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Stress, Contagion, and Transmission: 2020 Financial Stability Conference

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Once a year, financial system regulators and economists meet to present and discuss the latest research on financial stability at a conference sponsored by the Federal Reserve Bank of Cleveland and the Office of Financial Research. The major focus of discussion during the 2020 conference was the impact of the COVID-19 pandemic on the financial system. This *Commentary* summarizes the ideas and insights presented in the research papers and keynote speeches.

Just as the world was congratulating itself on a decade of recovery from the great financial crisis, financial markets again faced problems of contagion and transmission, but this time it was no analogy; the original meanings from epidemiology returned as the COVID-19 pandemic spread death and economic destruction around the world. In contrast to 2008–2009, where difficulties in the financial system led to economic problems, in 2020 the economic impact of the pandemic created financial problems.

The pandemic's impact on the financial system was the major focus of discussion during the 2020 Financial Stability Conference sponsored by the Federal Reserve Bank of Cleveland and the Office of Financial Research. Held virtually on November 19–20, the conference featured keynote addresses by Governor Michelle Bowman of the Federal Reserve Board of Governors and Professor Markus Brunnermeier of Princeton University. Panels and presentations of research papers covered topics in macroprudential and monetary policy; financial market frictions and liquidity; and networks and contagion. Introductory remarks were provided by Loretta J. Mester, president and CEO of the Federal Reserve Bank of Cleveland, and Dino Falaschetti, director of the Office of Financial Research.

This *Commentary* summarizes the academic papers and keynote talks delivered at the conference.[1,2]

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Macroprudential and Monetary Policy

Though central banks such as the Federal Reserve and the European Central Bank (ECB) make headlines for their monetary policy decisions, they are often important financial regulators. Coordinating these roles, particularly in times of crisis, is a key responsibility. The papers presented in this session explored two specific areas related to this issue: the ECB's negative interest policy and the Federal Reserve's stress tests.

Florian Heider and his coauthors, in "Why So Negative? The Effect of Monetary Policy on Bank Credit Supply across the Euro Area," look at the different ways monetary policy can impact the amount of credit banks supply to firms. Which channel of monetary policy dominates appears to differ across countries. Using detailed individual loan data from Germany and Portugal, they find that banks' cost of funding, especially the rates they pay on deposits, plays a key role in determining which channel is most important. A lower policy rate increases bank profits, as the deposit rate falls more than the lending rate. But a zero lower bound on retail deposit rates means that banks won't see a benefit when the policy rates drop into negative territory.

In the wake of the sovereign debt crisis, deposit rates vary substantially across the euro area, and those differences influence the degree to which monetary policy can stimulate bank lending. Negative policy rates don't necessarily help banks that depend on deposits for funding, and they can affect banks' cost of funding unevenly across countries. In Germany, where deposit rates were already low, negative policy rates did not translate into lower deposit rates. In Portugal, where rates were higher, deposit rates fell, and banks with high deposits became profitable and were able to lend more.

While Heider and his coauthors look at deposits and lending, Mehrnoush Shahhosseini examines questions related to bank capital and lending in "Capital Requirements and Banks' Behavior: Evidence from Bank Stress Tests." The paper studies the impact of higher regulatory capital by looking at differences between banks that underwent the stress tests and those that didn't. Contrary to a popular story that higher capital requirements means less lending, the paper finds that banks meet higher capital requirements by issuing equity and so expand their assets and reduce their leverage. Demonstrating this requires careful empirical work, because it is tricky to determine if a bank has reduced the supply of loans or if firms have reduced their demand. The paper uses detailed loan-level data across banks and firms to separate out these questions of credit supply from credit demand. It finds that capital requirements affect the real economy by changing the amount of loans banks make: the bank lending channel. The novelty of Shahhosseini's analysis lies in its ability to differentiate effects on borrowers across the firm size spectrum. While stress-tested banks increase lending, not all firms benefit: Smaller and riskier borrowers get less credit. Furthermore, these firms have nowhere else to go.

Videos and Presentations

For videos of the panel and paper discussions (and links to the conference presentations) go to the conference webpage:

2020 Financial Stability Conference: Stress, Contagion, and Transmission

clevelandfed.org/newsroom-and-events

Firms dependent on stress-tested banks reduce assets and investments extensively in response to the credit loss. This finding contrasts with other studies that find a bank-level effects but no aggregate effects.

Financial Market Frictions and Liquidity

The early months of the COVID-19 crisis saw a "dash-for-cash" by investors in markets that are normally liquid but faced stress during that period. The two papers presented in this session look at those problems of liquidity in the context of financial frictions and attempt to assess the policy response. Taken together, the papers tell a story of the factors that caused a massive sell-off in liquid securities, the market frictions that amplified its effects, and the Federal Reserve policies implemented in response.

Kairong Xiao and his coauthors try to understand why the panic in March 2020 appeared to have a flight away from the most-liquid assets in the economy. In "Mutual Fund Liquidity Transformation and Reverse Flight to Liquidity," they point out that traditionally liquid asset markets, such as those for Treasuries and high-quality corporate bonds, were strained by unusually high selling pressures during the COVID-19 pandemic. This is in contrast with the flight-to-liquidity by investors observed in past crises. They note the increased importance of fixed-income mutual funds as a contributing factor, in particular because of the mutual funds' role in liquidity transformation. Mutual funds issue demandable, liquid equity and may invest the proceeds in relatively illiquid assets. When the COVID-19 crisis delivered a large negative shock to economic fundamentals, investors worried that funds would have trouble selling their illiquid assets in a down market and started taking their money out of fixed-income mutual funds. Because funds may follow a pecking order of liquidation, first selling more liquid assets before moving on to illiquid ones, investor redemptions resulted in concentrated selling pressures by affected funds in traditionally more liquid asset markets. The investor flight out of these funds was thereby turned into the observed reverse flight-to-liquidity. The Federal Reserve, however, began purchasing some of the risky securities held by these funds, and this safety valve may have served as an important policy tool for stabilizing liquid asset markets as well.

In "Anatomy of a Liquidity Crisis: Corporate Bonds in the COVID-19 Crisis," Alex Zhou and his coauthor also examine the turmoil in the corporate bond market that resulted from the pandemic, but they concentrate more on the factors that amplified the problems. The fears were less about solvency—the ability of corporations to make payments—and more about market liquidity—the ability to trade these bonds in a crisis. Understanding these liquidity problems requires taking a closer look at the microstructure of the market—the "plumbing" details of how bonds get traded and who trades them. During the two weeks leading up to Fed interventions, trading volume shifted to the easiest-to-trade or "liquid" securities, the cost of individual trades soared, and dealers, particularly nonprimary dealers, shifted from buying to selling. This shift suggests that dealers were no longer providing liquidity to the market, and dealers' inventories plummeted accordingly. Liquidity provisions in electronic customer-to-customer trading increased, though at prohibitively high costs. The Federal Reserve responded quickly, with the Primary Dealer Credit Facility (PDCF) and the Secondary Market Corporate Credit Facility (SMCCF). These facilities stabilized trading conditions, improving dealer funding conditions and providing a liquidity backstop. Most of the impact of the SMCCF on bond liquidity seems to have materialized even before actual lending started, following its announcement. The authors suggest that the actions reflect a new role for the Federal Reserve, one as a market maker of last resort, rather than a lender of last resort.

Networks and Contagion

Network effects—the connections between people—became of central interest during the pandemic for obvious epidemiological reasons, but seeing the importance of such effects in relation to virus transmission also reminded people of other important networks in the financial system and the digital world. The two papers presented in this session look at different ways that risk could arise and propagate among a network of businesses.

In "Pirates without Borders: The Propagation of Cyberattacks through Firms' Supply Chains," Matteo Crosignani and his coauthors look at the impact of what is probably the most damaging cyberattack known so far. Named NotPetya, it was released in June 2017 and targeted Ukrainian organizations. It was viewed by many as an effort by the Russian military intelligence to cripple Ukrainian critical infrastructure. The paper documents the malware's propagation through firm supply chains and the important role of banks in mitigating the attack's impact through the liquidity they provided to the affected firms. Beyond any immediate impact, customers of directly hit firms saw reduced revenues, profitability, and trade credit relative to other comparable firms. The losses were larger for customers with fewer alternative suppliers, and those reliant on their suppliers for highly specific items were particularly hard hit. Customers with substantial liquid assets or available borrowing capacity, especially through bank credit lines, were often able to maintain investment and employment. Customers further adapted by making adjustments to their supply chain network and bringing in alternate suppliers. While supply chain networks are useful for carefully tracing the network linkages and transmission, just looking at supply chains probably underestimates the overall impact of the event, as the attack also affected other institutions not examined in the authors' analysis, including hospitals, banks, and power companies.

Chong Shu, in "Endogenous Risk-Exposure and Systemic Instability," addresses the question, "do highly connected financial networks contribute to systemic stability or systemic fragility?" Most research on financial systemic stability assumes an economy in which banks are subject to exogenous shocks, but in practice, banks choose their exposure to risk. Shu's paper studies the factors that determine how much of this endogenous risk banks choose when they are connected to each other in a financial network. The network creates a risk-taking externality: Connected banks' choices of risk are strategically complementary. That is, when other banks make riskier loans, a connected bank also wants to make riskier loans. Densely connected networks, in particular, induce banks to take greater risks. Adding to the problem, they choose correlated risks, aggravating systemic fragility and creating a "too-many-to-fail" problem. Thus, while banks join networks to insure themselves against certain types of risks, there is a downside. In modeling the network effects, Shu can also examine some proposed solutions to the resulting systemic risk. Somewhat counterintuitively, he finds that having a central clearing counterparty (CCP) can increase risk-taking. However, mandating a capital buffer for banks decreases the externality-risk incentives and thus reduces systemic risk.

Keynote: Mortgage Markets and Financial Stability

Federal Reserve Governor Michelle Bowman delivered the conference's traditional regulator keynote, speaking on "The Changing Structure of Mortgage Markets and Financial Stability." The COVID-19 pandemic and the efforts to contain the virus triggered an economic downturn unprecedented in its speed and severity, with more than 22 million jobs lost in March and April. Many financial markets were hit hard, including mortgage markets, and while the Federal Reserve responded by purchasing large quantities of mortgage-backed securities (MBS), the problems went beyond the MBS market. The crisis uncovered vulnerabilities in lending and mortgage servicing by nonbank mortgage companies. These firms originate about half of all mortgages and account for the majority of MBS securitized by Ginnie Mae, Fannie Mae, and Freddie Mac, along with having a large share of the mortgage-servicing market. These firms benefit the consumer by providing increased competition and technological innovation, but also increase the risk in the system.

One major risk is the liquidity risk these firms face as mortgage servicers. If borrowers cannot pay, the mortgage

servicers must still make the mortgage payments to Ginnie Mae and the government-sponsored enterprises (GSEs). The firms will eventually get paid back, but they must finance those payments somehow. If these firms collapse, it will reduce credit to consumers, and since mortgage companies originate the majority of mortgages in Black and Hispanic, as well as low- and moderate-income, neighborhoods, vulnerable areas will be particularly hard hit. While Federal Reserve actions (MBS purchases and interest rate reductions) and the CARES Act have ameliorated the immediate problems, there is still a need to address the underlying vulnerabilities in the mortgage market. Nonbanks differ from banks in a variety of ways: They are more exposed to mortgage market shocks, having less diversified portfolios than banks, and they do not have access to deposit insurance or the discount window. Improved regulation for mortgage companies, being considered by a variety of bodies, should recognize these firms' differences from banks and consequent need for different regulation.

Keynote: Digital Money and Financial Stability

Princeton Professor Markus Brunnermeier delivered the academic keynote on "Digital Money, Monetary Sovereignty, and Financial Stability." Brunnermeier considered the implications of the technological trends that have brought us smartphones, big data, artificial intelligence, and digital platforms. These trends have started a change in the organization of financial activities, perhaps most notably in China and India, where finance is moving from being bank-centric to payment-centric. Payment platforms have become important, and by virtue of their ubiquity, they gather extensive information on consumers. A key question will be the extent to which these platforms are able to lock people in, forming monopolies, or whether they will usher in a new phase of currency competition. Indeed, such "digital dollarization," where residents use a different nation's digital currency, may usher in a new era of currency competition. As an example, Brunnermeier noted a story of an Ohio resident who pays for takeout at his local Chinese eatery by transferring renminbi via WeChat.

There are advantages to a nation of being in control of its money supply. In addition to the seigniorage, there is the ability to manage the economy via monetary policy and the ability to serve as a lender of last resort to support banks during a crisis. In fact, a good monetary policy and an effective lender of last resort may make a particular money quite popular and promote its use. But there is bound to be competition because monies differentiate themselves. For example, some might promote their privacy features, or even their commodity backing. And the competition won't be only from other nations: Currently, our money system is two-tiered, with money being produced by the government (cash) and banks (checking accounts), but tech platforms are becoming increasingly important as a vehicle of payment. Brunnermeier foresees that in the near future, we will all have several currencies in our wallets, or at least in our cellphones.

Conclusion

Though the conference's themes were meant to be suggestive, the papers and keynotes addressed them directly and literally, whether it was stress tests, the contagion of a cyberattack, or the transmission effects of negative rates and capital requirements. Presentations and discussions highlighted the work needed to be done to support an economy of networked firms and markets, whether it be an immediate crisis response or the design and structure of institutions for financial stability.

Footnotes

1. Special thanks go to the discussants for the paper sessions, Philipp Schnabl of New York University, Victoria Ivashina of Harvard University, and Michael Gofman of the University of Rochester.

2. For the panel on macroprudential and monetary policy, the moderator was Andrew Atkeson, Stanley M. Zimmerman Professor of Economics and Finance at the University of California, Los Angeles. The panelists were Hugh Carney, vice president of capital policy at the American Bankers Association; James Chapman, deputy managing director of economic and financial research at the Bank of Canada; Dorothy DeWitt, director of the division of market oversight at the Commodity Futures Trading Commission; and Andreas Lehnert, director of financial stability at the Board of Governors of the Federal Reserve System.

For the panel on financial market frictions and liquidity, the moderator was Amy Edwards, assistant director of the office of markets at the US Securities and Exchange Commission. The panelists were Viral Acharya, C.V. Starr Professor of Economics in the Department of Finance at New York University Leonard N. Stern School of Business; Darrell Duffie, Adams Distinguished Professor of Management and professor of finance at Stanford Graduate School of Business; Ben Golub, chief risk officer at BlackRock; Isabel Schnabel, a member of the executive board at the European Central Bank; and Antoinette Schoar, Stewart C. Myers-Horn Family Professor of Finance at MIT Sloan School of Management.

For the panel on networks and contagion, the moderator was H. Peyton Young, Centennial Professor at the London School of Economics. The panelists were Joshua M. Epstein, professor of epidemiology at New York University School of Global Public Health; Paul Glasserman, Jack R. Anderson Professor of Business at Columbia Business School; and Suzanne Sprague, managing director of credit and liquidity risk, risk policy, and banking at CME Group.

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