

# Financial Stability and the Coronavirus Pandemic

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## Summary:

The Atlanta Fed recently helped organize a conference titled “Financial Stability and the Coronavirus Pandemic.” The conference had three sessions devoted to problems focusing on various aspects of how the markets for corporate credits responded to the COVID-19 shock including corporate bond investment funds, the corporate bond market, and the corporate loan market. This article summarizes some of the important findings of the papers presented at the conference.

## Key findings:

1. Liquidity stresses at corporate bond mutual funds have had notable effects on bond markets before COVID-19 and even larger effects during February and March 2020.
2. The Fed’s announcement of a facility to purchase corporate bonds and that facility’s subsequent purchases of bonds resulted in a material improvement in bond prices and market functioning.
3. The big nonbank lenders in the syndicated loan market reduced their activity. Banks honored drawdowns of corporate lending lines but at the cost of reducing the availability of funding to other firms.

**JEL classification:** G01, G12, G18, G21, G23

**Key words:** corporate bond mutual funds, corporate bond market, COVID-19 shock, Federal Reserve facilities, collateralized debt obligations, syndicated loans, lines of credit

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# Financial Stability and the Coronavirus Pandemic

**Summary:** The Atlanta Fed recently helped organize a conference titled “Financial Stability and the Coronavirus Pandemic.” The conference had three sessions devoted to problems that emerged with corporate bond investment funds as well as problems in the corporate bond market and the large corporate loan market. This article summarizes some of the important findings of the papers presented at the conference.

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## Introduction

In March 2020, the World Health Organization recognized the novel coronavirus, COVID-19, as a global pandemic. The virus has not only created a public health crisis, but it has also had a very large negative impact on the global economy. Although the 2020 economic shocks did not start in the financial system, the financial system's response to the economic downturn could amplify some of the economic shocks and mitigate others. With that in mind, the Atlanta Fed's [Center for Financial Innovation and Stability](#) recently organized the virtual workshop "[Financial Stability and the Coronavirus Pandemic](#)," in conjunction with the [Center for the Economic Analysis of Risk](#) at Georgia State University.

The workshop had three sessions devoted to problems that emerged with corporate bond investment funds, in the corporate bond market and in the large corporate loan market. This article reviews the papers and presentations from the workshop.

## Corporate Bond Investment Funds

The first set of papers looked at the role of corporate bond investment funds, especially corporate bond mutual funds, that allow investors to withdraw their investment upon demand. These investment funds have become increasingly important in the corporate bond market, with corporate bond exchange traded funds (ETFs) and mutual funds combined having increased their assets as a net proportion of outstanding corporate bonds from under 20 percent in 2010 to almost 40 percent in 2020. The problem posed by these funds is the mismatch between the promised ability of mutual fund holders to withdraw at any time and the relative illiquidity of the corporate bond market. These mutual funds are aware of the liquidity mismatch and typically hold a liquidity buffer that can be used for redemptions.

Additionally, outflows from some funds were offset by inflows to others, reducing the net selling by bond mutual funds. However, these funds in aggregate experienced large net outflows in February and March as investors became concerned about the economic implications of the COVID-19 pandemic. The papers in this session document the role of illiquidity during the COVID-19 crisis as well as the less obvious impact of corporate bond mutual funds on the bond and Treasury markets before the crisis.

A paper by Falato, Goldstein, and Hortaçsu titled "Financial Fragility in the COVID-19 Crisis: The Case of Investment Funds in Corporate Bond Markets" documents the large outflows from investment funds at the start of the COVID-19 crisis and analyzes the determinants of those flows. They find that during February and March 2020 the average fund experienced cumulative outflows of approximately 9 percent of net asset value. High-yield funds (funds specializing in lower-rated bonds) experienced outflows that started earlier and were proportionately larger than investment-grade mutual funds and exchange-traded funds. Consistent with the relatively larger high-yield fund outflows, funds that were invested more heavily in sectors exposed to the COVID-19 economic slowdown experienced greater outflows.<sup>1</sup> The paper also shows that the more illiquid funds and those with holdings similar to other funds also had higher outflows.

The paper "Does Mutual Fund Illiquidity Introduce Fragility into Asset Prices? Evidence from the Corporate Bond Market" by Jiang, Li, Sun, and Wang analyzes the effect of corporate bond mutual fund

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<sup>1</sup> Examples of these sectors include entertainment, transportation, retail, restaurants, hotels, and motels.

illiquidity on the pricing of corporate bonds. The paper does so by calculating a measure of a fund's latent fragility and showing that corporate bonds held by more fragile funds experience more volatility. The paper's measure of fund illiquidity is the weighted average of the illiquidity of the individual bonds in the portfolio. The paper then measures individual bond fragility as the weighted average of the illiquidity of the funds holding that bond. The results suggest that the latent fragility of individual bonds is predictive of that bond's volatility in the next quarter. The paper also found that that fund outflows in one quarter depress the prices of bonds held by those funds in the current quarter but that the prices rebound in the next quarter. Applying the paper's measure to the 2020 bond market, the paper finds that the most fragile decile of bonds experienced twice as large a decline as the least fragile decile.

The Jiang et al. results could be taken to suggest that corporate bond mutual funds should hold larger liquidity reserves, including increased holdings of the relatively more liquid Treasury debt securities. Huang, Jiang, Liu, and Liu examine the consequences of corporate bond mutual fund's use of Treasury securities to manage liquidity in their paper "Does Liquidity Management Induce Fragility in Treasury Prices? Evidence from Bond Mutual Funds." This paper hypothesizes that the use of Treasury securities introduces fragility into the prices of these securities, specifically inducing higher return comovement of Treasuries held by bond funds than those with relatively little common ownership. The paper finds that Treasury pairs commonly held by bond funds have a higher return comovement than pairs with little ownership over the sample period from 2002 to 2016. The paper further finds that the comovement relationship is stronger in down markets and when bond funds experience outflows. Finally, the paper uses both a mutual fund bond scandal in 2003 and the 2020 COVID-19 shock to financial markets as exogenous events to help establish the causal relationship between bond mutual funds and Treasury price comovements.

### **The Corporate Bond Market, COVID-19, and the Fed's Intervention**

The corporate bond market became relatively illiquid in March 2020 as concerns about COVID-19 led to an increased supply of bonds for sale, due in part to liquidations of corporate bond mutual funds and ETFs. The Fed responded on March 23 with the announcement of plans to buy bonds in the secondary market through the newly created Secondary Market Corporate Credit Facility (SMCCF) to purchase investment-grade bonds. The Fed followed that up with an announced expansion of the program on April 9 to buy bonds that were investment grade at the start of the year but were lowered to junk status after COVID-19—the so-called "fallen angels." However, the Fed only started purchasing corporate bond ETFs on May 12 and individual corporate bonds on June 16. The workshop had three papers analyzing developments in the corporate bond secondary market, the Fed's choice of which bonds to purchase, and the effectiveness of the Fed's program in restoring liquidity to the corporate bond market.

Kargar, Lester, Lindsay, Liu, Weill, and Zúñiga study the workings of the corporate bond market in the paper "Corporate Bond Liquidity During the COVID-19 Crisis." Those seeking to sell corporate bonds have historically used dealers (large banks) as intermediaries. Dealers provide two types of transactions. One type of transaction is "risky-principal" trades where the dealer purchases the bond and holds the bond on the dealer's balance sheet until it finds a buyer. This type of transaction provides the seller with immediacy but at the cost of the dealer bearing some risk that the bond's value will drop

before the dealer finds a buyer and the dealer bearing higher regulatory costs in the form of needing to hold more capital and liquidity. In the other type of transaction, the dealer acts as an agent for the seller where the seller retains the bond until the dealer finds a buyer (“agency” or “riskless-principal” trades). The paper shows that as bond market conditions deteriorated, bond dealers raised the price of risky-principal transactions by a factor of five, reflecting dealer reluctance to take the bonds on their balance sheet. Overall, the dealer sector indeed showed no net increase in its bond inventories. As a result, the volume of agency trades increased by as much as 15 percent. Market conditions improved with the Fed’s first announcement, with prices increasing for bonds eligible for purchase with the March 6 announcement and expanding to ineligible bonds with the April 9 announcement. The paper then develops a model of consumer surplus for the bond sellers and finds this measure decreased sharply after the COVID-19 shock hit and sellers switched to agency trades. Consumer surplus then rebounded most of the way, but not fully, with the Fed’s announcements. Interestingly, the paper finds that it was the announcements and not the actual bond purchases that were responsible for improving market conditions.

Gilchrist, Wei, Yue, and Zakrajšek explore the effects of the Fed’s corporate bond purchase announcements in their paper “The Fed Takes on Corporate Credit Risk: An Analysis of the Efficacy of the SMCCF.” On the surface, the program appeared very effective with bond prices increasing sharply after the announcement. However, in responding to COVID-19, the Fed took a variety of actions intended to improve market functioning, including announcing the creation of a Commercial Paper Funding Facility on March 17, the establishment of the Money Market Mutual Fund Liquidity Facility on March 18, and the announcement of a revived Term Asset-Backed Securities Loan Facility and an expansion of quantitative easing on March 23. Thus, it is possible that most, or all, of the improvement in the corporate bond market was due to these other announcements. To clearly identify the effects of the bond purchase program, the paper undertook a variety of tests that exploit two eligibility requirements for Fed purchases: the bond must be investment grade, and it must have a remaining maturity not greater than five years. They first divide all bonds into eligible and ineligible investment-grade bonds and find eligible bonds experience a drop in credit spreads of 70 basis points (bp). Then they limit the sample to companies that have outstanding issues of both eligible and ineligible bonds, thus better controlling for a wide variety of firm-specific characteristics. Again, credit spreads fell more for the eligible bonds (no more than five years from maturity) relative to the ineligible bonds (those with longer maturity). They also find that bid-ask spreads also declined for eligible bonds relative to ineligible bonds. As a third test, they analyzed the eligible and ineligible bonds issued by “fallen angels” after the April 9 announcement and find a 250 bp drop in credit spreads for the eligible bonds.

The paper “Corporate Bond Purchases After COVID-19: Who Did the Fed Buy and How Did the Markets Respond?” by Flanagan and Purnanandam analyzes the Fed’s bond purchases. The paper finds that the purchase program did not target firms that were hit harder by the pandemic or that had more employees. Instead, the program’s intent appeared to be improving dealers’ liquidity by alleviating frictions in the secondary funding market. An important source of funding for dealers arises from the use of their corporate bond portfolio as collateral in the repurchase (repo) market. To the extent that dealers can repo out their corporate bonds, their ability to engage in “risky-principal” transactions is

enhanced. Flanagan and Purnanandam also find that the Fed was more likely to purchase bonds with lower credit spreads and longer maturities. These results also hold when comparing bonds issued by the same company, with the additional finding that the Fed was more likely to purchase issues with more bonds outstanding. They then look directly at bonds used as collateral and found that their probability of being purchased by the Fed was 6 percent to 7 percent higher than bonds that were not used as collateral.

### Large Corporate Loan Markets

Loans are an important source of funding for corporations. Both banks and nonbank lenders participate in the syndicated loan market for larger firms, whereas banks tend to be more important for smaller firms. The papers in this session analyzed the lending activity in the wake of COVID-19 by banks and two important nonbank sources of funds in the syndicated loan market. These papers show banks increased overall lending and, in particular, lending to larger, less risky firms—lending that was drawing down lines of credit. However, the papers also show a decrease in lending, by nonbank lenders and by banks hit by credit line drawdowns to smaller, more risky firms.

The paper “Nonbank Lending and Credit Cyclicity” by Fleckenstein, Gopal, Gutiérrez, and Hillenbrand analyzes the credit supplied by collateralized loan obligations (CLOs) and loan mutual funds, which collectively hold 80 percent of nonbank loans. CLOs pool syndicated loans and divide their cash inflows into a set of tranches that take varying degrees of credit risk. The least risky tranches typically obtain a AAA rating, but the lower-rated tranches are often rated below investment grade. The residual risk of the CLO is borne by an equity tranche that can obtain very high returns if no defaults in the pool occur, but that tranche may become worthless if the pool experiences a high default rate. The paper notes that CLOs’ liabilities tend to have longer maturities, so their funding is secure. However, CLOs are structured so that as riskiness of the lending portfolio increases, the required amount of equity also increases.<sup>2</sup> The paper finds that potential CLO equity investors were not willing to supply the needed increase in equity, likely because the rates of return on CLO equity were becoming less attractive. This paper also finds evidence of fragility in open-end loan mutual funds that is similar to corporate bond mutual fund paper. As a result, nonbank lenders’ share of the syndicated loan market goes down when credit risk increases.

Banks are a potential substitute for nonbank lenders, and commercial and industrial (C&I) and lending by U.S. commercial banks did increase during recent crises, according to Kapan and Minoiu’s paper the “Liquidity Insurance vs. Credit Provision: Evidence from the COVID-19 Crisis.” C&I lending increased by 5 percent after Lehman Brothers failure in September 2008 and increased by 21 percent in the four weeks starting March 11. However, the paper documents that this increased lending was largely in response to drawdowns of existing credit lines by firms that had credit lines. Moreover, the firms with these lines tended to be larger, less risky firms, which raises the question of what happened to the firms that did not have credit lines at the start of the crisis. The paper looks at three measures of the availability of credit to these other firms: the supply of syndicated loans, the overall tightness of bank

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<sup>2</sup> This requirement for increased equity provides a buffer to absorb the increase in credit risk and so helps protect the higher-rated liabilities from increased defaults.

lending standards as measured by the Senior Loan Officer Opinion Survey, and the banks' participation in the U.S. Treasury's Payroll Protection Program for smaller firms. For all three of these measures, the paper finds that banks that were more exposed to credit line drawdowns showed a greater reduction in the availability of credit to other firms.

Greenwald, Krainer, and Paul reach a similar conclusion about the effect of credit lines on the availability of bank C&I credit in their paper "The Credit Line Channel." They then proceed to ask about the implications for the overall economy. The paper first analyzes bank lending in response to credit line drawdowns and what it means for other types of loans using the FR Y-14Q data set, which has comprehensive data on loans by banks subject to Federal Reserve stress tests (that is, all of the largest U.S. banks). They document that the distribution of used and undrawn credit lines tilts heavily toward the largest firms, with 40 percent of the used credit and 70 percent of the undrawn credit accruing to the largest 10 percent of firms. (Firms with credit lines not only tend to be larger, but also older and more profitable.) The paper then builds a macro model in which one group of firms is financially constrained and another is unconstrained. The ability to obtain debt financing has a larger effect on new investment by constrained firms, yet credit lines with fixed interest rate spreads are only available to the unconstrained firms. They then compare the model's results in a world with only term lending at the current interest rate spread with a world in which there are both term loans and credit lines. The model's results indicate that even though the existence of credit lines leads to more bank lending, these credit lines result in reduced credit flows to the constrained firms and less investment. Thus, the authors' results suggest that credit lines may have an adverse macroeconomic impact even though the lines also result in more bank lending.

### **Conclusion**

The large reduction in economic activity at the start of the novel coronavirus pandemic simultaneously increased both the credit risk of corporations and their need to be able to borrow to obtain liquidity. The papers presented at a recent virtual conference co-organized by the Atlanta Fed provide valuable insights into the way lenders and financial markets responded both to the COVID-19 shock and to the Fed's efforts to restore stability.

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