context of limited fiscal space, premature withdrawal of policy support could jeopardize the success achieved so far in broadly meeting the nonfinancial corporate sector's funding needs.

A Surge in Debt Financing and Cash Balances

This section discusses the provision of credit to firms in key segments of the corporate credit market during the containment phase of the crisis. Loans represent the major source of corporate debt funding in the G7 economies, ranging from 58 percent in the United States to 90 percent in Germany, according to the latest available financial accounts data. The remainder is composed of debt securities. In terms of issuance by large firms, the ratio of syndicated loans (which are mostly held by banks post syndication if they are investment grade and by nonbanks if they are non-investment grade) to bonds ranges from two to three.⁷

Despite a period of acute financial stress early in the year, outstanding amounts of bank credit to firms grew significantly in March and in the second quarter in all seven economies analyzed (Figure 3.1, panel 1). On a year-over-year basis, the rate of bank credit growth during the first half of the year was clearly above trend.⁸ Part of this dynamic is clearly attributable to sizable credit line drawdowns, especially in the United States (Figure 3.1, panel 2). Listed firms' drawdowns increased more than 40 percent, on average, compared with the first half of 2019. The increase was particularly spectacular in the United States, where net drawdowns at the end of March doubled, representing an increase of \$250 billion, which is of the same order of magnitude as the increase in commercial and industrial loans by domestic banks over the same period.⁹ Panel 3 of Figure 3.1 shows that these drawdowns were

concentrated in March, with a peak on the last day of the month. Presumably, this reflects firms' desire to secure funds while they were still in compliance with their maintenance covenants and because they expected a sharp deterioration in cash flow during the second quarter. Gross drawdowns in the United States subsided at the beginning of April, resulting in a decline in utilization rates—that is, the share of credit line commitments used. The same reduction can be observed in Canada; drawdown activity in Japan, however, continued during the second quarter, resulting in a utilization rate of 60 percent. Nevertheless, utilization rates across the seven economies remained well below 50 percent, on average, at the end of June, suggesting that liquidity insurance remained significant, at least in the aggregate.¹⁰ Bank credit developments during the second quarter also reflected the implementation of government programs (notably, off-budget credit guarantees) that transferred part—sometimes all—of the credit risk to the sovereign, as well as government-sponsored loans with a significant grant component. These direct support programs to corporate funding represented between 2.6 and 34 percent of GDP as of June 12 (Figure 3.1, panel 4). They complemented other on-budget fiscal measures that directly supported corporate cash flows and solvency, for example, through grants, employment support programs, and reductions in tax liabilities.¹¹ As of early July, committed amounts appear to have been significantly smaller than announced amounts in European economies (Anderson, Papadia, and Véron 2020).

Syndicated loan issuance during the first half of the year was somewhat more heterogeneous across economies. It was generally stronger than in 2019 in Europe and Japan, but weaker in the United States and Canada, especially during the second quarter. This appears to have been driven by a surge in investment-grade loan issuance in Europe and Japan (Figure 3.2, panel 1) and a drop in leveraged loan issuance outside of Germany and Italy (Figure 3.2, panel 2).¹² The weak recovery in the leveraged loan markets was to a large extent due

⁷Syndicated loans include both term loans and credit lines.

⁸Before the pandemic, the volume of nonfinancial corporate bank loans was on a declining trend in Italy.

⁹Acharya and Steffen (2020) and Kapan and Moinu (2020) discuss credit line drawdowns in the United States in early 2020. In contrast to the experience of the global financial crisis described in Ivashina and Scharfstein (2010), the increase in credit line drawdowns was related to immediate liquidity demand rather than concerns about the health of the US banking sector.

¹⁰Of course, there is substantial heterogeneity across firms and sectors. In the United States, the utilization rate was significantly above average in wholesale and retail trade at the end of June.

¹¹See the IMF's Fiscal Monitor Database of Country Fiscal Measures in Response to the COVID-19 Pandemic, <https://www.imf.org/en/Topics/imf-and-covid19/Fiscal-Policies-Database-in-Response-to-COVID-19>.

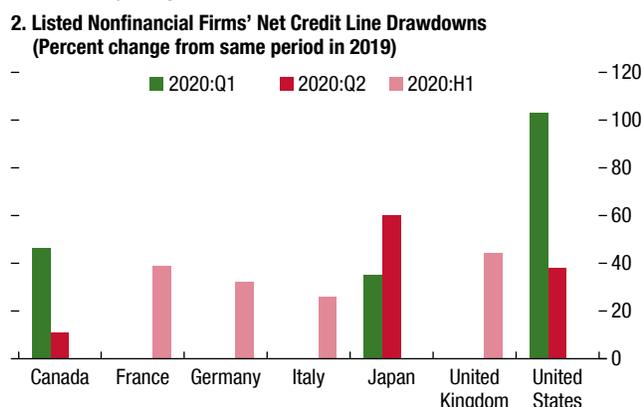
¹²It should be noted that the euro area leveraged loan market is significantly smaller than the US market.

Figure 3.1. Bank Lending to Nonfinancial Firms and Government Liquidity Support

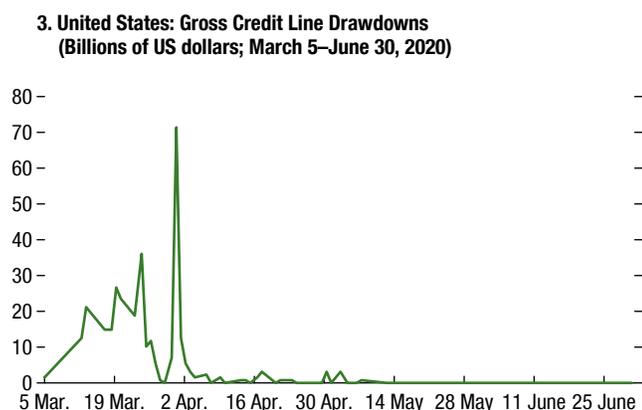
Corporate bank lending grew rapidly from March onward ...



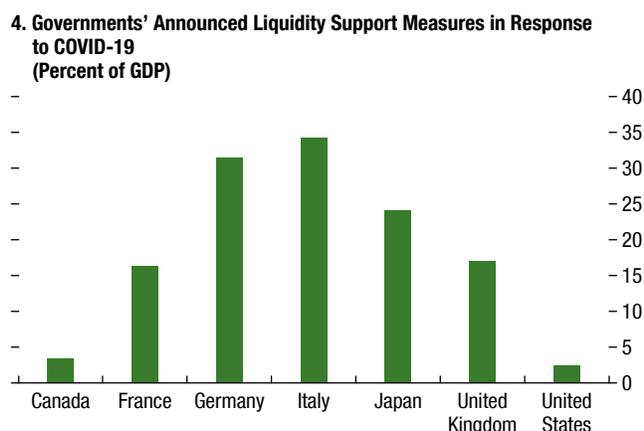
... driven in part by credit line drawdowns ...



... especially in the United States in March.



Liquidity support to firms by government was huge, especially in Europe and Japan.



Sources: Federal Reserve; Haver Analytics; IMF, Fiscal Monitor Database of Country Fiscal Measures in Response to the COVID-19 Pandemic (June 2020); S&P Capital IQ; S&P Leveraged Commentary & Data; and IMF staff calculations.

Note: Panel 2 is based on data available as of August 25, 2020. Half-yearly data are used instead of quarterly data for European economies because of scant quarterly reporting (when first half data are not available, but first quarter data are, the latter are used). Panel 4 shows liquidity support (including equity injections, loans, asset purchases or debt assumption, guarantees, and quasi-fiscal operations) per country as a percent of GDP. Amounts do not include above-the-line fiscal measures, such as the US Paycheck Protection Program, which amounts to about 3 percent of US GDP. NSA = not seasonally adjusted.

to subdued demand from the traditional investor base. Collateralized loan obligation (CLO) new issuance has been slow to restart.¹³ While activity picked up modestly from March levels, new CLO supply ran at half of last year's pace, while still accounting for more than 70 percent of new leveraged loan demand (Figure 3.2, panel 3). CLO investors were concerned about the wave

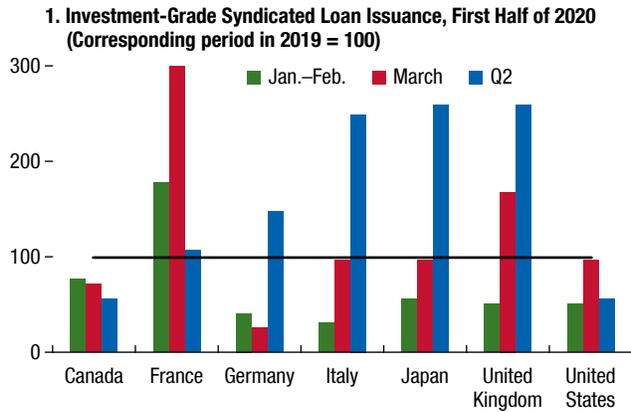
of downgrades and defaults (Figure 3.2, panel 4), which may affect lower-rated tranches.

Corporate bond markets in the first quarter were generally more resilient despite coming under intense pressure in mid-March. Policy responses by central banks announced in the second half of March, especially facilities aimed at directly supporting corporate bond markets, appear to have boosted activity in these markets and contributed to a reversal in corporate bond fund flows (including exchange-traded funds). During the second quarter, investment-grade issuance surged to levels twice as large as those in 2019

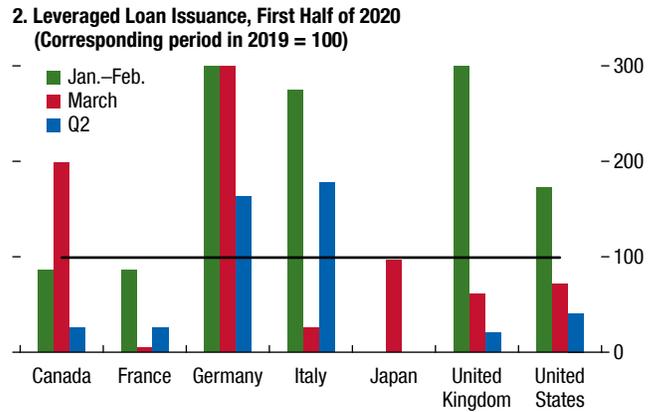
¹³A collateralized loan obligation is a structured finance product collateralized predominantly by broadly syndicated leveraged loans. See Chapter 2 of the April 2020 GFSR for a discussion of risky corporate credit markets.

Figure 3.2. Developments in Syndicated Loan Markets

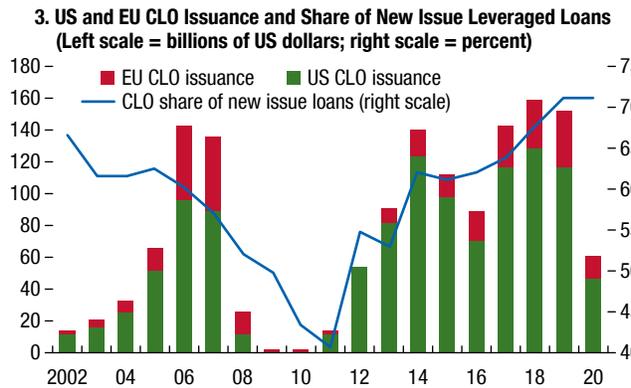
During the second quarter, investment-grade loan issuance was much stronger in Europe and Japan than in North America ...



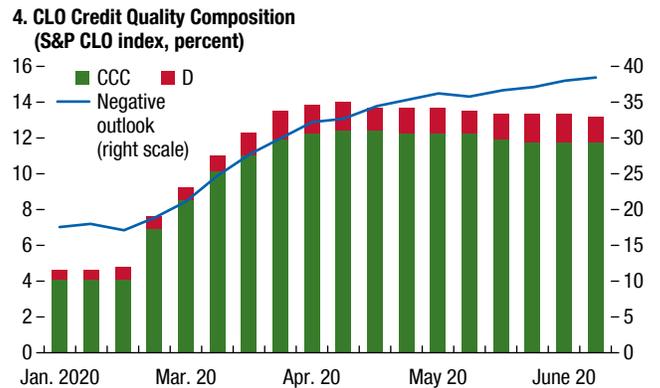
... whereas activity in the leveraged loan market generally dropped sharply.



Weaker investor demand suppressed new leveraged loan issuance, such as from slower CLO formation ...



... as underlying asset quality deteriorated.



Sources: Dealogic; S&P Capital IQ; S&P Global Ratings; S&P Leveraged Commentary & Data; and IMF staff calculations. Note: For panel 3, 2020 data are annualized through end-June 2020. Data for individual European countries are not available, so the European Union aggregate is shown. CLO = collateralized loan obligation; EU = European Union.

in France, Germany, the United Kingdom, and the United States (Figure 3.3, panel 1). The response of the high-yield segment was somewhat more muted outside the United States, probably reflecting its relative underdevelopment and the focus of central banks' purchases on the investment-grade segment. For its part, the United States saw high-yield issuance during the second quarter more than double compared with that in 2019 (Figure 3.3, panel 2).

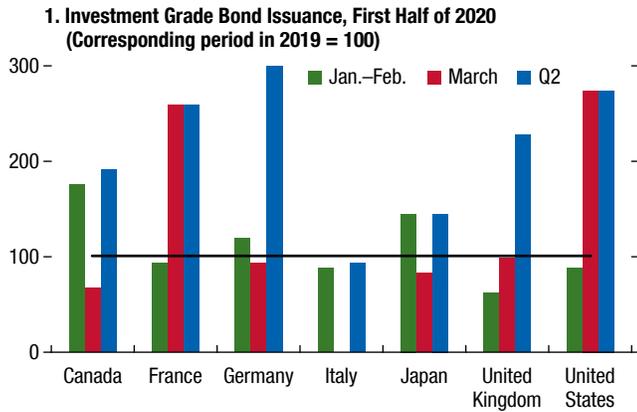
The characteristics of new debt in the high-yield bond market reveal a shift toward higher quality. In G7 economies, nearly 60 percent of high-yield new issues during the first half of the year were BB rated, and more than 30 percent of the bonds were secured, the highest levels for the past 15 years at least

(Figure 3.3, panel 3). By use of proceeds, more than 80 percent of year-to-date supply was for refinancing existing debt as lower yields and strong investor demand encouraged a range of issuers to tap into the market to repay credit lines, or for short-term expenses such as working capital (Figure 3.3, panel 4). Issuances motivated by acquisition and dividends or share repurchases, however, were at their lowest in a decade.

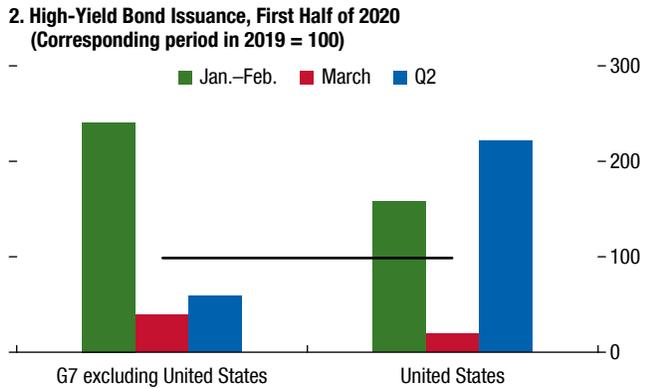
Developments in bond and syndicated loan issuance suggest that, for firms with access to these markets, the bond market clearly was the preferred source of debt financing in the United States, but perhaps not in the other G7 economies. This hypothesis is confirmed by a granular investigation of the

Figure 3.3. Corporate Bond and Commercial Paper Issuance

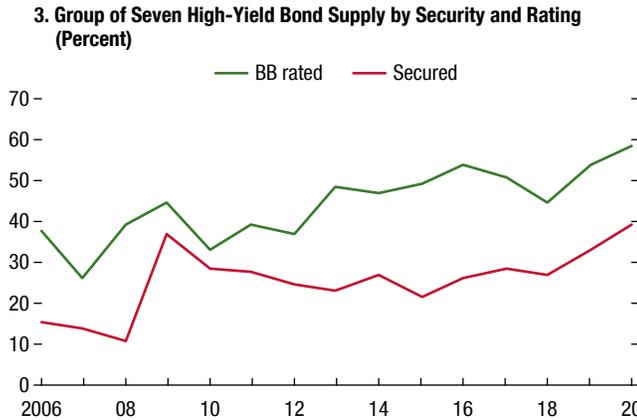
Unlike for syndicated loans, bond issuance was buoyant during the second quarter in the investment-grade segment ...



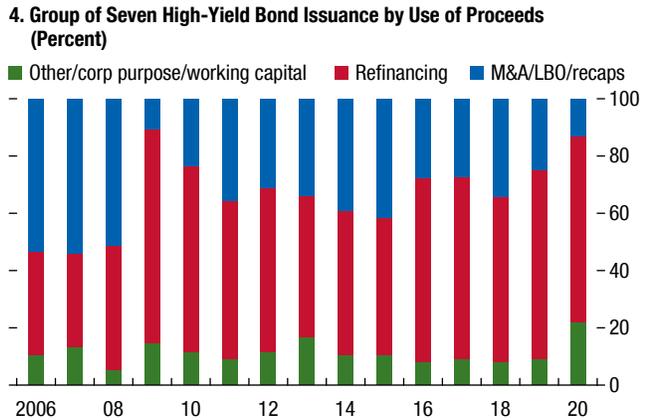
... as well as in the high-yield segment in the United States.



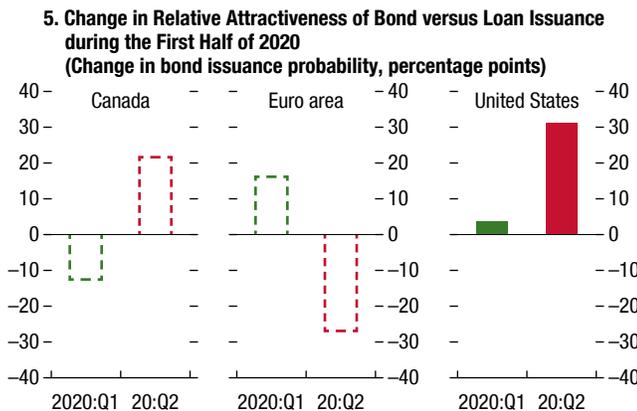
High-yield bond supply shifted to higher quality with more security and stronger ratings.



The majority of high-yield bond supply was used for refinancing and for other purposes, such as repayment of credit lines.



The bond market was clearly more attractive to US firms during the second quarter ...



... both in the investment-grade and the high-yield segments.

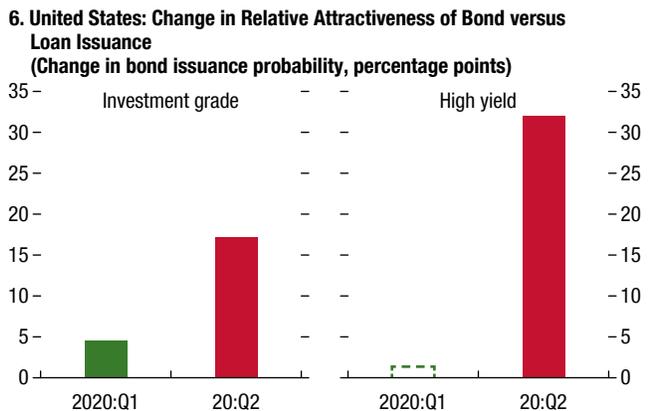
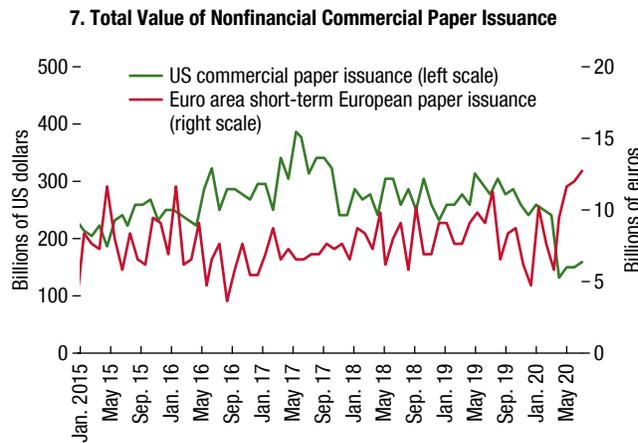
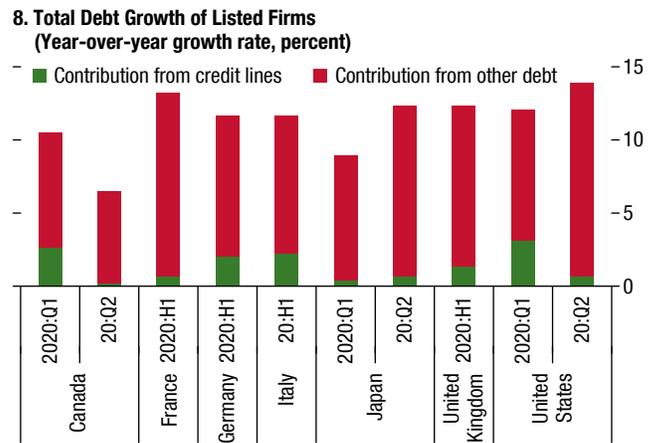


Figure 3.3. Corporate Bond and Commercial Paper Issuance (continued)

Volumes in the commercial paper market had opposite dynamics in the United States and the euro area.



Nonfinancial corporate debt growth was strong overall.



Sources: Federal Reserve; Haver Analytics; S&P Capital IQ; S&P Leveraged Commentary & Data; and IMF staff calculations.

Note: For panels 3 and 4, 2020 data are through end-June. Euro area refers to three euro area economies (France, Germany, Italy). Panels 5 and 6 show the change in the probability of issuing a bond (versus a loan) for a nonfinancial firm with characteristics equal to the sample mean during the first and second quarters of 2020 compared with before the COVID-19 crisis. Colored bars indicate significance at the 1 percent level. Empty bars indicate lack of statistical significance. See Online Annex 3.2 for methodological details. Panel 8 is based on data available as of August 25, 2020. Data as of the first half of the year are used for European Group of Seven economies to account for semiannual reporting of most firms (when first half data are not available, but first quarter data are, the latter are used). LBO = leveraged buyout; M&A = mergers and acquisitions.

debt financing choice of these firms. Controlling for a large set of firm characteristics and macro-financial variables, the analysis documents a shift toward bond financing in the United States but not in other jurisdictions (Figure 3.3, panel 5).¹⁴ This finding suggests that the Federal Reserve's March 23 announcement of its new corporate credit facilities had a stimulative impact on domestic bond markets.^{15,16} That the choice between bond versus loan financing was not affected in other jurisdictions likely partially reflects the presence of central bank corporate bond purchase programs predating the pandemic in these economies (except in Canada).¹⁷ A more detailed analysis for

¹⁴See Online Annex 3.2 for methodological details.

¹⁵Thus, a key driver of the shift toward bond financing in the United States appears to be related to policy rather than to the weakness of banks' balance sheets, as was the case at the time of the global financial crisis (Adrian, Colla, and Shin 2013; Becker and Ivashina 2014). The Federal Reserve corporate credit facilities cover the primary bond and loan markets as well as the secondary bond market. As of August 31, no purchases had been made on the primary markets.

¹⁶The evidence for the US market is consistent with the findings of Acharya and Steffen (2020).

¹⁷The Bank of Canada announced its first corporate bond purchase program on April 15, 2020.

the United States confirms that the shift toward the bond market happened in both the investment-grade and high-yield segments, with the shift in the former already visible in the first quarter, in line with record investment-grade issuance levels in March (Figure 3.3, panel 6).¹⁸ These shifts in corporate financing choice during the first half of the year also varied, depending on firm characteristics such as leverage and investment opportunities, as discussed in Online Box 3.2.

In contrast to the bond market, volumes in the commercial paper market in the United States have not recovered since their sharp drop in March, when investors shifted funds from prime to government money market funds (Figure 3.3, panel 7), despite the reintroduction of the Federal Reserve's Commercial Paper Funding Facility on March 17 and inflows resuming into prime funds, especially from institu-

¹⁸One factor contributing to the large volume of high-yield bond issuance in the United States in the second quarter was the announcement on April 9, 2020, by the Federal Reserve that the scope of its new corporate credit facilities would be extended to high-yield exchange-traded funds and bonds and loans from firms that lost their investment-grade status after March 22, 2020.

tional investors. It appears that the fall in bond market yields has tempted firms to reduce their refinancing risk and substitute commercial paper with longer-term debt.¹⁹ By contrast, commercial paper issuance in the euro area, supported by the European Central Bank's expansion of its commercial paper purchases through the Asset Purchase Programme and the Pandemic Emergency Purchase Programme, rebounded quickly from the March trough and hit a record high in June. Incentives to substitute commercial paper with longer-term bonds were weaker in the euro area, because the yield differential remained more stable than in the United States.²⁰

All in all, the year-over-year growth rate of total debt of listed firms was strong, generally exceeding 10 percent, with notable contributions from credit line drawdowns in Canada and the United States during the first quarter (Figure 3.3, panel 8).

Evidence suggests that this additional borrowing was used mostly to build cash reserves to cope with the uncertainty and the expected reduction in cash flow triggered by the pandemic shock. In contrast to Europe, all listed firms in Canada, Japan, and the United States are required to report quarterly, and their cash flow statements for the first quarter reveal an accumulation of cash and short-term investments of about 0.5 percent of assets in Japan and about 1.5 percent of assets in Canada and the United States. This behavior contrasts sharply with that observed a year earlier and during the peak of the global financial crisis in the fourth quarter of 2008, when no cash accumulation took place (Figure 3.4, panel 1). The change in cash levels can be attributed mostly to an increase in financing in Canada, a reduction in investment in Japan, and a combination of both in the United States relative to 2019. During the second quarter, listed Japanese and US firms built their cash buffers further, whereas listed Canadian firms reduced them somewhat. The accumulation of cash is also visible from nonfinancial corporate deposit data, which reveal

a further large expansion during the second quarter, especially in France and the United Kingdom (Figure 3.4, panel 2).

Shifts in Aggregate Credit Supply Conditions

The large increase in borrowing (net of withdrawals from existing credit lines) in March and the second quarter of 2020 was associated with credit spreads that widened sharply in March and subsequently slowly declined (as discussed in the June 2020 GFSR *Update* and Chapter 1 of this report). A key reason for the wider spreads is obviously the sharp deterioration in corporate fundamentals and concerns about default risk in all seven economies (Figure 3.5, panel 1), but a tightening in credit supply may also have played a role.

To assess how much of the widening in spreads can be attributed to adverse credit supply conditions, this section looks at evidence available in different segments of credit markets. For the commercial bank loan market, useful information is obtained from central banks' quarterly surveys of bank lending officers, which measure officers' perception of the strength of credit demand and of the evolution of their banks' lending standards.²¹ For the European and US primary syndicated loan markets, an empirical analysis to disentangle credit supply from demand factors is conducted by making use of publicly available transaction-level issuance data. Specifically, the analysis relies on empirical estimation of a supply and demand system of equations that includes variables capturing lender and borrower characteristics and covers the mid- to late 2000s through the second quarter of 2020.²² The value of the credit supply shock in each quarter is obtained by computing the time-varying "residual term" of the credit supply equation. For the secondary corporate bond market, a measure of investor risk appetite—the so-called excess bond premium

¹⁹Li and others (2020) suggest that liquidity rules introduced at the time of the 2016 money market fund reform may not have achieved the goal of making the system immune to runs. See also the discussion in Eren, Schimpf, and Sushko (2020).

²⁰The Bank of Canada and the Bank of England also introduced commercial paper purchase programs, whereas the Bank of Japan stepped up its existing program. These countries are not shown on the chart for lack of data.

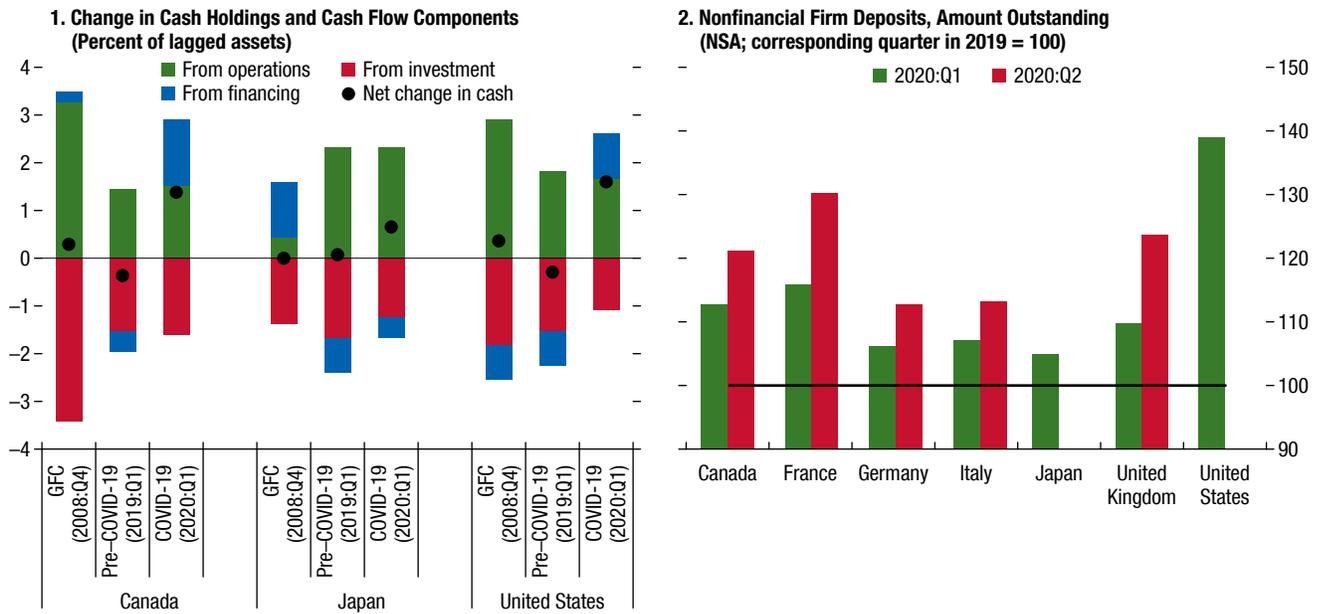
²¹An important caveat in interpreting results of bank lending officers' surveys is that they do not always clearly distinguish between changes in default risk and changes in credit supply in the definition of lending standards.

²²The analysis addresses endogeneity concerns by using an identification-through-heteroscedasticity methodology (Rigobon 2003). See Online Annex 3.3 for details.

Figure 3.4. Change in Corporate Cash-to-Assets Ratio and Corporate Bank Deposits

Nonfinancial firms accumulated more cash during the first quarter of 2020 than during the same period of 2019, mostly because of increased external financing in Canada and the United States ...

... and this precautionary behavior continued during the second quarter.



Sources: Bank of Japan; Federal Reserve Board; Haver Analytics; S&P Capital IQ; and IMF staff calculations.

Note: Panel 1 shows the listed nonfinancial firms' quarterly net change in cash as well as the contributions from the three cash flow components. European countries are not shown because of insufficient data for the first quarter. Panel 2 shows the amount of nonfinancial firms' deposits outstanding in the first and second quarters of 2020 compared with the corresponding quarter of 2019. Data for the second quarter are not available for Japan and the United States. GFC = global financial crisis; NSA = not seasonally adjusted.

proposed by Gilchrist and Zakrajšek (2012)—is constructed to gauge shifts in supply.^{23,24}

Survey-based evidence indicates that the commercial bank loan market in the United States was an outlier across countries in the second quarter. Credit demand fell and lending standards tightened sharply, while the evolution was generally muted or the opposite in the

other G7 economies.²⁵ In particular, a large loosening of credit conditions was observed in Japan and the United Kingdom (Figure 3.5, panel 2).²⁶ This stands in sharp contrast to the experience during the global financial crisis, when surveys indicate that banks tightened lending standards consistently across the board. The situation in the current crisis is likely related to the fact that banks' indicators of funding stress spiked only briefly in late March before normalizing thanks

²³This measure is constructed in two steps using detailed information on many individual corporate bonds for the period from the mid-2000s (or the first quarter of 2011 for the euro area) through the second quarter of 2020. First, for each bond, a spread to a synthetic risk-free rate that considers information on the duration of the bond is computed. Such a spread is more accurate than the more commonly used “naïve” spreads, whose construction ignores bond duration. Second, the spread is purged of its credit risk component to obtain the excess bond premium, which can therefore be interpreted as an indicator of bond investor risk appetite. See Online Annex 3.4 for methodological details. The series for the United States is from the Federal Reserve Board.

²⁴The three euro area economies (France, Germany, Italy) are analyzed as a group to improve sample size, and Canada is not included in the analysis for data availability reasons.

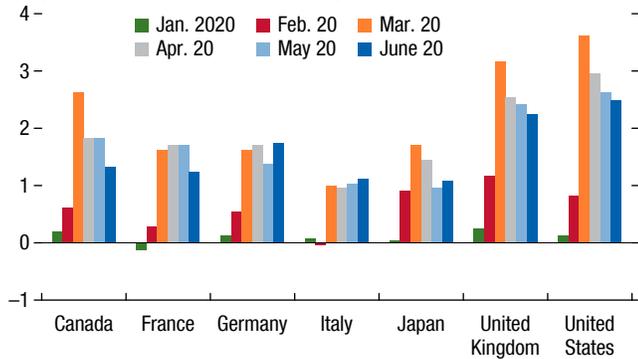
²⁵The evolution of the index for the United States indicates only that the tightening of lending standards was widespread, not that it was intense. However, the text describing the survey results makes it clear that lending standards were tight and explains that “banks, on balance, reported that their lending standards across all loan categories are currently at the tighter end of the range of standards between 2005 and the present” (Board of Governors of the Federal Reserve System 2020).

²⁶In the United Kingdom, the survey question refers to the “availability of credit” rather than to lending standards per se. The two notions are different in the presence of government loan guarantees, which may explain part of the difference between the United Kingdom and the euro area economies.

Figure 3.5. Evolution of Credit Supply Conditions

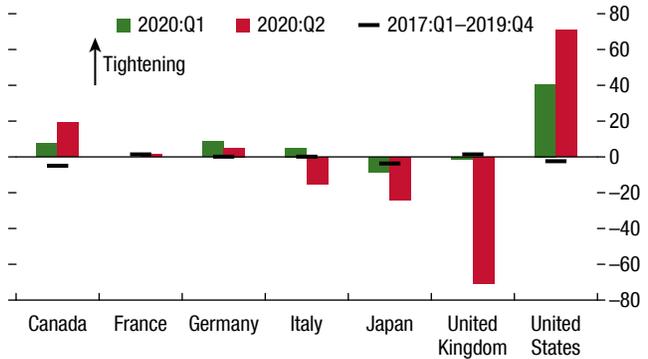
As the risk of default increased ...

1. One-Year Expected Default Frequency of Nonfinancial Firms Rated between Baa1 and B3 at the End of 2019, End of Period, 75th Percentile (Difference from end-2019, percent)



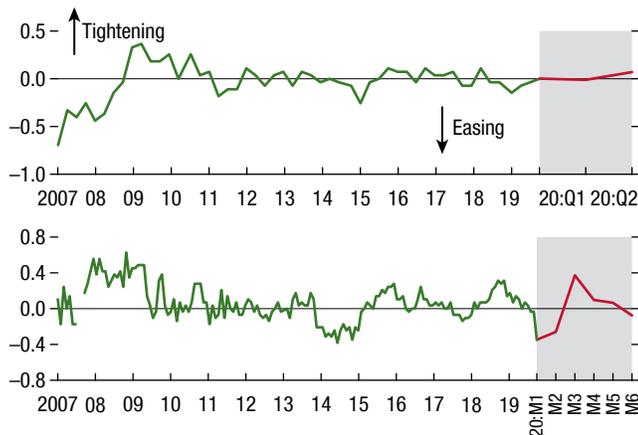
... bank lending standards tightened in the United States but eased in Japan and the United Kingdom.

2. Change in Bank Lending Standards (Index; see note for details)



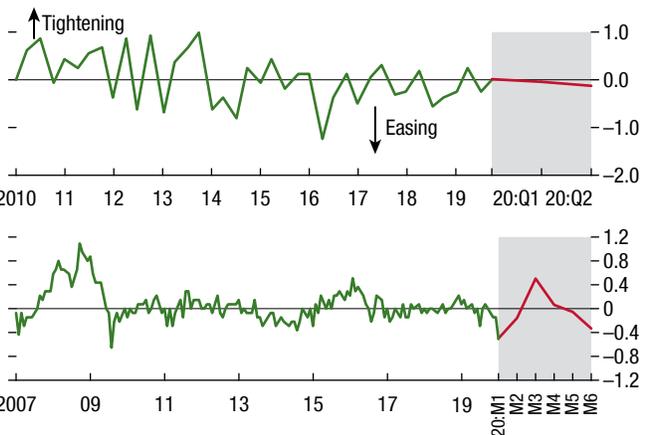
In the United States, credit conditions tightened somewhat in the syndicated loan market, but eased in the bond market after a period of tension in March.

3. Credit Supply Conditions in the United States (Top: syndicated loan market, spread residual, percent—quarterly; bottom: bond market, excess bond premium, percent—monthly)



In the United Kingdom, credit conditions also eased in the bond market after the stress in March, while conditions in the syndicated loan market remained neutral.

4. Credit Supply Conditions in the United Kingdom (Top: syndicated loan market, spread residual, percent—quarterly; bottom: bond market, excess bond premium, percent—monthly)



to the speed of policy support to financial markets and the economy, as well as to the effect of government programs to support lending to businesses (Bank of England 2020; European Central Bank 2020).²⁷

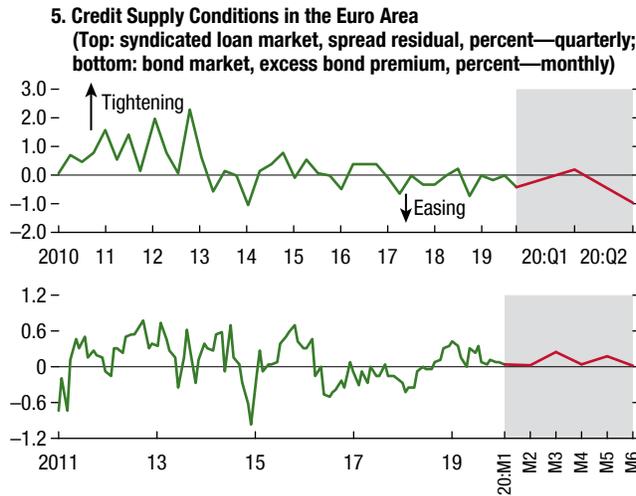
Turning to supply conditions in the syndicated loan and bond markets, the divergence across the two markets during the second quarter in the United States is striking. The top part of Figure 3.5, panel 3, shows the time series of the credit supply shock in the

syndicated loan market. Credit conditions were neutral in the first quarter, on average, and tightened during the second quarter, bringing the market into a tight position, though not as tight as in the aftermath of the global financial crisis. By contrast, the bottom part of the same panel, which shows supply conditions in the secondary bond market, reveals that a large part of the March tightening was undone during the second quarter. Aside from the stimulative effect of the introduction of the Federal Reserve corporate credit facilities mentioned previously, two supply-side considerations may explain the buoyancy of the US bond market. First, with short-term rates near zero and Treasury

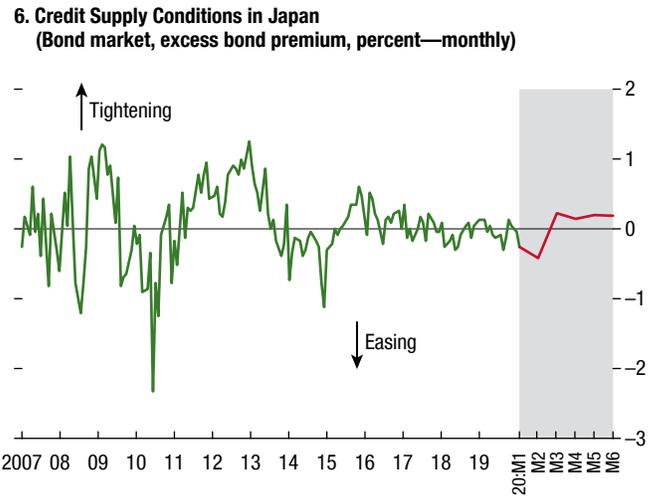
²⁷The total amount of credit line drawdowns could also be a factor explaining the tightening of lending standards in the United States because it reduced the amount of bank capital available for new lending (Kapan and Minoiu 2020).

Figure 3.5. Evolution of Credit Supply Conditions (continued)

In the euro area, credit conditions eased in the syndicated loan market and remained broadly neutral in the bond market.



In Japan, conditions in the bond market tightened in March and remained slightly on the tight side in the second quarter.



Sources: Bank of Japan; Bloomberg Finance L.P.; Dealogic; Federal Reserve Board; Haver Analytics; Moody's Analytics; Refinitiv Datastream, Eikon; S&P Market Intelligence; and IMF staff calculations.

Note: Panel 1 shows the change in the 75th percentile of the one-year end-of-period expected default frequency of nonfinancial firms rated between Baa1 and B3 (lower medium grade to highly speculative grade) at the end of 2019 in each Group of Seven country between the end of 2019 and each of the first six months of 2020. Panel 2 shows the quarter-on-quarter change in bank lending standards from the bank lending survey conducted by respective central bank; change is shown in the form of an index ranging from -100 to 100 . Canada, euro area economies, and the United Kingdom report a balance of opinions weighted by asset size with a base value of 0; Japan reports a balance of opinion weighted by the level of easing or tightening; the United States reports an unweighted balance of opinion in two categories by firm size (large versus small); and the figure shows the simple average of the two. See Online Annexes 3.3 and 3.4 for methodological details on the construction of the series shown in panels 3–6. Credit conditions in Canada and in the Japanese syndicated loan market could not be computed because of insufficient data. M = month.

purchases by the Federal Reserve bringing down term premiums, investors' search for yield pushed them toward yield-providing assets, especially those within the perimeter of central bank support. Second, expectations of no rise in the policy rate for several years reduced investors' incentives to get exposure to floating rates. As syndicated loan rates are floating and bond rates are fixed, some investors may find bonds relatively more attractive in the current environment. A separate analysis for investment-grade syndicated loans and leveraged loans indicates that conditions moved from easy to tight during the second quarter in both segments.²⁸

The dynamics of credit conditions in the United Kingdom's bond market mirrored those in the United States, but no tightening was observed in the syndicated loan market, on average (Figure 3.5, panel 4).

²⁸Loan covenant quality in North America appears to have continued to weaken during the first quarter, reaching its all-time worst level (according to Moody's)—to the benefit of borrowers who would need that flexibility during the crisis (Moody's Investors Service 2020).

A yield curve that shifted toward zero, as in the United States, may also have contributed to making the corporate bond market attractive to investors. In the euro area, where key policy rates remained unchanged around zero, bond market conditions continued to be broadly neutral, on average, during the first half of the year, but a clear loosening of conditions took place in the loan market during the second quarter (Figure 3.5, panel 5). In Japan, the March bond market tightening persisted through the end of June, but overall risk aversion was within the normal range observed over the past decade (Figure 3.5, panel 6).

All in all, the recent evolution of the excess bond premium suggests that conditions in bond markets were generally favorable during the second quarter, especially in the United Kingdom and the United States. In the United States, however, bank lending standards were tight, and the bank loan market was a clear outlier compared with the other G7 economies, where the change in lending standards ranged from a small tightening to a large easing. These differences

across economies and markets likely reflect the relative strengths of the different policy responses targeting the two markets, in particular the scope of government-sponsored loan guarantee programs as well as investors' search for yield in an environment of ultra-low interest rates and shifting expectations about future policy rates.²⁹

Greater Financial Stress Initially for Some Vulnerable Firms

Beyond aggregate indicators, changes in credit conditions are also likely to be visible through their differential impact on firms with different characteristics, as some firms may be more vulnerable to aggregate funding liquidity shocks than others. First, firms that generally have more restricted access to credit markets—for example, because of their relatively smaller size—may be more exposed to a deterioration in risk appetite than the rest of the corporate sector.³⁰ Second, firms with a worse liquidity position because of a lower stock of cash or higher short-term debt that needs to be rolled over are more sensitive to a tightening of credit conditions. In addition, firms with higher leverage may also suffer more during episodes of financial stress.

A comparison between the stock market performance of firms most vulnerable to funding shocks and that of other, less vulnerable firms can therefore be a useful complement to the aggregate analysis presented earlier in the chapter to better understand the behavior of lenders with respect to credit to firms. In what follows, the analysis focuses on vulnerabilities to funding liquidity shocks measured at the end of 2019 along three dimensions: (1) small size (low total assets), (2) low cash and short-term financial investments relative to industry peers (as a share of total assets), and (3) high short-term debt net of cash and short-term financial investments (as a share of total assets).³¹ The

²⁹It is plausible that, in each country, the structure of the financial sector (for example, market-based versus bank-based) played a role in the choice of policy instruments and calibration of the policy response across different markets, which in turn may explain the relative dynamics of supply conditions in the various markets.

³⁰See Holmstrom and Tirole (1997) for a theoretical discussion. Duchin, Ozbas, and Sensoy (2010) and Hadlock and Pierce (2010) discuss various financial constraint indicators commonly used in the empirical corporate finance literature.

³¹A high level of short-term debt net of cash exposes a firm to rollover risk. A low level of cash reduces a firm's room to maneuver in case credit conditions tighten (see, for example, Joseph and others 2020).

analysis examines the effect of these three vulnerabilities over and above the effect of leverage-related vulnerabilities, which clearly amplified the effect of the negative cash flow shock related to COVID-19 in five of the seven economies (Figure 3.6, panels 1 and 2).³²

Evidence of *relatively* greater financial stress measured by cumulative abnormal returns—that is, the cumulative difference between the actual returns and the returns predicted by a simple one-factor asset pricing model—is pervasive for relatively smaller firms. Their underperformance during February–March in Germany, Japan, the United Kingdom, and the United States was close to, or greater than, 10 percentage points (Figure 3.6, panel 2). Furthermore, firms that entered the COVID-19 crisis with relatively high liquidity vulnerabilities also experienced relatively greater financial stress than those with higher liquidity buffers in some economies during late February and March. Panel 3 of Figure 3.6 shows the cumulative abnormal returns of two groups of US firms: those with low and high relative cash. While the stock market performance of the two groups is indistinguishable until late February, a wedge in favor of the latter group appears at that time and becomes wider during the second half of March. A more formal econometric investigation, which controls for a number of firm characteristics (including the industrial sector) at the end of 2019, as well as the expected size of the pandemic-related revenue shock, confirms that visual impression: firms with relatively less cash suffered more financial stress in the United Kingdom and the United States, and those with a relatively higher level of short-term debt (net of cash) suffered more in France, the United Kingdom, and the United States (Figure 3.6, panel 4).³³ In these five cases, the underperformance of firms with liquidity vulnerabilities between early February and end-March was about 5 percentage points.

Policies that Helped Relieve Funding Stress

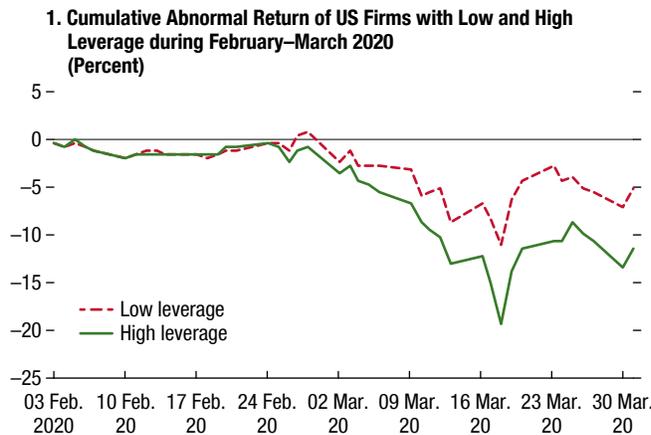
Precise measurement of the effects of policy announcements and actions in the context of the COVID-19 crisis is an extremely challenging task.

³²See Online Annex 3.5 for methodological details. For size, relative cash, and liquidity gap (leverage), a firm is deemed vulnerable if it belongs to the weakest tercile (half) of the distribution of the characteristic at the end of 2019.

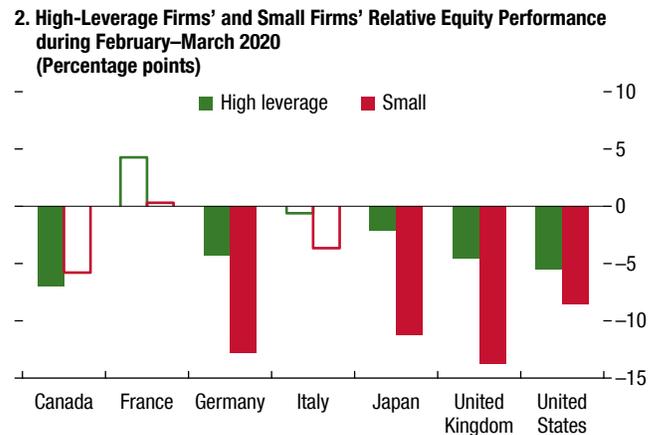
³³The finding for the United Kingdom echoes that of Joseph and others (2020).

Figure 3.6. Firm-Level Stock Market Performance

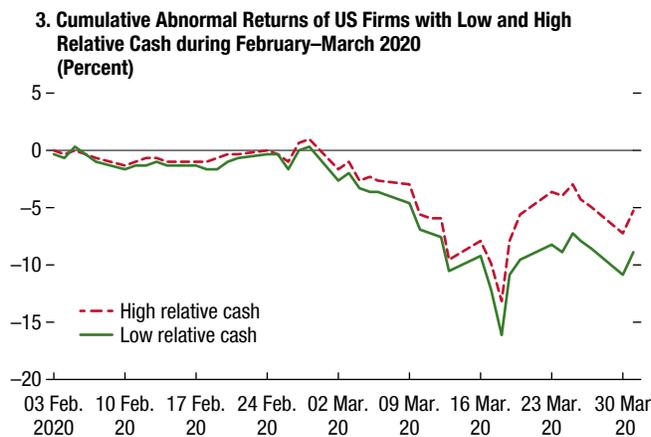
High-leverage firms suffered more financial stress during late February and March in the United States ...



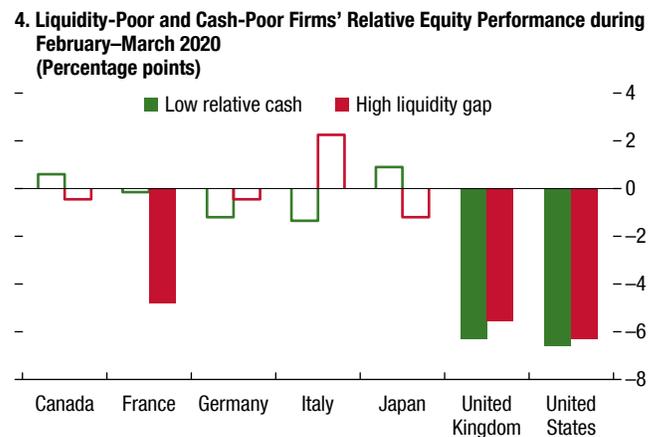
... and in four other Group of Seven economies, and small firms underperformed in four economies.



US firms with less cash than their industry peers suffered more financial stress during late February and March ...



... as did UK firms with relatively less cash and French, UK, and US firms with a high liquidity gap.



Sources: Refinitiv Datastream; S&P Capital IQ; and IMF staff calculations.

Note: Firm characteristics are as of the end of the fourth quarter of 2019. Leverage in panels 1 and 2 is defined as the debt-to-asset ratio. A high-leverage (low-leverage) firm is one in the top (bottom) half of the leverage distribution. In panels 2 and 4, equity performance is based on cumulative abnormal returns during February 3–March 31, 2020, and firm-level characteristics are controlled for. “Relative cash” is defined as in Joseph and others (2020), and a low-relative-cash (high-relative-cash) firm is one in the lowest (highest) tercile of the relative cash distribution. “Small” is defined as being in the lowest tercile of the distribution of total assets. “Liquidity gap” is defined as total short-term financing minus cash and short-term investments as a ratio of total assets. A high-liquidity-gap firm is one in the highest tercile of the distribution. Solid colored bars indicate statistical significance at the 5 percent level. Empty bars indicate lack of statistical significance at conventional levels. See Online Annex 3.5 for methodological details.

A variety of policy measures—monetary, fiscal, and financial—were announced over a short period of time, sometimes on the same day, making it difficult to isolate their effects. Important details of announced policy packages were sometimes released with a lag, and policy measures announced on different days could have had strong complementarities. Furthermore, because many of the economic policy measures announced early on in the crisis were concurrent with negative news about the progression of the pandemic and its effect on the real economy and financial markets—as

well as with the announcement of containment policy measures imposing restrictions on economic activity—assessment of their impact is extremely difficult.³⁴ In the face of these challenges, and with full acknowledgment of the associated limitations, this chapter follows

³⁴For example, the March 12 announcement by the Federal Reserve Bank of New York of new large repo operations coincided with one of the worst declines in US stock market history. The announcement, however, was a surprise and took place in the middle of the trading day, at a time when the intraday decline was already very large.

two simple approaches to try to gauge the impact of key policy announcements on corporate funding liquidity stress. First, it examines the effect of policy announcements on the *relative* stock market performance of the most vulnerable firms over a horizon of two trading days, taking into account the negative impact of global financial market volatility during days when it was extreme.^{35,36} Second, it assesses the overall impact of the policy response by extending the window of the analysis (to the end of June) of the *relative* stock market performance of the groups of vulnerable firms that have underperformed during February–March, as identified in the previous section. In both cases, several firm characteristics are controlled for.³⁷ As in the previous section, the relative performance of firms most vulnerable to adverse funding liquidity shocks (controlling for solvency and other firm characteristics) is interpreted as a symptom of changing credit supply conditions. The focus on those firms does not suggest that policies explicitly targeted them but that policies to support the economy (and credit provision in particular) may benefit them relatively more.

Policy announcements appear to have had a positive effect on the relative stock market performance of smaller firms (relative to larger firms) as well as on those with high leverage (relative to those with low leverage). Pooling all 85 announcement days in the sample, this effect amounts to about 0.3 percentage point of overperformance a day over two days for smaller firms and about 0.1 percentage point a day over two days for high-leverage firms. By contrast, no significant effect can be found for firms with liquidity vulnerabilities (Figure 3.7, panel 1). Given the small number of announcement days, identifying significant effects at the country level is challenging. Yet the data suggest a positive effect for small firms in Canada and for small firms and high-leverage firms in Japan.

It is plausible that some types of vulnerable firms were more affected by certain types of policy announcements than others. Some policies, such as government guarantees or purchases of corporate securities by central banks, have a *direct* impact on corporate funding and solvency, whereas others, such

as macroprudential measures or changes in financial sector regulation, have only an *indirect* impact. Comparing announcement days when at least one policy with a *direct* impact was announced with those when policies with only an *indirect* impact were announced, it appears that policies with a *direct* impact benefited firms with liquidity vulnerabilities relatively more.³⁸ The effect amounts to 0.2 percentage point of overperformance a day over two days for liquidity-poor firms and to 0.13 percentage point a day over two days for cash-poor firms (Figure 3.7, panel 2). No difference across types of policies is observed for high-leverage firms and small firms.³⁹

The analysis of the stock market performance of vulnerable firms through the end of June confirms that stress at smaller firms had generally disappeared by then—except in the United Kingdom, where it remained significant—while strains in high-leverage firms remained in Germany and Japan (Figure 3.7, panel 3). Stress at firms with liquidity vulnerabilities, however, persisted in France, the United Kingdom, and the United States (Figure 3.7, panel 4), echoing findings from the aggregate analysis of the loan markets in the US economy.

Conclusion and Policy Considerations

The tightening of credit conditions that took place across G7 economies in March as the COVID-19 pandemic gathered momentum was quelled to a very large extent thanks to an unprecedented set of powerful

³⁸When estimated separately, the effect of measures with an indirect impact is not statistically significant. It is plausible that such measures, including changes in financial sector regulation or macroprudential policy, take longer to have an effect on financing conditions for nonfinancial firms than measures with a direct impact. Among measures with a direct impact, the announcements of on-budget fiscal measures supporting firm solvency appear to have been the most powerful: excluding announcement days when such measures were announced, the difference between the effect of measures with a direct impact and those with an indirect impact loses significance. Among the other four types of measures with a direct impact, corporate asset purchase programs appear to have been relatively more powerful.

³⁹While it is very plausible that major policy announcements in the United States had positive spillover effects on other G7 economies, spillover analysis is impeded by the occasional concurrence of major announcements in the United States with those in the other countries. Focusing on days when an announcement was made in the United States only, no evidence can be found that the announcement had a positive effect on the relative performance of vulnerable firms in other G7 economies. Spillovers to emerging markets are discussed in Chapter 2 of this report.

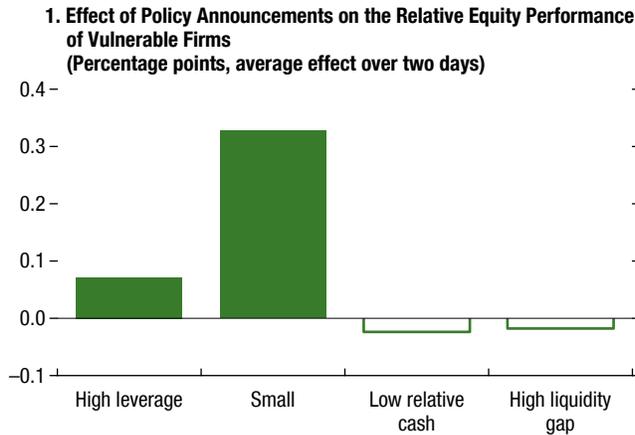
³⁵The analysis does not try to assess whether program eligibility mattered for firms' financial performance.

³⁶Global financial market volatility is defined as extreme when the Chicago Board Options Exchange Volatility Index (VIX) is above the 80th percentile of its distribution during February–June 2020.

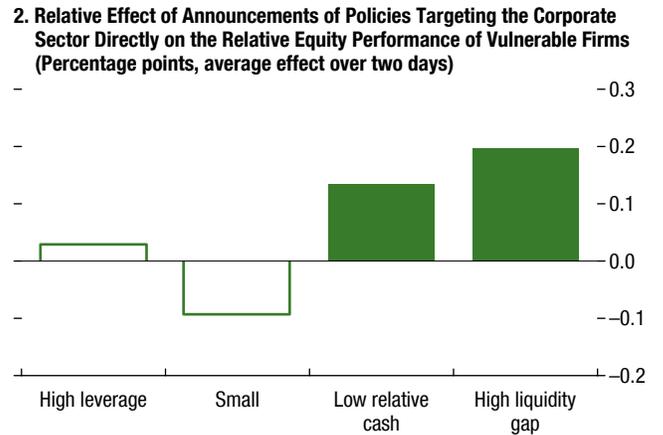
³⁷See Online Annex 3.6 for methodological details.

Figure 3.7. The Effect of Policies on Vulnerable Firms

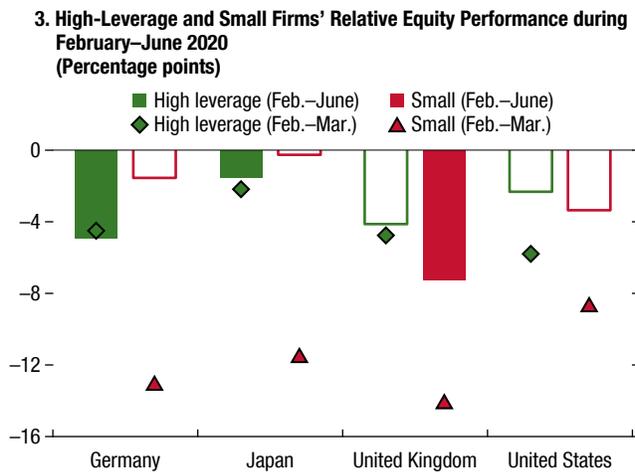
Policy announcements helped relieve financial stress on average in small firms and high-leverage firms ...



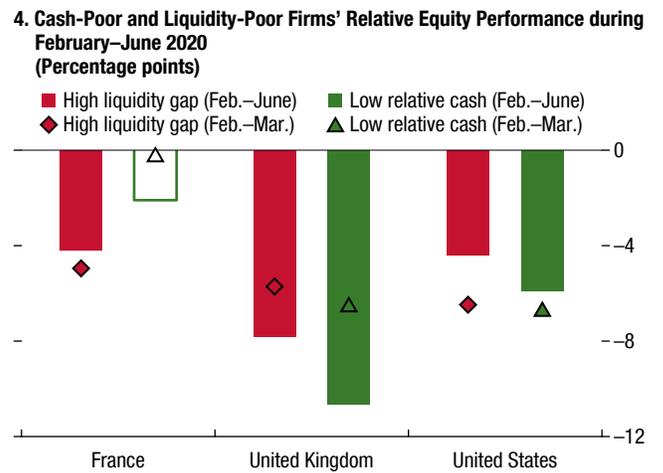
... and policies targeting the corporate sector directly had a stronger effect on cash-poor and liquidity-poor firms than policies with an indirect impact.



The relative performance of small firms improved during the second quarter ...



... but strains remained for liquidity-poor and cash-poor firms at the end of June.



Sources: IMF, COVID Policy Tracker; press releases and press reports; Refinitiv Datastream; S&P Capital IQ; Yale Program on Financial Stability; and IMF staff calculations.

Note: In panels 1 and 2, the effect of policy announcements is calculated net of the effect of extreme volatility, and equity performance is based on cumulative abnormal returns on the day of the policy announcement and the following day. Leverage is defined as the debt-to-asset ratio. A high-leverage (low-leverage) firm is one in the top (bottom) half of the leverage distribution. “Relative cash” is defined as in Joseph and others (2020), and a low-relative-cash (high-relative-cash) firm is one in the lowest (highest) tercile of the relative cash distribution. “Small” is defined as being in the lowest tercile of the distribution of total assets. “Liquidity gap” is defined as total short-term financing minus cash and short-term investments as a ratio of total assets. A high-liquidity-gap firm is one in the highest tercile of the distribution. In panels 3 and 4, equity performance is based on cumulative abnormal returns during February 3–June 30, 2020. Solid colored bars indicate statistical significance at the 5 percent level. Empty bars indicate lack of statistical significance at conventional levels. See Online Annex 3.6 for methodological details.

policy interventions. Despite the deterioration in its solvency, the nonfinancial corporate sector, as a whole, was generally able to obtain the funding it needed to continue operating during the second quarter.⁴⁰ Yet signs of tighter credit conditions also surfaced during the second quarter in some segments of the credit market or did not fully dissipate for some types of firms with a viable business model but vulnerable to adverse liquidity shocks. In particular, while US bond markets have been buoyant, bank-dependent firms, as well as those with pre-COVID-19 liquidity vulnerabilities, continue to face a more difficult environment. Firms with pre-COVID-19 liquidity vulnerabilities in the United Kingdom also appear to have been left behind, despite overall favorable credit conditions. An interesting topic for future analysis would be further exploration of the reasons for the cross-country differences in the evolution of credit supply conditions documented in the chapter.

While most G7 central banks have already signaled their intention to leave their pandemic-related facilities in place for the foreseeable future, it may be increasingly difficult for governments to maintain the same level of fiscal support because of fiscal space concerns or other political economy considerations. The latest bank lending survey of the euro area suggests that tighter bank lending standards may be around the corner, as government guarantee programs are set to end soon (European Central Bank 2020). Yet the evidence analyzed in this chapter suggests that it is the policies supporting firms directly that have had the most beneficial effect on firms with liquidity vulnerabilities. Policies also appear to have cushioned financial

strains in smaller firms. It is thus critical to carefully calibrate any withdrawal of fiscal policy support to funding markets.

Beyond the calibration of funding and liquidity support by fiscal and monetary policymakers, a key issue for financial stability in the near to medium term will be the deterioration in corporate solvency as a result of the pandemic-induced decline in profitability and increased corporate indebtedness. This deterioration will have a severe impact on banks' asset quality and capital adequacy (see Chapter 4), which in turn could limit the credit supply to firms over the next several quarters.

Chapter 1 of this report provides a policy road map to navigate the gradual reopening and the recovery phases of the COVID-19 crisis (see Table 1.2 in that chapter) and discusses policy trade-offs relevant to corporate funding issues documented in this chapter, including the impact on fiscal space and sovereign contingent liabilities as well as the risk of capital misallocation. Once the recovery is well entrenched, the experience of the COVID-19 shock on corporate funding markets must also be examined to determine the reasons for the fragility they experienced in March. The regulation of nonbank financial institutions must be revisited and mechanisms to enhance their resilience to large liquidity shocks devised, as discussed in recent GFSRs.

The evidence provided in this chapter also indicates that liquidity and leverage-related vulnerabilities have amplified the impact of the COVID-19 shock. The experience of the current crisis, therefore, is a reminder to supervisory authorities to continue to monitor corporate vulnerabilities closely and offers an opportunity for them to consider the benefits of macroprudential policy tools for the nonfinancial corporate sector (IMF 2020).

⁴⁰Because of lack of firm-level data for unlisted small and medium-sized enterprises in 2020, the analysis could not establish the degree to which this conclusion carries over to those firms.

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